WHEELED ARMORED PERSONNEL CARRIERS

ADI/Thales Australia Bushmaster

Notes: The Bushmaster Protected Mobility Vehicle was designed as a successor to the S-600, under the Bushranger Infantry Mobility Vehicle competition; it eventually emerged as the winner of that competition, with development beginning in 1998. The development and testing process was long, incloved, and troubled, and deliveries did not begin until 2005. The Bushmaster is based on a design originally conceived by the Irish company of Timoney; considerable portions of the Bushmaster are therefore manufactured under a licensing agreement with Timoney, though production is undertaken wholly in Australia. ADI began the part of the design process done in Australia, but production later passed to Thales Australia, who also developed several variants. (Virtually all of these variants differ primarily in internal arrangements and equipment; externally, almost all of the different versions differ little from each other.) The primary users of the Bushmaster are the Australian Army and Air Force, but it is also used by the Dutch Army and British Army. The Bushmaster was also evaluated by the US Army and Marines; though they ultimately went with another vehicle to fill their light MRAP requirement, they have not completely closed the door on Bushmaster acquisition, and Oshkosh Trucks stands ready to set up a license-production line just in case. The United Arab Emirates, Spain, and Iraq are also trialing the Bushmaster.

The Bushmaster, like the S-600, is a wheeled APC with for the most part average protection levels for a vehicle of its type. (Thales Australia terms the Bushmaster an Infantry Mobility Vehicle, or IMV, to underscore the role that the primary role of the Bushmaster is battlefield transport and not for troops to fight from the vehicle.) However, the Bushmaster is also an MRAP (Mine Resistant Ambush Protected) vehicle, and has a lower hull design with a V-shaped bottom designed to deflect the blast from a mine or IED away from the vehicle. Though this design does not necessarily allow the Bushmaster to hit a mine and get away unscathed, the design offers enhanced protection to the crew and troops inside, even if, for example, the blast is enough to blow the wheels off or immobilize the suspension or damage the automotive components. In addition to the protection afforded by the hull floor in the stats below, the crew, troops, and equipment inside a Bushmaster which hits a mine or IED have the damage they suffer reduced by 25%. The anti-mine features are also enhanced by the Bushmaster's high suspension and run-flat tires. The armor of the Bushmaster is of all-welded steel, leaving no rivets to pop loose and ricochet around the interior of the vehicle upon a hit. The armor of the Bushmaster can be supplemented by appliqué armor.

Configuration-wise, the Bushmaster greatly resembles the S-600, though the nose is tall and flat in the front with a large grille with armored shutters in front, and a gently-sloping section back to the windshield. The windshield is a single large piece of bullet-resistant glass; the sides of the cab have relatively small windows, also of bullet-resistant glass. Depending upon customer requirements, the sides of the troop compartment may have up to three windows of varying sizes, and the large rear door likewise has a window of a size depending upon the wishes of the buyer. Each side of the vehicle may have two or three firing ports; the rear door also has a firing port. Like the S-600, spare tires are found on the sides of the hull on either side of the rear, and projecting slightly out from the rear; the rear door itself is actually quite narrow. The Bushmaster does not have a separate gunner's position; instead, the commander in the right-hand seat mans the vehicle's weapon. Depending upon the role of the vehicle and the requirements of the buyer, this position may be a simple hatchway, a manually-rotating cupola, or an electrically-rotating cupola. This position may be armed with a variety of light, medium, or heavy machineguns or automatic grenade launchers (examples are given below in the stats). Most of the time, the commander's position is surrounded by AV2 gun shields. In 2008, the Dutch began putting a Thales SWARM OHWS on some of their Bushmasters in lieu of the standard commander's position, giving it a superior weapons fit with assistance from a laser rangefinder, ballistic computer, and several telescopic and night vision sighting devices. Some Australian Army vehicles have also had a similar modification, but based on the US-made Raven CROWS OHWS; these modifications began in 2007. There are two hatches on the rear roof of the troop compartment; to the rear of each hatch is a mounting point for a pintle to allow a SAW-type weapon to be mounted (usually the Minimi in the countries which are using the Bushmaster so far); these are manned by the infantry squad in the rear. I have included these in the stats below. I have also included two clusters of four smoke grenade launchers on the hull roof behind the cab area, another optional feature often fitted.

Originally, the versions in use by the Australian Army and Australian Air Force differed greatly internally, with the Army version having less space for troops and more for storage of weapons, equipment, and ammunition. In addition, the Army version was initially fitted with a 270-liter tank internally for drinking water, and had a separate gunner's station. The gunner's hatchway is normally plated over. However, the Australian Army (and those used by other countries) have since removed much of the dedicated storage and the water tank, and has drawn closer to the Security Vehicle version used by the Australian Air Force, which can carry more troops. Of course, this has led to much troop equipment as well as some boxes containing ammunition being carried externally on the roof or sides of the vehicle. The original IMV version and the Security Version have therefore essentially merged in design, with the Security Version now being called an IMV. Though in the stats below, I refer to the original IMV version as the "IMV" and the version being used now as simply the "Bushmaster," keep in mind that the old Security Version is now the standard Bushmaster version.

The Bushmaster is powered by a Caterpillar 3126E turbocharged diesel engine, developing 330 horsepower, and coupled to a fully automatic transmission. As stated above, the suspension is high and well-cushioned, more to provide additional mine protection for the crew and troops inside than for comfort. This suspension, however, also gives it excellent cross-country mobility.

Other APC-type versions of the Bushmaster include a command variant, which externally differs primarily in the extra antennas and internally has two short-range, two medium-range, and one long-range radio, the latter of which is data-capable. It carries a ruggedized laptop computer and has simple map boards and plotting and office-type supplies for use by the command crew. An armored ambulance version exists, able to carry four stretcher cases or two stretcher cases and three seated patients in the rear in addition to two medics, and having equipment such as an oxygen administration set, a defibrillator, the equivalent of two doctor's medical bags and 20 personal medical kits, and various other medical supplies such as splints, bandages, cravats, etc. The armored ambulance is unarmed. Other non-APC variants include a combat engineer vehicle and a mortar carrier. There is also a "Direct Fire

Weapons Variant," which I have, unfortunately, have not been able to find anything about; any help here would be appreciated.

The newest member of the family, due to enter service in late 2011 or early 2012 with the Australian Army and Air Force, is a logistics carrier version called the Armored Combat Support Vehicle (ASCV). This version retains the cab of the standard bushmaster along with a small space behind the seats for crew equipment, but the rear is replaced by a flatbed load deck equipped with tie-down and lock-down points, and designed especially for palletized and containerized cargoes. The cargo bed has retractable rollers in it, and ramps are carried to help roll the pallets or containers off of the cargo bed. The ASCV is also equipped with a small crane along a "wall" against the rear of the cab which has a capacity of three tons. The lower hull retains the V-shaped bottom and the cab contains the same anti-mine protection for the crew. Above the commander's position is a ring mount for a machinegun or grenade launcher. The side cab doors are smaller, but under them are steps which not only help the crew climb out of the vehicle, but they have the primary function of giving the crew somewhere to stand when operating the crane and unloading cargo. These step/fenders also have a ladder built into them for the crew to climb down. No appliqué armor package has been devised for the ASCV. The rear mounts for Minimis are also not found on the ASCV.

Twilight 2000 Notes: Only tiny amounts of the Bushmaster (only six) were fielded by the Australian Army in the Twilight 2000 timeline. These were all of the original-configuration IMV version.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Bushmaster IMV	$31,982	D, A	2.3 tons	14 tons	3+7	6	Headlights	Enclosed
Bushmaster IMV (w/Appliqué)	$33,087	D, A	2.1 tons	14.4 tons	3+7	6	Headlights	Enclosed
Bushmaster	$30,659	D, A	3.3 tons	13.5 tons	2+10	6	Headlights	Enclosed
Bushmaster (w/Appliqué)	$31,764	D, A	3.1 tons	13.9 tons	2+10	6	Headlights	Enclosed
Bushmaster w/OHWS	$125,039	D, A	3.2 tons	13.7 tons	2+10	6	Headlights	Enclosed
Bushmaster w/OHWS (w/Appliqué)	$126,144	D, A	3 tons	14.1 tons	2+10	6	Headlights	Enclosed
Bushmaster CPV	$210,927	D, A	1.7 tons	14.2 kg	2+5	7	Headlights	Enclosed
Bushmaster CPV (w/Appliqué)	$212,032	D, A	1.5 tons	14.6 tons	2+5	7	Headlights	Enclosed
Bushmaster AMV	$35,258	D, A	1.7 tons	13.7 tons	**	7	Headlights	Enclosed
Bushmaster AMV (w/Appliqué)	$36,363	D, A	1.5 tons	14.1 tons	**	7	Headlights	Enclosed
Bushmaster ASCV	$22,655	D, A	7.5 tons	9 tons	2	6	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Bushmaster IMV	186/94	46/24	385	175	Stnd	W(3)	HF6 HS3 HR3*
Bushmaster IMV (w/Appliqué)	183/92	44/24	385	179	Stnd	W(3)	HF8 HS4 HR3*
Bushmaster	192/97	47/25	385	170	Stnd	W(3)	HF6 HS3 HR3*
Bushmaster (w/Appliqué)	189/95	46/24	385	173	Stnd	W(3)	HF8 HS4 HR3*
Bushmaster w/OHWS/Bushmaster AMV	190/96	47/25	385	172	CiH	W(3)	TF2 TS2 TR2 HF6 HS3 HR3*
Bushmaster w/OHWS (w/Appliqué)/Bushmaster AMV (w/Appliqué)	184/93	46/24	385	177	CiH	W(3)	TF2 TS2 TR2 HF8 HS4 HR3*
Bushmaster CPV	184/93	46/24	385	177	Stnd	W(3)	HF6 HS3 HR3*
Bushmaster CPV (w/Appliqué)	179/90	43/23	385	182	Stnd	W(3)	HF8 HS4 HR3*
Bushmaster ASCV	291/147	71/37	385	112	Stnd	W(3)	HF6 HS3 HR3***

Vehicle	Fire Control	Stabilization	Armament	Ammunition
IMV/Bushmaster	None	None	MAG, M-2HB, or Mk 19	1800x7.62mm,

			(C), 2xMinimi (Rear)	1100x.50, or 360x40mm; 2400x5.56mm
Bushmaster w/OHWS	+2	Fair	M-2HB, 2xMinimi (Rear)	1100x.50, 2400x5.56mm
Bushmaster CPV	None	None	MAG, M-2HB, or Mk 19 (C), 2xMinimi (Rear)	1400x7.62mm, 825x.50, or 270x40mm; 1800x5.56mm
Bushmaster ASCV	None	None	MAG, M-2HB, or Mk 19 (C)	1800x7.62mm, 1100x.50, or 360x40mm

*Frontal hits are 25% likely to hit the windshield, which has an AV of 5. Hull floor AV is 6Sp, and damage to the occupants and internal equipment will be 25% less than normal (or for components, is 25% likely for them to remain undamaged or suffer only partial damage). Roof AV is 3.

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Shorland/Tenix S-55

Notes: A part of the Shorland 5-Series, the S-55 is a development of the original British Shorland Mk 3 armored patrol vehicle, which has been enlarged by basing it on the Land Rover 110 series and giving it a large, box-shaped body and slightly-improved armor. The large interior space not only increases its utility as a light APC, it also makes it useful to civilian agencies such as armored car companies, police, and news agencies and relief agencies which are operating in war zones. The fact that it is not a large, heavily-armed vehicle also means that it has a relatively “non-threatening” appearance, making it useful as a patrol vehicle for UN peacekeeping forces. Though Australia and Britain no longer use the S-55 in a military role, current military users include Malaysia, Pakistan, Sri Lanka, Turkey, and several Pacific island nations. It should be noted that while the S-55 design was acquired by Tenix Defence Systems (now part of BAE Australia) in 1996, and they now make replacement parts and do repairs and refurbishment on the S-55 (they are the “point of contact” for the S-55), no actual complete S-55 production was ever done in Australia; the S-55s now in existence were actually built in Britain.

The S-55 sort of resembles an oversized SUV, with a large, flat front end containing the engine compartment and transmission and the boxy combined cab and rear area. Each side of the cab area has doors with bullet-resistant windows in them, and the front of the cab has a bullet-resistant windshield composed of two panes. An option is armored shutters for the front and side windows, which have slits in them for vision. Another option is firing ports in either or both doors and a firing port below the front window on the commander’s side. Behind the cab is a hatch for a gunner or observer; this may be equipped with an actual rotating cupola, or be a simple hatchway. The gunner’s position may also have a raisable seat or stand below it, or have a simple firing step or raised platform. This position may be equipped with a pintle mount for a weapon; the sides and/or rear can also be equipped with projectors for smoke or irritant gas grenades, some of which can fire those grenades as much as 50 meters. The S-55 has two large doors in the rear, and optionally, up to three firing ports may be placed in each side and one in each rear door. The basic interior details include folding bench seats down either side of the vehicle; exact interior details (and even the crew and passenger capacity) vary wildly depending upon the function and role of the individual S-55. Similarly, though not to the same extreme, exterior details can vary greatly, including extra hatches atop the vehicle, windows, loudspeakers and communications equipment, spotlights and searchlights, and smoke grenade launchers banks or clusters. The greatest variances are actually made by the individual civilian users instead of military users. Likewise, engines can vary, but the most common ones are a 134-horsepower gasoline engine or a 107-horsepower diesel engine. Transmission is normally automatic, but the S-55 could also be had with a manual transmission. Right-side and left-side drive versions were made. Even non-APC versions were made, including a carrier for MANPADS SAMs and a rare fire support version designed for convoy escort armed with multiple machineguns or automatic grenade launchers in an enlarged gunner’s position on the roof with an electrically-rotating cupola surrounded by gun shields, and the rear area largely taken up by ammunition storage.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
S-55 (Gas Engine)	$10,608	G, A	800 kg	3.6 tons	3+6	2	Headlights	Enclosed
S-55 (Diesel Engine)	$10,508	D, A	800 kg	3.6 tons	3+6	2	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
S-55 (Gas Engine)	253/133	61/32	136	88	Stnd	W(2)	HF3 HS2 HR2

S-55 (Diesel Engine)	206/130	50/26	136	51	Stnd	W(2)	HF3 HS2 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
S-55	None	None	MAG or M-2HB (C)	800x7.62mm or 500x.50

Shorland/Tenix S-600

Notes: As with the S-55, Tenix did not originally design or manufacture the S-600 – it was originally a product of the British firm of Shorland before they were bought out by Tenix (and later by BAE Australia). Shorland, while still able to market the S-55 to many countries' armed forces and police, found that other potential customers felt that while the S-55 was almost the right vehicle, it was too small, not powerful enough automotively, and needed better protection. This led to the development of the S-600, with production starting in 1995. Though production stopped in 1999 after Shorland's buyout by Tenix, Tenix restarted production in 2001 due to an order by the Belgian Gendarmerie and some other unnamed parties. In between, the S-600 was bought Kuwait, Australia, several police and National Guard/Territorial-type units worldwide, and other unnamed parties.

Like the S-55, both the internal and external appointments of the S-600 can vary greatly depending upon the user's requirements. The S-600, however, is a physically much larger vehicle based upon the Unimog 1550L/2150L truck chassis instead of a Land Rover chassis. This provides a larger, stronger, and more robust chassis than the Land Rover 110. The overall layout is essentially the same as the S-55, being a large, boxy armored vehicle on wheels; however, the entire vehicle is larger, the suspension higher, and the nose blunter with a more sloped hood. The S-600 is also easily recognizable by the carriage of its two spare tires, which are on the rear sides on either side of the doors (and project out slightly from the rear on either side). Armor protection overall is greatly improved, especially over the front arc, where it rivals or exceeds many tracked light APCs. Improved technology has also allowed the front and side cab windows to offer protection almost equal to the rest of the front arc, and the side windows' protection levels are equal to that of the rest of the side armor. The armor of the S-600 is also composed of all-welded steel instead of riveted steel. The interior of the S-600 is protected by Kevlar anti-spalling panels, and add-on appliqué armor is available. The floor armor is also given increased protection against mines and IEDs, and appliqué armor can also be added to the floor of the vehicle. The tires are of the run-flat type.

Two primary variants of the S-600 are available. The Infantry Mobility version is equipped with a 214-horsepower turbocharged OM-366LA diesel engine and is primarily designed for use as a light wheeled APC; it is also normally equipped with a cupola over the gunner's position that has a pintle mount for a weapon and is surrounded by AV2 gun shields; the pintle mount can take any sort of light, medium, or heavy machinegun, or an automatic grenade launcher (the Kuwaitis often mount a Mk 19 AGL); the weapons listed below are general representatives. This version has internal racks for troop weapons, equipment, and ammunition, and typically has three firing ports in the hull sides and one in each rear door; an internal 100-liter tank for drinking water is also common as well as a hot plate for heating rations, as are compartments for troop rations and equipment. It also often has additional hatches in the vehicle's roof, ranging from two long ones to six smaller ones. Typical equipment also includes clusters of 3-5 smoke grenade launchers on either side of the front roof of the vehicle. (The stats below assume the most usual clusters of four launchers.)

The Internal Security model is a bit more sparsely equipped in the rear, without the normal weapons racks and with much less space for ammunition. It has much less storage space for equipment, and generally does not have the gunner's cupola of the Infantry Mobility version. This is due to its role as a police vehicle, and it is often used to deploy SWAT, SRT, or riot control teams to hot areas. Though it does not have the internal appointments of the Infantry Mobility version, it carries a much larger police team than the Infantry Mobility version's troop squad. Though the Internal Security version may have a cupola, it is not normally armed; normally, only an observer's hatch is fitted. The engine requirements are also less than the Infantry Mobility version; the Internal Security model has less powerful version of the Infantry Mobility model's engine, the OM-366L, which develops only 156 horsepower. Only one fuel tank is carried instead of two. A modified form of the smoke grenade launchers are normally retained, and can be used to fire smoke or irritant gas grenades of the standard type found in most police departments, or tailored for the grenades found in a particular police department.

Twilight 2000 Notes: This vehicle can be found in various places in the world in the Twilight 2000 timeline, though normally in small numbers; the largest users were the Kuwaiti National Guard, who had 22 of the Infantry Mobility version at the start of the Twilight War. Most other users are police forces (but not the Belgians in the Twilight 2000 timeline), and the individual departments using them in a given city or small country might have only one or two of them depending on the size of the police department.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Infantry Mobility	$21,067	D, A	2 tons	12.5 tons	3+7	8	Headlights	Enclosed
Infantry Mobility (w/Appliqué)	$22,022	D, A	1.7 tons	13 tons	3+7	8	Headlights	Enclosed
Internal Security	$13,340	D, A	3 tons	9 tons	3+11	4	Headlights	Enclosed
Internal Security (w/Appliqué)	$14,384	D, A	2.7 tons	10 tons	3+11	4	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Infantry Mobility	147/74	36/19	320	111	Stnd	W(3)	HF6 HS3 HR2*
Infantry Mobility	142/72	34/18	320	114	Stnd	W(3)	HF8 HS4 HR2**

(w/Appliqué)							
Internal Security	143/73	34/18	160	78	Stnd	W(3)	HF6 HS3 HR2*
Internal Security (w/Appliqué)	134/68	32/17	160	85	Stnd	W(3)	HF8 HS4 HR2**

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Infantry Mobility	None	None	MAG, M-2HB, or Mk 19 (C)	1600x7.62mm, 1000x.50BMG, or 320x40mm

*Frontal hits are 25% likely to hit the windshield, which have an AV or 4. Floor armor is 4.
**Frontal hits are 25% likely to hit the windshield, which have an AV or 4. Floor armor is 5.

Steyr-Daimler-Puch Pandur

Notes: The Pandur series is comprised of a bewildering number of variants, including those used by various countries, those tested by even more countries, and prototypes and demonstrator vehicles sold by Steyr-Daimler-Puch. Though Steyr-Daimler-Puch designed and sells the Pandur, actual manufacturing of the Pandur series is largely undertaken by GDLS Europe, MOWAG, and Santa Barbara Sistemas. The Pandur I first appeared in 1986. Users include Austria, Kuwait, the Czech Republic, Portugal (the largest user of the Pandur II), Belgium, Equatorial Guinea, and Slovenia; in addition, it has been evaluated by or is under evaluation by as many as 10 other countries, including the US Army, who tested it as a possible base for what eventually became the Stryker (using a LAV III base, not the Pandur), and also use small numbers for SOCOM. There have been two broad versions of the Pandur: the Pandur I and Pandur II (the most numerous version). These base vehicles can be topped by a bewildering variety of turrets and equipped in a bewildering number of ways; I will elaborate on some of the APC versions here, but will definitely only scratch the surface of the possibilities for the Pandur. The Pandur is a modular design which can easily be fitted out to the specifications of its customers, but has been criticized for being underpowered and underprotected, and having limited range.

The Pandur I is no longer in production, having been replaced in production by the Pandur II, but parts are still being manufactured as they are still in service with several countries. The Pandur I itself comes in two basic hull configurations: the Model A, with the center and rear roof being raised somewhat and the vehicle not being amphibious; and the Model B, with a flat center and rear roof and the vehicle being amphibious. Both are 6x6 vehicles. Both models have APC versions, but only the Model A has Command Post and Armored Ambulance versions. Armor protection in both cases is slim, with frontal protection being rated against only .50/12.7mm rounds and the sides and rear 7.62mm rounds. Armor weight is kept down by sharp sloping at the front and moderate sloping on the sides, and there is a Kevlar anti-spall liner and an additional anti-mine plate under the vehicle. The design of the Pandur's hull also helps minimize the radar cross-section and dampens the IR signature. The Model B is heavy enough and the Model A heavier, but the Steyr WD-612 turbocharged engine is only average at 260 horsepower. Engine noise; however, is baffled and dampened to reduce its levels. The transmission is fully automatic and electronically-controlled. Amphibious versions have steerable propellers at the rear for propulsion; in water, the Pandur can turn 180 degrees in 8 seconds. The driver is on the front right, and has three wide-angle vision blocks to his front, one of which may be replaced by a night vision block. Access for the troops is by two large doors in the rear. Firing ports, up to three in each side and two in the rear, are an option.

The typical armament, chosen by most users, is provided in a gunner's station equipped by a heavy and light machinegun in a small, electrically-rotating cupola. The cupola, however, is well-equipped with telescopic vision gear as well as night vision gear, along with a laser rangefinder and ballistic computer, though it provides little protection for the gunner; the commander can also access the gunner's sights; though he has no auxiliary controls for the weapons. This is the typical armament used by the Model A, as the other turrets don't fit on the Model A. The commander himself is in a smaller cupola to the left and somewhat to the rear of the gunner's cupola. The Model B has that turret as well as several other options, including the MICV-25 and MICV-30, equipped with autocannons and two-man turrets, and the MICV-40, using a smaller turret than the MICV-25 and MICV-30 (though still two-man) armed with an automatic grenade launcher/machinegun combination. These turrets have better protection levels than the small basic cupola. The typical armament for these turrets is listed below, though the specific armament can vary depending upon the needs of the user.

Command versions have the typical equipment of most command versions as a baseline, including one short-range, two medium-range, and two long-range radios (one of which is data-capable); a map board and various plotting and office-type supplies, a ruggedized laptop computer, and a hand-held thermal imager, image intensifier, and laser rangefinder. The command version is typically armed with the basic cupola. The ambulance version carries a medic in addition to the basic crew, and can carry up to four stretcher patients or two stretcher patients and four seated patients. It carries an oxygen administration set, a defibrillator, and a small refrigerator for perishable medical supplies. It also carries medical supplies such as splints, various bandages, and the equivalent of two doctor's medical bags and 20 personal medical kits. It is unarmed, but has a commander's cupola with all-around vision blocks.

The Pandur II

The Pandur II is characterized primarily by its longer wheelbase; it is nearly a meter longer than the Pandur I, and found both in 6x6 and 8x8 configurations. (The 8x8 version has an even greater increase in length.) Width and height remain about the same. The base engine of the Pandur II is a Cummins ISC-350 turbocharged diesel with an output of 285 horsepower, but options include other variants of the ISC-350 with outputs of 355, 385, or 400 horsepower, and Steyr-Daimler-Puch is willing to design in other engines at a customer's request. There are is only one roof type, and it is equivalent in height to the Pandur's Model B (and is, in fact, a few centimeters lower than the Pandur I Model B). The same sorts of baseline turrets are offered for the Pandur II, and as with the Pandur I, the customer can specify other turrets to be installed. Something new first offered in the Pandur II are Overhead Weapons Stations, with several baseline OHWSs offered, and again others being available as per customer request. The larger size allows for more troops and/or ammunition to be carried, or in specialist versions, more equipment. The baseline turrets are generally offered with better fire control equipment, though again customer request can alter this equipment (down or up). Hunter/killer combinations are also offered for the baseline turrets. Armor is increased somewhat; however, appliqué armor is available for the hull and all turret/cupola configurations. (Though firing ports are also an option on the Pandur II – up to four per side and two in the rear on the 8x8 version – appliqué armor normally blocks the side firing ports.) The appliqué armor used for the Pandur is normally a lightweight appliqué based on ceramic composite enclosed in thin steel. The baseline configuration gives the crew and passengers a collective NBC system, with an NBC overpressure system being an option. Normal access for the troops is via two large doors in the rear, but

a powered ramp can also be fitted. Other standard equipment includes a front-mounted winch with a capacity of 6 tons, or 12 tons with block and tackle. The Pandur II is also amphibious as standard, propelled in the water by steerable waterjets. Steering is power-assisted, and the Pandur II has antilock brakes. Turning radius is surprisingly small, with the Pandur II being able to turn 180 degrees in 9 meters for the 6x6 version and 10 meters for the 8x8 version.

The Czech Republic uses a special version of the 8x8 Pandur II, called the KBVP. This is an MRAP version, with a V-shaped lower hull; this version, in addition to enhanced floor armor, means that the crew and interior equipment take 25% less damage from a mine or IED it may run over. It is also armed with a version of the Israeli Rafael RCWS-30 OHWS, armed with a 30mm autocannon and a pair of ATGM launchers, as well as three smoke grenade launchers of each side of the turret. The OHWS is specially-designed for the KBVP, and has thermal imaging, a pair of low-light cameras with image intensification, and a hunter/killer configuration. The second LLTV/image intensifier is mast-mounted on a short mast which gives it a total height of 3.5 meters above the ground. The KBVP is also equipped with both a laser warning system and an IR illumination warning system, which can detect when the KBVP is being observed by IR or thermal viewers on a roll of 12+. A reconnaissance version, the KBV-Pz, also carries a ground surveillance radar set, though it carries less troops. The KBVP uses a powerful 455-horsepower engine which gives the KBVP tremendous speed and power despite the added weight, but also severely limits range. KBVP acquisition has been curtailed; the original requirement was for 199, but it has been halted at 107 total. This is partially due to an investigation around possible bribes and corruption surrounding the KBVP order, the investigation of which started in February of 2010.

The Valuk – The Slovenian Pandur II

The Valuk ARSV (Armored Reconnaissance and Scout Vehicle) is a highly-specialized version of the Pandur II used by the Slovenian Army, who use 85 of them. They are not meant as APCs, but as armored scout vehicles, with an accent on the rear area being used for ammunition stowage, extra communications equipment, and crew supplies for long-range operation. The Valuk is a 6x6 version of the Pandur II, and is therefore smaller than most countries' versions of the Pandur II, but carries a smaller dismount squad and more equipment and ammunition, and it is more heavily-armed than most Pandur IIs. The Valuk, however, has been criticized as being too heavy and underpowered for its role. Armor is likewise considered as being too light for its role. It also has smaller fuel tanks than other Pandur IIs. The Valuk uses a Rafael OWS-25 overhead weapons station with a TOW ATGM launcher mounted as additional armament. An alternate turret is an OHWS with a heavy machinegun and a 40mm automatic grenade launcher. The Valuk, however, eschews the standard engines offered for the Pandur II for a Steyr WD 612.95 256-horsepower diesel engine with an automatic transmission and a locking differential. The Valuk has the standard armor of a Pandur II, but Rafael has devised an appliqué ceramic/aluminum sandwich armor to increase protection. The 6x6 suspension can be switched to 6x4 for road use and has central tire pressure regulation and independent suspension for each wheel. Each wheel has independent shock absorbers, additional coil springs on the front and second pair of wheels, and additional torsion bars on the third axle. The Valuk is not amphibious. It has two additional long-range radios. Fire control is excellent, improved from the standard Rafael station. The crew and passengers have NBC overpressure and a collective NBC backup.

The Slovenians tested a version of the Pandur II as an APC, the Krpan, but ultimately rejected in favor of a version of a Patria AMV. This decision was surrounded by controversy and allegations of bribery.

Twilight 2000 Notes: In the Twilight 2000 timeline, the Pandur I is a much more prevalent version of the Pandur than the Pandur II. Eastern Bloc countries never got a chance to even evaluate the Pandur, though unlicensed production of the Pandur II has taken place in Iran. The US 9th Motorized Infantry Division was using 30 Pandur IIs in one of its battalions at the start of the war.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Pandur I Model A (Cupola)	$78,275	D, A	1.6 tons	13.5 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur I Model A CPV	$334,457	D, A	800 kg	13.6 tons	3+4	12	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur I Model A Ambulance	$90,017	D, A	800 kg	13.9 tons	*	11	Passive IR (D)	Shielded
Pandur I Model B (Cupola)	$77,613	D, A	1.6 tons	13.2 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur I Model B MICV-25	$88,817	D, A	1.4 tons	13.5 tons	3+7	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded

Pandur I Model B MICV-30	$91,890	D, A	1.3 tons	13.6 tons	3+7	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur I Model B MICV-40	$84,734	D, A	1.5 tons	13.4 tons	3+7	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur I Model B CPV	$334,059	D, A	800 kg	13.3 tons	3+4	12	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur I Model B Ambulance	$89,255	D, A	800 kg	13.6 tons	*	11	Passive IR (D)	Shielded
Pandur II 6x6 (Cupola, 285hp)	$86,438	D, A	1.8 tons	15 tons	3+10	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 (Cupola, 355hp)	$86,698	D, A	1.8 tons	15.1 tons	3+10	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 (Cupola, 385hp)	$86,808	D, A	1.8 tons	15.1 tons	3+10	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 (Cupola, 400hp)	$86,863	D, A	1.8 tons	15.1 tons	3+10	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 MICV-25 (285hp)	$157,862	D, A	1.6 tons	15.3 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 MICV-25 (355hp)	$158,122	D, A	1.6 tons	15.4 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 MICV-25 (385hp)	$158,232	D, A	1.6 tons	15.4 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 MICV-25 (400hp)	$158,287	D, A	1.6 tons	15.4 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 MICV-30 (285hp)	$160,967	D, A	1.5 tons	15.4 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 MICV-30 (355hp)	$161,227	D, A	1.5 tons	15.5 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 MICV-30 (385hp)	$161,337	D, A	1.5 tons	15.5 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II	$161,392	D, A	1.5	15.5	3+8	10	Passive IR (D, G),	Shielded

6x6 MICV-30 (400hp)			tons	tons			Image Intensification (G), Thermal Imaging (G)	
Pandur II 6x6 MICV-40 (285hp)	$153,444	D, A	1.7 tons	15.2 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 MICV-40 (355hp)	$153,704	D, A	1.7 tons	15.3 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 MICV-40 (385hp)	$153,814	D, A	1.7 tons	15.3 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 MICV-40 (400hp)	$153,869	D, A	1.7 tons	15.3 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 (Cupola, 285hp) w/Appliqué	$89,488	D, A	1.5 tons	16.3 tons	3+10	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 (Cupola, 355hp) w/Appliqué	$89,748	D, A	1.5 tons	16.4 tons	3+10	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 (Cupola, 385hp) w/Appliqué	$89,858	D, A	1.5 tons	16.4 tons	3+10	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 (Cupola, 400hp) w/Appliqué	$89,913	D, A	1.5 tons	16.4 tons	3+10	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 MICV-25 (285hp) w/Appliqué	$163,226	D, A	1.3 tons	16.6 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 MICV-25 (355hp) w/Appliqué	$163,486	D, A	1.3 tons	16.7 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 MICV-25 (385hp) w/Appliqué	$163,596	D, A	1.3 tons	16.7 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 MICV-25 (400hp) w/Appliqué	$163,651	D, A	1.3 tons	16.7 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 MICV-30 (285hp) w/Appliqué	$166,393	D, A	1.2 tons	16.7 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II	$166,653	D, A	1.2	16.8	3+8	10	Passive IR (D, G),	Shielded

6x6 MICV-30 (355hp) w/Appliqué			tons	tons			Image Intensification (G), Thermal Imaging (G)	
Pandur II 6x6 MICV-30 (385hp) w/Appliqué	$166,763	D, A	1.2 tons	16.8 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 MICV-30 (400hp) w/Appliqué	$166,818	D, A	1.2 tons	16.8 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 MICV-40 (285hp) w/Appliqué	$158,720	D, A	1.4 tons	16.5 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 MICV-40 (355hp) w/Appliqué	$158,980	D, A	1.4 tons	16.6 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 MICV-40 (385hp) w/Appliqué	$159,090	D, A	1.4 tons	16.6 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 MICV-40 (400hp) w/Appliqué	$159,145	D, A	1.4 tons	16.6 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 OHWS-50 (285hp)	$146,404	D, A	1.8 tons	15 tons	3+10	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 OHWS-50 (355hp)	$146,664	D, A	1.8 tons	15.1 tons	3+10	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 OHWS-50 (385hp)	$146,774	D, A	1.8 tons	15.1 tons	3+10	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 OHWS-50 (400hp)	$146,829	D, A	1.8 tons	15.1 tons	3+10	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 OHWS-25 (285hp)	$156,761	D, A	1.7 tons	15.2 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 OHWS-25 (355hp)	$157,021	D, A	1.7 tons	15.3 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 OHWS-25 (385hp)	$157,131	D, A	1.7 tons	15.3 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 OHWS-25 (400hp)	$157,186	D, A	1.7 tons	15.3 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II	$158,834	D, A	1.7	15.2	3+9	10	Passive IR (D, G),	Shielded

6x6 OHWS-30 (285hp)			tons	tons			Image Intensification (G), Thermal Imaging (G)	
Pandur II 6x6 OHWS-30 (355hp)	$159,094	D, A	1.7 tons	15.3 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 OHWS-30 (385hp)	$159,204	D, A	1.7 tons	15.3 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 OHWS-30 (400hp)	$159,259	D, A	1.7 tons	15.3 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 OHWS-40 (285hp)	$152,477	D, A	1.7 tons	15.1 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 OHWS-40 (355hp)	$152,737	D, A	1.7 tons	15.2 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 OHWS-40 (385hp)	$152,847	D, A	1.7 tons	15.2 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 OHWS-40 (400hp)	$152,902	D, A	1.7 tons	15.2 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 OHWS-50 (285hp) w/Appliqué	$149,508	D, A	1.6 tons	15.9 tons	3+10	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 OHWS-50 (355hp) w/Appliqué	$149,768	D, A	1.6 tons	16 tons	3+10	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 OHWS-50 (385hp) w/Appliqué	$149,878	D, A	1.6 tons	16 tons	3+10	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 OHWS-50 (400hp) w/Appliqué	$149,933	D, A	1.6 tons	16 tons	3+10	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 OHWS-25 (285hp) w/Appliqué	$159,968	D, A	1.5 tons	16.1 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 OHWS-25 (355hp) w/Appliqué	$160,228	D, A	1.5 tons	16.2 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 OHWS-25 (385hp) w/Appliqué	$160,338	D, A	1.5 tons	16.2 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II	$160,393	D, A	1.5	16.2	3+9	10	Passive IR (D, G),	Shielded

6x6 OHWS-25 (400hp) w/Appliqué			tons	tons			Image Intensification (G), Thermal Imaging (G)	
Pandur II 6x6 OHWS-30 (285hp) w/Appliqué	$162,062	D, A	1.5 tons	16.1 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 OHWS-30 (355hp) w/Appliqué	$162,322	D, A	1.5 tons	16.2 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 OHWS-30 (385hp) w/Appliqué	$162,432	D, A	1.5 tons	16.2 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 OHWS-30 (400hp) w/Appliqué	$162,487	D, A	1.5 tons	16.2 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 OHWS-40 (285hp) w/Appliqué	$155,641	D, A	1.5 tons	16 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 OHWS-40 (355hp) w/Appliqué	$155,901	D, A	1.5 tons	16.1 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 OHWS-40 (385hp) w/Appliqué	$156,011	D, A	1.5 tons	16.1 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 6x6 OHWS-40 (400hp) w/Appliqué	$156,066	D, A	1.5 tons	16.1 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 (Cupola, 285hp)	$87,235	D, A	1.9 tons	15.5 tons	3+10	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 (Cupola, 355hp)	$87,495	D, A	1.9 tons	15.6 tons	3+10	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 (Cupola, 385hp)	$87,605	D, A	1.9 tons	15.6 tons	3+10	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 (Cupola, 400hp)	$87,660	D, A	1.9 tons	15.6 tons	3+10	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 MICV-25 (285hp)	$158,722	D, A	1.7 tons	15.8 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 MICV-25 (355hp)	$158,982	D, A	1.7 tons	15.9 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II	$159,092	D, A	1.7	15.9	3+8	10	Passive IR (D, G),	Shielded

8x8 MICV-25 (385hp)			tons	tons			Image Intensification (G), Thermal Imaging (G)	
Pandur II 8x8 MICV-25 (400hp)	$159,147	D, A	1.7 tons	15.9 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 MICV-30 (285hp)	$161,827	D, A	1.7 tons	15.9 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 MICV-30 (355hp)	$162,087	D, A	1.7 tons	16 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 MICV-30 (385hp)	$162,197	D, A	1.7 tons	16 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 MICV-30 (400hp)	$162,252	D, A	1.7 tons	16 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 MICV-40 (285hp)	$154,304	D, A	1.8 tons	15.6 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 MICV-40 (355hp)	$154,564	D, A	1.8 tons	15.7 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 MICV-40 (385hp)	$154,674	D, A	1.8 tons	15.7 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 MICV-40 (400hp)	$154,729	D, A	1.8 tons	15.7 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 (Cupola, 285hp) w/Appliqué	$91,186	D, A	1.6 tons	16.8 tons	3+10	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 (Cupola, 355hp) w/Appliqué	$91,446	D, A	1.6 tons	16.9 tons	3+10	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 (Cupola, 385hp) w/Appliqué	$91,556	D, A	1.6 tons	16.9 tons	3+10	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 (Cupola, 400hp) w/Appliqué	$91,611	D, A	1.6 tons	16.9 tons	3+10	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II	$164,103	D, A	1.4	17.2	3+8	10	Passive IR (D, G),	Shielded

8x8 MICV-25 (285hp) w/Appliqué			tons	tons			Image Intensification (G), Thermal Imaging (G)	
Pandur II 8x8 MICV-25 (355hp) w/Appliqué	$164,363	D, A	1.4 tons	17.3 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 MICV-25 (385hp) w/Appliqué	$164,473	D, A	1.4 tons	17.3 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 MICV-25 (400hp) w/Appliqué	$164,528	D, A	1.4 tons	17.3 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 MICV-30 (285hp) w/Appliqué	$167,648	D, A	1.3 tons	17.3 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 MICV-30 (355hp) w/Appliqué	$167,908	D, A	1.3 tons	17.4 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 MICV-30 (385hp) w/Appliqué	$168,018	D, A	1.3 tons	17.4 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 MICV-30 (400hp) w/Appliqué	$168,073	D, A	1.3 tons	17.4 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 MICV-40 (285hp) w/Appliqué	$159,597	D, A	1.5 tons	16.9 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 MICV-40 (355hp) w/Appliqué	$159,857	D, A	1.5 tons	17 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 MICV-40 (385hp) w/Appliqué	$159,967	D, A	1.5 tons	17 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 MICV-40 (400hp) w/Appliqué	$160,022	D, A	1.5 tons	17 tons	3+8	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 OHWS-50 (285hp)	$147,264	D, A	1.9 tons	15.6 tons	3+10	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 OHWS-50 (355hp)	$147,524	D, A	1.9 tons	15.7 tons	3+10	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 OHWS-50 (385hp)	$147,634	D, A	1.9 tons	15.7 tons	3+10	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II	$147,689	D, A	1.9	15.7	3+10	10	Passive IR (D, G),	Shielded

8x8 OHWS-50 (400hp)			tons	tons			Image Intensification (G), Thermal Imaging (G)	
Pandur II 8x8 OHWS-25 (285hp)	$157,621	D, A	1.7 tons	15.7 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 OHWS-25 (355hp)	$157,881	D, A	1.7 tons	15.8 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 OHWS-25 (385hp)	$157,991	D, A	1.7 tons	15.8 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 OHWS-25 (400hp)	$158,046	D, A	1.7 tons	15.8 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 OHWS-30 (285hp)	$160,694	D, A	1.6 tons	15.8 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 OHWS-30 (355hp)	$160,954	D, A	1.6 tons	15.9 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 OHWS-30 (385hp)	$161,064	D, A	1.6 tons	15.9 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 OHWS-30 (400hp)	$161,119	D, A	1.6 tons	15.9 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 OHWS-40 (285hp)	$153,337	D, A	1.8 tons	15.7 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 OHWS-40 (355hp)	$153,597	D, A	1.8 tons	15.8 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 OHWS-40 (385hp)	$153,707	D, A	1.8 tons	15.8 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 OHWS-40 (400hp)	$153,762	D, A	1.8 tons	15.8 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 OHWS-50 w/Appliqué (285hp)	$150,376	D, A	1.7 tons	16.5 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 OHWS-50 w/Appliqué	$150,636	D, A	1.7 tons	16.6 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded

(355hp)								
Pandur II 8x8 OHWS-50 w/Appliqué (385hp)	$150,746	D, A	1.7 tons	16.6 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 OHWS-50 w/Appliqué (400hp)	$150,801	D, A	1.7 tons	16.6 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 OHWS-25 w/Appliqué (285hp)	$160,837	D, A	1.5 tons	16.7 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 OHWS-25 w/Appliqué (355hp)	$161,097	D, A	1.5 tons	16.8 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 OHWS-25 w/Appliqué (385hp)	$161,207	D, A	1.5 tons	16.8 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 OHWS-25 w/Appliqué (400hp)	$161,262	D, A	1.5 tons	16.8 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 OHWS-30 w/Appliqué (285hp)	$163,941	D, A	1.5 tons	16.8 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 OHWS-30 w/Appliqué (355hp)	$164,201	D, A	1.5 tons	16.9 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 OHWS-30 w/Appliqué (385hp)	$164,311	D, A	1.5 tons	16.9 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 OHWS-30 w/Appliqué (400hp)	$164,366	D, A	1.5 tons	16.9 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 OHWS-40 w/Appliqué (285hp)	$156,510	D, A	1.6 tons	16.6 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 OHWS-40 w/Appliqué	$156,770	D, A	1.6 tons	16.7 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded

(355hp)								
Pandur II 8x8 OHWS-40 w/Appliqué (385hp)	$156,880	D, A	1.6 tons	16.7 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Pandur II 8x8 OHWS-40 w/Appliqué (400hp)	$156,935	D, A	1.6 tons	16.7 tons	3+9	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
KBVP	$282,602	D, A	1.1 tons	17.9 tons	3+8	11	Passive IR (D, G, C), Image Intensification (G, C), Thermal Imaging (G)	Shielded
KBV-Pz	$383,198	D, A	550 kg	18.1 tons	3+4	12	Passive IR (D, G, C), Image Intensification (G, C), Thermal Imaging (G), GSR	Shielded
Valuk (OWS-25 Turret)	$145,531	D, A	1.6 tons	13.3 tons	3+4	10	Passive IR (D, G, C), Image Intensification (G, C)	Shielded
Valuk (OWS-25 Turret) w/Appliqué	$149,605	D, A	1.5 tons	13.7 tons	3+4	10	Passive IR (D, G, C), Image Intensification (G, C)	Shielded
Valuk (OWS-40 Turret)	$158,036	D, A	1.5 tons	13.3 tons	3+4	10	Passive IR (D, G, C), Image Intensification (G, C)	Shielded
Valuk (OWS-25 Turret) w/Appliqué	$162,110	D, A	1.5 tons	13.7 tons	3+4	10	Passive IR (D, G, C), Image Intensification (G, C)	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Pandur I Model A (Cupola)	159/80	39/20	275	135	CiH	W(3)	TF2 TS2 TR2 HF6 HS4 HR3
Pandur I Model A CPV	158/79	39/20	275	136	Stnd	W(3)	HF6 HS4 HR3
Pandur I Model A Ambulance	154/73	38/19	275	139	Stnd	W(3)	HF6 HS4 HR3
Pandur I Model B (Cupola)	161/82	40/20/4	275	134	CiH	W(3)	TF2 TS2 TR2 HF6 HS4 HR3
Pandur I Model B MICV-25	159/80	40/20/4	275	135	Trtd	W(3)	TF7 TS5 TR4 HF6 HS4 HR3
Pandur I Model B MICV-30	158/79	43/20/4	275	136	Trtd	W(3)	TF7 TS5 TR4 HF6 HS4 HR3
Pandur I Model B MICV-40	159/80	39/20/4	275	135	Trtd	W(3)	TF5 TS3 TR3 HF6 HS4 HR3
Pandur I Model B CPV	161/81	40/20/4	275	133	Stnd	W(3)	HF6 HS4 HR3
Pandur I Model B Ambulance	158/79	39/20/4	275	136	Stnd	W(3)	HF6 HS4 HR3
Pandur II 6x6 (Cupola, 285hp)	144/73	36/18/3	340	149	CiH	W(3)	TF2 TS2 TR2 HF7 HS4 HR4
Pandur II 6x6 (Cupola, 355hp)	172/87	42/22/4	340	188	CiH	W(3)	TF2 TS2 TR2 HF7 HS4 HR4
Pandur II 6x6 (Cupola, 385hp)	184/94	46/23/4	340	204	CiH	W(3)	TF2 TS2 TR2 HF7 HS4 HR4
Pandur II 6x6 (Cupola, 400hp)	191/96	51/24/4	340	212	CiH	W(3)	TF2 TS2 TR2 HF7 HS4 HR4

Pandur II 6x6 MICV-25 (285hp)	141/72	34/18/3	340	152	Trtd	W(3)	TF7 TS5 TR4 HF7 HS4 HR4
Pandur II 6x6 MICV-25 (355hp)	168/86	41/21/4	340	192	Trtd	W(3)	TF7 TS5 TR4 HF7 HS4 HR4
Pandur II 6x6 MICV-25 (385hp)	181/92	44/23/4	340	208	Trtd	W(3)	TF7 TS5 TR4 HF7 HS4 HR4
Pandur II 6x6 MICV-25 (400hp)	186/95	47/24/4	340	216	Trtd	W(3)	TF7 TS5 TR4 HF7 HS4 HR4
Pandur II 6x6 MICV-30 (285hp)	141/70	33/18/3	340	153	Trtd	W(3)	TF7 TS5 TR4 HF7 HS4 HR4
Pandur II 6x6 MICV-30 (355hp)	168/83	40/20/4	340	182	Trtd	W(3)	TF7 TS5 TR4 HF7 HS4 HR4
Pandur II 6x6 MICV-30 (385hp)	181/90	42/23/4	340	196	Trtd	W(3)	TF7 TS5 TR4 HF7 HS4 HR4
Pandur II 6x6 MICV-30 (400hp)	186/92	44/24/4	340	217	Trtd	W(3)	TF7 TS5 TR4 HF7 HS4 HR4
Pandur II 6x6 MICV-40 (285hp)	142/72	36/18/3	340	151	Trtd	W(3)	TF5 TS3 TR3 HF7 HS4 HR4
Pandur II 6x6 MICV-40 (355hp)	169/86	42/21/4	340	190	Trtd	W(3)	TF5 TS3 TR3 HF7 HS4 HR4
Pandur II 6x6 MICV-40 (385hp)	182/92	46/23/4	340	207	Trtd	W(3)	TF5 TS3 TR3 HF7 HS4 HR4
Pandur II 6x6 MICV-40 (400hp)	188/95	47/24/4	340	214	Trtd	W(3)	TF5 TS3 TR3 HF7 HS4 HR4
Pandur II 6x6 (Cupola, 285hp) w/Appliqué	133/67	32/17/3	340	162	CiH	W(3)	TF4 TS3 TR2 HF10Sp HS6Sp HR4**
Pandur II 6x6 (Cupola, 355hp) w/Appliqué	159/80	35/20/4	340	204	CiH	W(3)	TF4 TS3 TR2 HF10Sp HS6Sp HR4**
Pandur II 6x6 (Cupola, 385hp) w/Appliqué	171/86	41/22/4	340	222	CiH	W(3)	TF4 TS3 TR2 HF10Sp HS6Sp HR4**
Pandur II 6x6 (Cupola, 400hp) w/Appliqué	175/88	42/22/4	340	230	CiH	W(3)	TF4 TS3 TR2 HF10Sp HS6Sp HR4**
Pandur II 6x6 MICV-25 (285hp) w/Appliqué	131/66	31/17/3	340	165	Trtd	W(3)	TF9Sp TS7Sp TR3 HF10Sp HS6Sp HR4**
Pandur II 6x6 MICV-25 (355hp) w/Appliqué	155/79	39/20/4	340	208	Trtd	W(3)	TF9Sp TS7Sp TR3 HF10Sp HS6Sp HR4**
Pandur II 6x6 MICV-25 (385hp) w/Appliqué	168/84	40/22/4	340	226	Trtd	W(3)	TF9Sp TS7Sp TR3 HF10Sp HS6Sp HR4**
Pandur II 6x6 MICV-25 (400hp) w/Appliqué	173/87	41/22/4	340	234	Trtd	W(3)	TF9Sp TS7Sp TR3 HF10Sp HS6Sp HR4**
Pandur II 6x6 MICV-30 (285hp) w/Appliqué	129/65	31/17/3	340	166	Trtd	W(3)	TF9Sp TS7Sp TR3 HF10Sp HS6Sp HR4**
Pandur II 6x6 MICV-30 (355hp) w/Appliqué	153/80	39/20/4	340	209	Trtd	W(3)	TF9Sp TS7Sp TR3 HF10Sp HS6Sp HR4**
Pandur II 6x6 MICV-30 (385hp) w/Appliqué	164/83	40/22/4	340	227	Trtd	W(3)	TF9Sp TS7Sp TR3 HF10Sp HS6Sp HR4**
Pandur II 6x6 MICV-30 (400hp) w/Appliqué	170/86	41/22/4	340	236	Trtd	W(3)	TF9Sp TS7Sp TR3 HF10Sp HS6Sp HR4**

Pandur II 6x6 MICV-40 (285hp) w/Appliqué	132/66	32/17/3	340	164	Trtd	W(3)	TF7Sp TS5Sp TR3 HF10Sp HS6Sp HR4**
Pandur II 6x6 MICV-40 (355hp) w/Appliqué	158/79	39/20/4	340	207	Trtd	W(3)	TF7Sp TS5Sp TR3 HF10Sp HS6Sp HR4**
Pandur II 6x6 MICV-40 (385hp) w/Appliqué	171/86	41/22/4	340	225	Trtd	W(3)	TF7Sp TS5Sp TR3 HF10Sp HS6Sp HR4**
Pandur II 6x6 MICV-40 (400hp) w/Appliqué	175/88	42/22/4	340	233	Trtd	W(3)	TF7Sp TS5Sp TR3 HF10Sp HS6Sp HR4**
Pandur II 6x6 OHWS-50 (285hp)	144/73	39/18/3	340	149	CiH	W(3)	TF4 TS4 TR4 HF7 HS4 HR4
Pandur II 6x6 OHWS-50 (355hp)	172/87	42/22/4	340	188	CiH	W(3)	TF4 TS4 TR4 HF7 HS4 HR4
Pandur II 6x6 OHWS-50 (385hp)	184/94	46/23/4	340	204	CiH	W(3)	TF4 TS4 TR4 HF7 HS4 HR4
Pandur II 6x6 OHWS-50 (400hp)	191/96	47/24/4	340	212	CiH	W(3)	TF4 TS4 TR4 HF7 HS4 HR4
Pandur II 6x6 OHWS-25/30 (285hp)	142/72	39/18/3	340	151	CiH	W(3)	TF4 TS4 TR4 HF7 HS4 HR4
Pandur II 6x6 OHWS-25/30 (355hp)	169/86	42/21/4	340	190	CiH	W(3)	TF4 TS4 TR4 HF7 HS4 HR4
Pandur II 6x6 OHWS-25/30 (385hp)	182/92	46/23/4	340	207	CiH	W(3)	TF4 TS4 TR4 HF7 HS4 HR4
Pandur II 6x6 OHWS-25/30 (400hp)	188/95	47/24/4	340	214	CiH	W(3)	TF4 TS4 TR4 HF7 HS4 HR4
Pandur II 6x6 OHWS-40 (285hp)	143/72	39/18/3	340	150	CiH	W(3)	TF4 TS4 TR4 HF7 HS4 HR4
Pandur II 6x6 OHWS-40 (355hp)	171/86	42/21/4	340	189	CiH	W(3)	TF4 TS4 TR4 HF7 HS4 HR4
Pandur II 6x6 OHWS-40 (385hp)	183/92	46/23/4	340	206	CiH	W(3)	TF4 TS4 TR4 HF7 HS4 HR4
Pandur II 6x6 OHWS-40 (400hp)	189/95	47/24/4	340	213	CiH	W(3)	TF4 TS4 TR4 HF7 HS4 HR4
Pandur II 6x6 OHWS-50 (285hp) w/Appliqué	137/69	33/17/3	340	158	CiH	W(3)	TF4 TS4 TR4 HF10Sp HS6Sp HR4**
Pandur II 6x6 OHWS-50 (355hp) w/Appliqué	162/82	40/20/4	340	199	CiH	W(3)	TF4 TS4 TR4 HF10Sp HS6Sp HR4**
Pandur II 6x6 OHWS-50 (385hp) w/Appliqué	174/88	42/22/4	340	216	CiH	W(3)	TF4 TS4 TR4 HF10Sp HS6Sp HR4**
Pandur II 6x6 OHWS-50 (400hp) w/Appliqué	180/91	44/22/4	340	224	CiH	W(3)	TF4 TS4 TR4 HF10Sp HS6Sp HR4**
Pandur II 6x6 OHWS-25/30/40 (285hp) w/Appliqué	135/68	33/17/3	340	159	CiH	W(3)	TF4 TS4 TR4 HF10Sp HS6Sp HR4**
Pandur II 6x6 OHWS-25/30/40 (355hp) w/Appliqué	161/81	40/20/4	340	200	CiH	W(3)	TF4 TS4 TR4 HF10Sp HS6Sp HR4**
Pandur II 6x6 OHWS-25/30/40	173/87	42/20/4	340	218	CiH	W(3)	TF4 TS4 TR4 HF10Sp HS6Sp HR4**

(385hp) w/Appliqué							
Pandur II 6x6 OHWS-25/30/40	179/90	44/22/4	340	226	CiH	W(3)	TF4 TS4 TR4 HF10Sp HS6Sp HR4**
(400hp) w/Appliqué							
Pandur II 8x8 (Cupola, 285hp)	140/71	34/17/3	365	154	CiH	W(4)	TF2 TS2 TR2 HF7 HS4 HR4
Pandur II 8x8 (Cupola, 355hp)	167/84	41/20/4	365	194	CiH	W(4)	TF2 TS2 TR2 HF7 HS4 HR4
Pandur II 8x8 (Cupola, 385hp)	179/91	44/22/4	365	211	CiH	W(4)	TF2 TS2 TR2 HF7 HS4 HR4
Pandur II 8x8 (Cupola, 400hp)	184/94	46/22/4	365	219	CiH	W(4)	TF2 TS2 TR2 HF7 HS4 HR4
Pandur II 8x8 MICV-25 (285hp)	137/69	33/17/3	365	157	Trtd	W(4)	TF7 TS5 TR4 HF7 HS4 HR4
Pandur II 8x8 MICV-25 (355hp)	162/82	40/20/4	365	198	Trtd	W(4)	TF7 TS5 TR4 HF7 HS4 HR4
Pandur II 8x8 MICV-25 (385hp)	174/88	42/22/4	365	215	Trtd	W(4)	TF7 TS5 TR4 HF7 HS4 HR4
Pandur II 8x8 MICV-25 (400hp)	180/91	44/22/4	365	223	Trtd	W(4)	TF7 TS5 TR4 HF7 HS4 HR4
Pandur II 8x8 MICV-30 (285hp)	137/69	33/17/3	365	158	Trtd	W(4)	TF7 TS5 TR4 HF7 HS4 HR4
Pandur II 8x8 MICV-30 (355hp)	162/82	40/20/4	365	199	Trtd	W(4)	TF7 TS5 TR4 HF7 HS4 HR4
Pandur II 8x8 MICV-30 (385hp)	174/88	42/22/4	365	216	Trtd	W(4)	TF7 TS5 TR4 HF7 HS4 HR4
Pandur II 8x8 MICV-30 (400hp)	180/91	44/22/4	365	224	Trtd	W(4)	TF7 TS5 TR4 HF7 HS4 HR4
Pandur II 8x8 MICV-40 (285hp)	139/70	34/17/2	365	155	Trtd	W(4)	TF5 TS3 TR3 HF7 HS4 HR4
Pandur II 8x8 MICV-40 (355hp)	165/83	41/20/4	365	195	Trtd	W(4)	TF5 TS3 TR3 HF7 HS4 HR4
Pandur II 8x8 MICV-40 (385hp)	178/90	44/22/4	365	212	Trtd	W(4)	TF5 TS3 TR3 HF7 HS4 HR4
Pandur II 8x8 MICV-40 (400hp)	183/92	46/22/4	365	220	Trtd	W(4)	TF5 TS3 TR3 HF7 HS4 HR4
Pandur II 8x8 (Cupola, 285hp) w/Appliqué	129/65	32/16/3	365	167	CiH	W(4)	TF4 TS3 TR2 HF10Sp HS6Sp HR4**
Pandur II 8x8 (Cupola, 355hp) w/Appliqué	153/77	39/19/4	365	210	CiH	W(4)	TF4 TS3 TR2 HF10Sp HS6Sp HR4**
Pandur II 8x8 (Cupola, 385hp) w/Appliqué	164/83	41/19/4	365	229	CiH	W(4)	TF4 TS3 TR2 HF10Sp HS6Sp HR4**
Pandur II 8x8 (Cupola, 400hp) w/Appliqué	170/86	42/21/4	365	237	CiH	W(4)	TF4 TS3 TR2 HF10Sp HS6Sp HR4**
Pandur II 8x8 MICV-25/30 (285hp) w/Appliqué	125/64	31/16/3	365	171	Trtd	W(4)	TF9Sp TS7Sp TR3 HF10Sp HS6Sp HR4**
Pandur II 8x8 MICV-25/30 (355hp) w/Appliqué	149/76	37/19/3	365	215	Trtd	W(4)	TF9Sp TS7Sp TR3 HF10Sp HS6Sp HR4**
Pandur II 8x8 MICV-25/30 (385hp) w/Appliqué	160/82	40/20/4	365	234	Trtd	W(4)	TF9Sp TS7Sp TR3 HF10Sp HS6Sp HR4**
Pandur II 8x8 MICV-25/30 (400hp) w/Appliqué	165/84	41/21/4	365	243	Trtd	W(4)	TF9Sp TS7Sp TR3 HF10Sp HS6Sp HR4**

Pandur II 8x8 MICV-40 (285hp) w/Appliqué	128/65	31/16/3	365	168	Trtd	W(4)	TF7Sp TS5Sp TR3 HF10Sp HS6Sp HR4**
Pandur II 8x8 MICV-40 (355hp) w/Appliqué	152/77	37/19/3	365	212	Trtd	W(4)	TF7Sp TS5Sp TR3 HF10Sp HS6Sp HR4**
Pandur II 8x8 MICV-40 (385hp) w/Appliqué	164/83	40/19/4	365	230	Trtd	W(4)	TF7Sp TS5Sp TR3 HF10Sp HS6Sp HR4**
Pandur II 8x8 MICV-40 (400hp) w/Appliqué	169/86	41/21/4	365	239	Trtd	W(4)	TF7Sp TS5Sp TR3 HF10Sp HS6Sp HR4**
Pandur II 8x8 OHWS-50 (285hp)	139/70	34/17/3	365	155	CiH	W(4)	TF4 TS4 TR4 HF7 HS4 HR4
Pandur II 8x8 OHWS-50 (355hp)	165/83	41/20/4	365	195	CiH	W(4)	TF4 TS4 TR4 HF7 HS4 HR4
Pandur II 8x8 OHWS-50 (385hp)	178/90	44/22/4	365	212	CiH	W(4)	TF4 TS4 TR4 HF7 HS4 HR4
Pandur II 8x8 OHWS-50 (400hp)	183/92	46/22/4	365	220	CiH	W(4)	TF4 TS4 TR4 HF7 HS4 HR4
Pandur II 8x8 OHWS-25 (285hp)	138/70	34/17/3	365	156	CiH	W(4)	TF4 TS4 TR4 HF7 HS4 HR4
Pandur II 8x8 OHWS-25 (355hp)	164/83	41/21/4	365	194	CiH	W(4)	TF4 TS4 TR4 HF7 HS4 HR4
Pandur II 8x8 OHWS-25 (385hp)	177/90	44/22/4	365	211	CiH	W(4)	TF4 TS4 TR4 HF7 HS4 HR4
Pandur II 8x8 OHWS-25 (400hp)	182/92	46/22/4	365	219	CiH	W(4)	TF4 TS4 TR4 HF7 HS4 HR4
Pandur II 8x8 OHWS-30 (285hp)	137/60	33/17/3	365	157	CiH	W(4)	TF4 TS4 TR4 HF7 HS4 HR4
Pandur II 8x8 OHWS-30 (355hp)	162/71	40/20/4	365	198	CiH	W(4)	TF4 TS4 TR4 HF7 HS4 HR4
Pandur II 8x8 OHWS-30 (385hp)	174/77	42/22/4	365	215	CiH	W(4)	TF4 TS4 TR4 HF7 HS4 HR4
Pandur II 8x8 OHWS-30 (400hp)	180/79	44/22/4	365	223	CiH	W(4)	TF4 TS4 TR4 HF7 HS4 HR4
Pandur II 8x8 OHWS-40 (285hp)	138/70	34/17/3	365	156	CiH	W(4)	TF4 TS4 TR4 HF7 HS4 HR4
Pandur II 8x8 OHWS-40 (355hp)	164/83	41/21/4	365	194	CiH	W(4)	TF4 TS4 TR4 HF7 HS4 HR4
Pandur II 8x8 OHWS-40 (385hp)	177/90	44/22/4	365	211	CiH	W(4)	TF4 TS4 TR4 HF7 HS4 HR4
Pandur II 8x8 OHWS-40 (400hp)	182/92	46/22/4	365	219	CiH	W(4)	TF4 TS4 TR4 HF7 HS4 HR4
Pandur II 8x8 OHWS-50 w/Appliqué (285hp)	131/66	32/16/3	365	164	CiH	W(4)	TF4 TS4 TR4 HF10Sp HS6Sp HR4**
Pandur II 8x8 OHWS-50 w/Appliqué (355hp)	155/79	39/19/4	365	207	CiH	W(4)	TF4 TS4 TR4 HF10Sp HS6Sp HR4**
Pandur II 8x8 OHWS-50 w/Appliqué (385hp)	168/85	41/20/4	365	225	CiH	W(4)	TF4 TS4 TR4 HF10Sp HS6Sp HR4**
Pandur II 8x8 OHWS-50 w/Appliqué (400hp)	173/87	42/21/4	365	233	CiH	W(4)	TF4 TS4 TR4 HF10Sp HS6Sp HR4**
Pandur II 8x8 OHWS-25 w/Appliqué (285hp)	130/66	32/16/3	365	166	CiH	W(4)	TF4 TS4 TR4 HF10Sp HS6Sp HR4**
Pandur II 8x8	154/79	39/19/4	365	209	CiH	W(4)	TF4 TS4 TR4 HF10Sp HS6Sp

OHWS-25 w/Appliqué (355hp)							HR4**
Pandur II 8x8 OHWS-25 w/Appliqué (385hp)	167/79	41/20/4	365	227	CiH	W(4)	TF4 TS4 TR4 HF10Sp HS6Sp HR4**
Pandur II 8x8 OHWS-25 w/Appliqué (400hp)	171/87	42/21/4	365	236	CiH	W(4)	TF4 TS4 TR4 HF10Sp HS6Sp HR4**
Pandur II 8x8 OHWS-30 w/Appliqué (285hp)	129/65	32/16/4	365	167	CiH	W(4)	TF4 TS4 TR4 HF10Sp HS6Sp HR4**
Pandur II 8x8 OHWS-30 w/Appliqué (355hp)	153/77	38/19/3	365	210	CiH	W(4)	TF4 TS4 TR4 HF10Sp HS6Sp HR4**
Pandur II 8x8 OHWS-30 w/Appliqué (385hp)	164/83	41/20/4	365	229	CiH	W(4)	TF4 TS4 TR4 HF10Sp HS6Sp HR4**
Pandur II 8x8 OHWS-30 w/Appliqué (400hp)	170/86	42/21/4	365	237	CiH	W(4)	TF4 TS4 TR4 HF10Sp HS6Sp HR4**
Pandur II 8x8 OHWS-40 w/Appliqué (285hp)	135/68	33/17/3	365	159	CiH	W(4)	TF4 TS4 TR4 HF10Sp HS6Sp HR4**
Pandur II 8x8 OHWS-40 w/Appliqué (355hp)	161/81	40/20/4	365	200	CiH	W(4)	TF4 TS4 TR4 HF10Sp HS6Sp HR4**
Pandur II 8x8 OHWS-40 w/Appliqué (385hp)	173/87	42/20/4	365	218	CiH	W(4)	TF4 TS4 TR4 HF10Sp HS6Sp HR4**
Pandur II 8x8 OHWS-40 w/Appliqué (400hp)	179/90	44/22/4	365	226	CiH	W(4)	TF4 TS4 TR4 HF10Sp HS6Sp HR4**
KBVP	189/95	46/22/4	365	261	CiH	W(4)	TF4 TS4 TR4 HF10Sp HS6Sp HR4***
KBV-Pz	186/94	46/22/4	365	264	CiH	W(4)	TF4 TS4 TR4 HF10Sp HS6Sp HR4***
Valuk (OWS-25 Turret)/(OWS-40 Turret)	118/59	27/14	247	100	CiH	W(3)	TF4 TS4 TR4 HF7 HS4 HR4
Valuk (OWS-25 Turret)/(OWS-40 Turret) w/Appliqué	116/58	26/14	247	102	CiH	W(3)	TF4 TS4 TR4 H11Cp HS6Cp HR4

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Pandur I Basic/CPV	+2	None	M-2HB, MAG	500x.50, 1296x7.62mm
Pandur I MICV-25	+2	Fair	25mm M-242 Chaingun, MAG	600x25mm, 1296x7.62mm
Pandur I MICV-30	+2	Fair	30mm M-230 Chaingun, MAG	500x30mm, 1296x7.62mm
Pandur I MICV-40	+2	Fair	HK GMG, MAG	300x40mm Grenades, 1296x7.62mm
Pandur II (Cupola)	+2	None	M-2HB, MAG	815x.50, 2110x7.62mm
Pandur II MICV-25	+3	Good	25mm M-242 Chaingun, MAG	800x25mm, 2110x7.62mm
Pandur II MICV-30	+3	Good	30mm M-230 Chaingun, MAG	670x30mm, 2110x7.62mm
Pandur II MICV-40	+3	Fair	HK GMG, MAG	400x40mm Grenades, 2110x7.62mm

Pandur II OHWS-50	+3	Fair	M-2HB, MAG	735x.50, 1900x7.62mm
Pandur II OHWS-25	+3	Fair	25mm M-242 Chaingun, MAG	720x25mm, 1900x7.62mm
Pandur II OHWS-30	+3	Fair	30mm M-230 Chaingun, MAG	600x30mm, 1900x7.62mm
Pandur II OHWS-40	+3	Fair	Mk 19, MAG	360x40mm Grenades, 1900x7.62mm
KVBP	+3	Good	30mm M-230 Chaingun, MAG, 2xSpike-LR Launchers	670x30mm, 2110x7.62mm, 6xSpike-LR ATGMs
Valuk (OWS-25 Turret)	+4	Good	M-242 ChainGun, PKT, TOW II ATGM Launcher	775x25mm, 4000x7.62mm, 5xTOW II ATGMs
Valuk (OWS-40 Turret)	+4	Good	Mk 19 AGL, M-2HB, TOW II ATGM Launcher	990x40mm, 2400x.50, 5xTOW II ATGMs

*See Notes above for crew and passenger capacity.

