

ARCHIVED REPORT

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M11/Vehicule Blinde Leger

Outlook

- Production of the M11 VBL wrapped up in 2010
- The French Army introduced the VBL's successor, the VBMR-L Serval, into active service in 2022
- Barring any unforeseen market changes, this report will be archived in 2025

Unit Production Forecast
2024-2033



Orientation

Description. A wheeled armored 4x4 vehicle.

Sponsor. The French Army sponsored the development and French Army procurement of this vehicle.

Status. Development through serial production, which culminated in 2010.

Total Produced. Through 2010, we estimate the prime contractor produced 2,600 M11 VBL vehicles.

Application. A light wheeled armored vehicle optimized for scout and reconnaissance missions.

Price Range. The VBL2L reportedly maintains a unit price of \$250,630 in 2023 U.S. dollars.

Contractors

Prime

Panhard et Levassor SA	http://www.arquus-defense.com , 2 rue Panhard & Levassor, Marolles-en-Hurepoix, France, Tel: + 33 1 60 82 48 48, Fax: + 33 1 60 85 08 20, Email: charles.maisonneuve@panhard.fr , Prime
Rheinmetall Landsysteme GmbH	http://www.rheinmetall-defence.com , Heinrich-Ehrhardt-Strasse 2, Unterlues, Germany, Tel: + 49 5827 8002, Fax: + 49 5827 6810, Email: rls-info@rheinmetall.com , Licensee

Subcontractor

Automobiles Peugeot	http://www.peugeot.com , 75 Avenue de la Grande-Arme, Paris, France, Tel: + 33 40 66 55 11 (XD 3T Diesel Engine)
Hutchinson SA	http://www.hutchinson.com , 2 Rue Balzac, Paris, France, Tel: + 33 1 40 74 83 00, Fax: + 33 1 43 59 97 11, Email: marketing@hutchinson.fr (Run-Flat Tire Inserts)
KNDS France SA	http://www.knds.fr/ , 13, rue de la Minière, Versailles, France, Tel: + 33 1 39 49 30 00, Fax: + 33 1 30 97 39 00, Email: presse@nexter-group.fr (M11 VBL Turret Components)

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Michelin	http://www.michelin.com , Place des Carmes Dechaux, Clermont-Ferrand, Cedex 9, France, Fax: + 33 1 45 66 15 53 (XL 900x16 Radial Tires)
Zahnradfabrik Friedrichshafen AG	http://www.zf.com , Graf von Soden Platz 1, Friedrichshafen, Germany, Tel: + 49 07541 77 0, Fax: + 49 07541 77 908000, Email: postoffice@zf.com (3 HP22 Automatic Gearbox)

Contractors are invited to submit updated information to Editor, International Contractors, Forecast International, 75 Glen Road, Suite 302, Sandy Hook, CT 06482, USA; rich.pettibone@forecast1.com

Technical Data

Crew. Two: commander and driver, with the option for a gunner.

Configuration. 4x4.

Armor. Laminated steel alloy (designated THD) with a maximum thickness of 11.5mm (0.453 in), providing

protection against ballistic fragments and small-arms projectiles up to 7.62mm.

Dimensions. The following data reflect the production-standard VBL. Height is with the machine gun mounted; length with the spare fuel tank mounted is in parentheses.

	<u>SI Units</u>	<u>U.S. Units</u>
Length	3.70 (3.87) m	12.14 (12.59) ft
Width	2.02 m	6.63 ft
Height	2.14 m	7.02 ft
Combat weight	3.59 tonnes	3.96 tons
Fuel capacity	131.76 liters	36.60 gal

Performance. The speed and range data reflect use on a paved road. The VBL is amphibious after two minutes of preparation.

