

ARCHIVED REPORT

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BMP-23/BMP-30/BRM-23

Outlook

- BMP-30 production reportedly dormant at the present time
- Terem will likely offer vehicles modified to NATO standards in an attempt to improve export sales potential
- Production forecast reflects cessation of BMP-30 serial production; no export sales are expected

Orientation

Description. Tracked infantry combat vehicles.

Sponsor. The Bulgarian Army sponsors the development and production of these vehicles.

Licensees. None.

Status. Production dormant at the present time.

Total Produced. Through 2013, we estimate the prime contractor produced 98 BMP-23/BMP-23A, 130 BMP-30, and 29 BRM-23 vehicles.

Application. An amphibious mechanized infantry combat vehicle optimized for transporting infantry during both offensive and defensive operations.

Price Range. In 2014 U.S. dollars, the BMP-23 and BMP-23A would carry a unit price of \$494,200 for new orders. The BMP-30 reportedly maintains a unit price of \$572,800; the BRM-23 reportedly costs \$505,700.

Contractors

Prime

Terem SHC, Bulgarian Military Repair Factories	http://www.terem.bg , Stanislav Dospevski St, Block 40, Sofia, 1836 Bulgaria, Tel: + 359 2 946 59 57, Fax: + 359 2 946 55 85, Email: terem@nat.bg , Prime
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Subcontractor

Beta Corp AD	http://www.beta-corp.com , 19-21 Dimitar Manov St, Sofia, 1408 Bulgaria, Tel: + 359 2 986 55 66, Fax: + 359 2 421 40 49, Email: mail@beta-corp.com (BMP-30 Automotive Components)
Bulgaria Ministry of Defense, Bulgaria State Factories	http://www.mod.bg , 3 Diakon Ignatij St, Sofia, 1092 Bulgaria, Tel: + 359 02 92 20 922, Fax: + 359 02 987 96 93, Email: presscntr@mod.bg (YaMZ-238V Diesel Engine)
Tulamashzavod JSC	http://www.tulamash.ru , 2 Mosin St, Tula, 300002 Russian Federation, Tel: + 7 4872 32 10 09, Fax: + 7 4872 27 26 20, Email: wmzp@tulamash.ru (BMP-30 30mm 2A42 Automatic Cannon)

BMP-23/BMP-30/BRM-23

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Technical Data



BMP-23 Infantry Combat Vehicle

Source: Bulgarian Army

BMP-23/BMP-23A

Crew. Three: commander, gunner, and driver. The vehicle carries seven fully equipped infantrymen.

Armor. Conventional steel armor, with heavier layers of armor over the frontal arc of the turret.

Dimensions. The following data reflect the latest production-standard BMP-23; the BMP-23A is essentially the same. Height is to the top of the turret-mounted missile launcher.

	<u>SI Units</u>	<u>U.S. Units</u>
Length	7.29 m	23.92 ft
Width	2.85 m	9.35 ft
Height	2.53 m	8.30 ft
Combat weight	15.19 tonnes	16.74 tons
Fuel capacity	560 liters	148.94 gal

Performance. The speed and range data reflect use on a paved road.

	<u>SI Units</u>	<u>U.S. Units</u>
Maximum speed	61.5 kmph	38.19 mph
Maximum water speed	5 kmph	3.11 mph
Maximum range	584 km	362.67 stat mi
Step	80.1 cm	2.63 ft
Trench	2.5 m	8.20 ft
Slope	31%	31%
Gradient	60%	60%
Fording	Amphibious	Amphibious

BMP-23/BMP-30/BRM-23

Engine. Russian YaMZ-238V liquid-cooled four-stroke, V-8 diesel engine, produced under license by the Bulgaria State Factories. This powerplant generates 315 kilowatts (422.4 hp), with a power-to-weight ratio of 20.73 kilowatts per tonne (25.23 hp/ton). The vehicle integrates an oil-injection smoke-generating system with the engine exhaust. A 24-volt electrical system supports vehicle operations.

Gearbox. A manually operated gearbox, with one reverse and five forward gear ratios.

