Company «Balkan Novoteh Doo» is a young but strong company specialized on developing and manufacturing of high quality military goods. Our products were acknowledged by many countries around the globe after passing performance and conformity tests with 100% success.

We cooperate with many Serbian and Ukrainian companies to deliver best possible quality of products to our customers.

We are situated in a beautiful city of Novi Sad, Republic of Serbia and always glad to meet you there.

We are proud to present list of goods we are offering.
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Laser system for sight mark forming «Adros» FPM-01KV provides operative combat application of helicopter unguided munitions in dark conditions. It forms sight mark directly on the ground target visible through pilot night goggles. Laser system for sight mark forming «Adros» FPM-01KV increases helicopter original sight capabilities and can be used with different aiming and observing systems both independently and as reserve for FLIR systems.

«Adros» FPM-01KV system is designed for installing on Mi-8, Mi-17, Mi-171, Mi-24, Mi-35, Mi-2, as well as similar class helicopters.

«Adros» FPM-01KV system passed all official tests. It is adopted by Ukrainian Armed Forces and is exported to other countries.

Technical data

- **Designation**: FPM-01KV
- **Laser beam angular velocity (deg/s)**: not less than 20 deg/s
- **Beam deviation angles (deg)**: ±2° by azimuth, from -10° to 15° by elevation
- **Beam positioning accuracy (mrad)**: not worse than 1.5
- **Power supply**: 27V DC, 40W - 3K, 400Hz, 70VA
- **Readiness time (s)**: not more than 3
- **Weight (kg)**: not more than 5
AERODYNAMIC GUIDANCE KIT FOR BOMBS
«ADROS» BAU-01K

Aerodynamic guidance kit for bombs «Adros» BAU-01K is used to increase the effectiveness of conventional aviation bombs combat application against stationary and low-dimension targets. It is designed for bombs of 200lb (~100kg), 500lb (~250kg) and 1000lb (~500kg) caliber.

Goals
1) Bomb hit accuracy increase;
2) Fast conversion of conventional bombs to correction;
3) Planes/Flights/Bombs reduction for stationary low-dimension targets hitting;
4) Platform (base) for different guidance systems.

Features
1) Application on 200, 500 and 1000lb bombs;
2) Combined guidance system (GPS+inertial);
3) Two pairs of control surfaces (canards) for bomb flight control at calculated trajectory;
4) Possibility for other types of guidance system use such as TV(ccd), IIR, inertial, etc.;
5) Target hitting accuracy is comparable with value for specialized correction aviation bombs. In case of «Adros» BAU-01K application the target defeat probability grows 1.5 to 3 times and munitions (bombs) rate drops 6 to 30 times depends on target type.

In combination with conventional bombs «Adros» BAU-01K allows to reach effectiveness comparable with value for special aviation correction bombs of KAB-500L.

Target hit effectiveness

<table>
<thead>
<tr>
<th>Targets</th>
<th>Munitions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FAB-500K</td>
</tr>
<tr>
<td>Railway bridge</td>
<td>0.86</td>
</tr>
<tr>
<td>Wood/Salt covered control center</td>
<td>0.85</td>
</tr>
<tr>
<td>Town building</td>
<td>0.85</td>
</tr>
<tr>
<td>Dunked plane</td>
<td>0.85</td>
</tr>
<tr>
<td>Overbridge</td>
<td>0.82</td>
</tr>
<tr>
<td>Munitions stack</td>
<td>0.82</td>
</tr>
</tbody>
</table>

Technical data

- Designation: «Adros» BAU-01K
- Applicable altitude (m): 500 - 6000
- Readiness time (s): not more than 3
- Continuous working time in autonomous flight (s): not less than 60
- Guidance system onboard continuous working time (hours): 4
- Power supply: 3V and 24V
- Operating pressure (mm Hg): +50 to +70
- Operating altitude (m): up to 4000
- Operating humidity (%): up to 98 at +35°C
- Weight (kg): depends on design solution (up to 10)
«ADROS» KT-03UE

Infrared countermeasure station «Adros» KT-03UE is intended for active protection of helicopters and turboprop engine airplanes against guided missiles equipped with infrared homing heads. The majority of known such stations basically suppress infrared homing heads with amplitude-phase modulation (APM). Its interfering signal should exceed a signal from the engine nozzle in 1.5-2 times, and in some cases up to 20 times. «Adros» KT-03UE station is capable to suppress infrared homing heads with CCM function for other types of modulation: frequency-phase modulation (FPM) and pulse-length modulation (PLM). This allows of full lock-on failure for such guided missiles, as “Stinger”, “Igla”, “Igla-1”, R-60 M, R-73, “Sidewinder” and other.

The station provides the withdrawal of the guided missiles from the flight trajectory to the purpose with subsequent derangement of accompaniment due to the gradually increasing error of aiming in the contour of missile control. The station does not require information about type and frequency parameters of missile homing head modulation and works without missile warning system. For protection efficiency improvement special screens, engine exhaust shields and (or) flare dispensers «Adros» KUV 26-50E («Adros» AV-26V) are used in addition to «Adros» KT-03UE station.

IRCM station «Adros» KT-03UE is designed for installing on An-26, An-32 airplanes, Mil type helicopters as well as helicopters and turboprop airplanes of other manufacturers and their modifications. Two «Adros» KT-03UE stations in special containers jointly with flare dispensers «Adros» KUV 26-50E are installed on airplane.

**Technical data**

- **Designation**
  - The likelihood of defeating guidance unit of a Stinger-type missile (%)
  - 0.7 - 0.8

- **Time needed to divert a Stinger-type missile from its course (s)**
  - 0.5 - 0.8

- **Spectral range of radiation**
  - 1.8 - 5.5 micron

- **Airborne line-operated**
  - Single phase: 115V, 400Hz
  - Direct voltage: 27V

- **Protection zone (deg)**
  - up to 33

- **Mass (kg)**
  - up to 36
INFRARED COUNTERMEASURE STATION «ADROS» KT-01AVE

KT-01AVE is intended for active protection of helicopters against guided missiles equipped with infrared homing heads. The majority of known such stations basically suppress infrared homing heads with amplitude-phase modulation (APM). Its interfering signal should exceed a signal from the helicopter’s engines in 1.5-2 times, and in some cases up to 20 times. The station «ADROS» KT-01AVE is capable to suppress infrared homing heads with CCM function for other types of modulation: frequency-phase modulation (FPM) and pulse-length modulation (PLM). This allows for full lock-on failure for such guided missiles, as "Stinger", "Iгла", "Iгла-1", R-60 M, R-73, "Sidewinder" and other.

We applied new method of optical-electronic suppression and new modulator design with electronic control on the basis of programmed processors (DSP). Patents protect all novelties. For protection efficiency improvement in addition to IRCM station special screens and engine exhaust shields are used to provide decrease of helicopter thermal visibility.

IRCM station «ADROS» KT-01AVE is designed for installing on Mi-24, Mi-8, Mi-17 helicopters and their modifications, but can be also installed on other helicopters after additional works provided by company specialists.

IRCM station «ADROS» KT-01AVE passed all official tests. It is adopted by Ukrainian Armed Forces and is exported to other countries.

**Technical data**

- **Designation**: «ADROS» KT-01AVE
- **The likelihood of defeating guidance system of a Stinger type missile**: 0.7 - 0.8
- **Time necessary to divert a Stinger-type missile from its course (s)**: 0.5 - 0.8
- **Selectivity**: The system is efficacious against IR-guided missiles of various types and does not need to be readjusted
- **Airborne line-operated**: Three phase: 200V - 400Hz; Single phase - 110V, 400Hz; Direct voltage - 24V, up to 26V
- **Mass (kg)**
Infrared countermeasure station «Adros» KT-05UAV is intended for active protection of unmanned aerial vehicles (UAV) against guided missiles equipped with infrared homing heads. «Adros» KT-05UAV station is capable to suppress infrared homing heads with amplitude-phase modulation (APM), frequency-phase modulation (FPM) and pulse-length modulation (PLM). This allows of full lock-on failure for such guided missiles, as "Stinger", "Iгла", "Iglu-1", R 60M, R 73, "Sidewinder" and other.