	<u>SI Units</u>	<u>U.S. Units</u>
Maximum speed	95 kmph	58.99 mph
Maximum range	600 (800) km	372.6 (496.8) stat mi
Step	45 cm	1.48 ft
Trench	60 cm	1.97 ft
Slope	30%	30%
Gradient	50%	50%
Fording (without preparation)	90 cm	2.95 ft
Fording (with preparation)	110 cm	3.61 ft

Engine. Peugeot XD 3T supercharged, four-cylinder, liquid-cooled diesel engine. This powerplant generates 78.33 kilowatts (105 hp), with a power-to-weight ratio of 21.82 kW/tonne (26.52 hp/ton). The 24-volt electrical system features two 12-V/125-amp-hour batteries.

The VBL Mk 2 mounts a Steyr-Daimler-Puch 93.25-kW (125-hp) diesel engine, which yields a power-to-weight ratio of 23.31 kW/tonne (28.4 hp/ton).

Gearbox. Zahnradfabrik Friedrichshafen 3 HP22 automatic gearbox, with one reverse and three forward gears and a Fichtel torque converter. The transfer case features two gears.

The VBL Mk 2 mounts a Zahnradfabrik Friedrichshafen 4 HP22 automatic gearbox, with one reverse and three forward gears and a Fichtel torque converter. The transfer case features two gears.

Suspension and Running Gear. Full-time four-wheel drive. Front wheel suspension is a double triangle system using helical springs. Rear wheels use torsion bar suspension, with De Carbon double-acting hydropneumatic shock dampers. The vehicle features power disc brakes at all wheel stations. A central tire pressure inflation system regulates Michelin XL 900x16 radial tires with Hutchinson run-flat inserts. For amphibious operation, the rear differential engages a rear-mounted propeller.

Armament. The VBL can mount various machine guns, up to 7.62x51mm NATO (.308 Winchester). The vehicle can also mount mortars and anti-tank guided missile launchers.

The VBL Mk 2 features the Kongsberg Protector remote weapons station with day/night sights; it mounts a 12.7mm (.50-cal) M2 HB machine gun.

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Variants. As is the norm with this class of vehicle, most variants simply mount different armament options.

Designation	Description
M11 VBL	Basic 4x4 armored vehicle. See Technical Data , above.
VBL APC	Stretched wheelbase (2.7 m/8.86 ft). Four hatches in roof, seats four.
VBL Cargo/Logistics	Stretched wheelbase cargo transport.
Super VBL	Stretched wheelbase 6x6 version. Development complete; available for orders.
VBL Combat/Anti-Tank	Mounts Euromissile MILAN anti-tank guided missile system (six missiles).
VBL Scout	Optimized for intelligence gathering, scouting, and reconnaissance. Crew of two.
VBL2L	Reconnaissance vehicle; in original, stretched, and 6x6 versions.
VBL Mk 2	Enhanced version of standard VBL; features extended wheelbase, Steyr-Daimler-Puch 125-hp diesel engine, ZF 4 HP22 automatic transmission, and Kongsberg Protector remote weapons station.
VBL Anti-Tank (MTC)	Proposal for vehicle with MILAN/MTC turret; in original, stretched, and 6x6 versions.
VBL MILAN Cargo	Proposal for MILAN missile vehicle; in original, stretched, and 6x6 versions.
VBL Anti-Tank (HTC)	Proposal for vehicle with HOT/HTC turret; in original, stretched, and 6x6 versions.
VBL Anti-Tank (M40)	Proposal for M40 recoilless rifle vehicle; in original, stretched, and 6x6 versions.
VBL HOT Cargo	Proposal for HOT missile vehicle; in original, stretched, and 6x6 versions.
VBL Ingwe	Proposal for VBL featuring Denel Armed Long-Range Reconnaissance Turret (ALRRT), mounting four Denel Ingwe long-range anti-tank guided missiles. Panhard revealed prototype at IDEX 2007 trade show.
VBL Command	Proposal for command and control vehicle; in original, stretched, and 6x6 versions.
VBL Radio/Transport	Proposal for dedicated transport vehicle; in original, stretched, and 6x6 versions.
VBL Police	Proposal for police/internal security vehicle; in original, stretched, and 6x6 versions.
VBL 120mm Mortar Carrier	Proposal for 120mm mortar platform; in original, stretched, and 6x6 versions.
VBL 120mm Mortar Transport	Proposal for 120mm mortar carrier; in original, stretched, and 6x6 versions.
VBL Radar Vehicle	Proposal for RASIT or Elta radar platform; in original, stretched, and 6x6 versions.
VBL Mistral	Proposal for Mistral missile platform; in original, stretched, and 6x6 versions.
VBL Mistral Cargo	Proposal for Mistral missile carrier; in original, stretched, and 6x6 versions.
VBL Repair Vehicle	Proposal for dedicated repair vehicle; in original, stretched, and 6x6 versions.
VBL Ambulance	Proposal for dedicated ambulance; in original, stretched, and 6x6 versions.

