

# ROMARM CATALOGUE

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## SUMMARY



# ARMORED VEHICLES

ROMARM | Armored Vehicles on tracks



# TR-85-M1

## Main Battle Tank



### Technical Specification

|   |   |
|---|---|
| Combat weight                           | 50 t  |
| Crew                                    | 4 persons   |
| Weapon system main gun type             | rifled bore   |
| Weapon system main gun calibre          | 100 mm  |
| Weapon system main gun rate of fire     | 4 - 7 rounds/min  |
| Weapon system coaxial machine gun       | 7.62 mm   |
| Weapon system anti-aircraft machine gun | 12.7 mm   |
| Engine                                  | Diesel, 8 cylinders, 4 stroke cycle, turbocharged   |
| Engine power                            | 860 HP  |
| Transmission                            | hydro-mechanical  |
| Power to Weight Ratio                   | 17.2 HP/t   |
| Average ground pressure                 | 1 daN/cm <sup>2</sup>   |
| Maximum speed                           | 60 km/h   |
| Forward slope                           | 32°   |
| Range                                   | 400 km  |
| Ammunition on Board                     | 41 rounds - 100 mm; 500 rounds - 7.62 mm; 750 rounds - 12.7 mm  |
| Aiming system                           | gun/turret electric drive in two planes, with integrated laser finder and computer control                                |
| Maximum thickness of armor              | TURRET 320+20 mm with auxiliary armour<br>CHASSIS 200 mm stratified   |
| Measuring distance                      | 200...5000 m. Stroke distance with APFSD round - 4000 m   |
| Foreign sub-assemblies                  | Turret bearing, generator, thermal imaging sight, fire suppression system, commander's sight, stabilization system, radio |





# DMT-85-M1

## Mine Dregger



### Technical Specification

|  |  |
|--|--|
| <b>Total weight</b>                            | 43 t   |
| <b>Engine</b>                                  | Diesel, 8 cylinders, 860 CP  |
| <b>Travel speed</b>                            | 62 km/h  |
| <b>Dredging depth</b>                          | 300 mm   |
| <b>Dredging speed</b>                          | 7 - 12 km/h  |
| <b>Width of the dredged portion</b>            | 3900 mm  |
| <b>Longitudinal gradient</b>                   | 32°  |
| <b>Cross slope</b>                             | 17°  |
| <b>Non-hazardous bend radius</b>               | 65 m   |
| <b>The width of the antitank crossed ditch</b> | 2.8 m  |
| <b>Max. load of the crane</b>                  | 6.5 t  |
| <b>Weapon Systems:</b>                         | Fire remote control platform, equipped with thermal chamber  |
| <b>Equipment:</b>                              | <ul style="list-style-type: none"> <li>• machine gun cal. 7.62mm or 12.7 mm (EAST)</li> <li>• machine gun cal. 7.62 mm or 12.7 mm (NATO)</li> <li>• device for the first cocking with electric control</li> <li>• installation for launching smoke shells</li> </ul> |





# ARMORED VEHICLES

ROMARM | Armored Vehicles on wheels



# SAUR 2

## 8x8 Armored Personnel Carrier



| Technical Specification |  |                          |  |
|-------------------------|--|--------------------------|--|
| Type                    | 8x8, wheeled amphibious vehicle  | Main dimensions - length | 7960 mm  |
| Hull                    | Armored, sealed  | Main dimensions - width  | 3040 mm  |
| Protection              | LEVEL 2 by STANAG 4569   | Main dimensions - height | 2340 mm without turret   |
| Crew access             | Power operated ramp with emergency access door on the rear side of the vehicle | Ground clearance         | Min. 420 mm  |
| Speed                   | on road 100 km/h / on water 10 km/h  | G.V.W.                   | 16000 kg   |
| Gradient                | 30°  | Power to weight ratio    | Min. 20.3 hp/t   |
| Side slope              | 20°  | Armament                 | Turret RCWS-RO 12.7 or 7.62 mm   |
| Range on the road       | Min. 600 km  | Crew protection systems  | filtering installation, automatically fire extinguishing installation, fresh air intake system |





RN 94  
6x6 Armored Personnel Carrier



| Technical Specification |  |                          |                                |
|-------------------------|--|--------------------------|--------------------------------|
| Type                    | 6×6, wheeled amphibious vehicle            | Main dimensions - length | 6785 mm                        |
| Hull                    | Armored, sealed                            | Main dimensions - width  | 2850 mm                        |
| Crew                    | 10, including driver, commander and gunner | Main dimensions - height | 2340 mm without turret         |
| Speed                   | on road 100 km/h / on water 10 km/h        | Ground clearance         | 450 mm                         |
| Gradient                | Max. 32°                                   | Wheel base               | 3400 mm                        |
| Side slope              | Max. 20°                                   | Wheel track              | 2460 mm                        |
| Range on the road       | Min. 700 km                                | Armament                 | Turret RCWS-RO 12.7 or 7.62 mm |
|                         |  | G.V.W.                   | 12800 kg                       |



# AM 7.0 M

## 4x4 Armored Anti-Riot Vehicle



| Technical Specification |  |  |           |
|-------------------------|--|--|-----------|
| Type                    | 4x4, Armored Anti-riot vehicle   | Main dimensions length                     | 6620 mm   |
| Protection              | Level 2 with in STANAG 4569, including windows and windshield  | Main dimensions width                      | 2510 mm   |
| Crew                    | 14, including driver   | Main dimensions height                     | 3210 mm   |
| Crew access             | <ul style="list-style-type: none"> <li>• 2 sideways front doors for driver and commander</li> <li>• 2 sideways middle doors for crew members</li> <li>• 1 rear door for crew members</li> <li>• 2 access hatches on ceiling</li> </ul> | Filtering installation                     |           |
| Speed                   | on road 100 km / h   | Fire extinguishing installation for tyre   | Available |
| Gradient                | Max. 20°   | Dye cleaning installation for windshields  | Available |
| Side slope              | Max. 20°   | Self protection installation with tear gas | Available |
| Range on the road       | Min. 600 km  | Independent air heater                     | Available |
| TV and video system     | Available  | Communication system                       | Available |



# SMALL ARMS & AMMUNITION

ROMARM | Small arms and ammunition



# CALIBER 5.45 mm

## 5.45 mm ROMARM Ammunition and arms



### Caliber 5.45 mm

| Caliber        | Material    |               |                | Length     |            | Weight    |            |                    | Muzzle velocity<br>$V_{25}$<br>(m/s) | Maximum gas pressure<br>(kgf/cm <sup>2</sup> ) |
|----------------|-------------|---------------|----------------|------------|------------|-----------|------------|--------------------|--------------------------------------|--|
|                | Bullet core | Bullet jacket | Cartridge case | Total (mm) | Bulet (mm) | Total (g) | Bullet (g) | Cartridge case (g) |                                      |  |
| 5.45x39mm Ball | Steel       | Bimetal       | Brass          | 56.0       | 23.4       | 11,8      | 4          | 6.5                | 810                                  | 3200   |
| 5.45x39 Blank  | -           | -             | Steel          | 46.3       | -          | 7.25      | -          | 6                  | -                                    | -  |
| 5.45x39mm FMJ  | Lead        | Bimetal       | Steel          | 56.9       | 24.95      | 11.3      | 4          | 5.65               | 830                                  | 3100   |

### 5.45 mm ROMARM ASSAULT RIFLE

|                         |   |                          |   |
|-------------------------|---|--------------------------|---|
| Cartridge               | 5.45×39 mm  | Muzzle velocity          | 880 m/s   |
| Operation               | gas, selective fire (optional, 3-rds burst facility)            | Rate of fire             | cyclic, 600 rounds/min                            |
| Locking                 | rotating bolt   | Rifling                  | 4 grooves rh, 1 turn in 195 mm                    |
| Feed                    | detachable box magazine   | Weapon Length            | fixed butt - 940 mm; lateral folding butt 940/735 |
| Magazine capacity       | 30 rounds   | Barrel Length            | 415 mm  |
| Sight                   | mechanical fore pillar rear, U notch calibrated from 100÷1000 m | Line of sight            | 380 mm  |
| Weight without magazine | 3.30 kg   | Weight of empty magazine | 0.32 kg   |



### 5.45 mm ROMARM SUBMACHINE GUN

|                   |   |                          |                                |
|-------------------|---|--------------------------|--------------------------------|
| Cartridge         | 5.45×39 mm  | Muzzle velocity          | 790 m/s                        |
| Operation         | gas, automatic  | Rate of fire cyclic      | 600 rounds/min                 |
| Locking           | rotating bolt   | Rifling                  | 4 grooves rh, 1 turn in 195 mm |
| Feed              | detachable box magazine   | Weapon Length            | 805/605 mm                     |
| Magazine capacity | 30 rounds   | Barrel Length            | 305 mm                         |
| Sight             | mechanical fore pillar rear, U notch calibrated from 100÷1000 m | Weight of empty magazine | 0.32 kg                        |
| Line of sight     | 260 mm  | Weight without magazine  | 3.10 kg                        |



### 5.45 mm ROMARM LIGHT MACHINE GUN

|                   |   |                          |                                |
|-------------------|---|--------------------------|--------------------------------|
| Cartridge         | 5.45×39 mm  | Muzzle velocity          | 30 rounds                      |
| Operation         | gas, automatic  | Rate of fire             | cyclic, 600 rounds/min         |
| Locking           | rotating bolt   | Weapon Length            | 1080 mm                        |
| Feed              | detachable box magazine   | Barrel Length            | 590 mm                         |
| Magazine capacity | 30 rounds   | Line of sight            | 560 mm                         |
| Sight             | mechanical fore pillar rear, U notch calibrated from 100÷1000 m | Rifling                  | 4 grooves rh, 1 turn in 195 mm |
| Muzzle velocity   | 910 m/s   | Weight without magazine  | 5.20 kg                        |
|                   |   | Weight of empty magazine | 0.32 kg                        |



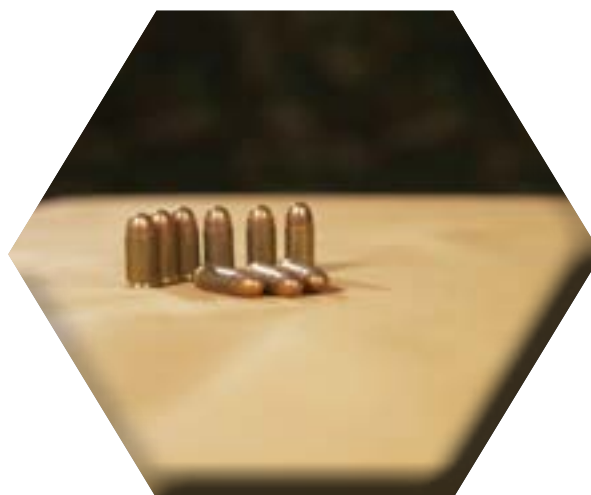


# CALIBER 5.56 mm & 7.65 mm

## ROMARM Ammunition

### Caliber 5.56 mm

|                                      |   |   |  |
|--------------------------------------|---|---|--|
| <b>Cartridge</b>                     | 5.56 x 45 mm with ball bullet, SS 109   | <b>Medium velocity of the bullet at 24 m</b>  | $V = 915 \text{ m/s} \pm 9 \text{ m/s}$<br>$V = 3000 \text{ fps} \pm 40 \text{ fps}$                 |
| <b>Cartridge case</b>                | case made of 70/30 brass  | <b>Mean case mouth max. pressure</b>          | $P_{\text{med. max}} \leq 405 \text{ MPa}$<br>$P_{\text{med. max}} \leq 55000 \text{ psi}$           |
| <b>Bullet of 4 g (61.5 gr) with:</b> | <ul style="list-style-type: none"> <li>bullet jacket made of 90/10 brass</li> <li>core made of steel and lead;</li> </ul> | <b>Individual max. case mouth pressure</b>    | $P_{\text{med. max}} \leq 445 \text{ MPa}$<br>$P_{\text{med. max}} \leq 61000 \text{ psi}$           |
|                                      |   | <b>Mean port pressure</b>                     | $P_{\text{med. max port}} \leq 106 \text{ MPa}$<br>$P_{\text{med. max port}} \leq 12700 \text{ psi}$ |
| <b>Primer</b>                        | boxer type, non corrosive   | <b>Accuracy - Standard deviation at 550 m</b> | St. Dev. $\leq 17.2 \text{ cm.}$<br>St. Dev. $\leq 6.8 \text{ inch}$                                 |
| <b>Propellant</b>                    | double base type  | <b>Identification</b>                         | Unpainted  |



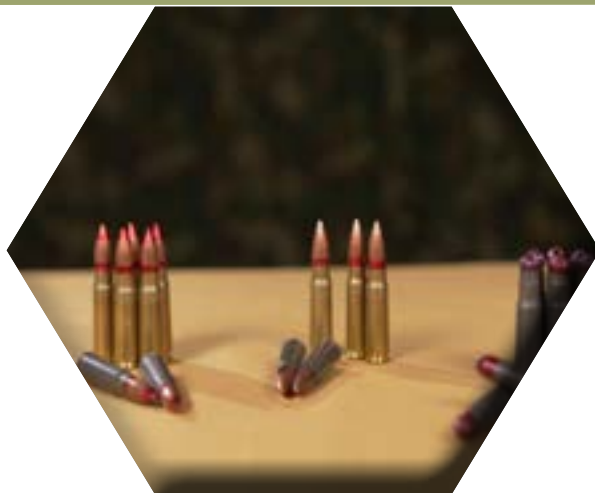
### Caliber 7.65 mm

| Caliber   | Material    |               |                | Length     |            | Weight    |            |                    | Muzzle velocity<br>$V_{16} \text{ (m/s)}$ | Maximum gas pressure<br>(kgf/cm <sup>2</sup> ) |
|-----------|-------------|---------------|----------------|------------|------------|-----------|------------|--------------------|---|--|
|           | Bullet core | Bullet jacket | Cartridge case | Total (mm) | Bulet (mm) | Total (g) | Bullet (g) | Cartridge case (g) |   |  |
| 7.65x17mm | Lead        | Tombak        | Brass          | 25         | 12         | 7.9       | 4.8        | 2,6                | $V_{12.5} = 305$                          | 1350   |



# CALIBER 7.62 mm

## 7.62 mm ROMARM Ammunition and arms



### Caliber 7.62 mm

| Caliber        | Material    |               |                | Length     |             | Weight      |            |                    | Muzzle velocity<br>V <sub>25</sub> (m/s) | Maximum gas pressure<br>(kgf/cm <sup>2</sup> ) |
|----------------|-------------|---------------|----------------|------------|-------------|-------------|------------|--------------------|--|--|
|                | Bullet core | Bullet jacket | Cartridge case | Total (mm) | Bullet (mm) | Total (g)   | Bullet (g) | Cartridge case (g) |  |  |
| 7.62x51        | Lead        | Tombak        | Brass          | 71.1       | 28.95       | 25.46       | 9.65       | 11.65              | 838                                      | 3875   |
| 7.62x39 Ball   | Steel       | Bimetal       | Steel/Brass    | 56         | 26.8        | 16.8 / 17.5 | 8.05       | 6.8 / 7.5          | 710                                      | 2800   |
| 7.62x39 Tracer | -           | Bimetal       | Steel          | 56         | 28          | 16.5        | 7.7        | 6.8                | 710                                      | 2800   |
| 7.62x39 Blank  | -           | -             | Steel          | 49.4       | -           | 8.8         | -          | 7.3                | -  | -  |
| 7.62x39 FMJ*   | Lead        | Bimetal       | Steel          | 56         | 26.8        | 16.8        | 8.05       | 6.8                | 710                                      | 2800   |

\* Cartridges 7.62x39 mm FMJ are only for the civil market (hunting cartridges).

### 7.62 mm ROMARM ASSAULT RIFLE

|                         |   |                          |                                |
|-------------------------|---|--------------------------|--------------------------------|
| Cartridge               | 7.62×39 mm  | Muzzle velocity          | 715 m/s                        |
| Operation               | gas, selective fire   | Rate of fire             | cyclic, 600 rounds/min         |
| Locking                 | rotating bolt   | Rifling                  | 4 grooves rh, 1 turn in 240 mm |
| Feed                    | detachable box magazine   | Weapon Length            | 870 mm                         |
| Magazine capacity       | 30 rounds   | Barrel Length            | 415 mm                         |
| Sight                   | mechanical fore pillar rear, U notch calibrated from 100÷1000 m | Sight radius             | 384 mm                         |
| Weight without magazine | 3.30 kg   | Weight of empty magazine | 0.35 kg                        |



### 7.62 mm ROMARM ASSAULT RIFLE - FOLDING BUTT

|                   |  |                          |                                |
|-------------------|--|--------------------------|--------------------------------|
| Cartridge         | 7.62×39 mm   | Muzzle velocity          | 680 m/s                        |
| Operation         | gas, automatic   | Rate of fire             | cyclic, 600 rounds/min         |
| Locking           | rotating bolt  | Rifling                  | 4 grooves rh, 1 turn in 240 mm |
| Feed              | detachable box magazine  | Weapon Length            | 805 / 605 mm                   |
| Magazine capacity | 30 rounds  | Sight radius             | 260 mm                         |
| Sight             | mechanical fore pillar rear, U notch calibrated from 100÷500 m | Weight without magazine  | 3.10 kg                        |
|                   |  | Weight of empty magazine | 0.35 kg                        |



### 7.62 mm ROMARM LIGHT MACHINE GUN

|                         |   |                          |                                |
|-------------------------|---|--------------------------|--------------------------------|
| Cartridge               | 7.62×39 mm  | Muzzle velocity          | 730 rounds                     |
| Operation               | gas, automatic  | Rate of fire             | cyclic, 600 rounds/min         |
| Locking                 | rotating bolt   | Rifling                  | 4 grooves rh, 1 turn in 240 mm |
| Feed                    | detachable box magazine   | Weapon Length            | 1035 mm                        |
| Magazine capacity       | 30 rounds, optional drum magazine 75 rounds                     | Barrel Length            | 590 mm                         |
| Sight                   | mechanical fore pillar rear, U notch calibrated from 100÷1000 m | Sight radius             | 560 mm                         |
| Weight without magazine | 4.68 kg   | Weight of empty magazine | 0.32 kg                        |



# CALIBER 7.62 mm

## 7.62 mm ROMARM Ammunition and arms

### Caliber 7.62 mm

| Caliber         | Material    |               |                | Length     |            | Weight    |            |                    | Muzzle velocity V <sub>25</sub> (m/s) | Maximum gas pressure (kgf/cm <sup>2</sup> ) |
|-----------------|-------------|---------------|----------------|------------|------------|-----------|------------|--------------------|---------------------------------------|---|
|                 | Bullet core | Bullet jacket | Cartridge case | Total (mm) | Bulet (mm) | Total (g) | Bullet (g) | Cartridge case (g) |                                       |   |
| 7.62x54R Ball   | Steel       | Bimetal       | Steel/Bimetal  | 76.91      | 32.3       | 23.2      | 9.75       | 8.65               | 820                                   | 2900  |
| 7.62x54R Tracer | Lead        | Bimetal       | Steel          | 76.91      | 35.4       | 23.1      | 9.65       | 8.65               | 790                                   | 2900  |
| 7.62x54R Blank  | Steel       | -             | Steel/Bimetal  | 53.72      | -          | 10.8      | -          | 8.65               | -                                     | -   |
| 7.62x54R FMJ*   | Lead        | Bimetal       | Steel          | 76.91      | 28.4       | 23.2      | 9.75       | 8.65               | 820                                   | 2900  |
| 7.92x57 FMJ*    | Lead        | Bimetal       | Steel          | 77         | 28.95      | 24        | 11         | 9.7                | 750                                   | 3200  |

\*Cartridges 7.62x54R mm and 7.62x57 mm FMJ are only for the civil market (hunting cartridges).



### 7.62 mm ROMARM SNIPER RIFLE

|                          |   |                         |                                |
|--------------------------|---|-------------------------|--------------------------------|
| Cartridge                | 7.62x54R mm   | Muzzle velocity         | 830 m/s                        |
| Operation                | gas, semiautomatic  | Rifling                 | 4 grooves rh, 1 turn in 320 mm |
| Locking                  | rotating bolt   | Weapon Length           | 1150 mm                        |
| Feed                     | detachable box magazine   | Barrel Length           | 620 mm                         |
| Magazine capacity        | 10 rounds   | Line of sight           | 590 mm                         |
| Sight                    | - mechanical fore pillar rear, U Notch calibrated from 100÷1200 m<br>- optical 4x6° telescope, calibrated from 100÷1300 m | Weight without magazine | 4.06 kg                        |
| Weight of empty magazine |   |                         | 0.21 kg                        |



### 7.62 mm ROMARM HEAVY MACHINE GUN

|              |   |                               |   |
|--------------|---|-------------------------------|---|
| Cartridge    | 7.62x54R mm   | Muzzle velocity               | 825 m/s   |
| Operation    | gas, automatic  | Sight radius                  | 660 mm  |
| Locking      | rotating bolt   | Barrel Length                 | - without suppressor 605 mm<br>- with suppressor 658 mm |
| Feed         | belt, 200 rounds  | Weapon Length shoulder closed | 1196 mm   |
| Rate of fire | cyclic, 600-650 rds/min   | Weapon weight with bipod      | 7.50 kg   |
| Sight        | mechanical fore pillar rear; rear, U notch calibrated from 100÷1500 m | Barrel weight                 | 2.40 kg   |
| Rifling      | 4 grooves rh, 1 turn in 240 mm  |                               |   |



### 7.62 mm ROMARM COMMANDO MACHINE GUN

|           |  |                 |                                |
|-----------|--|-----------------|--------------------------------|
| Cartridge | 7.62x54R mm                            | Muzzle velocity | 800 rounds                     |
| Operation | gas, automatic                         | Barrel          | 4 grooves rh, 1 turn in 240 mm |
| Locking   | rotating bolt                          | Weapon Length   | 1100/810 mm                    |
| Feed      | belt, 100 rounds                       | Barrel Length   | 510 mm                         |
| Sight     | mechanical fore, pillar; rear, U notch | Line of sight   | 570 mm                         |
| Sight     | mechanical fore pillar rear, U notch   | Weapon weight   | 8.25 kg                        |





# CALIBER 9 mm

## 9 mm ROMARM Ammunition and arms



### Caliber 9 mm

| Caliber           | Material      |               |                | Length     |            | Weight     |            |                    | Muzzle velocity<br>$V_{16}$<br>(m/s) | Maximum gas pressure<br>(kgf/cm <sup>2</sup> ) |
|-------------------|---------------|---------------|----------------|------------|------------|------------|------------|--------------------|--------------------------------------|--|
|                   | Bullet core   | Bullet jacket | Cartridge case | Total (mm) | Bulet (mm) | Total (g)  | Bullet (g) | Cartridge case (g) |                                      |  |
| 9x18mm Makarov    | Lead or Steel | Bimetal       | Brass          | 24.95      | 12.3       | 10.65/10.2 | 6.45/6.0   | 3.85               | $V_{12.5}$ 350                       | 1800   |
| 9X19mm Parabellum | Lead          | Bimetal       | Brass          | 29.6       | 15,2       | 12.6/12.0  | 8/7.45     | 4.2                | 385/370                              | 2345   |
| 9X19mm Safety     | -             | -             | Brass          | 29.6       | 16         | 10.1       | 5.45       | 4.2                | 435                                  | 2345   |
| 9X19mm Blank      | -             | -             | Brass          | 28         | -          | 5          | -          | 4.4                | -                                    | -  |
| 9X19mm Subsonic   | Lead          | Bimetal       | Brass          | 29.6       | 16         | 12.5       | 8          | 4.2                | 305                                  | min. 1350                                      |
| 9X19mm Luger      | Lead          | Bimetal       | Brass          | 29.6       | 15.65      | 12.2       | 7.45       | 4.2                | 380                                  | 2345   |
| 9X19mm Frangible  | Composite     | -             | Brass          | 29.3       | 17.4       | 9          | 4.2        | 4.2                | 430                                  | 2345   |

### 9 mm ROMARM SUBMACHINE GUN

| Specification                     | LP 7   | LP 7C*  |
|-----------------------------------|--|---|
| Caliber                           | 9x19 mm Parabellum                                     | 9x19 mm Parabellum  |
| Operation                         | blowback   | blowback  |
| Feed                              | from magazine, 30 round capacity                       | from magazine, 30 round capacity                                  |
| Firing mode                       | single shot, automatic fire                            | semi-automatic shot by shot                                       |
| Sights                            | rear: adjustable for 50 m; 100 m<br>front: front sight | rear: adjustable for 50 m; 100 m<br>front: adjustable front sight |
| Effective range                   | 100 m  | 100 m   |
| Maximum range                     | 1800 m   | 1800 m  |
| Weapon length                     | stock extended: 650 mm;<br>stock folded: 427 mm        | 427 mm  |
| Weight of weapon without magazine | 2.7 kg   | 2.7 kg  |

\* LP7C submachine gun is designed for the civil market.



