

ARCHIVED REPORT

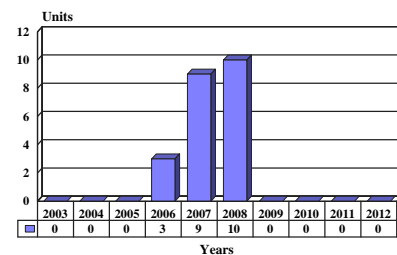
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Blindado Ligero de Ruedas - Archived 8/2004

Outlook

- Vehicle is in service in Spain
- Production is dormant, but marketing continues, with production expected to be resumed for an export sale
- This vehicle has only a minimal amount of modernization and retrofit potential

10 Year Unit Production Forecast
2003 - 2012



Orientation

Description. A wheeled vehicle.

Sponsor. The development and Spanish procurement of this vehicle were supported by the Spanish Ministry of Defense, Directorate General for Defense Armament & Materiel through the Spanish Army and General Directorate of Civil Guard.

Contractors. The Blindado Ligero de Ruedas was developed and originally manufactured by Empresa Nacional de Autocamiones SA, Madrid, Spain. Subsequently, the marketing and production rights were assumed by Santa Barbara Blindados, which was purchased by General Dynamics in 2002 and renamed Santa Barbara Sistemas. The Zahnradfabrik Friedrichshafen firm is the principal subcontractor.

Licensees. None

Status. The Blindado Ligero de Ruedas is in production on an as-needed basis (dormant as of mid-2003) and in service in Spain and at least one other nation. The marketing of the vehicle continues.

Total Produced. As of January 1, 2003, a total of 227 Blindado Ligero de Ruedas vehicles had been manufactured.

Application. An armored personnel carrier for the transport of infantry to and within the battlefield. The vehicle has been developed into a number of variants capable of performing a variety of reconnaissance and patrol missions for both military and internal security users.

Unit Price. In equivalent 2003 United States dollars, the basic armored personnel carrier version has a unit price of \$218,400.

Technical Data

Crew. Three: driver, gunner, and commander. The gunner is usually one of the 12 infantrymen who can be carried.

Configuration. 4x4

Armor. The basic steel alloy armor from which the hull is fabricated provides the armor protection. Over the

frontal arc, this armor is proof against 7.62 millimeter armor piercing projectiles, while the remainder of the vehicle is protected from 7.62 millimeter ball projectiles.

Design Features. The design is optimized for rugged use by military security and internal security organizations.

Dimensions. The following data are for the latest production standard. The height figure is measured to the top of the hull.

	<u>SI units</u>	<u>US units</u>
Length:	5.65 meters	18.53 feet
Width:	2.5 meters	8.2 feet
Height:	2.0 meters	6.56 feet
Combat weight:	12 tonnes	13.22 tons
Fuel capacity:	200 liters	53.19 gallons

Performance. The maximum speed and range figures are on a metaled road.

	<u>SI units</u>	<u>US units</u>
Maximum speed:	93 kilometers per hour	57.78 miles per hour
Maximum range:	570 kilometers	353.97 statute miles
Step:	55 centimeters	1.8 feet
Trench:	60 centimeters	1.96 feet
Slope:	30%	30%
Gradient:	75%	75%
Fording:	1.1 meters	3.61 feet

Engine. Either the Pegaso Model 9220 diesel engine, rated at 167.04 kilowatts (224 horsepower), or the Model 9100/41 diesel engine, rated at 126.82 kilowatts (170 horsepower) from the same firm can be installed in the Blindado Ligero de Ruedas. With the first engine, the power-to-weight ratio is 13.92 kilowatts per tonne (16.94 horsepower per tonne). With the lower rated engine, the power-to-weight ratio is 10.57 kilowatts per tonne (12.86 horsepower per tonne). Both engines have six cylinders and are liquid cooled and supercharged. A 24 volt electrical system with an 840 watt alternator and two 12 volt 150 ampere-hour batteries is the standard electrical fit.

Gearbox. With the Model 9100/41 engine, a manual gearbox with one reverse and six forward gear ratios is fitted. With the Model 9220 engine, an automatic gearbox with one reverse and five forward gear ratios is fitted. Both gearboxes are provided by Zahnradfabrik Friedrichshafen.

Suspension and Running Gear. This 4x4 vehicle has semi-elliptical springs and a hydropneumatic shock damper at each wheel station. Run-flat 13.00x20 tires are standard.

Armament. The basic armored personnel carrier is provided with a cupola mount that can accommodate any of the various rifle caliber machine guns available.