**Floor armor value is 4; hull and turret roof armor is 3.

*** Floor armor value is 6Sp in addition to the special rules above; hull and turret roof armor is 3.

CMI SIBMAS

Notes: This is a heavily armed wheeled armored personnel carrier built by Belgium and used primarily by Malaysia. Though built by CMI, the SIBMAS was designed by BN, with the first prototype being finished in 1976 and production beginning in 1983. The Malaysians use them in the fire support role to supplement their FV-101 Scorpions, in the APC role to replace their older Cadillac Gage V-100 Commandos, and also as an ARV version. The SIBMAS is a modular design which can be configured for several roles (though as yet, only an APC, FSV/Scout version, and an ARV have been built) and mount several different turrets (though only the turrets listed below have been used so far).

The SIBMAS is a rather large vehicle, and is in particular almost 3 meters tall. The driver is in the front center, and has a large bullet-resistant windshield to the front of his compartment and smaller ones on each side. His compartment also has a hatch on the top, and this hatch has a block into which an IR vision block can be inserted. Immediately to the rear of the driver's position is the turret, which is a two-man turret of varying size depending upon the weapons fit. The sides of the turret have clusters of four smoke grenade launchers. There are hatches on the turret roof for the commander and gunner; though there is no autoloader, even the version armed with a 90mm gun has no loader crewmember. Behind the turret is the troop section; the size of the troop compartment depends upon the weapons fit and the need for ammunition stowage as a result. The troop compartment has a door in wither side of the compartment and one in the rear. The compartment has a hatch in the roof, and there are three firing ports in the sides and one in the rear. The basic fit gives troop seats for three troops back to back down the center and two facing the rear; on the APC version, two more seats are added down the center, back to back, and one at the front of the compartment facing the rear and offset to the right side.

The SIBMAS is a 6x6 vehicle with automatic transmission and powered by a MAV D-2566 MK turbocharged diesel developing 320 horsepower. The engine is of average power for a vehicle of its weight, especially in the SIBMAS's heavier iterations. The SIBMAS is amphibious with 4 minutes of preparation; a bow plane must be erected at the front and bilge pumps turned on. Propulsion in the water is via two propellers in the rear of the vehicle, which are to a limited extent steerable. The suspension is heavy and has decent ground clearance, and the tires are, like most armored wheeled military vehicles, of the run-flat type. At the front of the hull is a winch which helps the SIBMAS extract itself from difficult terrain or assist another vehicle; this winch has a capacity of 8 tons, or 16 tons if block and tackle are used. Malaysian SIBMAS's are fitted with an air conditioner.

Twilight 2000 Notes: When the Twilight War began, local production of the SIBMAS began, and the Belgians put some 50 of them into service with its Army. Later, these vehicles were built in Malaysia, as they still had the necessary infrastructure, and exported all over the world.

Merc 2000 Notes: Belgium stopped producing the SIBMAS range in the late 1980s; however, Malaysia continued to build them, and in some cases, export them.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
AFSV (90mm)	$317,243	D, A	600 kg	18.5 tons	3+5	12	Passive IR (D, G, C), Image Intensification (G, C)	Enclosed
AFSV (60mm)	$288,179	D, A	1 ton	16.6 tons	3+7	10	Passive IR (D, G, C), Image Intensification (G, C)	Enclosed
APC	$146,462	D, A	1.3 tons	15.4 tons	3+11	10	Passive IR (D, G, C), Image Intensification (G, C)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
AFSV (90mm)	126/70	31/18/3	400	154	Trtd	W(3)	TF5 TS5 TR3 HF8 HS4 HR3
AFSV (60mm)	136/76	33/19/4	400	138	Trtd	W(3)	TF5 TS5 TR3 HF5 HS4 HR2
APC	143/80	35/20/4	400	128	Trtd	W(3)	TF5 TS5 TR3 HF5 HS4 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
AFSV (90mm)	+2	Fair	90mm Cockerill Gun, MAG, MAG (C)	40x90mm, 2500x7.62mm
AFSV (60mm)	+2	Fair	60mm MC-HB Gun/Mortar, 20mm M621 Autocannon, MAG, MAG (C)	60x60mm, 500x20mm, 2500x7.62mm
APC	+2	Fair	20mm M621 Autocannon, MAG, MAG (C)	1000x20mm, 5000x7.62mm

Bernardini AM-IV

Notes: This is a small APC used by Brazil and Chile as a riot control vehicle. First deliveries began in 1988. The AM-IV looks basically like an armored SUV, and has the engine under the front hood, a cab to the rear of that, and a section in the rear for troops and passengers. A siren and flashing lights are normally a standard installation, as the AM-IV is primarily a police and security vehicle. A small searchlight is also often fitted. In the sides of the cab there are a pair of doors, and the front of the cab has a bullet-resistant front windshield. The rear has a door, which can be opened by the troops or the driver. The cab has firing ports in the doors, the commander's side under the windshield has a firing port, and the sides each have a two firing ports, with two firing ports being in the rear. Atop the vehicle is a hatchway, but this is not fitted with a cupola or weapon mount. In addition to the front windshield, there are windows in each door, and long, narrow windows down each side of the passenger compartment. The armor is light, providing protection against basic small arms. Power is provided by a 94-horsepower diesel engine. Early production versions has a collective NBC system, but this was later deleted. Air conditioning is standard. A manual fire suppression system is mounted inside the vehicle and in the engine compartment. Recently, a cluster of three smoke grenade launchers were added to each front corner of the front roof.

Twilight 2000 Notes: As the situation deteriorated, they were taken into service as surrogate armored personnel carriers.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
$16,901	D, A	600 kg	3.4 tons	2+4	2	WL Searchlight	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
299/56	66/13	102	44	Stnd	W(2)	HF3 HS2 HR2

EE-11 Urutu

Notes: Sharing many basic automotive components with the EE-9 Cascavel reconnaissance car, the EE-11 Urutu (which translates as "rattlesnake" or "viper" – it is a venomous Brazilian snake) is a Brazilian 6x6 wheeled APC designed for both domestic service and the export market. Development began in the mid-1970s, and by 1977, the Urutu was on the export market as well as being in Brazilian service. Production ended in 1987, though upgrade and refurbishment work continues. The largest customer was actually Iraq, who had 2000 on hand at the start of the 1991 Gulf War (though virtually all have since been destroyed); Brazil herself currently has 215 in service with another 11 being refurbished for active use, and though some 15 other countries use the Urutu, most of these countries use less than 100 each and most of those 20 or less Urutus). The Urutu has seen combat service as a part of several countries' contingents to IFOR and KFOR, and has also seen service in Haiti, as well as the occasional border conflict. The Urutu can have no turret (a simple pintle weapon mount instead) or one of several turrets; an upgrade was also made in 1988 to the Urutus of several countries, giving it three choices of a more powerful engine and an automatic transmission to match the new engines. Though it is slated for replacement by the Brazilian Army and in some other countries, most of these users have experienced budget problems and the Urutu will probably continue to soldier on for a decade longer or more in most countries.

The basic form of the Urutu is a sort of long, flat 4x6 vehicle with the front wheels being well ahead of the two rear wheels. The four rear wheels are the drive wheels. These wheels are large, with a cross-country suspension, and have run-flat tires. The driver is in the front left and has three wide-angle vision blocks to the front, the center of which can be replaced by a night vision block. The Urutu is amphibious, propelled in the water by waterjets and to a lesser extent by the motion of the wheels. A removable windscreen can also be erected, both for use when the driver has his head out of the hatch and to stop splashes during amphibious operations or in mud. The windscreen is of simple clear plastic and folds away inside the driver's compartment when not in use. On the original version, power is provided by a 158-horsepower turbocharged diesel with a manual transmission, though the driver's controls are conventional. The engine is to the right of the driver. On the front right, just off-center, is the commander's position; he has a weapon on a pintle mount, and often has AV2 gun shields surrounding his position. (The weapons are representative of the class of weapons and may not be exact.) The troops are in the rear of the vehicle and enter and exit through a door in the rear of the vehicle or a door in the left side under and to the left of the commander's position on the left side. The rear deck also has a large hatch for the troops. The rear door can be opened by the troops or by the driver. Two firing ports are in each side of the troop compartment and one in the rear door. As an option, five firing ports can be mounted on each side and one in the rear door; the rear can also optionally have two firing ports (one in the door, and one to the left of it). In each case, the troops sit down the sides of the vehicle facing the center. Most vehicle components are indigenously designed or license-produced; overall design is indigenous.

Optional turrets include a low-profile turret mounting a heavy and light machinegun, a turret mounting a 25mm autocannon and coaxial machinegun, the turret of the EE-9 Cascavel reconnaissance car (using the Mark III turret) armed with a 90mm gun and coaxial machinegun, and a Swedish turret which is the same as mounted on the Pbv-302 APC. The front hull often has clusters of three smoke grenade launchers on the top of the front hull on either side, though on turreted versions these are normally mounted on the turret. In the case of the 25mm-armed turret and the 90mm-armed turret, the turret replaces the commander's station; in the version with the Pbv-302 turret or the low-profile machinegun turret, the turret *is* the commander's station. Most Urutus have a simple pintle mount at the commander's station, though usually surrounded with the gun shields mentioned above.

An optional 1988 upgrade brought automatic transmission to the Urutu, along with a choice of a 6V53 212-horsepower engine (the same as on the M-113 APC), or an upgraded versions of this engine, developing 230 or 260 horsepower. The 260-horsepower engine is the most common engine upgrade. The engine upgrades relieve the underpowered nature of the Urutu's stock engine. Armor protection of the Urutu from the frontal arc is surprisingly good, though side and rear armor is only mediocre. So far, no

appliqué armor kits have been devised or offered for the Urutu.

Command and ambulance versions of the Urutu also exist. Command versions have one short, two medium, and two long-range radios, along with map boards and various plotting and office-type supplies; later upgrades included making one of the long-range radios data-capable and a laptop computer, along with a hand-held thermal imager, image intensifier, and laser rangefinder for the command crew. (This is the version reflected below.) The medical version has room for a medic and up to four stretcher cases and three seated patients or two stretchers and five seated patients, along with medical supplies such as an oxygen administration kit, a defibrillator, a small refrigerator, and the equivalent of 2 doctor's medical bags and 20 personal medical kits. Ambulance versions are normally unarmed; command versions normally have only pintle-mounted weapons at their commander's stations.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Urutu (Basic, 153 hp)	$35,346	D, A	1.4 tons	14 tons	2+11	8	Passive IR (D)	Enclosed
Urutu (Basic, 212 hp)	$36,546	D, A	1.4 tons	14 tons	2+11	8	Passive IR (D)	Enclosed
Urutu (Basic, 230 hp)	$36,802	D, A	1.4 tons	14 tons	2+11	8	Passive IR (D)	Enclosed
Urutu (Basic, 260 hp)	$36,912	D, A	1.4 tons	14 tons	2+11	8	Passive IR (D)	Enclosed
Machinegun Turret (153hp)	$57,889	D, A	1.3 tons	14.3 tons	2+10	10	Passive IR (D, C)	Enclosed
Machinegun Turret (212hp)	$58,109	D, A	1.3 tons	14.3 tons	2+10	10	Passive IR (D, C)	Enclosed
Machinegun Turret (230hp)	$58,179	D, A	1.3 tons	14.3 tons	2+10	10	Passive IR (D, C)	Enclosed
Machinegun Turret (260hp)	$58,289	D, A	1.3 tons	14.3 tons	2+10	10	Passive IR (D, C)	Enclosed
25mm Turret (153hp)	$187,645	D, A	1.1 tons	15.2 tons	3+8	10	Passive IR (D, G, C), Image Intensification (G)	Enclosed
25mm Turret (212hp)	$188,076	D, A	1.1 tons	15.2 tons	3+8	10	Passive IR (D, G, C), Image Intensification (G)	Enclosed
25mm Turret (230hp)	$188,146	D, A	1.1 tons	15.2 tons	3+8	10	Passive IR (D, G, C), Image Intensification (G)	Enclosed
25mm Turret (260hp)	$188,256	D, A	1.1 tons	15.2 tons	3+8	10	Passive IR (D, G, C), Image Intensification (G)	Enclosed
EE-9 Turret (153hp)	$372,468	D, A	400 kg	16.8 tons	3+4	10	Passive IR (D, G, C), Image Intensification (G)	Enclosed
EE-9 Turret (212hp)	$373,668	D, A	400 kg	16.8 tons	3+4	10	Passive IR (D, G, C), Image Intensification (G)	Enclosed
EE-9 Turret (230hp)	$373,924	D, A	400 kg	16.8 tons	3+4	10	Passive IR (D, G, C), Image Intensification	Enclosed

EE-9 Turret (260hp)	$374,034	D, A	400 kg	16.8 tons	3+4	10	(G) Passive IR (D, G, C), Image Intensification (G)	Enclosed
Pbv-302 Turret (153 hp)	$50,636	D, A	1.3 tons	14.6 tons	2+10	8	Passive IR (D)	Enclosed
Pbv-302 Turret (212 hp)	$51,836	D, A	1.3 tons	14.6 tons	2+10	8	Passive IR (D)	Enclosed
Pbv-302 Turret (230 hp)	$52,092	D, A	1.3 tons	14.6 tons	2+10	8	Passive IR (D)	Enclosed
Pbv-302 Turret (260 hp)	$52,202	D, A	1.3 tons	14.6 tons	2+10	8	Passive IR (D)	Enclosed
Command Variant (153hp)	$348,446	D, A	700 kg	14.9 tons	3+4	12	Passive IR (D)	Enclosed
Command Variant (212hp)	$349,646	D, A	700 kg	14.9 tons	3+4	12	Passive IR (D)	Enclosed
Command Variant (230hp)	$349,902	D, A	700 kg	14.9 tons	3+4	12	Passive IR (D)	Enclosed
Command Variant (260hp)	$350,012	D, A	700 kg	14.9 tons	3+4	12	Passive IR (D)	Enclosed
Ambulance (153hp)	$39,498	D, A	700 kg	14.6 tons	*	11	Passive IR (D)	Enclosed
Ambulance (212hp)	$40,698	D, A	700 kg	14.6 tons	*	11	Passive IR (D)	Enclosed
Ambulance (230hp)	$40,954	D, A	700 kg	14.6 tons	*	11	Passive IR (D)	Enclosed
Ambulance (260hp)	$41,064	D, A	700 kg	14.6 tons	*	11	Passive IR (D)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Urutu (Basic, 153 hp)	110/56	30/15/3	380	79	Stnd	W(3)	HF10 HS4 HR3
Urutu (Basic, 212 hp)	134/68	37/18/4	380	109	Stnd	W(3)	HF10 HS4 HR3
Urutu (Basic, 230 hp)	142/72	39/19/4	380	119	Stnd	W(3)	HF10 HS4 HR3
Urutu (Basic, 260 hp)	155/78	42/21/4	380	136	Stnd	W(3)	HF10 HS4 HR3
Machinegun Turret (153hp)	108/55	30/15/3	380	80	CiH	W(3)	TF3 TS2 TR2 HF10 HS4 HR3
Machinegun Turret (212hp)	132/67	36/18/4	380	111	CiH	W(3)	TF3 TS2 TR2 HF10 HS4 HR3
Machinegun Turret (230hp)	140/71	38/19/4	380	121	CiH	W(3)	TF3 TS2 TR2 HF10 HS4 HR3
Machinegun Turret (260hp)	153/77	41/21/4	380	138	CiH	W(3)	TF3 TS2 TR2 HF10 HS4 HR3
25mm Turret (153hp)	97/49	26/13/3	380	86	Trtd	W(3)	TF5 TS3 TR2 HF10 HS4 HR3
25mm Turret (212hp)	121/61	33/17/3	380	118	Trtd	W(3)	TF5 TS3 TR2 HF10 HS4 HR3
25mm Turret (230hp)	129/64	35/18/4	380	130	Trtd	W(3)	TF5 TS3 TR2 HF10 HS4 HR3
25mm Turret (260hp)	141/71	38/19/4	380	148	Trtd	W(3)	TF5 TS3 TR2 HF10 HS4 HR3
EE-9 Turret (153hp)	92/46	27/13/3	380	95	Trtd	W(3)	TF6 TS6 TR4 HF10 HS4 HR3
EE-9 Turret (212hp)	112/56	33/16/3	380	131	Trtd	W(3)	TF6 TS6 TR4 HF10 HS4 HR3

EE-9 Turret (230hp)	119/59	35/17/4	380	143	Trtd	W(3)	TF6 TS6 TR4 HF10 HS4 HR3
EE-9 Turret (260hp)	130/65	38/18/4	380	163	Trtd	W(3)	TF6 TS6 TR4 HF10 HS4 HR3
Pbv-302 Turret (153 hp)	105/53	29/14/3	380	82	CiH	W(3)	TF2 TS2 TR2 HF10 HS4 HR3
Pbv-302 Turret (212 hp)	128/65	36/17/4	380	114	CiH	W(3)	TF2 TS2 TR2 HF10 HS4 HR3
Pbv-302 Turret (230 hp)	135/68	37/18/4	380	124	CiH	W(3)	TF2 TS2 TR2 HF10 HS4 HR3
Pbv-302 Turret (260 hp)	148/75	41/20/4	380	142	CiH	W(3)	TF2 TS2 TR2 HF10 HS4 HR3
Command Variant (153hp)	103/53	28/14/3	380	84	Stnd	W(3)	HF10 HS4 HR3
Command Variant (212hp)	126/65	34/17/3	380	116	Stnd	W(3)	HF10 HS4 HR3
Command Variant (230hp)	133/68	36/18/4	380	127	Stnd	W(3)	HF10 HS4 HR3
Command Variant (260hp)	145/75	39/20/4	380	145	Stnd	W(3)	HF10 HS4 HR3
Ambulance (153hp)	105/54	29/14/3	380	82	Stnd	W(3)	HF10 HS4 HR3
Ambulance (212hp)	128/68	36/17/4	380	114	Stnd	W(3)	HF10 HS4 HR3
Ambulance (230hp)	135/70	37/18/4	380	124	Stnd	W(3)	HF10 HS4 HR3
Ambulance (260hp)	148/76	41/20/4	380	142	Stnd	W(3)	HF10 HS4 HR3

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Urutu (Basic)/Command Variant	None	None	M-2HB (C) or MAG (C)	1260x.50 or 2100x7.62mm
Machinegun Turret	+1	Basic	M-2HB, MAG	1260x.50, 2000x7.62mm
25mm Turret	+2	Fair	25mm KBA Autocannon, MAG	700x25mm, 2000x7.62mm
EE-9 Turret	+2	Basic	90mm M-61 F1 Gun, MAG, MAG (C)	45x90mm, 2200x7.62mm
Pbv-302 Turret	+2	None	20mm m/47D	505x20mm

*See Notes for Crew and Passenger capacity.

VBT-2028 Armored Truck

Notes: This 6x6 Brazilian vehicle was first designed as a support and launch vehicle for a multiple rocket launcher. It has been subsequently used as a general ammunition supply vehicle, a battalion command post, an FDC, a battlefield mobile workshop, and a personnel carrier. The VBT-2028 has air conditioning for the cab, and the rear area on command and workshop versions. The cab has bullet resistant windows in the front and sides which can be covered with armored shutters from inside the cab, and the commander has a roof hatch with a weapon mount (NATO tripod compatible). A 6-ton capacity loading crane is mounted between the cab and cargo area; four stabilizer legs are normally lowered when the crane is being used. Armor is nothing to write home about, and note that the cargo area of the APC and the cargo versions have side and rear armor, but no overhead protection except for a canvas cover. Power is also nothing special, being provided by a 280-horsepower turbocharged diesel truck engine. The VBT-2028, however, has a satisfying cargo capacity and a modicum of protection. The crew figure includes the space in the rear and the cab capacity. This vehicle is in service with Brazil, Saudi Arabia, and formerly with Iraq.

Command versions have the general command vehicle equipment, including two short-range, medium-range, and long-range radios, one of which is data-capable. The interior has a table and chairs for the staff, and a ruggedized laptop computer. Other equipment includes large map boards and plotting and office-type equipment. The roof of the rear cargo area has several hatches, which can be used by the command staff to observe, including with a hand-held thermal imager, image intensifier, laser rangefinder, and several pairs of binoculars. These hatches do not have weapon mounts, though one could fire from them. A 5kW APU helps run electronics when the engine is off.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological*
VBT-2028 APC/Cargo	$20,681	D, A	10 tons	20 tons	6+40	12	Headlights	Enclosed

Command Variant	$244,374	D, A	5 tons	20.6 tons	6+10	15	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor**
VBT-2028 APC/Cargo	219/41	56/15	700	147	Stnd	W(3)	HF2 HS2 HR2
Command Variant	212/40	54/15	700	151	Stnd	W(3)	HF2 HS2 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
VBT-2028	None	None	M-2HB (C)	500x.50

*For APC and cargo versions, the rear area Radiological value is Open.

**For APC and Cargo versions, the rear cargo area has a hull roof AV of 0.

Alvis FV-600 Saracen

Notes: This was one of the first British APCs developed after World War 2. It was phased out of British service in 1993, and partially scrapped or sold off; Saracens are now a hot item for collectors as well as movie companies. Production began in 1952, and included a number of variants. The original command version, the FV-602, was almost immediately cancelled, but later another command fit was approved; the FV-601 is Saladin armored car and is dealt with on a different page, but shares a common chassis. The Saracens, in the form of the FV-603 APC version, found themselves almost immediately in combat service in Malaya; since then, they have seen further combat service in Aden, the Sri Lankan Civil War, and Northern Ireland. The Saracen is now out of service with most countries, but former and the few current users include Australia, Brunei, the Hong Kong Police, Indonesia, Jordan Kuwait, Niger, South Africa (one of the earliest countries to take them out of service), Sri Lanka (who still uses them), Sudan (also still uses them), Thailand, and of course, Britain. In the US, the Sierra Vista Police Department in Arizona uses one as part of its SWAT team, and the Tulsa, Oklahoma uses a Saracen body over a commercial truck chassis. There is an operational FV-603 in the Yad la-Shiryon museum in Israel, though where they got it is unknown.

The Saracen consists of large body with moderately-sloped armor on the front and sides, except for the vertical front radiator, which has armored louvers; the nose of the vehicle is large and bulbous. The front of the vehicle has a small cab which carries only the driver; he has a small bullet-resistant windshield with an armored shutter that has a vision slit in it, as well as windows to each side of his position (facing slightly forwards) which have the same armored shutters. The commander occupies a small turret in the roof behind the driver's position, which has a small hatch in the roof which is a tight squeeze to get in and out of. The primary access for the crew and troops is through two doors in the rear face. The rear deck has a ring mount with a weapon mount, and there are three firing ports on each side and two in the rear doors. These firing ports are merely swing-up shutters, and any weapon of up to 40mm in size that has no backblast can be used from them. Each front bumper has three smoke grenade launchers mounted on it.

The original version, the FV-603 APC, was originally fitted with an M-1919A4 in its turret and a Bren gun on the rear ring mount. Later, these were replaced with an L-37A1 in the turret and an L-7A2 on the ring mount. The most common engine was a Rolls-Royce B80 Mk 6A 160-horsepower gasoline engine, though some 25% were re-engined with Perkins Phaser 180 MTi diesel developing 180 horsepower in the 1990s. Versions operating in Northern Ireland were fitted with screens to block Molotov cocktails on the front and sides. Some countries fitted the Saracen with an appliqué armor kit for the hull in the mid-1990s. (Both of these occurred for other countries, and happened after the Saracen left British service.) Propulsion is 6x6, with an off-road suspension and run-flat tires fitted later in its career (in the early 1980s). About the time the run-flat tires were fitted, the brakes were also improved. Armor protection is sufficient to stop most small arms rounds and shell fragments.

The FV-604 ACV (Armored Command Vehicle) does not have a turret, but retains the rear ring mount. The place where the turret was is replaced with a simple unarmed cupola. The primary difference is a reduced crew and increased radio equipment, as well as a "penthouse" tent extension above the hull which could be erected for a sleeping area or to stow additional equipment. The FV-610 ACP (Armored Command Post) is a command variant designed for use by higher echelons; it has map boards, plotting and office supplies, and further increased radio equipment. It also has a folding table and chairs, and a tent attached to the rear that doubles the available work area when erected at a halt. Large stowage baskets are added to the sides of the vehicle for items like a generator or other bulk items. The FV-610 version is used at brigade or higher levels; it differs from the FV-604 in that it is wider, higher, has an extra map board, two extra radios and a 5kW generator fitted as standard.

The Saracen Ambulance (FV-611) is externally similar to the Saracen FV-604 ACV; internally, it contains medical equipment and stretcher racks. The FV-611 has a refrigerator for perishable medical supplies, 3 stretchers, a doctor's medical bag, a platoon's worth of refills for the personal medical kit, an air conditioning and heating unit, a respirator, a defibrillator, and a selection of other medical supplies, including the equivalent of one doctor's medical bag and 15 personal medical kits, as well as items such as cravats and splints. A 5kW generator is carried to power the vehicle when the engine is turned off. This version also does not have a turret nor is it armed in any way, though the rear roof hatch is retained. The FV-611 can carry three stretcher cases and two seated patients, or 8 seated patients; a medic is also carried in the rear.

Twilight 2000 Notes: In 1997, the remaining stocks were returned to service to replace vehicle losses, and they became a common sight in the British Isles and to a lesser extent, in Europe. South Africa likewise took theirs out of service shortly before the war, but also returned them to service later. Indonesia, Jordan, Lebanon, Mauritania, Nigeria, and Sri Lanka also used them during the Twilight War.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
FV-603 (Gas)	$28,380	G, A	1 ton	10.2 tons	2+10	6	Headlights	Enclosed
FV-603 (Diesel)	$28,654	D, A	1 ton	10.2 tons	2+10	6	Headlights	Enclosed
FV-603 (Gas) w/Appliqué	$28,776	G, A	900 kg	10.5 tons	2+10	6	Headlights	Enclosed
FV-603 (Diesel) w/Appliqué	$29,050	D, A	900 kg	10.5 tons	2+10	6	Headlights	Enclosed

FV-604 (Gas)	$29,957	G, A	500 kg	10.5 tons	2+4	7	Headlights	Enclosed
FV-604 (Diesel)	$30,231	D, A	500 kg	10.5 tons	2+4	7	Headlights	Enclosed
FV-610 (Gas)	$31,768	G, A	500 kg	10.5 tons	2+4	4	Headlights	Enclosed
FV-610 (Diesel)	$32,042	D, A	500 kg	10.5 tons	2+4	4	Headlights	Enclosed
FV-611 (Gas)	$31,997	G, A	500 kg	10.4 tons	*	5	Headlights	Enclosed
FV-611 (Diesel)	$32,271	D, A	500 kg	10.4 tons	*	5	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
FV-603 (Gas)	135/68	62/31	200	86	CiH	W(3)	TF2 TS2 TR2 HF4 HS4 HR2
FV-603 (Diesel)	148/74	68/34	200	91	CiH	W(3)	TF2 TS2 TR2 HF4 HS4 HR2
FV-603 (Gas) w/Appliqué	132/67	61/31	200	89	CiH	W(3)	TF2 TS2 TR2 HF5 HS5 HR3
FV-603 (Diesel) w/Appliqué	145/73	67/34	200	94	CiH	W(3)	TF2 TS2 TR2 HF5 HS5 HR3
FV-604/610 (Gas)	132/67	61/31	200	89	Stnd	W(3)	HF4 HS4 HR2
FV-604/610 (Gas)	145/73	67/34	200	94	Stnd	W(3)	HF4 HS4 HR2
FV-611 (Gas)	133/67	62/31	200	88	Stnd	W(3)	HF4 HS4 HR2
FV-611 (Diesel)	146/73	68/34	200	93	Stnd	W(3)	HF4 HS4 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
FV-603	None	None	M-1919A4, Bren L-2A4 (Rear) (Later L-37A1 and L-7A2)	1500x.30-06, 1500x7.62mm (later 3000x7.62mm)
FV-604/610	None	None	Bren L-2A4 (Rear) (Later L-7A2)	1500x7.62mm

BAE Simba

Notes: The then-GKN Sankey company designed the Simba as a private venture; this is often done by defense companies, hoping for sales later. As such, the Simba had sales only to the Philippine Army and police, largely for internal security and crowd suppression roles. The Philippine Army ordered most of its vehicles with a turret mounting an M-2HB machinegun; most of these Simbas were actually assembled in the Philippines by Asian Armored Technologies. Some of their vehicles do have the turret with a 25mm autocannon and a coaxial machinegun. BAE offers the Simba in other configurations as well, though these have not seen any sales as of yet. The Simba shares many automotive components with the AT-105 Saxon.

The basic Simba configuration seats the driver on the front left, with the turret behind him and the troop compartment in the rear. The driver has a hatch above him, and bullet-resistant windows around him. The Standard APC has a cupola for the commander behind the driver (on a slightly-raised platform). The vehicle has a large clamshell door on the left side under the turret, and a door in the rear. Four vision blocks are fitted on each side and another in the rear door; firing ports are an option, normally only two are fitted to each side and one in the rear. The troops are seated on folding bench seats on either side of the vehicle. The engine is to the driver's right and is a Perkins 210Ti Phaser turbocharged diesel developing 210 horsepower. Transmission is automatic. Frontal armor is substantial, but side and rear armor are none too thick.

The standard APC turret is a one-man with light armor mounting an M-2HB machinegun, and vision blocks all around. A searchlight is mounted on the turret on the front, just above the machinegun mantlet. Four smoke grenade launchers can be found on each side of the turret. The AIFV version has a larger turret with a 25mm autocannon housing the commander and a gunner; a lighter version of this turret uses a 20mm autocannon. Another version uses the small turret, but armed with an automatic grenade launcher. These have hatches on the turret roof for the commander and gunner. Self-propelled ATGM carriers and fire support vehicles have also been devised, but will not be discussed here.

Other APC versions include the Low-Profile APC, which is essentially an APC with the turret lopped off and a pintle-mounted weapon in its place. Designed for police use, it has a searchlight on the roof, as well as a PA system and flashing lights and a siren. Another police version, the Simba IS (Internal Security), has a small turret with a 38mm riot control grenade launcher. Sometimes a water cannon will be mounted, and the rear troop area will have a large water tank in it. It also has a PA system, and flashing lights and sirens. It has added mesh armor to stop Molotov cocktails and a 5-ton winch with 100 meters of cable.

Twilight 2000 Notes: These vehicles were used in a very ugly manner in the Philippines before and for decades after the Twilight War, with weapons and crews firing directly into crowds with live ammunition. A factory for these vehicles was set up in the Philippines just before the Twilight War, and continued operating and exporting these vehicles for at least 10 years after the Twilight

War before being burned by rioters. In Britain, production of these vehicles for home use did not start until the Twilight War, and the Simbas used by Britain were largely employed in an internal security role, mostly against marauders, Scottish separatists, and IRA terrorists.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Standard APC	$26,062	D, A	1.7 tons	11.2 tons	2+8	6	Headlights	Enclosed
Low-Profile APC	$21,462	D, A	1.9 tons	11 tons	2+10	6	Headlights	Enclosed
IS	$30,737	D, A	1.8 tons	11.1 tons	2+8	6	Headlights	Enclosed
AIFV-20	$50,234	D, A	1.5 tons	11.6 tons	3+7	6	Headlights	Enclosed
AIFV-25	$54,569	D, A	1.5 tons	11.7 tons	3+7	6	Headlights	Enclosed
AIFV-40	$64,214	D, A	1.4 tons	11.9 tons	3+7	6	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Standard APC	155/78	72/36	296	108	CiH	W(3)	TF4 TS3 TR3 HF8 HS3 HR3
Low-Profile APC	158/79	73/37	296	106	Stnd	W(3)	HF8 HS3 HR3
IS	157/79	72/37	296	107	CiH	W(3)	TF4 TS3 TR3 HF8 HS3 HR3
AIFV-20	151/76	70/35	296	112	Trtd	W(3)	TF6 TS4 TR4 HF8 HS3 HR3
AIFV-25	150/76	70/35	296	113	Trtd	W(3)	TF6 TS4 TR4 HF8 HS3 HR3
AIFV-40	149/75	69/34	296	115	Trtd	W(3)	TF6 TS4 TR4 HF8 HS3 HR3

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Standard APC	+1	Basic	M-2HB	900x.50
Low-Profile APC	None	None	L-7A2 (C)	1500x7.62mm
IS	+1	Basic	38mm Grenade Launcher	300x38mm
AIFV-20	+2	Basic	20mm KAA Autocannon, L-37A1	750x20mm, 1500x7.62mm
AIFV-25	+2	Basic	25mm M-242 Chaingun, L-37A1	750x25mm, 1500x7.62mm
AIFV-40	+2	Basic	40mm Mk 19, L-37A1	500x40mm, 1500x7.62mm

GKN Sankey AT-105 Saxon

Notes: The story of the AT-105 Saxon actually began a few years earlier than the AT-105 appeared. The British were looking for what were essentially armored trucks for use by the BAOR to quickly ferry around troops, cargo, and equipment on the battlefield, and do so relatively cheaply; the vehicle wasn't intended to be a main-force APC and so heavy armor and armament were only secondary considerations. A wheeled vehicle was desired due to the much higher road speeds; the vehicle was meant to quickly ferry reinforcements and supplies from German ports and airfields. This resulted in the AT-100 IS, a vehicle that was pretty much a truck with an armored shell that was deemed unsatisfactory and not proceeded with beyond some perfunctory testing.

The AT-104 – The Predecessor

The AT-104 came next; it too was a large armored truck body with some resemblance to the Cadillac Gage Ranger, though more squared-off. Customers included the Royal Brunei Malay Regiment and the Dutch State Police, but the British Army was still not satisfied. The chassis of the AT-104 is based on the 4x4 Bedford MK medium truck. The driver and commander sit in an armored cab in front, and see through relatively small bullet-resistant windows that can be closed off with armored shutters or with wire mesh screens. The radiator can also be protected with armored shutters. The cab has doors in each side, and these doors also have small windows. The rear carried the troops, including an elevated firing cupola, and troop seats down the sides of the vehicle. Two doors in the rear provide ingress and egress. A large amount of options were offered, from air conditioning to ramming bumpers to smoke grenade launchers. The armor is thin, but the tires are run-flat. Power could be provided by a Bedford 300 134-horsepower gasoline engine or a Bedford 330 98-horsepower diesel engine. The transmission is automatic. Despite production lasting from 1972 to 1976, only 30 were built; Brunei still uses some of them, but most have been scrapped or are in the hands of private collectors, where they seem to be in high demand.

The AT-105 Saxon

The Saxon had a long development period from its AT-104 roots – first prototypes appeared in 1976, but the British Army did not accept its first ones until 1983. Other users include Bahrain, Brunei, the Malaysian Police, Oman, and Iraq, who have recently bought 60 of them. Kuwait is considering a buy, one in Nigerian paint was seen in a BBC article even though they are not official users of the Saxon, and Serbia is believed to still operate one which they captured from IFOR. Hong Kong is a former user, though their Saxons have been sold off to other countries. The British themselves still operate some 640, though they are slated to be replaced by whatever vehicle results from the FRES program sometime around 2015. The Saxon has seen combat service with IFOR and KFOR as well as in Iraq, Afghanistan, Northern Ireland, and various UN peacekeeping missions.

The Saxon is essentially an extension and enlargement of the AT-104 concept, and does resemble a larger version of the AT-104 in many ways. The front end is a bit more sloped, however. Armor protection overall is also somewhat improved. More importantly, the Saxon is an early example of MRAP technology – though the hull does not have a full V-shape, it is curved on the bottom, and the

fenders are designed to blow off rather than focus blast. The crew and passenger seats are designed to help absorb the shock and blast of an explosion. The engine is below the driver and commander, helping shield them from a mine blast. However, the MRAP technology of the Saxon absorbs only 10% of the internal damage to occupants and equipment. The suspension is also raised in general, and has more of an off-road profile, including large run-flat tires. Hatches are found above the driver and commander, as well as their cab doors. Window and door appointments are largely the same as on the AT-104. There are two firing ports in either side of the hull and one in each rear door; these are merely slits that slide open and can take any weapon up to a 40mm grenade launcher in size. Several variants are available; however, details, such as air conditioning, spotlights, ramming bumpers, and smoke grenade launchers may differ from vehicle to vehicle. The basic vehicle has an elevated cupola atop the passenger compartment with a weapon mount, but some versions also differ in this detail. Most military versions have three smoke grenade launchers on each side of the turret; police versions sometimes use launchers which fire irritant gas grenades. Some early versions were fitted with a gasoline engine, but virtually all countries and users have converted theirs to use either a Bedford 500 164-horsepower diesel engine or a Perkins T6-354-4 195-horsepower diesel. (Most countries, including Britain, use the Bedford engine.) Transmission is automatic.

Aside from the basic APC, variants include a version on a slight dose of steroids called the LHD. This version has a low turret with heavier armament and a little better armor protection.

The Saxon Incident Control Vehicle was the first version of the Saxon issued to police, in Hong Kong, Nigeria, Oman, and the UK. They are standard Saxons with doors on either side of the hull, wire mesh screens to deflect Molotov cocktails, an actual small turret instead of a superstructure (like most police versions), a front-mounted obstacle-clearing blade, smoke or irritant gas grenade dischargers, and a low-light TV system on an extendable boom on the rear deck of the vehicle with a monitor, VCR, and playback systems inside the hull. The Patrol version was designed for British Police and Army forces in Northern Ireland, replacing the Humber One-Ton, and is an improved version of the ICV. It adds four roof-mounted spotlights atop the vehicle, an external public address system, an anti-wire device on a pole to keep cupola gunner's safe, an armored radiator cover, and improved brakes. Armed police versions are shown below, though just as often the turret is armed with a riot control grenade discharger, reloadable from inside the turret. 50% of the frontal hits will hit the front-mounted obstacle blade, which increases the armor value against that his to 8Sp.

The Saxon Command Vehicle is a command post variant of the Saxon APC, normally used at the platoon and company level. It carries slightly heavier armament than the Saxon APC, but its primary use is as a command and staff vehicle, so it carries at least one short-range, two medium-range, and one-long-range radio, a map board, a teleprinter, a folding table and chairs, and various storage drawers. Later versions delete the teleprinter in favor of a ruggedized laptop computer, and add another data-capable long-range radio. The command version has a simple pintle mount for a machinegun, normally surrounded by AV2 gun shields.

The ambulance version of the Saxon is minimally appointed for the medical role, but does have stretchers, a selection of medical supplies (the equivalent of one doctor's medical bag and 10 personal medical kits), an oxygen tank, and a defibrillator. Its shock absorbers are better than the average Saxon, and it has air conditioning and heating. Bins have been added to the sides and top of the vehicle for supplies. It is unarmed. It has room for a medic in the rear as well as 2 stretcher cases or one stretcher case and 6 seated patients.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
AT-104 (Gas Engine)	$13,039	G, A	900 kg	8.9 tons	3+8	6	Headlights	Enclosed
AT-104 (Diesel Engine)	$12,889	D, A	900 kg	8.8 tons	3+8	6	Headlights	Enclosed
AT-105 APC (164hp)	$18,145	D, A	1.1 tons	10.7 tons	3+9	6	Headlights	Enclosed
AT-105 APC (195hp)	$18,260	D, A	1.1 tons	10.7 tons	3+9	6	Headlights	Enclosed
AT-105 LHD (164hp)	$26,811	D, A	1 ton	10.9 tons	3+9	6	Headlights	Enclosed
AT-105 LHD (195hp)	$26,926	D, A	1 ton	10.9 tons	3+9	6	Headlights	Enclosed
AT-105 ICV (164hp)	$24,627	D, A	600 kg	10.9 tons	3+6	7	Headlights	Enclosed
AT-105 ICV (195hp)	$24,742	D, A	600 kg	10.9 tons	3+6	7	Headlights	Enclosed
AT-105	$29,627	D, A	600 kg	10.9 tons	3+6	7	Headlights	Enclosed

Patrol (164hp)								
AT-105 Patrol (195hp)	$29,742	D, A	600 kg	10.9 tons	3+6	7	Headlights	Enclosed
AT-105 CV (164hp)	$20,282	D, A	650 kg	10.9 tons	3+4	8	Headlights	Enclosed
AT-105 CV (195hp)	$20,397	D, A	650 kg	10.9 tons	3+4	8	Headlights	Enclosed
AT-105 CV Improved (164hp)	$199,954	D, A	650 kg	11 tons	3+4	8	Headlights	Enclosed
AT-105 CV Improved (195hp)	$200,109	D, A	650 kg	11 tons	3+4	8	Headlights	Enclosed
AT-105 AMV (164hp)	$20,867	D, A	650 kg	10.9 tons	**	7	Headlights	Enclosed
AT-105 AMV (195hp)	$20,982	D, A	650 kg	10.9 tons	**	7	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
AT-104 (Gas Engine)	169/41	39/10	160	88	Stnd	W(2)	HF3 HS2 HR2
AT-104 (Diesel Engine)	132/32	31/8	160	43	Stnd	W(2)	HF3 HS2 HR2
AT-105 APC (164hp)	133/67	31/16	153	82	Stnd	W(2)	HF5 HS3 HR2*
AT-105 APC (195hp)	151/76	35/18	153	100	Stnd	W(2)	HF5 HS3 HR2*
AT-105 LHD/ICV/Patrol/CV (164hp)	131/66	31/15	153	84	CiH	W(2)	TF2 TS2 TR2 HF5 HS4 HR2*
AT-105 LHD/ICV/Patrol/CV (195hp)	149/75	35/17	153	102	CiH	W(2)	TF2 TS2 TR2 HF5 HS4 HR2*
AT-105 CV Improved (164hp)	130/65	31/15	153	85	Stnd	W(2)	HF5 HS3 HR2*
AT-105 CV Improved (195hp)	148/74	35/17	153	103	Stnd	W(2)	HF5 HS3 HR2*
AT-105 AMV (164hp)	149/75	35/17	153	102	Stnd	W(2)	HF5 HS3 HR2*
AT-105 AMV (195hp)	130/65	31/15	153	85	Stnd	W(2)	HF5 HS3 HR2*

Vehicle	Fire Control	Stabilization	Armament	Ammunition
AT-104/AT-105 APC/CV	None	None	L-7A2	1000x7.62mm
AT-105 LHD	None	None	M-2HB, L-7A2	400x.50, 650x7.62mm
AT-105 ICV/Patrol	None	None	L-7A2 or 37mm or 40mm Riot Grenade Launcher	1000x7.62mm or 40x37/40mm Grenades

*Floor AV is 4Sp.

**See Notes above for crew and passenger capacity.

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GKN Sankey FV-1611 Humber

Notes: This vehicle, designed in the mid-1950s, is more commonly known as the Pig to its British crews. It was developed from the FV-1600 truck, and used heavily in Northern Ireland, where there was an insufficient supply of Saracen and Saxon APCs. They were on the verge of being totally withdrawn from service in the late 1960s, but as violence in Northern Ireland took an upswing, scrapping stopped and they were pressed back into service. By the mid-1990s, however, the remainder had been replaced by more modern vehicles. Most survivors are now in the hands of collectors and museums, and they are few in number.

Being a version of the FV-1600 truck, the Humber is an armored version of that truck, though the interior is heavily rearranged to form it into an APC. It is a large, boxy, steel construction, with a large hood with a cab behind it, and an armored troop compartment in the rear. Armor is all-welded, and largely of steel plates. The cab has a large windshield to the front which can be closed with an armored shutter which has vision slits in it. The cab doors likewise have bullet-resistant windows. The radiator opening also has armored shutters. Atop the commander's and driver's position are a pair of hatches. The rear face has a pair of doors with small windows in them. In each side and in each rear door are flip down firing ports (two on each side); as these firing ports are merely shuttered rectangular openings, they may take any sort of weapon of up to 40mm size. In practice, a ventilator was often fitted to one of the firing ports on each side.

There are seats for six troops in the rear, though in service it was routine for two more troops to stand or sit on the floor. Power is provided by a Rolls-Royce B60 Mk 5A 120-horsepower gasoline engine. In the 1970s, most Humbers received an armor upgrade; though this greatly increased weight and reduced speed, it increased protection. Run-flat tires were also fitted.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Humber	$4,442	G, A	1 ton	5.8 tons	2+6	4	Headlights	Enclosed
Humber w/Appliqué	$4,943	G, A	700 kg	7 tons	2+6		Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Humber	207/51	48/12	145	78	Stnd	W(2)	HF3 HS2 HR2
Humber w/Appliqué	183/45	42/10	145	94	Stnd	W(2)	HF4 HS4 HR2

Glover Webb APV (Armored Patrol Vehicle)

Notes: The APV was selected for use as a light armored car by British Forces in Northern Ireland, with the first of 100 vehicles being delivered in 1986 and deliveries being completed in 1994. None have been produced since that time, and most APVs have been retired from active military service. The APV was also used by British forces and by the UN during some peacekeeping operations. Some use of the APV is still made by police forces in Britain and some other countries, and as armored vehicles for dignitary protection.

The APV basically looks like an armored SUV; this is because it *is* an armored SUV, based on the Land Rover Defender 4x4 chassis. The APV has reinforced ramming bumpers which can be used to smash some obstacles out of the way, and a recessed part of the hood is where a spare tire is kept. A large bullet-resistant is up front, and the cab sides and the rear of the vehicle also have bullet resistant glass. Optionally, this can also be put into the sides of the rear itself. The roof behind the cab has a hatchway with a manually-rotating cupola and a pintle mount, and the APV normally has a high wire-cutting projection above the roof on the left side at the front of the cab. This stops a low-hanging wire from injuring a gunner in the cupola. Armor is relatively thin, but adequate for its intended purpose, construction is largely of composite materials, with polycarbonate anti-spalling liners. The floor has an additional composite armor plate. The engine and fuel tanks are protected by a fire detection and suppression system, and the fuel tank has further explosion protection and is above the floor armor plate. Wire mesh grills typically protect the front of the vehicle, including the windshield, as well as a rotating spotlight atop the vehicle and operated by the gunner. The windshield grill can be folded down onto the hood. Appliqué armor is available for the APV, normally in the form of add-on Kevlar, steel, or aluminum plates. Tires are normally of the run-flat type.

Aside from the two cab doors, there are twin doors in the rear of the vehicle. The passengers sit down either side of the vehicle, with the gunner also being one of the troops carried. Optional features include air conditioning and/or heating, firing ports and/or vision blocks, a siren and flashing emergency lights, smoke grenade launchers, and a front-mounted winch of various capacities. The standard engine is a 114-horsepower turbocharged gasoline engine.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
APV	$16,538	G, A	900 kg	5 tons	3+5	4	WL Spotlight	Enclosed
APV w/Appliqué	$17,299	G, A	800 kg	5.2 tons	3+5	4	WL Spotlight	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
APV	220/54	51/13	125	73	Stnd	W(2)	HF2 HS2 HR2*
APV w/Appliqué	215/52	50/12	125	76	Stnd	W(2)	HF3 HS3 HR3**

Vehicle	Fire Control	Stabilization	Armament	Ammunition
APV	None	None	L-7A2	1750x7.62mm

*Floor AV is 3.
**Roof and floor armor are 3.

Glover Webb/BAE Tactica

Notes: This vehicle was originally built as a private venture by Glover Webb, who hoped to attract sales from the British Army, knowing they needed armored vehicles for use in Northern Ireland. The British did order them, though the first Tacticas actually entered service with Singapore in 1988, and several other countries before entering British service in 1993. Saudi Arabia is actually the largest user; they use some 261 of the Patrol version. The Tactica is in use in Africa, South America, Southeast Asia, and the Middle East.

The Tactica is actually two vehicles sharing a common chassis, but with very different bodies. One, the Patrol version, is similar to an armored SUV and is used as a patrol vehicle and for dignitary protection and transport. As such, it can accommodate its crew and passengers in bench seats down each side of the rear, of in traditional rows of seats. The roof of the vehicle has a small cupola with a pintle mount for a weapon. The patrol version has a traditional flat hood and a ramming bumper up front, and three firing ports in each side and two in the rear. The rear has a large door, and the cab has doors in each side. The rear has bullet-resistant windows, and the front has a large one-piece bullet-resistant windshield and the cab doors large windows. Steps are provided into the vehicle to get inside, with the rear ones folding up. One of the troops mans the gun.

The APC version is shaped more like an armored bus, with a large, boxy body and plenty of headroom for the passengers. The troop compartment is longer, as the driver and commander sit in a cabover configuration. The ramming bumper remains, as do the firing ports and windows. The APC version has twin doors in the rear. The APC version has four firing ports in each side. A bulkhead separates the cab from the troop section.

Both can have the options of air conditioning and heating, as well as more luxurious accommodations (especially on dignitary protection models), flashing lights, sirens, and a PA system. The spare tire for the Patrol version is carried under the rear, while the spare tire for the APC version is atop the cab. The front corners of the roof have clusters of four smoke grenade launchers. Power is provided by a 176-horsepower Perkins 1006-6TW TD diesel.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Patrol	$27,812	D, A	1.2 tons	7.7 tons	2+7	6	WL Searchlight	Enclosed
APC	$28,312	D, A	1.9 tons	10 tons	2+12	3	WL Searchlight	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Patrol	229/56	53/13	167	89	Stnd	W(3)	HF4 HS2 HR2
APC	190/47	44/11	167	116	Stnd	W(3)	HF4 HS2 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
(Both)	None	None	L-7A2 or M-2HB	2900x7.62mm or 1750x.50

Hotspur Hussar

Notes: This is a large armored car with a passing resemblance to the old BTR-152, though it is of course not related to that vehicle. It is designed for more intense rioting and urban raid situations where more troops are needed; it can also function as a light APC. The British used small numbers of it in Northern Ireland, and it is also used in Bahrain, Egypt, and Sri Lanka; the British no longer use it. Production is currently for spare parts, and complete vehicles are built only upon demand.

The Hussar is basically an armored truck, with an engine in front, cab behind it, and a rear troop area. The suspension is 6x6, though a 4x6 configuration can also be selected by the driver (the four rear wheels becoming the drive wheels). The chassis is a stretched Land Rover 110, with an additional rear axle. There is a large space between the front wheels and the two rear pairs. The cab has bullet resistant windows in the front and sides, and a varying number of side and rear windows may also be placed. The front windshield can be further protected with an armored shutter with vision slits in it. The cab itself does not have doors, though there is a door on each side of the vehicle just behind the cab. There are also two doors in the rear. There are two firing ports on each side of the vehicle, and one in each rear door; however, these are simply shuttered slits and do not seal the vehicle. They do, however, allow for rifle grenades and grenade launchers of up to 40mm in size to be fired through them. The troop compartment at the rear of the hull has a folding bench seat down either side.

The front of the vehicle has the engine, which is normally a 134-horsepower gasoline engine. A 150-horsepower diesel engine is an option, though not one that has so far been taken by any of its users. Armor protection consists of all-welded steel and is largely designed for protection against weapons that may be wielded by rioting civilians; it is not heavy. There are two basic variants: the Internal Security (IS) version, which has a roof hatch and normally no roof armament, though a pintle mount with a light weapon can be mounted at that hatch. (The stats below do not provide for this, and it is a rare fit for the IS version.) The APC version has a small one-man, electrically-powered turret with a machinegun in it and all-around vision blocks. The APC variant normally has a cluster of four smoke grenade launchers on each side of the turret; the IS version normally has a wire cutter on a pole above the vehicle.

Vehicle	Price	Fuel	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological

Type								
IS (Gas Engine)	$7,033	G, A	1.9 tons	5.2 tons	2+12	2	WL Spotlight	Enclosed
IS (Diesel Engine)	$7,088	D, A	1.9 tons	5.2 tons	2+12	2	WL Spotlight	Enclosed
APC (Gas Engine)	$32,559	G, A	1.8 tons	5.4 tons	2+12	2	WL Spotlight, Passive IR (G)	Enclosed
APC (Diesel Engine)	$32,614	D, A	1.8 tons	5.4 tons	2+12	2	WL Spotlight, Passive IR (G)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
IS (Gas Engine)	245/60	56/14	98	88	Stnd	W(3)	HF3 HS2 HR2
IS (Diesel Engine)	268/65	62/15	98	74	Stnd	W(3)	HF3 HS2 HR2
APC (Gas Engine)	236/58	55/13	98	91	CiH	W(3)	TF3 TS2 TR2 HF3 HS2 HR2
APC (Diesel Engine)	258/63	60/14	98	77	CiH	W(3)	TF3 TS2 TR2 HF3 HS2 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
APC	None	Basic	L-37A1	3750x7.62mm

NP Aerospace CAV-100

Notes: This is a very light armored car used primarily in UN peacekeeping roles and by international aid agencies which are operating in hostile areas; it is also used by dignitary protection units, including by the US State Department, and has served in some armies the same role as up-armored HMMWVs have served in the US Army. It is based on the Land Rover Defender 110 chassis, and is armored with a glass composite armor called Camac. Windows are bullet resistant glass. The armor is surprisingly effective for its weight and does not result in spalling during hits. Thousands have been produced since the mid-1990s.

There are doors on both sides of the cab, a large door in the rear, and sliding hatch in the roof where guards or observers can stand. A spare tire is also typically found on the front bumper, where is can help provide some incidental frontal protection. Seats in the rear can be down either side or in rows like an SUV. APC-configured vehicles or cargo-configured vehicles are typically taller in profile. The Camac shell can be augmented with additional Camac panels to increase protection. The basic armored shell is compression-molded in virtually one piece to increase integrity of the structure. Other protection includes fire-resistant fuel tanks and a fire detection and suppression system for the engine. The standard powerplant is a 134-horsepower gasoline engine, while the CAV-100D is powered by a 200-horsepower turbocharged diesel engine. Options include air conditioning and heating, firing ports or ports to pass documents, additional windows in the sides (the standard vehicle has the windshield and side cab windows, and one in the rear), and more luxury accommodations.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
CAV-100	$5,617	G, A	1 ton	3.6 tons	2+6	2	Headlights	Enclosed
CAV-100 w/Appliqué	$6,825	G, A	900 kg	3.8 tons	2+6	2	Headlights	Enclosed
CAV-100D	$5,862	D, A	1 ton	3.6 tons	2+6	2	Headlights	Enclosed
CAV-100D w/Appliqué	$6,890	D, A	900 kg	3.8 tons	2+6	2	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
CAV-100	328/80	40/10	80	88	Stnd	W(2)	HF4 HS3 HR3
CAV-100 w/Appliqué	314/77	38/10	80	93	Stnd	W(2)	HF5 HS4 HR3*
CAV-100D	477/116	58/15	80	104	Stnd	W(2)	HF4 HS3 HR3
CAV-100D w/Appliqué	456/111	56/14	80	110	Stnd	W(2)	HF5 HS4 HR3*

*Floor and Roof AV are 3.

GDLS Bison

Notes: The Bison is, like the LAV-25, based on the 8x8 version of Swiss MOWAG Piranha II chassis, which GDLS calls the LAV II chassis. In many ways, the Bison and the LAV-25 are merely different variants of the same vehicle, though there are many differences that merit the Bison a separate entry. The Bison for the most part replaced the Grizzly in Canadian service, as the Bison offers much more cargo and troop carrying capability. The Bison entered Canadian service in 1990; they have 199, and Australia also operates the Bison, using 97 of them. (They call them the ASLAV-PC.) A dozen of the ISC version were sold to the Texas Army National Guard's 49th AD to support antidrug operations in the mid-2000s (not normally armed); I have not been able to determine if they have been used in any other capacity. The Bison has seen combat service with both the Canadians and Australians in Afghanistan (as the ASLAV Type II). However, Canadian Bisons have been replaced with the newer LAV III in the APC role, and all Canadian Bisons reworked into specialist versions, including command post carriers, armored medical vehicles, EW and commo vehicles, maintenance, and combat engineer vehicles.