### 9 mm ROMARM PISTOL

|                          |                                     |
|--------------------------|-------------------------------------|
| Caliber                  | 9 × 19 mm Parabellum                |
| Operation system         | short recoil operation              |
| Trigger system           | double/single action                |
| Magazine capacity        | 15 rounds                           |
| Frame                    | steel                               |
| Grip                     | polymer                             |
| Length between sights    | 152 mm                              |
| Overall length           | 206.5 mm                            |
| Height                   | 139 mm                              |
| Width                    | 36 mm                               |
| Barrel length            | 112 mm                              |
| Barrel rifling           | 6 grooves                           |
| Weight without magazine  | 900 g                               |
| Weight of empty magazine | 90 g                                |
| Effective range          | 50 m                                |
| Maximum range            | 1500 m                              |
| Standard set             | PISTOL cal. 9 × 19 mm with magazine |



CALIBER 9 mm

9 mm ROMARM Ammunition and arms



9 mm BERETTA PX4 STORM (under license)

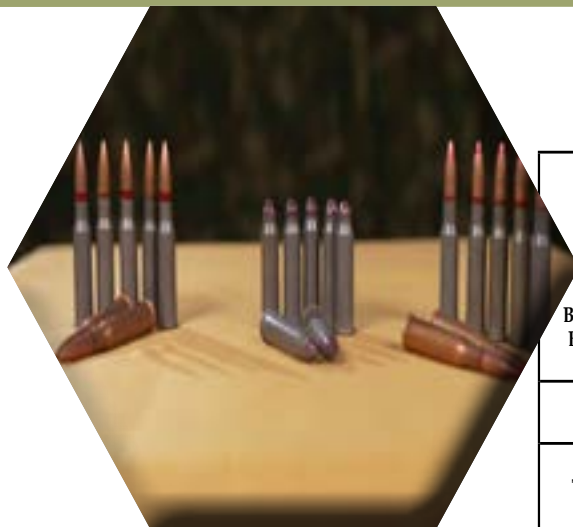
The PX4 Storm is a semiauto pistol, developed to meet the very demanding requirements. Beretta Px4 Storm is a recoil-operated pistol with a geometrically closed rotary barrel.

|                     |   |                 |                 |                 |
|---------------------|---|-----------------|-----------------|-----------------|
| Caliber             | 9 × 19 mm   | 9 x 21 mm IMI   | .40S&W          | .45ACP          |
| Overall length      | 192 mm  | 192 mm          | 192 mm          | 195 mm          |
| Barrel length       | 102 mm  | 102 mm          | 102 mm          | 105 mm          |
| Magazine capacity   | 17  | 15              | 14              | 10              |
| Overall height      | 140 mm  | 140 mm          | 140 mm          | 140 mm          |
| Overall width       | 36 mm   | 36 mm           | 36 mm           | 36 mm           |
| Width grip          | 30 mm   | 30 mm           | 30 mm           | 30 mm           |
| Twisting procentage | 250 mm  | 250 mm          | 400 mm          | 406 mm          |
| Sight radius        | 146 mm  | 146 mm          | 146 mm          | 149 mm          |
| Rifling             | Right hand, 6 slots   |                 |                 |                 |
| Weight unloaded     | 785 g   | 7850 g          | 810 g           | 800 g           |
| Action              | single / double   | single / double | single / double | single / double |
| Safety              | Automatic safety with pull pin, de-cocking handle / ambidextrous manual safety on mobile handle |                 |                 |                 |
| Firing pin          | Exposed   |                 |                 |                 |



# CALIBER 12.7 mm

## 12.7 mm ROMARM Ammunition and arms



### Caliber 12.7 x 99 mm

| Type   | Use   | Bullet weight (g) | Accuracy at 300m (cm) | Specific info   | Muzzle velocity at 24m (m/s) |
|--|---|-------------------|-----------------------|---|------------------------------|
| Ball case made of brass<br>Ball case made of steel | For use in all 12.7x99mm machine guns, such as: .50 Z03 M.G., .50 Browning M2, Browning M85, etc. | 42<br>45          | -<br>$R_{50} \leq 19$ | Bullet jacket made of gilding metal (CuZn10). Bullet core made of mild steel<br>Bullet jacket made of brass plated steel<br>Core made of mild steel                     | $V=886 \pm 9$                |
| Armor Piercing (AP)                                |   | 45                | $R_{50} \leq 19$      | Armor piercing capacity through 20mm thick armor at 100 m: 90%  | $V=886 \pm 9$                |
| Tracer Incendiary (IT)                             |   | 42                | $R_{50} \leq 19$      | Tracer capacity at 1500 m: 80%<br>Incendiary capacity of gasoline behind 15 mm thick armor at 70 m: 80%   | $V=886 \pm 9$                |
| Tracer (T)   |   | 42                | $R_{50} \leq 19$      | Tracer capacity at 1500 m: 80%  | $V=886 \pm 9$                |
| Armor Piercing Incendiary (API)                    |   | 45                | $R_{50} \leq 19$      | Armor piercing capacity through 20 mm thick armor at 100 m: 90%<br>Incendiary capacity of gasoline behind 15 mm thick armor at 70 m: 80%                                | $V=886 \pm 9$                |
| Armor Piercing Incendiary Tracer (APIT)            |   | 42                | $R_{50} \leq 19$      | Armor piercing capacity through 20 mm thick armor at 100 m: 90%<br>Incendiary capacity of gasoline behind 15 mm thick armor at 70 m: 80%.Tracer capacity at 1500 m: 80% | $V=886 \pm 9$                |
| High pressure cartridge with stell case            | For use in proof testing caliber.50 weapons, during manufacture, test and repair                  | 45                | -                     | Bullet jacket made of brass (CuZn10) plated steel. Core made of mild steel.   | -                            |

### 12.7 x 99 mm ROMARM MACHINE GUN

|                           |   |
|---------------------------|---|
| Cartridge:                | 12.7 x 99 mm                              |
| Operation:                | gas operated                              |
| Feed:                     | belt, "KRAB" type; 5 times reused         |
| Firing mode:              | single shot, automatic fire               |
| Sights:                   | rear: folding leaf;<br>front: front sight |
| Mean expected barrel life | 7000 rds                                  |
| Effective range:          | 1800 m                                    |
| Maximum range:            | 6700 m                                    |
| Weapon length:            | 1630 mm                                   |
| Barrel length:            | 1003 mm                                   |
| Rate of fire:             | 520-600 rds/min                           |
| Weight of weapon:         | 32.5 kg                                   |





# CALIBER 12.7 mm

## 12.7 mm ROMARM Ammunition and arms



### Caliber 12.7 x 108 mm

| Type                                    | Use  | Bullet weight (g) | Rim diameter (mm) | Round length (mm) | Muzzle velocity at 25m (m/s) |
|---|--|-------------------|-------------------|-------------------|------------------------------|
| Cartridge with B106 Ball Bullet         | For use in all 12,7x108 mm machine guns, such as: DShKM, NSV, KORD, IAKB                                       | 48                | 13.9              | 147               | $V_{25}=810-825$             |
| Armor Piercing (AP)                     |  | 48                | 13.9              | 147               | $V_{25}=810-825$             |
| Armor Piercing Tracer (APT)             |  | 44                | 13.9              | 147               | $V_{25}=810-825$             |
| Tracer (T)                              |  | 44                | 13.9              | 147               | $V_{25}=810-825$             |
| Armor Piercing Incendiary (API)         |  | 48                | 13.9              | 147               | $V_{25}=810-825$             |
| Armor Piercing Incendiary Tracer (APIT) |  | 44                | 13,9              | 147               | $V_{25}=810-825$             |
| Blank                                   | Designed to be fired from the DShKM-type machine gun, with recoil hardener system and a special feeding device | -                 | 14.05             | 110               | -                            |

### 12.7 x 108 mm ROMARM MACHINE GUN

|                           |   |
|---------------------------|---|
| Cartridge                 | 12.7 × 108 mm                             |
| Operation                 | gas operated                              |
| Feed                      | belt                                      |
| Firing mode               | automatic fire                            |
| Sights                    | rear: folding leaf;<br>front: front sight |
| Effective range           | 2000 m                                    |
| Maximum range             | 7000 m                                    |
| Weapon length             | 1590 mm                                   |
| Barrel length             | 1065 mm                                   |
| Rate of fire              | 520 to 600 rds/min                        |
| Weight of weapon          | 33 kg                                     |
| Mean expected barrel life | 7000 rds                                  |
| Weight of tripod          | 60 kg                                     |

#### PACKING

|                                     |                       |
|-------------------------------------|-----------------------|
| Machine gun, Tripod and Accessories |                       |
| Wooden Box                          | 1650 × 560 × 430 mm   |
| Net/Gross Weight                    | 130/168 kg            |
| Pallet for 6 products               |                       |
| Dimensions                          | 1650 × 1120 × 1410 mm |
| Net/Gross Weight                    | 780/1038 kg           |



# CALIBER 14.5 mm

## 14.5 mm ROMARM Ammunition and arms



### Caliber 14.5 mm

| Type                                     | Use   | Bullet weight (g) | Rim diameter (mm) | Round length (mm) | Muzzle velocity at 25m (m/s)               |
|--|---|-------------------|-------------------|-------------------|--|
| BALL                                     | For use in all 14.5x114 mm machine guns, such as: KPVT, ZU2 and MR4 | 64                | 16.55             | 156               | $V_{25}=980\text{m/s} \div 995\text{m/s}$  |
| ARMOUR PIERCING (AP)                     |   | 64                | 16.55             | 156               | $V_{25}=980\text{m/s} \div 995\text{m/s}$  |
| ARMOUR PIERCING TRACER (APT)             |   | 59                | 16.55             | 156               | $V_{25}=995\text{m/s} \div 1015\text{m/s}$ |
| TRACER (T)                               |   | 59                | 16.55             | 156               | $V_{25}=995\text{m/s} \div 1015\text{m/s}$ |
| ARMOUR PIERCING INCENDIARY (API)         |   | 64                | 16.55             | 156               | $V_{25}=980\text{m/s} \div 995\text{m/s}$  |
| ARMOUR PIERCING INCENDIARY TRACER (APIT) |   | 59                | 16.63             | 156               | $V_{25}=995\text{m/s} \div 1015\text{m/s}$ |
| BLANK CARTRIDGE                          | Perparing for trainig   | -                 | 16.63             | 118               | -  |

### 14.5 x 114 mm ROMARM MACHINE GUN

|                          |   |                         |                     |
|--------------------------|---|-------------------------|---------------------|
| Effective range          | 3000 m                                    | Medium velocity at 25 m | 995 m/s             |
| Maximum range            | 8000 m                                    | Weight of weapon        | 50.2 kg             |
| Armour piercing capacity | 20 mm armor plate at 20 oblicity at 300 m | PACKING                 |                     |
| Sights                   | mechanical                                | Wooden box dimensions   | 1860 x 750 x 670 mm |
| Cartridge                | 14.5 x 114 mm                             | Net/Gross weight        | 210/240 kg          |
| Operation                | short recoil operation                    | Firing mode             | automatic fire      |
| Feed system              | belt feed (right, left)                   | Belt capacity           | 10 rounds           |
| Barrel length            | 1342 mm                                   | Weapon length           | 1980 mm             |
|                          |   | Rate of fire            | 450÷600 rds/min     |



# CALIBER 20 mm

## 20 mm ROMARM Projectiles



### 20 x 102 mm FAP Projectile

|   |  |
|---|--|
| The total length of the round                 | max.168,2 mm                           |
| Weight of the complete round                  | approx. 260 ±2 g                       |
| FAP Projectile weight                         | 102 ±3 g                               |
| Penetrator weight                             | 60 g                                   |
| Penetrator material                           | tungsten alloy                         |
| Diameter of the projectile                    | max. 19.96 mm;                         |
| Diameter of the projectile ring               | 21.03-0.10 mm;                         |
| Powder  | spherical                              |
| Muzzle velocity of the projectile             | 1050 ±20 m/s                           |
| The mean pressure, max                        | ≤ 4 550 kgp/cm <sup>2</sup>            |
| Range of the temperatures of use              | - 54 <sup>0</sup> ÷ +71 <sup>0</sup> C |
| Optimum range (the distance of straight fire) | 3 000 m                                |
| Packing                                       | metal boxes                            |

### 20 x 102 mm HEI Projectile

|   |  |
|---|--|
| The total length of the round                 | 168.02 mm.                             |
| Weight of the complete round                  | approx. 258 g                          |
| HEI Projectile weight                         | 101.4±3 g;                             |
| Diameter of the projectile                    | 19.96 mm;                              |
| Diameter of the ring                          | 21.03-0.10 mm                          |
| Powder  | spherical                              |
| Muzzle velocity of the projectile             | 1030 ±15 m/s                           |
| The maximum pressure                          | 4 254.57 kg/cm <sup>2</sup>            |
| Range of the temperatures of use              | - 30 <sup>0</sup> ÷ +51 <sup>0</sup> C |
| Optimum range (the distance of straight fire) | 3 000 m                                |
| Packing                                       | metal boxes                            |



### 20 x 102 mm TP-T Projectile

|   |  |
|---|--|
| The total length of the round                 | max. 168.02 mm                         |
| Weight of the complete round                  | approx. 254 g                          |
| TP-T Projectile weight                        | 95 ±3 g                                |
| Diameter of the projectile                    | max. 19.96 mm                          |
| Powder  | spherical                              |
| Muzzle velocity of the projectile             | 1030 ±15 m/s                           |
| The maximum pressure                          | 4254 kgp/cm <sup>2</sup>               |
| Range of the temperatures of use              | - 54 <sup>0</sup> ÷ +60 <sup>0</sup> C |
| Optimum range (the distance of straight fire) | 3 000 m                                |
| Tracer performance                            | min. 1.9 sec                           |
| Packing                                       | metal boxes                            |





# CALIBER 23 mm

## 23 mm ROMARM Ammunition and arms



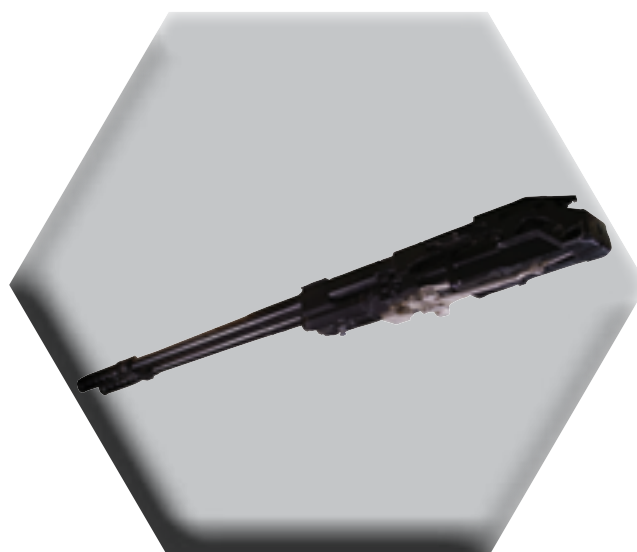
### Caliber 23 mm

| Gun type:                             |                      | Aircraft Gun GSh-23 and GSh-23L |  |                               |
|---------------------------------------|----------------------|---------------------------------|--|-------------------------------|
| Type of projectile                    | Measuring Unit       | EXPLOSIVE INCENDIARY OFZ<br>HEI | ARMOUR PIERCING INCENDIARY BZA<br>AP-I | TRACER FOR TRAINING<br>TP - T |
| Muzzle velocity                       | m/s                  | 720                             | 720                                    | 720                           |
| Average maximum pressure              | kgf/ cm <sup>2</sup> | 3000                            | 3000                                   | 3000                          |
| Total length                          |                      | 200.53                          | 200.66                                 | 200.53                        |
| Cartridge case                        | mm                   | 115                             | 115                                    | 115                           |
| Projectile                            |                      | 102.5                           | 98.5                                   | 105.8                         |
| Total weight                          |                      |                                 |  |                               |
| Cartridge case with propelling charge | kg                   | 0.329                           | 0.331                                  | 0.329                         |
| Projectile (without fuze)             |                      | 0.155                           | 0.157                                  | 0.155                         |
|                                       |                      | 0.174                           | 0.174                                  | 0.174                         |
| Fuze type                             | -                    | B-23A                           | -                                      | DUMMY                         |
| Blasting charge                       | -                    | A-IX-2                          | DU-5                                   | -                             |
| Propelling charge                     | -                    | 4/7Tgr 0.037                    | 4/7Tgr 0.037                           | 4/7Tgr 0.037                  |
| Tracer burning time                   | s                    | -                               | -                                      | Min. 4                        |

### ROMARM AIR TO AIR CANNON

|  |                   |  |  |
|--|-------------------|--|--|
| Caliber  | 23 mm             | Barrel inner diameter  |  |
| Rate of fire (normal conditions)               | 3000+3400 rds/min | On gaps  | 23.7+0.1 mm  |
| Muzzle velocity                                | 715 ±15 m/s       | On full  | 23+0.1 mm  |
| Mass - cal. 23 x 115mm Cannon                  | 49.2 kg           | Triggering   | electric   |
| Mass - cal. 23 x 115 mm Cannon with localizers | 50 kg             | Cocking  | manual pyro-cartridge  |
| Length cal. 23 x 115mm Cannon                  | 1387 mm           | Guaranteed number of rounds to be fire (with the use of the pertaining set of spare parts) | minimum 4000 rounds/ min (to this number there are allowed max. 200 pyrotechnic cockings from which 80 without ammunition) |
| Length cal. 23 x 115 mm Cannon with localizers | 1537 mm           | Packing  | 1 wooden box with 1 piece  |
| Breadth  | 165 mm            | Wooden box dimensions (Lxhx)   | 1673 x 345 x 319 mm  |
| Height   | 168 mm            | Net/Gross weight:  | 58.5 / 81.5 kg   |
| - barrel length                                | 1000 mm           | - threads pitch  | 575 mm   |
| - number of threads                            | 10                | - threads breadth  | 4.8 mm   |

The two-barrel cal. 23 x 115 mm air to air cannon is designed to be mounted on an aircraft fighter. It is intended for air defense and against ground targets.



# CALIBER 25 mm

## 25 mm ROMARM Ammunition

### APFSDS-T 25 x 137 mm

| Armour Piercing Fin Stabilised Discarding Sabot with Tracer |  |
|---|--|
| Total length round  | 223 mm   |
| Mass of round   | 437 g  |
| Mass of projectile  | 130 g  |
| Propellant  | NC single base   |
| Muzzle velocity   | 1445 m/s   |
| Cartridge case  | Steel  |
| Temperature range (functional)                              | -30°C to +50°C   |
| Time of flight  | 1000 m - 0.75 s  |
| Time of flight  | 2000 m - 1.57 s  |
| MAIN FEATURES   |  |
| Performance   | Short time of flight.<br>Defeats armour at low impact angles at extended ranges. |
| Firing mode   | Single shot and automatic mode   |
| Safety  | Intensive munition (no HE)   |
| Environment   | No toxic elements (no DU)  |
| Transport/Storage   | UN Classification 1.4C   |
| Gun/System  | Incl. KBA, M242, M811  |
| Packing   | sealed metal boxes.  |

### FAPDS-T 25 x 137 mm

| Frangible Armour-Piercing Discarding Sabot Shell with Tracer |  |
|--|--|
| Total length round   | 223 mm   |
| Mass of round  | 440 g  |
| Mass of projectile   | 150 g  |
| Propellant   | NC single base                                 |
| Muzzle velocity  | 1310 m/s                                       |
| Cartridge case   | Steel  |
| Temperature range (functional)                               | -30°C to +50°C                                 |
| Time of flight   | 1000 m - 0.82 s                                |
| Time of flight   | 2000 m - 1.78 s                                |
| Tracer distance  | < 2500 m                                       |
| MAIN FEATURES  |  |
| Performance  | Excellent against soft and semiarmored targets |
| Firing mode  | Single shot and automatic mode                 |
| Safety   | No ricochet, no duds (no HE)                   |
| Environment  | No pyrochemical substances                     |
| Transport/Storage  | UN Classification analogous TP-T               |
| Packing  | sealed metal boxes.                            |



### TPDS-T 25 x 137 mm

| Target Practice Discarding Sabot Shell with Tracer |                 | MAIN FEATURES     |  |
|--|-----------------|-------------------|--|
| Total length round                                 | 223 mm          | Safety            | Intensive munition (no HE)                 |
| Mass of round                                      | 425 g           | Performance       | Warshot trajectory match to tactical range |
| Mass of projectile                                 | 121 g           | Firing mode       | Single shot and automatic mode             |
| Muzzle velocity                                    | 1445 m/s        | Environment       | No toxic elements                          |
| Cartridge case                                     | Steel           | Transport/Storage | UN Classification 1.4C                     |
| Temperature range (functional)                     | -30°C to +50°C  | Gun/System        | Incl. KBA, M242, GAU12, M811               |
| Time of flight                                     | 1000 m - 0.82 s | Packing           | Sealed metal boxes                         |
| Time of flight                                     | 2000 m - 2.03 s | Tracer time       | 1.8 s                                      |



# CALIBER 30 mm

## ROMARM Ammunition



### Caliber 30 x 165 mm

| Gun type              | Unit                | NAVAL GUN NN-30 AND AK-230 |           |           | NAVAL GUN AK-306 AND AK-630 |              |          |          | TOWED GUN AA 2X30 Md. 80 |                 |
|-----------------------|---------------------|----------------------------|-----------|-----------|-----------------------------|--------------|----------|----------|--------------------------|-----------------|
| Type of projectile    |                     | (OF-83) HE                 | (F-83) HE | (BR-83) T | (OF-84) HE                  | (OR-84) HE-T | TP       | TP - T   | (OR-83R) HE-T            | (BZR-83R) API-T |
| Maximum range         | m                   | 3500                       | 3500      | 3500      | 3500                        | 3500         | 3500     | 3500     | 3500                     | 3500            |
| Muzzle velocity       | m/s                 | 1050                       | 1050      | 1050      | 890                         | 890          | 890      | 890      | 1050                     | 1050            |
| Average max pressure  | kgf/cm <sup>2</sup> | 3100                       | 3100      | 3100      | 3200                        | 3200         | 3200     | 3200     | 3100                     | 3100            |
| Total length          | mm                  | 304                        | 304       | 305       | 292                         | 292          | 292      | 292      | 305                      | 304             |
| Cartridge case        |                     | 210                        | 210       | 210       | 165                         | 165          | 165      | 165      | 210                      | 210             |
| Projectile            |                     | 129                        | 131       | 120       | 127                         | 127          | 127      | 127      | 135                      | 119             |
| Total weight          | kg                  | 1.061                      | 1.066     | 1.061     | 0.837                       | 0.833        | 0.837    | 0.833    | 1.076                    | 1.073           |
| Cartridge case with   |                     | 0.705                      | 0.706     | 0.704     | 0.447                       | 0.446        | 0.447    | 0.446    | 0.716                    | 0.713           |
| propelling charge     |                     | 0.356                      | 0.360     | 0.357     | 0.390                       | 0.387        | 0.390    | 0.387    | 0.360                    | 0.360           |
| Projectile            |                     |                            |           |           |                             |              |          |          |                          |                 |
| Fuze type             | -                   | MG-30                      | MD-30     | -         | FC-30                       | FC-30        | DUMMY    | DUMMY    | MG-30                    | -               |
| Blasting charge       | -                   | A-IX-2                     | A-IX-2    | -         | A-IX-2                      | A-IX-2       | -        | -        | A-IX-2                   | DU-5            |
| Propelling charge     | -                   | 6/7 BPgr                   | 6/7 BPgr  | 6/7 BPgr  | 6/7 FL-M                    | 6/7 FL-M     | 6/7 FL-M | 6/7 FL-M | 6/7 BPgr                 | 6/7 BPgr        |
| Self-destruction time | s                   | 12-17                      | 12-18     | -         | 11÷19                       | 11÷19        | -        | -        | 12-17                    | -               |
| Tracer burning time   | s                   | -                          | -         | min. 8    | -                           | min. 10      | -        | min. 10  | min. 9                   | min. 4          |

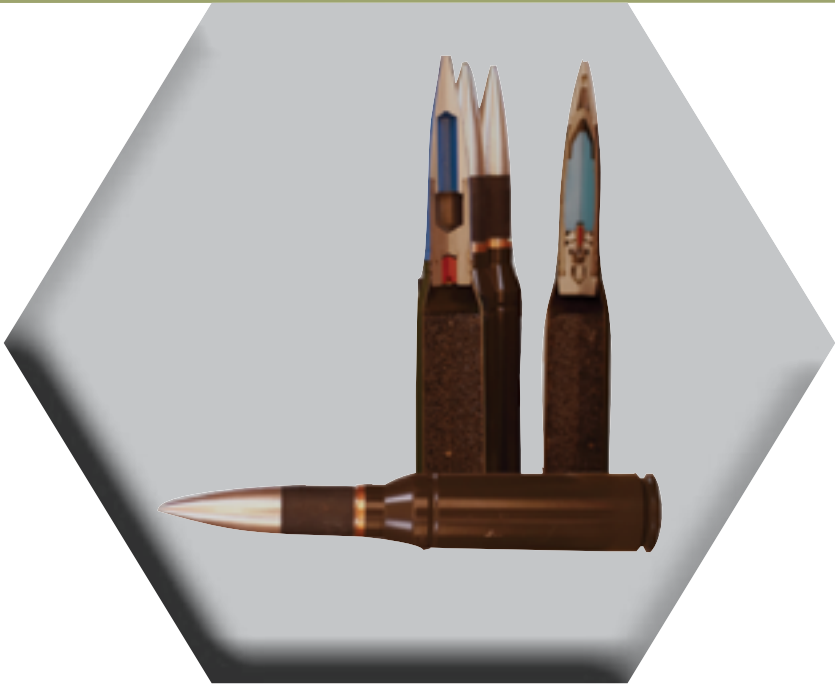
### Caliber 30 x 173 mm

| Type                 | Target practice tracer (TP-P) | High explosive incendiary HEI | High explosive incendiary tracer HEI-T |
|----------------------|-------------------------------|-------------------------------|--|
| MAIN CHARACTERISTICS |                               |                               |  |
| Round total weight   | 835 g                         | 835 g                         | 835 g                                  |
| Projectile weight    | 362 g                         | 378 g                         | 379 g                                  |
| Muzzle velocity      | 1100 m/s                      | 1100 m/s                      | 1100 m/s                               |
| Range                | 3000 m                        | 3000 m                        | 3000 m                                 |
| Trace burn time      | 3 s                           |                               | 3 s                                    |