The station provides the withdrawal of guided missiles from the flight trajectory to the purpose with subsequent derangement of accompaniment due to gradually increasing error of aiming in the contour of missile control. The station does not require information about type and frequency parameters of missile homing head modulation and works without the missile warning system.

IRCM station «Adros» KT-05UAV is designed for installing on unmanned aerial vehicles (UAV), equipped with piston and turboprop engines.

**Technical data**

- **Designation**: «Adros» KT-05UAV
- **The likelihood of defeating guidance unit of a Stinger-type missile (%)**: 0.7 - 0.8
- **Time needed to divert a Stinger-type missile from its course (s)**: 0.5 - 0.2
- **Spectral range of radiation (mum)**: 1.9 - 5.5
- **Direvoltage (V)**: 27 - 229
- **Power consumption (W)**: 500
- **Protection zone (deg)**: not more than 5°
- **Mass (kg)**: not specified
AIRCRAFT DEFENCE SYSTEMS

«ADROS» ASh-01V

Engine exhaust shields «Adros» ASh-01V decrease infrared visibility of helicopter and intended for their passive protection against guided missiles equipped with infrared homing heads of many types.

Engine exhaust shields «Adros» ASh-01V are installed on helicopter's engine nozzles and decrease infrared visibility due to unique design with use of special heat screens, ejecting devices, few heat removal circuits and forming determined and directed ejecting flow of exhaust.

Engine exhaust shields «Adros» ASh-01V installation increases helicopter survivability and decreases effectiveness of guided missiles equipped with infrared homing heads.

Engine exhaust shields «Adros» ASh-01V were designed for installation on helicopters Mi-24, Mi-8, Mi-17 of all types.

Based on «Adros» ASh-01V design we can develop similar device to be used on aircraft of any defined type according to customer need.

Technical data

- **Designation**: «Adros» ASh-01V
- **Infrared visibility decrease (%)**: not less than 1100
- **Engine power decrease (%)**: not more than 3
- **Mass of set of 2 units (kg)**: not more than 110
- **Decrease of range required by guided IR missiles to target helicopter (%)**: 350
- **Aerodynamic drag**: similar to standard
**AIRCRAFT DEFENCE SYSTEMS**

**«ADROS» T-32C**

Multifunction countermeasure pod (MCD) «Adros» T-32C is intended for active protection of airplanes with turboprop engines of An-26, An-32 type as well as similar class airplanes against guided missiles equipped with infrared homing heads.

Depending on composition of the equipment, placed in the pod, MCD can be supplied in the following variants:


One airplane can be equipped with two «Adros» T-32C pods, installed on both left and right airplane boad on regular mounting points.

---

**Technical data**

<table>
<thead>
<tr>
<th>Designation</th>
<th>Length (m)</th>
<th>Width (m)</th>
<th>Height (m)</th>
<th>Mass without decoys (kg)</th>
<th>Mass with decoys (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>«Adros» T-32C</td>
<td>2.6</td>
<td>0.4</td>
<td>0.8</td>
<td>max 190</td>
<td>max 250</td>
</tr>
</tbody>
</table>

---
**AIRCRAFT DEFENCE SYSTEMS**

«ADROS» KUV 26-50E

«Adros» KUV 26-50E flare dispenser is intended for locating and dispensing 26mm and 50mm caliber flares and chaffs. Flare dispensing is conducted by the special programs to create hard jamming situation for missiles with infrared homing heads as "Stinger", "Iгла", "Iгла 1", R 60M, R 73, "Sidewinder" and other.

Flare dispensing laws are developed for particular aircraft.

Activated flares provide false information about target location for missile approaching to protected aircraft.

«Adros» KUV 26-50E flare dispenser can be applied on all flight stages in manual or automatic (joint with missile warning system) mode.

«Adros» KUV 26-50E flare dispenser can be installed on any aircraft type.

---

**Technical data**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Designation</td>
<td>«Adros» KUV 26-50E</td>
</tr>
<tr>
<td>Flare caliber (mm)</td>
<td>26 and 50</td>
</tr>
<tr>
<td>Number of flares in one device</td>
<td>26 of 26mm; 10 of 50mm</td>
</tr>
<tr>
<td>Number of devices, controlled by one control unit</td>
<td>2-30</td>
</tr>
<tr>
<td>Readiness time (s)</td>
<td>30</td>
</tr>
<tr>
<td>Power supply</td>
<td>27V DC</td>
</tr>
<tr>
<td>Consumable power (W)</td>
<td>not more than 350</td>
</tr>
<tr>
<td>Built in test</td>
<td>yes</td>
</tr>
</tbody>
</table>
«ADROS» AV-26V

«Adros» AV-26V flare dispenser is intended for locating and dispensing 26mm caliber flares and chaffs. Flares dispensing is conducted by the special programs to create hard jamming situation for missiles with infrared homing heads as "Stinger", "Iгла", "Iгла-1", R-60M, R-73, "Sidewinder" and other.

Flare dispensing laws are developed for particular aircraft.

Activated flares provide false information about target location for missile approaching to protected aircraft. «Adros» AV-26V flare dispenser can be applied on all flight stages in manual or automatic (joint with missile warning system) mode.

«Adros» AV-26V flare dispenser can be installed on any aircraft type.

Technical data

- **Designation**: AV-26V
- **Flare caliper (mm)**: 26
- **Number of flares in one device**: 32
- **Number of devices, controlled by one control unit**: 3
- **Readiness time (s)**: 2-30
- **Power supply**: 30 V DC
- **Consumable power (W)**: not more than 250 W
- **Built-in test**: yes
FLARES 26 and 50mm

PPI-26-1S and PPI-50S type flares are used to protect aircraft (either helicopters or airplanes) against any guided missiles equipped with infrared seekers. Flares create false infrared targets and drag approached missiles to the distance safe for protected aircraft.

Flares are expendables and can be deployed on the aircraft equipped with different flare dispensers such as «Adros» KUV 26-50, ASO-2V, KDS-50, UV-26, «Adros» AV-26V and analogues.

Flares PPI-26-1S

**Technical data**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Designation</td>
<td>PPI-26-1S</td>
</tr>
<tr>
<td>Caliber (mm)</td>
<td>max 26.5</td>
</tr>
<tr>
<td>Length (mm)</td>
<td>85</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>0.09</td>
</tr>
<tr>
<td>Ejection velocity (m/s)</td>
<td>30+10</td>
</tr>
<tr>
<td>Burning time (s)</td>
<td>2.1 - 2.6</td>
</tr>
<tr>
<td>Infrared radiation intensity, range (20...30 mcm, kW/st)</td>
<td>6.3 - 7.2</td>
</tr>
<tr>
<td>Infrared radiation intensity, range (30...50 mcm, kW/st)</td>
<td>4.2 - 4.8</td>
</tr>
<tr>
<td>Time to reach max intensity (s)</td>
<td>0.5 - 0.91</td>
</tr>
<tr>
<td>Operational temperature (°C)</td>
<td>±50</td>
</tr>
<tr>
<td>Electrical resistance of circuit, line (Ω)</td>
<td>0.15 - 0.80</td>
</tr>
</tbody>
</table>

**Packing data**

<table>
<thead>
<tr>
<th>Description</th>
<th>5 flares in a bag, 96 bags in a wooden case with aluminum foil CA-40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wooden case dimension (mm)</td>
<td>540 x 400 x 348</td>
</tr>
<tr>
<td>Case gross mass (kg)</td>
<td>47</td>
</tr>
<tr>
<td>Case volume (m³)</td>
<td>0.0752</td>
</tr>
</tbody>
</table>