The basic form of the Bison is of a large 8x8 vehicle, wedge-nosed at the front and boxy behind the nose. The front half of the vehicle deck is about 200mm lower than the rear half; this front section houses the driver on the front left and the engine on the right, and the right side has a large muffler and exhaust system with the exhaust pipe running towards the top of the higher section. At the front of the raised section is a commander's cupola with a pintle mount for a machinegun. The rear section has a large, flat roof with stowage bins on the sides and a large flat section on the rear of this section where outsized cargoes can be tied or locked down, or a collection of smaller equipment. The rear section of the roof also has several large hatches for troops to stand in them. The rear of the vehicle has a powered ramp with a door in it. The interior of the vehicle is novel – it is designed especially with modularity in mind, and the floor and walls have runners, wheels, and lock-down and tie-down points to allow the Bison to be quickly configured and reconfigured in many ways. The sides and roof likewise have many points where things can be tied down for carrying. (It was definitely designed with grunts in mind!) A common add-on is a wire cutter to protect the driver and commander, and an air conditioning unit (the air conditioning unit generally takes up the space of one troop); the Bison also has a collective NBC system for the crew and troops inside. On each side of the hull near the front are a cluster of four smoke grenade launchers. A spare tire is often strapped to the front of the vehicle's nose, particularly when amphibious operation is not expected.

Power is provided by a Detroit Diesel 6V53T turbocharged diesel developing 275 horsepower, coupled to an automatic transmission and conventional driver's controls. The Bison is amphibious with a minimum of preparation (about 2 minutes), and propulsion in the water is by a pair of waterjets steered by rudders. As stated, drive is 8x8, with the front four and rear four sets of wheels able to steer independently to tighten steering radius. The tires are run-flat. Construction is largely of steel, with a Kevlar anti-spalling liner. The Bison can take a version of QinetiQ's LAST appliqué armor kit, which includes additional internal anti-spalling panels. The standard APC version, the ISC (Infantry Section Carrier) has various boxes and lockers for weapons and troop supplies both internally and externally. In the front of the hull is a winch with a capacity of 6.8 tons and 100 meters of cable.

APC-Type Variants

The Bison Ambulance has extra large stowage boxes on the upper hull sides, and an air conditioning unit is attached to the rear deck stand in an armored housing. Internally, the Bison Ambulance is configured to carry medical supplies and patients. There are plenty of lockers and bins for supplies, including an oxygen administration kit, a defibrillator, a small refrigerator and a heater for blankets, a hot plate, an 80-liter water tank, the equivalent of one doctor's medical bag, 20 personal medical kits, and an assortment of splints, cravats, space blankets, and bandages. The Bison Ambulance can handle four stretcher cases, 8 sitting cases, or two stretcher cases and four sitting casualties, as well as a medic. (The driver and commander are also normally medics.) The Bison Ambulance is unarmed.

The Bison CPV is equipped with two short-range, two medium-range, and two long-range radios, one of which is data-capable. The Bison CPV has a ruggedized laptop computer as well as a modern Battlefield Management System, including GPS with an inertial navigation backup. The commander's cupola is retained, though the ammunition load is decreased. A tent can be erected at the rear to double the work space, and a folding table and chairs are carried to assist in this. A hand-held thermal imager, image intensifier, and laser rangefinder are provided.

The Bison Commo Vehicle is equipped with advanced communications capabilities. In addition to the radios for the command version above, the Bison Commo has an additional long-range radio as well as a SATCOM radio and terminal. It has a tactical switchboard, carries a total of 20 field telephones along with 1000 meters of commo wire, and spare parts for commo gear. The Commo Vehicle has a computer to tie together functions.

The Bison EW vehicle is a generalist sort of EW vehicle, optimized primarily for radio jamming, though it does have some minor radar jamming capability. LF, HF, and VHF bands can be jammed at standard chances at a range of 50 kilometers; GSR radar can be jammed at a range of 10 kilometers, though degradation is one level less than normal. The EW vehicle can also detect and locate such radio broadcasts within 25 kilometers, and GSR emission within 10 kilometers. The EW Vehicle has a computer to tie together functions.

The ASLAV Type II

The ASLAV-PC is similar to the Bison ISC, but the commander's station is inside the armor envelope and the commander's external station is replaced by a Kongsberg Protector RWS armed with either an M-2HB or a Mk 19 AGL. The commander controls the RWS through a downlinked monitor, as well as being able to use the RWS's night vision gear through this monitor. It carries less troops, but it otherwise like the Bison ISC.

The ASLAV-C is basically the same vehicle as the Bison CPV, though for Afghanistan use the commander's station is often replaced with the same RWS as on the ASLAV-PC.

The ASLAV-S (Surveillance) is a specialized scout/surveillance vehicle equipped with enhanced night vision devices, a laser rangefinder, a day TV camera which can be slaved to the thermal imager, and a GSR (usually the French RASIT or US-designed AMSTAR). The radar has a range of 10 kilometers. All these sensors are mounted on a 10-meter mast which can also operate in the lowered position. Two medium-range and two-long-range radios are included, one of which is data-capable. The interior is rearranged to gather, collate, and transmit the information it finds, including a computer with ample storage space, and crew is limited to that necessary for operations. The ASLAV-S is equipped with a conventional commander's station, though armed with a heavier machinegun.

The ASLAV-A (Ambulance) is equipped with space for four stretcher cases, two stretcher cases and four seated patients, or 8 seated patients, and has a medic. The commander and driver are also medics. The ASLAV-A carries an oxygen administration kit, a defibrillator, a small heater for blankets, and small hot plate, a small (10-liter) later tank, and the equivalent of a doctor's medical kit and 15 personal medical kits. An assortment of bandages, slings, cravats, splints, and other such gear are also carried. Unlike most medical vehicles, the ASLAV-S is armed.

The Australians do not use the LAST kit. They are radiologically shielded, however.

Twilight 2000 Notes: This vehicle was in common use in Canada during the Twilight War; some of them were also used by the US Marines, and a dozen of the ISC version were sold to the Texas Army National Guard for use in urban drug raids; these were used as regular personnel carriers during the war, and armed with M-60 machineguns. The Australians also used 38 ASLAV Type IIs, of various types. (No ASLAV-Cs are equipped with an RWS in the Twilight 2000 timeline.) The Bison CPVs were the primary command vehicle of Canadian forces, were used in a limited amount by the US Marines (armed with M-240 machineguns), and, fitted with extra ground-to-air radios, were the vehicle of choice for Canadian FALO teams.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Bison ISC	$29,115	D, A	2 tons	12.9 tons	2+9	8	Passive IR (D)	Enclosed
Bison ISC (LAST)	$30,703	D, A	1.7 tons	14.2 tons	2+9	8	Passive IR (D)	Enclosed
Bison Ambulance	$33,483	D, A	1 ton	13.4 tons	*	9	Passive IR (D)	Enclosed
Bison Ambulance (LAST)	$35,071	D, A	700 kg	14.7 tons	*	9	Passive IR (D)	Enclosed
Bison CPV/ASLAV-C	$433,138	D, A	1 ton	13.7 tons	2+4	11	Passive IR (D)	Enclosed
Bison CPV (LAST)	$434,726	D, A	700 kg	15 tons	2+4	11	Passive IR (D)	Enclosed
Bison Commo	$230,151	D, A	1 ton	13 tons	4	11	Passive IR (D)	Enclosed
Bison Commo (LAST)	$231,739	D, A	700 kg	14.3 tons	4	11	Passive IR (D)	Enclosed
Bison EW	$394,961	D, A	1 ton	13 tons	4	11	Passive IR (D)	Enclosed
Bison EW (LAST)	$396,549	D, A	700 kg	14.3 tons	4	11	Passive IR (D)	Enclosed
ASLAV-PC	$46,664	D, A	1.7 tons	13.5 tons	2+7	8	Passive IR (D, C), Image Intensification (C)	Shielded
ASLAV-C w/RWS	$491,703	D, A	850 kg	13.7 tons	2+4	11	Passive IR (D, C), Image Intensification (C)	Shielded
ASLAV-S	$451,553	D, A	720 kg	14.5 tons	4	11	Passive IR (D), Image Intensification (Mast),	Shielded

ASLAV-A	$451,626	D, A	950 kg	13.5 tons	*	9	Thermal Imaging (Mast), GSR (Mast) Passive IR (D)	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Bison ISC	159/50	37/18/4	300	144	Stnd	W(6)	HF6 HS4 HR3**
Bison ISC (LAST)	148/74	34/17/3	300	159	Stnd	W(6)	HF10Sp HS6Sp HR4***
Bison Ambulance	153/48	36/17/4	300	150	Stnd	W(6)	HF6 HS4 HR3**
Bison Ambulance (LAST)	140/44	32/16/3	300	164	Stnd	W(6)	HF10Sp HS6Sp HR4***
Bison CPV	153/48	36/17/4	300	153	Stnd	W(6)	HF6 HS4 HR3**
Bison CPV (LAST)	137/43	32/15/3	300	167	Stnd	W(6)	HF10Sp HS6Sp HR4***
Bison Commo/EW	158/50	37/18/4	300	145	Stnd	W(6)	HF6 HS4 HR3**
Bison Commo/EW (LAST)	143/45	33/16/3	300	160	Stnd	W(6)	HF10Sp HS6Sp HR4***
ASLAV-PC	152/48	35/17/4	300	151	CiH	W(6)	TF4 TS2 TR2 HF6 HS4 HR3****
ASLAV-C	153/48	36/17/4	300	153	Stnd	W(6)	HF6 HS4 HR3****
ASLAV-C w/RWS	143/45	33/16/3	300	160	CiH	W(6)	TF4 TS2 TR2 HF6 HS4 HR3****
ASLAV-S	142/45	33/16/3	300	147	Stnd	W(6)	HF6 HS4 HR3****
ASLAV-A	152/48	35/17/4	300	151	Stnd	W(6)	HF6 HS4 HR3****

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Bison ISC	None	None	L-6 (C)	1620x7.62mm
Bison CPV/Commo/EW	None	None	L-6 (C)	1000x7.62mm
ASLAV-PC/ASLAV-C w/RWS	+2	Fair	M-2HB or Mk 19 (C)	1000x.50 or 325x40mm
ASLAV-C/ASLAV-S/ASLAV-A	None	None	M-2HB (C)	1000x.50

*See Notes for Crew and passenger capacity.
**Hull Floor AV is 3.
***Hull Floor AV is 5; Hull Roof AV is 3.
****Hull Floor and Roof AV are 3.

GDLS Grizzly

Notes: Like the LAV-25, the Grizzly is based on the MOWAG Piranha; however, the Grizzly is based on the 6x6 rather than the 8x8 version of that vehicle. They also predate the LAV-25 in Canadian service by about a half a decade, being first seen in service in 1979. Some 270 were built for Canadian Armed Forces. The Bison, above, began to replace the Grizzly in the early 1990s, as the Bison was a larger vehicle which offered more cargo and troop carrying capabilities, as well as offering a degree of utility the Grizzly could not deliver. Aside from Canada, the Uruguayans use 44 of them, though the Uruguayans opted to not use the turrets, replacing the opening with plating and a smaller commander's cupola with a pintle-mounted weapon. The Croatians operate one Grizzly, which they captured during the IFOR mission in Bosnia. The RCMP uses two unarmed Grizzlies with their Emergency Response team, and the Edmonton Police Service uses one unarmed Grizzly. These retain their turrets, and the turrets mount extra observation and surveillance gear, such as LLTV and video recorders, as well as a PA system; the former gunner's station controls these surveillance and PA systems. The Grizzly is related to the Cougar reconnaissance vehicle and the Husky ARV.

In 2005, 100 Grizzlies were loaded to African Union Peacekeepers for use in the Darfur region; as the turret of the Grizzly is a Cadillac Gage turret, and the US initially opposed the Darfur mission, the Grizzlies were at first sent without their turrets in the summer of 2005 and the opening plated over. The Sudanese government opposed the peacekeeping mission altogether, and training was necessary for the African crews, and it was not until November that the Grizzlies became operational in Darfur. By then, the Canadians had permission to use the turrets from the US, and the Grizzlies carried out their actual missions in Darfur with their turrets installed. The use of Grizzlies in Darfur became a bone of contention; while only one Grizzly was lost in combat, the crews were regarded as too poorly trained in their use to use them effectively, and they were withdrawn in 2006. The Uruguayan Grizzlies were taken from these loaned vehicles after refurbishment and the desired modifications made.

The Grizzly hull bears a great resemblance to the LAV-25, though it is a 6x6 instead of an 8x8 vehicle and is shorter in length. The hull sides are moderately sloped, and the front sharply sloped. The driver is in the front left, with the engine to his right. The

driver has three vision blocks to his front, one of which can be removed and replaced by a night vision block. He has a conventional driver control set. The turret is small, and is a modified form of one fitted to some variants of the Cadillac Gage LAV-150 and LAV-300. It is armed with heavy machinegun and a coaxial medium machinegun. A few also had a pintle-mounted machinegun on the commander's cupola, though this is not reflected in the stats below. The turret has a commander's cupola, but there is no hatch for the gunner. There is a cluster of four smoke grenade launchers on each side of the turret. (Uruguayan versions have the smoke grenade launchers shifted to either side of the upper glacis.) The rear troop compartment is accessed via a pair of rear doors of through hatches on the rear deck. Two firing ports are found on each side of the troop compartment, and one in the right rear door. The Grizzly uses a Detroit Diesel 6V63T turbocharged diesel for power (the same as on the Bison), and is coupled to an automatic transmission. The Grizzly can be fitted with a version of the LAST kit, which can be applied to both the hull and turret; the versions deployed to Darfur did not use this, nor do Uruguayan versions or police versions. Grizzlies were originally amphibious, propelled in the water by propellers and steered by rudders; the propulsion system proved to be troublesome and prone to breakdowns, and after a few years, was removed (though the bilge pumps remained, disabled). Tires are run flat and the Grizzly has an off-road suspension, with run-flat tires.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Grizzly	$62,679	D, A	900 kg	10.5 tons	3+6	6	Passive IR (D, G)	Enclosed
Grizzly (LAST)	$64,681	D, A	650 kg	11.5 tons	3+6	6	Passive IR (D, G)	Enclosed
Grizzly (Uruguayan)	$27,068	D, A	1.1 tons	9.8 tons	2+7	6	Passive IR (D)	Enclosed
Grizzly (Police)	$26,261	D, A	1 ton	10.4 tons	3+6	6	Passive IR (D, G), Image Intensification (G)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Grizzly	201/101	52/26/5	204	117	Trtd	W(4)	TF4 TS3 TR3 HF6 HS4 HR3
Grizzly (LAST)	188/94	43/22/4	204	128	Trtd	W(4)	TF6Sp TS5Sp TR3 HF8Sp HS6Sp HR3*
Grizzly (Uruguayan)	212/108	55/27/6	204	109	Trtd	W(4)	HF6 HS4 HR3
Grizzly (Police)	203/102	52/26/5	204	116	Trtd	W(4)	TF4 TS3 TR3 HF6 HS4 HR3

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Grizzly	+1	Fair	M-2HB, L-6	1000x.50, 4400x7.62mm
Grizzly (Uruguayan)	None	None	L-6 (C)	2200x7.62mm

*Hull floor AV is 5; hull and turret roof AV is 3.

GDLS LAV-25

Notes: The LAV-25 is based on the Canadian version of the Swiss Piranha II 8x8 APC, called the LAV II chassis by GDLS. The primary customers of the LAV-25 are the US Marines, who have bought 2036 of them as of 2017. Other users include the Saudi Arabian National Guard, the Iraqi Army (a recent acquisition), New Zealand (who call it the NZLAV) and the Australians, who use a highly-customized version called the ASLAV. The US Army also tested, but ultimately did not procure, the LAV-25 for use by the 82nd Airborne division and later for what became the Stryker Brigades. The Canadians also use the LAV-25, though only in the reconnaissance Coyote configuration. In addition to the standard LAV-25, several specialized variants of the LAV-25 exist, ranging from scout versions to ARVs to mortar carriers. (Only APC-type variants will be included in this entry.) The LAV-25 uses the same chassis as the Bison (above), and in many ways, the two vehicles may be regarded as variants of each other.

As a variant of the Piranha, the LAV-25 has the wedge-shaped nose and moderately-sloped sides of the basic chassis, and an 8x8 suspension with front and rear sets of wheels with independent steering, giving the LAV-25 a surprisingly small turning radius. For standard road use, the LAV-25 normally uses only the four rear wheels as drive wheels, switching to 8-wheel drive off road. The LAV-25 is amphibious with a minimum of preparation (about 2 minutes), and is propelled in the water by propellers and steered by rudders. Power is provided by the standard LAV II engine, the Detroit Diesel 6V53T 275-horsepower turbocharged diesel. This is coupled to an automatic transmission and the driver has a conventional drive control setup. The driver is located on the front left and has three vision blocks to his front.

The turret is to the rear of the driver, slightly forward of center; it carries a commander and gunner, with the commander having a cupola with all-around vision blocks and the gunner having a hatch with vision blocks to his front, left, and rear. The sights and night vision devices are provided for the gunner, but available to the commander, and he has auxiliary controls for the autocannon and coax. Though at first on US Marine versions, the commander did not have his own weapon, these were increasingly fitted after Desert Storm and now virtually all of them are armed with a commander's machinegun. Other countries used commander's machineguns from the start. The turret is armed with an autocannon and coaxial machinegun, though sighting equipment and stabilization is sketchy. Half the ammunition for the autocannon and coaxial machinegun is stowed in the turret, with the rest being elsewhere in the vehicle. A cluster of six smoke grenade launchers is found on each side of the turret on US Marine versions; clusters of four are used by other countries. The troop compartment is at the rear and normally carries six troops, though seven can be accommodated with a little more squeezing. They enter and exit through doors in the rear of the vehicle. Two firing points are found on each side and one in each rear door; these are normally designed specifically for the small arms used by the country in question, though in general they can accommodate the M-16/M-4 series, the Steyr AUG and its variants, the Minimi and M-249 and their variants, and the MAG and M-240 and their variants. The LAV-25 can take a version of the LAST appliqué armor kit.

Starting in the 1990s, US Marine LAV-25s went through a SLEP (Service Life Extension Program), becoming the LAV-25A1. Improvements included the addition of a ballistic computer, better gun stabilization, the addition of a commander's machinegun (on US Marine models), and a general overhaul of the vehicle. Virtually all LAV-25s currently fielded in the world today are LAV-25A1s. An air conditioner makes squeezing the seventh troop or Marine into the LAV-25 impossible. Some parts of the Phase I upgrades are also being applied to other LAV-25 versions.

Currently, US Marine LAV-25s are undergoing another update program, which started in 2005; this was at first called the LAV-25A2, then simply the LAV-A2. This is taking place in two phases; Phase I adds additional Kevlar anti-spalling liners inside and makes the LAST kit standard. It also improves the fire suppression equipment and upgrades the suspension, improving off-road capability. Unfortunately, this makes the LAV-A2 too heavy and unbalanced for reliable amphibious operations, and these features are being deleted on the LAV-A2. Phase II adds thermal imaging as well as a laser rangefinder, and an improved fire control computer. It further improves gun stabilization. Phase II upgrades began in 2007, but are progressing slowly. The suspension and fire suppression upgrades will also be applied to other LAV-25 versions.

Other Variants

The LAV-LOG (also called simply the LAV-L) is turretless and has a raised superstructure. It is used as an armored truck of sorts, i.e., a logistics carrier. It is used only by the US Marines. The resulting vehicle is externally similar to the Bison, but internally, it is very different. Instead of the turret, the LAV-LOG has a commander's cupola on the front center of the raised portion which is armed with a pintle-mounted weapon. The roof of the raised portion has large hatches to give easy access for the loading and unloading of supplies, and a crane over the left rear wheel with a capacity of 550 kilograms assist in this. The rear doors are replaced with one large door, and the rear face also has a ramp. The rear opening is large enough for the LAV-LOG to be loaded by small forklifts. The floor and walls have a set of rollers and tie-down and lock-down points to allow the LAV-LOG to carry bulk supplies or loose supplies. Removable bench seats can be added to make the LAV-LOG an *ad hoc* APC; these allow 8 Marines to be carried.

The LAV-C2 is the command version of the LAV-25 series, and is roughly analogous to the M-577. Externally, the LAV-C2 is similar to the LAV-LOG, though it has several antennas and does not have the crane. As with most such command vehicles, the LAV-C2 carries an extensive radio fit, including two short-range, two medium-range, and two long-range radios, one of which is data-capable. A map board, plotting supplies, and office-type supplies are carried. A ruggedized laptop computer is carried. A BMS system upgrade is being applied to the LAV-C2, and is included in the stats below. A hand-held image intensifier, thermal imager, and laser rangefinder is included. Two hatches are found on the rear deck, and the front of the raised area has two hatches, one for the vehicle commander near the front center and one for the senior command member to his right. A tent may be extended at the rear of the vehicle to double the working area, and a folding table and three folding chairs are carried. A LAV-C2 with a LAST kit is too heavy for amphibious operations, as is the LAVA1-C2.

The LAV-MEWSS (Mobile Electronic Warfare Support System) is a version of the LAV-25 chassis packed with equipment for radio and radar jamming functions. The LAV-MEWSS' equipment is capable of jamming all radio frequencies, though only two bands at a time, within 30 km, to a point that all radio skill level checks are three levels more difficult – it is a powerful, though short-range, ECM signal. It can also jam radar within 30 km, degrading radar by two levels of effectiveness. As a secondary function, the LAV-MEWSS carries a ground-surveillance radar and an artillery counterbattery radar. Four long-range radios are carried, and the radio operator is usually an intelligence specialist. Firing ports are plated over. The LAV-MEWSS with a LAST kit is not amphibious, nor is the LAV-MEWSSA1

The Coyote

The Coyote is a scout/surveillance version of the LAV-25. It is used only by Canada. The Coyote was designed to replace the M-114 Lynx in Canadian service. No dismount troops are carried, and most of the rear is taken up by a variety of reconnaissance and surveillance gear. The Coyote is fitted with thermal vision, a laser designator, a ground-surveillance radar with an extendable mast 10 meters high and a range of 10 km (it is a small radar), a video camera and VCR (linked to all visual and surveillance devices, and later replaced with digital storage), a digital compass system, a GPS system, and chemical and radiation detection equipment. The radio fit includes one short-range, one medium-range, and two long-range radios, one of which is data-capable. The radar mast also mounts a thermal imager and image intensifier, as well as an LLTV camera. The Coyote can detect and attempt to intercept radio

broadcasts within 50 kilometers, and an onboard computer helps analyze and record collected data. In addition, there is a front-mounted winch with a capacity of 6804kg.

The Coyote is often equipped with the LAST kit, but firing ports are plated over. The extra equipment on the Coyote unbalances it, rendering it incapable of amphibious operations, and that equipment is not fitted to the Coyote.

The ASLAV

The ASLAV is somewhat heavier than the standard LAV-25. This is primarily due to the inclusion of an air conditioner, slightly increased armor (especially the floor), and radiation shielding. The ASLAV also usually employs a wire cutter on a pole to protect the driver, commander, and gunner. Rounds for the autocannon are increased, and for the machineguns decreased. Other than this, the basic ASLAV is almost identical to the basic LAV-25. Phase 1 was the initial testing program; Phase 2 was the initial acquisition program. Phase 3 will increase the amount of locally-produced components, as well as fit the ASLAV with a laser rangefinder, and thermal imager as well as improved electrical components. More ASLAVs of all versions will also be acquired under Phase III, and the new ASLAVs will be built to the Phase III standards. The Type I ASLAV is used primarily as a scout vehicle rather than an APC, though it does carry a scout dismount team.

The Type II and Type III ASLAV is based on the Bison, and is found in that entry above (for the ASLAV Type II) and eventually on the Canadian Engineer Vehicles (for the ASLAV Type III). The Australians do not use the LAST kit.

Twilight 2000 Notes: In the Twilight 2000 timeline, the LAV-25 is used in large numbers by the US Marines. Some later modifications such as digital storage on the Coyote were not applied to the versions used in the Twilight War. The LAV-A2 does not exist in the Twilight 2000 timeline, and only about half the LAV-25s are LAV-25A1s. The US Marines employed 12 Coyotes, and the US Army seven. The Canadians also made some use of the LAV-25 APC, mostly inside of Canada herself; this is in addition to the Coyotes they used elsewhere in the world. The US Army used them in the 9th Motorized Infantry Division, as well as in several units raised later in the war and as replacement vehicles for vehicles such as APCs and scout vehicles. LAV-25s could be found in small numbers in Western US-based units, and in somewhat larger numbers in use by the Texas Army National Guard's 49th AD. The Australians employ some 150 ASLAVs, mostly of the standard configuration, which do get used as APCs in some cases; they also have some 25% of their ASLAV force being of Type II and Type III ASLAVs.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
LAV-25	$80,322	D, A	1.8 tons	12.8 tons	3+6	8	Passive IR (D, G), Image Intensification (G)	Enclosed
LAV-25 (LAST)	$83,596	D, A	1.4 tons	14.5 tons	3+6	8	Passive IR (D, G), Image Intensification (G)	Enclosed
LAV-25A1	$125,789	D, A	1.4 tons	14.6 tons	3+6	8	Passive IR (D, G), Image Intensification (G)	Enclosed
LAV-A2	$166,489	D, A	1.3 tons	14.8 tons	3+6	8	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Enclosed
LAV-LOG	$36,085	D, A	2.2 tons	12 tons	2 (+8)	8	Passive IR (D)	Enclosed
LAV-LOG (LAST)	$38,516	D, A	2.1 tons	13.5 tons	2 (+8)	6	Passive IR (D)	Enclosed
LAV-LOGA1	$40,947	D, A	2.1 tons	13.6 tons	2 (+8)	8	Passive IR (D)	Enclosed
LAV-A2-LOG	$41,957	D, A	2 tons	13.8 tons	2 (+8)	8	Passive IR (D)	Enclosed
LAV-C2	$460,265	D, A	900 kg	13.5 tons	2+3	10	Passive IR (D)	Enclosed
LAV-C2 (LAST)	$463,696	D, A	600 kg	15 tons	2+3	10	Passive IR (D)	Enclosed
LAV-C2A1	$468,223	D, A	600 kg	15.1 tons	2+3	10	Passive IR (D)	Enclosed
LAV-A2-C2	$469,223	D, A	900 kg	15.3 tons	2+3	10	Passive IR (D)	Enclosed
LAV-MEWSS	$639,615	D, A	600 kg	13.8 tons	4	11	Passive IR (D)	Enclosed
LAV-MEWSS (LAST)	$642,046	D, A	600 kg	15.3 tons	4	11	Passive IR (D)	Enclosed
LAV-MEWSSA1	$645,477	D, A	600 kg	15.4 tons	4	11	Passive IR (D)	Enclosed
LAV-A2-MEWSS	$647,577	D, A	500 kg	15.6 tons	4	11	Passive IR (D)	Enclosed
Coyote	$501,403	D, A	750 kg	13.4 tons	4	11	Passive IR (D,	Enclosed

							G. C), Image Intensification (G, C, Mast), Thermal Imaging (G, C, Mast), GSR (Mast)	
Coyote (LAST)	$504,677	D, A	325 kg	15.1 tons	4	11	Passive IR (D, G. C), Image Intensification (G, C, Mast), Thermal Imaging (G, C, Mast), GSR (Mast)	Enclosed
ASLAV	$61,759	D, A	1.6 tons	13.2 tons	3+6	8	Passive IR (D, G), Image Intensification (G)	Shielded
ASLAV Phase III	$76,259	D, A	1.6 tons	13.2 tons	3+6	8	Passive IR (D, G), Image Intensification (G), Thermal Imaging	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
LAV-25	172/87	40/20/5	300	144	Trtd	W(6)	TF6 TS4 TR4 HF6 HS4 HR4
LAV-25 (LAST)	158/80	37/18/5	300	163	Trtd	W(6)	TF8Sp TS6Sp TR4 HF10Sp HS6Sp HR5*
LAV-25A1	157/79	37/18/5	300	145	Trtd	W(6)	TF8Sp TS6Sp TR4 HF10Sp HS6Sp HR5*
LAV-A2	155/88	36/20	300	147	Trtd	W(6)	TF8Sp TS6Sp TR4 HF10Sp HS6Sp HR5*
LAV-LOG	184/93	43/21/5	300	135	Stnd	W(6)	HF6 HS4 HR4
LAV-LOG (LAST)	163/82	38/19/5	300	152	Stnd	W(6)	HF10Sp HS6Sp HR5*
LAV-LOGA1	162/81	38/19/5	300	153	Stnd	W(6)	HF10Sp HS6Sp HR5*
LAV-A2-LOG	160/90	38/21	300	155	Stnd	W(6)	HF10Sp HS6Sp HR5*
LAV-C2	164/83	38/19	300	145	Stnd	W(6)	HF6 HS4 HR4
LAV-C2 (LAST)	145/74	34/17	300	164	Stnd	W(6)	HF10Sp HS6Sp HR5*
LAV-C2A1	144/74	34/17	300	165	Stnd	W(6)	HF10Sp HS6Sp HR5*
LAV-A2-C2	142/82	34/19	300	167	Stnd	W(6)	HF10Sp HS6Sp HR5*
LAV-MEWSS	161/81	37/19/4	300	154	Stnd	W(6)	HF6 HS4 HR4
LAV-MEWSS (LAST)	142/72	33/17	300	174	Stnd	W(6)	HF10Sp HS6Sp HR5*
LAV-MEWSSA1	141/71	33/17	300	175	Stnd	W(6)	HF10Sp HS6Sp HR5*
LAV-A2-MEWSS	139/79	32/19	300	177	Stnd	W(6)	HF10Sp HS6Sp HR5*
Coyote	166/84	39/19	300	150	Trtd	W(6)	TF6 TS4 TR4 HF6 HS4 HR4
Coyote (LAST)	152/73	33/17	300	169	Trtd	W(6)	TF8Sp TS6Sp TR4 HF10Sp HS6Sp HR5*
ASLAV/Phase III	168/85	39/20/5	300	147	Trtd	W(6)	TF7 TS4 TR4 HF6 HS4 HR4*

Vehicle	Fire Control	Stabilization	Armament	Ammunition
LAV-25	+1	Basic	25mm M-242 ChainGun, L-6 or MAG or M-240, L-6 or MAG or M-240 (C)	630x25mm, 1620x7.62mm
LAV-25A1	+2	Fair	25mm M-242 ChainGun, M-240, M-240	630x25mm, 1620x7.62mm

			(C)	
LAV-A2	+4	Good	25mm M-242 ChainGun, M-240, M-240 (C)	630x25mm, 1620x7.62mm
LAV-LOG/C2/MEWSS	None	None	M-240 (C)	1000x7.62mm
Coyote	+3	Fair	25mm M-242 ChainGun, L-6, L-6 (C)	210x25mm, 1140x7.62mm
ASLAV	+1	Basic	25mm M-242 ChainGun, MAG, MAG (C)	720x25mm, 1500x7.62mm
ASLAV Phase III	+2	Fair	25mm M-242 ChainGun, MAG, MAG (C)	720x25mm, 1500x7.62mm

*Hull floor AV is 5; hull and turret roof AV is 3.

GDLS LAV III Kodiak

Notes: The LAV III, called the Kodiak in Canadian service, replaced the Bison as an APC in Canadian service, and is also used by Saudi Arabia and New Zealand (who call it the NZLAV III). The LAV III offers increased armor protection, the ability to take armor upgrades based on ceramic composite and bar/slat armor which dramatically increases protection without greatly increasing weight like the LAST kit, a strengthened undercarriage and suspension both for off-road performance and mine protection, and a collective NBC system, as well as air conditioning as standard. The resulting vehicle is also not drastically larger than the LAV-25 (but it is larger), though interior room is improved. The fire control, gun stabilization, and sights are improved, and some electronic aids are added. There are a few variants in service, including an ATGM vehicle, an ISC version with a raised hull and an RWS instead of a turret, a CPV, an OPV (Observation Post Vehicle), and a combat engineer vehicle. In addition to Canada, Saudi Arabia employs 19 Kodiaks.

The LAV III also forms the basis of the US Stryker APC. This version will eventually have its own entry under US Wheeled APCs.

The basic form of the Kodiak makes it look similar to the LAV-25, though the LAV III is noticeably more heavily built. The turret mounts the same weapons as the LAV-25, but fire control and gun stabilization is greatly improved, and night vision equipment is dramatically better. On each side of the turret are a cluster of four smoke grenade launchers. The gunner and commander have LCD screens displaying various information about the vehicle's state, and the commander and driver also have access to a GPS and tactical navigation system (TACNAV) along with a digital compass. The LCD monitors also display the view through the sights and vision devices to the gunner and commander. The commander has an independent thermal imager and image intensifier as well as a telescopic day sight, giving him a hunter/killer capability. The commander also has access to a 6-million candlepower searchlight with white light and IR channels. The driver is in his customary place in the front left, and has standard driving controls. The Kodiak is powered by a Caterpillar 3126 turbocharged diesel developing 350 horsepower, coupled to an automatic transmission. The 8x8 suspension can be switched to 4x8 (with the rear set of wheels providing the power) to improve on-road performance; it is also beefed up to improve off-road performance. All wheels have antilock brakes and run-flat tires, as well as a traction control system. In the front of the hull is a winch with a capacity of 6804 kg and 100 meters of cable. The LAV III is not amphibious.

The troops enter and exit through a rear ramp with a door in it, and have two large hatches on the rear hull roof. There are no firing ports. The crew and passengers are protected by an automatic fire detection and suppression system for the driver's compartment, engine compartment, turret basket, and rear troop compartment. The crew and passengers also have the protection of a collective NBC system, and Kodiak has a chemical agent detector and a radiation meter. The Kodiak is radiologically protected. Armor is still of steel, though it is improved over that of the LAV-25. The Kodiak has a laser/radar warning receiver to alert the crew when they are being targeted. The crew and troops have air conditioning.

The armor can be supplemented by a composite appliqué armor kit called MEXAS which provides excellent levels of protection without adding undue weight. The Kodiak can also be fitted with bar/slat armor around its hull to further foil HE-type rounds (Including HEAT); this acts as spaced armor with an AV of 1, and from some angles, gives a sort of "double spaced" effect (the 2D6 normally added to a hit are not added on, and then the hit is reduced by a further 2D6). The hull floor is especially strengthened; though it does not have the V-shape of true MRAPs, the design does to an extent channel away blasts, and troops and equipment inside suffer 10% less damage. The bar/slat armor adds 300 kg to the weight of the vehicle and slows it by 2%, and increases fuel consumption by 2%. The Kodiak is not air-portable with the bar/slat armor in place. The ramp is not covered by the bar/slat armor though the area immediately to the right and left of the ramp are – 25% of all rear-quarter hits will hit the bar/slat armor. The Kodiak employs thermal dampening technology which presents a -2 penalty to those trying to detect it by IR/thermal-based vision devices or when an IR-guided weapon tries to lock on.

The relatively high center of gravity of the Kodiak has led to some possible problems on roads with soft sides or unstable terrain – 12 rollover accidents may have been caused by the high center of gravity in such terrain.

The LAV III Upgrades (LAV 6.0)

After duty in Afghanistan, some 33% of Kodiaks came home combat-ineffective, with damage ranging from electrical wear to the effects of IED attacks. Some 34 were totaled outright by IED or RPG attack. This brought to the fore the urgent need to improve the Kodiak in major ways, if, as the MoD stated, they were to remain in service until 2035. The upgrades are known collectively as LAV III 6.0, or LAVUP. Among the improvements are a complete "as new" refurbishment, larger hatches and openings on armored steps, an improved day/night vision suite to give a true hunter/killer capability, and improved brakes and electrical systems. A BMS system has been added which is NATO compatible. An NBC Overpressure system has been added, as well as an optical chemical detection system. The LAVUP driver has CCD day/night cameras around the vehicle, and the driver and commander can use these cameras

for navigation. The commander's C-6 machinegun is replaced with a smaller, more flexible M-249 SAW. The crew is seated on energy-absorbing seats.

Some 500 Kodiaks are to be upgraded, with most of these upgrades to be done by 2018. Other Kodiak variants are now being upgraded in the much the same manner.

Foremost among the improvements, however, was an increase in the armor envelope, particularly the addition of a V-type hull floor which itself has much more base armor, with alternating layers of aluminum and Kevlar. A bar/slat cage may be added, or ERA. On the hull and turret, a combination of MEXAS applique and welded aluminum plates have been added. (Unfortunately, weight has also increased dramatically, leading to a more powerful engine.) A 450 horsepower Caterpillar C-9 engine was installed. To accommodate the larger engine, a much-enlarged radiator and beefed-up suspension have been fitted; in addition, the wheel housings, hydraulic likes. Brake lines, and electrical connections underneath the vehicle are under armored panels.

The NZLAV III is being upgraded in a similar manner, and the Australians are procuring 108 NZLAV III variants.

The Canadian Army is currently experimenting with the addition of an Israeli-made Trophy Light Active Defense System. This is included below as a "what-if." Details are found in the Glossary for Ground Vehicles (Or should by the time I publish this; as always, no guarantees!)

Other APC Versions

The LAV III ISC is similar in concept to the Bison ISC, carrying a larger infantry squad and lacking the standard Kodiak turret. Instead, the ISC is equipped with the German-designed Nanuk RWS, equipped with either an M-2HB or Mk 19 AGL. The commander is inside the armor envelope, and controls his weapon and sees through the sights and night vision devices via a downlinked monitor. The ISC has many of the other features of the Kodiak, including the GPS with TACNAV, vehicle state computer, laser/radar warning receiver, the chassis and suspension, and the front-mounted winch. It can take its own version of the MEXAS appliqué armor package, as well as bar/slat armor. The ISC retains the smoke grenade clusters, though they are moved to the top front corners of the raised portion of the vehicle hull.

The LAV III CPV is the command version of the ISC, and is equipped with two short-range, two medium-range, and two long-range radios, one of which is data-capable. The Bison CPV has a ruggedized laptop computer as well as a modern Battlefield Management System, and also has the GPS and TACNAV system of the Kodiak. The commander's position is reduced to a cupola with a machinegun. A tent can be erected at the rear to double the work space, and a folding table and chairs are carried to assist in this. A hand-held thermal imager, image intensifier, and laser rangefinder are provided.

The Columbians have recently ordered the LAV III 6.0; however on the turrets of their Kodiaks, instead of a commander's hatch, their Kodiaks are equipped with RWSs armed with either MAG or M-2HB machineguns. The RWSs are equipped with night vision and telescopic day channels and CCDs. The commander either leaves and enters through the rear of the gunner's hatch. A complaint by their crews is that they are very top-heavy. These Columbian vehicles do not have a BMS.

Twilight 2000 Notes: Kodiak replacement of the LAV-25 and Bison had just begun when the Twilight War began, and no more than 40 were produced for Canada in the Twilight 2000 timeline. 75% of these were standard Kodiaks, with the rest being a mix of ISCs and CPVs; OSV, ATGM, and engineer versions were not built. A few examples (about 12) of these vehicles were tested by the US Marines and taken into service when the war started. The LAVUP was not only not built, it was never even contemplated. The Columbians never received any Kodiaks.

Merc 2000 Notes: The Kodiak began replacing the LAV-25 in Canadian and (partially) in US Marine service in 2006.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Kodiak	$316,312	D, A	2 tons	17 tons	3+7	9	Passive IR (D, G, C), Image Intensification (G, C), Thermal Imaging (C)	Shielded
Kodiak (MEXAS)	$319,849	D, A	1.7 tons	17.5 tons	3+7	9	Passive IR (D, G, C), Image Intensification (G, C), Thermal Imaging (C)	Shielded
LAV III ISC	$133,914	D, A	2.2 tons	16.6 tons	2+9	6	Passive IR (D, C), Image Intensification (C)	Shielded

LAV III ISC (MEXAS)	$136,567	D, A	2.1 tons	17 tons	2+9	6	Passive IR (D, C), Image Intensification (C)	Shielded
LAV III CPV	$366,488	D, A	1 ton	17.5 tons	2+4	10	Passive IR (D)	Shielded
LAV III CPV (MEXAS)	$369,141	D, A	800 kg	17.9 tons	2+4	10	Passive IR (D)	Shielded
LAV III 6.0	$711,759	D, A	2.57 tons	19.05 tons	3+7	15	Passive IR (D, G, C), Image Intensification (G, C), Thermal Imaging (G, C), Day/Night CCTV (x5)	Shielded
LAV III 6.0 w/Trophy Light	$779,342	D, A	2.47 tons	19.45 tons	3+7	16	Passive IR (D, G, C), Image Intensification (G, C), Thermal Imaging (G, C), Day/Night CCTV (x5)	Shielded
Columbian LAV III 6.0	$553,640	D, A	2.07 tons	19.45 tons	3+7	16	Passive IR (D, G, C), Image Intensification (G, C), Thermal Imaging (G, C), Day/Night CCTV (x5)	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Kodiak	144/82	33/19	400	147	Trtd	W(6)	TF7Sp TS6Sp TR4 HF9Sp HS6Sp HR5*
Kodiak (MEXAS)	140/80	32/18	400	151	Trtd	W(6)	TF10Cp TS8Sp TR4 HF12Cp HS9Sp HR5*
LAV III ISC	147/84	34/19	400	143	Stnd	W(6)	HF9Sp HS6Sp HR5*
LAV III ISC (MEXAS)	144/82	33/19	400	147	Stnd	W(6)	HF12Cp HS9Sp HR5*
LAV III CPV	140/80	32/18	400	151	Stnd	W(6)	HF9Sp HS6Sp HR5*
LAV III CPV (MEXAS)	137/78	31/18	400	155	Stnd	W(6)	HF12Cp HS9Sp HR5*
LAV III 6.0	167/95	38/22	400	171	Trtd	W(8)	TF14Cp TS12Cp TR6 HF16Cp HS13Cp HR7**
LAV III 6.0 w/Trophy Light	164/93	37/22	400	174	Trtd	W(8)	TF14Cp TS12Cp TR6 HF16Cp

Columbian LAV III 6.0	164/93	37/22	400	174	Trtd***	W(8)	HS13Cp HR7** TF14Cp TS12Cp TR6 HF16Cp HS13Cp HR7***

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Kodiak	+4	Good	25mm M-242 ChainGun, L-6, L-6 (C)	845x25mm, 2175x7.62mm
LAV III ISC	+2	Fair	M-2HB or Mk 19 (C)	1250x.50 or 400x40mm
LAV CPV	None	None	L-6 (C)	1250x7.62mm
LAV III 6.0	+4	Good	25mm M-242 ChainGun, L-6, M-249 (C)	845x25mm, 2175x7.62mm, 3000x5.56mm
LAV II 6.0 w/Trophy Light	+4	Good	25mm M-242 ChainGun, L-6, M-249 (C), Trophy Light System	845x25mm, 2175x7.62mm, 3000x5.56mm, 10xTrophy APS Rounds
Columbian LAV III 6.0	+4/+2***	Good/Basic***	25mm M-242 ChainGun, L-6, L-6 or M-2HB (C)	845x25mm, 2175x7.62mm, 2175x7.62mm or 1300x.50

*Hull and Turret Roof AV is 3; Hull Floor AV is 5Sp.

**Hull and Turret Roof AV is 5; Hull Floor is 8Sp and has a V-type hull.

***Hull and Turret Roof AV is 5; Hull Floor is 8Sp and has a V-type hull. The Columbian LAV III 6.0 has a double turret; 75% or turret hits will hit the main turret, and the other 25% the RWS. The RWS has an AV of TF3Sp, TS3Sp, and TR of 3. The RWS uses the second set of figures for Fire Control and Stabilization.

Cardoen VTP-1 Orca

Notes: This is a light wheeled 6x6 APC similar in design to the BTR-152; it is, in fact, almost identical to an Israeli modification of the BTR-152 called the Shoet Mk II, though any such affiliation is unofficial. Israel, however, has been providing assistance to the Chileans since the late 1970s. The passenger compartment is open-topped, and there is a door in the rear of the hull and on either side of the cab. The cab has overhead cover, and the commander has an overhead hatch with a pintle mount. The windshield is of bullet-resistant glass and can be covered with an armored shutter with vision slits in them. The cab windows likewise can be covered with armored shutters with slits in them; this, needless to say, severely limits visibility. The hull is of all-welded steel which offers somewhat better protection than the BTR-152 or the Shoet Mk II. The engine is under a conventional hood at the front, and houses the same Detroit Diesel V-53 as on the Shoet Mk II developing 172 horsepower and coupled to the same automatic transmission. The Chileans appear to use this only as a light APC, though a version mounting a quad M-2HB has been postulated. It's a very basic APC that seems to me to be obsolete in today's world; I don't know what the Chileans were thinking, but at least it's inexpensive.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological*
$17,847	D, A	800 kg	9.7 tons	2+10	6	Headlights	Open

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor**
191/47	44/11	200	70	Stnd	W(3)	HF4 HS3 HR2

Fire Control	Stabilization	Armament	Ammunition
None	None	M-2HB (C)	1000x.50

*The Radiological rating for the cab is Enclosed.

**The armor rating for the windshield (25% chance of hitting) is AV 3, unless the armored shutter is closed.

Cardoen VTP-2

Notes: This light APC is based on the chassis of a Unimog cross-country truck, fitted with an armored body. The Chilean Army has been using them since 1983. The armor levels come in two versions for the body, 6mm armor or 8mm armor. The front and sides are moderately sloped. The most common version has a hatch on the roof for the commander with either a light or heavy machinegun on a pintle mount; a less common version has a small turret armed with a 20mm autocannon. The crew and passengers enter and exit through a door in the rear of the vehicle; an option gives the VTP-2 a pair of rear doors. The crew has a large windshield in front of them, and windows to either side of them. The side windows can be covered with armored shutters; optionally, the front windshield can have an armored shutter with vision slits in it. Three firing ports are found on each side of the troop compartment, and one in the rear to the left of the door; the two-door option gives a firing port in each rear door. On the roof on the rear of the deck are two rectangular hatches for the troops. The engine is a Mercedes-Benz OM-352 120-horsepower diesel coupled to a manual transmission.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
VTP-2 (6mm Armor, Pintle MG)	$16,302	D, A	1.2 tons	7 tons	2+10	4	Headlights	Enclosed
VTP-2 (6mm Armor, Turret)	$20,553	D, A	1.1 tons	7.2 tons	3+9	4	Headlights	Enclosed
VTP-2 (8mm Armor, Pintle MG)	$16,660	D, A	800 kg	7.8 tons	2+10	6	Headlights	Enclosed
VTP-2 (8mm Armor, Turret)	$20,911	D, A	700 kg	8 tons	3+9	6	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
VTP-2 (6mm Armor, Pintle MG)	141/71	33/16	150	47	Stnd	W(2)	HF2 HS2 HR2
VTP-2 (6mm Armor, Turret)	137/69	32/15	150	48	CiH	W(2)	TF2 TS2 TR2 HF2 HS2 HR2
VTP-2 (8mm Armor, Pintle MG)	126/64	30/14	150	52	Stnd	W(2)	HF3 HS3 HR3*
VTP-2 (6mm Armor, Turret)	123/62	29/14	150	54	CiH	W(2)	TF2 TS2 TR2 HF3 HS3 HR3*

Vehicle	Fire Control	Stabilization	Armament	Ammunition
VTP-2 (Pintle MG)	None	None	MG-3 (C) or M-2HB (C)	1600x7.62mm or

VTP-2 (Turret)	+1	Basic	20mm KAA Autocannon	1000x.50 600x20mm

*Hull and floor AV are 3.

FAMAE Piranha

Notes: FAMAE holds a license from MOWAG (now GDLS) to manufacture the Piranha II in its 8x8 form. It is similar to the GDLS version of the LAV II; Chile operates only a few of them in various configurations, but they form a decent amount of their armor force. Other versions have been demonstrated for both the Chilean military and possible export production. Currently, Chilean versions use a pintle-mounted machinegun, which is manned by a separate crewmember. The driver is on the front left, and the commander on the front right. This is the same layout for the OHWS, though the gunner is inside the vehicle in the armor envelope and aims and fires through a downlinked monitor. Other versions have commander's and gunner's hatches on the turret roof. Other versions demonstrated include an OHWS, a turret with a 20mm or 25mm autocannon, a 60mm HVWS autocannon turret (taken from Sherman tanks formerly equipped with that autocannon for Chile), and a 90mm gun turret and a small dismount team. Perhaps the largest difference is the lack of propellers and rudders on the Chilean Piranha; amphibious capability was not requirement for Chilean forces. However, the FAMAE Piranha remains amphibious, propelled slowly in water by its wheels. The mounts and mechanisms for the propellers have been replaced by storage boxes for supplies and equipment. Armor layout is also slightly different than the LAV II. Clusters of four smoke grenade launchers are found on the top of the glacis on either side; they are on the turret on other versions. Though there is theoretically no reason that the FAMAE Piranha couldn't use a variant of the LAST, the Chileans do not use it.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Pintle MG	$33,824	D, A	1.2 tons	13 tons	3+11	10	Passive IR (D)	Enclosed
OHWS	$48,652	D, A	1.1 tons	13.3 tons	3+10	10	Passive IR (D, G), Image Intensification (G)	Enclosed
20mm AC	$67,787	D, A	1 ton	13.6 tons	3+8	10	Passive IR (D, G), Image Intensification (G)	Enclosed
25mm AC	$75,079	D, A	1 ton	13.6 tons	3+8	10	Passive IR (D, G), Image Intensification (G)	Enclosed
60mm AC	$95,678	D, A	900 kg	14 tons	3+7	10	Passive IR (D, G), Image Intensification (G)	Enclosed
90mm Gun	$211,658	D, A	800 kg	14.6 tons	3+5	10	Passive IR (D, G), Image Intensification (G)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Pintle MG	171/86	40/20/3	300	145	Stnd	W(6)	HF8 HS5 HR4
OHWS	169/85	39/20/3	300	148	CiH	W(6)	TF2 TS2 TR2 HF8 HS5 HR4
20mm AC/25mm AC	165/83	38/19/3	300	151	Trtd	W(6)	TF4 TS4 TR4 HF8 HS5 HR4
60mm AC	159/80	37/19/3	300	156	Trtd	W(6)	TF6 TS4 TR4 HF8 HS5 HR4
90mm Gun	152/77	36/18/3	300	163	Trtd	W(6)	TF6 TS4 TR4 HF8 HS5 HR4

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Pintle MG	None	None	M-2HB	2000x.50
OHWS	+1	Basic	M-2HB, MAG	1000x.50, 2000x7.62mm
20mm AC	+2	Fair	20mm HS-820, MAG, MAG (C)	1100x20mm, 2500x7.62mm
25mm AC	+2	Fair	25mm M-242 ChainGun, MAG, MAG (C)	880x25mm, 2500x7.62mm
60mm AC	+2	Fair	60mm HVMS, MAG, MAG (C)	360x60mm, 2500x7.62mm

90mm Gun	+2	Fair	90mm Cockerill Gun, MAG, MAG (C)	30x90mm, 2500x7.62mm

Makina Multi 163

Notes: This is a light APC designed for use in internal security and installation patrolling. It is a commercial truck fitted with an armored body, and the result is a large, boxy, oblong-nosed vehicle with moderate sloping on the front and no sloping on the sides and rear. The vehicle is high and has a high center of gravity, making it susceptible to rolling. The whole vehicle is somewhat reminiscent of the German UR-416 in appearance. The vehicle has the appearance of a small armored bus, in a way. They appear to be used only by Chile, but do not appear in any recent literature about Chilean armored vehicles.

The driver and commander are at the front of the vehicle, with windshields that has an armored shutter to the front, and a small window to the sides. They have hatches above them, with the commander having a machinegun on a pintle mount. The troop compartment has a large door in the rear and two large hatches on the roof at the rear. There are four vision blocks down the dies and one in the rear door, but no firing ports. The engine is a 180-horsepower Chrysler truck engine which runs on gasoline and develops 180 horsepower, making is moderately-powered for its weight. The transmission is manual. The wheels and suspension are low to the ground and do not have a hint of any real off-road capability. The whole vehicle smacks of an improvised APC more for road use and riot control situations than of a full-fledged APC.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
$11,401	G, A	600 kg	5 tons	2+8	2	Headlights	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
327/80	64/26	114	122	Stnd	W(2)	HF2 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
None	None	MG-3 (C)	1000x7.62mm

Norinco Type 90 (WZ-551)

Notes: This vehicle is actually part of an AFV family, ranging from APCs and IFVs to mortar carriers, light AFVs, and mortar carriers, as well as some specialist vehicles. In addition to its use in large (1200+) use by the Chinese Army, it is used by Algeria, Bosnia, Kenya, Pakistan (who have an unknown number, Sri Lanka, Sudan, and Iran. The Type 90 and its descendants, the Type 92 family, outwardly resemble the French VAB in design; as in its early design phases the Chinese was still receiving considerable assistance from France, this resemblance may be more than passing. The Type 90, however, is longer and heavier than the VAB. The Type 90 series, in its Type 92 version, ended production only recently in the early 2000s. The Type 90 began service in 1984, but at this stage it was still in advanced development and field trials.

The Type 90

The driver's compartment of the Type 90 is in a cab in the front of the vehicle, behind bullet resistant windows to the front and sides. The driver has conventional controls. The commander is to the left of him, and both have hatches atop their positions. The Type 90 comes in several versions, ranging from one with a simple gunner's station with a pintle-mounted machinegun (often with AV2 gun shields around his cupola) to IFV versions with the same turret as on the Type 86 version of the Russian BMP-1. Versions with autocannon turrets come in between. Turreted versions generally come with hatches on the deck for the commander and (if present) the gunner, with the former commander's position often becoming a only passenger seat (usually for the squad leader). Turreted versions have three smoke grenade launchers on each side of the turret. The rear section is for the troops carried, with three firing ports in each side and a firing port in the single rear door. On the sides, the front firing port and the rear door firing port can take a 7.62mm machinegun or an assault rifle; the others take only assault rifles.

The Type 90 is powered by a 256-horsepower KHD F8L-413F diesel engine, coupled to a manual transmission. The Type 90 is amphibious, propelled in the water by cowled waterjets with steering vanes in their cowls. The driver has windows to both sides as well as a small one to his front, but has decent vision despite the design of his windows and his compartment. At the front of the vehicle is a spotlight, steerable by the commander.

The Type 92

The Chinese put the Type 90 into service, and trialed them for many years under intensive field conditions. And they were found wanting. Complaints primarily were against engine power, but cross-country movement and lack of effective armament were also cited as problem areas. Protection was also considered an issue. This led to the Type 92 (also called the ZSL-92), which first appeared in a parade in 1991.

The Type 92 is a large redesign of the Type 90. One noticeable difference is the cab, which is separated from the rest of the vehicle by an airtight bulkhead with a hatch separating it from the troop compartment. The driver has conventional controls. The front windshields are retained, but the driver and commander can also see to the front and sides when the armored shutters are closed by using vision blocks around the overhead hatches. The driver can also use the central vision block opening at night, replacing it with a night vision block. The biggest difference, however, is the use of an updated version of the same engine, developing 320 horsepower, giving it greater speed and agility, and partially to combat the increased weight. It is coupled to an automatic transmission. The Type 92 has an NBC overpressure system with a collective NBC backup. The suspension is beefed up, and the vehicle is equipped with run-flat tires. The bare APC is called the Type 92B, while the standard IFV is the Type 92. The Type 86 turret was rejected in favor of an autocannon turret; this was at first a French-built Dragar remote turret (which is a rather large turret), but after French participation in the program ended, it was replaced with a lower-profile turret with better vision devices, and the autocannon replaced with a reverse-engineered version of the M-811. (The original French/Chinese version was the NGV-1. The NGV-1 did not go into production, except for a few prototypes.) The turret is a one-man design, and the gunner sits partially within the armor envelope of the vehicle. Turrets on the Type 92 use a four-barreled smoke grenade launcher on each side of the turret. A simple APC version was also devised, similar to the Type 90 APC version. The suspension of the Type 92 was beefed up, and the spacing of the wheels has been changed, so that there is a noticeable space between the front wheels and the two rear sets of wheels; on the lower hull in this space, there is a small hatch on either side of the hull (it would be a tight squeeze for a fully-equipped soldier).

Recently, a new version of the Type 92 has been seen in China, and is tentatively called the Type 92B. This uses the same turret as the Type 92, but is armed with a heavier autocannon.

Other APC Versions

The police use a version of the Type 90 called the Type WJ-94, which has a turret similar to the Type 91 ISV above, and is fitted out in a similar manner to the Type 91 ISV. The WJ-94 is, unlike the military version, a 4x4 vehicle instead of a 6x6 vehicle, and is a little shorter.

The Type 92 RAV (Reconnaissance Armored Version) version is a reconnaissance variant of the Type 92. This version has enhanced communications gear (one extra long-range radio, which is data-capable), as well as a laser rangefinder and laser designator and other equipment to allow it to spot for artillery and air strikes. Part of the sensor suite is mounted on a raised pole on the turret which contains a night vision, LLTV, and a laser rangefinder and designator. At the rear of the turret, a GSR is mounted, which can be raised above the turret for use when necessary. Inside the Type 92 RAV, information from the sensors is fed to the crew and the radios allow for this information to be fed to higher headquarters. The Type 92 RAV is equipped with a BMS as well as a GPS system, and a 5kW APU to power systems while the engine is off. The increased weight and unbalancing renders the Type 92 RAV incapable of amphibious operations. The Type 92 RAV has a reduced crew with only a small dismount team.

A plain-vanilla version of the Type 92 has also been fielded, with a simple pintle-mounted machinegun surrounded by gun shields like that of the Type 90 APC. This is the Type 92A.

The Type WZ-551S is a version of the Type 90 which is fitted out to be a logistics support vehicle. In this guide, the pintle mount is moved forward to the commander's position, and the rear deck has large hatches for the loading and unloading of supplies. A folding crane with a capacity of 2 tons is mounted atop the vehicle. The rear door is enlarged, and removable ramps are carried. The interior has retractable rollers and tie-down and lock-down points for cargo and containers. It is essentially an armored truck.

Twilight 2000 Notes: The Type 92 versions comprised only about a quarter of the total Type 90 family in Chinese service during the Twilight 2000 timeline. The Type 92 RAV is a very rare vehicle, and the Type 92B does not exist in the Twilight 2000 timeline.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Type 90 APC	$22,794	D, A	1.4 tons	13 tons	3+10	6	Headlights	Shielded
Type 90 (KPV Turret)	$43,075	D, A	1 ton	14.8 tons	3+8	6	Passive IR (G)	Shielded
Type 90 (25mm Turret)	$60,789	D, A	800 kg	15.3 tons	3+8	8	Passive IR, Image Intensification (G)	Shielded
Type 90 (73mm Turret)	$326,419	D, A	800 kg	15.6 tons	3+7	10	Passive IR (D, C, G), Image Intensification (G, C), Thermal Imaging (G)*, White Light/IR Searchlight	Shielded
Type 92	$161,783	D, A	900 kg	15.3 tons	3+8	8	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Type 92A	$31,768	D, A	1.5 tons	14.9 tons	3+10	6	Passive IR (D)	Shielded
Type 92B	$164,822	D, A	1.5 tons	15.3 tons	3+8	8	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Type 92 RAV	$517,833	D, A	800 kg	15.5 tons	3+3	9	Passive IR (D, G), Image Intensification (G, Mast), Thermal Imaging (G, Mast), GSR	Shielded
WZ-551S	$24,298	D, A	7 tons	11.3 tons	2	7	Headlights	Shielded
WJ-94	$59,943	D, A	1.2 tons	12.2 tons	3+9		Passive IR (G), Image Intensification (G), WL Spotlight (G)	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Type 90 APC	162/82	38/19/3	300	107	Stnd	W(3)	HF5 HS3 HR2
Type 90 (KPV Turret)	142/72	33/18/3	300	122	CiH	W(3)	TF2 TS2 TR2 HF5 HS3 HR2
Type 90 (25mm Turret)	138/70	32/16/3	300	126	CiH	W(3)	TF4 TS4 TR3 HF5 HS3 HR2
Type 90 (73mm Turret)	135/68	32/16/3	300	128	Trtd	W(3)	TF10 TS4 TR4 HF5 HS3 HR2
Type 92/Type 92B	142/72	33/17/3	390	149	Trtd	W(4)	TF4 TS4 TR4 HF6 HS4 HR3
Type 92A	161/81	37/19/3	390	145	Stnd	W(4)	HF6 HS4 HR3
Type 92 RAV	140/71	33/17	390	151	Trtd	W(4)	TF4 TS4 TR4 HF6 HS4 HR3
WZ-551S	186/94	44/22/4	300	93	Stnd	W(3)	HF5 HS3 HR2
WJ-94	173/87	41/20/3	270	100	Stnd	W(3)	HF5 HS3 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Type 90 APC/WZ-	None	None	Type 85	600x12.7mm

551S				
Type 90 (KPV Turret)	+1	None	KPV, PKT	500x14.5mm, 2000x7.62mm
Type 90 (25mm Turret)	+1	Fair	25mm Giat M-811 Autocannon, Type 80	400x25mm, 1000x7.62mm
Type 90 (73mm Turret)	+1	Fair	73mm 2A28 Gun, Type 80, HJ-73 ATGM Launcher	40x73mm, 2000x7.62mm, 4xHJ-73 ATGM
Type 92/Type 92 RAV	+3	Fair	25mm ZPT-90 Autocannon, Type 80	400x25mm, 1000x7.62mm
Type 92A	None	None	Type 85	700x12.7mm
Type 92B	+3	Fair	30mm WZ-10 Autocannon, Type 80	330x30mm, 1000x7.62mm
WJ-94	+1	Basic	35mm Irritant Gas AGL, Type 80	80x35mm (Irritant Gas Only), 1600x7.62mm

*Before 1993, thermal imagers were absent; subtract $20,000 for these earlier vehicles.