CALIBER 35 mm  
ROMARM Ammunition



Caliber 35 mm

| MAIN CHARACTERISTICS |                               |                                  |
|----------------------|-------------------------------|----------------------------------|
|                      | HEI High explosive incendiary | TP-T Target practice with tracer |
| Round total weight   | 1572 g                        | 1572 g                           |
| Projectile weight    | 550 g                         | 550 g                            |
| Muzzle velocity      | 1174 m/s                      | 1174 m/s                         |



# CALIBER 7.62 mm

## ROMARM RIFLES



### 7.62 mm / 5.45mm SEMI-AUTOMATIC RIFLE

|                          |  |                                 |   |
|--------------------------|--|---------------------------------|---|
| <b>Cartridge</b>         | 7.62 x 39 mm / 5.45x39 mm  | <b>Sight</b>                    | mechanical: fore, pillar; rear, U-notch, rail for mounting optical sighting devices |
| <b>Variants</b>          | <ul style="list-style-type: none"> <li>DS - box magazine with cartridges on two rows;</li> <li>SS - box magazine with cartridges on a row</li> </ul>       | <b>Weapon length</b>            | 870 mm  |
| <b>Operation</b>         | gas, semiautomatic   | <b>Sight radius</b>             | 384 mm  |
| <b>Locking</b>           | rotating bold  | <b>Barrel length</b>            | 415 mm  |
| <b>Feed</b>              | detachable box magazine  | <b>Weight of empty magazine</b> | 0.350 Kg  |
| <b>Magazine capacity</b> | <ul style="list-style-type: none"> <li>optional: 5 or 10 rounds box magazine</li> <li>7.62 mm DB model is available with AK 30-rds box magazine</li> </ul> | <b>Weight without magazine</b>  | 3.300 Kg  |

### 7.62 mm SEMI-AUTOMATIC PISTOL

|                          |  |                                 |                                |
|--------------------------|--|---------------------------------|--------------------------------|
| <b>Cartridge</b>         | 7.62 x 39 mm   | <b>Models</b>                   | S / X-S / XX-S                 |
| <b>Operation</b>         | gas, semiautomatic   | <b>Weapon length</b>            | 520 mm / 415 mm / 370 mm       |
| <b>Locking</b>           | rotating bold  | <b>Barrel length</b>            | 295 mm / 194 mm / 150 mm       |
| <b>Feed</b>              | detachable box magazine                                    | <b>Sight radius</b>             | 260 mm / 160 mm / 255 mm       |
| <b>Magazine capacity</b> | 30-rounds magazine; optional: 5 or 10 rounds, box magazine | <b>Weight without magazine</b>  | 3.100 Kg / 2.300 Kg / 2.150 Kg |
| <b>Sight</b>             | mechanical; fore, pillar; rear, U-notch                    | <b>Weight of empty magazine</b> | 0.350 Kg                       |



## CALIBER 7.62 mm ROMARM RIFLES



### 7.62 mm SEMI-AUTOMATIC SNIPER RIFLE

|                   |  |                          |          |
|-------------------|--|--------------------------|----------|
| Cartridge         | 7.62x54R mm  | Weapon length            | 1150 mm  |
| Operation         | gas, semiautomatic   | Barrel length            | 620 mm   |
| Locking           | rotating bolt  | Line of sight            | 590 mm   |
| Feed              | detachable box magazine  | Weight without magazine  | 4.100 Kg |
| Magazine capacity | 10 rds.  | Weight of empty magazine | 0.210 Kg |
| Sight             | mechanical: fore, pillar; rear, U-notch.<br>optional: 4x6° telescope | Weight of telescope      | 0.600 Kg |



### 7.62 mm PUMP ACTION RIFLE

|                   |   |  |          |
|-------------------|---|--|----------|
| Cartridge         | 7.62 x 39 mm                            | Rail for mounting optical sighting devices |          |
| Operation         | hand operated                           | Weapon length                              | 910 mm   |
| Locking           | rotating bold                           | Barrel length                              | 415 mm   |
| Feed              | detachable box magazine                 | Sight radius                               | 425 mm   |
| Magazine capacity | optional: 5 or 10 rounds box magazine   | Weight without magazine                    | 3.300 Kg |
| Sight             | mechanical; fore, pillar; rear, U-notch | Weight of empty magazine                   | 0.200 Kg |



### 7.62 mm SEMI-AUTOMATIC RIFLE

|                   |  |  |          |
|-------------------|--|--|----------|
| Cartridge         | 7.62 x 39 mm                                     | Rail for mounting optical sighting devices |          |
| Operation         | gas, semiautomatic                               | Weapon length                              | 870 mm   |
| Locking           | rotating bold                                    | Barrel length                              | 415 mm   |
| Feed              | detachable box magazine with cartridges on a row | Sight radius                               | 260 mm   |
| Magazine capacity | 10 rounds box magazine                           | Weight without magazine                    | 3.300 Kg |
| Sight             | mechanical; fore, pillar; rear, U-notch          | Weight of empty magazine                   | 0.200 Kg |



### 7.62 mm SEMI-AUTOMATIC RIFLE FOLDING BUTT

|                   |   |
|-------------------|---|
| Cartridge         | 7.62 x 39 mm                            |
| Operation         | gas, semiautomatic                      |
| Locking           | rotating bold                           |
| Feed              | detachable box magazine                 |
| Magazine capacity | optional: 5 or 10 rounds box magazine   |
| Sight             | mechanical; fore, pillar; rear, U-notch |





# Grenades for under-barrel launchers

## ROMARM GRENADES



### 40 x 46 mm HE GRENADE

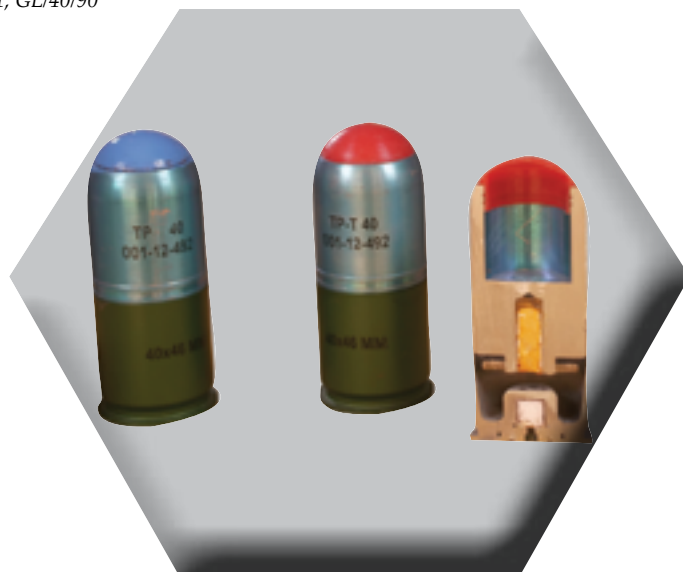
|   |  |
|---|--|
| Type  | HE   |
| Lenght  | 94.5 mm  |
| Weight  | 235 ± 10 g                                     |
| Filler and weight                             | Comp. B, 21 g                                  |
| Fuze  | AR 706   |
| Maximum range                                 | 400 m  |
| Number of balls                               | 144 pcs  |
| Number of splinters having mass over 0,2 gram | min. 200 pcs                                   |
| Muzzle velocity                               | 80 ± 2 m/s                                     |
| Temperature range for firing                  | -50 °C to +50 °C                               |
| Temperature range for storage                 | -50 °C to +50 °C                               |
| Shelf live                                    | 10 years                                       |
| Packing                                       | Metal box, T46 - 72 pcs or wooden box - 72 pcs |
| IMDG code                                     | 1.1F   |
| U.N. Number                                   | 0321   |

\* Launcher use: M203, M79, L123A2 UGL UK, GLG40, MZP-1, HK79, HK79A1, GL/40/90

### 40 x 46 mm TP-T GRENADE

|                               |  |
|-------------------------------|--|
| Type                          | TP-T   |
| Lenght                        | 101.5 mm                                       |
| Weight                        | 230 ± 10 g                                     |
| Maximum range                 | 400 m  |
| Muzzle velocity               | 80 ± 2 m/s                                     |
| Time burning tracer           | min. 15 s                                      |
| Temperature range for firing  | -50 °C to +50 °C                               |
| Temperature range for storage | -50 °C to +50 °C                               |
| Packing                       | Metal box, T46 - 72 pcs or wooden box - 72 pcs |
| IMDG code                     | 1.2C   |
| U.N. Number                   | 0328   |

\* Launcher use: M203, M79, L123A2 UGL UK, GLG40, MZP-1, HK79, HK79A1, GL/40/90



### 40 mm round for grenade launcher attached to submachine gun (AG - 40)

|                            |                        |
|----------------------------|------------------------|
| Type of projectile         | High explosive (HE-AP) |
| Total length               | 108 mm                 |
| Grenades                   | 81 mm                  |
| Total weight               | 0.275 Kg               |
| Grenades                   | 0.200 Kg               |
| Maximum range              | 400 m                  |
| Muzzle velocity            | 80 m/s                 |
| Grenade body               | STEEL                  |
| Splinters spreadind radius | 5 m                    |
| Selfdestruction time       | 13 ÷ 18 sec            |



# Grenades for under-barrel launchers

## ROMARM GRENADES

### 40 x 47 mm EXPLOSIVE GRENADE

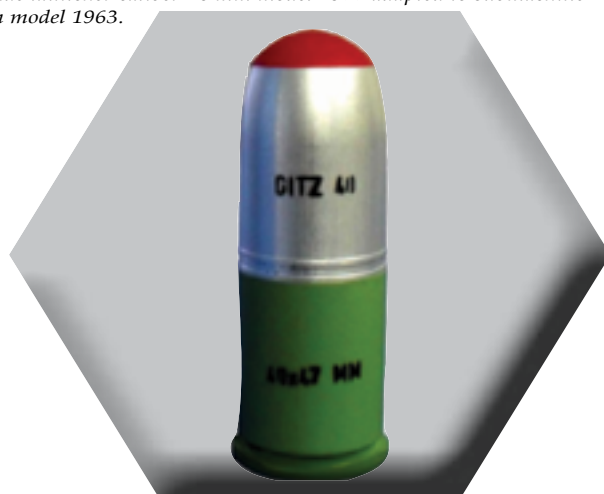
|                                      |  |
|--------------------------------------|--|
| Type                                 | Explosive                                      |
| Operational abbreviation             | GETZ 40 mm                                     |
| Length                               | 105 mm   |
| Cartridge length                     | 47 mm  |
| Total weight                         | 260 ± 10 g                                     |
| Weight of explosive grenade          | 200 ± 10 g                                     |
| Mass of propelling charge            | 0.6 g  |
| Mass of explosive charge             | 35 g   |
| Fuze                                 | PD SD-40-1TH                                   |
| Average speed                        | 77 ± 2 m/s                                     |
| Operating temperature                | -40 °C to +52 °C                               |
| Storage temperature                  | -40 °C to +52 °C                               |
| Method of initiation                 | Percussion                                     |
| Ballistic data                       | Lethal effects on living within a radius of 5m |
| Hazard class and compatibility group | 1.1F   |

For Romanian grenade launcher caliber 40 mm model 1977 adapted to submachine gun caliber 7,62 mm model 1963.



### 40 x 47 mm INERT GRENADE

|                                       |  |
|---------------------------------------|--|
| Type                                  | Target practice tracer   |
| Operational abbreviation              | GITZ 40 mm   |
| Length                                | 105 mm   |
| Cartridge length                      | 47 mm  |
| Total weight                          | 260 ± 10 g   |
| Weight of inert grenade               | 200 ± 10 g   |
| Mass of propelling charge             | 0,5 g  |
| Operating temperature                 | -40 °C to +52 °C   |
| Storage temperature                   | -40 °C to +52 °C   |
| Method of initiation                  | Percussion   |
| Ballistic data                        | Lethal effects on living only at their impact with the grenade |
| Hazard class and compatibility groupe | 1.2C   |



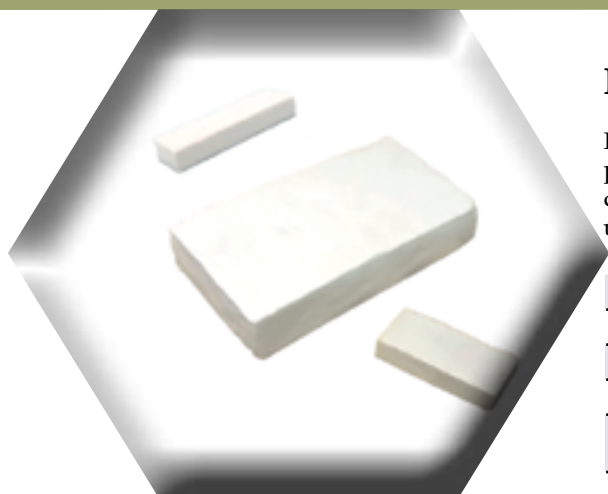
### Smoke grenade for visible & infrared masking

|                                      |   |   |  |
|--------------------------------------|---|---|--|
| Caliber                              | 76 mm   | Extension distance of the smoke curtain | 15 ÷ 40 m  |
| Maximum length                       | 170 mm  | Time for fumigation                     | Min. 60 s  |
| Total weight                         | ~1.2 kg   | Smoke duration                          | ≥20s (IR) / ≥30s(VIS)  |
| The mass of the fumigant load        | ~ 800 g multispectral fumigation composition RP/IR          | Size of screen                          | <ul style="list-style-type: none"> <li>for one grenade - Width ≥ 12m; Height ≥ 6 m</li> <li>salvo of eight grenades: Width 60 ÷ 70m; Height ≥ 6 ÷ 10m</li> </ul> |
| Launcher                             | WEGMANN 76 mm or TOHAN launcher SGL-1TH                     | Wave band covered                       | <ul style="list-style-type: none"> <li>VIS 0.4 ÷ 0.7 μm</li> <li>IR 0.7 ÷ 14 μm</li> </ul>   |
| The initiation mod                   | Electric  | Recoil force                            | < 10,5 kN  |
| Packing                              | 18 grenades are paked in a wooden box: 670 x 370 x 290mm    | Operating current                       | 2.4 A  |
| Hazard class and compatibility group | 1.4 G   | The threshold for non-initiation        | 1.2 A  |
| Key feature                          | non carcinogenic and low toxic; use for combat and training | Electrical circuit resistance           | 0.3 ÷ 2.5 Ω  |



# Powders & Explosives

## ROMARM POWDERS AND EXPLOSIVES



### Plastic Explosive HITEX-M

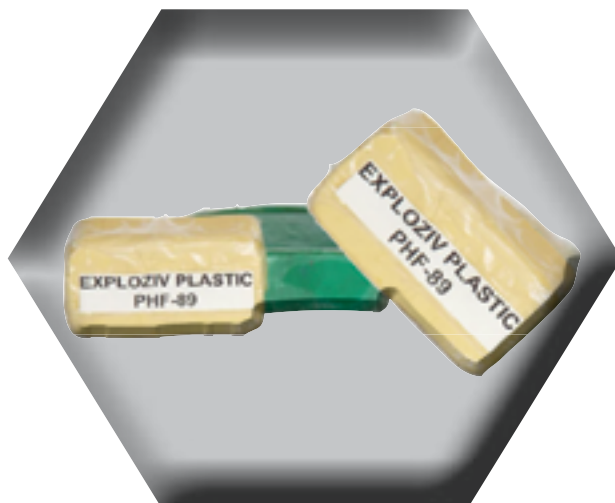
HITEX-M is an explosive composition based on RDX, with inert plastic binder, designed for producing the explosive charges for demolition or for processing or for nonconventional technologies using explosives. The product is marked with marker p-MNT.

|                               |   |
|-------------------------------|---|
| Shape                         | Parallelepiped block  |
| Malleability                  | Plasticized body, easy malleable;   |
| Weight of block               | 1000±5g (500g)  |
| Dimension of block            | ~ 182x61x59 mm;   |
| Content                       | 85-90%RDX, 10-15% inert plastic binder, 0,5-0,6% marking agent  |
| Operating and storage temp.   | -20° to +50°C;  |
| Detonating velocity           | min. 7000 m/sec;  |
| Hess shattering               | min. 20 mm;   |
| Volume of excavation Trauz    | ~ min. 330 cm³;   |
| Explosive heat                | 1100-1500 kcal/kg;  |
| Specific volume               | 900-950l/kg;  |
| Chemical stability at vacuum  | ≤1cm³/g;  |
| Temperature sensitivity       | Self-ignition >200°C;   |
| Impact sensitivity KAST (5kg) | H50>0,25m;  |
| Initiating capacity           | Electrical caps, non electrical caps, pyrotechnical caps, detonator cord  |
| Shelf live                    | 5 years   |
| Risk class:                   | 1.1D  |
| Transport number:             | 0457  |
| Packing:                      | Each block of 1kg is packed into transparent plastic bag, vacuumed, and into labeled cardboard box. Every identified wooden box contains 20 cardboard boxes (20kg). |

### Plastic Explosive PHF-89

PHF-89 is a plastic explosive for producing the explosive charges for civil and military destination.

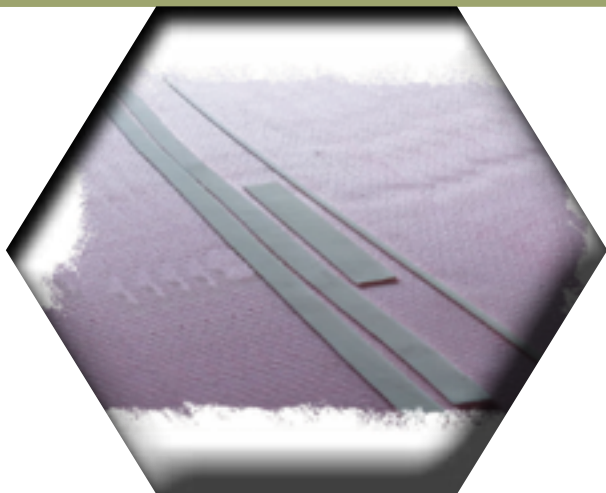
|                        |   |
|------------------------|---|
| Appearance             | homogenous plastic substance of white or yellowish color, slightly adherent   |
| RDX content            | 89 ±1.5%  |
| Moisture               | max. 0.25%  |
| Density                | min. 1.5 g/cm³  |
| Insoluble particles on | 0.425 mm sieve 0 / 0.25 mm sieve 5  |
| Acidity (H2SO4)        | max. 0.05%  |
| Detonation velocity    | min. 7400 m/s   |
| Packing                | The blocks of 200 g, 250 g, 500 g, 1000 g, etc., are wrapped in polyethylene sheets and/or waxed paper sheets. The blocks are then packed in cardboard or wooden cases according to customer's request. |
| Guarantee              | 1 year from the date of manufacturing.  |





# Powders & Explosives

## ROMARM POWDERS AND EXPLOSIVES



### Plastic Explosive BEP-88T

BEP-88T has a wide range of destination: explosives charge BEP - 88T, component anti-hail rocket, assuring destroy of her at the end of flight, after the activation of the delay included in self destroy mechanism.

|   |   |
|---|---|
| <b>Chemical compositions of product</b> | Hexogen: $88 \pm 1.5\%$ / Polyisobutylene rubber: $12 \pm 1.5\%$  |
| <b>Density</b>                          | $\geq 1.4 \text{ g/cm}^3$   |
| <b>Velocity of detonation</b>           | $\geq 6000 \text{ m/s}$   |
| <b>High explosives (Hess method)</b>    | $\geq 19$   |
| <b>Sensitiveness to friction</b>        | $\geq 80 \text{ N}$   |
| <b>Sensitiveness to impact</b>          | $> 2 \text{ J}$   |
| <b>Thermal stability</b>                | stable 48 h at $75^\circ\text{C} \pm 2^\circ\text{C}$   |
| <b>Packing</b>                          | Explosives charge BEP - 88 T is covered by a layer of hermetized rubber and then packed in wooden cases according to customer's request |
| <b>Size</b>                             | dimensions ranging from 4 to 22 mm, lengths up to 1300 mm and thickness over 2.4 mm   |
| <b>Guarantee</b>                        | 3 years from the date of manufacturing  |

### RDX

Hexogen is used to fill the fuse caps and for the manufacturing of detonating cords, detonators and mines. Civil and military destination.

|   |                          |
|---|--------------------------|
| <b>Appearance</b>                             | fine white crystals      |
| <b>Melting point</b>                          | min. $200^\circ\text{C}$ |
| <b>Ash</b>                                    | max. 0.05%               |
| <b>Acidity (as <math>\text{HNO}_3</math>)</b> | max. 0.05%               |

| Granulation Thru US STD Sieve, % | Class 1 |      | Class 3 |      | Class 4 |      | Class 5 |      |
|----------------------------------|---------|------|---------|------|---------|------|---------|------|
|                                  | min.    | max. | min.    | max. | min.    | max. | min.    | max. |
| 8                                |         |      |         |      |         |      |         |      |
| 12                               |         |      |         |      |         |      |         |      |
| 20                               | 96      | 100  |         |      |         |      |         |      |
| 35                               |         |      |         |      | 0       | 40   |         |      |
| 50                               | 80      | 100  | 30      | 50   |         |      |         |      |
| 100                              | 30      | 90   | 10      | 30   |         |      |         |      |
| 200                              | 5       | 45   | 0       | 20   |         |      |         |      |
| 325                              |         |      |         |      |         |      | 97      | -    |



### Desensitized RDX

Desensitized RDX is used for various types of ammunition with military destination.

| <b>Appearance</b>                                      | orange grains or crystals  | <b>Granulation</b>       |  |
|--|----------------------------|--------------------------|--|
| <b>Desensitizer</b>                                    | $5 \div 6.5\%$             | <b>over 1,0 mm</b>       | max. 1.0%  |
| <b>Humidity and volatile substances</b>                | max. 0.1%                  | <b>0,75 ÷ 1,0 mm</b>     | max. 5.0%  |
| <b>Acetone insoluble substances</b>                    | max. 0.25%                 | <b>0,50 ÷ 0,75 mm</b>    | 10 ÷ 35%   |
| <b>Ash</b>   | max. 0.15%                 | <b>0,30 ÷ 0,50 mm</b>    | 40 ÷ 60%   |
| <b>Silicone dioxide</b>                                | max. 0.04%                 | <b>0,10 ÷ 0,30 mm</b>    | 15 ÷ 30%   |
| <b>Acidity (as <math>\text{H}_2\text{SO}_4</math>)</b> | max. 0.05%                 | <b>less than 0,10 mm</b> | max. 2.0%  |
| <b>Melting point</b>                                   | min. $201.5^\circ\text{C}$ | <b>Packing</b>           | polyethylene bags containing 20 kg of 100% product stabilized with 15% water and overpacked in cardboard boxes of 450x310x290 mm. Gross weight of packed product is about 25 kg. |



# INFANTRY ARMS AND AMMUNITION

ROMARM | Infantry arms and ammunition



## 40 mm Weapon & Ammunition systems

### ROMARM AG 7



#### ROMARM AG 7 DS

The 40 mm antitank grenades and explosive bombs launcher is a means of fire landing force and submachine gunners squads in special missions. The launcher is designed for destroying the tanks, truck-borne cannons, any type of car and other armored mean of fire of the enemy, for neutralizing the living force and the fire means of enemy, existing in wooden and earth buildings, of light type or brick buildings.

|   |   |
|---|---|
| <b>Maximum range</b>                      | with hollow round - 500 m<br>with 40 mm explosive bomb - 1000 m<br>with 60mm explosive bomb - 1500 m  |
| <b>Weight</b>                             | without sight mechanism 6.5 kg<br>with PGO7V sight mechanism 7.1 kg   |
| <b>Rate of fire</b>                       | 4÷6 rounds / min  |
| <b>Length</b>                             | for firing 908 mm<br>for transportation 610 mm  |
| <b>Dangerous area behind the launcher</b> | 70° x 30 m  |
| <b>Packing</b>                            | 40 mm grenade launcher, together with the individual kit of spare parts, tools, and accessories is delivered in its wooden packing case. Kits for medium and capital repairs can be delivered on customer's order. 5 pieces of 40 mm launchers with individual kits are packed in wooden case |
| <b>Dimensions of case</b>                 | 1240 x 640 x 440 mm   |
| <b>Gross weight</b>                       | ~ 100 kg  |
| <b>Net weight</b>                         | ~ 60 kg   |

#### ROMARM AG 7 S

The 40mm antitank grenades and explosive bombs launcher is a means of fire of infantry subunits and landing force. The launcher is designed for destroying tanks, truck-borne cannons, any type of car and other armored mean of fire. The launcher can also be used for neutralizing the personnel and the firing means of the enemy.