Suspension and Running Gear. Torsion bar suspension, with seven dual-tire roadwheels (no track return rollers) on each side. The drive sprocket mounts at the front of the hull. The vehicle employs the tracks for water propulsion.

Armament

Main Armament. Partially stabilized (in one plane) 23mm 2A14 rifled cannon. This ordnance fires High Explosive Incendiary-Tracer (HE-I-T) and Armor Piercing Incendiary-Tracer (AP-I-T) ammunition. The vehicle carries 600 rounds of 23x152mm ammunition. Elevation (+83°), depression (-4°), and turret traverse (360°) are electrically powered, with manual backup.

Secondary Armament. One coaxially mounted 7.62x54mm PKT machine gun with 2,000 rounds of

ammunition. The vehicle also normally carries two 7.62x54mm PK machine guns (600 rounds each) and six 7.62x39mm AK-47 battle carbines (240 rounds each) for use with the eight firing ports in the troop compartment.

Missile Armament. The basic BMP-23 mounts one launcher for the 9M14 series Malyutka (AT-3 Sagger) wire-guided anti-tank missile on the turret roof. This missile has a maximum range of 3 kilometers (4,374.4 yd). The BMP-23A mounts a launcher for the 9M111M Faktoriya (AT-4 Spigot) wire-guided anti-tank missile. This missile has a maximum range of 2.5 kilometers (2,734 yd). Both vehicles have storage for three additional missiles.

In addition, the BMP-23/BMP-23A carries a single 9M32 Strela 2 (SA-7) surface-to air missile, an RPG-7 anti-tank weapon, and four RPG-22 light anti-tank weapons in the troop compartment.

Fire Control. The BMP-23 series features a rudimentary fire control suite consisting of an optical 4.5-power 2A14 sight (with a 40-degree field of view) and an optical 5.5-power sight (11-degree field of view) for the coaxial machine gun. The gunner's station features a day sight and an image-intensification night sight; the commander's station has three day periscopic sights.

BRM-23

Crew. Five: commander, gunner, navigator, driver, and radio operator.

Armor. Same as the BMP-23.

Design Features. The BRM-23 is essentially a BMP-23 optimized for tracked reconnaissance. BRM-specific components include:

- R-31M radio for communications with dismounted personnel
- R-123 radio for vehicle-to-vehicle communications

- RH-130M radio for communications with higher echelons
- PAB-2 artillery aiming circle
- PGN-9M passive night vision device
- LBD-1 handheld laser rangefinder
- A complete land navigation system
- A mine detector
- Nuclear, biological, and chemical (NBC) detection and decontamination equipment

Dimensions. The following data reflect the latest production-standard BRM-23. Height is to the top of the turret-mounted missile launcher.

	<u>SI Units</u>	<u>U.S. Units</u>
Length	7.29 m	23.92 ft
Width	2.85 m	9.35 ft
Height	2.53 m	8.30 ft
Combat weight	14.79 tonnes	16.30 tons
Fuel capacity	560 liters	148.94 gal

Performance. The speed and range data reflect use on a paved road.

	<u>SI Units</u>	<u>U.S. Units</u>
Maximum speed	61.5 kmph	38.19 mph

BMP-23/BMP-30/BRM-23

	<u>SI Units</u>	<u>U.S. Units</u>
Maximum water speed	5 kmph	3.11 mph
Maximum range	584 km	362.67 stat mi
Step	80.1 cm	2.63 ft
Trench	2.5 m	8.20 ft
Slope	31%	31%
Gradient	60%	60%
Fording	Amphibious	Amphibious

Engine. Same as the BMP-23. The powerplant yields a power-to-weight ratio of 15.89 kilowatts per tonne (19.33 hp/ton) in the BRM-23 application.

Gearbox. Same as the BMP-23.

Suspension and Running Gear. Same as the BMP-23.

Armament

Main Armament. Same as the BMP-23.

Secondary Armament. Same as the BMP-23; however, the BRM-23 carries only one additional

7.62x54mm PK machine gun and two 7.62x39mm AK-47 weapons in the troop compartment, as the vehicle features only three firing ports in that compartment.