Variants/Upgrades

Variants. While no specific variants of the Blindado Ligero de Ruedas have yet been developed, the vehicle can be configured to fulfill a range of tactical and internal security roles, including ambulance, command, and communications.

Modernization and Retrofit Overview. As of mid-2003, no major modernization or retrofit programs had been developed for the Blindado Ligero de Ruedas. None are expected.

Program Review

Background. Development of a new paramilitary and gendarme armored personnel carrier for the Spanish Army and Guardia Civil was begun by Empresa Nacional de Autocamiones in the late 1970s. The development of the new vehicle was carried out parallel to the development of the Blindado Medio de Ruedas-600 mechanized infantry combat vehicle. The vehicle was developed to meet the growing threat of terrorism by disaffected elements within Spain, as well as external threats. Typical roles envisioned for the vehicle included airport security, border patrols, and

internal security operations. The company designation for the Blindado Ligero de Ruedas is BLR 3545.

Following acceptance of the design by the paramilitary Civil Guard, production of the Blindado Ligero de Ruedas began in the early 1980s. The Marine Infantry also ordered the vehicle shortly thereafter, and deliveries to both services were completed by 1985. The Spanish Army later ordered a small number of the vehicles. Most of the production has been geared toward fulfilling Spanish requirements; the vehicle is currently operated by the Army, the Marine Corps (at least 18

vehicles), and the paramilitary Civil Guard. No specific requirements have been announced, but given the limited tactical roles the vehicle can fulfill, it is unlikely that production will surpass the 300 mark unless a concerted and successful attempt to export the vehicle is made. There have been indications that the contractor has been increasing its efforts to offer the vehicle to fill counterterrorist and internal security roles, but so far this has resulted in only a single small export order. As part of a general reorganization of the Spanish armaments industry, Empresa Nacional de Autocamiones and its products were absorbed by a reorganized Santa Barbara Blindados component of the Santa Barbara Group in the early 1990s. In early 2002, the purchase of Santa Barbara by General Dynamics was completed and the company renamed Santa Barbara Sistemas.

Description. The hull of the Blindado Ligero de Ruedas is composed of welded-steel armor plate, proof against small arms fire up to 7.62 millimeters caliber as well as protecting the crew from ballistic fragments. The vehicle is manned by a crew of one to three depending on the mission profile, and can carry up to 12 infantrymen in the troop compartment. Access to the vehicle is obtained either through two side doors or two rear doors, or through four roof hatches. The two rear doors are equipped with vision blocks, and there are five bulletproof glass windows on each side of the hull. The driver sits on the front left side of the vehicle, while the commander sits directly to his right. Each can see forward through large bulletproof windshields, which can be covered by hinge-down, steel shutters with integral vision slits when in action.

The windshields are equipped with two types of windshield wiper systems. The first is for foul weather conditions; the second is equipped with a solvent to deal with paints and other types of sprays that might be splashed on the vehicle during riot control operations. The vehicle also has vision blocks on the driver's side

and the commander's side for lateral vision. Access to the vehicle for the commander and driver is usually through two roof hatches mounted at the front. Directly to the rear of these hatches is a cupola capable of 360-degree rotation and armed with a 7.62 millimeter machine gun and a shield for the gunner. It is equipped with eight vision blocks. Directly to the rear of the cupola is an additional pair of roof hatches for passenger access to the vehicle.

In front of the commander and below the windshield is a pair of firing ports to give covering fire over the frontal arc. The troop compartment, located at the rear of the vehicle, can carry up to 12 fully equipped infantrymen. The engine compartment is located in the rear of the vehicle and can take either the Pegaso Model 9220 or Model 9100/41 liquid-cooled diesel engine. The Model 9220 is rated at 167.04 kilowatts (224 horsepower) and is coupled to an automatic gearbox, while the Model 9100/41 is rated at 126.82 kilowatts (170 horsepower) and is coupled to a manually operated gearbox. The Blindado Ligero de Ruedas has a hydraulic, power-assisted steering system and can reach a maximum road speed of 93 kilometers (57.78 miles) per hour. Two 100 liter fuel tanks give the vehicle a range of 570 kilometers (353.97 statute miles).

The vehicle is smoke- and gas-proof and is also equipped with a ventilation system and a semi-automatic fire-extinguishing system to protect the engine, gearbox compartment, and wheels. Optional equipment, other than armament and a choice of engines and gearboxes, includes a front-mounted 4,500 kilogram capacity winch, smoke or CS gas grenade launchers, various types of communications equipment, riot-control equipment and loudspeakers, different pattern run-flat tires, night vision devices, and a front-mounted obstacle-removing blade. The Blindado Ligero de Ruedas can be equipped with a wide range of weaponry, including the 12.7 millimeter M2HB machine gun, a 20 or 25 millimeter cannon, or a cannon up to 90 millimeters in caliber.