Flares PPI-50S

**Technical data**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Designation</td>
<td>PPI-50S</td>
</tr>
<tr>
<td>Caliber (mm)</td>
<td>max 50.2</td>
</tr>
<tr>
<td>Length (mm)</td>
<td>250</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>0.45</td>
</tr>
<tr>
<td>Ejection velocity (m/s)</td>
<td>20+10</td>
</tr>
<tr>
<td>Burning time (s)</td>
<td>3.5 - 4.1</td>
</tr>
<tr>
<td>Infrared radiation intensity, range (20...30 mcm, kW/st)</td>
<td>31.6 - 36.2</td>
</tr>
<tr>
<td>Infrared radiation intensity, range (30...50 mcm, kW/st)</td>
<td>14.6 - 16.8</td>
</tr>
<tr>
<td>Time to reach max intensity (s)</td>
<td>0.5 - 0.84</td>
</tr>
<tr>
<td>Operational temperature (°C)</td>
<td>±50</td>
</tr>
<tr>
<td>Electrical resistance of circuit, line (Ω)</td>
<td>0.15 - 0.80</td>
</tr>
</tbody>
</table>

**Packing data**

<table>
<thead>
<tr>
<th>Description</th>
<th>1 flare in a cardboard bag, 46 bags in a wooden case with aluminum foil CA-40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wooden case dimension (mm)</td>
<td>540 x 400 x 348</td>
</tr>
<tr>
<td>Case gross mass (kg)</td>
<td>45</td>
</tr>
<tr>
<td>Case volume (m³)</td>
<td>0.0752</td>
</tr>
</tbody>
</table>
### Ammunition 20mm x 110
for anti-aircraft gun 20mm M55, HS404 and HS804 «HISPANO»

#### Technical data

<table>
<thead>
<tr>
<th>NATO designation</th>
<th>HE</th>
<th>HEI</th>
<th>HE-T</th>
<th>HE-T</th>
<th>API-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Projectile mass (g)</td>
<td>122</td>
<td>122</td>
<td>122</td>
<td>122</td>
<td>142</td>
</tr>
<tr>
<td>Propellant mass (g)</td>
<td>29</td>
<td>29</td>
<td>29</td>
<td>29</td>
<td>32</td>
</tr>
<tr>
<td>Explosive mass (g)</td>
<td>12,1</td>
<td>12,1</td>
<td>6,1</td>
<td>5,1</td>
<td>none</td>
</tr>
<tr>
<td>Complete round mass (g)</td>
<td>231,6</td>
<td>231,6</td>
<td>231,6</td>
<td>231,6</td>
<td>265,3</td>
</tr>
<tr>
<td>Explosive type</td>
<td>RDX</td>
<td>RDX+Al</td>
<td>RDX</td>
<td>RDX+Al</td>
<td>none</td>
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<tr>
<td>Complete round length (mm)</td>
<td>184</td>
<td>184</td>
<td>184</td>
<td>184</td>
<td>182</td>
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<tr>
<td>Muzzle velocity (m/s)</td>
<td>845</td>
<td>845</td>
<td>845</td>
<td>845</td>
<td>844</td>
</tr>
<tr>
<td>Self-destruction time (s)</td>
<td>4,5</td>
<td>4,5</td>
<td>4,5</td>
<td>4,5</td>
<td>none</td>
</tr>
<tr>
<td>Tracer burning time (s)</td>
<td>3,5</td>
<td>3,5</td>
<td>none</td>
<td>none</td>
<td>none</td>
</tr>
</tbody>
</table>

#### Packing data

- Description: 100 rounds in a wooden case (660 x 232 x 200)
- Wooden case dimension (mm): 660 x 232 x 200
- Case gross mass (kg): 35
- Case volume (m³): 0,03

---

### Ammunition 20mm x 110RB
for anti-aircraft gun 20mm MK-IV «GEBLERKON»

#### Technical data

<table>
<thead>
<tr>
<th>NATO designation</th>
<th>HE</th>
<th>HEI</th>
<th>HE-T</th>
<th>HE-T</th>
<th>API-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Projectile mass (g)</td>
<td>142</td>
<td>142</td>
<td>142</td>
<td>142</td>
<td>142</td>
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<tr>
<td>Propellant mass (g)</td>
<td>29</td>
<td>29</td>
<td>29</td>
<td>29</td>
<td>29</td>
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<tr>
<td>Explosive mass (g)</td>
<td>12,1</td>
<td>12,1</td>
<td>6,1</td>
<td>5,1</td>
<td>none</td>
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<tr>
<td>Complete round mass (g)</td>
<td>265</td>
<td>265</td>
<td>276</td>
<td>276</td>
<td>265</td>
</tr>
<tr>
<td>Explosive type</td>
<td>RDX</td>
<td>RDX+Al</td>
<td>RDX</td>
<td>RDX+Al</td>
<td>none</td>
</tr>
<tr>
<td>Complete round length (mm)</td>
<td>182</td>
<td>182</td>
<td>184</td>
<td>184</td>
<td>184</td>
</tr>
<tr>
<td>Muzzle velocity (m/s)</td>
<td>845</td>
<td>845</td>
<td>845</td>
<td>845</td>
<td>844</td>
</tr>
<tr>
<td>Self-destruction time (s)</td>
<td>4,5</td>
<td>4,5</td>
<td>3,5</td>
<td>3,5</td>
<td>none</td>
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<tr>
<td>Tracer burning time (s)</td>
<td>3,5</td>
<td>3,5</td>
<td>none</td>
<td>none</td>
<td>none</td>
</tr>
</tbody>
</table>

#### Packing data

- Description: 100 rounds in a wooden case (660 x 232 x 200)
- Wooden case dimension (mm): 660 x 232 x 200
- Case gross mass (kg): 35
- Case volume (m³): 0,03
# AMMUNITION 20, 23, 30, 37, 40 and 57mm

## Ammunition 23mm x 115
for aircraft gun GSh-23L and GSh-23LU

### Technical data

<table>
<thead>
<tr>
<th>NATO designation</th>
<th>HE</th>
<th>HEI</th>
<th>TP</th>
<th>API</th>
<th>API</th>
</tr>
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<tbody>
<tr>
<td>Projectile mass (g)</td>
<td>174</td>
<td>174</td>
<td>174</td>
<td>168</td>
<td>174</td>
</tr>
<tr>
<td>Propellant mass (g)</td>
<td>37</td>
<td>37</td>
<td>37</td>
<td>37</td>
<td>37</td>
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<td>Explosive mass (g)</td>
<td>16.3</td>
<td>16.3</td>
<td>none</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>Complete round mass (g)</td>
<td>220</td>
<td>220</td>
<td>220</td>
<td>220</td>
<td>220</td>
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<tr>
<td>Explosive type</td>
<td>RDX</td>
<td>RDX-Al</td>
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<td>none</td>
<td>none</td>
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<tr>
<td>Complete round length (mm)</td>
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<td>197.9</td>
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### Packing data

- **Description**: 100 rounds in a wooden case
- **Wooden case dimension (mm)**: 705 x 250 x 202
- **Case gross mass (kg)**: 42
- **Case volume (m³)**: 0.035

## Ammunition 23mm x 152B
for anti-aircraft gun ZU-2 and ZSU-4

### Technical data

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### Packing data

- **Description**: 80 rounds in a wooden case
- **Wooden case dimension (mm)**: 688 x 286 x 204
- **Case gross mass (kg)**: 42
- **Case volume (m³)**: 0.045
### Ammunition 30mm x 165

**for anti-aircraft gun 30mm AO 18**

#### Technical data

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#### Packing data

- **Description**: 30 rounds in a wooden case
- **Wooden case dimension (mm)**: 576 x 338 x 218
- **Case gross mass (kg)**: 37
- **Case volume (m³)**: 0.042

---

### Ammunition 30mm x 165

**for anti-aircraft gun 30mm 2A72, 2A42 and 2A38M**

#### Technical data

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#### Packing data

- **Description**: 30 rounds in a wooden case
- **Wooden case dimension (mm)**: 576 x 338 x 218
- **Case gross mass (kg)**: 37
- **Case volume (m³)**: 0.042
## Ammunition 30mm x 165 for aircraft gun 30mm GSh 301

### Technical data

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<td>Complete round length (mm)</td>
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<td>Muzzle velocity (m/s)</td>
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<td>none</td>
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### Packing data