Norinco WZ-523

Notes: This wheeled 6x6 APC is a “basic box” sort of personnel carrier, an armored version of the Hanyang HT-472 6x6 heavy truck. The vehicle does have a surprisingly small turning radius for a vehicle of its size, making it quite useful in urban warfare – one reason why it was deployed (in its Type 91 form) to Hong Kong in 1997 and later Macau, even though it was never accepted for official Chinese Army service. The appearance of the WZ-523 is similar to the South African Ratel, though this similarity is coincidental and the two vehicles are not related. The WZ-523 is marketed by Norinco, but it is actually a product of the Second Automobile Plant. The few WZ-523s built were produced starting in the early 1980s; they were first seen by the West in a parade in 1984, leading to a short-term designation by the West as the M-1984. For the most part, the WZ-523 was not accepted by the Chinese Army, with production cancelled in favor of the WZ-551. The WZ-523 does not appear to have been exported.

The driver and commander sit partially atop the engine and transmission in a cab with a large two bullet-resistant windshields (side-by-side); armored shutters may be lowered over the windshields, with each shutter having a vision slit in it. The cab also has side windows, which may also be covered with armored shutters. The driver does not have night vision per se, but the vehicle has night vision goggles as standard for him. At about the center of the rear section is a gunner’s station armed with a heavy machinegun; this station has vision blocks in the front, sides, and rear, though there are considerable gaps in their vision arcs. The station is not a turret, but more of a cupola surrounded by AV2 gun shields. Behind the turret is a pair of large hatches for standing troops. To the rear of the first roadwheel, on the right side, is a door; there is another door in the rear of the vehicle. The rear door has a firing port, and there are two firing ports in each side. The engine, oddly for a modern military vehicle, is an EO-6105 165-horsepower engine fueled by gasoline instead of diesel fuel. The suspension is an off-road 6x6 suspension with, as noted above, a very small turning radius; it can, for example, take a sharp turn down an alley. The front wheels are under the cab, with a large space between this pair and the rear four wheels. Tires are run-flat. The WZ-523 is amphibious, propelled by waterjets in the water.

The Type 91 (ZFB-91) version was accepted for limited production, as an ISV (Internal Security Vehicle) which can be quickly converted for use as an APC (though this has not yet been done). The Type 91 is heavily modified from the basic WZ-523, most markedly with a larger turret on the roof where the gunner’s station was. The turret is nonetheless small; the gunner sits primarily inside the hull, though he has a hatch atop the turret. The vision blocks still have the problem with limited arcs of vision for the vision blocks, though it is improved somewhat, and the vision blocks are wide-angle. This turret is armed with a special automatic grenade launcher designed to fire only CS or CN grenades, and not able to fire other types of 35mm Chinese grenade launcher ammunition; it also has a coaxial machinegun. If an APC mission is called for, the grenade launcher can be replaced with a heavy machinegun. On each side of the turret are three smoke grenade launchers. Other modifications include a siren with flashing lights, a 300-watt searchlight, and on some vehicles, a front-mounted dozer blade to clear obstacles (it’s not strong enough to clear mines or dig fighting positions). The blade can be controlled by the driver or commander. Firing ports are increased to three per side.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
WZ-523	$17,349	G, A	1.2 tons	11.2 tons	3+9	6	Headlights	Enclosed
Type 91 ISV	$41,573	G, A	1.1 tons	11.6 tons	3+9	6	Passive IR (G), Image Intensification (G), WL Spotlight (G)	Enclosed
Type 91 APC	$38,878	G, A	1.1 tons	11.6 tons	3+9	6	Passive IR (G), Image Intensification (G), WL	Enclosed

Spotlight (G)

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
WZ-551	127/64	29/15/2	255	85	Stnd	W(4)	HF5 HS3 HR2
Type 91 ISV/APC	123/62	28/14/2	255	88	CiH	W(4)	TF2 TS2 TR2 HF5 HS3 HR2*

Vehicle	Fire Control	Stabilization	Armament	Ammunition
WZ-551	None	None	DShK	600x12.7mm
Type 91 ISV	+1	Basic	35mm Irritant Gas AGL, Type 80	75x35mm (Irritant Gas Only), 1500x7.62mm
Type 91 APC	+1	Basic	Type 85, Type 80	240x12.7mm, 1500x7.62mm

*If equipped with a dozer blade, add 70 kg to the weight of the vehicle (negligible for game purposes) and $293 to the price. Frontal hits are 25% likely to hit the blade; if so, add 1 to the frontal AV.

RH ALAN LOV-OP

Notes: The LOV is used as the base chassis for a number of Croatian armored vehicles, one of which is the LOV-OP APC. It is based on the Torpedo HV TK-130 T7 4x4 medium truck, with an armored shell added as well as a gunner's position near the center of the troop compartment. The LOV-OP began development in 1992 and was first seen in a parade in 1995, along with other members of the LOV family. So far, the LOV family is used only by Croatia, and has been offered for export. Interest is lowered somewhat by the LOV-OP being slightly underpowered, and RH-ALAN is considering putting more powerful engines in the LOV series.

The driver is in the front left, with a rather small bullet resistant front windshield and left side windshield. He has an overhead hatch to access his compartment; he can also get in by going through the troop compartment or by using a door on the left side. The driver's position is raised somewhat above the rest of the hull. The driver's position has no provision for night vision, but he is normally issued a set of night vision goggles (included in the cost below). The commander is to his right; he has vision blocks to his front and a door in the hull to his right. He also has a periscope which can be traversed to the front, right and the left. The gunner's position, in the center of the troop compartment, has a raisable seat and an overhead hatch. The position is surrounded by low AV2 gun shields to all sides except the front; they also go lower on the sides toward the front. The gun has only limited traverse and is moved side to side primarily by rotating the cupola. The gunner has no vision blocks and must peek over the gun shields to observe his surroundings. The troop compartment has a pair of large overhead hatches over the rear of the compartment and two doors in the rear of the hull. On each side of the hull at the front of the flat troop compartment roof is a cluster of four smoke grenade launchers which fire forwards and slightly to the sides. Optional equipment, so far not fielded by the Croatians, include air conditioning, an NBC overpressure system or collective NBC system (or both), and an amphibious operations kit. The left rear door has a spare tire, and the other has a firing port; there is also a firing port in each side of the troop compartment.

The LOV-OP is powered by a Deutz BT6L 9125 turbocharged diesel engine developing 120 horsepower, and coupled to a manual transmission. The driver has conventional controls. The suspension is 4x4 (switchable to 4x2 for road use) and has run-flat tires. A winch is mounted just behind the driver and commander's positions, and the cable leads out through the bottom front. It has a 5.1-ton capacity and 38 meters of cable, and is primarily meant for self-recovery. The front and sides of the vehicle have moderate armor sloping, helping protect the vehicle a little more. Armor slopes upwards and downwards from the center of the vehicle's sides and front. The floor and roof have additional armor reinforcement for protection against land mines and IEDs.

Twilight 2000 Notes: The LOV-OP forms a good portion of Croatia's APC fleet; as they were put into a greatly-accelerated production program starting in 1992.

Merc 2000 Notes: This vehicle does not exist in the Merc 2000 timeline.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
$27,476	D, A	2 tons	9.2 tons	3+9	4	Headlights	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
128/64	29/15	170	66	Stnd	W(3)	HF7 HS4 HR3*

Fire Control	Stabilization	Armament	Ammunition
None	None	M-2HB	600x.50

*Roof AV is 3; floor AV is 4.

TATRApan Armored All-Terrain Vehicle

Notes: This Czech vehicle is based upon the chassis of the TATRA T-815 VP 21 265 truck (8-ton). The vehicle has had sales in the Middle East. The basic truck has welded steel armor, including a heavily armored cab. The windows have armored shutters, and the vehicle has an NBC system. There is a ring mount over the commander's position, and another ring mount in the middle of the roof of the cargo hold. Two other hatches are provided on the roof of the cargo area, and there is a hatch in the rear with a firing port, as well as hatches on either side between the second and third wheels, both with firing ports.

Twilight 2000 Notes: The Czechs began to use the TATRApan en masse as they were easy to build or modify from existing trucks.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
$39,031	D, A	2.5 tons	20.6 tons	2+12	6	Headlights	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
159/96	55/15	460	133	Stnd	W(3)	HF6 HS4 HR3

Fire Control	Stabilization	Armament	Ammunition
None	None	NSV, PK (C)	500x12.7mm, 500x7.62mm

DAF YP-408

Notes: This elderly Dutch APC is based on the chassis of a Dutch heavy truck which had been long out of service at the time that design of the YP-408 began in 1958. The truck chassis is fitted with an armored body and is fitted with an extra axle to help support the vehicle. Though design work began in 1958, they did not enter production and service until 1964; though they were essentially obsolete only a few short years later, they remained in service (in dwindling numbers) until 1989. Reserve use lasted only a few years more. Production had stopped in 1968, and production of spare parts had stopped in the mid-1970s, so the numbers of the original 750 YP-408s declined as non-functional ones or older examples were scavenged for spare parts. The YP-408 was largely replaced by the YPR-765 tracked APC and M-113. In addition to the Netherlands, the YP-408 was used by the ex-Dutch colony of Surinam, and some examples may remain in use there. Portugal also used a small number of YP-408s for a short time, though none of these are operational anymore. The YP-408 is a hot item among collectors, however, and some may also be found in museums. Several APC and specialist versions were put into service along with the basic APC version.

The YP-408 SW-S(GR)

The YP-408 SW-S(GR) is the basic APC version. The armored body of the YP-408 is a simple steel shell, and consists of a long body with sloping sides and a sharply-sloping front with a projection up front for the engine. At the front of this projection are louvers for the radiator which can be closed off by the driver from within his compartment to protect the radiator and engine from high water or from enemy fire. The front of the vehicle has the driver on the left and the commander on the right, with the commander having a pintle mount for a weapon. Some commander's positions have AV1 gun shields, but these were not often mounted as there is little room for them. The driver and commander have vision blocks to their front; the commander and driver also have rotating periscopes (the driver's is more of a rotating vision block). The driver's hatch is square on three sides and projects out towards the right side; the commander's cupola hatch is a two-piece circular hatch opening to the right and left, and the halves can be locked open upwards to function as *ad hoc* (AV2) gun shields. The commander's machinegun is virtually fixed in its mount; it has an elevation capability of 170 degrees depression of 8 degrees, but can only traverse 8 degrees to either side before rotation of the cupola is necessary. Cupola rotation is manual, but easy. The driver has conventional controls. The rear passenger compartment is accessed through two doors on the rear face, and there are also six double hatches on each side of the rear deck which open upwards and downwards (necessary due to the sloped sides). The driver and commander can also get to their positions through the troop compartment. Troop accommodations are basic and consist of folding bench seats along with a shelf for radios and some stowage lockers below the seats and in the sides of the vehicle for ammunition and some gear. On either side of the hull front are a cluster of three smoke grenade launchers.

The YP-408 is powered by a 165-horsepower diesel engine (though prototypes had a gasoline engine) and has a manual transmission. The YP-408 is not amphibious; indeed, the engine is quite susceptible to flooding and cutting out in deep water. The YP-408 is an 8x6 cross-country vehicle; the additional axle, which is the second axle, can be steered but is unpowered. The YP-408 did not have run-flat tires.

Other APC Versions

The YP-408 PWI-S(PC) is a command version for use by a platoon leader or a platoon sergeant. The only difference between the PWI-S(PC) and the PWI-S(GR) is the carriage of additional radios, one extra long-range and one extra short-range, as well as additional stowage for maps, compasses, binoculars, and a set of night vision goggles (included in the cost below).

The YP-408 PWCO is a battalion commander's vehicle, and has a full set of command-vehicle radios: two long-range, two medium-range, and two short-range radios. It is also fitted with a teletype machine, though late in the PWCO's lifetime (mid-1980s) this was replaced with a ruggedized laptop computer, and one of the long-range radios was replaced with one that was data-capable. Map boards and extra map stowage was fitted, along with fold-out table tops and stowage for office-type supplies. A tent could be extended from the rear to double working space, and a folding table and four folding chairs carried. Also carried was a hand-held image intensifier, laser rangefinder, and (later) a thermal imager.

The YP-408 PW-GWT is an armored ambulance which can carry two stretcher-borne patients and four seated patients, as well as a medic (and the commander and driver were usually medics as well). The PW-GWT was unarmed. The PW-GWT carried the equivalent of one doctor's medical bag and 15 personal medical kits, an oxygen administration set, an assortment of bandages, cravats, splints, and suchlike, and later, a small refrigerator for perishable medical supplies and a defibrillator.

The YP-408 PW-V is essentially a logistics vehicle – essentially an armored truck. It is basically a YP-408 SW-S(GR) stripped almost down to the bare essentials, and equipped with a davit (a sort of manual crane) to help load and unload supplies through the roof hatches. A removable steel grate separates the driver and commander's positions from the cargo area, and stops loose cargo from hitting them. The PW-V can be easily converted to one of the other APC versions through use of kits.

Twilight 2000 Notes: Some YP-408s were taken out of mothballs by Dutch resistance forces after the French invasion, but during the Twilight War, most of these old vehicles were found in the hands of the Portuguese Army, and in South America, in use by Surinam. Some were also known to have been used in Belgium and Luxembourg, in the hands of resistance forces; the Andorran independence movement was also known to operate two of them, captured from the Portuguese during some unknown fight.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
YP-408 SW-S(GR)	$26,928	D, A	1 ton	12 tons	2+10	6	Headlights	Enclosed

YP-408 PWI-S(PC)	$38,478	D, A	800 kg	12 tons	2+6	6	Headlights	Enclosed
YP-408 PWCO	$149,428	D, A	500 kg	12.7 tons	2+4	10	Headlights	Enclosed
YP-408 PWCO (Late)	$257,108	D, A	500 kg	12.7 tons	2+4	10	Headlights	Enclosed
YP-408 PW-GWT	$29,621	D, A	500 kg	12.4 tons	*	7	Headlights	Enclosed
YP-408 PW-GWT (Late)	$30,968	D, A	500 kg	12.5 tons	*	7	Headlights	Enclosed
YP-408 PW-V	$26,558	D, A	1.3 tons	11.4 tons	2	6	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
YP-408 SW-S(GR)/PWI-S(PC)	124/62	29/14	800	66	Stnd	W(4)	HF6 HS4 HR3
YP-408 PWCO	117/59	27/13	800	70	Stnd	W(4)	HF6 HS4 HR3
YP-408 PW-GWT	119/60	28/13	800	69	Stnd	W(4)	HF6 HS4 HR3
YP-408 PW-V	131/65	31/15	800	63	Stnd	W(4)	HF6 HS4 HR3

Vehicle	Fire Control	Stabilization	Armament	Ammunition
YP-408 (All Except PW-GWT)	None	None	M-2HB (C)	2000x.50

* See Notes above for crew and passenger capacity.

AOI Fahd

Notes: The Fahd 4x4 APC was designed to meet the requirements of the Egyptian Army, and replace several older Egyptian APCs and IFVs after Egypt and Israel made peace with other and was able to get Western help for its defense industry. The Fahd was designed by Thyssen Henschel of Germany under the designation TH 390, and then built in Egypt, replacing the BTR-40, Walid, and to an extent the BMP-1 in Egyptian service. The Fahd is essentially a Daimler-Benz LAP-1117/32 truck chassis with an armored body. The Egyptians had an estimated over 1000 or so in service by 1997, plus sales to Kuwait, Oman, Sudan, Bangladesh, Algeria, and the Congo. Most of the 110 vehicles sold to the Kuwaitis in the 1980s were captured by Iraq during the 1990 invasion, and subsequently destroyed during Desert Storm; almost all of them have since been replaced, and 40 captured by Iraq were also returned to Kuwait after Desert Storm. The Iraqis themselves bought a quantity of Fahds from Egypt, and virtually were destroyed during the 2003 invasion of Iraq. Bangladeshi Fahds have seen combat service as part of some UN peacekeeping efforts in various places. Egyptian Fahds saw combat service in Desert Storm. The status of the Sudanese and Congolese Fahds is unknown, and they may have fallen into a state of disrepair and/or destroyed during the violence in those countries. There are several APC-type versions, as well as some specialized variants of the Fahd.

Fahd/Fahd 240/Fahd 280

The Fahd is basically a large, boxlike structure, similar in appearance to the German Fuchs or US Fox armored cars. Compared to other vehicles of its type and class, the Fahd is lighter and less well-armored, though some versions are much better-armed. The driver sits at the front of the vehicle on the left, with the commander to the right; they are behind bullet-resistant windshields, with windows on either side of their compartment. The windshield and the windows can be further protected by a fold down (or slide down, for the side windows) armored shutters with vision slits in them. The driver and commander have doors to enter the cab. The driver and commander can also get to their positions by going through the troop compartment. Above them are hatches; the commander's hatch is a rotating cupola with vision blocks and with a pintle mount for a weapon. The pintle mount normally holds a light or medium machinegun, but can hold heavier weapons up to a 20mm autocannon. The driver has a vision block built into his overhead hatch, which can be replaced with a night vision block. The rear troop compartment has its troops sitting down the middle of the compartment, facing outwards; there are four firing ports in each side of the troop compartment, and two in the rear of the compartment. The seats are individual bucket seats which have shock absorbing features for protection against mines and to smooth out the ride somewhat; the commander's and driver's seats are similar in construction. The troops enter the compartment through a split rear door; the bottom half has a built-in ladder, as the Fahd's suspension is a bit high. The interior of the Fahd is air conditioned, but has no provision for NBC warfare. The Fahd's interior has a decent amount of stowage for ammunition, troop equipment, and weapons such as grenades and RPG rockets, and is described as being relatively roomy. In the center of the troop compartment are a pair of roof hatches which also have pintle mounts for weapons; a third roof hatch at the rear of the compartment has another pintle mount. On each side of the Fahd, between the cab and troop compartment, is a bank of three smoke grenade launchers, facing forwards and slightly outwards.

The Fahd and Fahd 240 are powered by a Mercedes-Benz OM-352A turbocharged diesel engine developing 168 horsepower; this is coupled to a manual transmission. The suspension is a 4x4 cross country suspension with large tires designed for operation in even deep sand and to lower ground pressure for that purpose. The large tires also allow the Fahd to cross trenches the average 4x4 vehicle cannot negotiate. The suspension, engine, and transmission are specially sealed against sand and dust, and the air filtration system for the engine is also specially designed to this end. Both pairs of wheels are steerable. In the front of the Fahd is a winch with a 5-ton capacity and 100 meters of cable; this is primarily meant for self-recovery and to help recover other stuck vehicles. The Fahd is a vehicle designed not only for desert operations, but hot weather operations. Optional equipment (though not used by any country using the Fahd) includes a heater, a vision block and night vision block for the commander, and an NBC overpressure system and/or collective NBC system. Though armor is relatively light, an appliqué armor kit has not yet been devised.

The Fahd 240 is basically the same vehicle, but built on the newer Mercedes-Benz LAP-1424/32 chassis; engine power got a big boost, with the installation of a Mercedes Benz OM-366 LA turbocharged diesel engine, again coupled to a manual transmission. A slight increase in armor was also made. This, along with the new suspension and relatively light weight, gives the Fahd-240 good maneuverability, even in deep sand.

The Fahd 280 is a Fahd-240 equipped with a BTM-208 turret (the same as on some versions of the German Wiesel 1) at the front of the troop compartment, and uses a dedicated gunner. This version has a somewhat reduced troop-carrying capability. The commander's weapon is deleted, as are all the troop compartment pintle-mounted weapons except the rear.

The Fahd 280-30 version, based on the Fahd 240, places the entire turret of the BMP-2 atop the Fahd 240 chassis. As such, it has all the armament and equipment of the BMP-2 turret (except NBC protection), as well as the armor levels and an ability to take appliqué armor packages. (Still none for the Fahd's body, however.) The Fahd 280-30 carries a ground mount for the AT-5 missile it carries so they can be used away from the vehicle. The Fahd 280-30 has one less firing port on each side, the extra ports being plated over. Troop complement is drastically reduced to make room for the turret and ammunition. The turret is one-man. The commander's pintle mount is deleted, as are the pintle mounts by the overhead hatches on the troop compartment roof except that by the rear hatch.

Other APC-Type Versions

The Fahd 280 Anti-Riot is a police version, equipped for dealing with large riots and for police special reaction teams. The roof has a turret armed with a water cannon, fed by a tank with either 400 liters, 600 liters, 800 liters or 1000 liters. (The passenger

complement below is for a 400-liter tank; remove two passengers for each step upwards in water tank capacity and add $200 and 0.2 tons to the weight, and subtract 0.1 tons from the Load.) The water cannon fires at a rate of 180 liters per minute. The turret is also equipped with a manually-operated grenade launcher which fires only irritant gas or smoke. At the front of the vehicle is a dozer blade for removing obstacles of pushing people or cars; it is not, for example, strong enough to use against buried mines or to dig fighting positions. The blade is 50% likely to be hit if the vehicle is fired upon from the front, increasing AV by 2 and making the AV into *ad hoc* Spaced armor. The Fahd 280 Anti-Riot also has flashing lights, a siren, a loudspeaker, and an extra-loud horn. Despite the name, the Fahd 280 Anti-Riot does not have the Fahd 280's turret armament, though the turret is the same.

The Fahd 280 Command is, as its name befits, fitted out as a command vehicle; it has map boards, stowage for maps, plotting supplies, and office-type supplies, extra radios (two short-range, two medium-range, and two long-range, one of which is data-capable), a ruggedized laptop computer, and a hand-held thermal imager, image intensifier, laser rangefinder, and several pairs of binoculars. Despite its name, it has only pintle-mounted machineguns as armament; it is based on the Fahd 240.

The Fahd 280 Ambulance carries two stretcher-borne casualties and up to four seated casualties, as well as a medic in the rear. It has the equivalent of two doctor's medical bags and 20 personal medical kits, as well as an assortment of splints, cravats, and various bandages. It has a small refrigerator for perishable medical supplies, a hot plate, an oxygen administration set, and a defibrillator. It is unarmed, and based on the Fahd 240.

Twilight 2000 Notes: All these vehicles were in play in the Twilight 2000 timeline, though in most countries, the base Fahds had been updated to at least the Fahd 240 version by the start of the war.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Fahd	$44,052	D, A	2.5 tons	10.9 tons	2+10	8	Passive IR (D)	Enclosed
Fahd 240	$45,301	D, A	3.6 tons	11.6 tons	2+10	8	Passive IR (D)	Enclosed
Fahd 280	$45,484	D, A	3.3 tons	11.8 tons	3+8	8	Passive IR (D, G)	Enclosed
Fahd 280-30	$89,543	D, A	2.9 tons	12.5 tons	3+7	9	Passive IR (D, G), Image Intensification (G)	Enclosed
Fahd 280 Anti-Riot	$74,301	D, A	3.4 tons	12 tons	3+8	6	Passive IR (D, G)	Enclosed
Fahd 280 Command	$269,260	D, A	1.6 tons	12.7 tons	2+5	10	Passive IR (D)	Enclosed
Fahd 280 Ambulance	$52,097	D, A	1.6 tons	12.1 tons	*	9	Passive IR (D)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Fahd	134/67	31/16	280	85	Stnd	W(3)	HF4 HS2 HR2
Fahd 240	190/95	44/22	280	148	Stnd	W(3)	HF5 HS4 HR2
Fahd 280	187/94	43/22	280	151	CiH	W(3)	TF3 TS3 TR3 HF5 HS4 HR2
Fahd 280-30	176/87	41/20	280	160	Trtd	W(3)	TF6 TS3 TR3 HF5 HS4 HR2
Fahd 280 Anti-Riot	181/91	43/22	280	156	CiH	W(3)	TF3 TS3 TR3 HF5 HS4 HR2
Fahd 280 Command	173/87	40/20	280	162	Stnd	W(3)	HF5 HS4 HR2
Fahd 280 Ambulance	182/91	42/21	280	154	Stnd	W(3)	HF5 HS4 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Fahd/Fahd 240/Fahd 280 Command	None	None	4xPK (C, Right/Left Side, Rear)	2000x7.62mm
Fahd 280	+1	Basic	M-2HB, PKT, PKT (Rear)	1500x.50, 1500x7.62mm
Fahd 280-30	+2	Fair	30mm 2A42 Autocannon, PKT, PKT (Rear)	500x30mm, 2000x7.62mm, 5xAT-5 ATGM
Fahd 280 Anti-Riot	+1	Basic	25mm Water Cannon, 38mm Grenade Launcher	Water (See Above), 250x38mm Irritant Gas or Smoke Grenades

*See Notes for Crew and passenger figure.

Kader G-320

Notes: The Kader G-320 is a German Mercedes-Benz MB-320G SUV that one might say has been fitted with a “full metal jacket” – it has been given a body of light steel armor. Atop this armored body is a small, manually-operated turret with a machinegun in it, and in each side are one or two firing ports. One firing port is in the rear door. There is a door in each side of the cab, and the driver and commander have bullet resistant windshields and windows on their side doors. The rear door also has a window; side windows are optional. For all windows, armored shutters can be raised or lowered to help further protect the vehicle. The suspension is beefed up to accept the extra weight of armor and weapons, and the fuel tank is also armored. Run-flat tires are fitted, as are ABS brakes (which automatically switch off if differential locks are engaged). The G-320 has a fully automatic transmission, and can be switched from 4x2 to 4x4 drive on the fly, even at full speed or in very rough terrain. The engine is a Mercedes-Benz 210-horsepower gasoline engine. On either side of the front bumper are mounted three smoke grenade launchers. The G-320 also has some items not normally present on a military vehicle, such as cruise control and front and side-curtain airbags, as well as door locks. Unfortunately, this requires a key (which could be easily lost in a *Twilight 2000* game), to open the vehicle as well as start it. The G-320 can be outfitted as a basic military-type carrier or a VIP transport vehicle with rows of seats (the most common use); in such a case, additional side doors will be present.

Twilight 2000 Notes: During the Twilight War, G-320s were equipped with extra radios and used as scout vehicles.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
$15,769	G, A	700 kg	3.8 tons	3+5	2	Headlights	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
405/116	93/15	110	146	CiH	W(3)	TF2 TS2 TR2 HF2 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
None	Basic	PKT	1100x7.62mm

Kader Walid

Notes: The Walid (also spelled in some sources “Waleed”) is a very basic APC designed by Kader in 1960, and which first saw combat service in the 1967 War. The Walid was used by Egypt, but has been almost totally replaced in that country by newer vehicles, the other major user was Sudan, and the disposition of their Walids is unknown. Other users include Burundi and Yemen, and Israel once employed 10 captured Walids. It is basically an armored version of a German Magirus Deutz Unimog truck, of a type manufactured under license in Egypt at the time. The armoring is very basic and rather thin, and neither the troop compartment nor the cab has any overhead protection other than a canvas cover. There are three firing ports in the sides and two in the rear, but these are simple shutters covering holes in the body and not more complex APC/IFV-type firing ports. The troops enter and exit by climbing over the sides or rear; the cab has doors on each side. The rear face has a spare tire mounted on it. The driver and commander sit behind a bullet-resistant windshield; an armored shutter with vision slits in it can be lowered over the windshield to increase protection. The side cab doors open outwards at the top to give the commander and driver more vision, but do not have windows. The tires have a central pressure regulation, but are not run-flat. The commander has a pintle mount for a weapon; additional pintle mounts around the troop compartment are optional. Suspension is a 4x4 off-road-type, and the engine is a 168-horsepower diesel.

Twilight 2000 Notes: Walids were still in heavy use by Egypt in the Twilight 2000 timeline, primarily as reconnaissance vehicles.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
$12,737	D, A	2.8 tons	9.2 tons	2+8	6	Headlights	Open

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
150/75	34/18	260	85	Stnd	W(3)	HF3 HS3 HR2

Fire Control	Stabilization	Armament	Ammunition
None	None	PKT (C)	1000x7.62mm

Patria/Sisu XA-180 Pasi

Notes: This Finnish wheeled armored personnel carrier is also in use by host of nations, including Norway, Ireland, Netherlands, Austria, Denmark, Estonia, Ghana, and Sweden. (The Dutch plan to sell all of their Pasis to Estonia in the near future, as Finland has placed severe restrictions and costs of a sale of new Pasis to Estonia and it will allow the Dutch to buy other, more desirable vehicles, such as the Patria AMV.) The members of the XA-180 series have seen considerable combat service with various UN peacekeeping missions (including in Bosnia, Kosovo and Lebanon) and in Afghanistan. Several APC-type versions exist, from basic APCs to command versions to armored ambulances. Several more specialist versions are made, including ATGM versions, a radar carrier, SAM vehicles, and a mortar carrier for the AMOS system. The vehicle designations typically follow the power of the engine in kilowatts (for example, the XA-180 version's engine puts out 180 kilowatts of power).

Recently, development and production of the XA-185 series has stopped, with Patria concentrating on the AMV.

The Basic Vehicle: The XA-180

Production of the XA-180 began in 1984; with production continuing until 1994. The XA-180 series is similar in appearance to the German Fuchs series, though it is more heavily armored. The vehicle is radiologically shielded and has an NBC overpressure system. The commander is in the front of the hull on the right with the driver on the left in a cab, with bullet resistant windows on the front and sides, and a door on either side of the cab, and a hatch on the roof for the commander. The driver has a vision block on his hatch which can be replaced with a night vision block. The engine is to the rear of the driver, and the passenger compartment behind that. There are hatches on the roof for standing infantrymen, and doors on the rear of the hull with firing ports. Armor for this version is relatively light compared to later members of the XA-180 family, and the XA-180 is much lighter than later members; however, extra attention has been paid to mine protection and floor armor. Front armor is sharply sloped and the sides are moderately sloped. Most countries using the original XA-180 have updated them to the XA-185 standard; Sweden and Ghana are an exception, and the Finnish Army still has a small amount of base XA-180s which they loan out to the national police in certain emergencies. The XA-180 is in most countries is armed with a heavy machinegun in a gunner's mount surrounded by AV2 gun shields, though the Swedish XA-180S has the same turret as the Pbv-302 APC. The commander's position is typically also equipped with a lighter machinegun. There are also three firing ports on each side of the vehicle and two on the rear; these are modified versions of the firing ports on a BMP IFV. The XA-180 is equipped with a Valmet 611 DSBJA 236-horsepower diesel engine coupled to an automatic transmission, and the vehicle has a 6x6 cross-country with run-flat tires. The XA-180 is amphibious with almost no preparation, propelled by propellers at the rear in the water. Estonian XA-180s (designated XA-180EST) currently are equipped with the engine of the XA-185, but are otherwise stock XA-180s.

Today, Patria will replace the standard NSVT and PK machineguns on the XA-180 series with an M-2HB and MAG upon request, or weapons of the customer's request. NATO users and some other countries take these options, replacing them with M-2HBs and MAG machineguns.

There seems to be considerable variance and confusion about the crew and passenger capacity of the XA-180 series. The figure below is an average number.

The XA-185: The XA-180 Series Takes Off

Though Patria had good success with the XA-180, they followed it with an improved version called the XA-185, and the sales really took off at that point. Production began in 1991. The XA-185 features improved armor, higher load capacity, and a more powerful version of the XA-180's engine developing 248 horsepower. The roof has one more pair of hatches than on the XA-180. The XA-185 began the development of the XA-180 series into a variety of different versions, including several APC versions. The XA-185 is, however, a heavier vehicle, so this more than negates the effect of the more powerful engine. Versions include the basic XA-185 (armed in a similar manner to the basic XA-180 above), the Norwegian XA-186 version with slightly heavier armor, a fully-enclosed machinegun turret and a commander's machinegun, command versions, communications vehicles (both in XA-185 and XA-186 form), and armored ambulances. Command and commo XA-186s have simple gunner's and commander's machinegun mounts; XA-186 ambulances are unarmed. Finnish XA-185-series vehicles use a complete all-welded steel armored turret for the gunner's position. The turrets of many of these vehicles are also fitted with AT-4 ATGMs. (The figures below reflect this.) While most Pasis have four smoke grenade launchers mounted on either side of the front hull, the turreted Finnish versions have five smoke grenade launchers on each side of the turret. Finland offers this turreted version for sale (no takers yet), and will substitute the machineguns and ATGM for versions which are chosen by the buyer.

Command versions have two long-range, two medium-range, and two short-range radios; one of the long-range radios is data capable, and the vehicle carries a ruggedized laptop computer. GPS is installed along with a backup inertial navigation system. A hand-held thermal imager, image intensifier, and laser rangefinder is provided. Map boards and stowage for maps, plotting supplies, and office-type supplies is added. The ambulance has room for two stretcher cases and five sitting casualties, along with a medic in the rear. It has the equivalent of two doctor's medical bags, 20 personal medical kits, a set of splints, bandages, and cravats and suchlike, and a small refrigerator for perishable medical supplies. The communications version has four long-range and four medium-range radios, a switchboard, 20 field telephones, 200 meters of commo wire, spare parts for radios, and appropriate supplies and tools. One long-range radio is data-capable – to pass and send information from command post and other vehicles' computers, not because it has its own computer.

The Dutch XA-188 version has even heavier armor than the increase already afforded by even the XA-186. It too comes in APC, ambulance, and command versions, and the APC versions use the same turret as the XA-186. The heavier weight and difference in

balance renders the XA-188 incapable of amphibious operations; the rear of the vehicle typically have the rings that are normally around the propellers, but the propellers and motors have been removed. The XA-188's are soon to be sold to Estonia. The XA-188's are equipped with a GPS navigation system.

Two IFV versions of the XA-185 were heavily trialed, but never went into production: The XA-185/25 and the XA-185/30. Both were equipped with two-man turrets designed by the US/Canadian firm of Delco (later part of GDLS); The XA-185-25 had the turret of a LAV-25, but the M-240 machinegun was replaced with a PK machinegun (though a MAG could be fitted upon request). A TOW missile launcher on either side of the turret is available upon request. (The stats below reflect the use of these launchers.) The former commander's position is taken up by ammunition stowage. The armor of the turret is upgraded, and is equivalent to the M-2A2 version of the M-2 Bradley IFV. The XA-185-30 uses the same turret, but is armed with a heavier autocannon. Both are still offered for sale by Patria, but have had no takers.

The XA-200: The Latest Version

The XA-200 series looks larger and a bit lumpish due to the fact that its armor has been increased even further – surpassing XA-188 levels. Some countries also mount lugs on the hull sides and front for ERA. The extra weight called for a more powerful engine, a Valmet 612 DWIBC turbocharged diesel developing 271 horsepower, though the increase in power is more than negated by the increase in weight. The extra weight means that the XA-200 is not fully amphibious, but can still ford 1.5 meters. The XA-200 is more modular in construction, and maintenance is easier – a power pack replacement requires only 30 minutes, versus 4 hours for earlier versions, and an air conditioning module can be easily fitted. Numerous access doors and panels allow for quicker access to components. Even the base armor is modular, and can be increased at customer request if the customer is willing to accept the increase in weight. Even the gun mounting is modular; Patria is willing to put any armament on the XA-200 from a simple machinegun surrounded by gun shields to a turret armed with a 90mm gun.

The XA-202S AWCV (Armored Wheeled Combat Vehicle) is a Swedish command version of the XA-200, outfitted as the XA-185 command version above, as well as a GPS system with inertial navigation backup. A 10kW APU is mounted to run vehicle electronics when the engine is off. The AWCV carries a collapsing 24-meter antenna mast that automatically deploys guy ropes when extended (10 minutes and two people to deploy). Large stowage boxes are located on the rear hull deck.

In 1999, the XA-203 version was introduced, which has a full machinegun turret, and better floor armor. The turret has a better night vision system. Armor protection is further increased. Swedish versions of the XA-203 (the XA-203S) are armed with the turret of a Pbv-302.

The XA-200 series is intended to be an interim upgrade, until the arrival of the AMV, in Finnish service.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
XA-180	$42,784	D, A	2.4 tons	16 tons	3+11	8	Passive IR (D)	Shielded
XA-180EST	$42,829	D, A	2.4 tons	16 tons	3+11	8	Passive IR (D)	Shielded
XA-180S	$47,703	D, A	2.3 tons	16.4 tons	3+11	8	Passive IR (D)	Shielded
XA-185	$44,674	D, A	2.2 tons	17.4 tons	3+11	8	Passive IR (D)	Shielded
XA-185 w/Turret	$69,167	D, A	2.1 tons	17.8 tons	3+10	8	Passive IR (D, G), Image Intensification (G)	Shielded
XA-185 Command	$291,381	D, A	1.1 tons	18.2 tons	3+4	10	Passive IR (D)	Shielded
XA-185 Commo	$50,772	D, A	1.1 tons	17.8 tons	3+3	10	Passive IR (D)	Shielded
XA-185 Ambulance	$51,538	D, A	1.1 tons	18 tons	****	9	Passive IR (D)	Shielded
XA-186	$125,270	D, A	2.1 tons	18 tons	3+10	8	Passive IR (D, G), Image Intensification (G)	Shielded
XA-186 Command	$291,192	D, A	1 ton	18.4 tons	3+4	10	Passive IR (D)	Shielded
XA-186 Commo	$51,364	D, A	1 ton	18 tons	3+3	10	Passive IR (D)	Shielded
XA-186 Ambulance	$53,489	D, A	1 ton	18.2 tons	****	9	Passive IR (D)	Shielded
XA-185/25	$88,836	D, A	1.9 tons	18.4 tons	3+9	10	Passive IR (D, G), Image Intensification (G)	Shielded
XA-185/30	$91,908	D, A	1.9 tons	18.4 tons	3+9	10	Passive IR (D, G), Image Intensification	Shielded

							(G)	
XA-188	$145,808	D, A	2 tons	18.2 tons	3+10	8	Passive IR (D, G), Image Intensification (G)	Shielded
XA-188 Command	$291,758	D, A	1 ton	18.6 tons	3+4	10	Passive IR (D)	Shielded
XA-188 Ambulance	$74,027	D, A	1 ton	18.4 tons	****	9	Passive IR (D)	Shielded
XA-200	$47,476	D, A	1.9 tons	22 tons	3+10	10	Passive IR (D)	Shielded
XA-202 AWCV	$328,126	D, A	950 kg	24 tons	3+4	11	Passive IR (D)	Shielded
XA-203	$61,676	D, A	1.7 tons	22.5 tons	3+10	10	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
XA-203S	$57,595	D, A	1.7 tons	22.4 tons	2+10	10	Passive IR (D, G), Image Intensification (G)	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
XA-180	132/67	31/16/4	290	122	Stnd	W(4)	HF5 HS3 HR3*
XA-180EST	138/69	32/16/4	290	129	Stnd	W(4)	HF5 HS3 HR3*
XA-180S	129/65	30/16/4	290	125	CiH	W(4)	TF2 TS2 HR2 HF5 HS3 HR3*
XA-185	130/66	30/15/4	325	129	Stnd	W(4)	HF8 HS4 HR3**
XA-185 w/Turret	127/65	29/15/3	325	132	Trtd	W(4)	TF4 TS4 TR4 HF8 HS4 HR3**
XA-185 Command	125/63	29/14/3	325	135	Stnd	W(4)	HF8 HS4 HR3**
XA-185 Commo	127/65	29/15/3	325	132	Stnd	W(4)	HF8 HS4 HR3**
XA-185 Ambulance	126/64	29/15/3	325	133	Stnd	W(4)	HF8 HS4 HR3**
XA-186	126/64	29/15/3	325	133	Trtd	W(4)	TF4 TS4 TR4 HF9 HS5 HR3**
XA-186 Command	123/63	28/15/3	325	136	Stnd	W(4)	HF9 HS5 HR3**
XA-186 Commo	126/64	29/15/3	325	133	Stnd	W(4)	HF9 HS5 HR3**
XA-186 Ambulance	125/63	29/15/3	325	134	Stnd	W(4)	HF9 HS5 HR3**
XA-185/25 & XA-185/30	123/63	28/15/3	325	136	Trtd	W(4)	TF11 TS8 TR6Sp HF8 HS4 HR3**
XA-188	125/63	29/15	325	134	Trtd	W(4)	TF4 TS4 TR4 HF10 HS5 HR4**
XA-188 Command	122/62	28/14	325	138	Stnd	W(4)	HF10 HS5 HR4**
XA-188 Ambulance	123/63	28/15	325	136	Stnd	W(4)	HF10 HS5 HR4**
XA-200	113/57	26/13	325	163	Stnd	W(4)	HF12 HS6 HR4**
XA-202 ACWV	104/52	24/12	325	178	Stnd	W(4)	HF12 HS6 HR4**
XA-203	111/56	25/13	325	168	Trtd	W(4)	TF4 TS4 TR4 HF12 HS6 HR4***
XA-203S	111/56	25/13	325	166	CiH	W(4)	TF2 TS2 TR2 HF12 HS6 HR4***

Vehicle	Fire Control	Stabilization	Armament	Ammunition
XA-180/XA-185/XA-185 Command/XA-185 Commo/XA-200/XA-202 ACWV/XA-203	None	None	NSVT or M-2HB, PKT (C) or MAG (C)	1100x12.7mm or .50, 1700x7.62mm
XA-180EST	None	None	NSVT, PKT (C)	1100x12.7mm, 1700x7.62mm
XA-180S/XA-203S	+2	None	20mm m/47D	615x20mm

XA-185 w/Turret	+1	Fair	NSVT, AT-4 ATGM Launcher	1100x12.7mm, 5xAT-4 ATGMs
XA-186/XA-188	+2	Fair	M-2HB, MAG	1100x.50, 1700x7.62mm
XA-186 Command/XA-188 Command	None	None	M-2HB, MAG (C)	1100x.50, 1700x7.62mm
XA-185/25	+1	Basic	25mm M-242 ChainGun, PKT or MAG, PKT or MAG (C), 2xTOW ATGM Launchers	780x25mm, 2000x7.62mm, 4xTOW ATGMs
XA-185/30	+1	Basic	25mm M-242 ChainGun, PKT or MAG, PKT or MAG (C), 2xTOW ATGM Launchers	650x25mm, 2000x7.62mm, 4xTOW ATGMs

*Floor armor for this version is 4.
** Floor armor for this version is 4; roof armor is 3.
***Floor armor for this version is 6; roof armor is 3.
****See Notes for Crew and passenger capacity.

Patria XA-360 AMV

Notes: Known simply as the AMV (Armored Modular Vehicle) during its development (which started in 1995), the XA-360 is a relatively recent addition to the world arms scene, entering service with Finnish forces in 2004 and seeing its first combat service with the Poles in Afghanistan in 2007. As the name suggests, the XA-360 was designed to be a modular system – including the ability to customize armor, weapons, turrets, engines, interior layout, and even (in the case of the Polish version) the number of wheels on the chassis. In addition to Finland, the XA-360 series is used or will be used in the near future by Poland, Sweden, South Africa, Croatia, Slovenia, and the United Arab Emirates; the XA-360 is also being evaluated by the US Marines to possibly partially replace the LAV-25. Several other countries are evaluating the XA-360. Patria has shown itself to be lenient in granting production licenses, and also in working with other arms manufacturers in customizing the XA-360 for use by other countries – Rafael, Denel, Elbit, Kurganmashzavod/KBP, Boeing, Lockheed Martin, Saab, Scania, and several other arms manufacturers are supplying weapons, armor, electronics, and even complete turrets for the XA-360. Patria offers the XA-360 in 6x6 and 8x8 versions (originally a 10x10 version was planned as a chassis for heavier weapons turrets, but the idea was dropped). Currently, all versions of the XA-360 are 8x8 versions.

Unfortunately, not all is rosy for the XA-360. The biggest difficulty Patria has had is in fulfilling the unexpectedly high amount of orders – several orders for the XA-360 have fallen behind in schedule as a result. Patria recently signed a deal with Lockheed Martin to build a large number of XA-360s on its production lines in the US to make up for the shortfall, and it is also part of the reason for its lenient allowance for license-production. Nonetheless, Patria lost the large order they had from the Czech Republic as a result of the production delays. Patria is also embroiled in lawsuits in Slovenia and Croatia, whose governments allege that Patria bribed government ministers to give favoritism to Patria over other companies' vehicles. However, the large orders continue, and will probably get larger as time goes by. This scandal cost Slovenian Prime Minister Janez Janša his job, and also cost some Croatian cabinet ministers their jobs – though both countries were able to re-negotiate a lower cost for their XA-360s as a result. Patria is also being investigated in Finland in connection with these bribery allegations, with Patria's former CEO Jorma Wiitakorpi being arrested by Finnish authorities. Sales have gone forward, however, though at a smaller volume in some cases.

As stated, the XA-360 is a modular chassis, lending it usable for many applications both APC/IFV-type and other versions, ranging from specialist vehicles to ATGM carriers to armored gun systems and autoloading mortars (including the AMOS turret). Those other versions will be covered in the appropriate sections of the site (eventually). Turrets as heavy as those firing 105mm cannons from well-armored platforms have been mounted on the XA-360 chassis in trials, and of course there is one of the planned UAE versions, which will mount the turret of a BMP-3 on the XA-360 chassis.

Finnish Versions

The primary Finnish Army version is an ICV (Infantry Carrier Vehicle) mounting either an M-2HB machinegun or an HK GMG on a Norwegian Kongsberg M-151 Protector RWS (a licensed version, built in Finland, and called by Finland the Patria PML-127). This provides a well-stabilized platform for the gun which aids the gunner with a ballistic computer as well as a laser rangefinder, and has several sensors ranging from telescopic day sights to advanced night vision. The RWS is controlled by a gunner inside the armor envelope of the vehicle, who controls his weapon via downlinked controls and monitors. The gunner also has a hatch on the deck of the vehicle to enter and exit and should he need to look out, and he can control the RWS from this hatch. The driver is in the front left of the vehicle, and the commander to his right, with the engine in the front of the vehicle. Armor is quite heavy, and can be supplemented by MEXAS steel/composite appliqué armor. The basic chassis is air-portable, with even one being able to carried in a C-130, though not with appliqué armor attached and without the RWS attached. Additional attention has been paid to floor armor; the XA-360's floor armor and suspension are said to be able to run over a mine or IED of 10-kilogram size with only the tires being damaged. Frontal armor is said to be proof against even 30mm APFSDS autocannon rounds if appliqué armor is mounted.

Two engines are possible; one is a Scania DI-12 543-horsepower turbocharged diesel (the standard engine for all forces so far, and the one reflected in the stats below), or a Scania DC-12 480-horsepower turbocharged diesel The suspension is 8x8, switchable to 8x4 for road use (with the rear set of wheels being the drive wheels in this case). The rear four wheels steer independently from the

front four wheels to tighten the turning radius.

The standard ICV version carries a crew of three, including the RWS gunner, and an infantry squad of 8. The squad leader has access to an LCD screen which allows him to see through the gunner's sights and sensors. There are no firing ports, but there are four roof hatches for the infantrymen to stand in. Troop access is through a rear door, between fuel tanks which are carried in the rear of the vehicle on either side of the door. A second infantry version, the IFV version (not a true IFV, as it has no significant antitank capability), had a turret armed with Lockheed Martin LAV-30 turret armed with an autocannon and coaxial machinegun. The sensor suite is similar to that of the RWS-equipped version, as is gun stabilization. The turret in this case is two-man, and the former commander's position taken up by ammunition stowage. The APC version has four smoke grenade launchers on each side of the turret; the IFV version has five smoke grenade launchers of each side of the turret.

Other Finnish APC-type versions include a command version with several radios (essentially a standard command fit), such as two short-range, two-medium-range, and two long-range radios, one of which is data-capable. The command version has a BMS and a ruggedized laptop computer, along with considerable hard drive storage. The command version has map boards, plotting supplies, and office-type supplies, and stowage for it. Armament is generally a simple heavy machinegun over the commander's position, sometimes surrounded by AV2 gun shields. The ambulance version is unarmed, but has room for two stretcher cases and five sitting casualties, along with a medic in the rear (and the commander and driver are also generally medics). The ambulance version has the equivalent of 20 personal medical kits and two doctor's medical bags, an assortment of splints, bandages, and cravats (and other such supplies), an oxygen administration kit, a defibrillator, a small refrigerator, a blanket warmer, a hot plate, and a small (30-liter) water tank. Both the command version and the ambulance version are based on the "high roof platform" chassis, which, as the name suggests, features a rear area with a roofline raised by nearly a meter and no turret of any sort.

Swedish versions will be equipped the same as Finnish versions, except for the specific radio and electronics fit. They plan for 133 total XA-360s, replacing the MT-LB and some of the BMP-1 force.

Slovenian Versions

Slovenia was originally to buy 135 XA-360s, though this number is likely to be amended downwards in view of the bribery scandal which is still ongoing. The Slovenian version is called the Svarun. Delivery began in 2008, but most Slovenian XA-360s will not be available until 2011. Most will be armed with Elbit OWS stations armed with a 30mm autocannon and a coaxial machinegun, coupled to a ballistic computer and laser rangefinder and with good stabilization for the armament, as well as extensive day and night vision equipment. The gunner's station is similar to that of the Finnish ICV version. The rest of the Slovenian infantry versions will be basically the same as the Finnish ICVs, armed with the Kongsberg M-151 Protector RWS. The smoke grenade fit four smoke grenade launchers on each side of the turret. The first 13 of the Slovenian XA-360s were built by Patria in Finland, but the rest will be built by the Slovenian companies of Gorenje and Rotis. The Slovenians do not currently plan to buy or build command or ambulance versions.

Croatian models will be equipped the same, other than the specific fit of radios and some of the electronics. They also plan to buy some ambulance and command versions. 124 total are to be acquired. All vehicles are to be delivered from Finland by 2012.

Polish Versions

The Polish KTO Rosomak (*Kolowy Transporter Opencerzony;* Rosomak is Polish for Wolverine) is so far the only version of the XA-360 which has seen combat service – it has been used by Polish forces in Afghanistan since 2007. The Rosomak is somewhat smaller than the standard XA-360, primarily through the use of armor on the vehicle which is lighter in weight on the vehicle. The lesser amount of armor also shaves down the weight of the Rosomak; the Polish wanted it to be air-transportable inside a C-130 Hercules, which the Polish are now using in increasing numbers. The Rosomak is also amphibious, using propellers in the water. The Poles will eventually become the largest user of the XA-360; they intend to have a force of 895 Rosomaks of several versions in service by 2018, completely replacing their current fleet of OT-64 SKOTs and BWP-1 (BMP-1) IFVs as well as some older armored ambulance and command vehicles.

The current primary version of the Rosomak is equipped with a variant of the HITFIST turret that is mounted on the Italian VCC-80 Dardo IFV. The turret is equipped with advanced fire control and gun stabilization devices as well as up-to-date observation and night vision gear. The turret is also equipped with a soft-kill active protection system, similar to the Russian Shtora-1 system, called Obra. The APS system consists of sensors and equipment mounted atop the turret and control systems mounted inside the turret and hull; the primary controls for the system on the Rosomak are at the commander's station. The system includes an electro-optical jamming system to jam wire-guided ATGMs (on a roll of 12+ on a d20, the difficulty to the ATGM gunner is increased by one level; outstanding success indicates that the incoming missile pre-detonates before it can hit the Rosomak). A laser warning system is also included with the system; when the Rosomak is being lased by a laser designator, an alarm sounds inside the Rosomak, and a pair of smoke grenades are automatically launched to help obscure the Rosomak to the laser beam. The laser warning system can also be triggered manually by the commander. The smoke grenades can also be triggered by the gunner manually if he feels it is necessary; the Rosomak has six smoke grenade launchers on each side of the turret. The APS system also includes a pair of IRCM lights (one on the turret on each side of and above the main gun) that emit coded, pulsed IR beams to decoy IR-guided munitions; their effectiveness is the same as listed for the electro-optical jammer above, and both have a 360-degree range of protection, as well as 180-degrees upwards. They can also temporarily blind IR sights and image intensifiers; this is successful on a roll of 8 on a d20 for IR sights and 5 for image intensifiers. A computer is provided to tie all of this information from the APS system and other sensors together. The turret has a gunner's and commander's station, though only the commander has a hatch atop the turret.

The primary version the Poles are using in Afghanistan is the Rosomak-M1. This is the standard Rosomak IFV supplemented by steel/composite appliqué armor in theater. The combination of the advanced armor and the fact that the Rosomak is heavily-armed means that Taliban and Al-Qaida forces in Afghanistan are reportedly quite dismayed upon seeing Rosomaks arrive on a battlefield, and tend to retreat from Polish forces using them; the Taliban and Al-Qaida call the Rosomak-M1 the "Green Devil." The appliqué armor does, however, add considerable weight to the Rosomak-M1, and it is no longer amphibious, though it is capable of fording in excess of 1.5 meters. (The Rosomak-M1 retains the rings, bilge pumps, and propulsion equipment, though the propellers are removed, allowing for a backwards conversion in the future.) The Rosomak-M1 is also equipped with an additional long-range radio, a wire cutter in front of both the commander's and driver's stations to protect them from low-hanging wires or obstacles, and video cameras (with night vision) allowing the commander, gunner, and driver to see the sides and rear of the vehicle using LCD screens. The Rosomak-M1 is equipped with the Pilar system, similar to the American Boomerang fire direction detection system; this system uses a set of external directional microphones tied to a special computer which allows the commander to determine the direction and range of where incoming fire is coming from within 25 meters, as long as the origin point of the incoming fire is within a kilometer of the vehicle. The success of determining this information is a task (Difficult: Intelligence roll), done by the commander or whoever is manning the commander's station at the time (assuming he knows how to use the system).

Another APC version the Poles are using in Afghanistan is the Rosomak-M3. This is a simpler APC version, equipped with a simple one-man open-topped turret called the OSS-D. This version does not have the Obra system nor the Pilar system, though it does have appliqué armor similar to that of the Rosomak-M1, the additional radio, the wire cutters, and the side and rear video cameras. The gunner and commander can use these cameras even though they aren't in a conventional turret, and also have night vision of their own. The turret is armed with either of two heavy machineguns or an automatic grenade launcher. Needless to say, the turret has no overpressure system, though a hatch may be closed and the turret operated remotely.

Other versions in service include the Rosomak-WEM armored ambulance (equipped as per the Finnish version above), and the Rosomak-S ATGM team vehicle which carries two dismount teams armed with Israeli-made Spike ATGM launchers and extra ammunition for them. Future APC-type versions of the Rosomak include the Rosomak-WD command version. The Poles also plan to field the Rosomak-Lowcza model, which is set up for a tactical air control party (similar to the command version except for the mix of its radios, and in having an integral laser designator and rangefinder along with night vision equipment in a raisable-mast pod).

Rosomak-M1s in Afghanistan have endured repeated hits by RPG-7s, small arms, and heavy machinegun fire in the same combat and kept fighting. They have hit large IEDs and mines and not been destroyed. The Poles have not lost a Rosomak (of any type) in Afghanistan, nor has anyone inside a Rosomak been killed.

South African Versions

The South African Hoefyster (Badger) will be primarily an ICV version, equipped with a Denel Modular Turret armed with an autocannon and machinegun coaxial, as well as a small mortar mounted in the roof of the turret, firing to the rear of the turret. As such, it is currently the most heavily-armed IFV version of the XA-360. Other versions to be used by South Africa are command, ambulance, mortar carrier, and ATGM variants (the first two are the same as the Finnish versions in game terms, and the two latter will be covered elsewhere). The majority of Hoefysters will be built in South Africa by Denel under license. South Africa may eventually become the second largest user of the XA-360, with an expected 374 in service by 2016, completely replacing the Ratel for most purposes; however, South Africa is reportedly rethinking the amount of Hoefysters, citing the costs of the acquisition. The turret is a two-man turret. The Hoefyster will feature a CITS for the commander, giving the Hoefyster a hunter/killer capability. They will carry an unusually-large (for the XA-360) amount of ammunition, due to the mortar which is carried, and a correspondingly smaller amount of troops.

UAE Versions

The UAE has not yet gotten the XA-360 in service, though they have ordered 15 special chassis for evaluation purposes. The proposed UAE IFV version is the most radical, with the chassis and wheelbase lengthened and the vehicle topped by the complete turret of the BMP-3, which the UAE already uses in a version with thermal imaging. It will be the heaviest-armed XA-360 if it enters service, which is not certain as the UAE is also testing other vehicles for the role. It will also, of course, be the heaviest model of the XA-360. Acquisition of a mortar turret version and a command version are also being discussed; these will not have the lengthened hulls. The UAE may also field a version with a 30mm autocannon turret.

Twilight 2000 Notes: The XA-360 does not exist in the Twilight 2000 timeline.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
XA-360 ICV	$126,847	D, A	2.5 tons	20 tons	3+9	14	Passive IR (D, G), Image Intensification (G, C)	Shielded
XA-360 ICV w/Appliqué	$129,249	D, A	2.4 tons	20.4 tons	3+9	14	Passive IR (D, G), Image Intensification (G, C)	Shielded

XA-360 IFV	$138,682	D, A	2 tons	22 tons	3+8	16	Passive IR (D, G), Image Intensification (G, C)	Shielded
XA-360 IFV w/Appliqué	$150,252	D, A	1.8 tons	22.5 tons	3+8	16	Passive IR (D, G), Image Intensification (G, C)	Shielded
Svarun w/OWS	$138,676	D, A	2.5 tons	20 tons	3+9	14	Passive IR (D, G), Image Intensification (G, C)	Shielded
Svarun w/OWS & Appliqué	$141,078	D, A	2.4 tons	20.4 tons	3+9	14	Passive IR (D, G), Image Intensification (G, C)	Shielded
KTO Rosomak	$195,037	D, A	2.9 tons	20 tons	3+8	15	Passive IR (D, G), Image Intensification (G, C), Thermal Imaging (G)	Shielded
KTO Rosomak-M1	$216,845	D, A	1.7 tons	22.8 tons	3+8	18	Passive IR (D, G, C, Sides, Rear), Image Intensification (G, C), Thermal Imaging (G)	Shielded
KTO Rosomak-M3	$68,844	D, A	2 tons	21.6 tons	3+9	15	Passive IR (D, G, C, Sides, Rear)	Shielded
Hoefyster ICV	$263,209	D, A	1.6 tons	23.3 tons	3+7	19	Passive IR (D, G), Image Intensification (G, C), Thermal Imaging (G, C)	Shielded
XA-360 (UAE)	$1,266,527	D, A	1.1 tons	25.6 tons	3+8	18	Passive IR (D, G, C), Image Intensification (G), Thermal Imaging (G), IR Searchlight (C)	Shielded
XA-360 Command	$452,997	D, A	1.2 tons	22 tons	2+4	17	Passive IR (D)	Shielded
XA-360 Ambulance	$150,251	D, A	1.2 tons	20.8 tons	******	15	Passive IR (D)	Shielded
Rosomak-Lowcza	$278,103	D, A	1.2 tons	22 tons	4	17	Passive IR (D), Image Intensification (Mast), Thermal Imaging (Mast)	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
XA-360 ICV/Svarun	199/100	46/23/5	810	294	CiH	W(8)	TF4 TS4 TR4 HF15Cp

w/OWS							HS8Cp HR6Sp*
XA-360 ICV w/Appliqué/Svarun w/OWS & Appliqué	196/98	45/23/5	810	300	CiH	W(8)	TF4 TS4 TR4 HF19Cp HS10Cp HR8Sp**
XA-360 IFV	183/92	42/21/4	810	323	Trtd	W(8)	TF8Cp TS5Sp TR4 HF15Cp HS8Cp HR6Sp*
XA-360 IFV w/Appliqué	179/90	41/21/4	810	329	Trtd	W(8)	TF10Cp TS7Sp TR5 HF19Cp HS10Cp HR8Sp**
KTO Rosomak	199/100	46/23/5	810	294	Trtd	W(8)	TF6Sp TS5Sp TR4 HF13Cp HS6Cp HR6Sp*
KTO Rosomak-M1	175/88	40/20	810	335	Trtd	W(8)	TF12Cp TS9Cp TR6 HF22Cp HS12Cp HR8Sp***
KTO Rosomak-M3	185/93	40/20	810	318	CiH	W(8)	TF3 TS3 TR3 HF22Cp HS12Cp HR8Sp****
Hoefyster ICV	171/86	40/20	810	344	Trtd	W(8)	TF8Sp TS5Sp TR4 HF15Cp HS8Cp HR6Sp**
XA-360 (UAE)	149/75	35/17	810	391	Trtd	W(8)	TF12Sp TS6Sp TR4 HF15Cp HS8Cp HR6Sp**
XA-360 Command/Rosomak-Lowcza	183/92	42/21/4	810	323	Stnd	W(8)	HF15Cp HS8Cp HR6Sp*
XA-360 Ambulance	191/96	44/22/4	810	306	Stnd	W(8)	HF15Cp HS8Cp HR6Sp*

Vehicle	Fire Control	Stabilization	Armament	Ammunition
XA-360 ICV	+3	Good	NSVT or M-2HB or Mk 19 AGL	1100x12.7mm or .50, or 350x40mm
XA-360 IFV	+3	Good	30mm Mk 44 Autocannon, MAG	550x30mm, 1700x7.62mm
Svarun w/OWS	+3	Good	30mm Mk 44 Autocannon	550x30mm
KTO Rosomak/Rosomak-M1	+4	Good	30mm Mk 44 Autocannon, PKT	550x30mm, 1700x7.62mm
KTO Rosomak-M3	+1	Basic	WKM-B or Mk 19	1100x12.7mm or 350x40mm
Hoefyster	+3*****	Good*****	30mm Mk 44, MG-4, 60mm M-1 Mortar	450x30mm, 1400x7.62mm, 30x60mm Mortar Shells
XA-360 (UAE)	+2	Good	100mm 2A70 Gun, 2A72 30mm Autocannon, PKT	40x100mm, 8xAT-10 ATGM, 500x30mm, 4000x7.62mm
XA-360 Command/Rosomak-Lowcza	None	None	NSVT, WKM-B, or M-2HB (C)	1100x12.7mm or .50

*Roof armor for this version is 5Sp; Floor armor is 8Sp.
**Roof armor for this version is 5Sp; Floor armor is 10Sp.
***Roof armor for this version is 6Sp; Floor armor is 12Sp.
**** Hull Roof armor for this version is 6Sp; Floor armor is 12Sp. There is no Turret Roof, however.
*****The Fire Control and Stabilization mods do not apply to the mortar.
******See Notes for Crew and passenger capacity.