Missile Armament. Same as the BMP-23. The BRM-23 can mount either the AT-3 or the AT-4 ATGM system. The vehicle also carries the same complement of SA-7, RPG-7, and RPG-22 weapons as the BMP-23.

Fire Control. Same as the BMP-23. Reflecting its reconnaissance mission, the BRM-23 also mounts additional night vision and rangefinding components.



BMP-30 Infantry Combat Vehicle (rear detail)

Source: Naoruzanje I Vojna Oprema

BMP-30

Crew. Same as the BMP-23.

Armor. Same as the BMP-23.

Design Features. The BMP-30 is essentially an improved BMP-23, mounting the complete turret and

armament suite of the Russian BMP-2. The vehicle also features an upgraded fire detection/suppression system, an improved NBC protective suite, and better radios.

Dimensions. The following data reflect the latest production-standard BMP-30 vehicle. Height is to the top of the turret-mounted missile launcher.

	<u>SI Units</u>	<u>U.S. Units</u>
Length	7.29 m	23.92 ft

BMP-23/BMP-30/BRM-23

Width	2.85 m	9.35 ft
Height	2.12 m	6.96 ft
Combat weight	15.02 tonnes	16.56 tons
Fuel capacity	560 liters	148.94 gal

Performance. The speed and range data reflect use on a paved road.

	<u>SI Units</u>	<u>U.S. Units</u>
Maximum speed	61.5 kmph	38.19 mph
Maximum water speed	5 kmph	3.11 mph
Maximum range	584 km	362.67 stat mi
Step	80.1 cm	2.63 ft
Trench	2.5 m	8.20 ft
Slope	27%	27%
Gradient	54%	54%
Fording	Amphibious	Amphibious

Engine. Russian YaMZ-238N liquid-cooled four-stroke V-8 diesel engine, produced under license by the Bulgaria State Factories. This powerplant generates 225 kilowatts (301.7 hp), with a power-to-weight ratio of 14.98 kilowatts per tonne (18.21 hp/ton). The vehicle integrates an oil-injection smoke-generating system with the engine exhaust. A 24-volt electrical system supports vehicle operations.

Gearbox. A manually operated gearbox, with one reverse and six forward gear ratios.

Suspension and Running Gear. Same as the BMP-23.

Armament

Main Armament. Fully stabilized 30mm 2A42 rifled automatic cannon. This dual-feed weapon – a product of Tulamashzavod – fires a variety of high-explosive (HE) and armor piercing (AP) 30x165mm ammunition from disintegrating-link belts at rates of 250 or 500 rounds per minute. The vehicle carries 500 rounds of 30x165mm ammunition. Elevation (+74°), depression (-3°), and turret traverse (360°) are electrically operated, with manual backup.

Secondary Armament. One coaxially mounted 7.62x54mm PKT machine gun with 2,000 rounds of

ammunition. Each side of the turret mounts three 81mm 902V electrically operated smoke grenade launchers.

Missile Armament. The BMP-30 also mounts a launcher for the 9M113 Konkurs (AT-5 Spandral) wire-guided anti-tank missile. The AT-5 has a maximum range of 4 kilometers (4,374.4 yd). As an alternative, the BMP-30 can mount the 2.5-kilometer-range (2,734-yd-range) 9M111 Fagot/9M111M Faktoriya (AT-4 Spigot) wire-guided anti-tank missile. The vehicle can store four anti-tank missiles.

Fire Control. The BMP-30 features the basic Russian BMP-2 fire control suite, requiring manual aiming of the various onboard weapons systems. The gunner's station features the BPK-1-42 binocular sight and TNPT-1 designator. The commander's station features a 1PZ-3 day monocular sight, a TKN-3B day/night binocular sight, and a TNP-165 designator.

The turret mounts two infrared searchlights. One searchlight mounts coaxially (to the right) with the main armament; the other, designated OU 3GA2, mounts at the commander's station on the roof of the turret.