- Description: Wooden case
- Wooden case dimension (mm): 576 x 338 x 218
- Case gross mass (kg): 37
- Case volume (m³): 0.042

## Ammunition 30mm x 210B for anti-aircraft gun 30mm AK-230 and Automatic Gun 30mm M86 on BTR50

### Technical data

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<td>Explosive type</td>
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<td>Complete round length (mm)</td>
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### Packing data

- Description: Wooden case
- Wooden case dimension (mm): 670 x 355 x 176
- Case gross mass (kg): 37
- Case volume (m³): 0.041

## Ammunition 30mm x 220 for anti-aircraft gun 30/2 M53, 53/59 (G5)

### Technical data

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### Packing data

- Description: Wooden case
- Wooden case dimension (mm): 642 x 384 x 293
- Case gross mass (kg): 61
- Case volume (m³): 0.073
### Ammunition 37mm x 252
for anti-aircraft gun 37mm M39 (SU)

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### Packing data
- Description: Wooden case
- Case gross mass (kg): 35
- Case volume (m³): 0.075
- Wooden case dimension (mm): 680 x 455 x 258

### Ammunition 40mm x 311
for anti-aircraft gun 40mm L/60

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<td>7-13</td>
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### Packing data
- Description: Wooden case
- Case gross mass (kg): 46
- Case volume (m³): 0.061
- Wooden case dimension (mm): 564 x 343 x 318
### Ammunition 40mm x 365 for anti-aircraft gun 40mm L/70 «BOFORS»

#### Technical data

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#### Packing data

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### Ammunition 57mm x 348 for self-propelled anti-aircraft gun 57mm 5/68 and 5/60

#### Technical data

<table>
<thead>
<tr>
<th>NATO designation</th>
<th>HE</th>
<th>HEI</th>
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<th>HEIT</th>
<th>HEIT</th>
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<tbody>
<tr>
<td>Projective mass (g)</td>
<td>2850</td>
<td>2850</td>
<td>2850</td>
<td>2850</td>
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<td>Propellant mass (g)</td>
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<td>Explosive mass (g)</td>
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<td>153</td>
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<td>153</td>
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<tr>
<td>Complete round mass (g)</td>
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<td>6350</td>
<td>6350</td>
<td>6350</td>
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<tr>
<td>Explosive type</td>
<td>RDX</td>
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<td>RDX</td>
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<tr>
<td>Complete round length (mm) max</td>
<td>536,61</td>
<td>536,61</td>
<td>536,61</td>
<td>536,61</td>
<td>536,61</td>
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<td>Muzzle velocity (m/s)</td>
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<td>Self-destruction time (s)</td>
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<td>Tracer burning time (s)</td>
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#### Packing data

<table>
<thead>
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<th>Description</th>
<th>5 rounds in a wooden case</th>
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</thead>
<tbody>
<tr>
<td>Wooden case dimension (mm)</td>
<td>694 x 603 x 204</td>
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<tr>
<td>Case gross mass (kg)</td>
<td>4</td>
</tr>
<tr>
<td>Case volume (m³)</td>
<td>0.085</td>
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</tbody>
</table>
SMALL AMMUNITION CALIBER 30, 40, 60MM

Grenade 40mm x 46

**SMOKE WHITE M99**

- **Technical data**
  - NATO designation
  - Complete grenade length (mm): 106
  - Grenade mass (g): 230
  - Projectile length (mm): 76
  - Projectile mass (g): 180
  - Muzzle velocity (m/s): 78
  - Delay time (s): 2 to 3
  - Smoked time (s): min 20
  - Firing range (m): 50 to 400
  - Flare type: white, red, green, yellow

**SMOKE CS M99**

- **Technical data**
  - NATO designation
  - Complete grenade length (mm): 106
  - Grenade mass (g): 220
  - Projectile length (mm): 76
  - Projectile mass (g): 170
  - Muzzle velocity (m/s): 78
  - Delay time (s): 2 to 3
  - Smoked time (s): min 20
  - Firing range (m): 50 to 400

**Packing data**

- Description: 3 grenades in a polyethylene bag, 54 bags into a cardboard box or wooden case
- Wooden case dimension (mm): 540 x 400 x 348
- Case gross mass (kg): 54
- Case volume (m³): 0.066

---

Grenade 40mm x 46

**FLASH M99**

- **Technical data**
  - NATO designation
  - Complete grenade length (mm): 106
  - Grenade mass (g): 230
  - Projectile length (mm): 76
  - Projectile mass (g): 180
  - Muzzle velocity (m/s): 78
  - Delay time (s): 2 to 3
  - Firing range (m): 50 to 400
  - Sound intensity (dB): 120
  - Light intensity (cd): 2000000

**STUN M99**

- **Technical data**
  - NATO designation
  - Complete grenade length (mm): 106
  - Grenade mass (g): 230
  - Projectile length (mm): 76
  - Projectile mass (g): 180
  - Muzzle velocity (m/s): 78
  - Delay time (s): 2 to 3
  - Firing range (m): 50 to 400
  - Sound intensity (dB): 120
  - Light intensity (cd): none

**Packing data**

- Description: 3 grenades in a polyethylene bag, 54 bags into a cardboard box or wooden case
- Wooden case dimension (mm): 540 x 400 x 348
- Case gross mass (kg): 54
- Case volume (m³): 0.066

---

Grenade 40mm x 46

**BUCKSHOT M04**

- **Technical data**
  - NATO designation
  - Complete grenade length (mm): 106
  - Grenade mass (g): 200
  - Projectile length (mm): 76
  - Projectile mass (g): 190
  - Muzzle velocity (m/s): 78
  - Delay time (s): 2 to 3
  - Firing range (m): 50 to 100
  - Number of pellets: min 24
  - Pellet diameter (mm): 8
  - Number of flechettes: none
  - Flechette diameter (mm): none
  - Length of flechettes (mm): none

**FLECHETTE M05**

- **Technical data**
  - NATO designation
  - Complete grenade length (mm): 106
  - Grenade mass (g): 250
  - Projectile length (mm): 76
  - Projectile mass (g): 260
  - Muzzle velocity (m/s): 78
  - Delay time (s): 2 to 3
  - Firing range (m): 50 to 100
  - Number of flechettes: min 50
  - Flechette diameter (mm): 2
  - Length of flechettes (mm): 50

**Packing data**

- Description: 3 grenades in a polyethylene bag, 54 bags into a cardboard box or wooden case
- Wooden case dimension (mm): 540 x 400 x 348
- Case gross mass (kg): 54
- Case volume (m³): 0.066
### Small Ammunition Caliber 30, 40, 60mm

#### Round 40mm

**Technical data**
- **NATO designation**: HE, M03, VOG25
- **Round mass (g)**: HE 225, M03 106, VOG25 76, M03 400
- **Length (mm)**: HE 160, M03 15, VOG25 10
- **Muzzle velocity (m/s)**: HE 15, M03 20
- **Maximum range (m)**: HE 80, M03 80, VOG25 80
- **Fuse type**: HE, M03, VOG25
- **Self-destruction time (s)**: HE 15, M03 20, VOG25 10
- **Fuse safe action limit (m)**: HE 15, M03 20, VOG25 10
- **Action of fragments in field (mm)**: HE 15, M03 20, VOG25 10
- **Safety distance (m)**: HE 40, M03 40, VOG25 40
- **Armament**
- **Grenade effects**: HE 80, M03 80, VOG25 80

**Packing data**
- **Description**: 3 grenades in a polyethylene bag, 20 bag into a cardboard box or wooden case
- **Wooden case dimension (mm)**: 455 x 375 x 221
- **Case gross mass (kg)**: 24
- **Case volume (m³)**: 0.03

#### Round 40mm

**Technical data**
- **NATO designation**: ILLUMINATING, M04
- **Round mass (g)**: ILLUMINATING 265, M04 120
- **Length (mm)**: ILLUMINATING 110, M04 76
- **Muzzle velocity (m/s)**: ILLUMINATING 250, M04 15
- **Range of parachute opening, 45° shot (m)**: ILLUMINATING 30000, M04 2500
- **Star burning time (s)**: ILLUMINATING 10, M04 5
- **Light intensity (cd)**: ILLUMINATING 30000, M04 2500
- **Armament**
- **Grenade effects**: ILLUMINATING 30, M04 25