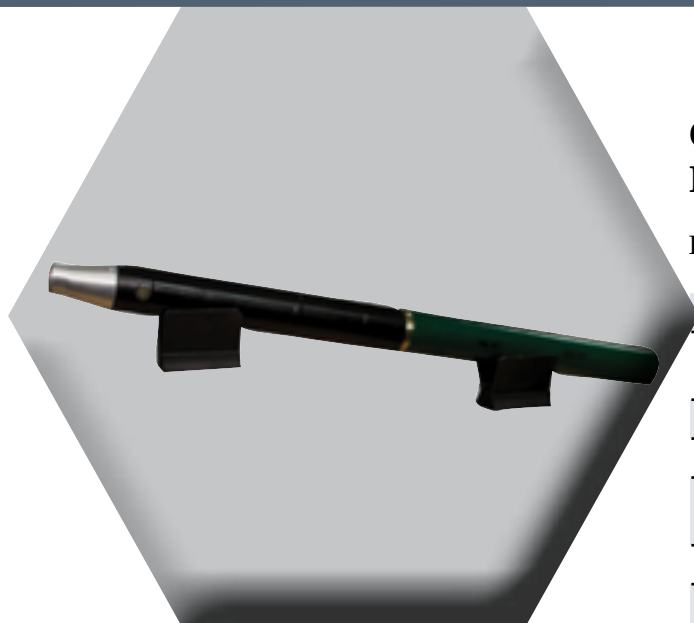
|                               |   |
|-------------------------------|---|
| <b>Maximum range</b>          | with hollow round - 500 m<br>with explosive bomb 40 mm - 1000 m<br>with explosive bomb 60 mm - 1500 m   |
| <b>Weight</b>                 | without sight mechanism 6 kg<br>with IOAG7S sight mechanism 7.1 kg <ul style="list-style-type: none"> <li>magnification x2.7</li> <li>field of view 13°</li> <li>range of elevation 0° ÷ 36°</li> </ul>   |
| <b>Rate of fire</b>           | 4÷6 rounds/min  |
| <b>Length of the launcher</b> | 908 mm  |
| <b>Dangerous area</b>         | 70° x 30 m  |
| <b>Packing</b>                | 40 mm grenade launcher, together with the individual kit of spare parts, tools, and accessories is delivered in its wooden packing case. Kits for medium and capital repairs can be delivered upon customer's order. 5 pieces of 40 mm launchers with individual kits are packed in wooden case |
| <b>Dimensions of case</b>     | 1240 x 640 x 440 mm   |
| <b>Gross weight</b>           | ~100 kg   |
| <b>Net weight</b>             | ~ 60 kg   |





## 40 mm Weapon & Ammunition systems

### ROMARM OG 7



#### OG - 7 - 40 mm

#### High explosive steel round with M6-R fuze

It's used with the AG 7 Portable Antitank Grenade Launcher.

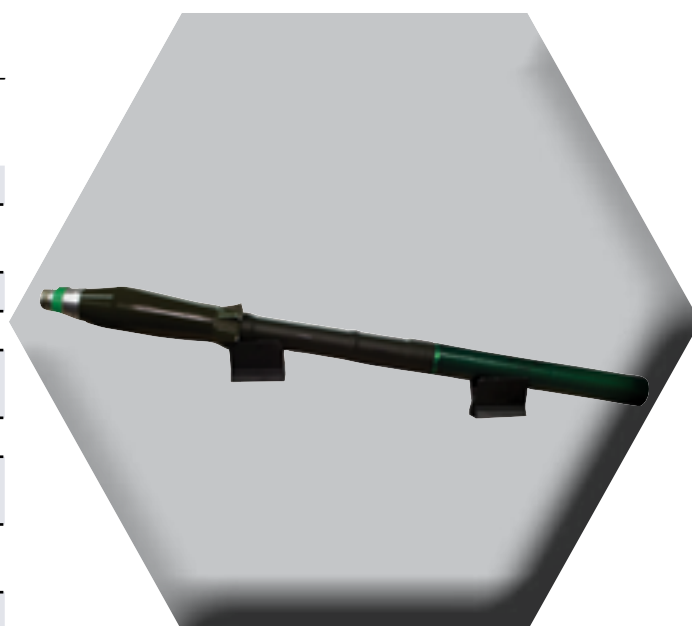
|                                   |   |
|-----------------------------------|---|
| Caliber                           | 40 mm   |
| Net weight (round fully equipped) | 1.725 kg  |
| Fuze                              | M6-R  |
| Propelling charge                 | PG-7PM  |
| Maximum medium pressure           | 900 kgf/cm <sup>2</sup>                         |
| Maximum range                     | 1000 m  |
| Precision                         | A pr/X: ≤1/50 / A pd/X: ≤1/200 PACK-ING         |
| Packing                           | Wooden case containing 12 fully equipped rounds |
| Full case weight                  | 34 kg   |
| Case overall dimensions           | 705×490×275 mm                                  |

#### OG - 7 - with 60 mm

#### High explosive steel bomb

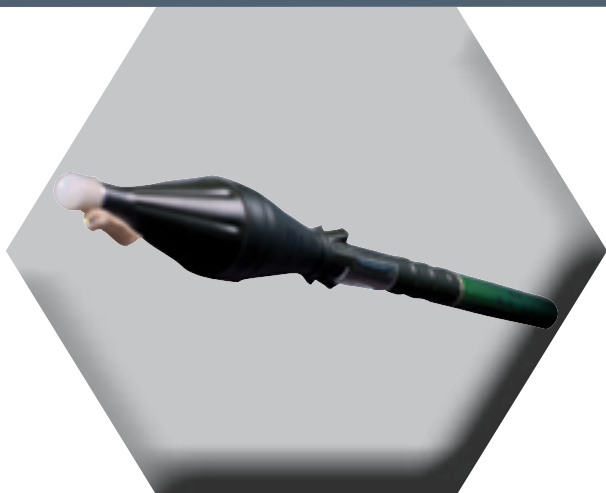
This active-reactive round is used with the AG 7 Portable Antitank Grenade Launcher.

|                                   |                                      |
|-----------------------------------|--------------------------------------|
| Caliber                           | 60 mm                                |
| Net weight (round fully equipped) | 2.300 kg                             |
| Fuze                              | V5K-MD                               |
| Propelling charge                 | PG-7PM                               |
| Maximum medium pressure           | ≤ 900 kgf/cm <sup>2</sup>            |
| Maximum range                     | 1500 m                               |
| Precision                         | Apr/X: ≤1/40<br>ApdX: ≤1/280         |
| Packing                           | Wooden case 12 fully equipped rounds |
| Full case weight                  | 40 kg                                |
| Case dimensions                   | 895 × 490 × 280 mm                   |



# Ammunition systems

## ROMARM PG 7



### PG-7V 85 mm Cumulative Antitank Grenade

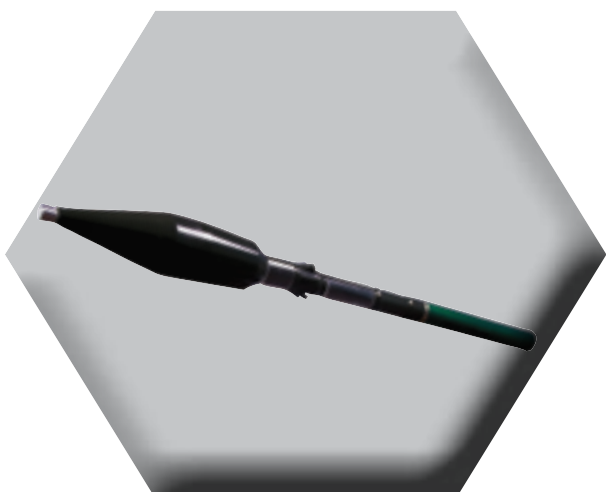
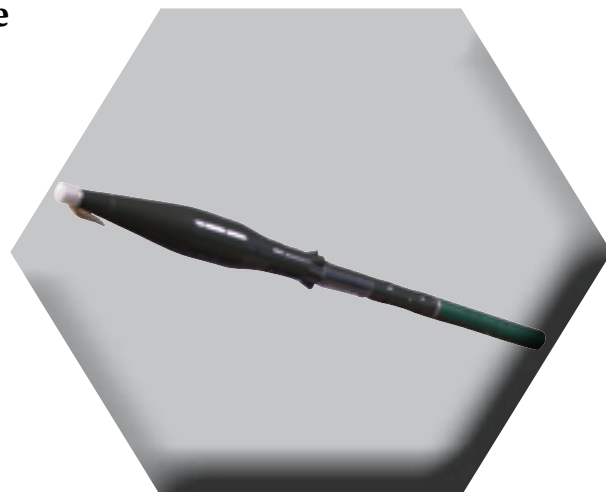
The round is designed to be used with the 40 mm Portable Antitank Grenade Launcher. Also, it is used against all the modern types of the enemy's armored means.

|                          |  |
|--------------------------|--|
| Caliber of grenade       | on the guiding part in launcher - 40 mm<br>on the grenade body - 85 mm   |
| Length                   | grenade 640 mm<br>round 925 mm   |
| Speed of grenade         | initial 120 m/s<br>maximum 300 m/s   |
| Shooting distance        | <ul style="list-style-type: none"> <li>300 m for direct round when the height of the objective is 2 m</li> <li>500 m maximum from support</li> </ul> |
| Shooting rate            | 4-6 rounds/min   |
| Penetration capacity     | 260 mm armoured plate  |
| Precision at 300 m       | <ul style="list-style-type: none"> <li>in height &lt; 0.6 m</li> <li>in direction &lt; 0.8 m</li> </ul>  |
| Exploitation temperature | -40°C to +50°C   |

### PG-7VM 70 mm Cumulative Antitank Grenade

The round is designed to be used with the 40 mm Portable Antitank Grenade Launcher. Also, it is used against all the modern types of the enemy's armored means.

|                          |  |
|--------------------------|--|
| Caliber of grenade       | on the guiding part in launcher - 40 mm<br>on the grenade body - 70,5 mm   |
| Length                   | grenade 669 - 680 mm<br>round 941 - 951 mm   |
| Speed of grenade         | initial 140 ± 3 m/s<br>maximum 350 m/s   |
| Shooting distance        | <ul style="list-style-type: none"> <li>330 m for direct round when the height of the objective is 2 m</li> <li>500 m maximum from support</li> </ul> |
| Shooting rate            | 4-6 rounds/min   |
| Penetration capacity     | 300 mm armoured plate  |
| Precision at 300 m       | <ul style="list-style-type: none"> <li>in height &lt; 0.5 m</li> <li>in direction &lt; 0.6 m</li> </ul>  |
| Exploitation temperature | -40°C to +50°C   |



### PG-7VLR HEAT for RPG-7 Launcher

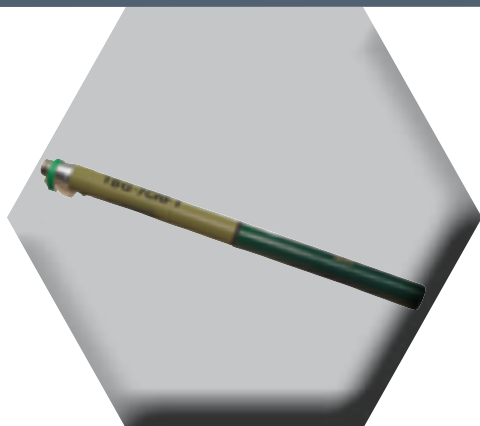
The round is designed for destroying all the modern types of tanks, self-propelled artillery units and other mechanized and armored means of the enemy.

|                           |  |
|---------------------------|--|
| Caliber of grenade        | on the guiding part in launcher - 40 mm<br>on the grenade body - 93 mm   |
| Round length              | 996 mm   |
| Round weight              | 2.75 kg  |
| Fuse type                 | VP-7M  |
| Direct firing range       | 250 m  |
| Maximum range             | 300 m  |
| Muzzle velocity           | 100 m/s  |
| Shooting rate             | 4-6 rounds/min   |
| Penetration capacity      | 500 mm   |
| Accuracy                  | <ul style="list-style-type: none"> <li>horizontal PE 0.6 m</li> <li>vertical PE 0.5 m</li> </ul>                                 |
| Exploitation temperature  | -40°C to +50°C   |
| Packing                   | 6 rounds in a wooden box/ 6 grenades and 6 expelling charges packed separately. Size of the box - 905x503x298 mm. Weight - 40 kg |
| Class of explosion hazard | 1.1F, UN 0180  |



# Ammunition systems

## ROMARM ROUNDS



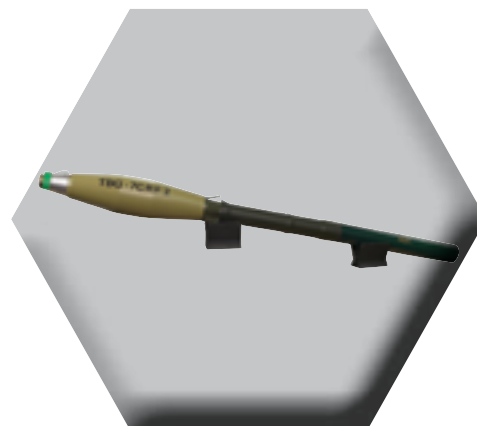
### TBG - 7CRF1 Thermobaric round

Ammunition with explosive and thermobaric effect responds to the demands of modern asymmetric warfare. The explosive and thermobaric ammunition combines the explosive effect with the dispersion of metallic particles, with a strong exothermic reaction and large overpressure and decompression.

|                                   |   |
|-----------------------------------|---|
| Warhead Caliber                   | 40 mm   |
| Net weight (round fully equipped) | ≈1.725 kg                                       |
| Fuze                              | impact SQ fuze for RPG-7                        |
| Maximum medium pressure           | ≤ 900 kgf/cm <sup>2</sup>                       |
| Maximum range                     | ≈ 1000 m  |
| Temperature range                 | -40° C ÷ +60° C                                 |
| Precision                         | $A_{p^i/X} \leq 1/50$<br>$A_{p^d/X} \leq 1/200$ |

### TBG - 7CRF2 HE & Thermobaric round

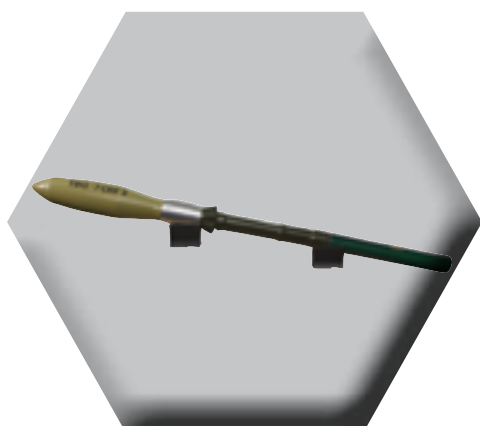
|                                   |   |
|-----------------------------------|---|
| Warhead Caliber                   | 70 mm   |
| Total length                      | 895 mm  |
| Net weight (round fully equipped) | ≈3.600 kg                                       |
| Fuze                              | impact SQ fuze for RPG-7                        |
| Maximum medium pressure           | ≤ 900 kgf/cm <sup>2</sup>                       |
| Maximum range                     | ≈ 1200 m  |
| Temperature range                 | -40° C ÷ +60° C                                 |
| Precision                         | $A_{p^i/X} \leq 1/40$<br>$A_{p^d/X} \leq 1/280$ |



### TBG - 7CRF3 HE & Thermobaric round

Ammunition with explosive and thermobaric effect responds is particularly effective in confined spaces, such as tunnels, buildings and different types of fortifications. The delayed electronic fuze ensures the penetration of the walls of different thickness producing the effects behind it.

|                                   |  |
|-----------------------------------|--|
| Warhead Caliber                   | 70 mm  |
| Total length                      | 940 mm   |
| Net weight (round fully equipped) | ≈4 kg  |
| Fuze                              | electronic time with delay fuze (fuze for RPG-7) |
| Maximum medium pressure           | ≤ 900 kgf/cm <sup>2</sup>                        |
| Maximum range                     | ≈ 1200 m   |
| Temperature range                 | -40° C ÷ +60° C                                  |
| Precision                         | $A_{p^i/X} \leq 1/40$<br>$A_{p^d/X} \leq 1/280$  |



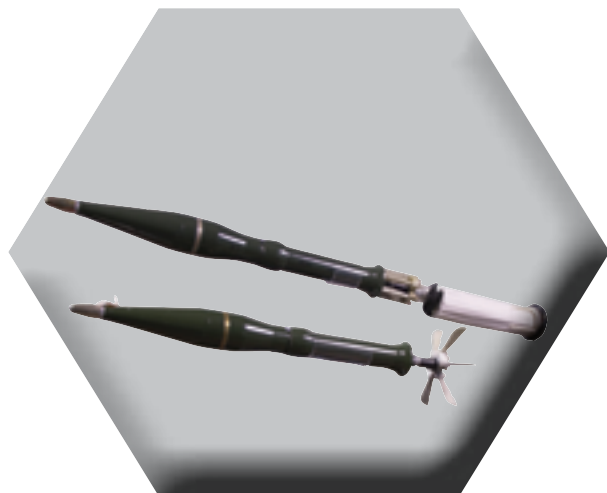
# Ammunition systems

## ROMARM ROUNDS

### PG-9V 73 mm Hollow-charge round

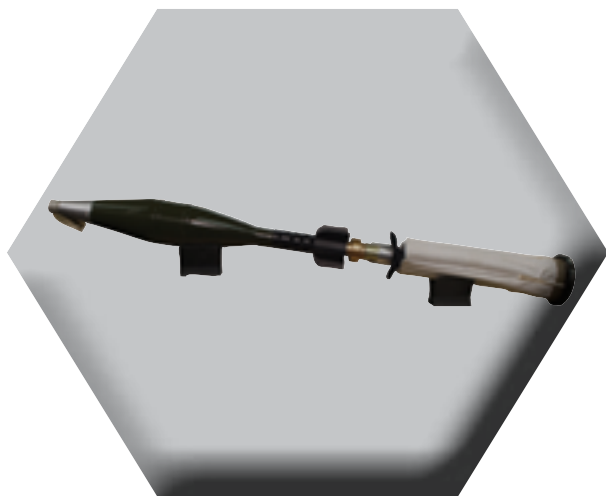
PG-9 hollow-charge round with the PG-9V antitank round rocket projectile is designed for destroying tanks, self-propelled guns and other armored vehicles. Additional, the round is used for neutralising and destroying the living forces of the enemy in field shelters and/or brick-wall fortifications.

|   |   |
|---|---|
| Calibre of the rocket projectile  | 73 mm   |
| Firing range  | 800 m   |
| For direct round when the height of the target is of 2 m maximum according to the sight |   |
| Weight  | <ul style="list-style-type: none"> <li>Rocket projectile 2.6 kg</li> <li>Round 4.4 kg</li> <li>Muzzle velocity 435 m/s</li> </ul> |
| Precision for 800 m distance  | <ul style="list-style-type: none"> <li>on height &lt; 0.5 m</li> <li>on direction &lt; 0.5 m</li> </ul>                           |
| Piercing capacity   | armoured plate of 300 mm tickness   |



### OG-9 73 mm High explosive steel bomb - 2 types

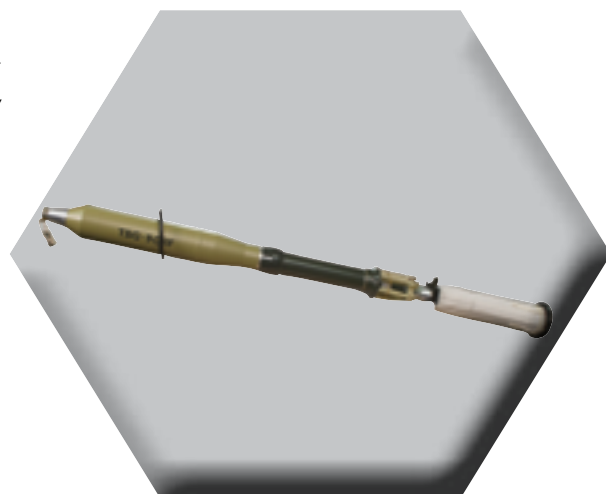
|                                   |  |   |
|-----------------------------------|--|---|
| Caliber:                          | 73 mm  | 73 mm   |
| Total lenght                      | 930.3 mm   | 806.37 mm   |
| Net weight (round fully equipped) | 5.300 kg   | 4,950 kg  |
| Fuze:                             | UB-2M  | UB-2M   |
| Propelling charge:                | PG-9P  | PG-9P   |
| Maximum medium pressure           | $\leq 660 \text{ kgf/cm}^2$  | $\leq 600 \text{ kgf/cm}^2$   |
| Maximum range:                    | 5400 m   | 4500 m  |
| Precision:                        | $A_{\text{p}}^{\text{d}}/X: \leq 1/140$<br>$A_{\text{p}}^{\text{d}}/X: \leq 1/500$ | $A_{\text{p}}^{\text{d}}/X: \leq 1/140$<br>$A_{\text{p}}^{\text{d}}/X: \leq 1/500$              |
| Packing                           | Wooden case containing 12 fully equipped rounds                                    | Wooden case containing 6 fully equipped rounds with fuze on 6 propelling charges fully equipped |
| Full case weight                  | 78 kg  | 55 kg   |
| Case overall dimensions           | 1105×450×305 mm  | 800×420×302 mm  |



### TBG9 - CRF Thermobaric active-reactive round

Intended for destroying the unarmed personnel and uncovered armored technique, light shelters and/or burning of fuel and ammunition deposits.

|                   |                               |
|-------------------|-------------------------------|
| Warhead caliber   | 73 mm.                        |
| Weight            | ≈ 4.5 Kg                      |
| Length            | 1200 mm                       |
| Fuze              | impact SQ fuze                |
| Pressure          | $\leq 600 \text{ Kg.f/cm}^2$  |
| Max. range        | ≈ 1500 m                      |
| Temperature range | -40° C÷ +60° C                |
| Precision         | Apr = ± 0.2 m / Apd = ± 0.3 m |
| Firing rate       | 3 shots/min.                  |





# 60 mm Mortars & mortar bombs

## ROMARM MORTARS



**ROMARM standard mortar launcher**



**ROMARM long range mortar launcher**

It has a smooth barrel and it is designed for firing with curved trajectory. It is also designed for fire support of infantry subunits, parachute landing forces and other subunits. Main missions: to destroy the personnel and the sheltered or unsheltered means of fire, the command observation posts, to set on fire the warehouses, to make passages through the mine fields, to destroy the defense works of enemies.

|   |   |  |
|---|---|--|
| Caliber   | 60 mm   | 60 mm  |
| Length of barrel                                  | 1080 mm   | 1300 mm  |
| Firing range                                      | <ul style="list-style-type: none"> <li>• maximum 3000 m</li> <li>• minimum 100 m</li> </ul>   | <ul style="list-style-type: none"> <li>• maximum 4500 m</li> <li>• minimum 100 m</li> </ul>  |
| Vertical firing field                             | 45°÷85°   | 45°÷85°  |
| Horizontal firing field                           | <ul style="list-style-type: none"> <li>• without moving the bipod ±3°</li> <li>• moving the bipod ±360°</li> </ul>                                | <ul style="list-style-type: none"> <li>• without moving the bipod ±3°</li> <li>• moving the bipod ±360°</li> </ul>   |
| Rate of fire in the first minute without reaiming | 20 rounds/min   | 20 rounds/min  |
| Weight of mortar ready for battle                 | max. 20 kg  | max. 30 kg   |
| Weight of component parts                         | <ul style="list-style-type: none"> <li>• barrel with breechblock ~7.5 kg</li> <li>• base plate ~4.7 kg</li> <li>• optical sight 0.8 kg</li> </ul> | <ul style="list-style-type: none"> <li>• barrel with breechblock ~11 kg</li> <li>• bipod ~10 kg</li> <li>• base plate ~9 kg</li> <li>• optical sight 0.8 kg</li> </ul> |



### ROMARM commando mortar launcher

Best product assets: it is an individual means of fire, with smooth barrel, for firing with curved trajectory.  
Purpose of use: subunits of navy, air force, as well as for intervention units.