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Designation

VBL 81mm Mortar

Description

Proposal for 81mm mortar platform; in original, stretched, and 6x6 versions.

VBL Jungle

Proposal for jungle vehicle, mounting 20mm cannon in BTM turret; in original, stretched, and 6x6 versions.

Modernization and Retrofit Overview. Not applicable at this time.

Program Review

Background. In 1978, the French Army issued a requirement for a new light armored scout/reconnaissance vehicle with high mobility and a weight of less than 3.5 tonnes (3.85 tons). The requirement specified two variants:

- An anti-tank vehicle armed with the MILAN anti-tank guided missile system
- A scout car/reconnaissance vehicle armed with machine guns

Panhard M11 Wins Competition

After an intensive competition and evaluation, the Panhard M11 was selected as the winner in 1985. The French Ministry of Defense awarded the initial production contract in July 1987, following further operational evaluations in Lebanon by the French Army.

For the export market, Panhard calls the VBL the ULTRAV.

Description. The M11 VBL exhibits a conventional layout. The engine mounts at the front of the vehicle. In the cab behind the engine compartment, the driver sits in the left-front; the commander sits to the right-front. Both crew stations feature a side door and hatch cover in the roof. The commander's roof hatch provides access to the pintle-mounted weapons station on the vehicle roof. The driver's station also features an emergency periscope. The rear compartment features a large door and a roof-mounted hatch cover.

Commercial Automotive Components

The engine and drivetrain are militarized variants of the mass-produced automobile components used on the standard Peugeot P4 military truck. The four-wheel disc brake system is essentially the serially produced Citroen commercial component. The use of standard components significantly eases maintenance and repair requirements.

Standard equipment includes Michelin XL tires with run-flat inserts and a central tire pressure regulation system. For French Army service, the amphibious kit (with a trim vane and propeller) is standard. Optional equipment includes two sizes of fuel tanks; a nuclear, biological, and chemical (NBC) protective suite; air conditioning; passive night vision devices; a heater; and power steering.

Corporate Evolution

In 2012, Renault Trucks Defense acquired Panhard for an undisclosed sum and after a lengthy negotiation process. The merger came in addition to RTD's acquisition of French defense manufacturer ACMAT in 2006.

The two acquisitions highlight the ongoing effort to consolidate and streamline the French land defense industry amidst Europe's economic uncertainty. Renault, ACMAT and Panhard now operate under the auspices of the Arquus Defense group.

Funding

The French Ministry of Defense, through the French Army, funds the VBL program.

Worldwide Distribution/Inventories

Export Potential. With a worldwide customer base, France has a major presence in the field of light armored vehicles. In 1985, Mexico placed the first export order for the VBL. The ULTRAV enjoyed moderate export sales thereafter.

In March 2011, the Russian Federal Security Service (FSB) reportedly entered into negotiations with Panhard to procure up to 500 VBLs for the Border Guard Service of Russia. The contract would have had a potential value of \$260 million. However, the contract never came to fruition.