**Packing data**
- **Description**: 3 grenades in a polyethylene bag, 20 bag into a cardboard box or wooden case
- **Wooden case dimension (mm)**: 455 x 375 x 221
- **Case gross mass (kg)**: 24
- **Case volume (m³)**: 0.03

#### Round 40mm

**Technical data**
- **NATO designation**: SMOKE, M04
- **Round mass (g)**: SMOKE 250, M04 110
- **Length (mm)**: SMOKE 110, M04 76
- **Muzzle velocity (m/s)**: SMOKE 250, M04 15
- **Smoke duration (s)**: SMOKE 400, M04 15
- **Max. range (m)**: SMOKE 400, M04 200
- **Armament**
- **Grenade effects**: SMOKE 400, M04 250

**Packing data**
- **Description**: 3 grenades in a polyethylene bag, 20 bag into a cardboard box or wooden case
- **Wooden case dimension (mm)**: 455 x 375 x 221
- **Case gross mass (kg)**: 24
- **Case volume (m³)**: 0.03
### Rifle Grenade 30mm

**HE-M91, P1 with Bullet Trap**

**Technical data**

- **NATO designation**: Type
- **Length (mm)**: 315
- **Mass (g)**: 555
- **Fuse**: Impact, superquick action (UT-M91, P1)
- **Safety distance (m)**: min 20 m in front of barrel
- **Aiming distance (m)**: Grenade must act upon cardboard 2mm thick, at the distance of 50m
- **Grenade effect at pent test**: D = 20m and 1.5m high
- **Grenade effect at pent test**: D = 10m and 1.5m high
- **Action on fragments in field (m)**: min 180 penetrations, board 20mm thick
- **Muzzle velocity (m/s)**: 38
- **Muzzle velocity (m/s)**: 72
- **Max range (m)**: 300
- **Max range (m)**: 450
- **Effective range (m)**: 150
- **Effective range (m)**: 250
- **Accuracy (firing at angle 14°)**: R_{max} - R_{min} = max 15m

**Packing data**

- **Description**: 40 grenades per sheet metal box, 1 box in a wooden case
- **Wooden case dimension (mm)**: 700 x 420 x 240
- **Case gross mass (kg)**: 34
- **Case volume (m³)**: 0.072

### Rifle Grenade 30mm

**HE-M99 with Bullet Trap**

**Technical data**

- **NATO designation**: Type
- **Length (mm)**: 315
- **Mass (g)**: 555
- **Fuse**: Impact, superquick action (UT-M90, SP)
- **Safety distance (m)**: min 15 m in front of barrel
- **Aiming distance (m)**: Grenade must act upon cardboard 1mm thick, at the distance of 50m
- **Grenade effect at pent test**: D = 20m and 1.5m high
- **Grenade effect at pent test**: D = 10m and 1.5m high
- **Action on fragments in field (m)**: min 180 penetrations, board 20mm thick
- **Muzzle velocity (m/s)**: 38
- **Muzzle velocity (m/s)**: 72
- **Max range (m)**: 300
- **Max range (m)**: 450
- **Effective range (m)**: 150
- **Effective range (m)**: 250
- **Accuracy (firing at angle 14°)**: R_{max} - R_{min} = max 15m

**Packing data**

- **Description**: 40 grenades per sheet metal box, 1 box in a wooden case
- **Wooden case dimension (mm)**: 700 x 420 x 240
- **Case gross mass (kg)**: 34
- **Case volume (m³)**: 0.072
**Rifle Grenade 40mm**

**Technical data**

- **NATO designation**: HE-BT, M03 with Bullet Trap
- **Type**: HE fragmentation
- **Length (mm)**: 270
- **Mass (g)**: 450
- **Muzzle velocity**: 3,56 x 45.55 109 m/s
- **Max range**: 5,56 x 45.55 109 m
- **Effective range**: 5,56 x 45.55 109 m
- **Accuracy (firing at angle 14°)**: 15 to 20
- **Rmin - Rmax = max 15m (span in travers max 3m)**

**Packing data**

- **40 grenades per sheet metal box, 1 box in a wooden case**
- **Wooden case dimension (mm)**: 650 x 320 x 250
- **Case gross mass (kg)**: 30
- **Case volume (m³)**: 0.032

---

**Rifle Grenade 30mm**

**Technical data**

- **NATO designation**: TPSFM, M03 with Bullet Trap
- **Type**: TPSFM
- **Length (mm)**: 318
- **Mass (g)**: 553
- **Muzzle velocity**: 5,56 x 45.55 109 or 7,62 x 29 (m/s)
- **Max range**: 5,56 x 45.55 109 or 7,62 x 29 (m)
- **Effective range**: 5,56 x 45.55 109 or 7,62 x 29 (m)
- **Accuracy (firing at angle 14°)**: 15 to 20
- **Rmin - Rmax = max 15m (span in travers max 3m)**

**Packing data**

- **40 grenades per sheet metal box, 1 box in a wooden case**
- **Wooden case dimension (mm)**: 700 x 420 x 240
- **Case gross mass (kg)**: 34
- **Case volume (m³)**: 0.072
### Rifle Grenade 30mm

**Technical data**

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<th>Description</th>
<th>Value</th>
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<tr>
<td>NATO designation</td>
<td>TP</td>
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<tr>
<td>Length (mm)</td>
<td>315</td>
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<tr>
<td>Mass (g)</td>
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<tr>
<td>Muzzle velocity / 5.56 x 45 SS 109(m/s)</td>
<td>58</td>
</tr>
<tr>
<td>Muzzle velocity / 7.62x51 (m/s)</td>
<td>22</td>
</tr>
<tr>
<td>Max range / 5.56 x 45 SS 109(m)</td>
<td>306</td>
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<tr>
<td>Max range / 7.62x51 (m)</td>
<td>450</td>
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<tr>
<td>Effective range / 5.56 x 45 SS 109(m)</td>
<td>150</td>
</tr>
<tr>
<td>Effective range / 7.62x51 (m)</td>
<td>250</td>
</tr>
<tr>
<td>Accuracy (firing at angle 14°)</td>
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**Packing data**

<table>
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<th>Value</th>
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<tr>
<td>Wooden case dimension (mm)</td>
<td>700 x 420 x 240</td>
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<tr>
<td>Case gross mass (kg)</td>
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<tr>
<td>Case volume (m)</td>
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### Rifle Grenade 30mm

**Technical data**

<table>
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<td>Muzzle velocity, mean (m/s)</td>
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<td>Effective range (m)</td>
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<tr>
<td>Accuracy (firing at angle 14°)</td>
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**Packing data**

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<th>Value</th>
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### Rifle Grenade 60mm

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<td>Mass (g)</td>
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<td>Muzzle velocity (m/s)</td>
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<td>Max range (m)</td>
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<tr>
<td>Effective range (m)</td>
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<td>Accuracy at the distance of 100m</td>
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**Packing data**

<table>
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<td>Wooden case dimension (mm)</td>
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<td>Case gross mass (kg)</td>
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<tr>
<td>Case volume (m)</td>
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**Small Ammunition Caliber 30, 40, 60mm**

### Rifle Grenade 40mm

**Smoke M62**

**Technical Data**

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<th>Length (mm)</th>
<th>Mass (g)</th>
<th>Muzzle velocity (m/s)</th>
<th>Time of burning delay element (s)</th>
<th>Max range (m)</th>
<th>Time of smoke screening (s)</th>
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<tbody>
<tr>
<td>SMOKE</td>
<td>330</td>
<td>475</td>
<td>70</td>
<td>7.5</td>
<td>350</td>
<td>70 to 100</td>
</tr>
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</table>

**Packing Data**

Description:

- Wooden case dimension (mm)
- Case gross mass (kg)
- Case volume (m³)