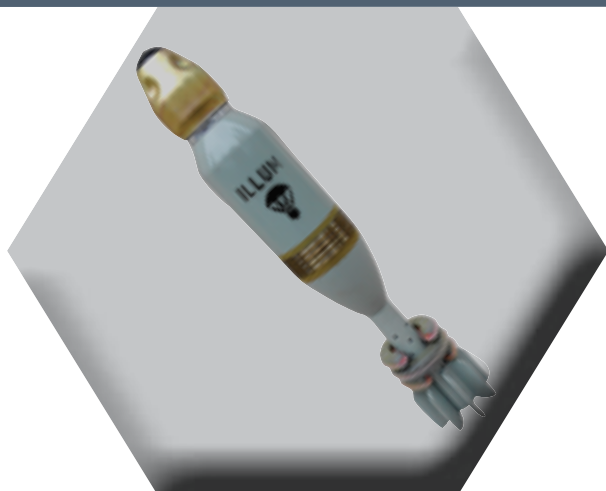
Main missions: to destroy the personnel and the sheltered or unsheltered means of fire, the command observation posts, warehouses of weapon and ammunition, fuel and lubricants.

|  |            |
|--|------------|
| Caliber  | 60 mm      |
| Length of barrel                                   | 735 mm     |
| Firing range: with explosive bomb                  | 1900 m     |
| Vertical firing field                              | 45°÷85°    |
| Rate of fire in the first minute without re-aiming | 12 rds/min |
| Weight of mortar ready for battle                  | max. 8 kg  |



# 60 mm Mortars & mortar bombs

## ROMARM illuminating mortar bombs



### Illuminating mortar bomb with fuze T-1

The 60 mm illuminating bomb is intended for artificial illumination of the target area for the purposes of reconnaissance.

| Caliber  | 60 mm                         | PYROTECHNIC TIME FUZE T-1         |   |
|--|-------------------------------|-----------------------------------|---|
| Length with fuze T-1 (without cuff protection) | 359.66...365.2 mm             | Fuze length with cuff protection  | 77.43÷81.25 mm  |
| Length without fuze                            | 293.76...298 mm               | Length of part mounted in ogive   | 11.57÷12.6 mm   |
| Weight (with fuze, w/out increments)           | 1.83 kg                       | Thread that is screwed into ogive | Sp 36,14x10 turns/inch  |
| Propulsion system                              | 1 prime charge + 3 increments | Weight (without cuff protection)  | 0.160 kg  |
| Muzzle velocity                                | 220 ± 3 m/s (max.)            | Operating mode and time adjusting | 10÷125 divisions =time 3.5÷46.45 s<br>UD - at impact                |
| Fuze   | time fuze T-1                 | Packing                           | Metal box sealed, containing 32 pieces and 4 boxes in a wooden case |
| Maximum range                                  | 2800 m                        | Case dimension                    | 520 x 490 x 257 mm  |
| Illum, intensity                               | min. 200 000 cd.              |                                   |   |
| Illum, burn time                               | min 25 s                      |                                   |   |
| Stabilized descent speed                       | max. 4.5 m/s                  |                                   |   |

### Illuminating mortar bomb with fuze ETF-1MT

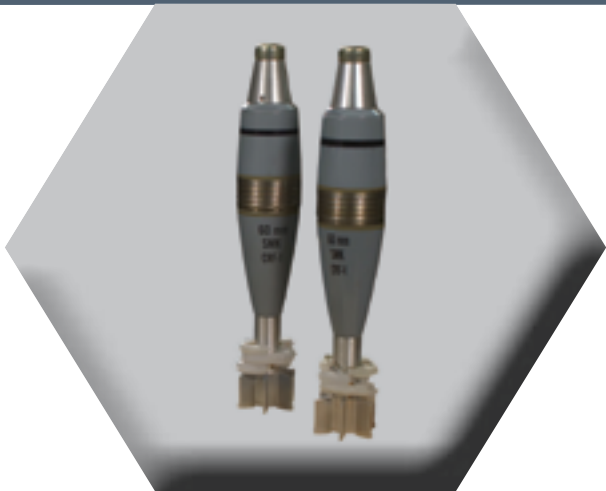
The 60 mm illuminating bomb is intend for artificial illumination of the target area for the purposes of reconnaissance and for the performance of other tactical actions on the battlefield.

| Caliber                              | 60 mm                         | ELECTRONIC TIME FUZE ETF-1MT    |   |
|--------------------------------------|-------------------------------|---------------------------------|---|
| Length with fuze ETF-1MT             | 379.36...384.25mm             | Fuze length                     | 98...100 mm   |
| Length without fuze                  | 293.76...295.8 mm             | Length of part mounted in ogive | 11.57...12.6 mm   |
| Weight (with fuze, w/out increments) | ~2.07 kg                      | Thread of part buried in ogive  | Sp 36.14x10 turns/inch  |
| Propulsion system                    | 1 prime charge + 3 increments | Weight                          | 0.285 kg  |
| Muzzle velocity                      | 200 m/s (max.)                | Power supply                    | Air driven turbine  |
| Fuze                                 | electronic time fuze ETF-1MT  | Adjustable setting time         | 3.1 s ÷ 99.9 s, with thread 0.1 s, precision 0.05s                                  |
| Maximum range                        | 2800 m                        | Operation mode                  | time or impact  |
| Illum, intensity                     | min. 200 000 cd.              | Time setting                    | electronic wire programmer that ensure setting, resetting and set time confirmation |
| Illum, burn time                     | min. 25 s                     | Operating temperature           | -32° C to 49° C   |
| Stabilized descent speed             | max. 4.5 m/s                  | Packing                         | 24 pieces / metal box sealed; 4 boxes in a wooden case                              |
| Temp. limits, firing and storage     | -32° C to 49° C               | Case dimension                  | 520 x 490 x 257 mm  |



# 60 mm Mortars & mortar bombs

## ROMARM MORTARS



Smoke mortar steel bomb



High explosive mortar steel bomb

| Type                              | Smoke  | High explosive  |
|-----------------------------------|--|---|
| Caliber                           | 60 mm  | 60 mm   |
| Total length                      | 340 mm   | ~298 mm   |
| Net weight (round fully equipped) | 1,900 kg   | 1,500 kg  |
| Fuze                              | M6-R   | M6R-M   |
| Propelling charge                 | 1 cartridge + 3 extra charges  | <ul style="list-style-type: none"><li>"Standard" mortar - 1 cartridge and + 3 extra charges</li><li>"Commando" mortar - 1 cartridge and + 2 extra charges</li></ul> |
| Maximum medium pressure           | ≤ 360 kgf/cm2  | ≤ 360 kgf/cm2   |
| Maximum range                     | ≈ 2200 m* (*Standard type launcher)  | 3000 m  |
| Precision                         | $A_p^r/X: \leq 1/80$<br>$A_p^d/X: \leq 1/175$  | $A_p^r/X: \leq 1/90$<br>$A_p^d/X: \leq 1/190$   |
| Packing                           | Wooden case containing 12 cardboard cases, each case containing one round fully equipped. Full case weight: 40 kg. Case overall dimensions: 475×330×300 mm |   |

# 60 mm Mortars & mortar bombs

## ROMARM high explosive and smoke steel bombs



HE steel bomb round with Junghans fuze

HE steel bomb round with enhanced range and electronic impact SQ fuze

| Type                                     | High explosive steel bomb round with Junghans fuze | High explosive steel bomb round with enhanced range and electronic impact SQ fuze |
|--|--|---|
| Caliber                                  | 60 mm  | 60 mm   |
| Length                                   | ~298 mm  | ~355 mm   |
| Weight                                   | ~1.50 kg   | ~2.20 kg  |
| Fuze                                     | M6R-M or other impact fuze                         | electronic impact SQ fuze   |
| Propelling charge                        | -  | 1 cartridge +3 extra charges  |
| Maximum medium pressure                  | ≤360 kgf/cm <sup>2</sup>                           | ≤500 kgf/cm <sup>2</sup>  |
| Maximum range                            | ~3000 m  | ~4500 m   |
| Temperature range                        | -40° C ÷ +60° C                                    | -40° C ÷ +60° C   |
| Precision A <sub>p</sub> <sup>r</sup> /X | ≤1/90  | ≤1/80   |
| Precision A <sub>p</sub> <sup>d</sup> /X | ≤1/190   | ≤1/180  |

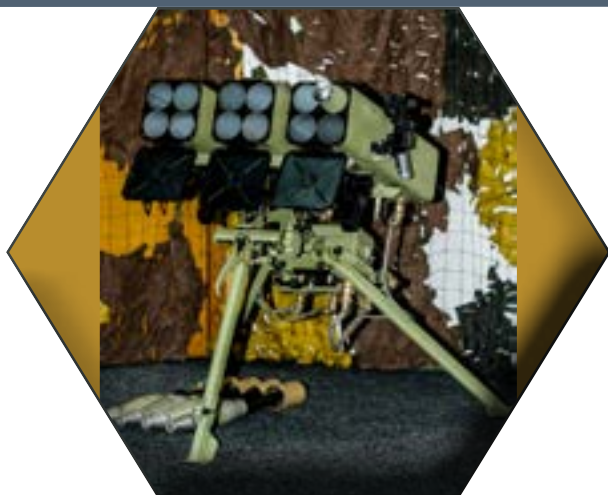
Smoke steel bomb with electronic SQ impact fuze

|  |                              |
|--|------------------------------|
| Caliber                                  | 60 mm                        |
| Lenght                                   | 370 mm                       |
| Weight                                   | ~2.05 kg                     |
| Fuze                                     | electronic SQ impact fuze    |
| Propelling charge                        | 1 cartridge +3 extra charges |
| Maximum medium pressure                  | ≤360 kgf/cm <sup>2</sup>     |
| Maximum range                            | ~2200 m                      |
| Temperature range                        | -40° C ÷ +60° C              |
| Precision A <sub>p</sub> <sup>r</sup> /X | ≤1/80                        |
| Precision A <sub>p</sub> <sup>d</sup> /X | ≤1/175                       |





## 70 mm HYDRA system & Thermobaric round ROMARM launchers and thermobaric rounds



**MLRS - FCS System - 70 mm - HYDRA**  
**Multiple launchers round system**  
**with fire control system**

The characteristics of the new types of conflicts require the development of flexible weapons systems, which can be installed on different types of platforms.

The systems must be able to offer troops the opportunity to act against targets in the urban environment, sheltered or not sheltered targets, shelters or lightly armored carrier or vehicles.

The range and accuracy must correspond to these new types of conflicts.

|  |  |
|--|--|
| Caliber  | 70 mm  |
| Type   | 70 mm MLRS - RCS platform - HYDRA is flexible system |
| <b>Advantages</b>  |  |
| Launching various ammunition: HE, EFP / THB, THB, SMOKE  |  |
| The system is offered in various configurations:<br>- remote controlled platform with FCS, who can be placed on various types of platforms: armored carrier: 4x4; 6x6; 8x8, lightly armored vehicles, etc. ;<br>- launcher assembly fixed to the tripod. |  |
| It is designed so that it can be upgraded according to the requirements of the beneficiary   |  |
| The technical characteristics differ depending on the type of system requested by the beneficiary  |  |

|   |  |
|---|--|
| Caliber                                     | 70 mm  |
| Length                                      | ~940 mm                                      |
| Weight                                      | ~4.00 kg                                     |
| Fuze  | electronic PDSQ with chemical battery        |
| Maximum medium pressure                     | $\leq 900 \text{ kgf/cm}^2$                  |
| Maximum accuracy range                      | ~1000 m                                      |
| Maximum fire range                          | ~2500 m                                      |
| Temperature range                           | $-40^\circ \text{C} \div +60^\circ \text{C}$ |
| Maximum moment of explosive expansion       | 0.15 s                                       |
| The final moment of the explosive expansion | 0.10 s                                       |
| Total time duration                         | 0.11 s                                       |
| Maximum pressure at 1 m                     | ~4 bar                                       |
| Overpressure ratio at 2 m                   | 0.95   |
| Overpressure ratio at 3 m                   | 1.94   |
| The surface area action                     | ~4 times larger than HE grenade              |



**High explosive formed penetrator (EFP)**  
**Thermobaric Round**

EFP / THB ammunition, which perfectly meets the requirements of asymmetric warfare, is used to penetrate armor, concrete or brick walls and produce a thermobaric explosion behind them.

EFP / THB round are fired from a considerable distance from the target, being aerodynamically stabilized by hitting the target at a small angle.

The own characteristic of the EFP / THB ammunition produced by us is the optimization of the warhead component and the initiation process ensured by a PSDQ electronic fuze with thermochemical battery energy source.

Another particularity of this ammunition is the combination between the penetrating effect and the insensitive thermobaric composition that explodes after the armor / wall is penetrated.



# 81 / 82 mm Mortars & mortar bombs

## ROMARM mortars



### 81 mm / 82 mm ROMARM mortar launcher

ROMARM mortar launcher has a smooth barrel, for firing with curved trajectory. It is designed for fire support of infantry units and/or other subunits. Recommended for the following missions: to destroy the sheltered or unsheltered means of fire, the command-observation posts, to make passages through the mine fields and barbed-wire net, to separate infantry from tanks, to destroy the defense works, to destroy or damage the communication ways, for illuminating and to camouflage by smoke-screen the objectives (ground).

|  |   |
|--|---|
| Caliber                                    | <ul style="list-style-type: none"> <li>81 mm</li> <li>82 mm</li> </ul>  |
| Length of barrel                           | 1220 mm   |
| Firing range                               | <ul style="list-style-type: none"> <li>maximum range with explosive bomb ~4460 m</li> <li>minimum range 100 m</li> </ul>  |
| Vertical firing field                      | 45°÷85°   |
| Horizontal firing field                    | <ul style="list-style-type: none"> <li>without moving the bipod, with barrel at 45°: ±3°</li> <li>moving the bipod, without moving the base plate: ±360°</li> </ul> |
| Rate of fire in the first minute           | without re-aiming 20 rds/min  |
| Weight of mortar ready for battle of witch | 43.5 kg:  |
| Barrel with breechblock                    | 16.5 kg   |
| - Bipod                                    | 11 kg   |
| - Base plate                               | 15 kg   |
| - Optical sight                            | 0.8 kg  |

### HE mortar steel bomb



|                                   | High Explosive Mortar Steel Bomb  | High Explosive Steel Bomb with electronic fuze      |
|-----------------------------------|---|---|
| Caliber                           | 81 mm   | 81 / 82 mm  |
| Total length                      | 361 mm  | 361 mm  |
| Net weight (round fully equipped) | 3.10 kg   | 3.10 kg   |
| Fuze                              | M6R   | MEF-1   |
| Propelling charge                 | 1 cartridge / + 5 extra charges   | 1 cartridge / + 5 extra charges                     |
| Maximum medium pressure           | ≤ 650 kgf/cm <sup>2</sup>   | ≤ 650 kgf/cm <sup>2</sup>                           |
| Maximum range                     | ~4500 m   | ~4500 m   |
| Precision                         | $A_p \cdot X: \leq 1/100 / A_p \cdot X: \leq 1/200$                                       | $A_p \cdot X: \leq 1/100 / A_p \cdot X: \leq 1/200$ |
| Packing                           | Wooden case containing 10 cardboard cases, each case containing one fully equipped round. |   |
| Full case weight                  | 50 kg   |   |
| Case overall dimensions           | 550×450×285 mm  |   |



## 81 / 82 mm Mortar bombs

### ROMARM illuminating, HE and smoke mortar bombs

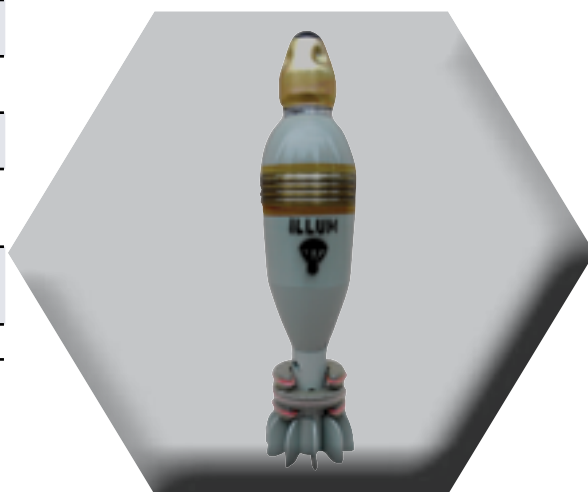


#### Illuminating mortar bomb with fuze ETF-1MT

| Caliber                              | 81 / 82 mm                    | Electronic time fuze ETF-1MT    |   |
|--------------------------------------|-------------------------------|---------------------------------|---|
| Length with fuze ETF-1MT             | 377.8...382.4 mm              | Fuze length                     | 98...100 mm   |
| Length without fuze                  | 291.8...295 mm                | Length of part mounted in ogive | 11.57÷12.6 mm   |
| Weight (with fuze, w/out increments) | 3.61 kg                       | Thread of part buried in ogive  | Sp 36,14x10 turns/inch  |
| Propulsion system                    | 1 prime charge + 3 increments | Weight                          | 0.280 kg  |
| Muzzle velocity                      | 199 m/s (max.)                | Power supply                    | Air driven turbine  |
| Fuze                                 | electronic time fuze ETF-1MT  | Adjustable setting time         | 3.1 s ÷ 99.9 s, with thread 0.1 s, precision 0.05 s                                 |
| Maximum range / Minimum range        | 2670 m / 220 m                | Operation mode                  | time or impact  |
| Illum, intensity                     | min. 500 000 cd.              | Time setting                    | electronic wire programmer that ensure setting, resetting and set time confirmation |
| Illum, burn time                     | min 30 s                      | Operating temperature           | -32° C to 49° C   |
| Stabilized descent speed             | max. 4.5 m/s                  | Packing                         | 24 pieces / metal box sealed; 4 boxes in a wooden case                              |
| Temp. limits, firing & storage       | ~32 / +49°C                   | Case dimension                  | 520 x 490 x 257 mm  |

| Caliber                                     | 81 / 82 mm                    | PYROTECHNIC TIME FUZE T-1         |   |
|---|-------------------------------|-----------------------------------|---|
| Length with fuze T-1 (with cuff protection) | 357.7...363.6 mm              | Fuze length with cuff protection  | 77.43 ÷ 81.25 mm  |
| Length without fuze                         | 291.8...295 mm                | Length of part mounted in ogive   | 11.57 ÷ 12.6 mm   |
| Weight (with fuze, w/out increments)        | 3.49 kg                       | Thread that is screwed into ogive | Sp 36.14x10 turns/inch  |
| Propulsion system                           | 1 prime charge + 3 increments | Weight (without cuff protection)  | 0.160 kg  |
| Muzzle velocity                             | 199 m/s (max.)                | Operating mode and time adjusting | 10÷125 divisions - time 3.5 ÷ 46.45 s UD - at impact                |
| Fuze  | time fuze T-1                 | Packing                           | Metal box sealed, containing 32 pieces and 4 boxes in a wooden case |
| Maximum range                               | 2670 m                        | Case dimension                    | 520 x 490 x 257 mm  |
| Minimum range                               | 220 m                         |                                   |   |
| Weight (w/out cuff protection)              | 0.160 kg                      |                                   |   |
| Illum. intensity                            | min. 500 000 cd               |                                   |   |
| Illum. burn time                            | min. 30 sec.                  |                                   |   |
| Stabilized descent speed                    | max.4.5 m/sec.                |                                   |   |
| Temp. limits, firing & storage              | - 40°C to + 50° C             |                                   |   |

#### Illuminating mortar bomb with fuze T-1



|                                   | High explosive mortar steel bomb   | Smoke mortar steel bomb  |
|-----------------------------------|--|--|
| Caliber:                          | 82 mm  | 82 mm  |
| Total length                      | ≈ 361 mm   | ≈ 360 mm   |
| Net weight (round fully equipped) | ~3,1 kg  | ~3,3 kg  |
| Fuze                              | M6R  | M6R  |
| Propelling charge                 | 1 cartridge + 5 extra charges  | 1 cartridge + 5 extra charges  |
| Maximum medium pressure           | ≤ 650 kgf/cm <sup>2</sup>  | ≤ 650 kgf/cm <sup>2</sup>  |
| Maximum range                     | ~4500 m  | ~4300 m  |
| Precision                         | A <sub>p</sub> <sup>r</sup> /X: ≤ 1/100<br>A <sub>p</sub> <sup>d</sup> /X: ≤ 1/200 | A <sub>p</sub> <sup>r</sup> /X: ≤ 1/100<br>A <sub>p</sub> <sup>d</sup> /X: ≤ 1/200 |



81/82 mm Mortars & mortar bombs  
ROMARM high explosive and smoke steel bombs



High explosive steel bomb  
with enhanced range and effect



Smoke steel bomb round  
with enhanced range and electronic SQ impact fuze

| Type   | High explosive steel bomb with enhanced range and effect | Smoke steel bomb round with enhanced range and electronic SQ impact fuze |
|--|--|--|
| Caliber  | 81 mm  | 81 mm  |
| Length   | ~517 mm  | ~490 mm  |
| Weight   | ~4.50 kg   | ~4.50 kg   |
| Payload  |  | 774 g  |
| Fuze   | electronic SQ impact fuze                                | electronic SQ impact fuze  |
| Propelling charge  | 1 cartridge +6 extra charges                             | 1 cartridge +6 extra charges   |
| Maximum medium pressure  | ≤880 kgf/cm <sup>2</sup>                                 | ≤880 kgf/cm <sup>2</sup>   |
| Maximum range  | ~6500 m  | ~6500 m  |
| Temperature range  | -40° C ÷ +60° C  | -40° C ÷ +60° C  |
| Precision A <sub>p</sub> <sup>r</sup> /X<br>Precision A <sub>p</sub> <sup>d</sup> /X | ≤1/100<br>≤1/200   | ≤1/100<br>≤1/200   |

High explosive steel bomb round with electronic fuze

|  |  |
|--|--|
| Caliber  | 82 mm                                    |
| Lenght   | ~361 mm                                  |
| Weight   | ~3.10 kg                                 |
| Fuze   | electronic impact SQ with turbogenerator |
| Propelling charge  | 1 cartridge +5 extra charges             |
| Maximum medium pressure  | ≤650 kgf/cm <sup>2</sup>                 |
| Maximum range  | ~4500 m                                  |
| Temperature range  | -40° C ÷ +60° C                          |
| Precision A <sub>p</sub> <sup>r</sup> /X<br>Precision A <sub>p</sub> <sup>d</sup> /X | ≤1/100<br>≤1/200                         |





## 120 mm High explosive rocket - assisted bomb CRF-5 (HERA-C5) ROMARM rockets



High explosive rocket - assisted bomb CRF-5 (HERA-C5)

**120 mm High Explosive Rocket Assisted - Carfil (HERA-C) mortar bomb** provide increased range and lethality. HERA-C mortar bomb loaded with TNT or B composition, consist of loaded high fragmentation steel warhead, rocket motor, high powerfull propellant charges and PDSQ fuze. The 120 mm HERA-C mortar bomb is one of the most up-to-date high explosive bombs of 120 mm caliber. Its performance—especially range, and effect—is the best possible for any tactical purpose.

This mortar bomb is destined for fighting uncovered living targets, as well as unarmored means of transportation and lightly armoured military vehicles. The highly explosive force, together with the best possible splinter formation, makes it a bomb of utmost efficiency. The 120 mm HERA-C was especially developed for long range mortars and offers a distinctly enhanced fragmentation effect; the excellent flight stability results in an improvement of range and dispersion. HERA-C was specially designed, both as a new bomb and for upgrading ammunition from stocks. HERA-C has the largest range with long range mortars, but can be used, also, with different 120 mm mortars.

|                   |                                       |
|-------------------|---------------------------------------|
| Caliber           | 120 mm                                |
| Total weight      | ~ 19 kg                               |
| Total length      | 970 mm                                |
| Type of fuze      | electronic PDSQ                       |
| Rocket motor      |                                       |
| Propellant        | double base                           |
| Length            | 285 mm                                |
| Weight            | 18 kg                                 |
| Propellant weight | 1 kg                                  |
| Avarage force     | 144 dan                               |
| Specific impulse  | 188 s                                 |
| Burning time      | 1.34 s                                |
| Propelling charge | 1 cartridge + 6 supplementary charges |
| Type              | EI (Nitrochemie- Rheinmetall)         |
| Maximum range     | ~ 14 000 m                            |



# 120 mm Mortar bombs

## ROMARM illuminating mortar bombs



### Illuminating mortar bomb with fuze ETF-1MT

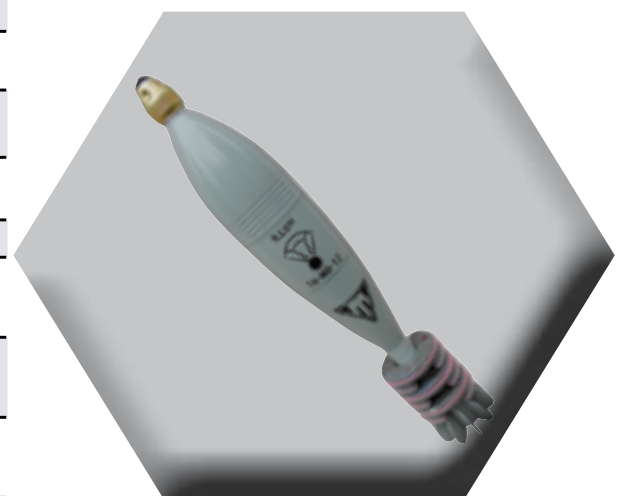
The TH-MB-13 illuminating mortar bomb is designed to illuminate the target at night or under low visibility conditions.

| Caliber                         | 120 mm                        | Electronic time fuze ETF-1MT    |   |
|---------------------------------|-------------------------------|---------------------------------|---|
| Length with fuze ETF-1MT        | 673.3...755 mm                | Fuze length                     | 98...100 mm   |
| Length without fuze             | 661.6...667 mm                | Length of part mounted in ogive | 11.57±12.6 mm   |
| Weight (with fuze, with charge) | 16.7...17.62 kg               | Thread of part buried in ogive  | Sp 36.14x10 turns/inch  |
| Propulsion system               | 1 prime charge + 6 increments | Weight                          | 0.285 kg  |
| Muzzle velocity                 | 275 m/s ±3                    | Power supply                    | air driven turbine  |
| Fuze                            | ETF-1MT electronic time fuze  | Adjustable setting time         | 3.1 s ÷ 99.9 s, with thread 0.1 s, precision 0.05 s                                 |
| Maximum range<br>Minimum range  | 5500 m at impact<br>1060 m    | Operation mode                  | time or impact  |
| Stabilized descent speed        | max. 8 m/s                    | Time setting                    | electronic wire programmer that ensure setting, resetting and set time confirmation |
| Temp. limits, firing & storage  | -32° / +49°C                  | Operating temperature           | -32° to +49°  |
| Illum, intensity                | min. 1 000 000 cd.            | Packing                         | 24 pieces / metal box sealed; 4 boxes in a wooden case                              |
| Illum, burn time                | min 60 s                      | Case dimension                  | 520 x 490 x 257 mm  |

### Illuminating mortar bomb with fuze T-1

The TH-MB-12 illuminating bomb is intend for artificial illumination of the target area for the purposes of reconnaissance and for the performance of other tactical actions on the battlefield.