Funding

Although no specific funding details are available, the Spanish Ministry of Defense has provided some developmental support for the Blindado Ligero de Ruedas program through the Spanish Army and Civil Guard.

Recent Contracts

Not available, as contractual information is not released.

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
	1978	Development of BLR 3545 to specifications of Spanish Army and Civil Guard commenced
June	1982	Development completed and acceptance given by Civil Guard
Early	1983	Production commenced
November	1985	Deliveries of initial orders to Spanish Marine Infantry and Civil Guard completed
Mid	2003	Production dormant but marketing continues; vehicle available for new orders

Worldwide Distribution

Export Potential. Despite the marketing efforts of the prime contractor, as of mid-2003, only one small export order had been placed for the Blindado Ligero de Ruedas. Although the Blindado Ligero de Ruedas was developed to meet Spain's counterinsurgency and internal security problems, the vehicle could be useful in many other situations, thus making it suitable for a number of other countries and regions. The Blindado Ligero de Ruedas and vehicles of its type offer several tactical advantages to paramilitary organizations and specialized police units. Efforts to market the Blindado Ligero de Ruedas for export will continue for the foreseeable future.

Countries. Ecuador (22), Spain (202)

Forecast Rationale

There have been no major developments in the Blindado Ligero de Ruedas program over the past year. Production of the vehicle remains dormant, although a rather strong marketing effort is still under way.

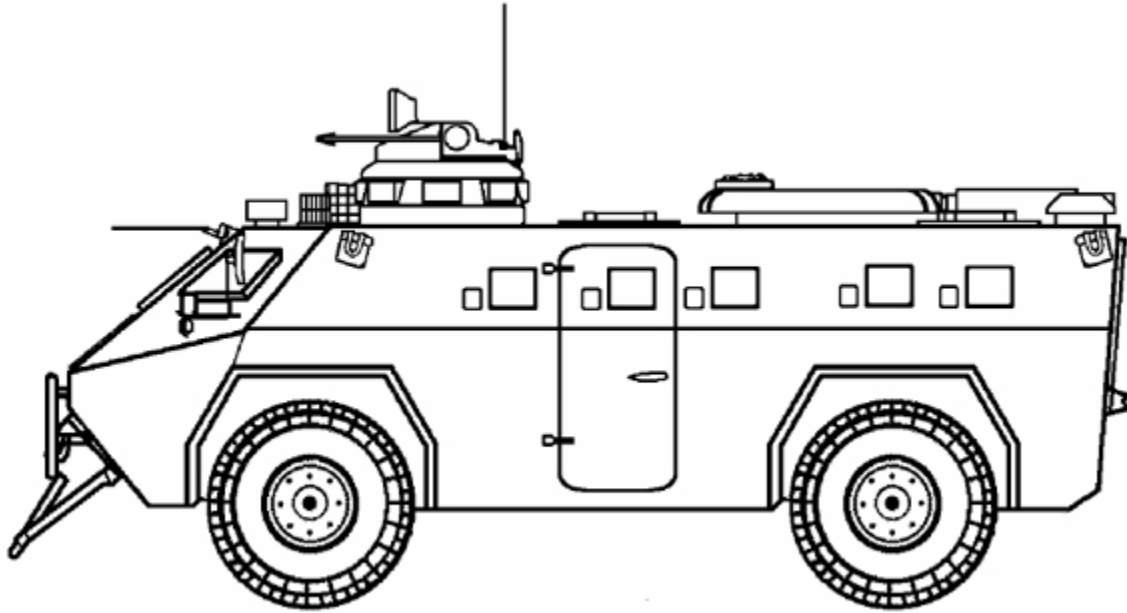
Given the rather lackluster sales of the Blindado Ligero de Ruedas of late, our production forecast through the coming 10 years is minimal – only one sale on the export market is forecast. This will most likely address an internal security requirement of the projected export customer.

Ten-Year Outlook

ESTIMATED CALENDAR YEAR PRODUCTION

Vehicle	(Engine)	through 02	High Confidence Level				Good Confidence Level				Speculative		Total 03-12	
			03	04	05	06	07	08	09	10	11	12		
SANTA BARBARA SISTEMAS BLINDADO LIGERO DE RUEDAS (a)	MODEL 9220	227	0	0	0	3	9	10	0	0	0	0	0	22
Total Production		227	0	0	0	3	9	10	0	0	0	0	0	22

(a) The through 2002 production includes three prototype/development vehicles.



BLR 3545

Source: Forecast International