650 x 320 x 250
32
0.065

### Rifle Grenade 40mm

**Illuminating M62**

**Technical Data**

<table>
<thead>
<tr>
<th>NATO designation</th>
<th>Length (mm)</th>
<th>Mass (g)</th>
<th>Muzzle velocity (m/s)</th>
<th>Time of flame burning (s)</th>
<th>Intensity of illuminating (cd)</th>
<th>Range of parachute opening at firing under 45° (m)</th>
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<tbody>
<tr>
<td>ILLUMINATING</td>
<td>330</td>
<td>450</td>
<td>77</td>
<td>4.3 to 5.1</td>
<td>200</td>
<td>150 to 100</td>
</tr>
</tbody>
</table>

**Packing Data**

Description:

- Wooden case dimension (mm)
- Case gross mass (kg)
- Case volume (m³)

650 x 400 x 250
31
0.065

### Rifle Grenade 40mm

**Illuminating-BT MG4**

**Technical Data**

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<th>NATO designation</th>
<th>Length (mm)</th>
<th>Mass (g)</th>
<th>Muzzle velocity (m/s)</th>
<th>Time of flame burning (s)</th>
<th>Intensity of illuminating (cd)</th>
<th>Range of parachute opening at firing under 45° (m)</th>
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<tr>
<td>ILLUMINATING-BT</td>
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<td>77</td>
<td>4.3 to 5.1</td>
<td>70 to 100</td>
<td>200</td>
</tr>
</tbody>
</table>

**Packing Data**

Description:

- Wooden case dimension (mm)
- Case gross mass (kg)
- Case volume (m³)

650 x 320 x 250
32
0.068
ROCKET WEAPONS 64, 90 and 120mm

64mm HAND ANTITANK rocket
RBR M80

Technical data

<table>
<thead>
<tr>
<th>Type</th>
<th>HEAT</th>
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<tbody>
<tr>
<td>Length in traveling position (mm)</td>
<td>800</td>
</tr>
<tr>
<td>Length in combat position (mm)</td>
<td>1200</td>
</tr>
<tr>
<td>Mass (g)</td>
<td>3000</td>
</tr>
<tr>
<td>Fuze</td>
<td>Impact, superquick, piezoelectric with self-destruction (UT PE M80 SP)</td>
</tr>
<tr>
<td>Muzzle velocity (m/s)</td>
<td>187</td>
</tr>
<tr>
<td>Effective range (m)</td>
<td>200</td>
</tr>
<tr>
<td>Maximum range (m)</td>
<td>1280</td>
</tr>
<tr>
<td>Penetration (mm)</td>
<td>&gt;300 (on homogenous armour plate)</td>
</tr>
</tbody>
</table>

Packing data

The unit is packed in traveling position, in a vacuumed polyethylene bag. 4 units thus packed then put in a wooden case on holders used to fix the unit. Cases are adapted for any form of transportation, carrying and paratrooping.

Case gross mass (kg)

90mm ROCKET HEAT M79A
for hand rocket launcher 90mm M79

Technical data

<table>
<thead>
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<th>Type</th>
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<td>Length (mm)</td>
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<tr>
<td>Mass (g)</td>
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<td>Fuze</td>
<td>Impact, superquick, piezoelectric with self-destruction (UT PE M80 SP)</td>
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<td>Muzzle velocity (m/s)</td>
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<tr>
<td>Effective range (m)</td>
<td>350</td>
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<tr>
<td>Maximum range (m)</td>
<td>1960</td>
</tr>
<tr>
<td>Penetration (mm)</td>
<td>&gt;450 (on homogenous armour plate)</td>
</tr>
</tbody>
</table>

Packing data

1 rocket in 1 container,
3 containers in a wooden case

Case gross mass (kg)

RBR 120mm M90
LIGHT ANTITANK weapon

Technical data

<table>
<thead>
<tr>
<th>Type</th>
<th>HEAT</th>
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</thead>
<tbody>
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<td>Length (mm)</td>
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</tr>
<tr>
<td>Mass (g)</td>
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</tr>
<tr>
<td>Fuze</td>
<td>Impact, superquick, piezoelectric with self-destruction (UT PE M80 SP)</td>
</tr>
<tr>
<td>Muzzle velocity (m/s)</td>
<td>215</td>
</tr>
<tr>
<td>Effective range (m)</td>
<td>350</td>
</tr>
<tr>
<td>Maximum range (m)</td>
<td>1960</td>
</tr>
<tr>
<td>Penetration (mm)</td>
<td>&gt;800 (on homogenous armour plate)</td>
</tr>
</tbody>
</table>

Packing data

2 rockets in a wooden case

Case gross mass (kg)

Balcan Novotech Dee 27/36
Guided artillery projectile with laser semiactive self-guidance «Kvitnyk» is intended for effective defeating of:
- tanks;
- IFVs;
- armored vehicles;
- rocket launcher systems;
- self-propelled artillery systems;
- artillery guns, in both installed and moving modes, both on open terrain and in pits;
- command, control and communication centers;
- bridges, crossings, fortifications;
- combat, landing, transport ships.

«Kvitnyk» guidance system provides very high probability of one shot kill.

Technical data

<table>
<thead>
<tr>
<th>Caliber (mm)</th>
<th>152, 155</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum range (m)</td>
<td>20000</td>
</tr>
<tr>
<td>Warhead types</td>
<td>fragmentation, high explosive</td>
</tr>
<tr>
<td>Explosive weight (kg)</td>
<td>9</td>
</tr>
<tr>
<td>Projectile length (mm)</td>
<td>1200</td>
</tr>
<tr>
<td>Projectile weight (kg)</td>
<td>48</td>
</tr>
</tbody>
</table>
# Artillery Ammunition 76, 100, 105, 122, 125, 130, 152, 155mm

## Round 76mm, Separate Loaded
**for gun 76mm M48B1**

### Technical Data

<table>
<thead>
<tr>
<th>NATO Designation</th>
<th>HE Shell M55</th>
<th>Smoke Shell M60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Projectile Mass (kg)</td>
<td>6.2</td>
<td>5.9</td>
</tr>
<tr>
<td>Explosive Mass (kg)</td>
<td>0.43</td>
<td>0.35</td>
</tr>
<tr>
<td>Propelling Charge Mass (kg)</td>
<td>0.32</td>
<td>0.32</td>
</tr>
<tr>
<td>Cartridge Case Mass (kg)</td>
<td>1.55</td>
<td>1.23</td>
</tr>
<tr>
<td>Explosive Type</td>
<td>TNT</td>
<td>WP</td>
</tr>
<tr>
<td>Projectile Length (mm)</td>
<td>max 347</td>
<td>max 347</td>
</tr>
<tr>
<td>Cartridge Case Length (mm)</td>
<td>385</td>
<td>385</td>
</tr>
<tr>
<td>Muzzle Velocity (m/s)</td>
<td>398</td>
<td>398</td>
</tr>
<tr>
<td>Maximum Range (m)</td>
<td>8750</td>
<td>8750</td>
</tr>
<tr>
<td>Fuze Action</td>
<td>Impact, Superquick and Delay Action</td>
<td>Impact, Superquick and Delay Action</td>
</tr>
<tr>
<td>Fuze Type</td>
<td>UTI, M68, UTI, M02, UTI, M03</td>
<td></td>
</tr>
</tbody>
</table>

### Packing Data

- **Description**: 3 rounds in a wooden case
- **Wooden Case Dimension (mm)**: 690 x 455 x 200
- **Case Gross Mass (kg)**: 38
- **Case Volume (m³)**: 0.05