| Caliber                              | 120 mm                        | Pyrotechnic time fuze T-1  |   |
|--------------------------------------|-------------------------------|--|---|
| Length without fuze                  | 661.6...667 mm                | Fuze length with protection case   | 77.43...81.25 mm  |
| Weight (with fuze, w/out increments) | 16.66 kg                      | Length of part mounted in ogive  | 11.57±12.6 mm   |
| Propulsion system                    | 1 prime charge + 6 increments | Thread that is screwed into ogive  | Sp 36.14x10 turns/inch  |
| Muzzle velocity                      | 275 m/s ±3                    | Weight (w/out cutt protection)   | 0.160 kg  |
| Fuze                                 | time fuze T-1                 | Way of performance for adjustment  | 10...125 divisions - time<br>3,5...46.45 s<br>UD - at impact      |
| Maximum range<br>Minimum range       | 5500 m at impact<br>1060 m    | 2 evacuation charges and variable propellant charges formed by 2 prime charges and 12 propellant charges introduced in the same wooden case. |   |
| Illum, intensity                     | min. 1 000 000 cd.            | The evacuation charges and variable propellant charges are introduced in cardboard boxes and then sealed in polyethylene foil.               |   |
| Illum, burn time                     | min 60 s                      | Packing  | Metal box sealed, containg 32 pieces and 4 boxes in a wooden case |
| Stabilized descent speed             | max. 8 m/s                    | Case dimension   | 520 x 490 x 257 mm  |
| Temp. limits, firing and storage     | -40 / +50°C                   |  |   |



# 120 mm Mortar bombs

## ROMARM high explosive mortar bombs

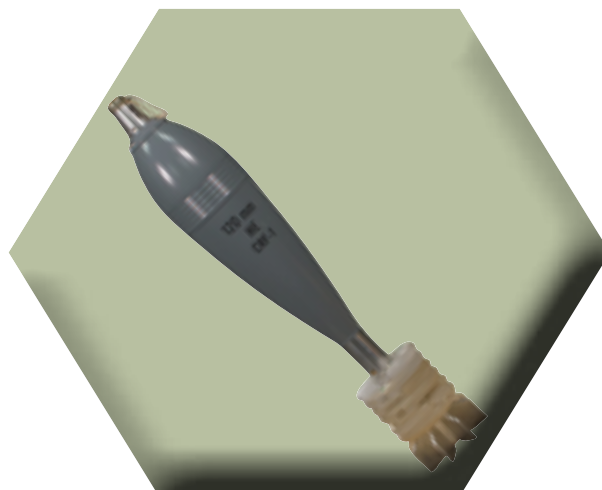


### High explosive long range bomb with proximity fuze

|                                   |  |
|-----------------------------------|--|
| Caliber                           | 120 mm   |
| Total length                      | ~ 725 mm   |
| Net weight (round fully equipped) | ~ 16 kg  |
| Fuze                              | Proximity  |
| Propelling charge                 | 1 cartridge / + 8 extra charges  |
| Maximum medium pressure           | $\leq 1200 \text{ kgf/cm}^2$   |
| Maximum range                     | ~ 7000 m   |
| Height of bursting                | 1 ÷ 5 m  |
| Action                            | Works over any type of terrain: dry or wet soil, sand, snow, swamp, water surface, mountain rock |
| Packing                           | Wooden case containing 2 rounds fully equipped in cardboard cases.                               |
| Full case weight                  | 50 kg  |
| Case overall dimensions           | 950×360×240 mm   |

### High explosive mortar steel bomb

|                                   |   |
|-----------------------------------|---|
| Caliber                           | 120 mm  |
| Total length                      | ~ 680 mm  |
| Net weight (round fully equipped) | 16 kg   |
| Fuze                              | M6R   |
| Propelling charge                 | 1 cartridge + 6 extra charges                                     |
| Maximum medium pressure           | $\leq 1030 \text{ kgf/cm}^2$                                      |
| Maximum range                     | ~ 6500 m  |
| Precision                         | $A_p^r/X: \leq 1/125$<br>$A_p^d/X: \leq 1/250$                    |
| Packin                            | Wooden case containing 2 rounds fully equipped.in cardboard cases |
| Full case weight                  | 50 kg   |
| Case overall dimensions           | 950×360×240 mm  |



# 120 mm Mortar bombs

## ROMARM high explosive mortar bombs



High explosive steel mortar bomb round with proximity fuze



High explosive steel mortar bomb round with electronic impact fuze

| Type                                     | High explosive steel mortar bomb round with proximity fuze   | High explosive steel mortar bomb round with electronic impact fuze  |
|--|--|---|
| Caliber                                  | 120 mm   | 120 mm  |
| Length                                   | ~725 mm  | ~725 mm   |
| Weight                                   | ~15 kg   | ~15 kg  |
| Fuze                                     | <ul style="list-style-type: none"> <li>- proximity and electronic fuze with chemical battery</li> <li>- arming distance</li> <li>- electronic jamming protection: cancellation operation of proximity and activation impact</li> <li>- height of bursting: 1 ÷ 5m</li> <li>- works over any type of terrain: dry or wet soil, sand, snow, swamp, water surface, mountain rock</li> </ul> | <ul style="list-style-type: none"> <li>- electronic impact fuze with chemical battery</li> <li>- arming distance: min 40 m</li> </ul> |
| Propelling charge                        | 1 cartridge + 7 extra charges  | 1 cartridge + 6 extra charges   |
| Maximum medium pressure                  | ≤1200 kgf/cm <sup>2</sup>  | ≤1200 kgf/cm <sup>2</sup>   |
| Maximum range                            | ~7000 m  | ~7000 m   |
| Temperature range                        | -40° C ÷ +60° C  | -40° C ÷ +60° C   |
| Precision A <sub>p</sub> <sup>r</sup> /X | ≤1/125   | ≤1/125  |
| Precision A <sub>p</sub> <sup>d</sup> /X | ≤1/250   | ≤1/250  |

### High explosive steel bomb round with enhanced range and sealing ring with SQ electronic impact fuze

|  |   |
|--|---|
| Caliber                                  | 120 mm  |
| Length                                   | ~730 mm   |
| Weight                                   | ~15 kg  |
| Fuze                                     | <ul style="list-style-type: none"> <li>- electronic impact SQ fuze with chemical battery</li> <li>- safety distance: min 40m</li> </ul> |
| Propelling charge                        | 1 cartridge + 6 extra charges   |
| Maximum medium pressure                  | ≤1200 kgf/cm <sup>2</sup>   |
| Maximum range                            | ~7000 m   |
| Temperature range                        | -40° C ÷ +60° C   |
| Precision A <sub>p</sub> <sup>r</sup> /X | ≤1/125  |
| Precision A <sub>p</sub> <sup>d</sup> /X | ≤1/250  |





# Hand grenades with various effects

## ROMARM hand grenades



**F-1 Defensive hand grenade**

The defensive hand grenade is designed to destroy the enemy in uncovered areas and light camp works. The grenade is an explosive type design, and the effect is due to the breakage of the cast iron body as a result of the explosive charge.

|  |                      |
|--|----------------------|
| Grenade type                           | defensive            |
| Function                               | fragmentation        |
| Number of fragments                    | no less than 800 pcs |
| Diameter of the grenade                | max. 56 mm           |
| Weight of the grenade with fuse        | max. 0.566 kg        |
| Weight of the fuse                     | max. 0.055 kg        |
| Weight of explosive charge             | max. 0.060 Kg TNT    |
| Length of the grenade with fuse        | max. 100 mm          |
| Delay time of the fuse with FGM-1 fuse | 3 - 4.5 s            |
| Delay time of the fuse with FGM fuse   | 4 - 4.5 s            |
| Throwing distance                      | 35 - 45 m            |



**M 592 Offensive hand grenade**

The offensive hand grenade is designed to confuse the unsheltered living force of the enemy by noise, blast and light chips. The grenade is of explosive type and the effect is due to the body break and the breaking up of a steel sheet spiral cover as a result of charge explosion.

|  |               |
|--|---------------|
| Diametre of the grenade                | max. 61 mm    |
| Weight of the grenade with fuse        | max. 0.255 kg |
| Weight of the fuse                     | max. 0.055 kg |
| Length of the grenade                  | max. 86 mm    |
| Length of the grenade with fuse        | max. 122 mm   |
| Delay time of the fuse with FGM-1 fuse | 3 - 4.5 s     |
| Delay time of the fuse with FGM fuse   | 4 - 5.5 s     |
| Hand-launching distance                | 35 - 45 m     |

## GMM Multifunctional hand grenade

The multifunctional hand-grenade is designed to eliminate the personnel from the fight, to punch the light armours and to destroy the light constructions.

The action of the grenade is produced by blast, splinters and destroying of light constructions and armours.



| Type                              | Defensive hand-grenade | Offensive hand-grenade | Cumulative explosive grenade  |
|-----------------------------------|------------------------|------------------------|---|
| Number of splinters               | 1500 pieces            | 200 pieces             |   |
| Operation radius of the splinters | max. 30 m              | 5 m                    | Cumulative effect - it punches steel-armours with a tickness of 40 mm |
| Weight with fuse                  | 515 ± 40 g             | 150 g                  |   |
| Fuse type                         | FGM-1                  | FMG-1                  | FGP-1   |
| Delay-time                        | 3 - 4.5 sec.           | 3 - 4.5 sec            | 9.5 - 12.5 sec  |
| Explosive effect                  |                        |                        | distroing light metallic profile constructions and splinters          |



# Hand grenades with various effects

## ROMARM hand grenades



**Multiple consternation grenade**

The multiple consternation grenade allows surprising the opposition by creating multiple effects of consternation in the tactical field . It can be used in urban areas.

|   |  |
|---|--|
| Total weight of the grenade (with fuse)               | 0.300 ± 0.010 kg   |
| Weight of a load of consternation                     | 0.0015 kg  |
| Diameter of grenade                                   | 40 mm  |
| Height of grenade (without fuse)                      | 122 ± 2 mm   |
| Delay time of the fuse                                | 1±0,2 sec.   |
| Number of loads of consternation                      | 9  |
| Delay time until the first load of consternation      | 2 sec.   |
| Delay time between the other 8 loads of consternation | 1.5÷2 sec.   |
| Effect  | consternation (sound and light flash)  |
| Minimum throw distance (recommended)                  | 3 m  |
| Exploitation temperature                              | -25°C ÷ +50°C  |
| Delay time  | between the last effect of the initial consternation grenade up to the first effect of consternation for next grenade must be 3 seconds. |



**GAL Explosive grenade with light-acoustic effect**

Explosive grenades with light-acoustic effect are used by training and re-establishing public order.

|                                       |                 |
|---------------------------------------|-----------------|
| Total weight of grenade               | 0.200 kg        |
| Weight of detachable fuse             | 0.063 kg        |
| Weight of pyrotechnic load            | 0.09 kg         |
| Grenade diameter                      | 45 mm           |
| Shape                                 | cylindrical     |
| Total delay time                      | 0.9 - 1.6 sec   |
| Time after which the fuse is detached | 0.7 - 1.1 sec   |
| Acoustic pressure at 1m distance      | ~0.34 bar       |
| Sound level at 1m distance            | 130 dB          |
| Light effect at 1m distance           | 2.000.000 cd    |
| Operation temperature                 | -25°C .. + 50°C |
| Optional temperature range            | -40°C ÷ +50°C   |



**GMAC - Hand grenade with acoustic effect**

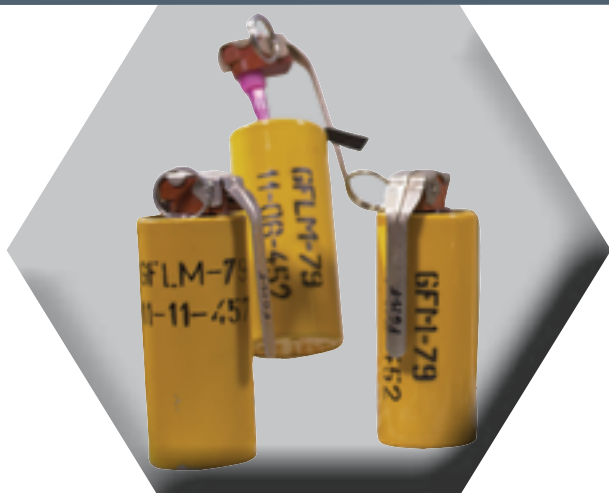
Hand grenades with acoustic effect are used by officers against groups of people causing public disorder which may lead to uncertainty and a state of public fear. When using it does not cause body lesions.

|                                       |                        |
|---------------------------------------|------------------------|
| Total weight of grenade               | 0.232 kg               |
| Weight of detachable fuse             | 0.057 kg               |
| Weight of grenade with FD 2 fuse      | 0.214 kg ± 0.007 Kg    |
| Weight of grenade with FD fuse        | 0.21 kg ± 0.007 Kg     |
| Weight of charge                      | 0.09 Kg 105 ± 0.001 Kg |
| Grenade diameter                      | 72 mm ± 0,2 mm         |
| Shape                                 | Spherical              |
| Grenade material                      | Rubber                 |
| Total delay time                      | 3 ÷ 4 sec              |
| Time after which the fuse is detached | 0.7 ÷ 1.1 sec          |
| Sound level                           | 120 ÷ 140 dB           |
| Hand-launching distance               | 25 ÷ 30 m              |



# Hand grenades with various effects

## ROMARM hand grenades



### GFLM-79 Smoke tear hand grenade

Smoke hand grenades are used for hiding of elements placed on the action field or for signalling, and the smoke – tear effect is used by the authorities to stop aggressive actions of the persons or groups, according to the law.

|                                  |                               |
|----------------------------------|-------------------------------|
| Total weight of grenade          | 0.42 ± 0.01 kg                |
| Weight of fuse FGM-F             | 0.055 ± 0.005 kg              |
| Grenade diameter                 | 55 ± 1mm                      |
| Height of grenade (without fuse) | 127 ± 1mm                     |
| Total delay time of fuse         | 1.2 ÷ 2,2 sec.                |
| Smoking time                     | min 30 sec.                   |
| Delay time                       | max 3 sec.                    |
| Effect                           | smoke / respective tear-smoke |
| Safety distance                  | min 10 m                      |
| Exploitation temperature         | -20°C ÷ +50°C                 |



### GMIL Hand grenade with tear-irritant effect

Tear gas hand grenades are used by police officers against groups of people causing public disorder, which can lead to uncertainty and a state of fear among the population, causing suffocation and a tear gas effect. The use of the product does not cause bodily injuries and the effect wears off after 15-20 min.

|                                       |                                    |
|---------------------------------------|------------------------------------|
| Total weight of grenade               | 0.159 kg ± 0.007 kg                |
| Weight of detachable fuse             | 0.057 kg                           |
| Weight of tear charge                 | 0.03 ± 0.001 kg                    |
| Charged with (irritant gas)           | CS ortho-chloro-benzal-malonitrile |
| Smoke version                         | white                              |
| Grenade diameter                      | 72 mm                              |
| Shape                                 | Spherical                          |
| Grenade material                      | Rubber                             |
| Total delay time                      | 3 - 4 sec (or 2-3 sec)             |
| Time after which the fuse is detached | 0.7 - 1.1 sec                      |
| Hand-launching distance               | 25 - 30 m                          |
| Dissemination area                    | 6 m <sup>2</sup>                   |



### GFFC - Smoke grenades with colored smoke

Hand grenades with colored smoke are pyrotechnical objects designed for execution of the signalization markings in the tactical field or special effects in the festive demonstrations.

|                                       |   |
|---------------------------------------|---|
| Form of grenade                       | cylinder  |
| Diameter of grenade                   | 55 mm   |
| Length of grenade with protection lid | 87 ± 5 mm   |
| Weight of grenade                     | 0.200 Kg  |
| Effect                                | column of smoke   |
| Emission of different colors          | red, yellow, green, white, orange, blue                                 |
| Emission time                         | min. 40 seconds where the smoke disperse and form a consistency curtain |
| Temperature                           | -32°C ÷ +49°C   |

# Training hand grenades

## ROMARM training grenades



|                                 | Training grenade F-1 T  | Training grenade GMIL-T   | Training grenade GMM-T  |
|---------------------------------|---|---|---|
| Usability                       | Training grenade used to familiarize and practice throwing the defensive hand grenades (F-1, respectively RG-42). | Training grenade GMIL-T for Law Forces is used to familiarize and practice throwing irritating tear gas grenades that cause disruption to public order and peace. | Training grenade GMM-T is best choice for practice throwing the multifunctional grenades (GMM). |
| Diameter                        | 56 mm   | 72 mm   |   |
| Detachable fuse weight          |   | 0.058 kg  |   |
| Lenght of grenade with fuse     | 100 mm  |   | 130 mm  |
| Weight of grenade with fuse     | 0.588 kg  | 0.123   | 0.463 kg  |
| Fuse type                       | FGMR-T  | detachable  | FGM-1T  |
| Fuse weight                     | 0.056 kg  |   | 0.058 kg  |
| Grenade shape                   | sferical  | sferical  | tubular   |
| Grenade diameter                |   |   | max. Ø 50   |
| Grenade type                    | training  | training  | training  |
| Grenade body material           |   | rubber  |   |
| Effect                          | curtain of smoke and noise  | curtain of smoke and noise  | curtain of smoke and noise  |
| Delay time                      | 3 ÷ 4.5 sec   | 3 ÷ 4 sec   | 3 ÷ 4.5 sec   |
| Time after the fuse is detached |   | 0.7 - 1.1 sec   |   |
| Throwing distance               | 15 ÷ 45 m   | 15 ÷ 30 m   |   |
| Operating temperature           | -40° ÷ +50°C  | -30° ÷ +50°C  | -40° ÷ +50°C  |

### KIT-K9

#### Explosive kit for dog training

The kit is intended for the traning and certification of explosive detection dogs (EDD) or explosive detection canine teams (EDDT). The explosive kit (TRUSA-K9) is used to train dogs because is a system of odor storage and delivery devices (DPLM) from real explosive materials.



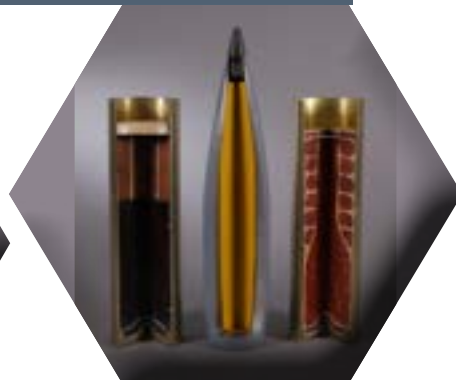
|                             |  |
|-----------------------------|--|
| Kit package                 | TRUSA-K9 - 10 types of explowswive materials for military & civilian use |
| Code of explosive materials | TNT, RDX, PETN, C-4, SEMTEX, DINAMITE, AN, BP, SGP, DBP                  |
| Total kit mass              | 8300±50 g  |
| Transport bag mass          | 2800±25 g  |
| Total mass of explosives    | 2400 ± 10 g  |
| Mass of DPLM V1 loaded      | 1050 ± 50 g  |
| Mass of DPLM V2 loaded      | 405 ± 50 g   |
| Mass of DPLM V3 loaded 1    | 250 ± 50 g   |
| Mass of DPLM V3 loaded 2    | 225 ± 50 g   |
| Mass of DPLM V4 loaded      | 200 ± 50 g   |
| Outer length of the kit     | 413 mm   |
| The outer width of the kit  | 327 mm   |
| The outer heigth of the kit | 171 mm   |





# AMMUNITION

## ROMARM artillery ammunition



|                                       | 100 mm Artillery ammunition   |                                |                                     | 130 mm Artillery ammunition       |                             | 152 mm Artillery ammunition             |                            |
|---------------------------------------|---|--------------------------------|-------------------------------------|-----------------------------------|-----------------------------|---|----------------------------|
| GUN TYPE                              | D-10 SERIES TANK GUNS; FIELD GUN BS-3 (MD 44, MD 53); AA KS-19; TOWED ANTI-TANK GUN M77; COAST GUN (YUGOSLAVIA); T59 (CHINA); SELFGUN |                                |                                     | FIELD GUN M-46 ; TOWED GUN Md. 82 |                             | HOWITZER GUN Md. 37 AND HOWITZER Md. 81 |                            |
| TYPE OF PROJECTILE                    | HIGH EXPLOSIVE OF-412 HE  | 100 mm APFSDS-T                | ARMOUR PIERCING TRACER BR-412B AP-T | HIGH EXPLOSIVE HE (OF-482M)       | HIGH EXPLOSIVE HE (OF-482M) | FULL-VARIABLE CHARGE                    | HIGH EXPLOSIVE (OF-540) HE |
| Propelling charge                     | Full  | Specially                      |                                     | Full-variable                     | Reduced-variable            | Full-variable charge                    | Reduced-variable charge    |
| Maximum range                         | 19800 m   | 5000 m                         | 4000 m                              | 26800                             | 22000                       | 17000                                   | 13000                      |
| Muzzle velocity                       | 900 m/s   | 1400 m/s                       | 887 m/s                             | 930 / 810                         | 705 / 525                   | 655 / 462                               | 425 / 282                  |
| Average maximum pressure              | 3000 kgf/cm <sup>2</sup>  | 3700 kgf/cm <sup>2</sup>       | 3000 kgf/cm <sup>2</sup>            | 3150                              | 2700 / 1100                 | 2350 / 900                              | 1800 / 750                 |
| Total length                          | 1095 mm   | 1060 mm                        | 992 mm                              | Non-coupled                       | Non-coupled                 | Non-coupled                             | NON-COUPLED                |
| Cartridge case                        | 695 mm  | 695 mm                         |                                     | 846                               | 846                         | 547                                     | 547                        |
| Projectile                            | 429 mm  | 584 mm                         |                                     | 676                               | 676                         | 706                                     | 706                        |
| Total weight                          | 30.32 kg  | 21.3 kg                        | 30.6 kg                             | 59                                | 52                          | 59.28                                   | 54.26                      |
| Cartridge case with propelling charge | 14.72 kg  | 15.5 kg                        |                                     | 25.6                              | 18.6                        | 15.72                                   | 10.70                      |
| Projectile                            | 15.6 kg   | 5.8 kg                         |                                     | 33.4                              | 33.4                        | 43.56                                   | 43.56                      |
| Fuze type                             | V-429   | -                              |                                     | V-429                             | V-429                       | RGM-2                                   | RGM-2                      |
| Blasting charge                       | TNT   | -                              | A-IX-2                              | TNT                               | TNT                         | TNT                                     | TNT                        |
| Propelling charge                     | NDT 3 18 / 1  | M-30                           | NDT3 18/1                           | NDT 3 23 / 1                      | 9 / 7 + 12 / 1 TR           | NDT 3 16 / 1                            | 4 / 1 V / A + 7 / 7        |
| Power of piercing                     | -   | 425 mm at 1000 m 90 °          |                                     |                                   |                             |   |                            |
| Self-destruction time                 | -   | -                              |                                     |                                   |                             |   |                            |
| Self-destruction range                | -   | -                              |                                     |                                   |                             |   |                            |
| Packing                               | Wooden case   | Fiber container in wooden case |                                     |                                   |                             |   |                            |
| No. of rounds per case                | 2 pcs   | 2 pcs                          |                                     |                                   |                             |   |                            |
| Case dimensions                       | 1200 x 445 x 265 mm   | 1200 x 405 x 215 mm            |                                     |                                   |                             |   |                            |
| Gross weight                          | 85 kg   | 70 kg                          |                                     |                                   |                             |   |                            |



# Artillery ammunition

## ROMARM artillery ammunition

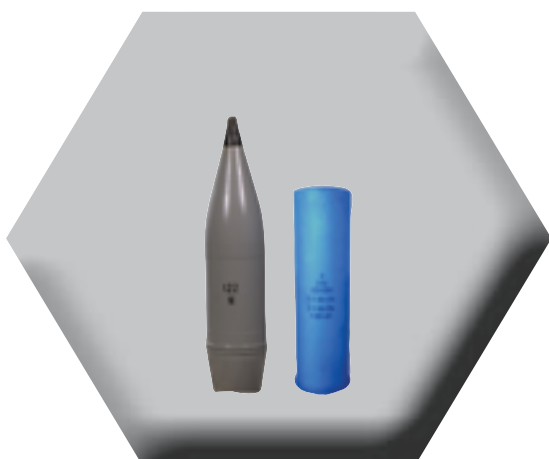


### 100 mm BR-412 (AP-T)

|                                       |                                  |
|---------------------------------------|----------------------------------|
| Type of projectile                    | Perforant trasor BR- 412B (AP-T) |
| Fuze type                             | MD - 8M1 or DBR-2                |
| Muzzle velocity                       | 887 m/s                          |
| Average maximum pressure              | 3000 kgf/cm <sup>2</sup>         |
| Propelling charge                     | NDT3 18/1                        |
| Blasting charge                       | A-IX-2                           |
| Power of piercing                     | 150 mm at 1.000 m-90°            |
| Maximum range                         | 4 000 m                          |
| Total lenght                          | 992mm                            |
| Cartridge case                        | 695 mm                           |
| Projectile                            | 360 mm                           |
| Total weight                          | 30.60 kg                         |
| Cartridge case with propelling charge | 14.72 kg                         |
| Projectile                            | 15.88 kg                         |

### 105 mm artillery ammunition

|                      |                                    |
|----------------------|------------------------------------|
| Gun type             | ALL 105 mm; L7; Rh 105, M 68, GT 7 |
| Type of projectile   | High explosive                     |
| Muzzle velocity      | Max. 683                           |
| Maximum range        | 11 000 m                           |
| Lenght of projectile | 418 mm                             |
| Weight of projectile | 14.3 kg                            |
| Blasting charge      | TNT                                |