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The tense state of diplomatic relations between the Russian Federation and the European Union, owing primarily to the former's 2014 annexation of the Crimean Peninsula, effectively precluded any further opportunities for the sale of French armored vehicles to Russia.

Cooperative Ventures. In 1989, Panhard and Rheinmetall Landsysteme (then Krupp Maschinenbau Kiel) reached an agreement for the latter firm to market the M11 VBL in Germany. In April 1992, the participants expanded this agreement to include the joint development of a heavier version of the vehicle.

Countries. Benin (10), Botswana (64), Cameroon (5), Djibouti (7), France (2,092), Gabon (12), Georgia (10), Greece (150), Indonesia (18), Kuwait (40), Mexico (40), Niger (7), Nigeria (70), Oman (132), Portugal (25), Qatar (16), Rwanda (16), Togo (2), and the United Arab Emirates (24).

Forecast Rationale

In December 2014, the French Ministry of Defense announced that it had signed a \$6.1 billion contract with Renault Trucks Defense, Thales, and Nexter for the fulfillment of the French Army's ambitious Scorpion next-generation vehicle requirement.

The Scorpion program is intended to achieve nothing less than a complete transformation of the French Army's light tactical vehicle, armored reconnaissance vehicle, and wheeled armored personnel carrier inventories over the course of the next several decades.

The MoD has designated these two new concepts the Griffon Multi-Role Armored Vehicle (VBMR) and Jaguar Reconnaissance and Combat Armored Vehicle (EBRC). The VBMR family of vehicles will consist of two primary variants: a heavy 24.5-ton 6x6 model and a light 10.0-ton 4x4 version.

Although the Army had initially hoped to begin implementation of the Scorpion program several years earlier, budgetary considerations owing to the implementation of domestic austerity measures ultimately compelled the MoD and government to reduce both the scale and pace of Scorpion procurement.

France Commits to VBMR

On February 12, 2018, Florence Parly, France's minister of the armed forces, awarded an estimated \$1.5 billion contract to the team of Nexter and Texelis for the development, production and servicing of Light VBMR (VBMR-L) "Serval" troop carrier armored vehicles. The Military Planning Law covering the years 2019 through 2025 forecasted a fleet of 978 VBMR-L Servals by 2030, including 689 slated for delivery by 2025.

The Light VBMR will replace the French Army's M11 VBL and the PVP light protected armored vehicle. The Light VBMR will be capable of carrying 10 soldiers equipped with Felin infantry soldier kits. The vehicles will arrive in four variants:

1. Patrol
2. Intelligence and reconnaissance
3. Tactical communications post
4. Electronic warfare

Each vehicle will come equipped with the Scorpion combat information system.

Production of the VBMR-L began in June 2021. By this time, the French Army had already taken delivery of 14 prototypes and pre-series models. The first four series-production units were delivered to the French Army's 51e Régiment d'Infanterie joint combat preparation support center in Mourmelon on May 5, 2022. Around 100 more arrived over 2022. A total of 978 are planned for delivery through 2030.

While the VBL and PVP tactical vehicles will remain important assets for the French Army for the immediate future, the ubiquitous VBL will soon enter the twilight stage of its lengthy deployment with the French Army but could remain in service into the mid-2030s.

Although French deployment of VBL series vehicles will wane over the next several decades, the vehicle is likely to remain in service until the Scorpion program fully winds down. Therefore, maintenance and upgrade contracts for vehicles belonging to the French Army (and export recipients) could possibly be expected through 2030.

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Ten-Year Outlook

ESTIMATED CALENDAR YEAR UNIT PRODUCTION												
Designation or Program		High Confidence				Good Confidence			Speculative			
	Thru 2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	Total
Panhard et Levassor SA												
M11												
	2,600	0	0	0	0	0	0	0	0	0	0	0
Total	2,600	0	0	0	0	0	0	0	0	0	0	0