## Round 100mm, Fixed
**for gun on tank T55, SPG 100mm M44 and coast gun M87**

### Technical Data

<table>
<thead>
<tr>
<th>NATO Designation</th>
<th>HE Shell M63</th>
<th>HE Shell M65P1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Projectile Mass (kg)</td>
<td>15.6</td>
<td>15.6</td>
</tr>
<tr>
<td>Propellant Mass (kg)</td>
<td>5.5</td>
<td>5.5</td>
</tr>
<tr>
<td>Explosive Mass (kg)</td>
<td>1.41</td>
<td>1.48</td>
</tr>
<tr>
<td>Complete Round Mass (kg)</td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td>Explosive Type</td>
<td>TNT</td>
<td>TNT</td>
</tr>
<tr>
<td>Complete Round Length (mm)</td>
<td>1099</td>
<td>1099</td>
</tr>
<tr>
<td>Projectile Length (mm)</td>
<td>492</td>
<td>492</td>
</tr>
<tr>
<td>Cartridge Case Length (mm)</td>
<td>695</td>
<td>695</td>
</tr>
<tr>
<td>Muzzle Velocity (m/s)</td>
<td>900</td>
<td>900</td>
</tr>
<tr>
<td>Maximum Range (m)</td>
<td>20618</td>
<td>20618</td>
</tr>
<tr>
<td>Penetration (mm)</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>Tracer Burning Time (s)</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>Fuze Action</td>
<td>Impact, Superquick and Delay Action</td>
<td>Impact, Superquick and Delay Action</td>
</tr>
<tr>
<td>Fuze Type</td>
<td>UTI, M72-B1, UTI, MO2, UTI, M03</td>
<td></td>
</tr>
</tbody>
</table>

### Packing Data

- **Description**: 3 rounds in a wooden case
- **Wooden Case Dimension (mm)**: 1260 x 440 x 260
- **Case Gross Mass (kg)**: 82
- **Case Volume (m³)**: 0.144
Round 105mm, semi fixed
for howitzers 105mm M56, M18/61, M2A1 and M4

Technical data
NATO designation
Projectile mass (kg)
Explosive mass (kg)
Propelling charge mass (kg)
Cartridge case mass (kg)
Explosive type
Projectile length (mm)
Cartridge case length (mm)
Muzzle velocity (m/s)
Maximum range (m)
Fuze type
Fuze action

Packing data
Description
Wooden case dimension (mm)
Case gross mass (kg)
Case volume (m³)

Round 105mm M02, semi fixed
for howitzers 105mm M56

Technical data
NATO designation
Projectile mass (kg)
Explosive mass (kg)
Propelling charge mass (kg)
Cartridge case mass (kg)
Explosive type
Projectile length (mm)
Cartridge case length (mm)
Muzzle velocity (m/s)
Maximum range (m)
Fuze type
Fuze action

Packing data
Description
Wooden case dimension (mm)
Case gross mass (kg)
Case volume (m³)

Round 105mm M02, semi fixed
for howitzers 105mm M56/33, M2A1

Technical data
NATO designation
Projectile mass (kg)
Explosive mass (kg)
Propelling charge mass (kg)
Cartridge case mass (kg)
Explosive type
Projectile length (mm)
Cartridge case length (mm)
Muzzle velocity (m/s)
Maximum range (m)
Fuze type
Fuze action

Packing data
Description
Wooden case dimension (mm)
Case gross mass (kg)
Case volume (m³)
ARTILLERY AMMUNITION 76, 100, 105, 122, 125, 130, 152, 155mm

Round 122mm, separate loaded
for howitzers D-30, D-30J and SP-251

Technical data

NATO designation
Projectile mass (kg) 21.88
Explosive mass (kg) 3.6
Propelling charge mass (kg) 2.47 (reduced charge)
Cartridge case mass (kg) 2.65
Explosive type
Projectile length (mm) 561
Cartridge case length (mm) 447
Muzzle velocity (m/s) 690
Maximum range (m) 12840
Fuze type
Fuze action

HE SHELL TF-462A1
HE SHELL TF-462A1

UTIU, M72 B1
UTIU, M72 B1
impact, superquick, delay
impact, superquick, delay

NATO designation
Projectile mass (kg) 21.76
Explosive mass (kg) 3.6
Propelling charge mass (kg) 2.47 (reduced charge)
Cartridge case mass (kg) 3.86
Explosive type
Projectile length (mm) 561
Cartridge case length (mm) 447
Muzzle velocity (m/s) 690
Maximum range (m) 12840
Fuze type
Fuze action

SMOKE M60
SMOKE M60

UTIU, M72 B1
UTIU, M72 B1
impact, superquick, delay
impact, superquick, delay

Packing data

Description
Wooden case dimension (mm) 980 x 500 x 230
Case gross mass (kg) 80
Case volume (m³) 0.1

Round 125mm, separate loaded
for tank gun D-81, TM (ZU46)

Technical data

NATO designation
Projectile mass (kg) M86P1
Explosive mass (kg) 3.55
Propelling charge mass (kg) 5
Main charge mass (kg) 2.85
Explosive type
Projectile length (mm) 670
Cartridge case length (mm) 496
Main charge length (mm) 408
Muzzle velocity (m/s) 850
Maximum range (m) 12220
Fuze type
Fuze action

HE SHELL M86
HE SHELL M86

UTIU, M85 P1
UTIU, M85 P1
impact, superquick, delay action
impact, superquick, delay action

APFSDS-T
APFSDS-T

UT-PE, M87 P1
UT-PE, M87 P1
impact, superquick, delay action
impact, superquick, delay action

Packing data

Description
2 rounds in a wooden case
1 round in a wooden case
1 round in a wooden case

Wooden case size (mm)
810 x 410 x 210
850 x 430 x 270
810 x 410 x 210

Case gross mass (kg)
60
55
50

Case volume (m³)
0.07
0.1
0.07
**ARTILERY AMMUNITION 76, 100, 105, 122, 125, 130, 152, 155mm**

### Round 130mm, separate loaded for gun 130mm M46

**Technical data**

<table>
<thead>
<tr>
<th>NATO designation</th>
<th>Projectile mass (kg)</th>
<th>Explosive mass (kg)</th>
<th>Propelling charge mass (kg)</th>
<th>Cartridge case mass (kg)</th>
<th>Explosive type</th>
<th>Projectile length (mm)</th>
<th>Cartridge case length (mm)</th>
<th>Muzzle velocity (m/s)</th>
<th>Maximum range (m)</th>
<th>Fuze type</th>
</tr>
</thead>
<tbody>
<tr>
<td>HE SHELL M79</td>
<td>33.4</td>
<td>3.64</td>
<td>13.5 (full charge)</td>
<td>11.85</td>
<td>TNT</td>
<td>671</td>
<td>846</td>
<td>930</td>
<td>27490</td>
<td>UTU, M72-B1; UTU, M72-B1; UTU, M02; UTU, M03</td>
</tr>
<tr>
<td>HE SHELL M29</td>
<td>33.4</td>
<td>3.64</td>
<td>6.75 (reduced charge)</td>
<td>11.85</td>
<td>TNT</td>
<td>671</td>
<td>846</td>
<td>705</td>
<td>19210</td>
<td>UTU, M02; UTU, M03</td>
</tr>
</tbody>
</table>

**Packing data**

- Description: 2 rounds in a wooden case
- Wooden case dimension (mm): 310 x 200
- Case gross mass (kg): 92
- Case volume (m³): 0.057

### Round 152mm, separate loaded for gun howitzer D-20

**Technical data**

<table>
<thead>
<tr>
<th>NATO designation</th>
<th>Projectile mass (kg)</th>
<th>Explosive mass (kg)</th>
<th>Propelling charge mass (kg)</th>
<th>Cartridge case mass (kg)</th>
<th>Explosive type</th>
<th>Projectile length (mm)</th>
<th>Cartridge case length (mm)</th>
<th>Muzzle velocity (m/s)</th>
<th>Maximum range (m)</th>
<th>Fuze type</th>
</tr>
</thead>
<tbody>
<tr>
<td>HE SHELL OF-540</td>
<td>43</td>
<td>5.86</td>
<td>8.8 (full charge)</td>
<td>11.85</td>
<td>TNT</td>
<td>700</td>
<td>547.5</td>
<td>511</td>
<td>13400</td>
<td>UTU, M22-B1; UTU, M02; UTU, M03</td>
</tr>
<tr>
<td>HE SHELL OF-540</td>
<td>43</td>
<td>5.86</td>
<td>4.2 (reduced charge)</td>
<td>11.85</td>
<td>TNT</td>
<td>700</td>
<td>547.5</td>
<td>511</td>
<td>13400</td>
<td>UTU, M22-B1; UTU, M02; UTU, M03</td>
</tr>
</tbody>
</table>