### 122 mm Ammunition

122 mm Ammunition calibre with explosive projectile and complete charge with RGM-2 or V-429 fuze, and with explosive projectile and variable reduced charge.

| Type                              | Complete charge          | Variable reduced charge  |
|-----------------------------------|--------------------------|--------------------------|
| Howitzer type                     | D-30                     | D-30                     |
| Calibre                           | 122 mm                   | 122 mm                   |
| Ammunition type                   | non - coupled            | non - coupled            |
| Maximum range                     | 15 290 m                 | 12 840 m                 |
| Type projectile                   | HE                       | HE                       |
| Weight of explosion charge (TNT)  | 3.5 kg                   | 3.5 kg                   |
| Projectile weight with fuze       | 21.76 kg                 | 21.76 kg                 |
| Projectile length, with fuze max. | 564.6 mm                 | 564.6 mm                 |
| Type propelling charge            | complete                 | reduced                  |
| Propelling charge length          | ~3.8 kg                  | ~2.43 kg                 |
| Muzzle velocity                   | 690 m/s                  | 565 m/s                  |
| Average maximum pressure          | 2500 Kgf/cm <sup>2</sup> | 1950 Kgf/cm <sup>2</sup> |
| Cartridge tube height             | 447 mm                   | 447 mm                   |
| Fuze type                         | RGM-2                    |                          |
| Operating mode fuze               | point detonating         | point detonating         |



# Artillery ammunition

## ROMARM artillery ammunition



### 155 mm artillery ammunition

|                          |  |
|--------------------------|--|
| Gun typ                  | All 39 cal. Barrel such as the FH 70, M 109, M 198, Howitzer |
| Type of projectile       | High explosive M 107   |
| Components made in plant | Reduced –Variable Charge                                     |
| Muzzle velocity          | Max. 830   |
| Maximum range            | 24 000 m   |
| Lenght of projectile     | 605 mm   |
| Weight of projectile     | 43.88 kg   |
| Blasting charge          | TNT or Comp. B   |

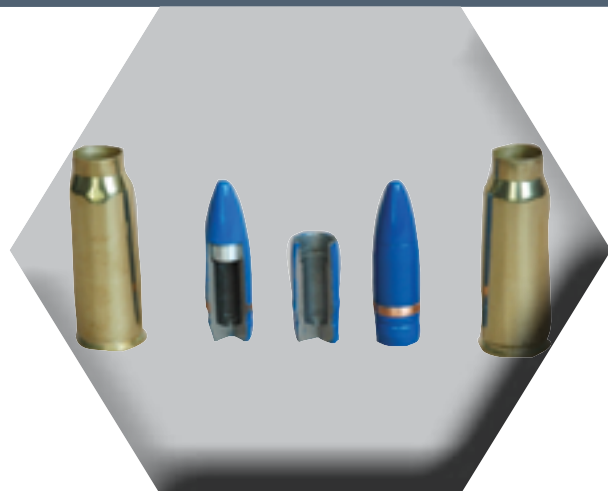


### 76 mm artillery ammunition

| GUN TYPE  | MOUNTAIN GUN MD 48 B1 A5 AND MD.82 |  |                            | 76 mm ALL GUNS                       | DIVISIONAL GUN Md.42 And selfgun Md.t 76 |                                       |
|---|------------------------------------|--|----------------------------|--------------------------------------|--|---------------------------------------|
| TYPE OF PROJECTILE  | EXPLOZIVE OF-350 (HE)              | CUMULATIVE WITH MLRBK-354 M HOLLOW CHARGE HEAT-T | FUMIGEN D-350 SMOKE        | FESTIVITY (without projectile) BLANK | EXPLOZIVE OF-350 (OF-350)                | ARMOUR PIERCING TRACER BR-350B (AP-T) |
| FUZE TYPE   | UP-3 or                            | RGM-2  | GPV-2R                     | RGM-2                                | KTM-1-U                                  | MD-8                                  |
| MUZZLE VELOCITY   | 398 / 222 m/s                      | 410 m/s  | 398 / 222 m/s              | -                                    | 680 m/s                                  | 680 m/s                               |
| AVERAGE MAXIMUM PRESSURE                                      | 1950/490 Kgf/cm²                   | 1900 kgf/cm²                                     | 1950/490 Kgf/cm²           | -                                    | 2380 kgf/cm²                             | 2380 kgf/cm²                          |
| PROPELLING CHARGE   | 5/7                                | 5/7  | 5/7                        | P -55                                | 9/7                                      | 9/7                                   |
| BLASTING CHARGE   | TNT                                | A-IX-2   | TNT                        | -                                    | TNT                                      | A-IX-2                                |
| POWER OF PIERCING   | -                                  | 80 mm at 100 mm -60°                             | -                          | -                                    | -  | 60 mm at 100 m--90°                   |
| MAXIMUM RANGE   | 8 600 m                            | 1 000 m  | 8 600 m                    | -                                    | 13 300 m                                 | 4000 m                                |
| SMOKE PERSISTANCE   | -                                  | -  | Min. 20 s                  | -                                    | -  | -                                     |
| TOTAL LENGTH CARTRIDGE CASE PROJECTILE                        | Non coupled 386 mm 357 mm          | 725 mm 386 mm 495 mm                             | Non coupled 386 mm 357 mm  | - 165 mm -                           | 165 mm 386 mm 343 mm                     | 642 mm 386 mm 309 mm                  |
| TOTAL WEIGHT CARTRIDGE case with propelling charge PROJECTILE | 8.564 kg 2.294 kg 6.270 kg         | 8.175 kg 2.110 kg 6.065kg                        | 8.564 kg 2.294 kg 6.270 kg | 1.420 kg - -                         | 9.000 kg 2.800 kg 6.200 kg               | 9.300 kg 2.800 kg 6.500 kg            |

# Artillery ammunition

## ROMARM artillery ammunition

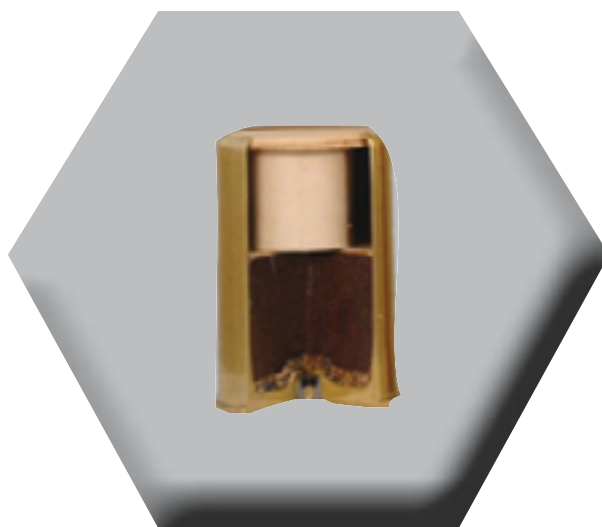


### 20 mm artillery ammunition components

| Gun Type                       | M 621, M 61A, M39, M50, M61A1, M168, M197, MK22, US GAU-4, MK 29 GUNS |                              |
|--------------------------------|---|------------------------------|
| Type of projectile             | Training with tracer TP-T   | Training without tracer TP   |
| Components made in plant       | Projectiles, tracer, cartridge cases                                  | Projectiles, cartridge cases |
| Muzzle velocity                | 1030 m/s  | 1030 m/s                     |
| Tracer burning time            | Min.2   | -                            |
| Total length                   | 168 mm  | 168 mm                       |
| Cartridge case                 | 102 mm  | 102 mm                       |
| Projectile                     | 86.8 mm   | 86.8 mm                      |
| Total weight                   | 0.262 kg  | 0.260 kg                     |
| Cartridge case with propelling | 0.103 kg  | 0.101 kg                     |
| Projectile                     | 0.159 kg  | 0.159 kg                     |

### 100 mm blank / festivity artillery ammunition

| Type of projectile                    | Festivity (Blank) |
|---------------------------------------|-------------------|
| Fuse type                             | -                 |
| Muzzle velocity                       | -                 |
| Average maximum pressure              | -                 |
| Propelling charge                     | P 55              |
| Blasting charge                       | -                 |
| Maximum range                         | -                 |
| Cartridge case                        | 246 mm            |
| Cartridge case with propelling charge | 6 kg              |



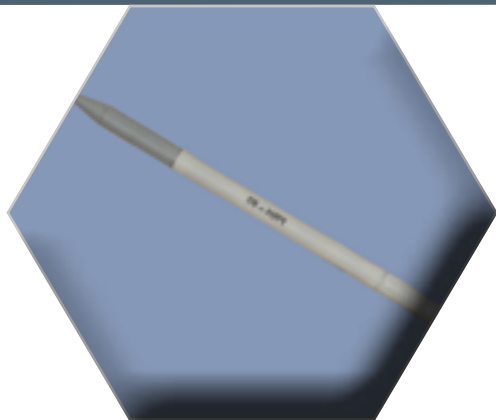
### 130 mm artillery ammunition

| Type of projectile                    | Explosive with BB (HE)    |
|---------------------------------------|---------------------------|
| Fuse type                             | ZETA                      |
| Muzzle velocity                       | 930 / 810 m/s             |
| Average maximum pressure              | 3150 kgf /cm <sup>2</sup> |
| Propelling charge                     | NDT 3-23-1                |
| Blasting charge                       | TNT                       |
| Maximum range                         | 35 000 m                  |
| Total lenght                          | Noncoupled                |
| Cartridge case                        | 846 mm                    |
| Projectile                            | 676 mm                    |
| Total weight                          | 59 kg                     |
| Cartridge case with propelling charge | 25.6 kg                   |
| Projectile                            | 33.4 kg                   |



## Rockets and missiles

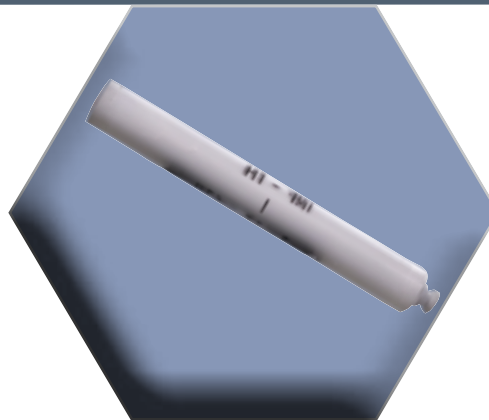
### ROMARM rockets



#### PRN-80 Air-to-ground rocket

PRN-80 rocket is used on aircrafts and helicopters against ground targets: self-propelled artillery, infantry combat vehicles, armored personnel carriers, missile systems, radars, grounded aircrafts and helicopters, fuel warehouses, trains and personnel. The PRN-80 rocket is fully compatible with the aircrafts and helicopters using 20-tubes launchers.

|                        |                        |
|------------------------|------------------------|
| Platform               | MIG-29, MI-8/17, MI-28 |
| Launching altitudes    | 300 - 1000 m           |
| Optimal slant range    | 2000 m                 |
| Rocket weight          | 12 kg                  |
| Warhead weight         | 3.2 kg                 |
| Warhead type           | Hollow charge - HE     |
| Armour penetration     | 380 ÷ 400 mm RHA       |
| Fragmentation          | +500 pre-fragmented    |
| Fuze type              | impact                 |
| Caliber                | 80 mm                  |
| Length (before launch) | 1566 mm                |
| Fins span              | 374 m                  |



#### Infrared flare IRF-TH

Infrared flares are designed to achieve a drawn bright emission in the near infrared spectrum (N.I.R).

|                              |  |
|------------------------------|--|
| Outer case                   | Steel  |
| Max. gross weight            | 210 g  |
| Mass composition             | ~ 119 g  |
| Charged flare diameter       | max. 25.4 mm   |
| Flare length                 | max. 200.8 mm  |
| Operational speed            | Up to 400 Kts  |
| Fuze head circuit resistance | 1.25 ÷ 2.25 ohms   |
| Circuit test current         | max. 30 mA/10 sec  |
| Min. firing current          | 1A/10 msec   |
| Burning time                 | min. 60 sec  |
| Output                       | min. 400W/sr in the 2.9 ÷ 5.5 microns bandwidth                                  |
| Storage conditions           | - stable temperature between -32° C ÷ +40° C / - relative humidity less than 70% |



#### Smart tactical advanced rocket star-80L

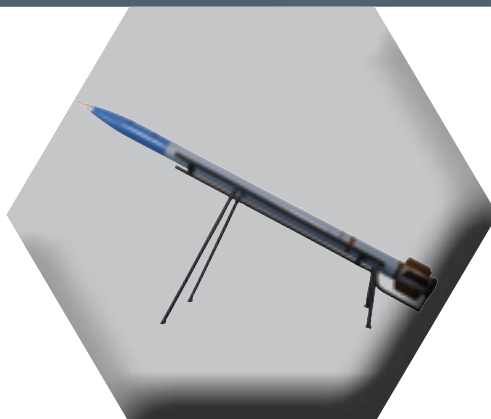
The weapon is designed to combat small fixed and mobile ground targets as APC's, tactical vehicles, command points, shelters, other unarmoured and armoured means, resistance points and river boats. The missile can be delivered by grounded or heliborne weapon systems and guided until the target from launching platform or from an advanced designation team. Accuracy and controlled blast effects allows this weapon to be widely used in urban warfare and especially in anti-terror operations.

|                                 |  |
|---------------------------------|--|
| Caliber                         | 80 mm  |
| Length                          | 1800 mm  |
| Weight                          | 13.5 kg  |
| Warhead weight                  | 3 kg HEBF  |
| Range                           | 1000 ÷ 6000 m  |
| Accuracy                        | 1.5 m CEP  |
| Period of maintaince in service | The launcher - 20 years / the missiles 10 years.   |
| Primary platforms               | - Attack and support helicopters / - Light APC's and unarmoured tactical vehicles / - Man-portable (detachable) firing post (optional) |



# Rockets and missiles

## ROMARM rockets



### 122 mm Reactive ammunition

| Ammunition                        | ER with MFF-2T fuze                       | ER with MRV-UBM fuze                      | with MRV-U fuze                           | with HE-TB warhead and MRV-U fuze         | with MRV-U fuze and preformed elements    |
|-----------------------------------|---|---|---|---|---|
| - caliber                         | 122 mm                                    | 122 mm                                    | 122 mm                                    | 122 mm                                    | 122 mm                                    |
| - max. range                      | 42 km                                     | 42 km                                     | 20.4 km                                   | 20.4 kg                                   | 20.4 km                                   |
| - length (incl. fuze)             | 2860 mm                                   | 2810 mm                                   | 2875 mm                                   | 2875 mm                                   | 2875 mm                                   |
| - weight (incl. fuze)             | 64.5 kg                                   | 65 kg                                     | 66 kg                                     | 62.5 kg                                   | 66.5 kg                                   |
| - max. velocity                   | 1230 m/s                                  | 1230 m/s                                  | 690 m/s                                   | 690 m/s                                   | 690 mm                                    |
| - operating temperature           | -40° C ÷ +50° C                           | -40° C ÷ +50° C                           | -32° C ÷ +50° C                           | -32° C ÷ +50° C                           | -40° C ÷ +50° C                           |
| <b>Warhead</b>                    |   |   |   |   |   |
| - type                            | HE  | HE  | HE  | HE-TB                                     | HE with performed elements                |
| - weight                          | 18.4 kg                                   | 18.4 kg                                   | 18.4 kg                                   | 18.4 kg                                   | 18.4 kg                                   |
| - explosive charge weight         | 6.35 kg                                   | 6.35 kg                                   | 6.35 kg                                   | 3.25 kg                                   | 4.8 kg                                    |
| <b>Reactive motor</b>             |   |   |   |   |   |
| - type                            | Composite powder                          | Composite powder                          | Double base                               | Double base                               | Double base                               |
| - weight                          | 41.7 kg                                   | 41.7 kg                                   | 47.1 kg                                   | 47.1 kg                                   | 47.1 kg                                   |
| - powder weight                   | 24.8 kg                                   | 24.8 kg                                   | 20.65 kg                                  | 20.65 kg                                  | 20.65 kg                                  |
| - burning time                    | 3 sec. (at 20° C)                         | 3 sec. (at 20° C)                         | 2.2 sec. (at 20° C)                       | 2.2 sec. (at 20° C)                       | 2.2 sec. (at 20° C)                       |
| - initiation current              | 0.45 A                                    | 4 A                                       | 0.45 A                                    | 0.45 A                                    | 0.45 A                                    |
| - stabilization                   | aerodynamic by rotation (4 folding wings) | aerodynamic by rotation (4 folding wings) | aerodynamic by rotation (4 folding wings) | aerodynamic by rotation (4 folding wings) | aerodynamic by rotation (4 folding wings) |
| <b>Fuze</b>                       |   |   |   |   |   |
| - type                            | MFF-2T                                    | MRV-UBM                                   | MRV-U                                     | MRV-U                                     | MRV-U                                     |
| - weight                          | 1050 ± 30 g                               | 750 g                                     | 710 g                                     | 710 g                                     | 710 g                                     |
| - lenght                          | max. 245 mm                               | 191,42÷195,04 mm                          | -   | -   | -   |
| - safety distance from the muzzle | 150 ÷ 400 m                               | 150 ÷ 400 m                               | 150 ÷ 400 m                               | 150 ÷ 400 m                               | 150 ÷ 400 m                               |



### TPDM-01 Parachute target

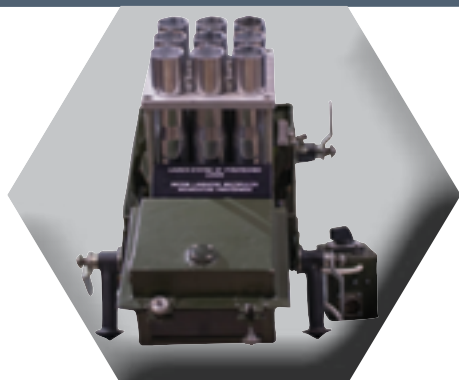
The TPDM-01M parachute target has been conceived to simulate a real aerial target radiating in IR and reflecting waves like a fighter-bomber aircraft. It is used for training and practice firing with IR and radar guided missiles air to air as well as surface to air. It can be also used for training proposes by the surveillance radar operators.

|  |  |
|--|--|
| External diameter  | 280 mm   |
| Total weight   | 4 kg   |
| Maximum dropping altitude                                  | 10.000 m   |
| Torch burning time   | - at ground level 3 min.<br>- at 10.000 ÷ 8.000 m 5 min. |
| Torch light intensity at ground level min.                 | 900.000 Cd   |
| Descending speed with burning torch and deployed reflector | - at 10 000 ÷ 8 000 m 12 m/s<br>- at H<4 000 m 4 m/s     |



# Miscellaneous products

## ROMARM dedicated products



### Launch system of pyrotechnic loads

A great launch system designed to launch multiple shells **with different effects**:

- shell with consternation effect-symbol LEC, that produce flash of light intensity at 1m distance ~1.800.000Cd; noise intensity: max 120dB at 1m distance; a pressure wave: max 0.25 bar at 1m distance.
- shell with termitic effect-symbol LET, that produce outbreaks with temperatures around 2000° C;
- shell with smoke-tear effect-symbol LEFL, that produce curtains of tear-smoke for a period of at least 20 sec.

Launcher systems are used to combat terrorism, at tactical actions.

|  |  |
|--|--|
| Vertical angle of shooting, from the ground              | min.40° ÷ max.80°  |
| Weight of the launcher (without module with the 9 pipes) | 16.5 kg  |
| Weight module with the 9 pipes                           | 10.8 kg  |
| Shooting distance by firing angle                        | 70 ÷ 140 m   |
| Accuracy of the target                                   | ± 10 m   |
| Initiating of shells                                     | Electric   |
| Power supply   | autonomous from its own battery or lighter car           |
| Battery type   | BB BATTERY BP7-12 (12V, 7AH/20HR)                        |
| Voltage time to initiation                               | 12 ± 2Vcc  |
| LET & LEC after launch                                   | 6 ÷ 8 seconds  |
| LEFL after launch  | 3 ÷ 4 seconds  |
| Launcher system  | module with 9 pipes                                      |
| Launch opportunities                                     | one by one; series of 3 shells; series of 9 shells       |
| Launch system  | double - with electronic programmer or sequential switch |
| Temperature range that launcher can operate              | -25° C ÷ +50° C  |



### 56 mm Cartridge with nonlethal CC 56 kinetic projectile

The cartridge caliber 56 with nonlethal kinetic projectile is designed to prevent and neutralize the aggressive actions of individuals or groups of individuals who seriously disturb the public order.

Compatible launcher: Individual launcher cal. 56 Cougar or Chouka model.

|                                  |                  |
|----------------------------------|------------------|
| Cartridge diameter               | Ø 56 mm          |
| Cartridge length                 | 85 ± 0.5mm       |
| Round weight                     | 0.160 ± 0.003 kg |
| Kinetic projectile weight        | 0.082 kg         |
| Propelling charge weight (TO-34) | 0,045 kg         |
| Ignition cap by percussion       | E96              |
| Initial velocity average         | 60 ± 3 m/sec     |
| Kinetic energy 5m                | 157 J            |
| Maximum effective range          | 25 m             |
| Cartridges dispersion at 25 m    | Rmed ≤ 30 cm     |
| Rate of fire                     | 3 ÷ 5 shots/min  |
| Operating temperature            | -30°C ÷ +50°C    |

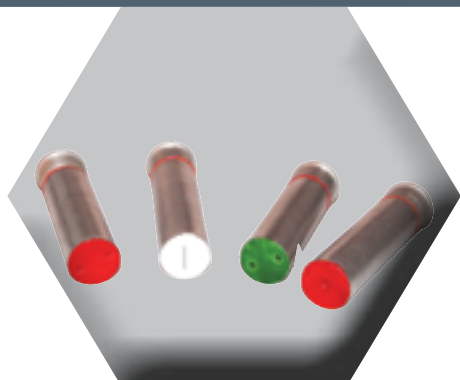
### Electronic Countermeasure Munition for MIG - 21 Lancer, IAR - 99 SOIM, IAR - 330 H aircraft type



|   | Munition with                  |                              |                                |
|---|--------------------------------|------------------------------|--------------------------------|
|   | Thermal decoy (IR)             |                              | Electromagnetic decoy (RL)     |
| Type munition                           | 1"x1"x8"                       | 1"x2"x8"                     | 1"x1"x8"                       |
| Dimensions                              | 206.5 mm<br>24.4 mm<br>24.4 mm | 206.5 mm<br>24.4 mm<br>52 mm | 206.5 mm<br>24.4 mm<br>24.4 mm |
| Total weight                            | 0.21 kg                        | 0.45 kg                      | 0.18 kg                        |
| Working temperature                     | -40 ÷ +60°C                    | -40 ÷ +60°C                  | -40 ÷ +60°C                    |
| Storage temperature                     | -40 ÷ +60°C                    | -40 ÷ +60°C                  | -40 ÷ +60°C                    |
| Number strokes on the dispersion device | 30 pcs                         | 15 pcs                       | 30 pcs                         |
| Charge converging band IR or LR         | 3 ÷ 5 µm                       | 3 ÷ 5 µm<br>8 ÷ 16 µm        |                                |
| Priming Mode                            | Electric                       | Electric                     | Electric                       |
| Type of electric primer CAP             | CE - 1                         | CE - 1                       | CE - 1                         |
| Charging voltage                        | 27 ± 10% Vcc                   | 27 ± 10% Vcc                 | 27 ± 10% Vcc                   |

# Miscellaneous products

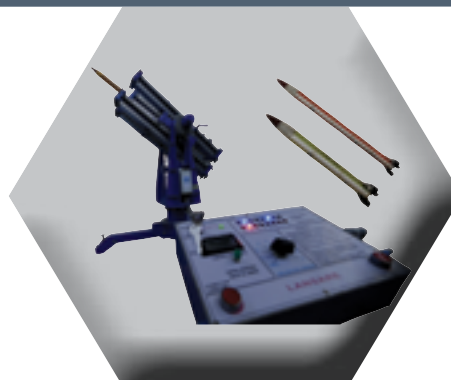
## ROMARM dedicated products



### Tears gas shell CC38-FL (IRRITANT CS)

The tear gas shells 38 mm caliber is used by the police and is designed to prevent and neutralize the aggressive actions of groups who seriously disrupting public order according to the law.

|  |                     |
|--|---------------------|
| Shell diameter                                   | 38 ± 0,3 mm         |
| Height of shell                                  | 138,5 ± 1 mm        |
| Weight of shell                                  | 0.218 ± 0.007 kg    |
| Weight of pyrotechnic charge                     | 0.0026 kg           |
| Weight of tear smoke charge                      | 0.084 ± 0.003 kg    |
| Irritant gas CS (ortho-chloro-benzal malonitril) | CIC6H4CH = C (CN) 2 |
| Smoking time                                     | min 20 sec          |
| Delay time                                       | 4 sec               |
| Range (short / long)                             | 85 ± 140 m          |
| Operational temperature range                    | -30°C ÷ +50°C       |



### Anti hail system

The anti-hailstone system is designed to fight against the hailstone falls.

To ensure a fast and efficient intervention, the system is structured in several units of combating the hailstone falls, each unit covering an area of about 100,000 ha.