ACMAT TPK 4.20/TPK 6.40

Notes: This armored personnel carrier is based on the ACMAT VLRA truck chassis. The truck chassis is fitted with an armored body, firing ports, bullet-resistant windows, and large doors at the rear. There are three firing ports in each side and one in one of the rear doors. These are simply openings in the body with armored shutters, so any sort of weapon that will fit through the opening can be used. Three versions are available: the smaller 4x4 TPK 4.20, and the larger 6x6 TPK 6.40. For each of these versions, open-topped and closed-roof versions are available. Several African nations use these vehicles, particularly former French colonies that maintain ties with France.

The APC and Basic Information

The basic APC version is called the VBL. Armor is of chrome-moly steel, and is quite hard. The front is sharply-sloped, and sides moderately-sloped, which gives the vehicle surprising armor despite it being only 5.8mm thick. It is based on a VLRA long-range reconnaissance vehicle fitted with an armored body. The TPK 6.40 is longer and heavier than the TPK 4.20, and this extra room is primarily in the rear troop compartment. The top of these versions are open-topped, with troops entering and exiting the vehicle by going over the sides. The troop compartment is in the rear, and the engine in the front; the driver and commander are in a cab behind the engine, with bullet-resistant windshields and windows to the front and sides. The windows and windshields may be closed off with armored shutters to increase protection, with the windshield shutters having vision slits in them. The side doors of the cab have shuttered firing ports below the windows. The cab has an enclosed roof, and the commander has a hatch with a pintle-mounted weapon. The troops sit down either side of the troop compartment. They have no firing ports, but the sides and rear can be hinged downwards to give the troops inside a better field of fire. The vehicle can also be had with a fully enclosed troop compartment; this version is the VSC, and has two roof hatches (one near the rear, and one at the center. On the VSC, troop access is by two doors in the rear, and the sides still hinge downwards when desired. On the open-topped version, pintle mounts can be mounted on the sides and rear, though this is not standard.

The engine is a Perkins 6.354.4 diesel engine developing 135 horsepower. This is coupled to a manual transmission; the TPK 6.40 has one more forward gear than the TPK 4.20. Suspension is by leaf springs as well as hydraulic shock absorbers, and rather smooth. The suspension, however, is optimized for road use instead of off-road. The TPK 4.20 has a 4x4 configuration; the TPK 6.40 has a 6x6 configuration. The TPK 4.20 can be switched to 4x2 for road use, while the TPK 6.40 may be switched to 6x4 for road use.

(Weapons below are examples; others may be mounted.)

The VBL Light Armored Car

The VBL Light Armored Car is similar to the closed-topped TPK 4.20 VSC, but the sides the vehicle have three firing ports, and the rear has two. In the center of the roof is a light one-man turret armed with a light/medium machinegun or a heavy machinegun (a Milan missile system can also be mounted instead of the turret, but this will not be covered here). The commander retains his weapon. There is also a roof hatch near the rear of the vehicle. Extra radios are carried (two long range, one medium range, and one short-range), and extra ammunition and less troops are carried. Optional equipment includes air conditioning.

Other APC-Type Versions

There are ambulance versions of the TPK 4.20, designated BL-SAM. All are these vehicles are closed-topped, with a raised roofline housing an air conditioning and heating unit. The doorways have steps that lower to help load patients into the vehicle. The vehicles are equipped with refrigerators for perishable medical supplies, and most are equipped with oxygen administration gear, as well as the equivalent of one doctor's medical kit and 10 personal medical kits and an assortment of splints, bandages, and other such equipment. The TPK 4.20 BL-SAM can carry four stretchers and two seated patients, or two stretchers and six seated patients, plus a medic. The vehicle characteristics are otherwise the mostly the same as the TPK 4.20 VSC, except they are unarmed and do not have roof hatches or firing ports.

The logistics carrier version of the TPK 6.40, the TPK 6.50 BL-CTL, is a version of the open-topped armored personnel carrier has an improved suspension for increased cargo carrying capacity. No seats are mounted, though there are lock-down and tie-down points for cargo. A light crane with a capacity of 2 tons is mounted near the front of the cargo compartment. The sides of the vehicle can be dropped for carrying outsized cargoes, and the roofline is raised for the same purpose. The BL-CTL carries an extra crewmember to operate the crane and assist with cargo handling; he has a folding seat in the rear near the cab.

Twilight 2000 Notes: Before the Twilight War, these vehicles were used only by certain African nations that maintained ties with France (such as the Central African Republic, Gabon, and the Ivory Coast); but when the Twilight War commenced, a number of them were sent to the Middle East with French Foreign Legion forces. Later, a number of them were retained in France for patrolling the Dead Zone.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
TPK 4.20 VBL	$15,211	D, A	1.4 tons	7.3 tons	2+10	4	Headlights	Open
TPK 4.20 VSC	$17,611	D, A	1.3 tons	7.6 tons	2+10	6	Headlights	Enclosed

TPK 6.40 VBL	$16,222	D, A	1.4 tons	8.6 tons	2+16	6	Headlights	Open
TPK 6.40 VSC	$19,022	D, A	1.3 tons	9 tons	2+16	6	Headlights	Enclosed
VBL Light Armored Car	$19,998	D, A	1.2 tons	7.7 tons	3+8	6	Headlights	Enclosed
TPK 4.20 BL-SAM	$21,876	D, A	650 kg	9.4 tons	*	7	Headlights	Enclosed
TPK 6.50 BL-CTL	$16,722	D, A	4.5 tons	8.8 tons	3	6	Headlights	Open

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
TPK 4.20 VBL	192/47	45/11	360	66	Stnd	W(3)	HF4 HS3 HR2
TPK 4.20 VSC	187/46	43/11	360	69	Stnd	W(3)	HF4 HS3 HR2
TPK 6.40 VBL	173/42	40/10	360	77	Stnd	W(4)	HF4 HS3 HR2
TPK 6.40 VSC	167/41	39/10	360	81	Stnd	W(4)	HF4 HS3 HR2
VBL Light Armored Car	167/41	39/10	360	71	Stnd	W(3)	TF2 TS2 TR2 HF4 HS3 HR2
TPK 4.20 BL-SAM	148/36	34/8	360	85	Stnd	W(3)	TF2 TS2 TR2 HF5 HS3 HR3
TPK 6.50 BL-CTL	170/41	40/10	360	80	Stnd	W(4)	HF4 HS3 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
TPK 4.20 or 6.40 VBL/VSC/6.50 BL-CTL	None	None	M-2HB (C) or AAT-F1 (C) or MAG (C)	600x.50 or 1000x7.62mm
VBL Light Armored Car	None	None	M-2HB or AAT-F1 or MAG	1500x.50 or 2500x7.62mm

Giat TPP-501

Notes: This is basically a square, armored body placed on the chassis of a Unimog U-1550L truck. It is primarily meant to be an armored car or vehicle for police SRT teams, and not a military APC, and the level of protection is only average. It does, however, have some amenities that military vehicles generally do not have, such as comfortable seats and air conditioning. There is a large door on the rear of the vehicle, and doors on either side of the driver/commander compartment. There are large bullet-resistant windows in the front of the vehicle, and smaller ones in the sides and rear. There are no firing ports, just twin doors in the rear. Two engines are offered, a Mercedes-Benz OM-366A 155-horsepower diesel and a Mercedes-Benz OM-366LA 214-horsepower diesel. The suspension gives the vehicle decent cross-country performance, and the vehicle has a 4x4 suspension with differential locking. No provision is made for a weapon, and there are no hatches in the roof.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
TPP-501 (155 hp)	$5,911	D, A	2.4 tons	9.5 tons	2+11	6	Headlights	Enclosed
TPP-501 (214 hp)	$6,131	D, A	2.4 tons	9.5 tons	2+11	6	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
TPP-501 (155 hp)	139/70	32/16	160	78	Stnd	W(2)	HF3 HS3 HR3
TPP-501 (214 hp)	178/90	41/21	160	111	Stnd	W(2)	HF2 HS2 HR2

Giat VAB

Notes: This French vehicle is also a contender for the title of “most modified APC,” being available in some 27 variants and used by 10 countries. It is also available in a 4x4 or 6x6 versions, and is a common sight, especially in Africa and the Middle East. The VAB is also used by Argentina (who use only five), Cyprus, and Norway (who again use only five). The French are the largest users, with 840 built for them; the Moroccans are the second largest users, with 394. The 4x4 and 6x6 versions are the same size, but the 6x6 versions have better off-road performance. Statistics for the base versions are shown here, but the base version is rarely seen, as most customers outside of France use one of the modified versions, and France used several variants as well. A plethora of non-APC versions are also in service, ranging from recovery vehicles to ATGM carriers. The VAB has a long development period; the French Army first issued its requirements in 1970, but the first VABs were not delivered to the French Army in 1976.

The Basic VAB and General Description

As stated above, the “basic” VAB is rarely seen, since most countries choose to top the VAB with one of many turrets available. This basic version is called the VTT. The driver is on the front left of the vehicle, with the commander to his right; both have overhead hatches, and there is also a door on the hull side for each of them. The driver and commander have bullet resistant windshields to their front and bullet-resistant windows to their sides; these may be further protected by closing armored shutters, with the front shutters having vision slits in them. A weapon station may be located to the rear of the driver and commander, but usually the weapon station is deleted and the weapon mount is by the commander’s hatch, either on a pintle or as part of a cupola. The troops leave by two doors in the rear hull. If a separate weapon station is not present, there will be a hatch in the center of the hull deck, as well as two larger ones further back. (The stats below assume the lack of a separate weapons station.) Air conditioning and heating are optional, as is a front-mounted winch with 60 meters of cable and a capacity of 7 tons. On each door is a small armored window, and there are three more on each side and in the commander and driver’s doors. Each of these windows may be locked open, allowing weapons to be fired from inside; they allow the troops inside to look out and fire their weapons, but are not firing ports. The troops sit facing each other down the sides of their compartment. The seats may be folded, turning the VAB into an *ad hoc* logistics carrier, when needed. The rear doors do not have a central pillar, which also facilitates the use of the VAB as an armored truck if required. A small passageway on the right side of the troop compartment connects the driver’s and commander’s position to the troop compartment. A cluster of three smoke grenade launchers is normally found on each side of the front of the vehicle.

The armor of the VAB is on par with most light APCs, but not exceptional. Armor is of all-welded steel and is moderately-sloped on the front and sides. The VAB has an automatic fire detection and suppression system for the troop compartment, driver/commander compartment, engine compartment, and fuel tanks. The VAB is fully amphibious, requiring the erection of a trim vane at the front and switching on bilge pumps, requiring two minutes. Propulsion in the water is via waterjets at the rear with deflection vanes for steering. The driver controls these vanes by a joystick. The waterjets are not powerful, but better than propulsion by motion of the wheels. Other driver controls are conventional, and transmission is manual. The 6x6 version is switchable to 6x4 for road use, while the 4x4 version is switchable to 4x2. The suspension is cross-country and uses large run-flat tires. The 6x6 version does cut down on interior space, but not on the amount of troop space available; it does, however, allow for better off-road performance as well as better cargo carrying capacity. Three engines are available: a Renault MIDS 06-20-45 220-horsepower turbocharged diesel, a Renault MIDR 06-02-26 250-horsepower turbocharged diesel (the type chosen by most users), or a Renault MIDR 06-20-45 450-horsepower turbocharged diesel (a common upgrade for French and many Middle Eastern customers).

APC With Turrets

The VAB VCI T20 is a 4x4 VAB with a T20 gun station/cupola. This is a light autocannon mount that does not take up much room. This version has a dedicated gunner, and the turret has a roof hatch. The gun is almost always the newer duel-feed M-693 autocannon. The turret has electric traverse. This (and other turreted version of the VAB) do not have the commander’s weapon, and the smoke grenade launchers are moved to the turret. The VCI T25 is the same, but it has a T25 gun station/cupola. The VCI Dragar is mounted only on 6x6 VABs and is equipped a Dragar 25mm autocannon one-man turret. The VCI Toucan is also mounted only on 6x6 VABs and has a Giat Toucan I turret. The French Air Force also uses this vehicle, where it is known as the VIB. Both have roof hatches for the gunner.

The VMO is a VAB designed for the internal security role. In this role, there is a light cupola armed with light/medium machinegun, along with a machinegun for the commander. Mounted in the front is an obstacle-clearing blade and winch, and in the hull are a loudspeaker system and several radios (two medium and two short-range). The blade is not strong enough to dig fighting positions or to be used as a mine plow, but frontal hits are 25% likely to hit the blade, which increases frontal armor against the blade by 1. 4x4 and 6x6 versions exist; Abu Dhabi uses the 6x6 version.

The VMO-VOI is an internal security (police) version. It has a light manually-operated cupola armed with a light/medium machinegun and a grenade launcher designed to fire irritant gas or smoke grenades; this must be reloaded between each shot, and is essentially a shoulder-fired riot grenade launcher mounted in the cupola. It is a one-man cupola. The cupola also has a variety of imaging devices including low-light TV, a standard TV camera (both with 20x zoom capability), a white light spotlight, windshield and window washers, a loudspeaker, a shotgun microphone, and a cluster of four grenade launchers on each side of the front of the roof which can launch smoke, irritant gas, or flash-bang grenades. Inside, the VMO-VOI has a set of 2-4 TV monitors linked to the imaging devices on the turret, speakers for the shotgun microphones, and a link to the loudspeaker. Flashing lights and sirens are optional. The VMO-VOI also has capacious recording capacity for the TV cameras and shotgun microphones; this may be by tape or digital. The sides of the VMO-VOI have three firing ports, and the rear two, and the interior has overpressure against chemical attack (though not biological or radiological threats); this is to allow it to operate in riots where irritant gas has been used. Extra radios are carried as for the VMO above; one of the medium-range radios is data-capable and used to transmit remote video. The VMO-VOI is a 6x6 vehicle.

Other APC-Type Versions

The VAB ATILA is a communications vehicle used at various levels, usually at battalion and above. The vehicle has four long-range and two medium-range vehicles; one long-range radio is data-capable (for supplying data to the command post). It has a switchboard able to handle up 30 field telephones, and itself carries 20 field telephones and 200 meters of commo wire. It also carries a variety of spare parts for radios and communications equipment, and has a SATCOM terminal. The VAB ATILA normally tows a trailer with more communications gear such as parts and hoards more commo wire, as well as spare radios and communications gear for the command post. The VAB Transmission is a similar vehicle used at higher echelons and equipped with

the RITA network, though it has somewhat different equipment. This is a 6x6 vehicle.

The VAB PC is a command post vehicle with two long-range, two medium-range, and two short-range radios, a map board, plotting and office supplies, various maps, and storage for those items. A hand-held thermal imager, image intensifier, and laser rangefinder is carried. It has a ruggedized laptop computer. It has fold-out tables and folding chairs. With different equipment, it can also be used as an FDC (the VAB FDC) and as a Forward Observation Officer and FALO vehicle (the VAB FOO). This is a 6x6 vehicle.

The VAB EW is an electronic warfare vehicle with equipment to detect and jam radar and radio transmissions. Jamming range for radar is 15 kilometers and for radio 30 kilometers. A total of four bands of radar and six bands of radio can be jammed, but only two bands of radar and three of radio can be jammed at once. Radar detection range is the same as its jamming range – 15 kilometers. Radio detection range is 50 kilometers. The EW version can be distinguished by the many unusual aerials on the roof. A small computer helps tie these functions together, but it is a simple computer which does not have the functions of a laptop; it simply gives the crew the required information. This is a 6x6 vehicle.

The VAB Sanitaire is the armored ambulance version of the VAB. It has the equivalent of two doctor's medical bags, 20 personal medical kits, a variety of splints, bandages, and other first aid equipment, and a small refrigerator for perishable medical supplies. On the roof is s small observation cupola; this does not rotate and is not armed, but has all-around vision blocks. Behind the cupola is an armored box containing an air conditioning unit, and the VAB Sanitaire also has a heater. The VAB Sanitaire has an NBC Overpressure System with a collective NBC Backup. The VAB Sanitaire can carry four stretcher patients, two stretcher patients and five seated patients, or 10 seated patients. This is a 4x4 vehicle.

The VAB NBC Reco is an NBC reconnaissance vehicle with Geiger counters, a gamma radiation meter, optical chemical sniffer, GPS system and mapping equipment, and extra communications equipment (two long-range radios in addition to a medium-range and short-range radio; one of the long-range radios is data-capable). At the rear of the vehicle is an arm for taking samples, and a mechanism to drop 50 radio and 50 visual beacons to mark contaminated areas. A central computer manages the whole system; and the detection operates continuously and automatically. The vehicle has four external cameras on booms which may be used day or night to further examine contaminated areas. This vehicle has a cupola with a machinegun which may be aimed and fired from within the vehicle, and has NBC-sealed firing points. In addition to its NBC reconnaissance functions, the NBC Reco can take meteorological measurements to determine wind speed and direction to investigate wind drift of chemical, biological, and radiological agents. This is a 6x6 vehicle. The NBC Reco was one of the vehicles tested in the US competition which resulted in the M-93A1 Fox NBC Recon vehicle.

The Improved VAB

The Improved VAB is basically a VAB 6x6 with a new turret and improved armor protection. No firm offers have been placed for the Improved VAB, though it has apparently be tested by several countries; it has suffered since the 1990s since from competition from wheeled APCs which are more capable and less expensive (in real world prices). The vehicle is essentially an upgraded VAG, upgraded in the area of protection, mobility, and driver's controls as well as the transmission and suspension. The Improved VAB is designed primarily for use in hot and dusty climates, and is improved in operation in those areas. The design is still reportedly being shopped around, though only an APC version has been shown so far; it is aimed primarily at the export market, as France herself plans to move to the new VBCI in the near future. 4x4 and 6x6 versions have been shown.

The layout of the improved VAB is virtually identical to the standard VAB. The driving controls are simplified and less fatiguing, and the vehicle has automatic transmission. The Improved VAB has air conditioning in addition to heating, and is NBC shielded. The engine is fitted with protection against Molotov cocktails, so burning fuel will not pour into the engine. The commander's station is equipped with an OHWS which allows him to remain at his station and still operate the weapon via downlinked controls. The OHWS has improved fire control and gun stabilization as well as night vision and vision equipment. The smoke grenade launcher complexes have been increased to four per cluster. The length has been increased, giving the crew compartment more room as well as the driver's and commander's stations more room. The engine is a Renault MIDR 06.20.45 turbocharged diesel developing 300 horsepower. Swimming mobility has been increased by the use of more powerful waterjets using steering vanes. Demonstrator versions have only been APC versions.

The VAB Mk II

This is a VAB "brought up to the 21st century," being shopped around the world market, with no takers so far, though many countries are testing it. The primary change is the MEXAS armor package which is much more advanced and protective. Appliqué armor panels are also possible. The entire vehicle is longer than a VAB, though not as long as an Improved VAB, and it is higher than a VAB due to its anti-mine suspension and belly. A variety of weapons stations are available; some representative examples are shown below. The VAB Mk II is available in 4x4 and 6x6 versions. Power is provided by a Renault DX17 turbocharged diesel with a power output of 320 horsepower. The VAB Mk II is a modular system which can be outfitted for a variety of roles such as the VAB above. The VAB Mk II has air conditioning and heating with an NBC overpressure system and a collective NBC backup. The floor of the VAB Mk II is highly resistant to mines and IEDs; in addition to the armor values listed below, the interior crew, passenger, and equipment suffer 25% less damage from a bottom hit. Appliqué armor can be added to the bottom as well. The VAB Mk II can have a turret with a dedicated gunner, or a commander's OHWS (the basic VAB Mk II).

Twilight 2000 Notes: The Improved VAB was used only by the French in the Twilight 2000 timeline, and was encountered only in

France or the French Occupation Zone.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
VAB VTT (4x4, 220 hp)	$24,071	D, A	950 kg	13 tons	2+10	10	Headlights	Enclosed
VAB VTT (4x4, 250 hp)	$24,181	D, A	950 kg	13 tons	2+10	10	Headlights	Enclosed
VAB VTT (4x4, 450 hp)	$24,931	D, A	950 kg	13 tons	2+10	10	Headlights	Enclosed
VAB VTT (6x6, 220 hp)	$28,553	D, A	1.1 tons	14.2 tons	2+10	10	Headlights	Enclosed
VAB VTT (6x6, 250 hp)	$28,663	D, A	1.1 tons	14.2 tons	2+10	10	Headlights	Enclosed
VAB VTT (6x6, 450 hp)	$29,413	D, A	1.1 tons	14.2 tons	2+10	10	Headlights	Enclosed
VAB VCI T20 (4x4, 220 hp)	$35,350	D, A	750 kg	13.8 tons	3+6	10	Headlights	Enclosed
VAB VCI T20 (4x4, 250 hp)	$35,460	D, A	750 kg	13.8 tons	3+6	10	Headlights	Enclosed
VAB VCI T20 (4x4, 450 hp)	$36,210	D, A	750 kg	13.8 tons	3+6	10	Headlights	Enclosed
VAB VCI T20 (6x6, 220 hp)	$39,832	D, A	900 kg	15 tons	3+6	10	Headlights	Enclosed
VAB VCI T20 (6x6, 250 hp)	$39,942	D, A	900 kg	15 tons	3+6	10	Headlights	Enclosed
VAB VCI T20 (6x6, 450 hp)	$40,692	D, A	900 kg	15 tons	3+6	10	Headlights	Enclosed
VAB VCI T25 (4x4, 220 hp)	$39,318	D, A	500 kg	14 tons	3+6	10	Headlights	Enclosed
VAB VCI T25 (4x4, 250 hp)	$39,428	D, A	500 kg	14 tons	3+6	10	Headlights	Enclosed
VAB VCI T25 (4x4, 450 hp)	$40,178	D, A	500 kg	14 tons	3+6	10	Headlights	Enclosed
VAB VCI T25 (6x6, 220 hp)	$43,800	D, A	650 kg	16 tons	3+6	10	Headlights	Enclosed
VAB VCI T25 (6x6, 250 hp)	$43,910	D, A	650 kg	16 tons	3+6	10	Headlights	Enclosed
VAB VCI T25 (6x6, 450 hp)	$44,660	D, A	650 kg	16 tons	3+6	10	Headlights	Enclosed
VAB VCI Dragar (220 hp)	$78,246	D, A	800 kg	15.4 tons	3+6	10	Passive IR (G, C), Image Intensification (G)	Enclosed
VAB VCI Dragar (250 hp)	$78,356	D, A	800 kg	15.4 tons	3+6	10	Passive IR (G, C), Image Intensification (G)	Enclosed
VAB VCI Dragar (450 hp)	$79,106	D, A	800 kg	15.4 tons	3+6	10	Passive IR (G, C), Image Intensification (G)	Enclosed
VAB VCI Toucan (220 hp)	$75,826	D, A	950 kg	14.8 tons	3+6	10	Passive IR (G, C), Image Intensification (G)	Enclosed
VAB VCI Toucan (250 hp)	$75,936	D, A	950 kg	14.8 tons	3+6	10	Passive IR (G, C), Image Intensification (G)	Enclosed
VAB VCI Toucan	$76,686	D, A	950 kg	14.8 tons	3+6	10	Passive IR (G,	Enclosed

(450 hp)							C), Image Intensification (G)	
VAB VMO (4x4, 220 hp)	$26,685	D, A	950 kg	13.3 tons	3+9	10	Headlights	Enclosed
VAB VMO (4x4, 250 hp)	$26,795	D, A	950 kg	13.3 tons	3+9	10	Headlights	Enclosed
VAB VMO (4x4, 450 hp)	$27,545	D, A	950 kg	13.3 tons	3+9	10	Headlights	Enclosed
VAB VMO (6x6, 220 hp)	$31,167	D, A	1.1 tons	14.5 tons	3+9	10	Headlights	Enclosed
VAB VMO (6x6, 250 hp)	$31,277	D, A	1.1 tons	14.5 tons	3+9	10	Headlights	Enclosed
VAB VMO (6x6, 450 hp)	$32,027	D, A	1.1 tons	14.5 tons	3+9	10	Headlights	Enclosed
VAB VMO-VOI (220 hp)	$64,653	D, A	975 kg	14.7 tons	2+6	11	Image Intensification (x2, C)*	Enclosed**
VAB VMO-VOI (250 hp)	$64,763	D, A	975 kg	14.7 tons	2+6	11	Image Intensification (x2, C)*	Enclosed**
VAB VMO-VOI (450 hp)	$65,513	D, A	975 kg	14.7 tons	2+6	11	Image Intensification (x2, C)*	Enclosed**
VAB ATILA (4x4, 220 hp)	$104,990	D, A	475 kg	13.8 tons	4	12	Headlights	Enclosed
VAB ATILA (4x4, 250 hp)	$105,100	D, A	475 kg	13.8 tons	4	12	Headlights	Enclosed
VAB ATILA (4x4, 450 hp)	$105,850	D, A	475 kg	13.8 tons	4	12	Headlights	Enclosed
VAB ATILA (6x6, 220 hp)	$109,472	D, A	550 kg	15 tons	4	12	Headlights	Enclosed
VAB ATILA (6x6, 250 hp)	$109,582	D, A	550 kg	15 tons	4	12	Headlights	Enclosed
VAB ATILA (6x6, 450 hp)	$110,332	D, A	550 kg	15 tons	4	12	Headlights	Enclosed
VAB PC (4x4, 220 hp)	$349,220	D, A	475 kg	13.8 tons	2+5			
VAB PC (4x4, 250 hp)	$349,330	D, A	475 kg	13.8 tons	2+5	11	Headlights	Enclosed
VAB PC (4x4, 450 hp)	$350,080	D, A	475 kg	13.8 tons	2+5	11	Headlights	Enclosed
VAB PC (6x6, 220 hp)	$353,702	D, A	550 kg	15 tons	2+5	11	Headlights	Enclosed
VAB PC (6x6, 250 hp)	$353,812	D, A	550 kg	15 tons	2+5	11	Headlights	Enclosed
VAB PC (6x6, 450 hp)	$354,562	D, A	550 kg	15 tons	2+5	11	Headlights	Enclosed
VAB EW (4x4, 220 hp)	$868,579	D, A	475 kg	13.6 tons	4	12	Headlights	Enclosed
VAB EW (4x4, 250 hp)	$868,689	D, A	475 kg	13.6 tons	4	12	Headlights	Enclosed
VAB EW (4x4, 450 hp)	$869,439	D, A	475 kg	13.6 tons	4	12	Headlights	Enclosed
VAB EW (6x6, 220 hp)	$873,058	D, A	550 kg	14.8 tons	4	12	Headlights	Enclosed
VAB EW (6x6, 250 hp)	$873,168	D, A	550 kg	14.8 tons	4	12	Headlights	Enclosed
VAB EW (6x6, 450 hp)	$873,918	D, A	550 kg	14.8 tons	4	12	Headlights	Enclosed

VAB Sanitaire (4x4, 220 hp)	$27,682	D, A	475 kg	13.5 tons	***	11	Headlights	Shielded
VAB Sanitaire (4x4, 250 hp)	$27,792	D, A	475 kg	13.5 tons	***	11	Headlights	Shielded
VAB Sanitaire (4x4, 450 hp)	$28,542	D, A	475 kg	13.5 tons	***	11	Headlights	Shielded
VAB NBC Reco (220 hp)	$558,910	D, A	550 kg	14.7 tons	4	12	Image Intensification, Image Intensification (4xBoom)	Shielded
VAB NBC Reco (250 hp)	$559,020	D, A	550 kg	14.7 tons	4	12	Image Intensification, Image Intensification (4xBoom)	Shielded
VAB NBC Reco (450 hp)	$559,770	D, A	550 kg	14.7 tons	4	12	Image Intensification, Image Intensification (4xBoom)	Shielded
Improved VAB (4x4)	$65,039	D, A	1 ton	13.6 tons	2+10	10	Passive IR (C), Image Intensification (C)	Shielded
Improved VAB (6x6)	$69,521	D, A	1.2 tons	14.8 tons	2+10	10	Passive IR (C), Image Intensification (C)	Shielded
VAB Mk II (Basic, 4x4)	$68,194	D, A	2.6 tons	15.8 tons	2+10	12	Passive IR (C), Image Intensification (C)	Shielded
VAB Mk II (Basic, 4x4, Appliqué)	$73,072	D, A	2.4 tons	16.5 tons	2+10	12	Passive IR (C), Image Intensification (C)	Shielded
VAB Mk II (Basic, 6x6)	$72,676	D, A	2.9 tons	17.2 tons	2+10	12	Passive IR (C), Image Intensification (C)	Shielded
VAB Mk II (Basic, 6x6, Appliqué)	$77,508	D, A	2.7 tons	17.9 tons	2+10	12	Passive IR (C), Image Intensification (C)	Shielded
VAB Mk II Dragar (4x4)	$71,046	D, A	2 tons	17 tons	3+6	12	Passive IR (G, C), Image Intensification (G)	Shielded
VAB Mk II Dragar (4x4, Appliqué)	$75,878	D, A	1.8 tons	18.7 tons	3+6	12	Passive IR (G, C), Image Intensification (G)	Shielded
VAB Mk II Dragar (6x6)	$75,528	D, A	2.3 tons	18.4 tons	3+6	12	Passive IR (G, C), Image Intensification (G)	Shielded
VAB Mk II Dragar (6x6, Appliqué)	$80,360	D, A	2.1 tons	19.1 tons	3+6	12	Passive IR (G, C), Image Intensification	Shielded

(G)

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
VAB VTT (4x4, 220 hp)	145/73	33/17/3	300	114	Stnd	W(3)	HF6 HS4 HR3
VAB VTT (4x4, 250 hp)	159/80	37/18/3	300	131	Stnd	W(3)	HF6 HS4 HR3
VAB VTT (4x4, 450 hp)	256/129	59/30/4	300	152	Stnd	W(3)	HF6 HS4 HR3
VAB VTT (6x6, 220 hp)	137/78	32/18/2	300	125	Stnd	W(4)	HF6 HS4 HR3
VAB VTT (6x6, 250 hp)	150/84	34/20/3	300	143	Stnd	W(4)	HF6 HS4 HR3
VAB VTT (6x6, 450 hp)	239/135	55/32/4	300	166	Stnd	W(4)	HF6 HS4 HR3
VAB VCI T20 (4x4, 220 hp)	137/69	31/16/2	380	121	CiH	W(3)	TF2 TS2 TR2 HF6 HS4 HR3
VAB VCI T20 (4x4, 250 hp)	150/75	35/17/2	380	139	CiH	W(3)	TF2 TS2 TR2 HF6 HS4 HR3
VAB VCI T20 (4x4, 450 hp)	241/122	56/28/4	380	161	CiH	W(3)	TF2 TS2 TR2 HF6 HS4 HR3
VAB VCI T20 (6x6, 220 hp)	129/82	30/19/2	380	133	CiH	W(4)	TF2 TS2 TR2 HF6 HS4 HR3
VAB VCI T20 (6x6, 250 hp)	141/89	32/21/2	380	152	CiH	W(4)	TF2 TS2 TR2 HF6 HS4 HR3
VAB VCI T20 (6x6, 450 hp)	225/143	52/34/3	380	176	CiH	W(4)	TF2 TS2 TR2 HF6 HS4 HR3
VAB VCI T25 (4x4, 220 hp)	135/68	31/16/2	380	123	CiH	W(3)	TF2 TS2 TR2 HF6 HS4 HR3
VAB VCI T25 (4x4, 250 hp)	148/74	34/17/2	380	141	CiH	W(3)	TF2 TS2 TR2 HF6 HS4 HR3
VAB VCI T25 (4x4, 450 hp)	238/120	55/28/4	380	164	CiH	W(3)	TF2 TS2 TR2 HF6 HS4 HR3
VAB VCI T25 (6x6, 220 hp)	119/66	27/16/2	380	140	CiH	W(4)	TF2 TS2 TR2 HF6 HS4 HR3
VAB VCI T25 (6x6, 250 hp)	129/73	30/17/2	380	161	CiH	W(4)	TF2 TS2 TR2 HF6 HS4 HR3
VAB VCI T25 (6x6, 450 hp)	208/118	48/27/3	380	187	CiH	W(4)	TF2 TS2 TR2 HF6 HS4 HR3
VAB VCI Dragar (220 hp)	122/69	28/16/2	380	135	Trtd	W(4)	TF4 TS4 TR3 HF6 HS4 HR3
VAB VCI Dragar (250 hp)	134/76	31/17/2	380	155	Trtd	W(4)	TF4 TS4 TR3 HF6 HS4 HR3
VAB VCI Dragar (450 hp)	216/122	50/29/4	380	180	Trtd	W(4)	TF4 TS4 TR3 HF6 HS4 HR3
VAB VCI Toucan (220 hp)	127/72	29/17/2	380	130	Trtd	W(4)	TF2 TS2 TR2 HF6 HS4 HR3
VAB VCI Toucan (250 hp)	140/79	32/18/2	380	149	Trtd	W(4)	TF2 TS2 TR2 HF6 HS4 HR3
VAB VCI Toucan (450 hp)	225/127	51/30/4	380	173	Trtd	W(4)	TF2 TS2 TR2 HF6 HS4 HR3
VAB VMO (4x4, 220 hp)	142/71	32/17/2	380	117	Stnd	W(3)	HF6 HS4 HR3
VAB VMO (4x4, 250 hp)	155/78	36/18/3	380	134	Stnd	W(3)	HF6 HS4 HR3
VAB VMO (4x4, 450 hp)	250/126	58/29/4	380	155	Stnd	W(3)	HF6 HS4 HR3
VAB VMO (6x6, 220 hp)	134/76	30/18/2	380	127	Stnd	W(4)	HF6 HS4 HR3
VAB VMO (6x6, 250 hp)	146/83	34/19/2	380	146	Stnd	W(4)	HF6 HS4 HR3
VAB VMO (6x6, 450 hp)	236/135	55/31/4	380	169	Stnd	W(4)	HF6 HS4 HR3
VAB VMO-VOI (220 hp)	128/72	29/17/2	380	129	CiH	W(4)	TF2 TS2 TR2 HF6 HS4 HR3
VAB VMO-VOI (250 hp)	141/80	33/18/2	380	148	CiH	W(4)	TF2 TS2 TR2 HF6 HS4 HR3

VAB VMO-VOI (450 hp)	226/128	52/30/3	380	172	CiH	W(4)	TF2 TS2 TR2 HF6 HS4 HR3
VAB ATILA/PC (4x4, 220 hp)	137/69	31/16/2	380	121	Stnd	W(3)	HF6 HS4 HR3
VAB ATILA/PC (4x4, 250 hp)	150/75	35/17/2	380	139	Stnd	W(3)	HF6 HS4 HR3
VAB ATILPC (4x4, 450 hp)	241/122	56/28/4	380	161	Stnd	W(3)	HF6 HS4 HR3
VAB ATILA/PC (6x6, 220 hp)	129/82	30/19/2	380	133	Stnd	W(4)	HF6 HS4 HR3
VAB ATILA/PC (6x6, 250 hp)	141/89	32/21/2	380	152	Stnd	W(4)	HF6 HS4 HR3
VAB ATILA/PC (6x6, 450 hp)	225/143	52/34/3	380	176	Stnd	W(4)	HF6 HS4 HR3
VAB EW (4x4, 220 hp)	139/70	32/16/3	380	119	Stnd	W(3)	HF6 HS4 HR3
VAB EW (4x4, 250 hp)	152/76	35/17/2	380	137	Stnd	W(3)	HF6 HS4 HR3
VAB EW (4x4, 450 hp)	131/75	56/29/4	380	159	Stnd	W(3)	HF6 HS4 HR3
VAB EW (6x6, 220 hp)	131/75	29/16/2	380	130	Stnd	W(4)	HF6 HS4 HR3
VAB EW (6x6, 250 hp)	139/78	32/19/2	380	173	Stnd	W(4)	HF6 HS4 HR3
VAB EW (6x6, 450 hp)	245/78	35/16/2	380	159	Stnd	W(4)	HF6 HS4 HR3
VAB Sanitaire (4x4, 220 hp)	140/70	32/16/2	380	118	Stnd	W(3)	HF6 HS4 HR3
VAB Sanitaire (4x4, 250 hp)	153/77	36/17/3	380	136	Stnd	W(3)	HF6 HS4 HR3
VAB Sanitaire (4x4, 450 hp)	247/124	57/29/4	380	158	Stnd	W(3)	HF6 HS4 HR3
VAB NBC Reco (220 hp)	128/73	29/17/2	380	129	Stnd	W(4)	HF6 HS4 HR3
VAB NBC Reco (250 hp)	141/80	33/16/2	380	148	Stnd	W(4)	HF6 HS4 HR3
VAB NBC Reco (450 hp)	267/128	52/30/3	380	172	Stnd	W(4)	HF6 HS4 HR3
Improved APC (4x4)	163/82	38/19/7	360	158	CiH	W(3)	TF5 TS5 TR4 HF8Sp HS5Sp HR4
Improved APC (6x6)	152/92	35/21/6	360	171	CiH	W(4)	TF5 TS5 TR4 HF8Sp HS5Sp HR4
VAB Mk II (Basic, 4x4)	153/78	36/18/6	300	169	CiH	W(3)	TF5 TS5 TR4 HF8Cp HS6Cp HR5****
VAB Mk II (Basic, 4x4, Appliqué)	147/75	35/17/6	300	176	CiH	W(3)	TF5 TS5 TR4 HF12Cp HS8Cp HR7*****
VAB Mk II (Basic, 6x6)	141/72	33/20/6	300	184	CiH	W(4)	TF5 TS5 TR4 HF8Cp HS6Cp HR5****
VAB Mk II (Basic, 6x6, Appliqué)	135/69	32/19/6	300	192	CiH	W(4)	TF5 TS5 TR4 HF12Cp HS8Cp HR7*****
VAB Mk II Dragar (4x4)	142/73	33/17/6	300	183	CiH	W(3)	TF5 TS5 TR4 HF8Cp HS6Cp HR5****
VAB Mk II Dragar (4x4, Appliqué)	129/66	30/15/5	300	199	CiH	W(3)	TF5 TS5 TR4 HF12Cp HS8Cp HR7*****
VAB Mk II Dragar (6x6)	132/67	31/15/6	300	196	CiH	W(4)	TF5 TS5 TR4 HF8Cp HS6Cp HR5****
VAB Mk II Dragar (6x6, Appliqué)	127/65	30/15/6	300	204	CiH	W(4)	TF5 TS5 TR4 HF12Cp HS8Cp HR7*****

Vehicle	Fire Control	Stabilization	Armament	Ammunition
VAB VTT	None	None	M-2HB (C) or AAT-F1(C) or MAG (C)	1200x.50 or 2000x7.62mm
VAB VCI T20	+1	Basic	20mm M-693 Autocannon, AAT-F1 or MAG	530x20mm, 1200x7.62mm
VAB VCI T20	+1	Basic	25mm M-811 Autocannon, AAT-F1 or MAG	530x25mm, 1200x7.62mm
VAB VCI Dragar/VAB Mk II	+2	Good	25mm M-811 Autocannon, AAT-F1 or MAG	620x25mm, 1400x7.62mm

Dragar VAB VCI Toucan	+1	Basic	20mm M-693 Autocannon, AAT-F1 or MAG	700x20mm, 2000x7.62mm
VAB VMO	None	None	AAT-F1 or MAG, AAT-F1 (C) or MAG (C)	2000x7.62mm
VAB VMO-VOI	None	None	AAT-F1 or MAG, 37mm Grenade Launcher	1000x7.62mm, 200x37mm
VAB ATILA/PC/EW/NBC Reco	None	None	AAT-F1 or MAG (C)	2000x7.62mm
Improved VAB	+2	Good	25mm KBA Autocannon (C), AAT-F1 or MAG (C)	620x25mm, 1620x7.62mm
VAB Mk II (Basic)	+2	Good	25mm KBA Autocannon (C), or M-2HB (C) or AAT-F1 (C) or MAG (C), plus AAT-F1 (C) or MAG (C)	620x25mm or 1250x.50 or 2100x7.62mm, plus 1620x7.62mm

*One of these is a day-only camera; the other can be used day or night.
**The VMO-VOI has overpressure against chemical attack only.
***See Notes above for Crew and passenger capacity.
****Roof armor is 3Sp; Floor armor is 6Sp.
*****Roof armor is 5Sp; Floor Armor is 8Sp.

Nextor VBCI

Notes: The 8x8 VBCI has recently, in June of 2010, entered service with French forces as their next APC, designed to replace the VAB and AMX-10P and provide infantry the mobility to keep with fast-moving Leclerc tanks. The Spanish are going to replace the BMR-600 with the VBCI in the near future, and the VBCI was at one time considered as a candidate vehicle for Britain's FRES program and by Germany. Another country considering the VBCI is Greece. Other versions being considered by the French include a Milan ATGM vehicle, an MGS armed with a 120mm cannon, and an APC version more heavily armed with a 40mm autocannon firing case-telescoped ammunition.

The Basic Vehicle

The VBCI comes in two versions so far: the VCI APC version and the VPC command vehicle version. Both are on an 8x8 chassis, with rear wheels steering independently from the front wheels to tighten the turn radius, and the VBCI can turn a complete circle at half-speed in 17 meters without danger of a skid. The vehicle is powered by a 550-horsepower engine. The vehicle has an automatic transmission, with the driver having conventional driver's controls. Both are hydraulically-boosted. The VBCI uses run-flat tires which are thicker-walled than standard military vehicle tires. The vehicle's basic armor is of aluminum, and in this configuration, it will fit on most cargo aircraft and is air-droppable; however, the armor can, and French intends it to be in most cases, supplemented by a steel/ceramic/titanium sandwich appliqué armor kit on the sides and front and a steel/titanium spaced appliqué on the deck and floor. The VBCI will be integrated with the new French C4ISR architecture (in other words, a BMS system), with the VCI using the SIT system, and the VPC using the more sophisticated SIR system. The VBCI will be compatible with troops using the new FELIN system. Access in both cases includes the driver's hatch on the front right deck and a rear door; the driver himself is behind a front bullet-resistant windshield over which an armored shutter with a vision slit can be dropped. The front doors also have bullet-resistant windows which can be closed off with armored shutters. The commander is beside him in the cab with a hatch above him and a full sensor suite available. Both the commander and driver have side doors to access their positions. The VBCI has an NBC overpressure with a collective NBC backup. The VBCI is not amphibious, but it can ford 1.2 meters, or 1.5 meters with the aid of a kit.

The VCI

The VCI is the primary infantry version, topped with a Dragar turret equipped with an enhanced sensor and fire control suite as well as improved armor. The turret has three smoke grenade launchers on either side of the main gun. The enhanced sensor suite gives the VPC superior gun stabilization and aiming capability, and the enhanced sensor suite gives the commander and gunner better day and night vision capability. The commander also has access to the full SIT system, which is a BMS system giving him full digital communications with other members of the unit up to brigade level, including the other vehicles' and troops' positions and the positions of other friendly troop positions and known enemy positions. The commander can also receive and send updates to such information, and send and receive orders to subordinate and from superior units. The system also tells him the state of his vehicle, including the automotive components, the amount of ammunition available, and any damage or defect in the vehicle. The SIT system also gives the commander GPS and mapping capability. His sensors give him a limited hunter/killer capability; though he cannot fire the weapons, he can spot for them and automatically lay them. The gunner has access to the part of the SIT system pertaining to his job, and driver has access to the part of the SIT system pertaining to his job. The infantry squad leader can access the part of the SIT system that allows him to send and receive orders and monitor friendly and enemy positions.

The VPC

The VPC is the command version. It is not as heavily-armed, having only a RWS with an M-2HB machinegun. The smoke grenade launchers are shifted to the front points of the hull, to the top sides and slightly to the rear of the commander's and driver's positions. The primary component of the VPC is the SIR BMS system, which is sort of like the SIT system above, but much more so. The SIR system is designed to be used at battalion, brigade, and division level, and the interior of the VPC is highly-customized for the command role. The vehicle commander operates the machinegun in the front, while in the rear are a pair of large LCD screens for the information from the SIR system, along with several smaller ones. The rear area of the vehicle is large enough and open enough to accommodate a relatively large command and equipment operator crew (usually two equipment operators and five command personnel/aides). Radio equipment includes two long-range, two medium-range, and two short-range radios; one of the long-range radios is data-capable. The vehicle does not use map boards – the SIR system provides such information – though maps are carried for reference if needed. In addition, the normal array of plotting and office-type supplies is not carried, though there are notepads and suchlike. The VPC also does not normally carry the usual hand-held imaging devices – the RWS has several day and night imaging devices as well as a laser rangefinder in addition to the laser rangefinder used for the weapon, and the RWS can be controlled by the command crew in the rear. VPCs often tow trailers carrying generators to power their electronics when the engine is off – the SIR system itself can require 8kW or more of electricity to operate.

Twilight 2000 Notes: The VBCI is not available in the Twilight 2000 timeline.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
VCI	$425,878	D, A	2 tons	25.6 tons	3+8	17	Passive IR (D, G, C), Image Intensification (G, C), Thermal Imaging (G, C)	Shielded
VCI (w/Appliqué)	$438,963	D, A	1.4 tons	28 tons	3+8	17	Passive IR (D, G, C), Image Intensification (G, C), Thermal Imaging (G, C)	Shielded
VPC	$550,315	D, A	1 ton	23.3 tons	2+7	19	Passive IR (D, C), Image Intensification (C), Thermal Imaging (G)	Shielded
VPC (w/Appliqué)	$560,783	D, A	600 kg	25.7 tons	2+7	19	Passive IR (D, C), Image Intensification (C), Thermal Imaging (G)	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
VCI	159/80	37/18	770	287	Trtd	W(8)	TF7 TS7 TR5 HF11Sp HS6Sp HR5*
VCI (w/Appliqué)	145/73	34/16	770	313	Trtd	W(8)	TF12Cp TS9Sp TR5 HF16Cp HS11Cp HR5**
VPC	175/88	41/20	770	262	Trtd	W(8)	TF4 TS4 TR4 HF11Sp HS6Sp HR5*
VPC (w/Appliqué)	160/80	37/18	770	285	Trtd	W(8)	TF4 TS4 TR4 HF16Cp HS11Cp HR5**

Vehicle	Fire Control	Stabilization	Armament	Ammunition
VCI	+4	Good	25mm M-811 Autocannon, AAT-F1	750x25mm, 1675x7.62mm
VPC	+4	Good	M-2HB (C)	1200x.50

*Roof armor is 3; Floor armor is 5.

**Roof armor is 5Sp; Floor armor is 8Sp.

Panhard M3

Notes: Manufactured in large numbers for the export market, the Panhard M3 is a 4x4 APC not used by France, but it was exported to over 20 countries. It will win no contests in the looks department – to me, it looks something like a combination of a Conex and a turtle. The M3 is, in its basic form, a simple armored box-type APC with no real frills, though it may be topped with a wide variety of turrets and/or weapon installations. In many cases, the M3 has been sold and resold to different customers – sort of like a hand-me-down to a little brother, with countries selling them or giving them to lesser countries when they acquire more up-to-date vehicles. The M3 was replaced by the Buffalo in 1985 in production, and now the entire line has been long closed except for spare parts. In some cases, spare parts are made in license-production and refurbishment is being carried out in countries other than France.

The M3

The Panhard M3 is, as stated above, a basic box sort of APC, and looks a bit squat and lumpish. The armor is of steel plate, with a driver's position in the front center at the top of the glacis and the engine behind him. The driver has three vision blocks to his front, and a semi-triangular hatch opens upwards. The hatch can be locked open enough for him to see out (just above the horizontal) or fully open (vertical). The first position is a normal driving position and the other is for him to get in and out of his station, as he cannot enter it from the rear of the vehicle. The commander is to his rear on the vehicle roof; on most of these vehicles, the machinegun has no turret, just a cupola-mounted machinegun (sometimes surrounded by AV2 gun shields). On some vehicles, this gun mount is a light/medium machinegun mount. In each side is a circular troop hatch, and the rear has a pair of doors. In many cases, one or both of the side doors has a spare tire mounted on it. There are no firing ports in the sides *per se,* but there are three small hatches on the upper sides which are just large enough for troops to look out and fire their weapons. When closed, troops can look through these hatches via vision blocks. Each rear door has a firing port, but these are simple shutters with vision blocks above them. At the rear of the troop compartment on the roof is a circular hatch which can fit two troops comfortably and squeeze three troops in the space. The rear hatch has a skate mount at the rear for a weapon. The troop space inside is spartan, and up to ten troops can be squeezed inside (though there are seats for only eight). On each side of the front of the vehicle above the fenders are three smoke grenade launchers.

The M3 is reportedly very difficult to drive; the transmission is manual and balky, there is no power steering (though the driver's controls are conventional) or even power assist for the transmission. The suspension is 4x4 and cross-country, with locking differentials and run-flat tires. The ride, unlike the driving task, is decent, with the M3 having excellent shock absorbers. Engine power is poor, with the engine being a 90-horsepower Panhard 4 HD gasoline engine; this also limits its range.

A variety of turrets can be mounted in place of the standard commander's station, including one with twin machineguns, one with one machinegun and three LRAC-F1 rocket launchers (which must be reloaded from the rear deck hatch), one with a single machinegun and one LRAC-F1 rocket launcher, two with autocannons and varying degrees of armor, and one with a breech-loading 81mm gun/mortar or 60mm gun/mortar. In these turreted versions, the rear machinegun is deleted.

APC-type variants include the M3/VPC command vehicle, which is fitted with one long-range radio which is data-capable, two medium-range radios, and two short-range radios. The M3/VPC, like most command vehicles, is equipped with a map board and storage for plotting supplies, office-type supplies, and maps. A hand-held image intensifier, thermal imager, and laser rangefinder is provided. This version omits the rear weapon mount. The M3/VTS ambulance has the equivalent of 15 personal medical kits, one doctor's medical kit, and an assortment of splints, bandages, cravats, and suchlike. It has oxygen administration gear and a small refrigerator for perishable medical supplies. It can carry up to four stretcher patients or two stretcher patients and six seated patients, plus a medic in the rear and the commander and driver.

The Buffalo

The Buffalo looks almost identical to the M3, but is longer and has a different engine, a 145-horsepower gasoline engine. The same turrets can be applied to the Buffalo. Command and ambulance variants of the Buffalo also exist. Many of the same countries which employ the M3 employ the Buffalo, though they don't necessarily replace the M3 in all cases.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
M3 (Basic)	$25,200	G, A	800 kg	6.1 tons	2+8	2	Headlights	Enclosed
M3 (Double-Gun Mount)	$27,775	G, A	800 kg	6.1 tons	2+8	2	Headlights	Enclosed
M3 (Twin MG Turret)	$23,432	G, A	700 kg	6.4 tons	2+8	4	Headlights	Enclosed
M3 (MG-3xRL Turret)	$77,457	G, A	600 kg	6.5 tons	2+6	4	Headlights	Enclosed
M3 (MG-1xRL Turret)	$49,302	G, A	700 kg	6.4 tons	2+6	4	Headlights	Enclosed
M3 (20mm Turret 1)	$26,143	G, A	500 kg	6.8 tons	2+6	4	Headlights	Enclosed
M3 (20mm Turret 2)	$26,695	G, A	500 kg	6.9 tons	2+6	4	Headlights	Enclosed
M3 (60mm	$53,647	G, A	500 kg	6.8 tons	2+6	4	Headlights	Enclosed

Mortar Turret)								
M3 (81mm Mortar Turret)	$58,938	G, A	500 kg	6.8 tons	2+6	4	Headlights	Enclosed
M3/VPC	$210,437	G, A	400 kg	6.4 tons	2+4	5	Headlights	Enclosed
M3/VTS	$28,980	G, A	400 kg	6.3 tons	*	5	Headlights	Enclosed
Buffalo	$26,993	G, A	900 kg	6.6 tons	2+10	4	Headlights	Enclosed
Buffalo (Double-Gun Mount)	$29,622	G, A	900 kg	6.6 tons	2+10	4	Headlights	Enclosed
Buffalo (Twin MG Turret)	$24,048	G, A	800 kg	6.9 tons	2+10	4	Headlights	Enclosed
Buffalo (MG-3xRL Turret)	$88,052	G, A	700 kg	7 tons	2+8	4	Headlights	Enclosed
Buffalo (MG-1xRL Turret)	$56,318	G, A	800 kg	6.9 tons	2+8	4	Headlights	Enclosed
Buffalo (20mm Turret 1)	$28,026	G, A	600 kg	7.3 tons	2+8	4	Headlights	Enclosed
Buffalo (20mm Turret 2)	$28,584	G, A	600 kg	7.4 tons	2+8	4	Headlights	Enclosed
Buffalo (60mm Mortar Turret)	$62,099	G, A	600 kg	7.3 tons	2+8	4	Headlights	Enclosed
Buffalo (81mm Mortar Turret)	$66,938	G, A	600 kg	7.3 tons	2+8	4	Headlights	Enclosed
Buffalo/VPS	$211,460	G, A	450 kg	6.9 tons	2+4	5	Headlights	Enclosed
Buffalo/VTS	$31,042	G, A	450 kg	6.9 tons	*	5	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
M3/Double-Gun Mount	128/64	29/15	165	58	Stnd	W(3)	HF3 HS3 HR2
M3 (Twin MG Turret)/(MG-1xRL Turret)	123/62	28/14	165	61	CiH	W(3)	TF2 TS2 TR2 HF3 HS3 HR2
M3 (MG-3xRL Turret)	122/62	28/14	165	62	CiH	W(3)	TF2 TS2 TR2 HF3 HS3 HR2
M3 (20mm Turret 1)	119/60	27/14	165	65	CiH	W(3)	TF2 TS2 TR2 HF3 HS3 HR2
M3 (20mm Turret 2)	118/59	27/14	165	66	CiH	W(3)	TF3 TS3 TR3 HF3 HS3 HR2
M3 (Mortar Turrets)	119/60	27/14	165	65	Trtd	W(3)	TF3 TS3 TR3 HF3 HS3 HR2
M3/VPC	123/62	28/14	165	61	Stnd	W(3)	HF3 HS3 HR2
M3/VTS	124/63	28/14	165	60	Stnd	W(3)	HF3 HS3 HR2
Buffalo/Double-Gun Mount	170/86	39/20	180	96	Stnd	W(3)	HF4 HS3 HR2
Buffalo (Twin MG Turret)/MG-1xRL Turret)	164/82	38/19	180	100	CiH	W(3)	TF2 TS2 TR2 HF4 HS3 HR2
Buffalo (MG-3xRL Turret)	162/82	38/19	180	102	CiH	W(3)	TF2 TS2 TR2 HF4 HS3 HR2
Buffalo (20mm Turret 1)	158/79	37/18	180	111	CiH	W(3)	TF2 TS2 TR2 HF4 HS3 HR2
Buffalo (20mm Turret 2)	155/78	36/18	180	112	CiH	W(3)	TF3 TS3 TR3 HF3 HS3 HR2
Buffalo (Mortar Turrets)	158/79	37/18	180	111	Trtd	W(3)	TF3 TS3 TR3 HF3 HS3 HR2
Buffalo/VPS/VTS	164/82	38/19	180	100	Stnd	W(3)	HF4 HS3 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
M3 (Basic)	None	None	M-2HB (C) or MAG (C), MAG (Rear)	600x.50 or 1200x7.62mm,

				600x7.62mm
M3 (Double-Gun Mount)	None	None	2xMAG (C), MAG (Rear)	2000x7.62mm
M3 (Twin MG Turret)	+1	Basic	2xMAG	2000x7.62mm
M3 (MG-3xRL Turret)	+1	Basic	MAG, 3xLRAC-F1 Rocket Launchers	1000x7.62mm, 12x89mm Rockets
M3 (MG-1xRL Turret)	+1	Basic	MAG, LRAC-F1 Launcher	1250x7.62mm, 9x89mm Rockets
M3 (20mm Turrets)	+1	Basic	20mm Giat M-621 Autocannon	760x20mm
M3 (60mm Mortar Turret)	+1	Basic	60mm Brandt Breech-Loading Mortar	43x60mm
M3 (81mm Mortar Turret)	+1	Basic	81mm Brandt Breech-Loading Mortar	32x81mm
M3/VPC	None	None	M-2HB (C) or MAG (C)	600x.50 or 1200x7.62mm
Buffalo	None	None	M-2HB (C) or MAG (C), MAG (Rear)	750x.50 or 1500x7.62mm, 750x7.62mm
Buffalo (Double-Gun Mount)	None	None	2xMAG (C), MAG (Rear)	2500x7.62mm
Buffalo (Twin MG Turret)	+1	Basic	2xMAG	2500x7.62mm
Buffalo (MG-3xRL Turret)	+1	Basic	MAG, 3xLRAC-F1 Rocket Launchers	1250x7.62mm, 15x89mm Rockets
Buffalo (MG-1xRL Turret)	+1	Basic	MAG, LRAC-F1 Launcher	1560x7.62mm, 11x89mm Rockets
Buffalo (20mm Turrets)	+1	Basic	20mm Giat M-621 Autocannon	950x20mm
Buffalo (60mm Mortar Turret)	+1	Basic	60mm Brandt Breech-Loading Mortar	54x60mm
Buffalo (81mm Mortar Turret)	+1	Basic	81mm Brandt Breech-Loading Mortar	40x81mm
Buffalo/VPC	None	None	M-2HB (C) or MAG (C)	750x.50 or 1200x7.62mm

*See Notes on Crew and Passenger Capacity.

Panhard VCR

Notes: The Panhard VCR (*Véhicule de Combat a Roues* or Wheeled Combat Vehicle) is a private venture, 6x6 or 4x4 APC developed by the Panhard Company for the export market. Other variants on the basic hull exist, including a mortar carrier, a Milan ATGM carrier, and a light support vehicle mounting a 20mm autocannon in an open (unturreted) mount. The vehicle is fully amphibious. In many respects, it is a larger version of the Panhard M3. The VCR is used by Argentina, Mexico, and the UAE; however, the largest user was pre-invasion Iraq, who had 400 VCRs of several configurations in service starting in 1979. Virtually all VCRs sold were the 6x6 versions. Some 1200 were built, making the VCR a great success for Panhard.

The VCR

The VCR does look very much like an enlarged M3, though most of the vehicle is much more squared-off than the M3 is. Armor is a bit heavier than the M3, and there is more room in the rear, about as much as in the Buffalo; the sides are somewhat sloped. On both sides of the troop compartment, towards the rear, are armored shutters much like those on the M3, which open just enough for the troops behind them to stand, look out, and fire weapons. The two doors on the rear have conventional firing ports. Like the M3, the basic, most common armament option was a basic weapons mount by a commander's cupola, sometimes surrounded by AV2 gun shields. The same sort of turrets can be mounted on a VCR as on an M3 (though the rocket launcher turrets are not used), but when these turrets are mounted, troop complement is reduced since the VCR in these configurations has both a commander's position and dedicated gunner. The VCR can also mount the Toucan autocannon turret, which is also used on other French APCs. The basic VCR APC is called the VCR/TT.

The driver is in the center front of the vehicle; he has three vision blocks to his front, the center of which can be replaced with a night vision block. The commander's cupola is a simple manually-rotating cupola which has no vision blocks. When a turret is mounted, the commander's hatch is to the right of the turret, with vision blocks to the front, right, and rear. Roof hatches are limited to a relatively small one at the rear of the troop compartment. The VCR is powered by a Peugeot PRV gasoline engine developing 155

horsepower. The transmission is automatic, with the driver having conventional controls and power-assisted steering. The vehicle is amphibious without preparation, propelled in the water by its wheels. The VCR has a 6x6 off-road suspension, but when used on road, the suspension can be switched to 6x4, with the center pair of wheels raising into the hull. Options include a winch with 30 meters of cable and a capacity of 6 tons, a collective NBC system, and air conditioning. There are a pair of smoke grenade launchers on the front fender on either side of the vehicle.

The Argentine VCR/TT Hydrojet version (they use no other form of the VCR other than the VCR/TT) replaces the center wheels with hydrojets for propulsion in the water, and is therefore faster when swimming than the standard VCR. It is also lighter than the standard VCR/TT. There are three more hatches on the roof of the troop compartment. It is otherwise the same as the standard VCR/TT, though the Argentines employ only the basic commander's weapon station. The Argentine version has 85% parts commonality with the 6x6 version.

Three versions require some more elaboration. The VCR/IS is an ambulance version of the VCR. In this role, the VCR is unarmed, and has a raised roofline. Firing ports are deleted and the vehicle is equipped with medical gear, such as a small refrigerator, respirator, defibrillator, the equivalent of a doctor's medical bag and 15 personal medical kits, and other items such as bandages, syringes, medicines, blood products, and splints. The VCR/IS can carry 3 stretchers and three seated patients, or 6 seated patients, plus a medic in the rear. The VCR/PC is a command post carrier version of the VCR that is also used as the chassis of an electronic warfare vehicle. The roofline is raised, similar to that of the ambulance. In the command post vehicle, the PC is equipped with no less than one long-range, two medium-range, and two small-range radios, a PC with wireless LAN, GPS, a map board, and drawers for various office supplies and a folding table and three chairs. A hand-held thermal imager, image intensifier, and laser rangefinder is provided. In the EW role, the VCR/PC is equipped with at least four high-power radios in various transmitting wavelengths (generally two long-range and two medium-range), a signal processor, a radio jammer with a four-band capability that is effective within 20 km, and a high-powered radar jammer (four-band-capable, but only one band at a time) that is effective within 5 km. The standard jammer makes radio use one level harder; the high-powered jammer makes radio use two levels harder. The smoke grenade launchers may alternatively be loaded with chaff-firing grenades. The command and EW versions have a ruggedized laptop computer and a standard commander's position with a weapon mount.