Program Review

Background. Beginning with the Boyevaya Mashina Pekhoty (BMP-1) in the early 1960s, the Russians have exported a significant portion of the tens of thousands of BMP series vehicles produced. Although Bulgaria received only a few BMP-1 vehicles, it did receive the ubiquitous MT-LB multipurpose tracked vehicle. In the late 1970s, Bulgaria began manufacturing the MT-LB under license.

Bulgaria's MT-LB-Based BMP

In 1987, Bulgaria embarked on a program to develop an indigenous mechanized infantry combat vehicle based

on the MT-LB. The Bulgaria State Factories originally developed the BMP-23 and BMP-30; the Terem Joint

BMP-23/BMP-30/BRM-23

Stock Company took over production in the early 1990s.

Although the weakness of the Bulgarian economy caused the BMP-23/BMP-30/BRM-23 line to grind to a halt after a relatively short low-rate production run, open-source reporting suggests BMP-30 production restarted sometime in 2005; the BRM-23 production line was reportedly restarted in 2011.

Description. The basic Bulgarian BMP/BRM design consists of a modified MT-LB chassis, mounting either an indigenously designed turret (BMP-23 and BRM-23) or the Russian BMP-2 turret (BMP-30). The all-welded steel armor provides protection against 7.62mm AP rounds and ballistic fragments.

Unusual Layout

The engine compartment occupies the space immediately behind the driver; it is accessible through roof-mounted hatches.

The driver sits in the left-front of the hull, immediately behind the gearbox. His station features a single-piece hatch cover and three day periscopes; the center periscope is interchangeable with a passive night vision device. One infantryman sits to the right of the driver. This position features a single-piece hatch cover, three day periscopes, and an AK-47 firing port on the side of the hull.

The power-operated, all-welded steel armor turret mounts over the center of the vehicle. The indigenous Bulgarian turret and the Russian BMP-2 turret share a common basic internal configuration. The commander sits to the right of the main armament; the gunner sits to the left.

The gunner's station features a single-piece hatch cover, as well as several day and night vision devices, one of which is most likely an image intensification device. The commander's station features a single-piece hatch cover and three day periscopes. The turret design allows for a main armament maximum elevation sufficient to engage aerial (helicopter) targets.

Whether the BMP-2 turrets of the BMP-30 are Russian exports or produced under license in Bulgaria remains open to speculation.

The troop compartment occupies the rear of the hull, behind the turret. Six infantrymen sit in two rows, back to back, on each side of the fuel tank. Two outward-opening rear doors provide primary troop access/egress. In addition, the troop compartment features two large roof hatches. The troop compartment of the BMP-23/BMP-30 features eight firing ports with periscopic vision blocks (three along each side of the troop compartment, one in each rear door).

Russian-Style Features

The Bulgarian BMP is fully amphibious, employing its tracks for water propulsion. When operating in the water, the driver uses an extended periscope to see over the extended trim vane. The vehicle features an overpressure nuclear, biological, and chemical (NBC) protective suite, fire extinguishers, a vehicle ventilation system, a cabin heater, and a bilge pump. Standard communications and navigation equipment includes a vehicle intercommunications system, an ultra-high-frequency radio suite, and a GPK-59 navigation component.

Related News

More Libyan Troops Begin Training Abroad – Approximately 300 Libyan troops recently arrived in Italy for specialized company-level training as the international effort to rebuild the North African country's security forces intensifies.

The departure of the second group came two weeks after the return of the first 300 Libyan soldiers trained by the Turkish Army under an international program, which seeks to train up to 15,000 troops over the next decade.

The training mission followed a request of the Libyan prime minister in response to an increase in militia violence. In terms of agreements signed between the Libyan government and partner nations, the troops will be trained in Turkey, Italy, France and the United Kingdom and by the United States Army at selected military bases in Bulgaria. (FI 4/14)

Bulgaria's Budget Woes Continue – Bulgarian Defense Minister Angel Naydenov stated in an interview for local television on October 10, 2013 that he expects a budgetary allocation of no less than BGN1 billion (\$690 million). He warned that the ramifications of earmarking less than that amount would be reduced combat readiness and fading military capability. Due to years of budgetary cutbacks, the Bulgarian Army is now at the point it may be considered a minimal essential force, and further investment reductions would render it unable to meet even a limited set of tasks.