The structural elements of each unit are as follows:

- command posts for conducting the anti-hailstone operations
- launching posts for the anti-hailstone rockets, with launching installations and rockets storage
- meteorological radars for discovering the hailstone clouds
- rockets for spreading the cloud condensation agents and launching installation
- communications means

Through the actions conducted using the anti-hailstone equipment, it is ensured a protection level of at least 75%. The elements of the rocket structure are mainly biodegradable.

|                           |                      |                   |                |
|---------------------------|----------------------|-------------------|----------------|
| Caliber                   | 82,5 mm              | LARMA-1           | Launcher       |
| Length                    | 1,4 m / 1,1 m        | Weight            | 600 kg         |
| Weight                    | 8,8 kg / 6,6 kg      | No of rails       | 8              |
| Workload weight           | 0.66 kg              | Op Mode           | manual/remote  |
| Number of active cores    | 3 x 10 <sup>15</sup> | Ignition mode     | electric 24Vcc |
| Maximum trajectory height | 9300 m               | Selfdestruct time | ~ 45 sec       |
| Maximum range             | 12000 m / 7000 m     |                   |                |

### Remote control weapon station turret RCWS - RO



|  |   |  |                           |
|--|---|--|---------------------------|
| Caliber  | 7.62 x 51 / 54 mm<br>12.7 x 99 / 108 mm | Feature multifunctional display  |                           |
| Weapon assembly, actuating system (WA + AS)  |   | Provides stadia scale for estimated distance-to-target before firing                                 |                           |
| Azimuth range  | nx360°                                  | Display the elevation angle according to the approximated stadia scale, made by Fire Control Systems |                           |
| Elevation range (Up)   | +60° ± 2°                               | Provides brightness and contrast adjustments   |                           |
| Elevation range (Down)   | +20° ± 2°                               | Size   | 10.4"                     |
| Azimuth speed - high<br>Azimuth speed - low  | min 1 rad / s<br>max 0.27 mrad / s      | Input  | VGA/PAL - composite video |
| Elevation speed - high<br>Elevation speed - low  | min 0.4 rad / s<br>max 0.27 mrad / s    | Supply voltage   | 22 - 30 Vcc               |
| Weight without gun and ammunition  | max 165 kg                              | Environmental conditions according to military standards   |                           |
| Overall dimensions - length<br>Overall dimensions - width<br>Overall dimensions - height | 849 mm<br>602 mm<br>671 mm              | Electrical power usage - Nominal usage   | max 160 w                 |
| Protection (N.I.J. 0108.01)  | Level 3                                 | Electrical power usage - Peak demand < 1second   | max 600 w                 |





# COMPONENTS AND PARTS

ROMARM | Components for ammunition



# Components and parts

## ROMARM fuze parts



### V-429 Point detonating fuze

Outfitting of 76 mm, 85 mm, 100 mm, 122 mm, 130 mm si 152 mm HE round.

|   |  |
|---|--|
| <b>Fuze type</b>                                  | Nose fuze, with impact functioning.              |
| <b>Adapter theard</b>                             | Sp 36.18x10/inch                                 |
| <b>Outer diameter</b>                             | max. 40 mm                                       |
| <b>Total length</b>                               | max. 105.7 mm                                    |
| <b>Length of screwed area into the projectile</b> | 45.2 ÷ 46.8 mm                                   |
| <b>Mass</b>                                       | 0.43 kg  |
| <b>Safety distance from muzzle</b>                | min. 5 ÷ 7 m                                     |
| <b>The fuze operates at impact</b>                | - D -instantaneus<br>- I - with delay (27÷56) ms |



### RGM-2 Point detonating fuze

Outfitting of 76 mm, 122 mm and 152 mm HE round.

|   |   |
|---|---|
| <b>Fuze type</b>                                  | Nose fuze, with impact functioning.           |
| <b>Adapter thread</b>                             | Sp 36.18x 10/inch                             |
| <b>Outer diameter</b>                             | max. 40 mm                                    |
| <b>Total length</b>                               | max. 105.7 mm                                 |
| <b>Length of screwed area into the projectile</b> | 45,2 ÷ 46,8 mm                                |
| <b>Mass</b>                                       | 0.43 kg                                       |
| <b>Safety distance from muzzle</b>                | min. 5 ÷ 7 m                                  |
| <b>The fuze operates at impact</b>                | D- instantaneous<br>I - with delay (27÷56) ms |

### MRV-U Fuze

Outfitting of 122 mm HE Rocket Rounds, type M21 OF.

|                       |   |  |  |
|-----------------------|---|--|--|
| <b>Fuze type</b>      | Nose fuze with impact functioning   | <b>Detonator</b>   | RDX-tipA IX-1  |
| <b>Adapter thread</b> | Sp.44,96 x 2 turns/inch   | <b>Functioning temperature range</b>                     | -40°C÷+50°C  |
| <b>Outer diameter</b> | max.: Ø 64 mm   | <b>Safety distance from muzzle</b>                       | 50 ÷ 400 m   |
| <b>Length</b>         | 191.42 ÷ 195.04 mm  | <b>Length of screwed area into the projectile</b>        | 53.01 ÷ 54.39 mm   |
| <b>Mass</b>           | 0.75 kg   | <b>The fuze operates at impact. Ways of functioning:</b> | <ul style="list-style-type: none"> <li>• "00"(0) instantaneus - adjustment performed by manufacturer</li> <li>• "+" with long delay - 0.007÷0.013 s</li> <li>• "0" with short delay - 0.001÷0.005 s</li> </ul> |
| <b>SHELF LIFE</b>     | Min. 15 years-if kept in original packing and observing the Storage Directions sent by manufacturer | <b>Adjustments</b>                                       | for "+" or "0" functioning are to be performed prior to firing by rotating the adjusting device with a special key.  |



# Components and parts

## ROMARM fuze parts



### MFF-2T Multiple function fuze

|                                 |   |   |                           |
|---------------------------------|---|---|---------------------------|
| <b>Destination</b>              | MFF-2T is designed for 122 mm reactive ammunition.  | <b>Length (max)</b>                                 | 245 mm                    |
| <b>Fuze type</b>                | Fuze with air drive generator and proximity, time and impact performance.                                       | <b>Weight (max)</b>                                 | 1050 ± 30 g               |
| <b>Operation selection mode</b> | cable programmer  | <b>Thread</b>                                       | Sp 44.96x2 mm             |
| <b>Proximity action</b>         | average burst height 4 ÷ 30 m   | <b>Exterior diameter (max.)</b>                     | Ø 63.8 <sub>-0,4</sub> mm |
| <b>Time function</b>            | 5 to 199.9 sec (with 0,1 sec. increment)  | <b>Screwed length of the fuze in the projectile</b> | 53.01 ÷ 54.39 mm          |
| <b>Point detonation</b>         |   | <b>Performance temperature</b>                      | -40° C ÷ +50° C           |
| <b>Safety</b>                   | mechanical - min. 150 m electronic 5 seconds  | <b>Storage temperature</b>                          | -40° C ÷ +50° C           |
| <b>Programmer</b>               | supplied in a protective box no of programmers which will be delivered at a batch is determined by the customer | <b>Power supply</b>                                 | Air drive generator       |

### ETF-1MT Fuze

|                                       |   |
|---------------------------------------|---|
| <b>Destination</b>                    | Equip illuminating mortal bombs caliber 60mm, 81mm, 82mm and 120 mm.  |
| <b>Fuze type</b>                      | Head fuze, with time and impact operation.  |
| <b>Fuze weight</b>                    | 285 ± 5 g   |
| <b>Fuze lenght</b>                    | 98 +2 mm  |
| <b>Ogive buried part length</b>       | 11.55 ...12.4 mm  |
| <b>Thread for ogive montage</b>       | Sp.M 36.14 x 10 turns/inch  |
| <b>Maximum diameter</b>               | 47.3 mm   |
| <b>Power supply</b>                   | Air driven turbine  |
| <b>Adjustable setting time</b>        | 3.1 s...99.9 s, with thread 0.1 s, precision 0.05s  |
| <b>Safety distance to the manhole</b> | Minimum 40 m  |
| <b>Operation mode</b>                 | Time/ Impact (if time set higher than trajectory time).   |
| <b>Safe arming conditions</b>         | Mechanical arming / Electrical arming.  |
| <b>Time seting</b>                    | It is possible through electronic wire programmer that ensures setting, resetting and set time confirmation.  |
| <b>Functional doubling</b>            | If the product does not operate at the set time, it operates at impact.   |
| <b>Operating temperature</b>          | -32° C ÷ +49° C   |
| <b>Fuze safety</b>                    | Safe on handling, store, transport, firing, and at external factors action like vibrations, electrostatic discharges, saline fog, extreme temperatures, thermal shock, water, dust. |



# Components and parts

## ROMARM fuze parts



**EIF-2 CRF Electronic impact fuze**

|                   |                                 |
|-------------------|---------------------------------|
| Compatible        | 120 mm HE and SMOKE mortar bomb |
| Operation mode    | quick                           |
| Temperature range | -32° C ÷ +49° C                 |
| Weight            | 570 gr                          |
| Lenght            | 152 mm                          |
| Arming distance   | min. 40 m                       |
| Powered by        | thermal battery                 |
| Thread size       | M56 x 1.5                       |
| Intrusion size    | 64 mm                           |
| Life time         | 10 years                        |



**EIF-3 CRF Electronic impact fuze**

|                   |  |
|-------------------|--|
| Compatible        | 120 mm HE and SMOKE mortar bomb with enhanced range and sealing ring |
| Operation mode    | quick  |
| Temperature range | -32° C ÷ +49° C  |
| Weight            | 500 gr   |
| Lenght            | 152 mm   |
| Arming distance   | min. 40 m  |
| Powered by        | thermal battery  |
| Thread size       | M52 x 1.5  |
| Intrusion size    | 64 mm  |
| Life time         | 10 years   |



**EIF-6 CRF Electronic time fuze**

|                   |  |
|-------------------|--|
| Compatible        | 120 mm Illuminating mortar bomb with enhanced range and sealing ring |
| Operation mode    | time   |
| Setting time      | 6 ÷ 60 sec in step of 0.1 sec  |
| Temperature range | -32° C ÷ +49° C  |
| Backup            | point detonation   |
| Weight            | 570 gr   |
| Lenght            | 152 mm   |
| Arming distance   | min. 40 m  |
| Powered by        | thermal battery  |
| Thread size       | M56 x 1.5  |
| Intrusion size    | 64 mm  |
| Life time         | 10 years   |



**FPv-120 CRF Proximity and impact fuze**

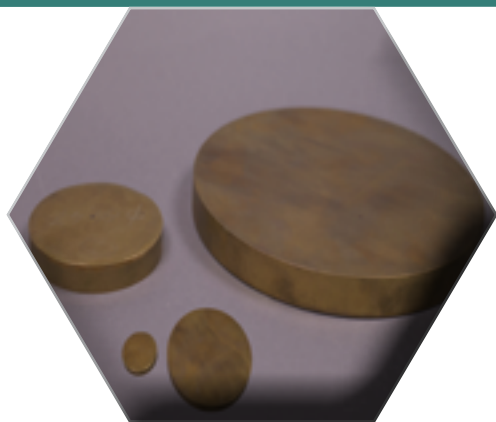
|                    |  |
|--------------------|--|
| Compatible         | 120 mm HE mortar bomb  |
| Height of bursting | 1 to 5 m   |
| Temperature range  | -32° C ÷ +49° C  |
| Weight             | 790 gr   |
| Lenght             | 192 mm   |
| Arming distance    | min. 40 m  |
| Usability          | any type of terrain (dry or wet soil, sand, snow, swamp, water, mountain rock) |
| Powered by         | thermal battery  |
| Thread size        | M52 x 1.5 or as requested  |
| Intrusion size     | 90 mm  |
| Life time          | 10 years   |





# Components and parts

## ROMARM parts for ammunition



### Brass plates for artillery rounds

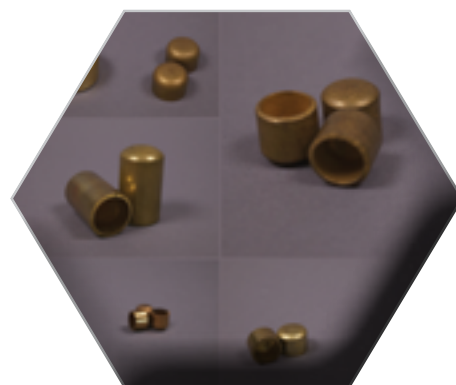
| Product name | Caliber/<br>dimension<br>(mm)     | Weight/<br>pcs (kg) | Material               |
|--------------|-----------------------------------|---------------------|------------------------|
| Brass plate  | Ø 84.25 x 16.15<br>caliber 37 mm  | 0.5                 | OL                     |
| Brass plate  | Ø 85 x 13<br>caliber 37 mm        | 0.63                | Brass LK 75 GOST 16520 |
| Brass plate  | Ø 141 x 21.2<br>caliber 57 mm     | 2.9                 | Brass C26000 ASTM B19  |
| Brass plate  | Ø 141 x 24.7<br>caliber 57 mm     | 2.9                 | Brass C26000 ASTM B19  |
| Brass plate  | Ø 155 x 12.7<br>caliber 76 mm     | 1.98                | Brass C26000 ASTM B19  |
| Brass plate  | Ø 204.22 x 19<br>caliber 85 mm    | 5.5                 | Brass C26000 ASTM B19  |
| Brass plate  | Ø 208 x 15<br>caliber 122 mm      | 4.74                | Brass C26000 ASTM B19  |
| Brass plate  | Ø 212 x 15<br>caliber 85 mm       | 4.6                 | Brass C26000 ASTM B19  |
| Brass plate  | Ø 245 x 18.7<br>caliber 105 mm    | 7.5                 | Brass C26000 ASTM B19  |
| Brass plate  | Ø 261.32 x 21.6<br>caliber 100 mm | 9.87                | Brass C26000 ASTM B19  |
| Brass plate  | Ø 281.4 x 18.7<br>caliber 152 mm  | 9.92                | Brass C26000 ASTM B19  |
| Brass plate  | Ø 296 x 23.5<br>caliber 130 mm    | 13.8                | Brass C26000 ASTM B19  |
| Brass plate  | Ø 308 x 23.5<br>caliber 130 mm    | 14.9                | Brass C26000 ASTM B19  |
| Brass plate  | Ø 31 x 6.5 mm                     | 0.042               | Brass C26000 ASTM B19  |



### Case and components for 122 mm rockets

These parts are used as components for manufacture of 122mm rockets M-21 OF and M-21 OF S.

|                            |                      |
|----------------------------|----------------------|
| Steel Fragmente Casing     | 2.1 kg               |
| Steel Fragmente Casing     | 2.2 kg               |
| Steel Semi-Finished Carcas | 1.7 kg / 205- 235 mm |
| Steel Projectile Body      | 7.7 kg               |
| Steel Frn Case             | 9.35 kg / 980 mm     |



### Brass case cups

| Product name   | Caliber/<br>dimension<br>(mm) | Weight/<br>pcs (g) | Material              |
|----------------|-------------------------------|--------------------|-----------------------|
| Cartridge case | 5.56 x 45 mm                  | 8                  | Brass C26000 ASTM B19 |
| Bullet jacket  | 5.56 x 45 mm                  | 6                  | Brass C26000 ASTM B36 |
| Cartridge case | 5.45 x 39 mm                  | 8                  | Brass C26000 ASTM B19 |
| Cartridge case | 7.62 x 51 mm                  | 13                 | Brass C26000 ASTM B19 |
| Bullet jacket  | 7.62 x 51 mm                  | 3,26               | Brass C26000 ASTM B36 |
| Cartridge case | 7.62 x 39 mm                  | 9,40               | Brass C26000 ASTM B19 |
| Cartridge case | 7.65 mm                       | 3,2                | Brass C26000 ASTM B19 |
| Bullet jacket  | 7.65 mm                       | 1,18               | Brass C26000 ASTM B36 |
| Cartridge case | 9 mm                          | 4,8                | Brass C26000 ASTM B19 |
| Cartridge case | 12.7 mm                       | 66,5               | Brass C26000 ASTM B19 |
| Bullet jacket  | 12.7 mm                       | 18                 | Brass C26000 ASTM B36 |
| Cartridge case | 23 mm                         | 133                | Brass C26000 ASTM B19 |
| Cartridge case | 20 mm                         | 141                | Brass C26000 ASTM B19 |



# Components and parts

## ROMARM parts for ammunition



### 20 - 40 mm Cartridge case for artillery ammunition

| Caliber  | 20 mm   | 23 mm   |          | 25 mm  |        | 30 mm  |        |        | 37 mm  |        | 40 mm     |           |
|----------|---------|---------|----------|--------|--------|--------|--------|--------|--------|--------|-----------|-----------|
| Material | Brass   | Brass   | Steel    | Brass  | Steel  | Brass  | Steel  |        | Brass  | Steel  | Aluminium | Aluminium |
| Diameter | Ø 29.59 | Ø 27    | Ø 33.4   | Ø 40   | Ø 40   | Ø 46   | Ø 40   | Ø 46   | Ø 52   | Ø 48.6 | Ø 42      | Ø 44      |
| Lenght   | 102 mm  | 115 mm  | 151.5 mm | 219 mm | 219 mm | 210 mm | 165 mm | 210 mm | 252 mm | 265 mm | 74.5 mm   | 47 mm     |
| Diameter | Ø 19.38 | Ø 22.25 | Ø 22.21  | Ø 25.4 | Ø 25.6 | Ø 29.2 | Ø 29.2 |        | Ø 36   | Ø 36.6 | Ø 39.6    | Ø 39.1    |
| Weight   | 0.71 g  | 0.8 g   | 0.75 g   | 0.7 g  | 0.7 g  | 1.3 g  | 1.3 g  |        | 1 g    | 0.85 g | 0.6 g     | 0.6 g     |

### 155 mm Artillery ammunition components

| Gun type                           | All 39 cal. Barrel such as FH 70, M 109, M 198, Howitzer |                      |
|------------------------------------|--|----------------------|
| Type of projectile                 | Extended range cargo projectile M 396                    | High explosive M 107 |
| Components made in plant           | Projectile bodies<br>bleeder adapters<br>bleeder bases   | Projectile bodies    |
| Characteristics of designate shell |  |                      |
| Muzzle velocity                    | Max. 825 m/s   | Max. 830 m/s         |
| Maximum range                      | 28700 m  | 24000 m              |
| Weight of projectile               | 42.3 kg  | 43.88 kg             |
| Length of projectile               | 802 mm   | 605 mm               |
| Blasting charge                    | 49 bomblets M 85   | TNT or COMP. B       |

\* NOTE: The projectiles can be fired as well from 45 mm and 52 mm caliber barrels with higher propelling charges, thus significantly increasing the effective firing range.



# Components and parts

## ROMARM accesories

### Magazines

| Type of Magazine                              |        | Loading capacity | Material | Weight (empty) | Magazine overall dimension (mm) |       |        |
|---|--------|------------------|----------|----------------|---------------------------------|-------|--------|
|   |        | (no of rounds)   | type     | (g)            | length                          | width | height |
| Cal. 5.45x39 mm for AK74                      |        | 30               | steel    | 310            | 210                             | 74    | 30     |
|   |        | 40               | steel    | 350            | 260                             | 74    | 30     |
| Cal. 5.56 mm                                  |        | 5 rds. / 1 row   | steel    | 155            | 90                              | 74    | 30     |
|   |        | 10 rds. / 1 row  | steel    | 165            | 140                             | 74    | 30     |
|   |        | 5 rds. / 2 rows  | steel    | 160            | 70                              | 74    | 30     |
|   |        | 10 rds. / 2 rows | steel    | 170            | 94                              | 74    | 30     |
|   |        | 30 rds. / 2 rows | steel    | 255            | 187                             | 74    | 30     |
| Cal. 7.62x39 mm                               | AKM47  | 30               | steel    | 340            | 230                             | 74    | 30     |
| Cal. 7.62x39 mm                               | RPK    | 40               | steel    | 380            | 280                             | 74    | 30     |
| Cal. 9 x19 mm for Pistols and Submachine guns | LP5.04 | 15               | steel    | 93             | 130                             | 43    | 26     |
| Cal. 9 x19 mm for Pistols and Submachine guns | LP7.06 | 30               | steel    | 217            | 232                             | 37    | 26     |



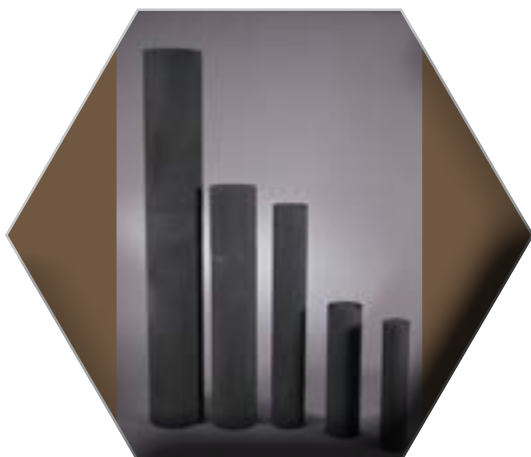
### Link belts

| Type  | Use  |
|---|--|
| 7.62 x 54 link belt for 100, 200 and 250 rounds                   | 7.62 x 54 mm cartridges in PKT and PKMS machine guns. Material: hardened steel.  |
| Link belts for cartridges cal. 12.7 x 108 mm                      | 12.7 x 108 mm cartridges in DShKM machine guns. Material: hardened steel.        |
| Yakb desintegrating link belts for cartridges cal. 12.7 x 108 mm  | 12.7 X 108 mm cartridges in YAKB machine guns. Material: hardened steel.         |
| Link belts for cartridges cal. 14.5 x 114 mm                      | 14.5 x 114 mm cartridges in KPV and KPVT machine guns. Material: hardened steel. |
| GS 23 desintegrating link belts for cartridges cal. 14.5 x 114 mm | 23 x 114 mm cartridges in GS23 and GS23L cannons. Material: hardened steel.      |



### Cardboards packagings for mortar bombs

| Dimension | Caliber 60 mm | Caliber 82 mm | Caliber 120 mm |
|-----------|---------------|---------------|----------------|
| Length    | 362 mm        | 380 mm        | 720 mm         |
| Diameter  | 72 mm         | 100 mm        | 136 mm         |



# Accessories for weapons

## ROMARM accessories

### Linking devices

| Type  | Use  | Dimensions  | Weight |
|---|--|---|--------|
| Hand linking device for cal. 12.7x108 mm and for .50 ammunition | Loading and straightening the 12.7x108 mm cartridges in 12.7x108 mm link belts for DShKM, NSV and KORD machine guns    | 300x230x290 mm  | 3.5 kg |
| Hand linking device for cal. 14.5x114 mm                        | Loading and straightening the 14.5x114 mm cartridges in the 14.5x114 mm link belts for KPV and KPVT Heavy machine guns | 300x230x290 mm  | 3.5 kg |
| Hand linking device for GS23 and GS23L                          | Loading and straightening the 23 mm cartridges in the 23 mm link belts for GS23 and GS23L air to air cannons           | 472x41x232 mm   | 1.7 kg |
| Linking device for cal. 12.7x108 mm YAKB belt                   | Intended to manually link cartridges cal. 12.7x108 mm in the YAKB belt   | 300x220x395mm (handle in vertical position)<br>300x220x60mm (handle folded for transport) | 4.7 kg |



### Torsion bars

Torsion bars are best used for trucks, tanks, fighting vehicles suspensions, and shock-absorber are useful for special mechanism. Torsion bars can also be used as mechanical drives for industrial units.

|                             |   |
|-----------------------------|---|
| Material                    | Higly purified alloy steel  |
| Maximum length              | 2500 mm   |
| Diameter of the rod         | max 65 mm   |
| Coupling part with diameter | max. 112 mm, special profiled according with customers request      |
| Maximum moment              | 500 daNm  |
| Construction                | left pre-tension or right pre-tension                               |
| Operation                   | up to 200.000 loops of solicitation depending on constructive type. |





# SERVICES

ROMARM | Services



# Maintenance / Demilitarisation / Conversion Research & Development / Training & Consultancy

Having a long history in this field and employing specialists in every step of the defense equipment manufacturing process, we are able to offer our Customers the following services:

## Maintenance

We provide maintenance, repair, overhaul for various types of products and systems:

- armored vehicles on wheels and tracks
- rockets
- artillery systems
- arms
- ammunition caliber 5,45 – 155 mm (replacing the charge, reloading, etc.

## Demilitarisation

We are closely working with Governments and organizations throughout the world in all aspects of demilitarization, disarmament, security of weapons and ammunition. We have special facilities for the disposal of conventional M.o.D. ammunitions (excluding biological or nuclear), various types of weapons of all calibers, combat armored vehicles on wheels and on tracks, anti-tank mines, projectiles and rockets of any caliber.

We can also provide:

- waste incineration
- reverse engineering
- sorting and salvage
- disposal of ammunition, primarily propellant, primers and fuzes;
- open burning including cage burning
- open detonation of ammunition and explosives (used only in specific circumstances)

## Conversion

ROMARM can perform conversion of military grade infantry weapons for hunting, target practice or sport. We can use weapons from our own production or from other sources.

## Research & Development

Trough ROMARM Research Centre new products are constantly being developed and homologated. The innovations and know-how of the Romanian Defence Industry in general and ROMARM in particular can play a pivotal role in promoting and fulfilling the ambitions of our partners at a time when the current global context is marked by geopolitical uncertainty and financial constraints. A special attention is given to the requests/suggestions/proposal made by various customers about the presentation, technical and tactical characteristics of the products.

The research and development activity aims to ensure the compliance with the NATO military standards.

## Training & Consultancy

We offer education, preparation and training for the specialists or technicians for the ammunition and weapons manufacturing lines and operating systems. Our specialists adapt training courses for all categories of staff or personnel. wwwWe complete and edit the user manuals for systems.