**Packing data**

- Description: 1 round in a wooden case
- Wooden case dimension (mm): 480 x 240
- Case gross mass (kg): 81
- Case volume (m³): 0.1

### Round 155mm for howitzers M198, FH70, FH77, M109 A2 and gun 45

**Technical data**

<table>
<thead>
<tr>
<th>NATO designation</th>
<th>Projectile mass (kg)</th>
<th>Explosive mass (kg)</th>
<th>Projectile length (mm)</th>
<th>Muzzle velocity (m/s)</th>
<th>Maximum range (m)</th>
<th>Fuze type</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERF B</td>
<td>47.6</td>
<td>8.74</td>
<td>861</td>
<td>925 (52cal.)</td>
<td>20000</td>
<td>UTU, M02; UTU, M03</td>
</tr>
<tr>
<td>ERF C</td>
<td>48.6</td>
<td>8.71</td>
<td>861</td>
<td>925 (52cal.)</td>
<td>20000</td>
<td>UTU, M02; UTU, M03</td>
</tr>
<tr>
<td>HE M08</td>
<td>43.6</td>
<td>8</td>
<td>807</td>
<td>925 (52cal.)</td>
<td>20000</td>
<td>UTU, M02; UTU, M03</td>
</tr>
</tbody>
</table>

**Ballistical data** depends on howitzer type and propelling charge type.
### Signal ammunition 26.5mm

#### Technical data

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>WHITE/LP 57</th>
<th>RED/LP 57</th>
<th>GREEN/LP 57</th>
</tr>
</thead>
<tbody>
<tr>
<td>Designation</td>
<td>WHITE</td>
<td>RED</td>
<td>GREEN</td>
</tr>
<tr>
<td>Length (mm)</td>
<td>120 ± 20</td>
<td>120 ± 20</td>
<td>120 ± 20</td>
</tr>
<tr>
<td>Height of climbing (m)</td>
<td>8 ± 1.5</td>
<td>8 ± 1.5</td>
<td>8 ± 1.5</td>
</tr>
<tr>
<td>Burning time (s)</td>
<td>20000</td>
<td>20000</td>
<td>10000</td>
</tr>
<tr>
<td>Light intensity (cd)</td>
<td>&lt; 58%</td>
<td>&gt; 70%</td>
<td>&gt; 57%</td>
</tr>
<tr>
<td>Middle wave length (nm)</td>
<td>580 ± 7</td>
<td>609 ± 1</td>
<td>580 ± 3</td>
</tr>
<tr>
<td>Flare type</td>
<td>white</td>
<td>red</td>
<td>green</td>
</tr>
</tbody>
</table>

#### Packing data

- Description: 10 cartridges are packed in a cardboard box, 50 cardboxes in a wooden case
- Wooden case dimension (mm): 814 x 380 x 268
- Case gross mass (kg): 46
- Case volume (m³): 0.08

---

### Signal ammunition 26.5mm

#### Technical data

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>YELLOW WITH PARACHUTE/LP 57</th>
<th>ABC/LP 57</th>
</tr>
</thead>
<tbody>
<tr>
<td>Designation</td>
<td>YELLOW</td>
<td>ABC</td>
</tr>
<tr>
<td>Length (mm)</td>
<td>155</td>
<td>170</td>
</tr>
<tr>
<td>Height of climbing (m)</td>
<td>85 ± 15</td>
<td>260 ± 25</td>
</tr>
<tr>
<td>Burning time (s)</td>
<td>&gt; 12</td>
<td>6 ± 1.5</td>
</tr>
<tr>
<td>Pipe duration (s)</td>
<td>20000</td>
<td>6 ± 1.5</td>
</tr>
<tr>
<td>Light intensity (cd)</td>
<td>5.78%</td>
<td>10000</td>
</tr>
<tr>
<td>Middle wave length (nm)</td>
<td>589 ± 3</td>
<td></td>
</tr>
</tbody>
</table>

#### Packing data

- Description: 10 cartridges are packed in a cardboard box, 50 cardboxes in a wooden case
- Wooden case size (mm): 914 x 380 x 368
- Case gross mass (kg): 63
- Case volume (m³): 0.125

---

### Signal ammunition 26.5mm

#### Technical data

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>SMOKE/VIOLET/LP 57</th>
</tr>
</thead>
<tbody>
<tr>
<td>Designation</td>
<td>SMOKE/VIOLET</td>
</tr>
<tr>
<td>Length (mm)</td>
<td>30</td>
</tr>
<tr>
<td>Height of climbing (m)</td>
<td>190 ± 20</td>
</tr>
<tr>
<td>Flare type</td>
<td>violet, white, red, green, ...</td>
</tr>
</tbody>
</table>

The smoke composition starts burning directly before the smoke cartouch reaches the trajectory apex and emits smoke until cartouch fall to the ground.

#### Packing data

- Description: 10 cartridges are packed in a cardboard box, 50 cardboxes in a wooden case
- Wooden case dimension (mm): 814 x 380 x 268
- Case gross mass (kg): 46
- Case volume (m³): 0.08
Cartridge 38mm

Technical data

Designation

Length (mm)
Burning time (s)
Light intensity (cd)
Max height fired at 45° (m)
Light intensity, red (cd)
Light intensity, green (cd)
Light intensity, white (cd)

Packing data

Description: 5 cartridges are packed in a polyethylene bag, 20 polyethylene bags into a cardboard or wooden case.

Cartridge 38mm

Technical data

Designation

Length (mm)
Mass of cartridge (g)
Max range (m)
Number of balls
Hardness of rubber (shore)
Shell life (years)

Packing data

Description: 1 cartridge is packed in a polyethylene bag, 64 polyethylene bags into a wooden case.

Cartridge 38mm

Technical data

Designation

Length (mm)
Delay time (s)
Sound intensity (dB)
Mass of cartridge (g)

Packing data

Description: 1 cartridge is packed in a polyethylene bag, 64 polyethylene bags into a wooden case.

Balkan Novotech Doo
## Hand grenade 45mm

### Technical data
- **Designation:** STUN AND FLASH
- **Length (mm):** 140
- **Delay time (s):** 2.5 to 5
- **Sound intensity (dB):** 120
- **Mass of grenade (g):** 20000
- **Light intensity (cd):** 175

### Packing data
- **Description:** 1 grenade in a polyethylene bag, 105 bags in a wooden case with metal sheet box.
- **Wooden case dimension (mm):** 540 x 400 x 348
- **Case net mass (kg):** 20
- **Case gross mass (kg):** 30
- **Case volume (m³):** 0.066

## Hand grenade 45-60mm

### Technical data
- **Designation:** SMOKE
- **Caliber (mm):** 60
- **Length (mm):** 115
- **Delay time (s):** 2.5 to 5
- **Smoke time (s):** 70 to 120
- **Mass of grenade (g):** 350
- **Type:** white, red, blue

### Packing data
- **Description:** 1 grenade in a polyethylene bag, 84 bags in a wooden case with metal sheet box.
- **Wooden case size (mm):** 540 x 400 x 348
- **Case net mass (kg):** 30
- **Case gross mass (kg):** 40
- **Case volume (m³):** 0.066

## Shot cartridge 26,5mm

### Technical data
- **Designation:** ILLUMINATING
- **Complete cartridge length (mm):** 114
- **Burning time (s):** min 15
- **Light intensity (cd):** min 10 000
- **Sound signal force (dB):** min 115
- **Height of sound signal rising (m):** min 10

### Packing data
- **Description:** 25 cartridges in a small wooden box, 4 boxes in a wooden case.
- **Wooden case dimension (mm):** 666 x 265 x 255
- **Case net mass (kg):** 24
- **Case gross mass (kg):** 30
- **Case volume (m³):** 0.046