BMP-23/BMP-30/BRM-23

Upon joining the NATO Alliance in 2004, Bulgaria was, like many of its neighbors in Eastern and Central Europe, largely saddled with Soviet- and Warsaw Pact-legacy weaponry dating back to the Cold War era. In an attempt to reform the military and bring it closer to NATO standards, the government committed to annual defense allocations equal to 2.6 percent of GDP. The country remained one of the few NATO members devoting the minimum Alliance requirement of at least 2 percent of annual GDP toward defense.

But Bulgaria also had the added burden of being one of the poorest countries in Europe, and thus defense investment would need to be far higher than what was expected in order to properly reform, professionalize, train and equip the Army. Adding to the dilemma was that the Bulgaria that emerged from the Cold War not only was poor, but suffered from inbred corruption issues that filtered upward to the highest levels of the judicial and executive areas of government. Infrastructure upgrades were desperately needed, and to attain the necessary funds the country looked to the European Union, which added to Sofia's defense funding quandary, as the Stability & Growth Pact requirements of the European Commission called for budget deficits reaching no higher than 3 percent of GDP.

By the time the global financial crisis erupted in late 2008, Bulgarian defense investment was already down to 2.3 percent of GDP from 2.96 percent in 2001. The ensuing recession hit Bulgaria hard, as the economy shrunk nearly 5 percent in 2009, forcing the government to trim defense spending below the 2 percent threshold to 1.86 percent of GDP. Worse followed, as the 2010 earmark represented a 23 percent nominal reduction in defense spending, and by 2012 the level of Bulgarian military expenditure had plummeted to 1.2 percent.

For a poor country, this level of defense spending places the Army on a path to irrelevancy as long-term equipment goals fade further and further from view and recruitment of soldiers becomes difficult. Bulgaria's military currently remains in a slow starvation mode. A minimal BGN1 billion earmark fails to account for years of underfunding, but with an economy that fails to grow enough to allow the government to boost expenditures and the country barely staving off recession, positive change in the Bulgarian Army's budgetary situation will not be evident anytime soon. (*Standart News*, 10/13)

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Funding

The Ministry of National Defense of Bulgaria, through the Bulgarian Army, funds the development and production of these vehicles.

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
Late	1970s	License-manufacture of MT-LB begun in Bulgaria
Thru	1980s	Bulgaria continues development of the MT-LB
	1987	Development begun of BMP-23, based on the MT-LB
	2005	Production of BMP-30 reportedly restarted
	2014	Serial production of BMP-30 dormant; retrofit and modernization ongoing

Worldwide Distribution/Inventories

Export Potential. In an attempt to secure badly needed revenue, Bulgaria has been offering the BMP-30 and BRM-23 on the international market, albeit without any success. As Bulgaria remains an unknown new player in a glutted international market, prospects for export sales are poor.

Countries. **Bulgaria** (96 BMP-23/BMP-23A, 130 BMP-30, and 29 BRM-23 vehicles).

Forecast Rationale

BMP-23/BMP-30/BRM-23

The Terem Joint Stock Company continues to offer the BMP-23/23A, BRM-23 and BMP-30 vehicles for order on the international market. However, to date the Bulgarian Army is the only operator of the vehicle. We estimate 257 vehicles of this class are currently in active service with the Bulgarian Army.

Reports indicate that low-rate serial production of the BMP-30 series ended in 2013. Although the BMP-23, BRM-23 and BMP-30 will never gain significant traction on the international market, these vehicles continue to provide the Bulgarian Army with a reasonably modern mechanized assault capability.

Given the fiscal challenges facing Bulgaria, a resumption of BMP-30 production during the forecast period is unlikely. As a result, we anticipate that the focus of the BMP-23/23A and BMP-30 series will shift

to the resale of surplus Bulgarian Army vehicles and the retrofit and modernization of existing vehicle stocks. These efforts could provide a significant source of revenue for the prime contractor through the forecast period.

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