The VCR TT 2

Though developed for the export market in general, the only customer for the VCR/TT2 has as of yet been Algeria, who had to cut their order due to lack of funds and the imminent arrival on the export market of more capable vehicles. The hull is similar, but a bit larger than, the VCR; however, the automotive components share more in common with the ERC-90 F4 Sagaie 2. The armament normally a pintle-mounted heavy machinegun, but some have had a light twin machinegun turret fitted; other turrets applicable to the VCR can also be fitted. (These will not be covered here.) Versions with two types of engines were supplied; one has a pair of Peugeot XD 3T diesel engines developing a total of 196 horsepower and the other has a pair of Peugeot PRV gasoline engines developing 290 horsepower. Most of the particulars of suspension, driving, and automotive operations are the same as the 6x6 version of the VCR, though the suspension is beefed up a bit the ride is generally regarded as smoother. The VCR TT 2 is a quite a bit heavier than the VCR, with some of the extra weight going to heavier armor, though the VCR TT 2 is also longer than the VCR. The VCR TT2 has the hinged firing windows in the sides and firing ports in the rear doors, the same as on the VCR. Side doors are also found in the sides of the troop compartment, near the front of the compartment between the noticeable gap between the front pair of wheels and second pair of wheels. The VCR TT 2 has two large hatches on the rear deck instead of the small hatch of the VCR. The Algerian vehicles have had air conditioning installed, and a collective NBC system is an option as is a front mounted winch similar to that of the VCR and a commander's cupola with night vision devices or a night vision scope for the machinegun turret are options. A cluster of three smoke grenade launchers are found on each of the front fenders.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
VCR/TT	$29,841	G, A	1.1 tons	7.9 tons	2+10	6	Passive IR (D)	Enclosed
VCR/TT (M-2HB Turret)	$40,121	G, A	1 ton	8.3 tons	3+8	6	Passive IR (D)	Enclosed
VCR/TT (Twin MG Turret)	$34,958	G, A	1 ton	8.2 tons	3+8	6	Passive IR (D)	Enclosed
VCR/TT (20mm Turret 1)	$37,766	G, A	900 kg	8.6 tons	3+7	6	Passive IR (D)	Enclosed
VCR/TT (20mm Turret 2)	$38,324	G, A	900 kg	8.7 tons	3+7	6	Passive IR (D)	Enclosed
VCR/TT (Toucan Turret)	$68,169	G, A	900 kg	8.5 tons	3+6	6	Passive IR (D, G), Image Intensification (G)	Enclosed
VCR/TT	$61,651	G, A	900 kg	8.6 tons	3+6	6	Passive IR	Enclosed

(60mm Mortar Turret)							(D)	
VCR/TT (81mm Mortar Turret)	$66,777	G, A	900 kg	8.6 tons	3+6	6	Passive IR (D)	Enclosed
VCR/TT Hydrojet	$30,597	G, A	1.1 tons	7.7 tons	2+10	6	Passive IR (D)	Enclosed
VCR/IS	$34,318	G, A	550 kg	8.1 tons	*	7	Passive IR (D)	Enclosed
VCR/PC	$361,725	G, A	550 kg	8.2 tons	2+5	7	Passive IR (D)	Enclosed
VCR/PC-EW	$231,625	G, A	550 kg	8.6 tons	4	8	Passive IR (D)	Enclosed
VCR TT 2 (Diesel Engine)	$26,342	D, A	1 ton	9.6 tons	2+10	6	Passive IR (D)	Enclosed
VCR TT 2 (Gas Engine)	$26,992	D, A	900 kg	9.8 tons	2+10	6	Passive IR (D)	Enclosed
VCR TT 2 (Diesel w/M-2HB Turret)	$30,821	D, A	900 kg	10 tons	3+9	6	Passive IR (D)	Enclosed
VCR TT 2 (Gas w/M-2HB Turret)	$31,581	D, A	800 kg	10.2 tons	3+9	6	Passive IR (D)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
VCR/TT	158/79	37/18/1	242	104	Stnd	W(4)	HF4 HS3 HR2
VCR/TT (M-2HB Turret)	152/77	35/18/1	242	109	CiH	W(4)	TF2 TS2 TR2 HF4 HS3 HR3
VCR/TT (Twin MG Turret)	152/77	35/18/1	242	108	CiH	W(4)	TF2 TS2 TR2 HF4 HS3 HR2
VCR/TT (20mm Turret 1)	148/74	34/17/1	242	113	CiH	W(4)	TF2 TS2 TR2 HF4 HS3 HR2
VCR/TT (20mm Turret 2)	147/74	34/17/1	242	115	CiH	W(4)	TF3 TS3 TR3 HF4 HS3 HR3
VCR/TT (Toucan Turret)	149/75	34/17/1	242	112	CiH	W(4)	TF2 TS2 TR2 HF4 HS3 HR2
VCR/TT (Mortar Turrets)	148/74	34/17/1	242	113	Trtd	W(4)	TF3 TS3 TR3 HF4 HS3 HR3
VCR/TT Hydrojet	160/81	37/18/6	242	101	Stnd	W(3)	HF4 HS3 HR2
VCR/IS	154/77	36/18/1	242	104	Stnd	W(4)	HF4 HS3 HR2
VCR/PC	160/97	35/20/4	242	108	Stnd	W(4)	HF4 HS3 HR2
VCR/PC-EW	148/74	34/17/1	242	113	Stnd	W(4)	HF4 HS3 HR2
VCR TT 2 (Diesel)	164/82	38/19/3	225	100	Stnd	W(4)	HF5 HS4 HR3
VCR TT 2 (Gas)	221/112	51/26/4	225	204	Stnd	W(4)	HF5 HS4 HR3
VCR TT 2 (Diesel w/M-2HB Turret)	157/79	36/18/3	225	104	Stnd	W(4)	TF2 TS2 TR2 HF5 HS4 HR3
VCR TT 2 (Gas w/M-2HB Turret)	208/105	48/24/3	225	217	Stnd	W(4)	TF2 TS2 TR2 HF5 HS4 HR3

Vehicle	Fire Control	Stabilization	Armament	Ammunition
VCR/TT, VCR/PC, VCR/PC-EW/VCR TT 2	None	None	M-2HB (C), MAG (C)	750x.50 or 1500x7.62mm
VCR/TT & VCR TT 2 (M-2HB Turret)	+1	Basic	M-2HB, MAG	1260x.50, 1200x7.62mm

VCR/TT (Twin MG Turret)	+1	Basic	2xMAG	2500x7.62mm
VCR/TT (20mm Turrets)	+1	Basic	20mm Giat M-621 Autocannon	950x20mm
VCR/TT (Toucan Turret)	+1	Basic	20mm Giat M-693 Autocannon, MAG	760x20mm, 2000x7.62mm
VCR/TT (60mm Mortar Turret)	+1	Basic	60mm Brandt Breech-Loading Mortar	54x60mm
VCR/TT (81mm Mortar Turret)	+1	Basic	81mm Brandt Breech-Loading Mortar	40x81mm

*See Notes above for Crew and Passenger capacity.

VXB-170

Notes: This French APC was taken into service with the French Gendarmerie in 1973 and with the Senegalese and Gabonese police somewhat later. They supplement the VAB in those countries as a lighter alternative. The driver and commander sit at the front behind bullet-resistant windshields, which may be covered with armored screens. The first few were turretless, but most have a light cupola with weapons behind the driver's and commander's positions. There is a large door on each side of the hull for entry, and there is another door in the rear of the hull. The VXB-170 has a large roof hatch on the rear deck. The vehicle has a heater, an NBC system, and a winch with a capacity of 4.5 tons and 60 meters of cable.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
$38,080	D, A	975 kg	12.7 tons	3+8	4	Headlights	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
117/70	30/18	220	55	CiH	W(3)	HF4 HS3 HR3

Fire Control	Stabilization	Armament	Ammunition
+1	Basic	Mk-19, AAT-F1	350x40mm, 2000x7.62mm

Henschel TH-444

Notes: This German vehicle is basically an armored sports utility vehicle, being an armored version of the long-wheelbase version of the Mercedes-Benz 250 GD. This vehicle is related to the Egyptian G-320 (see Egyptian Wheeled Armored Personnel Carriers), and was used for much the same purpose, that of VIP transport, usually for CEOs and other high officers of European corporations. There is a door on each side of the cab, a door on the rear of the vehicle, and a hatch above the cab passenger seat, which may be equipped with a machinegun mount. The engine is a 112-horsepower diesel, coupled to a manual transmission. Armor is minimal, and no special attention is paid to top or floor armor. The driver and commander have a bullet-resistant windshield to the front and bullet-resistant windows to each side in their doors. The sides have two bullet-resistant windows each, and there is one in the rear door.

Twilight 2000 Notes: During the war, many of these vehicles were appropriated by local police and militia forces for use as personnel carriers and scout cars.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
$9,299	D, A	800 kg	3.7 tons	2+4	2	Headlights	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
262/64	60/15	110	51	Stnd	W(2)	HF2 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
None	None	MG-3 (C) or MAG (C)	500x7.62mm

Krauss-Maffei Wegmann Dingo APV

Notes: The Dingo APV (All Protected Vehicle) is an MRAP-type APC designed by the Germans to partially replace the M-113 in the German Army, and provide a safe and secure multipurpose vehicle for both military and peacekeeping operations. The Dingo grew out of Krauss-Maffei's APCV (All-Purpose Carrier Vehicle) project, which was based on an upgraded version of the Unimog U-100L light truck; the Dingo is much larger and based on the Unimog U-1550L medium truck. Besides Germany, the Dingo is used by Austria, Belgium, the Czech Republic, and Luxembourg; Israel was very interested early on in the Dingo, but the German government prohibited Krauss-Maffei Wegmann from selling the Dingo to Israel, citing its probable use against the Palestinians. The US for a time considered the Dingo 2 for use as a light MRAP, but ultimately chose the M-1117 instead. Some are also used by police forces worldwide. The Czech acquisition is currently stalled due to allegations of corruption among Czech government officials. Dingos are small and light enough to be easily air-transported (including sling-loaded from heavy-lift helicopters), and air-dropped. The Dingo 1 entered service in the late 1990s; the Dingo 2 entered service in the mid-2000s.

The Dingo 1

As stated, the Dingo is an MRAP (Mine Resistant Ambush Protected) vehicle, using a V-shaped bottom and special floor armor to protect the crew against mine and IED blasts, as well as special seats and mounts for interior gear. The initial version, now called the Dingo 1, is used only by Germany and is rapidly being replaced by the later Dingo 2 version. The Dingo 1 is based on the U-1550L chassis, and uses an OM-366A 155-horsepower diesel engine coupled to an automatic transmission. The suspension if beefed-up for better off-road performance and has run-flat tires. The Dingo 1 is a basic sort of APC, though it can be topped with a cupola with a light or heavy machinegun or grenade launcher or an RWS with the same weapons or an autocannon. The Dingo seats its troops down each side of the vehicle, with doors in the sides of the cab for the driver and commander and a door in the rear for the troops. There is also a door in each side of the vehicle. Other than the commander's roof hatch, there is another hatch on the rear deck. The front has a bullet-resistant windshield; it is one piece for the driver and commander. The driver and commander have bullet-resistant windows to their sides in their doors, and there is window in each of the side doors and in the rear door. The armor is largely of aluminum; the vehicle is built largely like a truck, with a truck-like front and sides which are flat on the bottom half and slanted on the upper sides. The MRAP hull, other than its armor value, allows the crew and interior components to take 25% less damage than a standard vehicle. The Dingo 1, however, is a small vehicle, not equal to a standard APC in size, and carries only a small infantry squad; it is perhaps better used as a patrol and reconnaissance vehicle than an APC. The Dingo 1, in Afghanistan, has survived running over a 7-kilogram land mine with no ill effects to the crew and passengers and only minor damage to the vehicle.

The Dingo 2

The Dingo 2 is based on the more robust Unimog U-5000 chassis, allowing for more armor and a beefed-up suspension to be fitted. The new chassis also slows the Dingo 2 to have two main variants: a short wheelbase version (similar in size to the Dingo 1) and a long wheelbase that carries more troops and cargo. The different-length, more robust chassis also slows the creation of several specialist vehicles which are both APC-type and non-APC-type. It also allows for the fitting of enhancements such as (in German service, for example, and provided for in the stats below) a GPS system, a collective NBC system, a rear-view camera system, antilock brakes, and better internal communications, as well as more radios in some roles. The standard Dingo 2 replaces the commander's weapon station with an RWS mounted on the center of the roof, armed with a light, medium, or heavy machinegun, automatic grenade launcher, or light autocannon. The Dingo 2's armor can be supplemented with additional appliqué armor, normally a spaced aluminum/steel composition made by IBD and part of the MEXAS system. The Dingo 2 is powered by stronger 237-

horsepower diesel engine. The suspension is heavy and on run-flat tires, with central tire pressure regulation.

Dingo 2 APC-Type Variants

Variants of the Dingo 2 are normally based on the LWB version, which offers more room for customization and equipment. Some variants include an armored ambulance, able to take two stretcher cases and three seated patients as well as a medic in the rear. It has, despite the limited space, a defibrillator, an oxygen administration kit, the equivalent of a doctor's medical bag and 10 personal medical kits, an assortment of splits, bandages, cravats, space blankets, and other such items.

A logistics version has large roof hatches as well as a widened rear hatch, and has rollers, lock-down points, and tie-down points for cargo. The vehicle has a 2-ton-capacity crane to assist in cargo handling, and removable ramps to off-load the same. It is essentially a stripped-down version of the LWB Dingo 2.

The BUR carries a GSR set and a small crew to operate it. The BUR's GSR has a range of 30 kilometers. Sensors also include a FLIR and image intensifier. A small computer helps tie together the data, and there is storage for intelligence gathered. The vehicle has a long-range and a short-range radio, and the long-range radio is data-capable.

There is an NBC reconnaissance version which has all the required gear for the detection and measurement of chemical, biological, and radiological contamination, including Geiger counters, dosimeters, chemical agent detection and identification equipment, and sampling equipment. This version is equipped with an NBC overpressure system with a collective NBC backup. A small computer helps tie together the detection and sampling data, and the vehicle has a data-capable long-range radio and a short-range radio.

Twilight 2000 Notes: The Dingo 1 exists in the Twilight 2000 timeline, but is a rare vehicle that exists only in German service. The Dingo 2 does not exist in the Twilight 2000 timeline.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Dingo 1	$18,664	D, A	1.1 tons	6.4 tons	2+5	2	Passive IR (C)	Shielded
Dingo 2 SWB	$48,135	D, A	1.2 tons	9.2 tons	3+4	4	Passive IR (C), Image Intensification (C)	Shielded
Dingo 2 SWB w/Appliqué	$49,136	D, A	1.1 tons	9.7 tons	3+4	4	Passive IR (C), Image Intensification (C)	Shielded
Dingo 2 LWB	$50,488	D, A	1.2 tons	11.9 tons	3+7	6	Passive IR (C), Image Intensification (C)	Shielded
Dingo 2 LWB w/Appliqué	$51,489	D, A	1.1 tons	12.4 tons	3+7	6		
Dingo 2 Ambulance	$58,062	D, A	600 kg	12.1 tons	****	7	Headlights	Shielded
Dingo 2 Ambulance w/Appliqué	$59,063	D, A	500 kg	12.6 tons	****	7	Headlights	Shielded
Dingo 2 Logistics	$39,135	D, A	1.5 tons	10.9 tons	2	5	Headlights	Shielded
Dingo 2 Logistics w/Appliqué	$40,136	D, A	1.4 tons	11.4 tons	2	5	Headlights	Shielded
Dingo 2 BUR	$232,482	D, A	600 kg	12 tons	3	7	Image Intensification (Mast), Thermal Imaging (Mast), GSR	Shielded
Dingo 2 BUR w/Appliqué	$233,483	D, A	500 kg	12.5 tons	3	9	Image Intensification (Mast), Thermal Imaging (Mast), GSR	Shielded
Dingo 2 NBC Recon	$388,082	D, A	500 kg	12.3 tons	3	9	Headlights	Shielded
Dingo 2 NBC	$389,083	D, A	400 kg	12.8 tons	3	9	Headlights	Shielded

Recon w/Appliqué

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Dingo 1	170/86	39/20	110	78	CiH	W(3)	TF2 TS2 TR2 HF4 HS3 HR2*
Dingo 2 SWB	174/88	41/20	245	116	CiH	W(3)	TF2 TS2 TR2 HF6 HS4 HR3**
Dingo 2 SWB w/Appliqué	165/84	39/19	245	122	CiH	W(3)	TF2 TS2 TR2 HF7Sp HS5Sp HR3***
Dingo 2 LWB	134/68	32/15	245	150	CiH	W(3)	TF2 TS2 TR2 HF6 HS4 HR3**
Dingo 2 LWB w/Appliqué	129/65	31/15	245	156	CiH	W(3)	TF2 TS2 TR2 HF7Sp HS5Sp HR3***
Dingo 2 Ambulance	131/67	31/15	245	153	Stnd	W(3)	TF2 TS2 TR2 HF6 HS4 HR3**
Dingo 2 Ambulance w/Appliqué	126/64	30/14	245	159	Stnd	W(3)	TF2 TS2 TR2 HF7Sp HS5Sp HR3***
Dingo 2 Logistics	146/74	35/16	245	138	Stnd	W(3)	TF2 TS2 TR2 HF6 HS4 HR3**
Dingo 2 Logistics w/Appliqué	139/71	33/16	245	144	Stnd	W(3)	TF2 TS2 TR2 HF7Sp HS5Sp HR3***
Dingo 2 BUR	133/67	32/15	245	152	Stnd	W(3)	TF2 TS2 TR2 HF6 HS4 HR3**
Dingo 2 BUR w/Appliqué	127/65	30/14	245	158	Stnd	W(3)	TF2 TS2 TR2 HF7Sp HS5Sp HR3***
Dingo 2 NBC Recon	130/66	31/15	245	155	Stnd	W(3)	TF2 TS2 TR2 HF6 HS4 HR3**
Dingo 2 NBC Recon w/Appliqué	125/63	30/14	245	162	Stnd	W(3)	TF2 TS2 TR2 HF7Sp HS5Sp HR3***

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Dingo 1	+1	Fair	MG-3 or MAG (C) or M-2HB (C) or HK GMG or Mk 19 (C), or 20mm Rh-202 autocannon	1000x7.62mm or 500x.50 or 150x40mm or 300x20mm
Dingo 2 APC	+1	Fair	MG-3 or MAG or M-2HB or HK GMG or Mk 19 or 20mm Rh-202 autocannon	1400x7.62mm or 700x.50 or 220x40mm or 430x20mm
Dingo 2 BUR/Logistics/NBC Recon	None	None	MG-3 or MAG (C)	1000x7.62mm

*The Dingo 1 has a floor AV of 4Sp in addition to being an MRAP hull.
**This version has a floor AV of 6Sp and a roof AV of 3 as well as being an MRAP hull.
***This version has a floor AV of 7Sp and a roof AV of 4 as well as being an MRAP hull.
****See Notes for Crew and passenger capacity.

Thyssen-Henschel Condor

Notes: The Condor was designed in the late 1970s to be the successor to the UR-416. It did not enjoy the success of the UR-416, however, as it was not enough of an improvement over the UR-416 for most users of the UR-416 or potential new users to accept it. The exception to this was Malaysia, who employed over 450 of them, where they acquired a reputation for vulnerability during combat use with the Malaysian Army in their operations with the UN force in Somalia in the 1990s; a few were even present during the “Black Hawk Down” incident, and one was lost to an RPG-7 round which not only killed the driver, but penetrated through to the engine compartment. The Uruguayans also used 64 of them, and the Turkish, Thais, Portuguese, Indonesians, and Kuwaitis each used less than 25 each; small amounts have also been sold to NGOs and some national or city police forces worldwide. Production continues today, though the Condor is now being built by Rheinmetall instead of Thyssen-Henschel.

That said, the Condor does have improved armor, speed and load carrying capability over the UR-416, and is also amphibious. The amount of ammunition normally carried is quite large for a vehicle of its size. The driver sits on the front left with bullet-resistant windows to the front and sides; these windows can be covered by armored shutters with vision slits in them to increase protection. The small turret has a single hatch for the gunner. The troops sit down the sides of the vehicle, and the infantry squad leader is behind the driver also facing the center. He has a pair of vision blocks to see out of the left side of the vehicle, but no firing port. There is a cluster of three smoke grenade launchers on each side of the turret (though some countries mount the smoke grenade launchers in banks of three on each side of the vehicle near the rear). The troop compartment has three firing ports in each side and two in the rear, as well as a hatch on the rear deck. There is a winch that can be led out the front or rear, with a capacity of 5 tons and 50 meters of cable. It is large for a 4x4 vehicle, but much of this is the high ground clearance which gives the Condor good performance

off-road and some extra resistance to mines and IEDs.

The engine of the Condor is Mercedes-Benz OM-352A 168-horsepower diesel which is to the right of the driver compartment. The driver has conventional controls, and a manual transmission. The turrets used are Thyssen-Henschel designs, except for the 20mm autocannon turret which is a British FVT-900 turret as used on some versions of the Stormer APC. The suspension is partially borrowed from some Panhard designs; as stated above, the suspension is high, and the tires are, as on most wheeled military vehicles, run-flat tires. The vehicle is propelled in the water by a propeller that can be moved 360 degrees. A trim vane must also be erected at the front for amphibious operations, and bilge pumps turned on; preparation for amphibious operations takes two minutes. Optional features include air conditioning, a collective NBC system, and a hatch for the driver which has a night vision block in it.

Twilight 2000 Notes: This armored personnel carrier was manufactured by Germany, but in the Twilight 2000 timeline was not actually used by that country until the Twilight War. Germany normally outfitted Condors as long-range scout vehicles, with the rear set up to carry extra gear, ammunition, rations, and radios.

Merc 2000 Notes: Light and inexpensive, the Condor is a popular APC for Third World countries in the Twilight 2000 timeline.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Twin MG Turret	$39,719	D, A	3 tons	12 tons	3+9	8	Passive IR (C)	Enclosed
.50/7.62 Turret	$42,934	D, A	3.2 tons	12.2 tons	3+9	8	Passive IR (C)	Enclosed
20mm Turret	$45,694	D, A	3.2 tons	12.7 tons	3+7	10	Passive IR (C)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Twin MG Turret	126/63	30/14/3	280	82	CiH	W(3)	TF3 TS3 TR2 HF5 HS3 HR2*
.50/7.62 Turret	124/62	29/14/3	280	84	CiH	W(3)	TF3 TS3 TR2 HF5 HS3 HR2*
20mm Turret	118/59	28/13/3	280	87	Trtd	W(3)	TF5 TS3 TR3 HF5 HS3 HR3*

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Twin MG Turret	+1	Fair	2xMG-3	3600x7.62mm
.50/7.62 Turret	+1	Fair	M-2HB, MG-3	1100x.50, 1800x7.62mm
20mm Turret	+1	Fair	20mm Oerlikon KAA, MG-3	440x20mm, 1800x7.62mm

*Floor armor is 3.

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Thyssen-Henschel Fuchs

Notes: This vehicle was not originally intended to be a simple armored personnel carrier; instead, the Fuchs was meant to be a base chassis for a variety of specialist vehicles. The Fuchs is therefore sometimes called a “retrofit platform,” since over 90 possible combinations are possible (32 of which have been built and gone into service). Variants of the basic chassis ranging from ambulances to command vehicles to combat engineer vehicles have been made; perhaps the most numerous variant is the NBC reconnaissance vehicle, such as the M-93 Fox, used by Germany, the US, Israel, Britain, Turkey, and Saudi Arabia.

The front hull has two overhead hatches, one for the driver and one for the commander with a weapon mount; alternately, the hatch in the center deck of the vehicle can be fitted with a weapon mount instead. Normal armament in German service is an MG-3, but the mounts are capable of taking any weapon able to be mounted on an NLT, NMT, or NHT; the US routinely uses the M-2HB on its M-93 Foxes, and the Germans have recently been, in Afghanistan, been mounting M-3M machineguns or HK GMG grenade launchers. Troops enter and exit through two large doors in the rear; there are two vision blocks in each side of the hull and one in the right rear door, but no firing ports are fitted. There are two more hatches on the rear deck, staggered from one another, and these normally also have weapon mounts. The commander and driver have hatches on the sides of the cab for entry and exit. The engine of the Fuchs is a powerful Mercedes-Benz OM-402A multifuel engine developing 320 horsepower. Transmission is automatic, and controls are power-assisted. Suspension is 6x6 off-road with run-flat tires. The Fuchs is amphibious, requiring the erection of a trim vane and the turning on of bilge pumps and propellers, requiring 2 minutes. A banks of four smoke grenade cluster is count near the front on the sides of the vehicle.

Basic APC versions can carry up to 14 troops, including the crew; the roof weapons are manned by those troops. They sit in seats slung from roof harnesses, to help absorb the shock of running over a mine or IED. However, as stated above, an APC is not normally the role of a Fuchs.

Some variants include one carrying the RASIT ground surveillance radar and other sensors on an extendible mast, to make a reconnaissance and surveillance vehicle. The RASIT vehicle has both a GSR and a mortar/artillery counterbattery radar set (with a range of 30km), and the sensor mast includes FLIR, day and night image intensification, a laser rangefinder, TV cameras (both day and LLTV), and recording equipment, along with extra radios (two long range with data capability, two medium-range, and one short-range), a ruggedized computer, and copious digital and analog storage capacity.

The command version has a BMS system with additional vision gear on the roof on an extendible mast, similar to the RASIT sensor mast above, but without the recording equipment. The vehicle has two long-range radios (one of which is data-capable), two medium-range, and two-short-range radios, a ruggedized computer, and the usual LCD screens, monitoring equipment for the vehicle and enemy and friendly units, and space for maps, office and plotting-type supplies, and an independent map board. The vehicle has a small table and folding chairs for the command crew.

The communications vehicle is normally used in a command post unit at battalion level and above. The vehicle has four long-range and two medium-range vehicles; one long-range radio is data-capable (for supplying data to the command post). It has a

switchboard able to handle up 30 field telephones, and itself carries 20 field telephones and 200 meters of commo wire. It also carries a variety of spare parts for radios and communications equipment, and has a SATCOM terminal. The vehicle has a computer which is used to coordinate the communications functions, and is not a fully-functioning computer. The communications version normally tows a trailer with more communications gear such as parts and hoards more commo wire, as well as spare radios and communications gear for the command post. There are several different versions of this vehicle, with somewhat different equipment. The command and communications versions are both collectively referred to as the FüFü.

The NBC reconnaissance version, designated the Spürfuchs by the Germans, is perhaps the most common version of the Fuchs in use in the world. Perhaps the best known example is the US M-93 Fox (which will be covered on the US Wheeled APCs page), but in general, the Spürfuchs includes sensors to detect a wide variety of chemical, biological, and radiological agents, including the ability to take samples not only from the air, but from surfaces in the area through two extendible arms. The vehicle includes an onboard computer to assist in chemical analysis; this computer is restricted to analyzing and detecting chemical agents and relaying the information to other units. A data-capable long-range radio, medium-range radio, and short-range radio has been mounted. The radiological sensors include a basic Geiger counter, a dosimeter, and a radiation analysis mechanism (types and amounts of various rays such as alpha, beta, and gamma radiation). The Spürfuchs is radiation-hardened and has an NBC overpressure system with a collective NBC backup. At the rear, a set of two 40-flag dispensers are mounted to mark contaminated areas; these operate remotely.

The Eloka is an electronic warfare vehicle with equipment to detect and jam radar and radio transmissions. Jamming range for radar is 15 kilometers and for radio 30 kilometers. A total of four bands of radar and six bands of radio can be jammed, but only two bands of radar and three of radio can be jammed at once. Radar detection range is the same as its jamming range – 15 kilometers. Radio detection range is 50 kilometers. The EW version can be distinguished by the many unusual aerials on the roof. A small computer helps tie these functions together, but it is a simple computer which does not have the functions of a laptop; it simply gives the crew the required information. The HELAS is a more powerful EW/reconnaissance vehicle which can jam up to six bands of radar and radio at once, and includes radar and radio detection equipment with a range of 50 km each. The HELAS can also detect the electronic emissions of a computer at short range (15 km), and attempt to hack into such computers (Formidable: Electronics task). The HELAS also has a GSR set as well as a sensor mast similar to that of the RASIT above. The HELAS necessarily has powerful computers with large amounts of storage and processing power. It has limited BMS capability, able to keep track of friendly and enemy positions and intelligence information.

The Fuchs-San is a standard Transportpanzer 1 Fuchs multipurpose vehicle outfitted for use as an ambulance, and used by many of the same countries that use the Fuchs for other purposes. In this role, the Fuchs has brackets to carry up to 4 stretcher-borne patients and four seated patients or 10 seated patients as well as a medic, and medical equipment such as a refrigerator, oxygen administration set, a defibrillator, enough refills of the personal medical kit for a platoon, a doctor's medical bag, and equipment such as bandages and splints.

These specialist versions of the Fuchs typically have APUs with a capacity of 5-15kW. All of these vehicles can be fitted with an appliqué armor package provided by MEXAS, which consists of spaced armor panels of steel and aluminum. The appliqué armor kit normally includes power assist for the doors and hatches, as it makes them heavier.

Twilight 2000 Notes: As the Twilight War went on, more and more of these vehicles were pressed into service as APCs or logistics carriers, where their roomy interiors proved very adept at transporting lots of troops or equipment. There were at least 32 variants of the Fuchs before the war, and the highly adaptable chassis spawned more *ad hoc* variants during the Twilight War.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Fuchs (Basic)	$32,769	D, G, A	6 tons	18.3 tons	2+12	12	Headlights	Shielded
Fuchs (Basic) w/Appliqué	$41,351	D, G, A	5.6 tons	19.7 tons	2+12	12	Headlights	Shielded
RASIT	$614,392	D, G, A	2.8 tons	19.7 tons	5	14	GSR, Mortar/Artillery Radar, Thermal Imaging (Mast), 4xImage Intensification (Mast)	Shielded
RASIT w/Appliqué	$622,974	D, G, A	2.4 tons	21.1 tons	5	14	GSR, Mortar/Artillery Radar, Thermal Imaging (Mast), 4xImage Intensification (Mast)	Shielded

FüFü Command	$328,001	D, G, A	2.5 tons	19.9 tons	2+5	14	Thermal Imaging (Mast), 4xImage Intensification (Mast)	Shielded
FüFü Command w/Appliqué	$336,583	D, G, A	2.1 tons	21.3 tons	2+5	14	Thermal Imaging (Mast), 4xImage Intensification (Mast)	Shielded
FüFü Communications	$116,148	D, G, A	2.8 tons	19.6 tons	5	14	Headlights	Shielded
FüFü Communications w/Appliqué	$124,730	D, G, A	2.4 tons	21 tons	5	14	Headlights	Shielded
Spürfuchs	$432,641	D, G, A	1.3 tons	18.7 tons	3	14	Headlights	Shielded
Spürfuchs w/Appliqué	$441,223	D, G, A	950 kg	20.1 tons	3	14	Headlights	Shielded
Eloka	$705,230	D, G, A	2.9 tons	18.7 tons	5	14	Headlights	Shielded
Eloka w/Appliqué	$713,812	D, G, A	2.5 tons	20.1 tons	5	14	Headlights	Shielded
HELAS	$1,164,580	D, G, A	2.8 tons	18.9 tons	5	15	Headlights	Shielded
HELAS w/Appliqué	$1,173,162	D, G, A	2.4 tons	20.3 tons	5	15	Headlights	Shielded
Fuchs-San	$41,435	D, G, A	2.7 tons	19 tons	**	13	Headlights	Shielded
Fuchs-San w/Appliqué	$50,017	D, G, A	2.3 tons	20.4 tons	**	13	Headlights	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Fuchs (Basic)	151/76	35/18/4	390	170	Stnd	W(4)	HF8 HS5 HR3
Fuchs (Basic) w/Appliqué	140/71	33/17/3	390	184	Stnd	W(4)	HF12Sp HS6Sp HR4*
RASIT	140/71	33/17/3	390	184	Stnd	W(4)	HF8 HS5 HR3
RASIT w/Appliqué	130/66	31/16/3	390	197	Stnd	W(4)	HF12Sp HS6Sp HR4*
FüFü Command	139/70	32/17/3	390	177	Stnd	W(4)	HF8 HS5 HR3
FüFü Command w/Appliqué	130/65	30/15/3	390	197	Stnd	W(4)	HF12Sp HS6Sp HR4*
FüFü Communications	140/71	32/17/3	390	182	Stnd	W(4)	HF8 HS5 HR3
FüFü Communications w/Appliqué	131/66	30/16/3	390	196	Stnd	W(4)	HF12Sp HS6Sp HR4*
Spürfuchs/Eloka	148/74	34/18/3	390	173	Stnd	W(4)	HF8 HS5 HR3
Spürfuchs w/Appliqué/Eloka w/Appliqué	137/69	32/16/3	390	187	Stnd	W(4)	HF12Sp HS6Sp HR4*
HELAS	146/74	34/18/3	390	175	Stnd	W(4)	HF8 HS5 HR3
HELAS w/Appliqué	136/68	32/16/3	390	189	Stnd	W(4)	HF12Sp HS6Sp HR4*
Fuchs-San	145/73	34/17/3	390	177	Stnd	W(4)	HF8 HS5 HR3
Fuchs-San w/Appliqué	136/68	32/16/3	390	189	Stnd	W(4)	HF12Sp HS6Sp HR4*

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Fuchs (except Fuchs-San)	None	None	MG-3, MAG, M-2HB, M-3M, or HK GMG/Mk 19 AGL (C,	Up to 3000x7.62mm, 1800x.50, or 575x40mm, or ratio

	2xRear)	combination of those

*Roof AV is 3; Floor AV is 4Sp.
**See Notes above for Crew and passenger capacity.

Thyssen Henschel TM-170

Notes: This light APC was produced as a successor to the UR-416 in some roles, and looks like what it is: a medium Unimog truck chassis given an armored body. The TM-170, designated the SW-4 in German service, was selected by the German Border Guards in 1982; other than that use, the only known export customers were Kuwait, who acquired the TM-170 in 1993, and Macedonia, who bought some in 1999-2000 and called the Hermelin. German TM-170s were passed on to the German Army at large some years ago. The TM-170 was in turn replaced by the Condor. Military versions of the TM-170 are carry the company designation of TM-170 BGS.

As stated, the TM-170 is basically an armored truck, with the engine in front, driver and commander to its immediate rear, and a rear troop compartment. The troop compartment has one small and one large roof hatch, with the smaller hatch in the center and having a machinegun mount. Many also have a small turret in the center of the troop compartment, armed with light or medium weapons. Turrets are one-man. Police versions typically have a small turret with a small single-shot grenade launcher loaded from the inside of the turret. The troop compartment also has a door in each side of the hull, and double hatch in the rear which opens up and down. Most are APCs, with some communications vehicle versions and armored workshop versions. Some, though not all, have two firing ports in each side and two in the rear. The troops sit down the sides of the vehicle. Four smoke grenade launchers are found on each side of the vehicle near the front of the hull; alternatively, there is one cluster of four at the rear of the turret or commander's cupola.

The driver and commander are in the front, in a cab behind a bullet-resistant windshield, with side doors which have bullet-resistant windows in them. Armored shutters can be lowered to increase protection, with the commander and driver using three vision blocks to the front during this time. The driver and commander also have roof hatches, with the commander's hatch having a weapon mount on the standard APC version. The engine is front-mounted, and is a Mercedes-Benz OM-366 turbocharged diesel developing 240 horsepower, coupled to an automatic transmission which is power-boosted along with power steering and brakes. The suspension is 4x4, switchable to 4x2 for road use, and is a cross-country suspension with a beefed-up suspension and run-flat tires. The TM-170 is fully amphibious with preparation (two minutes), and can ford to a depth of 1.3 meters without preparation.

Police versions are typically unarmed or have a light grenade launcher cupola, with a grenade launcher able to launch irritant gas or smoke grenades. They have an air horn and a loudspeaker/PA system, as well as a light dozer blade at the front for clearing obstacles (it is not strong enough to dig fighting positions or plow mines, but allows for an increase of armor of 2Sp if hit, which is a 25% chance if hit from the front). A surveillance cupola is also available, with recording devices, shotgun microphones, and LLTV, as well as recording equipment inside of the vehicle; this turret is unarmed or has only a grenade launcher as per the Police version (this is reflected in the stats below). Police versions can be fitted with a water cannon fed by a 1000-liter water tank or an irritant gas tank. The water/gas tank has a range of 50 meters. A further version, the TM-170 Hardliner, is a low-cost alternative to the TM-170, less armored, with the commander's station having a simple pintle weapons mount. The Hardliner Patrol has an open rear section with a fully-enclosed cab and is typically unarmed. The Hardliner uses a 214-horsepower engine and has a smaller fuel tank at 170 liters. Police versions and Hardliners are not amphibious.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
TM-170 BGS Basic APC	$23,074	D, A	1.5 tons	11.6 tons	2+10	6	Headlights	Enclosed
TM-170 BGS Twin MG Turret	$32,727	D, A	1.4 tons	11.8 tons	3+8	6	Passive IR (G)	Enclosed
TM-170 BGS .50/7.62 Turret	$35,434	D, A	1.3 tons	12 tons	3+8	6	Passive IR (G)	Enclosed
TM-170 BGS Autocannon Turret	$40,468	D, A	1.2 tons	12.5 tons	3+8	10	Passive IR (G)	Enclosed
TM-170 Police	$26,975	D, A	1.6 tons	11.6 tons	3+8	6	Headlights	Enclosed
TM-170 Surveillance	$34,183	D, A	700 kg	11.8 tons	3+4	7	Image Intensification (Turret/G)	Enclosed
TM-170 Hardliner	$22,524	D, A	1.4 tons	11.6 tons	2+10	6	Headlights	Enclosed
TM-170 Hardliner Patrol	$12,755	D, A	1.5 tons	11.3 tons	2+10	6	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
TM-170 BGS Basic APC	168/85	39/20/4	200	125	Stnd	W(3)	HF6 HS3 HR2
TM-170 BGS Twin MG Turret	165/83	38/19/3	200	127	CiH	W(3)	TF2 TS2 TR2 HF6 HS3 HR2
TM-170 BGS	163/82	38/19/3	200	129	CiH	W(3)	TF2 TS2 TR2 HF6 HS3 HR2

.50/7.62 Turret							
TM-170 BGS Autocannon Turret	159/80	37/18/3	200	135	Trtd	W(3)	TF2 TS2 TR2 HF6 HS3 HR2
TM-170 Police	168/85	39/20	200	125	CiH	W(3)	TF2 TS2 TR2 HF6 HS3 HR2
TM-170 Surveillance	165/83	38/19	200	127	CiH	W(3)	TF2 TS2 TR2 HF6 HS3 HR2
TM-170 Hardliner	154/78	36/18	170	111	Stnd	W(3)	HF5 HS3 HR2
TM-170 Hardliner Patrol	157/79	36/18	170	108	Stnd	W(3)	HF5 HS3 HR2*

Vehicle	Fire Control	Stabilization	Armament	Ammunition
TM-170 BGS Basic APC/Hardliner	None	None	M-2HB (C) or MG-3 (C)	1000x.50 or 2000x7.62mm
TM-170 BGS Twin MG Turret	+1	Fair	2xMG-3	2000x7.62mm
TM-170 BGS .50/7.62 Turret	+1	Fair	M-2HB, MG-3	500x.50, 1000x7.62mm
TM-170 BGS Autocannon Turret	+1	Fair	20mm Rh-202 Autocannon, MG-3	400x20mm, 1000x7.62mm
TM-170 Police/Surveillance	None	None	37mm, 38mm, or 40mm Irritant Gas Grenade Launcher	375x37mm, 38mm, or 40mm

*This vehicle has no top for its rear troop section.

Thyssen-Henschel UR-416

Notes: Based on the chassis of a Unimog cross-country vehicle fitted with an armored body, the UR-416 is a light APC used mostly by police forces and border guards in the countries that use them. The UR-416 is or has been used by some 20 countries, on every continent except North America. They were built under license by several countries, and without license by the former Rhodesia; one is even used by Lebanon, who captured it from the PLO, who in turn are not licensed builders of the UR-416. Production began in 1969, and the UR-416 was produced mostly for export. Many countries who use the UR-416 call it the Pig or some variation of it, at least informally. The UR-416 is largely an APC, but can also be used in a variety of other roles. About 1030 were built, with over 1000 of them being exported or license-produced. They are not particularly well-protected or good APCs, but are cheap and easy to build and maintain.

The UR-416 is a lumpish, squat, square-bodied vehicle with moderately-sloped frontal and side armor. The driver is in the front left of the vehicle behind a vision port that has an armored shutter. To his side is a window, also with an armored shutter. To the driver's right is a commander's station, also with armored shutters and vision ports. The commander has a roof hatch with a weapons mount, or light turret. (Most are armed only with light or medium machineguns.) Troop access is by a door on either side of the vehicle (and one in the rear), and there are two roof hatches. There are four vision blocks on each side of the vehicle and two in the rear, along with two firing ports in each side and two in the rear, but these are merely holes in the hull with armored shutters. The doors are clamshell-type doors, with the bottom half having small stairs. The roof hatches also have firing ports and can be used as armored gun shields when raised. The troops are seated three down each side and two at the rear facing the rear. In the front of the vehicle is a winch with a 5-ton capacity and 40 meters of cable.

The engine used in a Mercedes-Benz OM-352 120-horsepower diesel engine, with manual transmission and power steering and brakes. The suspension has decent cross-country capabilities, with a good ground clearance. The drive is 4x4, switchable to 4x2 for road use, with the rear wheels becoming the drive wheels. The UR-416 generally has a pintle-mounted machinegun at the commander's hatch, but sometimes this is replaced by an automatic grenade launcher or a small turret fitted with a 20mm autocannon, M-2HB, or twin light/medium machineguns.

The unlicensed Rhodesian copies of the UR-416 were built after a controversy about how they got the plans in the first place. Zimbabwe still used them until recently. The first ones were direct copies of the UR-416; they were the ones that started the "Pig" appellation. The next versions of Rhodesian UR-416s differ greatly, having a raised roofline and having no roof. Over the commander's station is a pintle mount for a Hispano-Suiza Mk 5 (HS-404) 20mm autocannon, scavenged from old Vampire jet fighters. On each side was a MAG machinegun on a pintle mount; at the rear was an M-2HB. The vehicles were not particularly protected against mines or IEDs and were eventually mostly replaced with MRAP-type vehicles of South African origin. These Rhodesian versions typically carried less troops and more ammunition.

PLO versions were sometimes seen with mounts for AT-3 or Entac ATGMs on the roof, though they were most often equipped with additional machineguns by the roof hatches.

Salvadoran UR-416s are normally equipped with wrap-around mesh armor, similar to a chain-link fence, which stands off from the vehicle's sides and front. This is an ad hoc form of spaced armor which is light and easy to make and maintain. Unlike standard spaced armor, it stops only 1d6 damage instead of 2d6 from HE-type rounds. In addition to the commander's weapon, Salvadoran UR-416s have weapon mounts by their roof hatches, which typically have an M-2HB by the center hatch and an M-1919A4 converted

to 7.62mm NATO at the rear hatch. The commander's weapon is normally an M-2HB as well. These mounts have AV2 gun shields to the front of the weapon.

Police (Internal Security) versions are equipped with an obstacle-clearing blade at the front of the vehicle. This blade can push something like a car or roadblock out of the way, but is not strong enough to use as a mine plow or dig fighting positions. It gives the UR-416 an increase in AV to the front of the vehicle of 2Sp (25% chance to hit it). The Internal Security version has a rotating cupola where the center roof hatch normally is that has a weapon mount for a standard version; the cupola has a single vision block to the front and rear, as well as a rotating periscope. A second weapon mount on the cupola has an irritant gas nozzle, fed by a 500-liter internal tank. The Internal Security version has double rows of vision blocks on each side instead of single vision blocks. Passenger capacity is reduced somewhat by the irritant gas tank.

Twilight 2000 Notes: During the Twilight War, large numbers of these vehicles were pressed into service as mainstream APCs due to losses among vehicles of other types. At least 17 countries had the UR-416 in service at the time of the Twilight War.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Basic APC	$15,198	D, A	800 kg	7.6 tons	2+8	6	Headlights	Enclosed
Twin MG Turret	$27,925	D, A	800 kg	7.8 tons	2+8	6	Passive IR (C)	Enclosed
M-2HB Turret	$26,366	D, A	800 kg	7.8 tons	2+8	6	Passive IR (C)	Enclosed
Autocannon Turret	$31,311	D, A	700 kg	8.1 tons	2+8	6	Passive IR (C)	Enclosed
Rhodesian UR-416	$46,954	D, A	800 kg	7.4 tons	2+6	4	Headlights	Enclosed
Salvadoran UR-416	$35,415	D, A	700 kg	7.8 tons	2+8	6	Headlights	Enclosed
Internal Security	$53,172	D, A	650 kg	7.9 tons	2+7	6	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Basic APC	133/67	31/16	150	59	Stnd	W(3)	HF4 HS3 HR2
Twin MG Turret/M-2HB Turret	131/66	31/15	150	61	CiH	W(3)	TF2 TS2 TR2 HF4 HS3 HR2
Autocannon Turret	125/63	29/15	150	63	CiH	W(3)	TF2 TS2 TR2 HF4 HS3 HR2
Rhodesian UR-416	135/68	31/17	150	57	Stnd	W(3)	HF4 HS3 HR2
Salvadoran UR-416	131/66	31/15	150	61	Stnd	W(3)	HF4Sp HS3Sp HR2*
Internal Security	128/64	30/15	150	61	Stnd	W(3)	HF4 HS3 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Basic APC	None	None	MG-3 or M-2HB (C)	1000x7.62mm or 600x.50
Twin MG Turret	+1	Fair	2xMG-3 (C)	1000x7.62mm
M-2HB Turret	+1	Fair	M-2HB (C)	600x.50
Autocannon Turret	+1	Fair	20mm Rh-202 Autocannon (C)	450x20mm
Rhodesian UR-416	None	None	20mm HS-404 Autocannon (C), MAG (Right, Left), M-2HB (R)	500x20mm, 2000x7.62mm, 1000x.50
Salvadoran UR-416	None	None	M-2HB (C), M-2HB, MAG (Rear)	1200x.50, 2000x7.62mm
Internal Security	None	None	MG-3, Irritant Gas Dispenser	1000x7.62mm, 500 Liters Irritant Gas

*This is not standard spaced armor; see above.

Armadillo

Notes: In the late 1970s, Guatemala was unable to obtain new armored vehicles from the US due to an embargo, so they decided to develop their own APC/Reconnaissance vehicle, the Armadillo. The commander and driver sit at the front of the vehicle, with windows to their front and side and a twin hatch over their position. The troop compartment is in the center, and there are three firing ports and one door on each side, as well hatches on the roof. On most versions of the Armadillo, there is a cupola with an M-2HB on the roof over the front of the troop compartment and an M-60 machinegun to the rear of the troop compartment; but some have a one-man manually operated turret with an M-2HB and M-60 machinegun. Note that the floor of this vehicle is AV 3.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
$42,151	D, A	3.2 tons	10 tons	3+13	4	Headlights	Open

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
253/152	50/30	454	111	CiH	W(2)	TF1 or 2 TS 1 or 2 TR 1 or 2 HF4 HS3 HR2

Fire Control	Stabilization	Armament	Ammunition
None	None	M-2HB, M-60E2	500x.50, 1500x7.62mm

PSZH-IV

Notes: This is an APC version of the OT-65 FUG listed in the *Twilight 2000 Version 2.2* rules (the Hungarian designation of which is the PSZH). The fuselage is topped with a turret mounting a KPV and PKT machinegun, and there is very cramped space in the rear for 6 infantrymen. The position is so cramped that fire through the two firing ports on each side of the hull and in the rear doors are at -1, and dismounting takes an additional phase if more than 4 passengers are in the vehicle. The turret is one man and does not have a hatch in the roof.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
$48,577	D, A	935 kg	7.6 tons	3+6	3	Passive IR	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
122/73	30/18/3	200	36	CiH	W(2)	TF3 TS3 TR3 HF4 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
None	None	KPV, PKT	500x14.5mm, 1250x7.62mm

Rakshak Gypsy

Notes: This Indian vehicle is similar in concept to the Egyptian G-320 and German TH-444, being an armored version of an SUV, in this case the locally-produced Maruti MPFI Gypsy King, with a more powerful engine than the standard Gypsy King. The vehicle is lightly armored, designed to provide protection against 7.62 NATO, 7.62 Nagant, and 7.62 Kalashnikov rounds fired at point-blank range. The basic body has been fitted with a steel armor kit known to the Indians as Kackal; the windows are bullet-resistant to the same degree as the body, and the passenger compartment has two firing ports on either side of the vehicle. These firing ports are simply holes in the body covered by an armored shutter, so they can take any weapon that can fit out the ports. There are doors on either side of the cab, and two large doors in the rear of the hull, and each of these doors also has a firing port. This vehicle is used only by the Indians, more normally as a scout vehicle than an assault carrier, though it is also used as a VIP transport and as a vehicle for certain high-ranking officers. Some of these vehicles have more luxury appointments than standard Rahshak Gypsies. The engine is an 80-horsepower G-13BB gasoline engine; the transmission is manual, but the Rakshak Gypsy has power steering and power brakes.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
$2,808	G, A	600 kg	4.4 tons	2+4	2	Headlights	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
179/44	41/10	150	48	Stnd	W(2)	HF2 HS2 HR2

ARTEC Boxer

Notes: The Boxer was designed by ARTEC GmbH, a consortium of Krauss-Maffei Wegmann and Rheinmetall of Germany and Stork PWV of the Netherlands. Originally, Giat of France was also involved, but they left early in the design process. The Germans intend to have a force of 600 Boxers, martially replacing M-113-based vehicles and Fuchs-based vehicles. The Dutch are looking for a force of 400 Boxers, to replace M-113-based vehicles and the YPR-765. The Boxer is also being closely considered for the British FRES (Furture Rapid Effects System) requirement. The main strike against the Boxer, so far, is the fact that design and production timeframes have slipped considerably; production was to commence in 2004, but production did not start until September of 2009, and only LRIP (Low-Rate Initial Production) has taken place so far. In addition, the Boxer suffers from repeated and high cost overruns. Other strikes against the Boxer include its high weight (about 10 tons more than comparable vehicles), though the heavy armor and sheer amount of advanced subsystems are largely involved in this. The Boxer, also known as the MRAV (Multi-Role Armored Vehicle), since it is a modular system designed to be adaptable to a number of roles. (Only APC-type versions will be covered here.)

The Boxer has a large, long boxy chassis with a sharply-raked glacis and moderately sloped sides. The driver is in the front left, while the commander is in the front right; the vehicle also has a dedicated gunner's position. The driver's position and commander's position are both surrounded by vision blocks, with the center in both cases being capable being removed and replaced with night vision blocks. The commander also has a downlinked camera with advanced day and night vision capability. They both have hatches above their position, and these may be opened completely or locked partially open to give them observation to the outside. The driver has conventional driver controls, and they are connected to the mechanics of the vehicle by redundant control systems and linkages. The driver has power steering and brakes, and these too have redundant systems. The commander can also drive the vehicle with reduced-size controls if necessary, and take over the gunner's weapons if necessary. His observation devices also give the Boxer a hunter/killer capability.

The gunner uses an RWS armed with an HK GMG automatic grenade launcher or an M-3M (a high ROF version of the M-2HB more normally found as a door gun on aircraft) machinegun. (Other armament and turrets are being considered.) He has advanced day and night vision devices as well as excellent fire control, and some conventional vision blocks. The gunner actually sits inside the armor envelope of the vehicle, with only the RWS projecting above the vehicle, and the gunner's head being inside the RWS only if his downlinked sights are damaged. The boxer has a bank of four smoke grenade launchers on each side of the upper hull behind the driver's and commander's positions.

The troop compartment in the rear carries a somewhat small troop squad, and it has been criticized for a lack of firing ports. However, a lack of firing ports seem to be the wave right now, as they compromise armor integrity and are useless is appliqué armor is installed. Armor protection is better than most vehicles of its class, and MEXAS appliqué armor panels can be installed to further increase protection. The troops have an NBC overpressure system with a collective NBC system backup. Most controls and systems are redundant, and the backups can keep the vehicle functioning even when damaged. The troops have hatches on the roof of their compartment, and doors in the rear face.

The Boxer has a Battlefield Management System (BMS), allowing it to keep track of enemy and friendly positions, battlefield reconnaissance, and vehicle state, as well as giving it a GPS navigation system with an inertial navigation backup. Each crew member has monitors giving them only the information they need – the driver has monitors relating to navigation and the mechanical state of the vehicle. The gunner's monitors allow his to keep track of his weapons and observation devices as well as ammunition supply and presence of friendly units that may be in the line of fire. The commander has access of the full suite of the BMS, and can send and receive orders from superior and subordinate units. The commander's BMS also gives him full control over the vehicle's radios, while the other crewmembers have partial control over the short-range radio. The infantry squad leader has a monitor as well, giving him the state of the battle such as friendly and enemy positions and the radios, as well as allowing him to input ammunition carried by his troops.

Power for the Boxer consists of an MTU 199 TE-20 turbocharged diesel with an output of 791 horsepower and coupled to an automatic transmission with a manual transmission backup. The suspension is of the off-round type, 8x8 and with independent front and rear steering to decrease turning radius. Tires are run-flat. The armor is modular and can be changed or supplemented by heavier armor or more advanced armor, and includes composite armor for the front and sides and extra roof and floor armor as well as Kevlar anti-spall liners. The armor is relatively light in weight for its protection level, but contributes to the vehicle's high weight. The crew and troops have seats which isolate the seats from ground blasts, and reduce damage to the crew and troops by 25% when a mine, IED, or other explosives explodes underneath or near the vehicle. The Boxer incorporates thermal, radar, and acoustic suppression technology, reducing observation with such devices by -3 and allowing the Boxer to "sneak up" on enemy positions (reduce the chances of hearing the Boxer at 50 meters or more by -3).

A command version of the Boxer differs externally very little from the APC Boxer (except for more radio antennas), but internally has a higher order of BMS and two long-range, two medium-range, and two short-range radios, with both long-range radios being data capable. The computer, rather than being a ruggedized laptop, is built into the vehicle, and has capacious hard-drive storage. (Solid-state drives are being considered.) The internal systems fully integrate the BMS components, the ability to generate and gather intelligence information, the navigation system, and the vehicle's observations devices. The observation devices can be controlled from the command suite, as can turret traverse (for use of those observation systems; the command suite does not have control over the weapons). Conventional map storage as well as items such as grease pencils, notepads and suchlike are provided, but the primary mapping system is intended to be the BMS. The command version also has an additional laser rangefinder and laser designator in the RWS. The Boxer Command has a 10kW APU to operate the electronics when the engine is off. Fold-out bench

tables and chairs are provided.

The modular nature of the Boxer means that the APC can be turned into a command version (or any other version) in 2-5 hours, depending on the type it is being converted to and the availability of components. Mixes of components are of a limited nature only; the modules are intended to operate independently of the chassis. The modular nature also simplifies maintenance and repair, down to damage of armor. Future sub-types are planned, including an armored ambulance (details not released so far, and not covered here).

Twilight 2000 Notes: The Boxer is not available in the Twilight 2000 timeline.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Boxer APC	$604,079	D, G, AvG, A	2 tons	33 tons	3+8	27	Passive IR (D, G, C), Image Intensification (G, C), Thermal Imaging (C), FLIR (G)	Shielded
Boxer APC w/Appliqué	$617,018	D, G, AvG, A	1.7 tons	34.1 tons	3+8	27	Passive IR (D, G, C), Image Intensification (G, C), Thermal Imaging (C), FLIR (G)	Shielded
Boxer Command	$763,850	D, G, AvG, A	1 ton	34.1 tons	3+6	28	Passive IR (D, G, C), Image Intensification (G, C), Thermal Imaging (C), FLIR (G)	Shielded
Boxer Command w/Appliqué	$767,825	D, G, AvG, A	850 kg	35.2 tons	3+4	28	Passive IR (D, G, C), Image Intensification (G, C), Thermal Imaging (C), FLIR (G)	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Boxer APC	165/83	39/20	785	348	CiH	W(8)	TF4Sp TS4 TR4 HF21Cp HS12Cp HS9*
Boxer APC w/Appliqué/Command	160/81	38/19	785	358	CiH	W(8)	TF4Sp HS4 HR4 HF26Cp HS15Cp HR11Sp*
Boxer Command w/Applique	155/78	37/19	785	373	CiH	W(8)	TF4Sp HS4 HR4 HF26Cp HS15Cp HR11Sp*

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Boxer APC	+4	Good	HK GMG or M-3M	590x40mm or 1850x.50
Boxer Command	+4	Good	HK GMG or M-3M	440x40mm or 1400x.5050

*Roof Armor is 6Sp; Floor Armor is 8Sp.

BTR-3U Guardian

Notes: This is fairly new design, being developed in 2000 and introduced in 2001. It is similar in appearance to the BTR-80 in many ways, but is a new design rather than an upgrade or modification of that vehicle. The BTR-3U has been developed by an international consortium consisting of Kharkiv Morozov and the State Scientific Technical Center of Ukraine, ADCOM of Abu Dhabi, Deutz AG of Germany, Allison of the US, and some other subcontractors; currently, Ukraine and Abu Dhabi use the BTR-3U, though it is being actively marketed to other countries by the consortium.

The 326-horsepower Deutz engine is coupled to an Allison transmission, giving the vehicle a surprising amount of power for its size. The BTR-3U is amphibious with a minimum amount of preparation; a trim vane must be opened at the front of the vehicle, and bilge pumps activated. Once in the water, it is propelled by a water jet at the rear. The troop compartment is accessed by doors on

either side of the vehicle, with the top of the door hinging upwards and the bottom downwards where it forms a step. There are two firing ports on either side of the passenger compartment, and two in the rear. The turret is the one-man Shkval unified fighting module, which allows the gunner to control all the weapons. A commander's seat is located beside the driver's seat in the front of the vehicle. The standard AT-5 Konkurs of Ukrainian design may be replaced with any number of missile systems of a similar size, including those of US, Western or Eastern European, Israeli, or other countries. In addition, a laser designator may be fitted to control laser-guided missiles (though this is not included in the cost below). Smoke generation for cover is accomplished by six 81mm grenade launchers (three on each side of the turret, firing forwards); these may be loaded with virtually any sort of smoke hand grenade of the appropriate size. An unusual feature of the BTR-3U is the heating and air conditioning system for the crew and passengers; this is because the vehicle is intended to operate in virtually any part of the world. The tires are adjustable for pressure, allowing the BTR-3U to operate over a variety of terrain. The BTR-3U has an automatic Halon fire suppression system, along with manually-operated bottles. Upgraded radiological and overpressure protection is available upon request, but not standard equipment.

Twilight 2000 Notes: This vehicle does not exist in the Twilight 2000 timeline.

Merc 2000 Notes: This vehicle does not exist in the Merc 2000 timeline.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
$259,495	D, A	2.21 tons	16.4 tons	3+6	5	Passive IR, Image Intensification	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
170/69	80/27/8	120	82	CiH	W(4)	TF5 TS3 TR3 HF6 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+2	Good	30mm 2A42 Autocannon, 30mm AGS-30 Grenade Launcher, PKT	350x30mm, 116x30mm Grenades, 2500x7.62mm

Jankel/KADDB Aigis/Al-Jawad

Notes: A joint project of Great Britain and Jordan, the Algis is a highly-modified GM K-series or Ford F-450 pickup truck, turned into a light armored personnel carrier which looks like an innocuous and inoffensive SUV (in its basic guise). It is primarily used by Jordan's counterterrorist team (Squad 14), but may in the future be picked up by Britain's special ops units as well. It was, in fact, first used by the British in Kosovo, who were giving the vehicles a sort of combat trial, but the results have not been reported and the British MoD will neither confirm nor deny its use in Kosovo. Modifications include (of course) armor, firing ports, bullet-resistant glass, stowage for military equipment and supplies, special seating arrangements, and in one version, an powered extendible assault ladder similar to those on a fire truck (but shorter), which deploys from what is an open bed in that version of the Aigis. The armor is not heavy, but will stop a 7.62mm AP round at 10 meters, or a 20-kilogram plastic explosive burst at 6 meters. The floor is somewhat armored, and can withstand the burst of most antipersonnel mines or grenades. The Aigis has run-flat tires. The vehicle is known as the Aigis by the British and the Al-Jawad by the Jordanians.

The Stirling Tactical Intervention Vehicle is an interesting modification of the Aigis; it has the extendible ladder mentioned above. As an option, it may carry standard foldable ladders. The height to which it may be extended is still classified, but I will use 20 meters for game purposes until I have better information. It may be rotated through at least 180 degrees. The ladder may be removed, and armored side and roof panels substituted, basically turning the Stirling into an armored pickup truck. It can be used as a mobile observation point or to rescue hostages, but its primary role is to deliver an assault team. If necessary, there is room inside for a cage in which a prisoner may be placed.

A third variant of the Aigis is the Guardian, known to be used by the London Metropolitan Police and other undisclosed British police departments. Instead of an SUV-like profile, the Guardian has a large rear box body and additional Kevlar armor panels for the hood. There are two firing ports in each sight with vision blocks, and two in the twin rear doors.

Twilight 2000 Notes: These vehicles do not exist in the Twilight 2000 timeline.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Aigis	$9,570	D, A	1.5 tons	6.8 tons	2+6	2	Headlights	Enclosed
Stirling*	$15,732	D, A	750 kg	7.05 tons	2	3	Headlights	Enclosed
Guardian	$14,400	D, A	1.5 tons	7.52 tons	2+6	3	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Aigis	306/76	70/19	110	115	Stnd	W(3)	HF3 HS3 HR2
Stirling*	298/75	70/19	110	115	Stnd	W(3)	HF3 HS3 HR2*
Guardian	284/71	65/16	110	115	Stnd	W(3)	HF4 HS3 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Aigis	None	None	None	None
Stirling	None	None	None	None
Guardian	None	None	None	None

*This is the Stirling in with the extendible ladder; with armored side and roof panels, the statistics are the same as the Aigis. Note that when the ladder is fitted, the Stirling is open-topped and has no side armor for the bed.

OT-64

Notes: The OT-64 (known as the SKOT to the Poles) is a joint product of Poland and Czechoslovakia used by those countries in place of the BTR-60 and BTR-70. Besides Czechoslovakia and Poland, the OT-64 is used by 11 other nations, including Cambodia, India, Egypt, Syria, Slovakia, Iraq (all destroyed or collapsed), Syria, and several African countries. The Czechs and Poles got their first OT-64s in 1964; the Czechs initiated the project, motivated by a need to replace their obsolete OT-810 half-tracks. They are still used by other countries, but are being rapidly replaced in Czech, Slovakian and Polish service by newer vehicles.

The OT-64 was an advanced design for the time, with 8x8 independent steering for the rear and front set of wheels, locking differential, automatic transmission, a collective NBC system, and decent armor. The front is sharply raked and has a driver's position to the front left, with a large vision block to the front and a hatch above the position. The commander is beside him, with a hatch above his position and raised vision blocks to the front and right side. The driver and commander have doors in each side; there are small vision slits in these doors. On the roof of the passenger section are four large hatches. Troops enter and exit through doors in the rear face. There are two firing ports in each side and two in the rear. The engine used is a Tatra T-928-14 diesel developing 180 horsepower.

Several variants exist, and there are other minor differences between Polish and Czech versions and in other countries depending upon who they got their OT-64s from. The basic version, the OT-64A (called the SKOT by the Polish) has a pintle mount on each side of the passenger compartment for light machineguns. Some OT-64As have a pair of AT-3 ATGM launchers mounted atop the roof; these are OT-64AMs/SKOT-Ms. The forward part of the troop compartment has a small turret with a KPV machinegun and an SGMT as a coaxial machinegun. In some newer versions of the OT-64A, the KPV is replaced with an NSVT. The SKOT-2 (OT-64B) was used only by Poland and had a simple machinegun mount with AV2 gun shields to the front and sides; the open hatch operates as a rear gun shield. The SKOT-2 has three hatches over the rear compartment: one that opens forward and two behind it open to the center. The next most common variant is the OT-64C(1)/SKOT-2AP; this has a new turret of a different shape than the BTR-70 and BRDM-2 turrets (a variant of the BRDM-2's turret), and the weapons have a much better elevation (capable of firing almost straight up and to a -11-degree depression). The four roof hatches open outwards and can be locked upwards; they have firing ports in them. After that, there is another variant of the OT-64C(2)/SKOT-2AM; this version has a launcher for an AT-3 Sagger ATGM on either side of the turret or a double launcher to the left side and to the rear of the turret.

The OT-64R-2 and R-3 command vehicles are command versions; the OT-64R-2 is similar to the OT-64C(1)/SKOT-2AP, but carries less troops internally, more radios (an extra long-range and medium-range radio), and internal map boards and storage for maps and plotting and office-type supplies. The OT-64R-3 has no turret (only a pintle mount by the commander's hatch) and has a total of two long-range, two medium-range, and two short-range radios. Later versions have a data-capable long-range radio and a ruggedized laptop computer.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
OT-64A	$96,867	D, A	1.7 tons	14.3 tons	3+10	8	Passive IR (D, G)	Shielded
SKOT	$108,784	D, A	1.7 tons	14.4 tons	3+10	8	Passive IR (D, G)	Shielded
OT-64A w/NSV	$95,671	D, A	1.7 tons	14.3 tons	3+10	8	Passive IR (D, G)	Shielded
OT-64AM/SKOT-M	$107,117	D, A	1.6 tons	14.5 tons	3+10	8	Passive IR (D, G)	Shielded
SKOT-2	$56,991	D, A	1.8 tons	14 tons	3+10	7	Passive IR (D)	Shielded
OT-64C(1)/SKOT-2AP	$97,836	D, A	1.6 tons	14.5 tons	3+10	8	Passive IR (D, G)	Shielded
OT-64C(2)/SKOT-2AM	$108,189	D, A	1.5 tons	14.7 tons	3+10	8	Passive IR (D, G)	Shielded
OT-64R-2	$108,342	D, A	800 kg	14.7 tons	3+5	9	Passive IR (D, G)	Shielded
OT-64R-3	$58,420	D, A	800 kg	14.4 tons	2+5	9	Passive IR (D)	Shielded
OT-64R-3 (Late)	$145,874	D, A	800 kg	14.4 tons	2+5	10	Passive IR (D)	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
OT-64A	104/53	24/12/2	330	90	CiH	W(4)	TF4 TS4 TR4 HF6 HS4 HR3
SKOT	103/52	24/12/2	330	91	CiH	W(4)	TF4 TS4 TR4 HF6 HS4 HR3
OT-64AM/SKOT-M	103/52	24/12/2	330	91	CiH	W(4)	TF4 TS4 TR4 HF6 HS4 HR3
SKOT-2	107/54	24/12/2	330	88	Stnd	W(4)	HF6 HS4 HR3

OT-64C(1)/SKOT-2AP	103/52	24/12/2	330	91	CiH	W(4)	TF4 TS4 TR4 HF6 HS4 HR3
OT-64C(2)/SKOT-2AM/OT-65R-2	102/51	24/12/2	330	93	CiH	W(4)	TF4 TS4 TR4 HF6 HS4 HR3
OT-64R-3	103/52	24/12/2	330	91	Stnd	W(4)	HF6 HS4 HR3

Vehicle	Fire Control	Stabilization	Armament	Ammunition
OT-64A	None	None	KPV, SGMT	500x14.5mm, 2000x7.62mm
SKOT	None	None	KPV, SGMT, PK (Right, Left)	500x14.5mm, 3000x7.62mm
OT-64A w/NSV	None	None	NSV, PKT	550x12.7mm, 2000x7.62mm
OT-64AM/SKOT-M	None	None	KPV, SGMT, 2xAT-3 ATGM Launchers	500x14.5mm, 2000x7.62mm, 4xAT-3 ATGM
SKOT-2	None	None	NSVT	1750x12.7mm
OT-64C(1)/SKOT-2AP/OT-64R-2	+1	Basic	KPV, PKT	500x14.5mm, 2000x7.62mm
OT-64C(2)/SKOT-2AM	+1	Basic	KPV, PKT, 2xAT-3 ATGM Launchers	500x14.5mm, 2000x7.62mm, 4xAT-3 ATGM
OT-64R-3	None	None	PKT (C)	2000x7.62mm

Timoney/BDX

Notes: The Timoney, used primarily by the Irish Army, and the BDX, license-produced by Belgium and used by that country and by Argentina and Mexico, are related vehicles, differing primarily in internal seating arrangements and the positioning of firing ports and vision blocks. Armament also differs between the two, and also varies from country to country. The Timoney is a light APC with thin armor better suited to internal security and rear area security than battlefield use. Two BDXs were also sold to Kuwait before Desert Storm, but lost in that conflict. The Timoney is being phased out of Irish service; the BDX is no longer used by Belgium but is still used by Argentina and Mexico (where it is designated the DNC-2).

The Timoney

The original prototype of the Timoney was the Mk 1, built only as a demonstrator vehicle in 1973; the Mk 2 was a test version which was used primarily as a static test vehicle. Two more prototypes, the Mk 3s, were then produced as advanced demonstrators. The Mk 4 was the first production version, appearing in 1976. The Mk 5 was the prototype of the BDX. The Mk 6 was an improved version of the Timoney; the improvements will be discussed below.

The armor of the Timoney is of all-welded steel, with additional floor protection. The driver and commander sit in the front of the vehicle, behind a bullet-resistant windshield and with vision blocks on either side of their compartment. They have hatches above their positions, and the driver's hatch has a vision block which can be replaced by a night vision block. The engine is behind the commander and driver, with the troop compartment behind that; there is no direct connection between the driver and commander's compartment and the troop compartment. Above the troop compartment of the Timoney is a small turret armed with a heavy and light machinegun, with a small double hatch above it; this has another light machinegun on a pintle mount to use against targets that must be engaged faster than the turret can traverse (turret traverse is manual). The turret weapons are marginally trainable from side to side, but have good elevation and depression of +55 degrees and -11 degrees. The turret has a day/night vision block to aim the weapons from inside the turret as well as a rotating periscope. On either side of the turret are double smoke grenade launchers and on the gun mantlet is a small searchlight which moves in conjunction with the main armament, but rotates more than the main armament. The troop compartment has the troops sitting down the sides, with the squad leader in a seat at the rear and facing the rear. Firing ports are located down the sides and in the rear of the vehicle, two down each side and one in the rear. There is a door in the rear face and a is a hatch on the rear deck; there is a door in each side of the vehicle on each side for the commander and driver.

The Timoney has a 4x4 off-road suspension. The engine is a Chrysler gasoline engine developing 180 horsepower, combined with an automatic transmission. The driver's controls are conventional, and are power-assisted. The suspension is beefy and gives a smooth ride on and off road. The front and rear wheels steer independently to reduce turning radius. A collective NBC system is optional, but not present on Irish vehicles.

The Mk 6 improves protection primarily with better armor technology, but also by a redesign of the glacis plate which increases the slant of the glacis plate and a lowering of the driver's and commander's positions. The slant of the windshield is also reduced for better visibility. An additional firing port is in each side of the vehicle, and the field of view of the vision blocks is improved and the firing ports have a better field of fire. The vehicle's air intakes are also located lower on the sides of the engine compartment and are better protected. The wheelbase is lengthened and widened, giving the Mk 6 better stability and a lower center of gravity as well as increasing interior space. The engine has been replaced with a 180-horsepower Detroit Diesel 4-53T engine, giving the vehicle better range without sacrificing power, and also increasing torque. The transmission is the same one as in the Mk 4. The suspension has been given differential locking. Due to the increase in length and width as well as the increase in armor, the vehicle is heavier than the Mk 4.

A variant of the Mk 6, the Mk 6 Fire Support vehicle, is armed with a 90mm Cockerill gun with electrical traverse and elevation as well as a coaxial machinegun and a pintle-mounted machinegun. Despite the inclusion of the 90mm gun and the space the ammunition takes up, the vehicle still carries the same number of troops, though internal space is decidedly more at a premium.

The BDX

The BDX was adopted by the Belgians in 1981 and the Argentines and Mexicans in the early 1990s. Most of the particulars of the Timoney Mk 4 are the same on the BDX. The most noticeable difference in at the front of the vehicle, which has a single driver's compartment in the center front, with the commander's position moved to the roof of the vehicle. The driver has a bullet-resistant windshield to the front and bullet-resistant windshield to the sides, all of which can be covered by armored shutters. The slope of the front armor is noticeably less than on the Timoney Mk 4. The driver's hatch has a vision block which may be exchanged for a night vision block. The commander's hatch has either a pintle-mounted weapon or the hatch is replaced by a light turret like the Timoney above. (Turreted versions are rare.) BDXs typically move the smoke grenade launchers to the sides of the front of the vehicle, and are in banks of three instead of being double mounts. The customary hatches at the rear and on the rear deck are on the BDX, and there are the same firing ports on the BDX as on the Timoney Mk 4. In addition, the BDX has a door in each side of the hull. Both the front and side hatches can be locked in a half-open position. The rear troop area is larger and carries more troops, even on turreted versions. The engine is the Chrysler 180-horsepower gasoline engine, but still coupled to an automatic transmission with power steering and brakes and a power-boosted transmission.

Mexican DNC-2s have been modified by the installation of the Detroit Diesel 6V-53T 212-horsepower engine, the same as the M-113 uses.

The Valkyr

The Valkyr was developed with the help of Vickers, and is a further development of the BDX. All in all, it looks like a BDX, but somewhat chunkier, and it is larger than the BDX. Though they have been shown at various arms shows in the 1980s and 1990s, they are no longer being marketed, hand had no takers. The Valkyr was meant to form the basis of a fighting vehicle family, though the only demonstrators built were APC-type variants similar in armament to the Mk 6. One was also configured as a VIP transport vehicle, for use in dignitary protection in hot areas. The Valkyr took a cue from the Mexicans and was powered by a 6V-53T engine, and had heavier armor which could be supplemented by appliqué armor. The 4x4 suspension has independent shock absorbers and springs for each wheel to increase off-road performance. Tires are larger than those of the BDX, and this also improves off-road performance. The inside of the vehicle is somewhat smaller than the Mk 6. The somewhat small rear door of the BDX is made larger on the Valkyr. Armor is heavier than on the BDX, and the floor armor is dramatically increased. In addition, the lower parts of the hull are designed to blow off in the event that the vehicle runs over a mine or IED, further increasing floor armor performance. The left side door is moved forward and is meant as an exit and entrance for the driver and commander, while the right side door is primarily for troop entry and exit. There is a direct connection between the driver's position and the troop compartment. The driver has a larger compartment, with larger side windows. The Valkyr has an automatic fire detection and suppression system. A small 50-liter water tank and lockers for rations are includes under the seats, and there are brackets on the hull for additional fuel cans. The Valkyr was marketed with the option of several turrets, ranging from double light machineguns to a version with a 60mm gun/mortar and autocannon combination and a two-man fire support variant with a 90mm gun. These turrets reduce the troop capacity, due to the greater amount of ammunition carried than on the BDX; the turret is also lower on the basic chassis than on the BDX. The changes would have made it a credible APC, had it gone into production. Padding and sound protection are added to the driver's commander's, and troop compartments.

Twilight 2000 Notes: The Valkyr was produced in the Twilight 2000 timeline, and used by Belgium, Britain, Kuwait, and Mexico (who produced them under license, and were the last producers of the Valkyr).

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Timoney Mk 4	$52,020	G, A	800 kg	8.7 tons	3+9	4	Passive IR (D, G)	Enclosed
Timoney Mk 6	$53,782	D, A	1 ton	10 tons	3+9	4	Passive IR (D, G)	Enclosed
Timoney Mk 6 FSV	$328,278	D, A	650 kg	11.4 tons	3+9	6	Passive IR (D, G), Image Intensification (G)	Enclosed
BDX	$29,841	G, A	1 ton	10.7 tons	2+10	6	Passive IR (D)	Enclosed
BDX w/Turret	$65,524	G, A	900 kg	11 tons	2+9	6	Passive IR (D, G), Image Intensification (G)	Enclosed
DNC-2	$29,961	G, A	1 ton	10.7 tons	2+10	6	Passive IR (D)	Enclosed
Valkyr w/Twin MG Turret	$39,035	D, A	1 ton	11 tons	2+8	6	Passive IR (D, G), Image Intensification (G)	Enclosed
Valkyr w/.50/7.62 Turret	$42,354	D, A	900 kg	11.2 tons	2+8	6	Passive IR (D, G)	Enclosed
Valkyr w/60-20 Turret	$171,277	D, A	550 kg	12.5 tons	3+6	8	Passive IR (D, G), Image Intensification (G)	Enclosed
Valkyr FSV	$310,940	D, A	650 kg	12.4 tons	3+5	8	Passive IR (D, G), Image Intensification (G)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Timoney Mk 4	164/82	38/19	248	121	CiH	W(3)	TF2 TS2 TR2 HF4 HS3 HR2*
Timoney Mk 6	143/71	33/87	248	91	CiH	W(3)	TF2 TS2 TR2 HF5 HS4 HR2**
Timoney	126/62	29/77	248	104	Trtd	W(3)	TF4 TS4 TR4 HF5 HS4 HR2**

Mk 6 FSV							
BDX	133/66	31/15	248	149	Stnd	W(3)	HF5 HS4 HR2**
BDX w/Turret	130/65	30/15	248	154	CiH	W(3)	TF2 TS2 TR2 HF5 HS4 HR2**
DNC-2	161/82	37/19	248	109	Stnd	W(3)	HF5 HS4 HR2**
Valkyr w/Twin MG Turret	156/80	36/18	200	112	CiH	W(3)	TF2 TS2 TR2 HF6 HS4 HR3***
Valkyr w/.50/7.62 Turret	155/79	36/18	200	114	CiH	W(3)	TF2 TS2 TR2 HF6 HS4 HR3***
Valkyr w/60-20 Turret	138/71	31/15	200	128	Trtd	W(3)	TF4 TS4 TR3 HF6 HS4 HR3***
Valkyr FSV	138/71	31/15	200	126	Trtd	W(3)	TF4 TS4 TR4 HF6 HS4 HR3***

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Timoney Mk 4	+1	Basic	M2HB, MAG, MAG (C)	400x.50, 1000x7.62mm
Timoney Mk 6	+1	Basic	M2HB, MAG, MAG (C)	475x.50, 1200x7.62mm
Timoney Mk 6, FSV	+2	Fair	90mm Cockerill Gun, MAG, MAG (C)	67x90mm, 1200x7.62mm
BDX/DNC-2	None	None	MAG (C)	1700x7.62mm
BDX w/Turret	+1	Basic	M2HB, MAG, MAG (C)	475x.50, 1200x7.62mm
Valkyr w/Twin MG Turret	+1	Basic	2xMAG	2000x7.62mm
Valkyr w/.50/7.62 Turret	+1	Basic	M2HB, MAG, MAG (C)	600x.50, 1000x7.62mm
Valkyr w/60-20 Turret	+1	Fair	60mm HB-60 Mortar, 20mm KAD Autocannon, MAG (C)	50x60mm, 500x20mm, 600x7.62mm
Valkyr FSV	+2	Fair	90mm Cockerill Gun, MAG, MAG (C)	67x90mm, 1500x7.62mm

*Floor Armor is 4.
**Floor Armor is 5.
***Floor Armor is 6.

AIL Rhino

Notes: This Israeli-made armored car was sold to several countries that were never disclosed, but examples have been seen in Central America, Africa, the Middle East, and Southeast Asia. Israel uses them for internal security purposes, especially in police raids against Palestinian rebels. It is based on the M-462 Abir light truck, with a fully enclosed armored body.

The Rhino looks like an armored SUV. The driver and commander have a Bullet-resistant windshield to their front, and bullet-resistant windows to their sides. Further (rather small) bullet-resistant windows are found three per side and two in the rear. Below each is a firing port, but this is merely a hinged cover for a hole in the vehicle and not a sealed firing port. The driver and commander also have firing ports in their doors. The front end contains the engine and transmission. The troops enter and exit through doors in the sides behind the cab or through a small door in the rear (to which a spare tire is normally attached). The troops have individual seats with integral seat belts and shock absorption to help protect against mines. Police versions typically have an unarmed cupola in the roof and equipment like loudspeakers, sirens, flashing lights, and sometimes an irritant gas dispenser with a 100-liter tank in the vehicle (included in the stats below), but military versions have a cupola with a machinegun, a ramming bumper, and armored shutters for the windshield and windows. The suspension is optimized for road use, and has limited off-road capability, though it is a 4x4 suspension with run-flat tires. The power is provided by a 165-horsepower diesel engine; as the armor and the vehicle are relatively light, this low power is not a big problem. There is no NBC system, but on the roof is a forced air system which can clear out smoke and irritant gas to an extent.

VIP transport versions also exist; these normally have more luxury accommodations inside and carry less passengers. They will not be discussed here, as they can take many forms, but can be inferred.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological*
Rhino (Police)	$25,944	D, A	750 kg	5.8 tons	2+6	2	Headlights	Enclosed
Rhino (Military)	$20,314	D, A	950 kg	5.8 tons	3+9	2	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Rhino	252/62	58/14	140	83	Stnd	W(2)	HF3 HS3 HR2**

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Rhino	None	None	Irritant Gas Dispenser	100L irritant gas
Rhino (Military)	None	None	MAG	2500.50

*Note the minimal interior clearing system noted above.

**Floor AV is 3.

Ramta RAM

Notes: The RAM family of armored cars was built for long-range scouting missions, for use by paratroopers, and by special operations units which needed a fast-moving vehicle and for whom armor was a secondary consideration. They were later picked up for use by security forces. They are updated versions of the earlier RBY Mk 1 armored car. Improvements over the RBY Mk 1 include higher ground clearance, a diesel instead of a gasoline engine, an automatic transmission to reduce driver fatigue, and a beefier suspension to reduce the fatigue of the rest of the crew. Known users include Israel, Botswana, Cameroon, Congo, Gabon, Guatemala, Honduras, Lesotho, and Morocco.

There are four basic APC-type variants: the open topped V-1S (short wheelbase) and V-1L (long wheelbase), and the closed topped V-2S and V2L. Each of these versions have 4 further variants: the infantry fighting vehicle carries 3 machineguns (or grenade launchers) and a B-300 rocket launcher; the infantry combat vehicle carries 3 machineguns (or grenade launchers), a 52mm mortar (hand-fired), and two M-72 LAW rockets or one RPG-7; the close-range antitank vehicle carries an M-40 recoilless rifle; and the long-range antitank vehicle carries a TOW II ATGM launcher and two machineguns (or grenade launchers). In all cases, the weapons may be easily dismounted and fired from outside the vehicle if necessary. These variants are all V-1 versions; the V-2 has no place for all these weapons, and is defended only by troops firing from the open hatches. The RAM in its basic configuration has slightly-sloped sides and a jeep-like front end which usually carries a spare tire. Most are festooned with brackets and tie-down points for extra gear and troop equipment. There are no doors on the vehicle in the V-1; troops and crew climb in over the sides of the troop compartment. The front and sides of the cab have bullet-resistant windshields. In the V-2, there are three hatches on either side of the top of the troop compartment, which troops squeeze into. These hatches may be locked open. The engine in all cases is at the rear of the vehicle, as are the fuel tanks. The armor, though not heavy, is sufficient to withstand most small arms fire and the suspension is high and the floor armor reinforced. Some examples have an automatic fire detection and suppression system. The engine is a Deutz BT-6L 912S 132-horsepower diesel. Suspension is 4x4 and off-road. At the front of the vehicle is a winch with a capacity of 3629 kg.

The RAM-2000 is the newest version of the RAM. It is essentially a LWB RAM given additional armor protection (though advances in armor design and composition), a more fortified floor, and a cupola atop the commander's position with a weapon mount. It is a closed-roof design, with doors in either side of the vehicle. The suspension is raised further, with the bottom of the vehicle being nearly 0.8 meters from the ground. Engine power has been increased to 166 horsepower. The vehicle has been lengthened by 29 centimeters. The suspension is 4x4, switchable to 4x2 for road use. A reconnaissance version exists, which has an

extendible mast with various day and night imaging devices as well as a radio detector and listener (four bands, range 20 km) and shotgun microphone. The rear of this version is taken up largely by the electronics to control this array and transmit the information to higher headquarters, including two long-range radios (one data-capable), and a short-range radio. The RAM-2000 is sometimes referred to as the RAM V-3.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
V-1S (IFV)	$40,283	D, A	700 kg	5.4 tons	2+4	2	Headlights	Open
V-1S (ICV)	$47,666	D, A	700 kg	5.4 tons	2+4	3	Headlights	Open
V-1S (CRAT)	$87,002	D, A	700 kg	5.4 tons	4	3	Headlights	Open
V-1S (LRAT)	$87,871	D, A	700 kg	5.4 tons	4	3	Headlights	Open
V-1L (IFV)	$40,783	D, A	1.3 tons	5.6 tons	2+7	2	Headlights	Open
V-1L (ICV)	$47,866	D, A	1.3 tons	5.6 tons	2+7	2	Headlights	Open
V-1L (CRAT)	$87,202	D, A	1.3 tons	5.6 tons	4+2	3	Headlights	Open
V-1L (LRAT)	$88,073	D, A	1.3 tons	5.6 tons	4+2	3	Headlights	Open
V-2S	$40,811	D, A	700 kg	5.7 tons	2+4	3	Headlights	Enclosed
V-2L	$46,001	D, A	1.3 tons	6 tons	2+7	4	Headlights	Enclosed
RAM-2000	$39,028	D, A	1.2 tons	6 tons	2+8	2	Headlights	Enclosed
RAM-2000 Recon	$75,709	D, A	600 kg	6.1 tons	4	4	Image Intensification (Mast), Thermal Imaging (Mast)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
V-1S	181/91	42/21	120	65	Stnd	W(2)	HF3 HS3 HR2*
V-1L	176/89	41/20	160	67	Stnd	W(2)	HF3 HS3 HR2*
V-2S	172/86	40/20	120	69	Stnd	W(2)	HF3 HS3 HR2**
V-2L	163/82	38/19	160	72	Stnd	W(2)	HF3 HS3 HR2**
RAM-2000	203/102	47/24	160	84	Stnd	W(2)	HF5 HS5 HR3***
RAM-2000 Recon	199/100	46/24	160	86	Stnd	W(2)	HF5 HS5 HR3***

Vehicle	Fire Control	Stabilization	Armament	Ammunition
RAM V-1 (IFV)	None	None	3xMAG, B-300	5000x7.62mm, 6x89mm Rockets
RAM V-1 (ICV)	None	None	3xMAG, IMI 52mm Mortar, 2xM-72A2 Rockets or 1xRPG-7	5000x7.62mm, 36x52mm Mortar Rounds (+4xRPG-7 Rockets if so equipped)
RAM V-1 (CRAT)	None	None	M-40A2 Recoilless Rifle, 2xMAG	18x106mm Rockets, 2500x7.62mm
RAM V-1 (LRAT)	None	None	TOW II Launcher, 2xMAG	16xTOW II ATGM, 2500x7.62mm
RAM-2000	None	None	MAG or M-2HB (C)	4000x7.62mm or 2400x.50

*Floor AV is 4. There is no Roof armor.
**Floor AV is 4.
***Floor AV is 4Sp.

RAMTA RBY Mk 1

Notes: The RBY Mk 1 is a 4x4 light reconnaissance vehicle, sort of an earlier version of the RAM V-1. It entered service with the Israelis in 1975. Aside from the Israelis (who no longer use them except for five kept for internal security), the other users of the RBY Mk 1 are Guatemala, (who has modified theirs in several ways), Honduras, and Lesotho. Most of these vehicles are straightforward reconnaissance cars/light APCs, but an antitank variant was in service with the Israelis.

The RBY Mk 1 has basically the same layout as the RAM, with a front end like a jeep and with a spare tire on it. A cab is behind the front end for the commander and driver, with a bullet-resistant windshield to the front and windows to the sides. Thw windows and windshield have armored shutters with vision slits in them for use in heavy firepower environments. The center of the vehicle has the troop compartment, which is rather cramped. The rear has the engine. The armor is rather thin, but the RBY Mk 1 has a high ground clearance, wide wheelbase, and reinforced floor to help against mines and IEDs. (The floor, in fact, has the thickest armor on the vehicle.) The hull is made in a unitary fashion, to further increase structural integrity; it has no doors or hatches for this reason. Like the RAM, the RBY Mk 1 has run-flat tires. The RBY Mk 1 has a 4x4 off-road suspension and is powered by a Chrysler 225-2 120-horsepower gasoline engine with a manual transmission.

The troop compartment of the RBY Mk 1 is interesting – the troops have three outward-facing seats on each side, high enough so that they can see over the sides of the vehicle. (They can be raised and lowered, however.) The troops and the crew enter and leave

by going over the sides of the troop compartment, and there are several steps to help them. The exterior of the vehicle is replete with tie-down places and brackets for crew equipment, extra gear and fuel, and extra ammunition. Up to five machineguns are mounted, one on each side of the troop compartment, and one above the commander's position. Ammunition stowage, like on the RAM, is basically everywhere, helping to lead to a cramped troop compartment.

The antitank version is simply a standard RBY Mk 1 with a recoilless rifle mounted in it, and stowage boxes for ammunition replacing most of the troop space.

The Guatemalans have modified their RBY Mk 1s in several ways. They have replaced the engine with a 145-horsepower diesel engine, coupled to an automatic transmission. The troop compartment has a solid piece of Kevlar over it to cover the space, and the troop seats have been lowered. All the machinegun mounts have been removed, and instead a ring mount for a heavy machinegun is found atop the Kevlar slab covering the vehicle. Doors have been cut in the sides of the vehicle since the troops and crew can no longer enter and exit over the sides of the vehicle.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
RBY Mk 1	$39,840	G, A	500 kg	3.6 tons	2+6	2	Headlights	Open
RBY Mk 1 AT	$86,667	G, A	500 kg	3.6 tons	4	3	Headlights	Open
Guatemalan RBY Mk 1	$30,949	D, A	400 kg	3.9 tons	3+5	2	Headlights	Open

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
RBY Mk 1/AT	228/114	53/26	140	77	Stnd	W(2)	HF3 HS2 HR2*
Guatemalan RBY Mk 1	254/128	59/30	140	83	Stnd	W(2)	HF3 HS2 HR2**

Vehicle	Fire Control	Stabilization	Armament	Ammunition
RBY Mk 1	None	None	5xMAG (Front, Rear, Left, Right, C)	5000x7.62mm
RBY Mk 1 AT	None	None	M-40A2 Recoilless Rifle, 2xMAG	18x106mm Rockets, 2500x7.62mm
Guatemalan RBY Mk 1	None	None	M-2HB	2400x.50

*Floor AV is 4. There is no Roof AV.

**Floor AV is 4.

ASA Guardian

Notes: This is a light APC in use by Italy and some Middle Eastern countries. It is primarily designed for antiriot and police SRT use. It is basically a stretched, raised, and armored version of the Fiat Campagnola light vehicle (see Italian Unarmored Vehicles) with a more powerful engine, armored body, and various accouterments to equip it for its role.

The ASA Guardian has doors on either side of the cab, a hatch in the center of the roof (usually without a weapon mount), and a door in the rear with a spare tire attached. Each cab door has a firing port, and there is one on each side of the vehicle and one in the rear, but these are merely shutters for holes cut in the armored body and not sealed firing ports. Between the two halves of the windshield is also a firing port. Layout is otherwise conventional, with the engine at the front, the cab behind the engine, and the troop compartment at the rear. The body is made of light aluminum alloy which provides basic protection against small arms and shell fragments. This fits its role as being primarily a police vehicle and not an APC. The driver and commander have a bullet-resistant windshield to their front and bullet-resistant windows to their sides, a small such window is found in each side hear the top of the vehicle and near the top of the rear of the vehicle in the rear door. The firing ports are below these, and clearly the firing ports are meant to be used by standing troops or officers. Interior appointments are plush for such a vehicle, with padded seats for the troops and bucket seats for the driver and commander. Atop the Guardian is a hatch, though it has no weapon mount nor provision for one. Flashing lights, sirens, and a ramming bumper are standard, as is air conditioning and a winch with a 3-ton capacity and 60 meters of cable.

The suspension is 4x4, but it is more suited to road use than off-road and has limited off-road capability. The wheels, however, are independently sprung. The engine is a 80-horsepower gasoline engine, so it is just as well that the vehicle is light in weight; this is coupled to a manual transmission, though the Guardian does have power steering and brakes.

A Mk 2 version exists; this is characterized primarily by an increase in front and side armor.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Guardian	$3,092	G, A	495 kg	2.73 tons	2+4	2	Headlights	Enclosed
Guardian Mk 2	$3,464	G, A	395 kg	2.93 tons	2+4	2	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Guardian	251/110	58/21	57	48	Stnd	W(3)	HF2 HS2 HR2
Guardian Mk 2	233/102	54/20	57	51	Stnd	W(3)	HF3 HS3 HR2

Boneschi MAV-4

Notes: The Boneschi MAV-4 is a light armored vehicle used by the Italians as a command post carrier in their light formations. It is described as a “multi-purpose armored vehicle” and can also be fitted out as a light APC for the police or rear-area role. It is basically a Fiat 80.17 truck chassis fitted with a steel armored body, and looks like an armored van.

The MAV-4 has a cab with a commander’s and driver’s position; the driver has a large bullet-resistant windshield, while the commander has a smaller bullet-resistant window to the front. Both have bullet-resistant windows to their sides. They have doors in the sides of their cab. The commander has a hatch above his position, but a weapon mount is not normally fitted. On the sides are four vision blocks with firing ports under them, but these are simple shuttered openings and not sealed firing ports. Two such ports are also found in the rear, where there is also a door. The commander also has a firing port below his windshield. On the roof of the MAV-4 is a hatch that is meant primarily as an emergency exit, but can be used by standing troops. Also on the roof is an air conditioner, ceiling lights (inside), and flashing lights and a siren (on police models). In addition, the MAV-4 has fire resistant paint and a firefighting system that allows the MAV-4 to put out fires directly ahead of the vehicle to protect the tires, engine, and transmission; it can put out five medium-sized fires. In APC models, there are seats for 12 troops, seven on the left and five on the right. On the command version, the vehicle has 2 long-range, two medium-range, and two short-range radios; one of the long-range radios is data-capable. The command version has a ruggedized laptop computer and an inertial land navigation system. It has a map board and storage for maps, as well as plotting and office-type supplies.

The MAV-4’s suspension is best suited for road use, but has some off-road capability. It is a 4x4 suspension, switchable to 4x2 for road use, with a locking differential. At the front of the vehicle is a 5-ton-capacity winch with 60 meters of cable. The engine is a Fiat diesel developing 160 horsepower.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
MAV-4 APC	$5,989	D, A	2 tons	9.5 tons	2+12	6	Headlights	Enclosed
MAV-4 Command	$197,797	D, A	1 ton	9.6 tons	2+5	8	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
MAV-4 APC	155/58	36/13	130	80	Stnd	W(2)	HF3 HS2 HR2
MAV-4 Command	154/57	36/13	130	81	Stnd	W(2)	HF3 HS2 HR2

Boneschi MAV-5

Notes: Another light armor vehicle by Boneschi, the MAV-5 is used by the Italian Carabineri, and by Italian Army units in UN peacekeeping roles. It is basically an IVECO 40.10 4x4 truck chassis with a steel armored body. All windows and vision blocks are of bullet-resistant glass. The driver is at the front of the vehicle on the left, with the commander to his right, with a windshield to their front and windows to each side. The troops are seated on swiveling seats; just ahead of them on each side is a door, and they each have firing ports on the sides of the vehicle. These firing ports are shuttered ports and not sealed firing ports. In addition, there are two firing ports to the rear, where there is also a door. The engine is at the front of the vehicle, and the whole vehicle looks like an armored van. The MAV-5 has ceiling lights, air conditioning, and a tear gas filtering system. A pintle mount for a machinegun is on the roof just behind the driver. The suspension is 4x4, but best suited for road use, and uses a manual transmission with a 103-horsepower diesel engine.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
$11,065	D, A	600 kg	4.45 tons	2+6	2	Headlights	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
220/54	51/13	75	49	Stnd	W(2)	HF2 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
None	None	MG-42/59 (C)	1000x7.62mm

Fiat 6614

Notes: Also called the Type 6614, this is a light wheeled APC built by Italy and used by that country and Argentina, South Korea, Peru, Libya, Somalia, Tunisia, and Venezuela. South Korea built the Fiat 6614 under license and called it the KM-900. Some Peruvian Fiat 6616s are heavily-modified for use in the ATGM/scout role. Most countries, however, that use or used the Fiat 6614 use them in a more-or-less stock configuration. The Fiat 6614 was designed for use by military police or civilian police, scout units, and countries who cannot afford more advanced vehicles. They are also designed to be used by units which require lighter vehicles such as mountain troops or airborne troops.

The Fiat 6614

The Fiat 6614 has a boat-shaped front hull with a sharply-raked glacis plate. The sides are only slightly sloped, and the rear is unsloped. The armored hull of the Fiat 6614 is of all-welded steel. The driver is in the front center, with small bullet-resistant windows to his front and left and right sides. He has conventional controls, but a manual transmission. He has a hatch above his position; the hatch has a space into which a night vision block can be inserted. To the rear of this position is the commander's position, which is armed with a light, medium, or heavy machinegun (examples are given below). This position is sometimes surrounded with AV2 gun shields. The troops sit down each side of the rear hull and enter and exit through a rear ramp which also has a hatch in it. There is also a door in each side of the hull just behind the driver's compartment. There are three firing ports in each side of the vehicle and two in the rear. The Fiat 6614 has a pair of roof hatches over the rear of the hull. Smoke grenade launchers are found at the top of the glacis, three per side.

The Fiat 6614 is powered by an Iveco 8062.24 turbocharged diesel engine with 160 horsepower. The vehicle is amphibious with 2 minutes of preparation, and is propelled in the water by its wheels, but it is horrendously slow in water. The Fiat 6614 is a 4x4 vehicle which has an off-road-type suspension.

Note that ROK KM-900s are typically armed with M-2HBs instead of lighter machineguns.

APC-Type Variants

The South Koreans produced several variants of their version of the Fiat 6614 (which they called the KM-900), which are collectively called the KM-901. APC-type variants (there is also a KM-901-based mortar carrier) include an armored ambulance, which can carry two stretcher-borne patients and four sitting patients, as well as a medic in the rear. This vehicle has a defibrillator, an oxygen administration set, the equivalent of one doctor's medical bag and 10 personal medical kits, and an assortment of splints, bandages, and items such as space blankets and minor medical items like burn cream and blister treatment kits. They also produced a command version, which has two long-range radios, a medium-range radio, and a short-range radio; one of the long-range radios is data-capable. The command vehicle has a ruggedized laptop computer, a map board, equipment and storage for maps, and office and plotting supplies. A hand held thermal imager, image intensifier, and laser rangefinder are carried. Fold-out shelves and three folding chairs are provided.

Italy produced 50 of the Fiat 6616 version for their own use as scout vehicles and for the Carabineri. Libya, Peru, and Somalia later bought some. They have a two-man turret armed with a light autocannon and a rear troop area which carries more ammunition for the guns and extra radios (including a long-range, medium-range, and short-range), as well as extra equipment. It carries no dismount team. The turret has improved vision gear, both for day and night, including day and night telescopic gear. Beside the commander's position is a 106mm recoilless rifle.

The Peruvians have produced a local modification of the Fiat 6616; it is believed that all of their Fiat 6616's have been modified this way. This includes a large, three-man turret with a light autocannon, coaxial machinegun, a commander's machinegun (a 7.62mm version of the M-1919A4), and a pair of side-mounted HJ-73 Red Arrow ATGMs. They do not carry the 106mm recoilless

rifle. The turret has considerable day and night vision equipment, as well as good fire control equipment. The commander can access the gunner's vision equipment. The vehicle is meant as a scout/recon vehicle and does not have a dismount squad, but instead carries extra ammunition, missiles, and radios (at least two long-range, one medium-range, and one short-range radios) and equipment, in the same manner as a standard Fiat 6616.

A version of the Fiat 6616 armed with a 60mm HVMS autocannon was produced as an experiment, but not proceeded with. I have provided "what-if" stats below.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Fiat 6614	$26,825	D, A	1.2 tons	8.5 tons	2+8	6	Passive IR (D)	Enclosed
KM-901 Ambulance	$30,849	D, A	600 kg	8.7 tons	*	7	Passive IR (D)	Enclosed
KM-901 Command	$252,195	D, A	600 kg	9 tons	2+4	8	Passive IR (D)	Enclosed
Fiat 6616	$73,476	D, A	400 kg	8 tons	3	6	Passive IR (D, G), Image Intensification (G)	Enclosed
Peruvian Fiat 6616	$128,415	D, A	400 kg	8.1 tons	3	6	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Enclosed
Fiat 6616-60	$89,720	D, A	400 kg	8.2 tons	3	6	Passive IR (D, G), Image Intensification (G)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Fiat 6614	152/77	36/18/2	142	80	Stnd	W(3)	HF6 HS3 HR2
KM-901 Ambulance	149/75	35/18/2	142	82	Stnd	W(3)	HF6 HS3 HR2
KM-901 Command	143/72	34/17/2	142	85	Stnd	W(3)	HF6 HS3 HR2
Fiat 6616	161/82	38/19/2	142	75	Trtd	W(3)	HF4 HS3 HR3 HF6 HS3 HR2
Peruvian Fiat 6616	159/81	38/19/2	142	77	Trtd	W(3)	HF4 HS3 HR3 HF6 HS3 HR2
Fiat 6616-60	158/80	37/19/2	142	77	Trtd	W(3)	HF4 HS3 HR3 HF6 HS3 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Fiat 6614/M-901 Command	None	None	MG-42/59 (C) or MAG (C) or M-2HB (C)	1600x7.62mm or 1000x.50
Fiat 6616	+1	Basic	20mm Rh-202 Autocannon, MG-42/59, M-40A2 Recoilless Rifle (C)	400x20mm, 2500x7.62mm, 39x106mm
Peruvian Fiat 6616	+2	Fair	20mm Rh-202 Autocannon, MAG, M-1919A4 (C), 2xHJ-73 ATGM Launchers	400x20mm, 3000x7.62mm, 8xHJ-73 ATGMs
Fiat 6616-60	+2	Fair	60mm HVMS Autocannon, MG-42/59, MG-42/59 (C)	200x60mm, 3000x7.62mm

*See Notes for Crew and passenger capacity.

Iveco/Oto-Breda Centauro VBC

Notes: This is an eight-wheeled armored personnel carrier that is used by the Italian Army. It is based on the Centaur B1 tank destroyer vehicle (q.v.), but has a smaller turret, armed with an autocannon. A newer version, the VBM Freccia (Arrow) has better armor and ATGMs. Production of the original Centauro VBC began in 1990; production of the Freccia is a more recent development which started development in the 1990s, but did not appear in service until 2006.

The Centauro VBC

The Centauro VBC has the same basic hull as the Centauro B1, but the interior is greatly changed to reflect its role as an infantry squad carrier leader. The rear has a troop section with the troops sitting down each side of the vehicle. There are two firing ports on each side of the vehicle and two in the rear. There is a hatch on the rear deck, but primary troop access is by a rear ramp which itself has a hatch in it. Under the troop seats is space for their equipment and ammunition, and there are also racks inside the vehicle for the same. The troop compartment is rather cramped, though it is wide.

The turret is towards the center of the vehicle, and is armed with an autocannon and coaxial machinegun. It is a two-man turret, with the gunner having a laser rangefinder for help in aiming and a small computer. The commander has access to the gunner's vision equipment. On each side of the turret is a cluster of four smoke grenade launchers. The driver's compartment is on the front left and has conventional controls with power assist for the steering and brakes. The suspension is 8x8 and an off-road suspension, and the front and rear wheel sets steer independently to reduce turn radius. The engine is an Iveco MTCA turbocharged diesel developing 520 horsepower, and is coupled to an automatic transmission.

The Centauro VBM Freccia

The newer version is the Centauro VBM Freccia. The biggest change is the addition of an ATGM launcher on each side of the turret; the turret is a modified version of the same is that on the VCC-80 Dardo, the HITFIST-Plus turret. At first, the launchers were for TOW II missiles, but recently, Italy has begun replacing them with Israeli-made Spike-LR missiles in 2006. The autocannon and ammunition remain the same except for the addition of missiles. The commander has been given a machinegun of his own. The engine has been increased in power to 550 horsepower, which is necessary as the Freccia is heavier than the VBC. The Freccia has been fitted with an NBC overpressure system with a collective NBC backup. Armor protection is increased over that of the VBC. Fire control equipment has increased, and the vehicle has been given a hunter/killer capability. Despite the extra ammunition, interior rearrangement has allowed for an additional infantryman to sit in the rear.

An experimental version of the Freccia has been armed with the Israeli-made 60mm HVMS autocannon. Other than the alterations necessary for this weapon, the vehicle is unchanged.

Twilight 2000 Notes: The VBC was the primary version of the Centauro IFV used by Italy in the Twilight 2000 timeline, with some 250 available when the war started. However, about 50 Freccias were available for the war, all using TOW II launchers for their ATGM launchers. The experimental variant of the Freccia with the 60mm autocannon was not available for the Twilight 2000 timeline.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
VBC	$187,848	D, A	1.4 tons	24 tons	3+6	16	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Freccia	$379,696	D, A	1.1 tons	26 tons	3+7	17	Passive IR (D, G, C), Image Intensification (G, C), Thermal Imaging (G, C)	Shielded
Freccia-60	$409,176	D, A	1.1 tons	26.1 tons	3+7	17	Passive IR (D, G, C), Image Intensification (G, C), Thermal Imaging (G, C)	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
VBC	168/101	41/20	540	277	Trtd	W(8)	TF6 TS6 TR5 HF14Sp HS9Sp HR7*
Freccia	160/81	37/19	540	294	Trtd	W(8)	TF10Sp TS6Sp TR5 HF15Sp HS10Sp HR7**
Freccia-60	158/80	37/19	540	297	Trtd	W(8)	TF10Sp TS6Sp TR5 HF15Sp HS10Sp HR7**

Vehicle	Fire Control	Stabilization	Armament	Ammunition
VBC	+2	Good	25mm KBA Autocannon, MG-42/59	900x25mm, 2000x7.62mm
Freccia	+4	Good	25mm KBA Autocannon, MG-42/59, MG-42/59 (C), 2xTOW II or Spike-LR	900x25mm, 3000x7.62mm, 7xTOW II or Spike-LR ATGM

			Launchers	
Freccia-60	+4	Good	60mm HVMS Autocannon, MG-42/59, MG-42/59 (C), 2xSpike-LR Launchers	375x60mm, 3000x7.62mm, 7xSpike-LR ATGM

*Floor AV is 6.
**Floor AV is 7Sp.

Iveco/Oto-Breda Puma

Notes: The Puma is a series of light APCs which come in 4x4 and 6x6 versions, with the 4x4 version being a scout vehicle and the 6x6 version being a light APC. They were made for the Italian Army, who wanted a light wheeled APC to operate with its Centauro B1 and Centauro VBC vehicles. The Puma is also used by special operations units like the Folgore Brigade and units like their Alpini Regiments and Lagunari (Marine) Regiment. Two of the 6x6 version are also employed by Argentine forces when deployed on UN peacekeeping missions. Some 250 6x6 versions and 330 4x4 versions are operated by Italy; they have seen combat service in Afghanistan, where they have shown themselves surprisingly resistant to crew and passenger injury due to mines and IEDs. The hulls are, of course, different due to the 4x4 version's smaller size and lesser amount of wheels, but mechanically they are almost identical, and some details like the driver's compartment and the commander's station are also identical. Deliveries began in 1999, and were completed in 2003. In addition to APC and scout vehicles, armored ambulances, command vehicles, mortar vehicles, SAM vehicles, and two types of ATGM Pumas are produced, and an experimental unmanned ground vehicle version has been made.

The hull of the Puma is of all-welded steel, with the engine in the front and the driver on the front left side. The commander's station is to the rear and right of the driver, and is slightly off-center. The driver has conventional controls, and his hatch has vision blocks to the front and left (with one slightly to the right); the center front block can be removed and replaced with a night vision block. His station is separated from the rest of the vehicle by a bulkhead. The vision blocks are built into the hatch, which can be locked partially open enough for him to see out or opened completely for him to enter and exit. Troop entry and exit is by a rear door of doors in the sides (between the two sets of wheels in the 4x4 version, and between the two front sets of wheels and the rear set of wheels for the 6x6 version). There is also a large circular hatch on the rear deck on the 6x6 version. The commander's station is normally armed with a machinegun or automatic grenade launcher, but in 2005, Italy began arming some of their Pumas with Kongsberg M-151 Protector RWS armed with an M-2HB. The side and rear doors are each equipped with a firing port and a vision block. Three smoke grenade launchers are found on either side of the vehicle at roughly the center of the vehicle at the top.

The Puma is equipped with an Iveco 4V 180-horsepower engine, coupled to an automatic transmission. The suspension in either case is an off-road-type suspension; in the 4x4 version, it is switchable to 4x2 for road use. In the 6x6 version, it is switchable to 6x4. Ground clearance is good and contributes to the Puma's protection against mines and IEDs. The floor is also reinforced against such explosions. The Puma has power steering and power brakes, and the Puma has a collective NBC system. It also has an automatic fire detection and suppression system for the crew compartment, engine compartment, driver's compartment, and fuel tanks.

The armored ambulance and command versions are both based on 6x6 versions of the Puma. The armored ambulance can carry four stretcher-borne patients, two stretcher patients and four sitting patients, or six sitting patients, along with a medic. The vehicle has a defibrillator, an oxygen administration set, a small refrigerator for perishable supplies, the equivalent of two doctor's medical bags and 20 personal medical kits, and supplies like bandages, splints, space blankets, burn first-aid kits, and suchlike.

The command version has a map board, storage for more maps and plotting and office-type supplies, six radios (two long-range – one data-capable, two medium-range, and two short-range), a ruggedized laptop computer, and fold-out shelves and three folding chairs. A hand-held thermal imager, image intensifier, and laser rangefinder are carried.

The 4x4 scout versions of the Puma typically have an extra long-range radio (for two total). Italian doctrine is to operate the scout versions in pairs.

Twilight 2000 Notes: The Puma was first seen in combat against the Germans in early 1998.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Puma Scout	$22,965	D, A	950 kg	7 tons	2+5	2	Passive IR (D)	Shielded
Puma Scout w/RWS	$31,323	D, A	950 kg	7.2 tons	2+5	3	Passive IR (D, C), Image Intensification (C)	Shielded
Puma APC	$22,652	D, A	1.2 tons	8.2 tons	2+8	6	Passive IR (D)	Shielded
Puma APC w/RWS	$35,880	D, A	1.2 tons	8.4 tons	2+8	6	Passive IR (D, C), Image Intensification (C)	Shielded
Puma Ambulance	$26,050	D, A	600 kg	8.4 tons	**	7	Passive IR (D)	Shielded
Puma Command	$250,934	D, A	600 kg	8.4 tons	2+4	8	Passive IR (D)	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Puma Scout	180/91	42/21	150	92	Stnd	W(3)	HF6 HS4 HR3*
Puma Scout w/RWS	175/88	41/20	150	95	CiH	W(3)	TF2 TS2 TR2 HF6 HS4 HR3*
Puma APC	159/80	37/18	270	108	Stnd	W(4)	HF6 HS4 HR3*
Puma APC w/RWS	156/78	36/18	270	110	CiH	W(4)	TF2 TS2 TR2 HF6 HS4 HR3*
Puma Ambulance/Command	156/78	36/18	270	110	Stnd	W(4)	HF6 HS4 HR3*

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Puma/Puma Command	None	None	MG-42/59 (C) or M-2HB (C) or HK GMG (C)	2000x7.62mm or 1200x.50 or 400x40mm
Puma w/RWS	+2	Fair	M-2HB (C)	1200x.50

*Floor AV is 4Sp.

**See Notes for Crew and passenger capacity.

Type 96

Notes: The latest Japanese armored vehicle, the Type 96 APC was first produced in 1995 in LRIP and type-standardized in 1996. It is a basic armored vehicle with medium armor for an APC. It has not been exported, like most Japanese weapons, but has seen combat service in Afghanistan during Japan's short-lived participation in ISAF. The Japanese currently have 72 of them on their rolls, but they intend to eventually have 217.

There is a hatch on the front right deck for the driver, a cupola behind the driver's hatch for the commander with a weapon mount, four large hatches on the rear deck, and a rear ramp with a door for troop entry. The driver can replace his forward vision block with a night vision block, and the commander can do the same on his cupola; the commander also has an additional vision device. Four hatches are on the troop compartment deck. Two firing ports are on each side of the passenger compartment, and two are in the rear of the hull, one in the door and one to the side of it. The commander's cupola-mounted weapon can be aimed and fired when the vehicle is buttoned up, and the roof is a device that detects laser targeting beams and automatically launches smoke grenades in the direction of the beam. The smoke grenades, four per side, are found on each side of the forward side of the vehicle. Two versions exist; the Type 96A is armed with an automatic grenade launcher, and the Type 96B is armed with an M-2HB.

Armor is of all-welded steel spaced armor. There are no special provisions for floor or roof armor. For service in Afghanistan, a bullet-resistant windshield was fitted to the driver's position that covered the front and sides of the driver's position, allowing him to drive with his head out of the vehicle in relative safety. (This windshield has AV 4. The vehicle uses a Komatsu 6D40 turbocharged diesel developing 640 horsepower coupled to an automatic transmission. The suspension is 8x8 and of the off-road-type, and steers with the front set and rear set of wheels steering independently to tighten the turning radius.

Twilight 2000 Notes: About 50 of them had been produced by 2000 in the Twilight 2000 timeline, but the factory manufacturing them had not been destroyed by late 2000 and it was one of the few large armored vehicles of any type being produced in the world at that time.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Type 96A	$58,887	D, A	2.2 tons	14.5 tons	2+8	8	Passive IR (D, G), Image Intensification (G)	Shielded
Type 96B	$36,586	D, A	2.2 tons	14.5 tons	2+8	8	Passive IR (D, G), Image Intensification (G)	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Type 96	195/98	45/23	360	192	Stnd	W(6)	HF12Sp HS6Sp HR6

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Type 96A	+1	Basic	Mk 19 (C)	375x40mm
Type 96B	+1	Basic	M-2HB (C)	1200x.50

DN-IV Caballo

Notes: The DN-I, DN-II, and DN-III were prototype APCs based on the Cadillac-Gage LAV-150, but which never went into production. The DN-IV armored personnel carrier was thought at first to be based on the US LAV-100 and LAV-150 designs, but is in fact an indigenous design. The DN-IV has never been exported, probably since it is simply a run-of-the-mill APC.

The DN-IV looks like a blend of the LAV-150 and the Swiss MOWAG Roland, but has a beefier suspension than either of those vehicles, with bigger tires. The vehicle is topped with an open turret with a pintle-mounted machinegun, sometimes surrounded with AV2 gunshields (often, the open hatch serves as the rear gun shield). The driver has a hatch on the front left deck and there is a rear door for passengers. At least three versions were developed and fielded: as version with a simple commander's cupola as described above, a version with a one-man KUKA turret armed with a 20mm autocannon, and a version with a French SAMM 208 turret armed with an M-2HB and a 7.62mm machinegun. There are two hatches on the rear deck; the rear deck has a pintle mount for a machinegun. The DN-IV is otherwise undistinguished as an APC, not being blessed with heavy armor or any sort of NBC system and having a fire extinguishing system consisting of manual bottles in the vehicle. The engine is a derivative of a Cummins diesel truck engine, the V8-504, which develops 202 horsepower. It does have the virtue of light weight, however, which makes its powerplant adequate. Suspension is 4x4 and of the off-road-type. Driver's controls are conventional, with a manual transmission.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
DN-IV (Basic)	$19,341	D, A	1 ton	9.5 tons	2+8	6	Headlights	Enclosed
DN-IV (KUKA Turret)	$40,839	D, A	900 kg	9.9 tons	2+8	6	Passive IR (C)	Enclosed
DN-IV (SAMM Turret)	$14,400	D, A	850 kg	10.1 tons	2+8	6	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
DN-IV (Basic)	169/86	39/20	176	104	Stnd	W(3)	HF4 HS3 HR2
DN-IV (KUKA Turret)	163/82	38/19	176	108	CiH	W(3)	TF2 TS2 TR2 HF4 HS3 HR2
DN-IV (SAMM Turret)	162/82	37/19	176	111	CiH	W(3)	TF2 TS2 TR2 HF4 HS3 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
DN-IV (Basic)	None	None	HK-21 (C) or M-2HB (C), HK-21 (Rear)	2000x7.62mm or 1200x.50
DN-IV (KUKA Turret)	+1	Basic	20mm Rh-202 Autocannon, HK-21 (Rear)	760x20mm, 1000x7.62mm
DN-IV (SAMM Turret)	+1	Basic	M-2HB, HK-21, HK-21 (Rear)	1200x.50, 3000x7.62mm

DN-VI Ocelote

Notes: This newer Mexican APC is similar in appearance to the 4x4 version of the French VAB wheeled armored personnel carrier, and may in fact be based on an unlicensed copy of that vehicle. The Mexicans already have a number of VABs on their rolls. The DN-VI is also known as the Ocelote. It has not been exported and will probably never be so, as the VAB is a better vehicle and the DN-VI cannot compete with the VAB on the world market.

For the most part, it is a basic APC, but can also be topped by turrets of the same type on the DN-IV, and several variants exist. APC-type variants include a scout/reconnaissance vehicle with extra radios (one extra long-range radio and medium-range radio) and enhanced vision equipment; a command version with two long-range radios, two medium-range radios, and two short-range radios and a map board, map storage, and office and plotting-type supplies, as well as fold-out shelves and three folding chairs, a hand-held thermal imager, image intensifier, and laser rangefinder (and with the machinegun shifted to the commander's position); a logistics carrier with enlarged roof hatches and a widened single rear door, and a 5-ton crane to help load and unload cargo (with the machinegun shifted to the commander's position); and an armored ambulance which can carry four stretcher cases, two stretcher cases and four seated patients, as well as a medic, a defibrillator, an oxygen administration kit, , the equivalent of a doctor's medical bag and 10 personal medical kits, a small refrigerator, and items such as bandages, splints, burn treatment kits, ointments, cravats, and other such materials.

The DN-VI has the basic same sort of body as the VAB, with the driver on the front left and commander to the right, behind a

bullet-resistant windshield, and small windows to either side of the vehicle. There are no doors to the cab, the crew entering and exiting through the rear hatches or the hatches over their position. On the rear deck is a large hatch for standing troops, and this has a pintle mount at the rear. The basic APC has a gunner's station with twin machineguns and sometimes with AV2 gun shields, though as noted above turrets may be mounted. The vehicle has a collective NBC system, as well as improved manual fire suppression equipment (actuated by external and internal pull handles. There are twin doors at the rear for troop access. The sides of the vehicle have three small vision blocks for the troops to see out, and each door has vision blocks, but there are no firing ports.

The DN-VI has 4x4 off-road-type suspension, switchable to 4x2 for road use. The vehicle is amphibious with preparation (2 minutes), and propelled in the water by its wheels. The vehicle is powered by a 120-horsepower engine coupled to a manual transmission; the driver has conventional controls without power boost. The DV-VI is reportedly difficult to drive because of this.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
DN-VI (Basic)	$42,494	D, A	1.1 tons	8 tons	3+10	4	Passive IR (D)	Enclosed
DN-VI (KUKA Turret)	$47,169	D, A	1 ton	8.4 tons	3+10	4	Passive IR (D, G)	Enclosed
DN-IV (SAMM Turret)	$50,517	D, A	950 kg	8.6 tons	3+10	4	Passive IR (D)	Enclosed
DN-VI Scout	$57,957	D, A	750 kg	8.6 tons	3+5	4	Passive IR (D, G), Image Intensification (G)	Enclosed
DN-VI Command	$46,865	D, A	550 kg	8.4 tons	3+4	5	Passive IR (D)	Enclosed
DN-VI Ambulance	$44,194	D, A	550 kg	8.3 tons	*	5	Passive IR (D)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
DN-VI (Basic)	103/52	24/12/2	350	50	Stnd	W(3)	HF6 HS5 HR4
DN-VI (KUKA Turret)	98/49	24/12/2	350	53	CiH	W(3)	TF2 TS2 TR2 HF6 HS5 HR4
DN-IV (SAMM Turret)/Scout	96/48	22/11/2	350	54	CiH	W(3)	TF2 TS2 TR2 HF6 HS5 HR4
DN-VI Command	98/49	24/12/2	350	53	Stnd	W(3)	HF6 HS5 HR4
DN-VI Command	99/50	23/12/2	350	52	Stnd	W(3)	HF6 HS5 HR4

Vehicle	Fire Control	Stabilization	Armament	Ammunition
DN-VI (Basic)/Command	None	None	2xHK-21, HK-21 (Rear)	3000x7.62mm
DN-VI (KUKA Turret)	+1	Basic	20mm Rh-202 Autocannon, HK-21 (Rear)	1140x20mm, 1500x7.62mm
DN-IV (SAMM Turret)	+1	Basic	M-2HB, HK-21, HK-21 (Rear)	1800x.50, 4500x7.62mm
DN-VI (Scout)	+1	Basic	20mm Rh-202 Autocannon, HK-21 (Rear)	1700x20mm, 2250x7.62mm

M-1992

Notes: This North Korean armored personnel carrier is basically an enlarged BRDM. The vehicle is fitted with a multiple missile launcher mount and an AGS-17. The passenger compartment is cramped, but this is not a great problem for the small-statured North Korean soldier.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
$167,941	G, AvG, A	900 kg	12 tons	2+8	5	Image Intensification	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
196/118	40/25/4	435	98	CiH	W(4)	TF2 TS2 TR2 HF3 HS2 HR1

Fire Control	Stabilization	Armament	Ammunition
None	None	5xAT-4 Launchers, AGS-17	5xAT-4 ATGM, 200x30mm Grenades

Bravia Chaimite

Notes: This Portuguese wheeled armored personnel carrier is also used by Lebanon, Libya, Peru, and the Philippines; the Filipinos are the second largest users of the Chaimite. The Libyans also supplied one to the PLO, and it is believed to still be in service. It was adopted in the late 1960s by Portugal and by other countries a short time later. It has seen combat service in Portugal's colonial wars, and in UN service. It is a light, four-wheeled APC that comes in many versions. Most are APC or reconnaissance versions, but there are also command, armor ambulance, and a number of non-APC versions. Portugal is currently in the process of replacing the Chaimite.

The hull is all-welded by lasers, an advanced technique for the time. The driver has a hatch on left front deck, while the vehicle commander sits on the right of him. The driver and commander have small bullet resistant windows to the front and sides of them, and hatches above them. The driver and commander have firing ports directly in front of them and to the sides of them, but these are only shutters with armored covers and not sealed firing ports. There are three similar firing ports on the left side of the vehicle, four on the right, and two in the rear. There are two-part clamshell doors on either side of the passenger compartment, and a door on the right rear of the hull, with one of the firing ports. The top of the clamshell doors can be locked open outwards, or locked open inwards to form a window. On the roof there is usually a small turret (except on the basic V-200 APC and the command version); these turrets may be armed differently depending on the type of Chaimite involved. The versions with multiple antiarmor weapons typically have them one or two on each side of the turret. The roof also has a pair of large hatches over the troop compartment.

The V-300 Recon version has an extra long-range and extra medium-range radio, as well as improved vision equipment and fire control. Like the APC version, some have antiarmor capability. The command version generally has two long-range, two medium-range, and two-long range radios, and a rearranged interior with a map board, map storage, and office and plotting-type supplies. The ambulance version has room for two stretcher cases plus four sitting patients and a medic. It has the equivalent of one doctor's medical bag, 10 personal medical kits, an oxygen administration kit, a defibrillator, and various supplies like splints, bandages, and other medical supplies.

The Chaimite was originally powered by a Chrysler gasoline engine, but these were quickly replaced by a 155-horsepower Cummins diesel engine. Transmission is manual. Suspension is 4x4 off-road-type, with a spare tire normally mounted at the front of the vehicle. The front of the hull has a winch with a capacity of 4.53 tons, with 38.1 meters of cable. The Chaimite is amphibious, propelled in the water by its wheels. Armor is painfully light.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Basic V-200	$27,263	D, A	1.2 tons	7.3 tons	3+8	4	Headlights	Enclosed
V-200 Twin 7.62mm Turret	$49,294	D, A	1 ton	7.7 tons	3+8	6	Passive IR (G)	Enclosed
V-200 Twin 7.62mm Turret w/Antiarmor	$61,494	D, A	900 kg	8 tons	3+7	7	Passive IR (G)	Enclosed
V-200 7.62/.50 Turret	$52,328	D, A	900 kg	8 tons	3+8	6	Passive IR (G)	Enclosed
V-200 7.62/.50 Turret w/Antiarmor	$64,628	D, A	800 kg	8.3 tons	3+7	7	Passive IR (G)	Enclosed
V-300 Recon	$58,210	D, A	900 kg	8 tons	3+5	7	Passive IR (G), Image Intensification (G)	Enclosed
V-300 Recon w/Antiarmor	$70,510	D, A	800 kg	8.3 tons	3+5	7	Passive IR (G), Image Intensification (G)	Enclosed
V-500 CPC	$31,500	D, A	600 kg	7.7 tons	3+4	7	Headlights	Enclosed
V-500 Ambulance	$31,353	D, A	600 kg	7.6 tons	*	7	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Basic V-200	168/84	39/20/4	300	78	Stnd	W(3)	HF3 HS3 HR2
V-200 7.62mm Turret	161/81	37/19/4	300	81	CiH	W(3)	TF2 TS2 TR2 HF3 HS3 HR2
V-200 Twin 7.62mm Turret w/Antiarmor/7.62mm & .50 Turret/V-300 Recon	153/76	35/19/4	300	86	CiH	W(3)	TF2 TS2 TR2 HF3 HS3 HR2
V-200 7.62/.50 Turret w/Antiarmor/V-300 Recon w/Antiarmor	148/74	34/18/3	300	89	CiH	W(3)	TF2 TS2 TR2 HF3 HS3 HR2
V-300 Recon	217/130	45/30/5	300	76	CiH	W(3)	TF2 TS2 TR2 HF3 HS2 HR2

V-500 CPC/Ambulance	161/81	37/19/4	300	81	Stnd	W(3)	HF3 HS3 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Basic V-200/V-500 CPC	None	None	MG-3 (C), M-2HB (C), or M-249 (C)	7100x7.62mm, 4000x.50, or 9700x5.56mm
V-200 Twin 7.62mm Turret	None	Basic	2xMG-3	9500x7.62mm
V-200 Twin 7.62mm Turret w/Antiarmor	None	Basic	Twin MG-3s, 4xM-20A1 Bazookas or 2xSS-11 ATGM Launchers or M-40A2 Recoilless Rifle	9500x7.62mm, 8x89mm or 4xSS-11 ATGM or 6x106mm
V-200 7.62/.50 Turret	+1	Basic	MG-3, M-2HB	4750x7.62mm, 2850x.50
V-200 7.62/.50 Turret w/Antiarmor	+1	Basic	MG-3, M-2HB, 4xM-20A1 Bazookas or 2xSS-11 ATGM Launchers, or M-40A2 Recoilless Rifle	4750x7.62mm, 2850x.50, 8x89mm or 4xSS-11 ATGM or 6x106mm
V-300 Recon	+2	Fair	20mm KAA Autocannon, MG-3	400x20mm, 4750x7.62mm
V-300 Recon w/Antiarmor	+2	Fair	20mm KAA Autocannon, MG-3, 4xM-20A1 Bazookas or 2xSS-11 ATGM Launchers, or M-40A2 Recoilless Rifle	400x20mm, 4750x7.62mm, 8xBazooka Shells, or 4xSS-11 ATGM or 6x106mm

Bravia Commando Mk III

Notes: This is an armored car used by the Portuguese National Guard and at least two other unnamed countries, probably in Africa. It was developed in 1977 at first for the Portuguese National Guard, primarily for internal security use, and the two other countries which use it are also known to use it in internal security purposes. The Commando Mk III was preceded by unsuccessful Mk I and Mk II prototypes. The Commando Mk III is based on the SWB version of the Bravia Gazela light truck, fitted with a welded steel body.

Being basically an armored truck, the Commando Mk III is truck-like in appearance, with the engine up front under a hood, a cab with the commander and driver behind that with a bullet-resistant windshield and bullet-resistant windows to the sides, with armored shutters which can be dropped or slid over the windows which have vision slits in them. They have doors in the sides of their cab. The troops are in the rear, with the very rear being a low section that holds equipment and has a spare tire atop it on the exterior. Troop access is on the rear of the troop compartment via a door; the troops must climb over the rear of the vehicle and the spare tire if present. On some versions, the troop compartment is topped by a small turret mounting a pair of machineguns, but on most versions, the vehicle has a simple ring mount with a machinegun or riot control grenade launcher. On the turreted versions, there is a bank of five smoke grenade launchers at the rear; on versions without turrets, there is a cluster of three smoke grenade launchers at the front corners of the body of the vehicle over the driver's and commander's positions. There are four firing ports, one on each side and two in the rear of the troop compartment. The vehicle does not have an NBC system, but it does have a forced air system to clear the interior as much as possible of irritant gas or smoke, since the firing ports are merely shuttered holes rather than sealed firing ports.

Suspension is 4x4 and of the off-road-type, switchable to 4x2 for road use. Run-flat tires are optional; run-flat sand tires are also optional, as is air conditioning. The interior does not have a fire suppression system beyond fire extinguisher bottles, but the interior walls are lined with non-flammable PVC foam. Power may be provided by an 81-horsepower Perkins diesel or a Dodge 150-horsepower gasoline engine; transmission is manual.

Vehicles	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Commando Mk III (Basic, Gas)	$17,917	D, A	700 kg	4.2 tons	3+5	4	Headlights	Enclosed
Commando Mk III (Basic, Diesel)	$17,657	D, A	700 kg	4.2 tons	3+5	4	Headlights	Enclosed
Commando Mk III (Twin MG Turret, Gas)	$22,077	D, A	600 kg	4.6 tons	3+5	4	Headlights	Enclosed
Commando Mk III (Twin MG Turret, Diesel)	$21,817	D, A	600 kg	4.6 tons	3+5	4	Headlights	Enclosed

Commando Mk III (.50/7.62mm Turret, Gas)	$25,165	D, A	500 kg	4.9 tons	3+5	4	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Commando Mk III (Basic, Gas)	248/125	57/29	160	100	Stnd	W(2)	HF2 HS2 HR2
Commando Mk III (Basic, Diesel)	143/72	33/17	160	36	Stnd	W(2)	HF2 HS2 HR2
Commando Mk III (Twin MG Turret, Gas)	230/116	53/27	160	110	CiH	W(2)	TF2 TS2 TR2 HF2 HS2 HR2
Commando Mk III (Twin MG Turret, Diesel)	135/68	31/16	160	39	CiH	W(2)	TF2 TS2 TR2 HF2 HS2 HR2
Commando Mk III (.50/7.62mm Turret, Gas)	219/110	51/26	160	114	CiH	W(2)	TF2 TS2 TR2 HF2 HS2 HR2
Commando Mk III (.50/7.62mm Turret, Diesel)	130/66	30/15	160	41	CiH	W(2)	TF2 TS2 TR2 HF2 HS2 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Commando Mk III (Basic)	None	None	MAG	1850x7.62mm
Commando Mk III (Twin MG Turret)	None	Basic	2xMAG	1850x7.62mm
Commando Mk III (.50/7.62mm Turret)	+1	Basic	M-2HB, MAG	500x.50, 1000x7.62mm

ROMARM TAB-71

Notes: Using the Soviet BTR-60PB as a base, the Romanians came up with the at first very similar TAB-71 series of APCs. In addition to Romania, the TAB-71 was used by Yugoslavia and later Moldova. Yugoslavian and Moldavan examples may still be in service, but Romanian TAB-71s have long been replaced by the TAB-77 and later APCs. The TAB-71 was first seen by the West in 1972 and is externally very similar to the BTR-60PB, though the vehicle is believed to have been in service since the late 1960s. Internal arrangements are different and the turret used is also different. In addition to the basic TAB-71 APC and its upgrades, there are several command variants as well as an ARV and mortar carrier (only APC-types will be covered here).

The TAB-71

As stated before, the basic form of the TAB-71 is very similar to that of the BTR-60PB. The engines are in the rear; this means that there is no door or hatch in the rear of the vehicle for the troops to enter and exit, the troops must therefore enter and exit through a pair of roof hatches, making them vulnerable if this is done under fire. There are small hatches in the sides between the second and third roadwheels. These are commonly called by the Romanians “suicide hatches” as they are very small, almost impossible to squeeze out of wearing even minimal gear, and generally used only in emergencies or to feed supplies through; you definitely can’t come out of them in a fighting posture. The front of the vehicle has a boat-shaped nose, and the driver on the left and commander on the right have bullet-resistant windshields to their front and small windows to either side. The windshields have armored shutters which may be closed over the windshields with vision slits in them. The commander has a hatch overhead which opens forwards, but no sort of weapon mount. The driver has no hatch, but does have a head for a night vision block. Behind the commander’s and driver’s position is the small turret; this turret is the same as used on the MLVM tracked APC, and it has a small hatch in the turret roof. The turret is manually-operated. There are no firing ports and no special provisions for fire other than manual fire extinguishers. The crew and troops have a collective NBC system to plug into. A front-mounted winch is mounted for self recovery; this has a capacity of 5.5 tons and 60 meters of cable.

Like the BTR-60PB, the TAB-71 is powered by twin gasoline engines, but the engines used on the TAB-71 are much more powerful Saviem SR-225 engines each developing 140 horsepower. The vehicle is still very difficult to drive, as transmission is manual with the driver having to shift each engine individually in gear simultaneously in order for the vehicle to continue to operate smoothly. The vehicle is amphibious with minimal preparation (a trim vane must be erected from the driver’s compartment and bilge pumps turned on), requiring 4 minutes. Once in the water, the TAB-71 is propelled by the motion of its wheels. Suspension is 8x8 and of the off-road-type, with central tire pressure regulation.

The TAB-71M, also called the TAB-72, is fitted with the same Saviem 797-05 diesel engines as the TAB-77; there are still two mounted and the driver difficulty is still present, as the manual transmission is retained. These engines each have a capacity of 130 horsepower. The engines are mounted in a somewhat larger compartment, which unfortunately takes room away from the troop compartment. The “suicide hatches” have been made a little larger, but are still a tight squeeze. The turret is modified and has more vision blocks than the TAB-71’s turret, and the gunsight head is improved and better protected.

Command Variants

The TAB-71A R-1450 is a minor command variant, for use at platoon command levels. The primary difference is the addition of an additional long-range radio and short-range radio with associated antennas on the roof. The TAB-71A R-1451 is used at a somewhat higher level of command; it has two long-range radios and two short-range radios, a removable pole-type antenna to extend communications range, and a small box on the right side of the roof which houses a 1kW generator. The turret of the R-1451 houses only a PKT machinegun; the KPV and the associated ammunition and stowage are deleted. The interior of the R-1451 is rearranged for command functions, and has a small amount of space for map stowage, marking and office-type supplies, and room for the radio operators. It does not carry a dismount crew. The TAB-71A R-1452 is used at even higher command levels; the turret is unarmed and contains extra day and night vision devices, and the interior is heavily rearranged with room for a command staff, map stowage, a map board, two long-range, two medium-range, and two short-range radios, a radio teletype machine (one of the long-range radios is modified to allow the transmission of this data), and office and plotting supplies. The roof of the R-1452 has a 4kW generator, and also has a small crane with a capacity of 1 ton to allow the generator to be dismounted and remounted.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
TAB-71	$67,566	G, A	1.6 tons	11 tons	3+8	4	Passive IR (D)	Shielded
TAB-71M	$67,491	D, A	1.6 tons	11 tons	3+8	4	Passive IR (D)	Shielded
TAB-71A R-1450	$68,041	D, A	1.2 tons	11 tons	3+7	4	Passive IR (D)	Shielded
TAB-71A R-1451	$62,112	D, A	800 kg	11.3 tons	3+5	5	Passive IR (D)	Shielded
TAB-71A R-1452	$86,599	D, A	700 kg	11.5 tons	3+5	6	Passive IR (D)	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
TAB-71	183/92	42/21/5	290	195	CiH	W(4)	TF2 TS2 TR2 HF3 HS3 HR2
TAB-71M/R-1450	171/86	39/20/4	290	135	CiH	W(4)	TF2 TS2 TR2 HF3 HS3 HR2
TAB-71A R-1451	166/83	38/19/4	290	139	CiH	W(4)	TF2 TS2 TR2 HF3 HS3

TAB-71A R-1452	164/83	37/19/4	290	142	CiH	W(4)	TF2	TS2	HR2 TR2 HR2	HF3	HS3

Vehicle	Fire Control	Stabilization	Armament	Ammunition
TAB-71/TAB-71A R-1450	None	None	KPV, PKT	600x14.5mm, 2500x7.62mm
TAB-71M	+1	Basic	KPV, PKT	600x14.5mm, 2500x7.62mm
TAB-71A R 451	+1	Basic	PKT	2500x7.62mm

ROMARM TAB-77

Notes: The Romanians not only built the BTR-70 under license, they built their own version of the BTR-70, the TAB-77. The TAB-77 first appeared in the late 1970s to the West, but was probably in service with the Romanians a couple of years earlier than that. The Romanians do not appear to have ever had any export customers for the TAB-77. There are a number of different versions of the TAB-77 that were built, including several upgraded models and prototype versions. (The prototype versions will not be covered here.) The Chinese purchased a number of TAB-77s in the 1980s for evaluation purposes, and they reportedly entered limited test service, though the idea was not further pursued.

The TAB-77

The hull follows the basic model of the BTR-70, though with some detail differences, primarily to suit local Romanian manufacturing methods. The main difference is the engines; the two gasoline-powered engines of the BTR-70 are replaced with a pair of 132-horsepower Savia 797-05M1 diesel engines which give the TAB-77 greater range. The TAB-77, however, is heavier than the BTR-70, so even though engine power is comparable, the TAB-77 is slower than the BTR-70. The turret is also different, being of higher profile, and having weapons with greater elevation and depression (-12 degrees and almost straight up). The turret has no hatch in the roof, and vision is through vision blocks or the gunsight (which also has a night vision device). The turret is manually-operated. The TAB-77 retains the “suicide hatches” of the TAB-71M; the primary entrance and exit for the troops is still a pair of roof hatches. There are, however, three firing ports in each side of the troop compartment and two in the rear. The engines are at the very rear of the vehicle, as on the TAB-71. The driver and commander are in the front of the vehicle, with the driver on the right and commander on the left; they have bullet-resistant windshields to the front with armored shutters which may be lowered and have vision slits in them. To their sides are small windows over which armor plates may be slid. The commander has a hatch over his position; the driver does not have a hatch, but the roof does have an opening for a night vision block.

As stated above, the TAB-77 uses different engines than the BTR-70. Suspension is 8x8 off-road-type; the front four wheels are the steerable wheels. The TAB-77 is still difficult to drive due to the manual transmission and twin engines. The driver has a central tire pressure regulation system. The crew has a collective NBC system. Armor is all-welded steel, but is relatively light (though an improvement on the TAB-71). The vehicle is amphibious, with a trim vane requiring erection from inside the driver’s compartment and bilge pumps turned on, as well as a waterjet once the vehicle is floating. The crew is protected by an automatic fire detection and suppression system. The same front-mounted winch as on the TAB-71 is on the TAB-77, with a capacity of 5.5 tons and 60 meters of cable.

The B-33 Zimbru

Originally thought to be simply an upgrade of the TAB-77, the B-33 in fact uses the BTR-80 as a base. It was first seen in 1996. The B-33 is powered by a single 280-horsepower diesel engine. (Transmission is still manual.) Layout is largely the same as on the TAB-77, but to the side of the commander’s compartment is an additional firing port. The turret is the same as on the TAB-77, but has an IR searchlight on top (controllable from inside the turret) and a bank of six smoke grenade launchers at the rear of the turret. Gone are the “suicide doors;” the doors are now large enough for troops to enter and leave the vehicle through them, and are clamshell doors opening upwards and downwards. The roof hatches open outwards and can be locked open vertically; for this purpose, they each have a firing port in them, with the soldier using the hatch as a gun shield. The winch has been increased in strength to 6 tons, but still with 60 meters of cable. The B-33 is fitted with a modern radio set, including a long-range, medium-range, and short-range radio.

The Zimbru 2000 is a further development of the B-33, powered by a German-made 260-horsepower turbocharged diesel coupled to an automatic transmission. The turret of the Zimbru 2000 is larger and is an OHWS fitted with a 30mm 2A42 autocannon instead of the customary twin machinegun turret. This turret hats a hatch in it, and has upgraded night vision equipment and fire control. Service began in 2007, after the delay of the RN-94 program.

The Saur 1 is greatly redesigned from the Zimbru 2000, with the engine in the center of the vehicle, and that engine being a Cummins 275-horsepower engine. The troop compartment is in the rear and there is a large hatch in the rear of the vehicle. The front of the vehicle is redesigned and has a sharper slope than previous models. The Saur 1 has an OHWS like that fitted to the Zimbru 2000. The Saur 1 is available for export, but no sales have yet been made.

The version made for Chinese evaluation is believed to have increased armor and is much heavier than its Romanian counterpart. It is otherwise like the standard TAB-77.

Command and Signals Vehicles

The TAB-77A R-1451/M is a version of the TAB-77 fitted out as a command vehicle. In this role, the vehicle is fitted with a low-profile turret armed only with a PKT machinegun. Two long-range, three medium-range, and two short-range radios are carried, as well as a radio teletype machine; in later versions, a ruggedized laptop computer is carried instead of the radio teletype. A map board and map storage is carried, as well as office and plotting supplies, and the shelves of the vehicle can be folded out into a large work space. Three folding chairs are carried. A hand-held image intensifier and thermal imager is carried.

The TAB-77A R-1452 is not only a signals vehicle, it carries generators to power the vehicle and an accompanying R-1451/M. It has a very long-range radio with a range of 100 km, two long-range radios, two medium-range radios, and a switchboard, along with necessary commo gear. It carries 20 field telephones. An antenna mast can be erected atop the vehicle to further extend radio range. The vehicle has a 1kW and a 5kW generator at the rear of the vehicle on the roof. The R-1452 has a dummy turret, but it does not rotate and the weapons are fake and the weapons do not elevate or depress. The false turret still functions as an observation dome, and is therefore given a value below. The true armament of the R-1452 is a pintle-mounted machinegun by the commander's station.

Twilight 2000 Notes: The B-33 is a rare vehicle in the Twilight 2000 timeline. The Zimbru 2000 and Saur 1 are absent from the Twilight 2000 timeline.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
TAB-77	$47,833	D, A	1.6 tons	13.3 tons	3+8	8	Passive IR (D)	Shielded
B-33	$39,761	D, A	1.5 tons	14 tons	3+8	10	Passive IR (D)	Shielded
Zimbru 2000	$44,204	D, A	1.6 tons	14 tons	3+8	8	Passive IR (D, G)	Shielded
Saur 1	$92,685	D, A	1.7 tons	13.5 tons	3+8	8	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Shielded
Chinese TAB-77	$48,549	D, A	1.2 tons	15 tons	3+8	8	Passive IR (D)	Shielded
TAB-77A R-1451/M	$128,056	D, A	800 kg	13.7 tons	3+4	9	Passive IR (D)	Shielded
TAB-77A R-1451/M (Late)	$187,981	D, A	800 kg	13.7 tons	3+4	10	Passive IR (D)	Shielded
TAB-77 A R-1452	$43,457	D, A	600 kg	13.6 tons	4	10	Passive IR (D)	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
TAB-77	150/75	34/18/4	290	138	CiH	W(4)	TF4 TS4 TR3 HF4 HS3 HR3
B-33	151/76	35/18/4	290	147	CiH	W(4)	TF4 TS4 TR3 HF5 HS3 HR3
Zimbru 2000	142/72	33/17/4	290	136	CiH	W(4)	TF4 TS4 TR3 HF5 HS3 HR3
Saur 1	152/77	35/18/4	290	143	CiH	W(4)	TF4 TS4 TR3 HF6 HS3 HR3
Chinese TAB-77	137/69	32/16/4	290	156	CiH	W(4)	TF4 TS4 TR3 HF5 HS4 HR3
TAB-77A R-1451/M	146/73	33/17/4	290	142	CiH	W(4)	TF4 TS4 TR3 HF4 HS3 HR3
TAB-77A R-1452	147/73	33/17/4	290	141	CiH	W(4)	TF4 TS4 TR3 HF4 HS3 HR3

Vehicle	Fire Control	Stabilization	Armament	Ammunition
TAB-77/Chinese TAB-77	+1	Basic	KPV, PKT	600x14.5mm, 2500x7.62mm
B-33	+1	Basic	KPV, PKT	600x14.5mm, 3000x7.62mm
Zimbru 2000	+2	Fair	30mm 2A42 Autocannon, PKT	300x30mm, 3000x7.62mm
Saur 1	+2	Fair	30mm 2A42 Autocannon, PKT	360x30mm, 3600x7.62mm
TAB-77A R-1451/M	+1	Basic	PKT	2500x7.62mm
TAB-77 R-1452	None	None	PK (C)	2500x7.62mm

ROMARM TABC-79/ABC-79M

Notes: This Romanian vehicle uses many automotive components of the TAB-77. Though it is primarily still known as the TABC-79, its designation was recently changed to the ABC-79M. Although classed as an APC, its Romanian designation is reconnaissance armored personnel carrier. It is a 4x4 vehicle, smaller but more heavily armored than the TAB-77 series. It is uses many of the same

automotive components as the TAB-77 and is regarded by some experts as a shortened version of the TAB-77, though it bears only a superficial resemblance to the TAB-77. The TABC-79 is currently used only by Romania. The TABC-79 has seen combat service in Kosovo as part of KFOR. One example was purchased by the Israelis in 1994, for unknown trials, and its current disposition is also unknown.

The commander and driver sit at the front of the vehicle, the driver on the left and commander beside him on the right. The commander and driver have a windshield to the front that may be covered by an armored shutter (they then use vision blocks); they also have hatches above their positions. The turret is identical to the TAB-77s, except that the vision equipment is better as is fire control equipment. The passengers have hatches on either side of the vehicle between the wheels, and another door on the rear; the side hatches are small, similar to the “suicide hatches” of the TAB-71M, and the rear door is cramped and narrow. There is also a hatch on the roof of the vehicle behind the turret. The troop compartment is relatively small. The TABC-79 has a collective NBC system for the crew and troops. Protection also includes an automatic fire detection and suppression system. The passengers have firing ports, two to a side and two in the rear. The TABC-79 has a 5.5-ton winch on the front with 50 meters of cable.

There are two primary variants of the TABC-79: The TABC-79 reconnaissance version, with an extra long-range radio that is data-capable and a radio teletype; and the TAB-C, an APC variant which has room for one extra person in the troop section. There is also the TABC-79M turretless APC, with a pintle-mounted machinegun and even more room in the troop section. The TAB RCH-84 is an NBC reconnaissance version with appropriate biological, chemical, and radiological detection and measurement gear, and a pair of dispensers for marking flags (40 per side, which are actuated from inside the vehicle), and a full NBC overpressure suite. It also has an extra long-range radio with data capability, and appropriate communications gear for transmitting its findings back to higher headquarters. The TABC-79A PCMOA is a FIST vehicle with extra observation and rangefinding equipment in its turret as well as a designator; its turret is wider but lower in profile, and is armed only with a PKT machinegun. The PCMOA has extra communications gear, including an extra long-range data-capable computer and equipment to communicate fire direction information to artillery and mortar units. It has a limited computer for computation of fire direction information and coordinates.

The TABC-79 is powered by a single Savia 798.05N2 turbocharged diesel engine, with an automatic transmission. The driver has conventional controls. The engine is relatively compact, allowing for that small hatch in the rear, though it is mounted at the rear of the vehicle. The TABC-79 is amphibious without preparation, requiring only that a waterjet be switched on when the vehicle begins floating. Suspension is 4x4 and of the off-road-type. Armor protection is slightly improved over the TAB-77, being on par with the B-33.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
TABC-79	$50,423	D, A	700 kg	9.3 tons	3+4	6	Passive IR (D, G)	Shielded
TAB-C	$35,373	D, A	900 kg	9.2 tons	3+5	6	Passive IR (D)	Shielded
TABC-79M	$24,295	D, A	1 ton	9 tons	3+6	6	Passive IR (D)	Shielded
TAB RCH-84	$472,778	D, A	350 kg	9.5 tons	4	8	Passive IR (D, G)	Shielded
TABC-79A PCMOA	$125,195	D, A	350 kg	9.5 tons	4	8	Passive IR (D, G), Image Intensification (G)	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
TABC-79	127/63	29/15/3	200	80	CiH	W(3)	TF4 TS4 TR3 HF5 HS3 HR3
TAB-C	128/64	29/15/3	200	79	CiH	W(3)	TF4 TS4 TR3 HF5 HS3 HR3
TABC-79M	131/65	30/15/4	200	78	Stnd	W(3)	HF5 HS3 HR3
TAB RCH-84/TABC-79A PCMOA	124/62	28/15/3	200	82	CiH	W(4)	TF4 TS4 TR3 HF5 HS3 HR3

Vehicle	Fire Control	Stabilization	Armament	Ammunition
TABC-79/TAB RCH-84	+2	Fair	KPV, PKT	500x14.5mm, 2000x7.62mm
TAB-C	+1	Basic	KPV, PKT	500x14.5mm, 2000x7.62mm
TABC-79M	None	None	PK	2500x7.62mm
TABC-79A PCMOA	+2	Fair	PKT	2500x7.62mm

Arzamas BTR-70

Notes: This improved version of the BTR-60PB was first identified as a separate vehicle type during a parade in Moscow in 1980. Before that, it was thought to be merely a modified BTR-60. Unknown to the West, the BTR-70 has been in service with Soviet forces since mid-1972. It did not have as wide export sales as the BTR-60, but was used by most Warsaw Pact countries, Bangladesh, Iran, Indonesia, Pakistan, Nepal, and Vietnam. Taliban Afghanistan operated an unknown number of captured BTR-70s, but these were all destroyed in the US invasion in 2002. The PLO is rumored to have a force of 50 of them, and Mexico is rumored to have recently taken delivery of an unknown number of them. They saw large-scale combat use in Afghanistan with the Soviets and by Taliban forces, and smaller combat use in Chechnya, Georgia, and with IFOR and KFOR. Lesser numbers of the BTR-70 are seen than the BTR-80, as the BTR-80 appeared not long after the BTR-70 and the BTR-80 is a better vehicle.

The BTR-70

The BTR-70 is largely an upgraded and improved BTR-60PB, and the two can easily be mistaken for each other. The BTR-70 has pronounced exhaust pipes and mufflers on the rear roof of the vehicle. The BTR-70 has one extra firing port on each side of the vehicle (for a total of three in each side). The nose is somewhat longer, a consequence of both improved armor and a larger trim vane. The hull on the whole is lower and more stretched than on the BTR-60. Perhaps the most telling difference is the driver's and commander's positions; they have vision blocks forwards and to the sides in addition to windows. The side doors, though still quite small, are now found between the second and third wheels below the center of the vehicle instead of being above the center of the vehicle. This door position means that troops can exist through them more quickly, though it also means that, due to their small size and the squeezing involved, that troops using them are more likely to be run over by the second wheel. The preferred method of entry and exit is still through roof hatches (two total), as there is no rear door (the engine is in the back). The commander and driver are still in the front of the vehicle, with the driver and commander having night vision blocks in their overhead hatches. The driver has vision blocks to the front and left side, and the commander to the front and right side. The turret is largely the same as on the BTR-60PB, though with slightly better fire control equipment. The turret controls are still manual. The interior layout is basically similar, but is more cramped due to the larger engines and fuel tanks. The troops inside sit back-to-back, facing out, except for the squad leader, who sits with his back to the turret facing to the rear.

The BTR-70 is powered by a pair of ZMZ-4905 120-horsepower gasoline engines; these are coupled to the same sort of difficult and complicated manual transmission as on the BTR-60. The transmission has been somewhat improved in reliability, but is still prone to breakdowns. One engine propels the second and fourth axles, and the second engine propels the first and third axles. The dual engine format means that if one engine goes out, the vehicle can still drive at half speed, but causes the driving difficulties as stated. Suspension is 8x8 and of the off-road-type, and the tires are run-flat and have thicker walls than on the BTR-60. The BTR-70 is fully amphibious with preparation (a trim vane must be erected in front from the driver's compartment, bilge pumps turned on, and a waterjet turned on when the vehicle is floating; this takes four minutes). Swim speed is reduced from that of the BTR-60; this is due to less freeboard (the BTR-70 sits lower in the water than the BTR-60). The BTR-70 has a one-piece waterjet cover, rather than the two-piece unit of the BTR-60, and the waterjet is more reliable. The BTR-70 has a collective NBC system for the crew and troops; it also has an overpressure system. The frontal armor has been supplemented with spaced appliqué armor. The BTR-70 has an automatic fire detection and suppression system.

In Afghanistan, a common addition to the BTR-70 was a pintle-mounted AGS-17 just forward of the troop compartment, to be fired from troops in the open roof hatches.

Late BTR-70s have a number of changes to them, including the mounting of the BTR-80's turret, which allows for much greater elevation and depression. The trim vane has been further modified to make it more stable when swimming, the section behind the rear wheels has been modified to trap more air when swimming. A section of the troop compartment on each side has been angled, and these angled edges have firing ports in them to allow better suppressive fire against targets above the vehicle (important in Afghanistan's mountainous regions). Brackets have been added for the attachment of external stowage. Firing ports have been added to the sides of the commander's and driver's positions. Other than these changes, this late version of the BTR-70 is the same as the standard BTR-70 for game purposes.

Later APC-Type Modifications

The BTR-70M is as the late-production BTR-70 above, but has the single KamAZ-7403 260-horsepower diesel engine of the BTR-80, and four smoke grenade launchers on each side of the turret. The BTR-70V is the same vehicle, but with an auxiliary fuel tank in the rear.

In the late 1990s, the Ukrainian firm of KMDB began offering an upgrade package for the BTR-70 featuring a new 300-horsepower UTD-20 turbocharged diesel engine and automatic transmission as well as a larger turret with increased armor protection and a 30mm ZTM-2 autocannon instead of the standard KPV machinegun. Customers for this upgrade have not been made public, but are rumored to include Ukraine herself as well as Russia. The new engine is more powerful than the two gasoline engines it replaces, as well as offering greater fuel economy; it may also burn kerosene as well as diesel. The modification may be noticed primarily by the Ingul turret (as noted for the BTR-60D above), which has a raised superstructure on top of the old turret with the autocannon, coaxial machinegun, and ammunition storage. The turret has electrical traverse instead of being manual. The commander may use the sights of the turret, using downlinked monitors. Another KMDB modification gives the BTR-70 a semi-overhead weapons system (the Grom turret) armed with a pair of 23mm autocannons instead of the single 30mm autocannon. This version has downlinked sights and vision equipment, as the gunner is mostly inside the hull of the vehicle. In both cases, the side doors are replaced with two-piece

clamshell doors, much easier to get in and out of. Both have four smoke grenade launchers on either side of the turret. Though I have found no official designation for these versions, I have used the designations BTR-70D-1 and BTR-70D-2 below for convenience purposes, though both are called BTR-70D in official literature.

A Slovakian/Belarusian version of the BTR-70, the Cobra-K, is equipped with a new turret armed with a 2A42 autocannon, coaxial machinegun, and an AT-14 ATGM launcher. Fire control is improved, as is vision equipment. The launcher is reloaded from the troop compartment through the deck hatches. Four smoke grenade launchers are found on each side of the turret. The engine is the same as that in the BTR-80. The Cobra-K is NBC shielded.

Other APC-Type Versions

The BTR-70K is a simple command version used at lower echelons; these have an additional long-range and medium-range radio, an inertial navigation system, and a 1kW generator. It has a reduced dismount squad.

The BTR-70KShM is a command/staff version of the BTR-70. It has a total of three long-range radios, two medium-range radios, and one short-range radio, as well as a radio teletype machine. Later versions replace the radio teletype with a ruggedized laptop. The interior is modified with a map board and map storage as well as office and plotting-type supplies. It has bows and a tarpaulin cover that may be erected to either side of the vehicle to increase working space. The vehicle has two extendible 10-meter radio masts, a 2kW generator, and extendible shelves and three folding chairs. The turret is retained. A hand-held thermal imager, image intensifier, and laser rangefinder are carried. The BTR-70 SA-22 is a similar vehicle, used at higher command levels, with a different mix of radios, and has an inertial navigation system. For game purposes, it is otherwise like the BTR-70KShM.

The BTR-70MS is a signal vehicle with one very long-range (100 km), two long range, and two medium-range radios, a switchboard, 20 field telephones, and a 4kW generator. It has no turret, and the roof is festooned with antennas. There are several similar signals vehicles, which differ primarily in the radios carried.

The BTR-70 SPR-2 is a specialist EW variant; it is designed to help protect units from artillery attack by jamming proximity fuzes on the incoming shells. Jamming these shells is a task by the operator of the equipment (Difficult: Electronics); success means that the shell detonates 20-70 meters (1D6+1x10) meters above the ground, and scatters an extra 10-60 meters. Catastrophic Failure has no special effect (other than the jamming being ineffective); Outstanding Success means that the rounds either do not detonate (25% chance) or detonate at double the normal jamming altitude and scatter distance (75% chance). The SPR-2 has a 4kW generator on the rear of the roof, and has no turret.

The BTR-70Kh is an NBC reconnaissance version of the BTR-70. It carries instruments to measure radiation and chemical contamination, as well as better shielding, but no special marking equipment. It has an extra long-range radio and radio teletype (later replaced by a ruggedized laptop) and carries a number of maps and map-marking equipment.

Twilight 2000 Notes: The BTR-70D-1, BTR-70D-2, and Cobra-K do not exist in the Twilight 2000 timeline. The BTR-70M and BTR-70V are rare.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
BTR-70	$57,277	G, A	1.2 tons	11.5 tons	3+7	6	Passive IR (D, C)	Enclosed
BTR-70 w/AGS-17	$42,646	G, A	1.2 tons	11.6 tons	3+7	6	Passive IR (D, C)	Enclosed
BTR-70M	$50,698	D, A	1.2 tons	11.5 tons	3+7	6	Passive IR (D, C)	Enclosed
BTR-70V	$50,832	D, A	1.2 tons	11.6 tons	3+7	6	Passive IR (D, C)	Enclosed
BTR-70D-1	$177,777	D, K, A	1.1 tons	13 tons	3+7	8	Passive IR (D, G, C), Image Intensification (G), Thermal Imaging (G)	Enclosed
BTR-70D-2	$187,960	D, K, A	1.1 tons	13 tons	3+7	8	Passive IR (D, G, C), Image Intensification (G), Thermal Imaging (G)	Enclosed
BTR-70 Cobra-K	$90,065	D, A	1.2 tons	12.1 tons	3+7	8	Passive IR (D, G, C), Image Intensification (G)	Shielded
BTR-70K	$67,977	D, A	900 kg	11.7 tons	3+5	9	Passive IR (D, C)	Enclosed
BTR-70KShM	$247,887	D, A	600 kg	11.9 tons	3+4	10	Passive IR (D, C)	Enclosed

BTR-70KShM (Late)	$307,812	D, A	600 kg	11.9 tons	3+4	10	Passive IR (D, C)	Enclosed
BTR-70 SA-22	$257,887	D, A	600 kg	11.9 tons	3+4	10	Passive IR (D, C)	Enclosed
BTR-70 SA-22 (Late)	$317,812	D, A	600 kg	11.9 tons	3+4	10	Passive IR (D, C)	Enclosed
BTR-70MS	$49,341	D, A	600 kg	11.8 tons	4	10	Passive IR (D, C)	Enclosed
BTR-70 SPR-2	$46,976	D, A	600 kg	11.5 tons	4	9	Passive IR (D, C)	Enclosed
BTR-70Kh	$456,677	D, A	600 kg	11.7 tons	4	9	Passive IR (D, C)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
BTR-70	154/78	36/18/4	350	133	CiH	W(5)	TF2 TS2 TR2 HF4 HS3 HR2
BTR-70 w/AGS-17	153/77	36/18/4	350	134	CiH	W(5)	TF2 TS2 TR2 HF4 HS3 HR2
BTR-70M	165/83	38/19/4	350	136	CiH	W(5)	TF2 TS2 TR2 HF4 HS3 HR2
BTR-70V	163/82	38/19/4	350+175	137	CiH	W(5)	TF2 TS2 TR2 HF4 HS3 HR2
BTR-70D-1	169/85	39/20/4	350	126	CiH	W(5)	TF5 TS5 TR5 HF4 HS3 HR2
BTR-70D-2	169/85	39/20/4	350	126	CiH	W(5)	TF4 TS4 TR4 HF4 HS3 HR2
BTR-70 Cobra-K	159/80	37/18/4	350	135	CiH	W(5)	TF4 TS4 TR4 HF4 HS3 HR2
BTR-70K/70Kh	151/76	35/18/4	350	136	CiH	W(5)	TF2 TS2 TR2 HF4 HS3 HR2
BTR-70KShM/SA-22	149/76	35/17/4	350	137	CiH	W(5)	TF2 TS2 TR2 HF4 HS3 HR2
BTR-70MS	149/76	35/17/4	350	137	Stnd	W(5)	HF4 HS3 HR2
BTR-70 SPR-2	154/78	36/18/4	350	133	Stnd	W(5)	HF4 HS3 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
BTR-70/70M/70V/70K/70Kh	+1	Basic	KPV, PKT	500x14.5mm, 3000x7.62mm
BTR-70 w/AGS-17	+1	Basic	KPV, PKT, AGS-17	500x14.5mm, 3000x7.62mm, 120x30mm Grenades
BTR-70 With AGS-17	None	None	KPV, PKT, AGS-17	500x14.5mm, 2000x7.62mm, 200x30mm Grenades
BTR-70D-1	+3	Good	30mm 2A72 Autocannon, PKT, up to 4xAT-15 ATGM and/or 4xSA-18 SAM Launchers	300x30mm, 2000x7.62mm, up to 4xAT-14 ATGMs and/or 4xSA-18 SAMs
BTR-70D-2	+3	Good	2x23mm 2A7M Autocannon, PKT, up to 4xAT-15 ATGM and/or 4xSA-18 SAM Launchers	400x23mm, 2000x7.62mm, up to 4xAT-14 ATGMs and/or 4xSA-18 SAMs
BTR-70 Cobra-K	+2	Fair	30mm 2A42 Autocannon, PKT, AT-14 ATGM Launcher	300x30mm, 3000x7.62mm, 4xAT-14 ATGMs
BTR-70KShM	+1	Basic	KPV, PKT	500x14.5mm, 2000x7.62mm

BTR-70MS/SPR-2	None	None	PK	2000x7.62mm

Arzamas BTR-80

Notes: This was the most common version of the wheeled BTR series by 2010, used in large numbers by Russian forces and widely sold throughout the world to help raise money, and used by countries as diverse as Bangladesh and even South Korea. Even the new Iraqi Army has ordered the BTR-80UP version. All in all, the BTR-80 is used by some 32 nations, with even Finland ordering two for evaluation (the XA-185 was chosen instead). In addition, the US is believed to have a small number on hand for use by OPFOR training units. The BTR-80 has a number of improvements over the BTR-70 and differences in design in even its base form, and later modifications have given it even more firepower and utility. The BTR-80 is a large step forward for the BTR series. The BTR-80 has been in production since 1986.

The Standard BTR-80

The BTR-80 to a large extent follows the layout of previous BTR designs, but the bullet-resistant windshields and small windows to the sides are even more resistant to gunshots. The commander and driver have vision blocks to the front and to their respective sides to supplement this, and each have a night vision block. The driver's controls are conventional and easy to use. The turret is stepped up and, based on experiences in Afghanistan, the weapons are capable of very high elevation (almost straight up) and depression of -12 degrees. The gunner now has night vision equipment as standard. The new mantlet bulges outwards from the front of the turret, and the turret is a little taller, giving the gunner a better field of view. Fire control is similar to that of the BTR-70. The new turret has electric traverse and elevation instead of the manual controls on earlier BTRs. The turret has a cluster of four smoke grenade launchers on either side of the turret. The troop compartment in the rear has a little more room due to the smaller size of the engine compartment, and can carry a larger infantry squad. The troops have three firing ports in each side, and the gunner and commander have firing ports in their respective sides of their compartment. The troops' firing ports angle slightly forward, allowing them to fire more forward and contribute to the overall firepower of the vehicle. The firing ports are ball mounts derived from the BMP-1 series. The troops enter and exit through enlarged side hatches, which are clamshell hatches opening upwards and downwards. There is also a pair of roof hatches.

The BTR-80 is not simply an improved BTR-70; it is has a new hull which is longer and wider than the BTR-70, and the turret is taller. The armor is a little heavier, especially in the floor, which is reinforced against mines and the wheels and suspension, which are likewise strengthened. The front of the vehicle has spaced armor, and the nose is a little longer as a result. Perhaps the greatest change is in the powerplant; the BTR-80 is powered by a single KamAZ-7403 260-horsepower turbocharged diesel engine, which, though the BTR-80 has a manual transmission, greatly decreases the difficulty of the driver's task as well as greatly simplifying the transmission and drive train, and increasing reliability. Suspension is 8x8 and of the off-road-type, with run-flat tires. The BTR-80 is amphibious with preparation; when floating, a waterjet at the rear is turned on. The BTR-80 has an NBC overpressure system with collective NBC backup, and radiological shielding. The BTR-80 has a winch in the front with a capacity of 4.5 tons and 60 meters of cable.

For a short time, production of the BTR-80 outstripped the availability of its engines. As a result, the BTR-80M was produced, with a DMZ-238M2 240-horsepower diesel engine substituting for the standard engine. It is likely that all or virtually all BTR-80s have been retrofitted with the standard KamAZ engine in Russia and most First and Second-World countries, though some Third-World nations may still have BTR-80Ms. Hungary bought about 500 of the BTR-80M version, making them the only large-scale user, but theirs have thermal imager on the roof of the turret, and they are in the process of upgrading the engines of their BTR-80Ms.

APC-Type Modifications and Upgrades

The BTR-80A is the current standard for the Russian Army; all BTR-80s are eventually to be converted to the BTR-80A standard, though since they have 4000 BTR-80s, it may take some time for all of them to be upgraded. The BTR-80A is equipped with the BPPU turret with extra armor, which has a 2A72 autocannon instead of the KPV machinegun, improved vision equipment, and improved fire control. A variant of the BTR-80A, the BTR-80S, retains the KPV machinegun, but also keeps the improved vision equipment and fire control of the BTR-80A. The larger turret enables it to carry more ammunition than the standard BTR-80.

The BTR-82 is the latest version, with improved armor (primarily through the use of appliqué), thermal imaging for the gunner, gunner's sights downlinked to the commander, and a 300-horsepower turbocharged diesel engine. The BTR-82 is equipped with the GLONASS system, the Russian equivalent of the GPS system, and the driver has a screen to allow him to navigate with it, as does the commander. The BPPU turret is retained (with its greater ammunition storage capacity), but the BTR-82 is armed with the KPV/PKT combination. This version was first shown at an arms exposition in 2009. The BTR-82A has the standard BPPU turret with its autocannon instead of KPV machinegun.

In the KMDB BTR-80D upgrade, the engine is replaced with a UTD-20 turbocharged multifuel 300-horsepower engine. The turret is replaced with an Ingul turret. The Ingul turret is a semi-overhead weapons station armed with an autocannon and coaxial machinegun capable of great elevation (almost straight up) and depression (able to engage enemy troops that are as little as 10 meters from the vehicle). The Ingul turret also has four launchers for AT-14 ATGMs, which are modular and can be replaced by up to four SA-18 SAMs (the missiles on each side of the turret must be replaced in pairs when doing this). The gun and coax are fully stabilized and equipped with modern fire control equipment, and the gunner has excellent day and night vision sights (which may be accessed by the commander via a downlinked monitor). The turret also has a cluster of four smoke grenade launchers on each side. KMDB also offers the more straightforward BTR-80UP version, which is similar to the BTR-80A, equipped with the BPPU turret and

an air conditioner, as well as stronger appliqué armor.

The BTR-80B is a version of the BTR-80 fitted with the Kliver turret. The Kliver turret is similar to the turret of the BTR-80A, except that there are 4 launchers for the AT-14 Kornet missile and an external AG-17 auto0matic grenade launcher. (This is loaded from the troop hatches to the rear of the turret.) The AG-17 has independent elevation and limited traverse from the turret weapons. This turns the BTR-80 into an even more viable infantry fighting vehicle than the BTR-80D, and provides a significant upgrade in firepower from a BTR-80 or BTR-80A. It is otherwise similar to the KMDB BTR-80D in capabilities, but has lesser fire control and vision equipment.

As an experiment, the turret of the BMD-3M has been mounted on the BTR-80. This gives the BTR-80 a major increase in firepower, making it more of an MGS than an APC, though it still carries a reduced dismount crew. The commander is moved into the turret, and the old commander's position used for ammunition stowage. I have used the designation "BTR-80C" below, though this is not an official designation.

The Columbian Marines use a version of the BTR-80 called the Caribe which is stock except that it uses an M-2HB instead of the KPV machinegun.

Other APC-Type Versions

The BTR-80K is a platoon/company commander's vehicle; it has an extra long-range and medium-range radio, and a GLONASS navigation system. The dismount crew is reduced by one. It can be distinguished by the extra antennas on top of the hull and turret. The standard BTR-80 has an observation window in the rear of the turret; the BTR-80K lacks this. The BTR-80AK is similar, but is based on the BTR-80A.

The BRDM-3 (not the BRDM-based light combat vehicle; the use of "BRDM-3" for one of those BRDM-base light combat vehicles is incorrect) is based on the BTR-80AK, but is an armored reconnaissance vehicle with better vision devices (including for the commander) and carrying more ammunition. It is equipped with a GLONASS navigation system with an inertial navigation backup and has two long-range (one data-capable), one medium-range, and one short-range radio, along with a ruggedized laptop computer. The dismount crew is greatly reduced.

The BTR-80 PBKM is for use by higher command levels. It has a much higher roofline in the rear of the vehicle, two long-range (one data-capable), two medium-range, and two short-range radios, and the turret is not fitted with a PKT (only the KPV). In the forward part of the turret is a window with an armored shutter. It is distinguishable by its 5 radio antennas. It has a ruggedized laptop computer. The vehicle has a map board and map storage as well as office and plotting-type supplies. It has the GLONASS system as well as an inertial navigation backup, and additional vision devices. There are a variety of similar vehicles at use by various command and control elements at different levels or for different roles (particularly FDC and missile command vehicles); they may be regarded as identical to the PBKM in game terms.

The BTR-80 R-149BMRA is a signals vehicle equipped with a very-long-range (100-kilometer) radio, three long-range radios, two medium-range radios, and one short-range radio. The very-long-range radio is data-capable, though this is in order to allow command posts to transmit data and the vehicle has no computer or teletype of its own. It has a switchboard and 20 field telephones, and the required commo wire. It carries a small- mission-specific computer to help coordinate communications. It carries a selection of spare communications parts, and a 5kW generator atop the rear of the roof. It has a profusion of antennas, and carries two erectable radio masts. It often tows a trailer with more communications parts and gear. The BTR-80 R-439-BK1 is the same, but has a Satcom terminal instead of the very-long-range radio, conceivably allowing it to communicate with any station on the planet. The BTR-80 R-149BMR is similar to the R-149BMRA, but has a video feeding and communication system allowing command posts to transmit video and have video conferences. This equipment is in place of two of the long-range radios. There are several other signals vehicle which differ primarily in their mix of radios, such as being able to communicate with aircraft or ships.

The BTR-80 1V152 is a FIST vehicle which has a larger turret housing a larger array of vision equipment, an extra laser rangefinder, and a laser designator. It has two extra long-range radios, one of which is data-capable, and the vehicle has a small fire-solutions computer. It has no PKT machinegun.

The RKhM-4 is an NBC reconnaissance version, with detection and measuring systems for chemical and biological agents and radiation levels. Detection is automatic and requires no special interaction from the crew; measurement requires vehicle equipment use. At the rear is a single dual flag dispenser with 80 flags total for hazard marking purposes. The RKhM-4 has a small computer limited in capability to analysis of data from its measurements and transmitting its findings to higher headquarters. The RKhM-4 has an extra long-range radio which is data capable.

The BTR-80 E-351BrM is a mobile power station, carrying a diesel-fired 25kW generator in the rear which takes up most of what would normally be the passenger compartment.

The BMM, sometimes also called the BMM-80, is an armored ambulance. There are three versions: The BMM-1 is designed for casualty evacuation and first aid on the battlefield. It carries up to four stretcher cases, two stretcher cases and four seated patients, or six seated patients, plus a medic. It has the equivalent of a doctor's medical bag, 20 personal medical kits, and a selection of splints, burn first-aid kits, bandages, and other such gear. It has an oxygen administration set, a defibrillator, a small refrigerator for perishable medical supplies, a blanker warmer, and a hot plate. The BMM-2 is designed as a battalion aid station; equipment is largely the same as for the BMM-1, but it has tent sets on either side of the vehicle to expand working space as well as folding gurneys (on stands, not rolling), and carries only up to two stretcher cases. The BMM-3 is designed as a mobile field hospital and surgical station; it is similar to the BMM-2, but carries the equivalent of four doctor's medical bags, the equivalent of 10 personal medical kits, the equivalent of 50 doses of antibiotics, a total anesthetic administration set, surgical medications such as local anesthetic and drugs for spinal blocks, two refrigerators instead of one, and a greater selection of splints and bandages. Equipment

to treat burns and give stitches are also present. BMMs have no turrets, no armament, and raised rooflines.

Twilight/Merc 2000 Notes: This BTR-80C was so rare in the Twilight War that it was regarded as a mere myth by most NATO and Chinese troops. The BTR-80M comprises about 25% of the Russian and Warsaw Pact BTR-80 force (except in Hungary, where they comprise all of the BTR-80 force). The BTR-80D is rare, with about 10% of the Russian (only) BTR-80 force being BTR-80Ds. The BTR-80A is about half of the Russian BTR-80 total, and about one-quarter of the Warsaw Pact BTR-80 total (except for Hungary); it is rare elsewhere. The BTR-80S comprises less than 5% of the Russian BTR-80 force, and is not found in any other armies. The BTR-80B and BTR-82 are not available in the Twilight 2000 timeline. The BTR-80A is rare outside of Russian and Pact service, and not used by Western or South American units at all in the Twilight 2000 timeline; they are very rare elsewhere. In the Twilight 2000 timeline, the Mexicans have about 25 BTR-80Ms.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
BTR-80	$54,553	D, A	2 tons	13.6 tons	3+8	8	Passive IR (D, G, C)	Shielded
BTR-80M	$54,477	D, A	2 tons	13.6 tons	3+8	8	Passive IR (D, G, C)	Shielded
BTR-80A	$72,310	D, A	1.8 tons	14.4 tons	3+8	8	Passive IR (D, C, G), Image Intensification (G)	Shielded
BTR-80S	$62,686	D, A	1.8 tons	14.4 tons	3+8	8	Passive IR (D, C, G), Image Intensification (G)	Shielded
BTR-82	$185,708	D, A	1.5 tons	15.6 tons	3+8	9	Passive IR (D, C, G), Image Intensification (G), Thermal Imaging (G)	Shielded
BTR-82A	$195,332	D, A	1.5 tons	15.6 tons	3+8	9	Passive IR (D, C, G), Image Intensification (G), Thermal Imaging (G)	Shielded
BTR-80D	$185,900	D, K, A	1.6 tons	15.1 tons	3+8	9	Passive IR (D, C, G), Image Intensification (G), Thermal Imaging (G)	Shielded
BTR-80UP	$172,062	D, K, A	1.7 tons	15.8 tons	3+8	9	Passive IR (D, C, G), Image Intensification (G), Thermal Imaging (G)	Shielded
BTR-80B	$86,435	D, A	1.9 tons	14.3 tons	3+8	8	Passive IR (D, C, G), Image Intensification (G)	Shielded
BTR-80C	$345,533	D, A	1.4 tons	16.1 tons	3+4	9	Passive IR (D, G, C), Image Intensification (G), Thermal Imaging (G)	Shielded
BTR-80 Caribe	$53,452	D, A	2 tons	13.6 tons	3+8	8	Passive IR (D, G, C)	Shielded
BTR-80K	$75,409	D, A	1.5 tons	13.6 tons	3+7	9	Passive IR (D, G, C)	Shielded
BTR-80AK	$93,167	D, A	1.8 tons	14.4 tons	3+7	9	Passive IR (D, C, G), Image Intensification (G)	Shielded
BRDM-3	$210,106	D, A	900 kg	14.5 tons	3+4	9	Passive IR (D, G, C), Image Intensification (G,	Shielded

							C), Thermal Imaging (G)	
BTR-80 PBKM	$312,634	D, A	900 kg	14.8 tons	3+4	10	Passive IR (D, G, C), Image Intensification (G, C), Thermal Imaging (G)	Shielded
BTR-80 R-149BMRA	$126,222	D, A	1 ton	13.8 tons	4	10	Passive IR (D, G, C)	Shielded
BTR-80 R-439-BK1	$127,093	D, A	900 kg	13.9 tons	4	10	Passive IR (D, G, C)	Shielded
BTR-80 R-149BMR	$128,153	D, A	900 kg	14 tons	4	10	Passive IR (D, G, C)	Shielded
BTR-80 RKhM-4	$538,247	D, A	900 kg	14 tons	4	10	Passive IR (D, G, C)	Shielded
BTR-80 E-351BrM	$61,543	D, A	750 kg	14.6 tons	4	10	Passive IR (D, G, C)	Shielded
BMM-1	$62,713	D, A	875 kg	14.1 tons	***	9	Passive IR (D, C)	Shielded
BMM-2	$64,100	D, A	825 kg	14.3 tons	***	9	Passive IR (D, C)	Shielded
BMM-3	$73,647	D, A	825 kg	14.3 tons	***	10	Passive IR (D, C)	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
BTR-80/BTR-80 Caribe/BTR-80K	145/73	34/17/4	300	136	CiH	W(6)	TF4 TS4 TR4 HF5Sp HS3 HR3*
BTR-80M	135/69	32/16/4	300	124	CiH	W(6)	TF4 TS4 TR4 HF5Sp HS3 HR3*
BTR-80A/BTR-80S/BTR-80AK	130/66	30/15/3	300	144	CiH	W(6)	TF4 TS4 TR4 HF5Sp HS3 HR3*
BTR-82/BTR-82A	147/74	34/17/4	300	156	CiH	W(6)	TF5 TS5 TR5 HF6Sp HS4 HR3**
BTR-80D	151/74	35/18/4	300	151	CiH	W(6)	TF4 TS4 TR4 HF5Sp HS3 HR3*
BTR-80UP	145/73	34/17/4	300	158	CiH	W(6)	TF5 TS5 TR5 HF6Sp HS4 HR3**
BTR-80B	160/81	37/19/4	300	144	CiH	W(6)	TF4 TS4 TR4 HF5Sp HS3 HR3*
BTR-80C	122/61	29/14/3	300	160	Trtd	W(6)	TF11Sp TS4Sp TR4 HF5Sp HS3 HR3*
BRDM-3	136/69	32/16/4	300	146	CiH	W(6)	TF4 TS4 TR4 HF5Sp HS3 HR3*
BTR-80 PBKM	133/67	31/16/3	300	148	CiH	W(6)	TF4 TS4 TR4 HF5Sp HS3 HR3*
BTR-80 R-149BMRA	144/73	34/17/4	300	138	CiH	W(6)	TF4 TS4 TR4 HF5Sp HS3 HR3*
BTR-80 R-439-BK1	142/72	33/17/4	300	139	CiH	W(6)	TF4 TS4 TR4 HF5Sp HS3 HR3*
BTR-80 R-149BMR/RKhM-4	141/71	33/16/4	300	140	CiH	W(6)	TF4 TS4 TR4 HF5Sp HS3 HR3*
BTR-80 E-351BrM	135/68	32/16/4	300	146	CiH	W(6)	TF4 TS4 TR4 HF5Sp HS3 HR3*
BMM-1	139/70	33/16/4	300	141	Stnd	W(6)	HF5Sp HS3 HR3*
BMM-2/BMM-3	138/69	32/16/4	300	143	Stnd	W(6)	HF5Sp HS3 HR3*

Vehicle	Fire Control	Stabilization	Armament	Ammunition
BTR-80/BTR-80M/BTR-80K/R-149BMRA/R-439-BK1/R-149BMR/RKhM-4/E-351BrM	+1	Basic	KPV, PKT	500x14.5mm, 2000x7.62mm

BTR-80A/BTR-80AK	+2	Fair	30mm 2A72 Autocannon, PKT	350x30mm, 3000x7.62mm
BTR-80S	+2	Fair	KPV, PKT	725x14.5mm, 3000x7.62mm
BTR-82	+3	Good	KPV, PKT	725x14.5mm, 3000x7.62mm
BTR-82A	+3	Good	30mm 2A72 Autocannon, PKT	350x30mm, 3000x7.62mm
BTR-80D	+3	Good	30mm 2A72 Autocannon, PKT, up to 4xAT-15 ATGM and/or 4xSA-18 SAM Launchers	300x30mm, 2000x7.62mm, up to 4xAT-14 ATGMs and/or 4xSA-18 SAMs
BTR-80UP	+3	Good	30mm 2A72 Autocannon, PKT	300x30mm, 2000x7.62mm
BTR-80B	+2	Fair	30mm 2A72 Autocannon, PKT, AGS-17 AGL, 4xAT-14 ATGM Launchers	300x30mm, 2000x7.62mm, 300x30mm Grenades, 4xAT-14 ATGM
BTR-80C	+2	Good	100mm 2A70 Gun, 30mm 2A72 Autocannon, PKT	40x100mm, 6xAT-10 ATGM, 500x30mm, 2000x7.62mm
BTR-80 Caribe	+1	Basic	M-2HB, PKT	575x.50, 2000x7.62mm
BRDM-3	+2	Fair	30mm 2A72 Autocannon, PKT	525x30mm, 4500x7.62mm
BTR-80 PBKM	+1	Basic	KPV	500x14.5mm

*This vehicle has a floor AV of 4Sp.
**This vehicle has a roof AV of 3 and a Floor AV of 5Sp.
***See Notes for Crew and passenger capacity.

Arzamas BTR-90

Notes: At first glance, this appears to be a modified BTR-80; however, the BTR-90 is more a new vehicle, though many sources consider it an enlarged BTR-80. Design work began in the early 1990s, and it was first publicly shown in 1994. It appears that so far no foreign sales have taken place, though some are used in Russia by the MVD, Airborne and Spetsnaz. The numbers in use, however, are very small, with Russia primarily focusing on the BTR-80; however, some Russian plans call for the BTR-90 to eventually be in use by motorized units as well as the Naval Infantry. Compared to the BTR-80, the BTR-90 has improved firepower and protection and a much more powerful engine. The BTR-90's chassis is suitable for a number of applications, though few have yet been announced or demonstrated.

The BTR-90

The first difference one will notice about the BTR-90 is the nose; it is pointed and looks similar to that of the Canadian LAV-25. Gone are the windshields and side windows of the driver's and commander's compartment; instead, these positions have vision blocks around roof hatches, and in each position, the center block is a day/night block. The commander is now in the turret, so the former commander's position is not generally used as a passenger position, though he has no direct connection to the rear troop area; this position is often taken up by the infantry squad leader. This passenger position is rather small, as the driver's position is moved to just off-center of the front. Like on the other BTRs, the BTR-90 troop compartment is in the center of the vehicle, with the engine at the rear, with full-sized clamshell side hatches and two roof hatches. The space between the first two axles and the rear two axles is a bit larger, allowing for the enlargement of the side doors. The troops have three firing ports on each side on each side of the hull; like on the BTR-80, these are angled forward, though they have more traverse and elevation than on the BTR-80. The turret is essentially the same as that on the BMP-2, suitably modified for the new chassis, and equipped with an autocannon, coaxial machinegun, and ATGM launcher on the roof, as well as four smoke grenade launchers on each side of the turret. Depression is only mediocre at -5 degrees, but elevation is +75 degrees. In addition, the BTR-90 has an externally-mounted AG-17 grenade launcher, reloaded from the rear deck hatches. The turret has hatches for the commander and gunner, with vision blocks around them. The AG-17 has independent elevation and limited independent traverse. Thermal imaging for the gunner is an option found on some BTR-90s; this has no effective weight and costs an additional $30,000. The thermal imaging is useful only for the main weapons and not the AG-17. The commander has auxiliary controls for the main gun and coaxial machinegun, and is the only one who can aim and fire the ATGM.

The BTR-90 is powered by multi-fuel turbocharged engine developing 510 horsepower. Though this is much greater than on previous BTRs, much of this is soaked up by the much higher weight of the BTR-90. Suspension is 8x8 and of the off-road-type, with central tire pressure regulation. The front two axles are steerable, with the driver having power steering and conventional controls. The wheels have antilock brakes and a limited-slip differential; the wheels are also capable of turning at separate speeds without losing traction as terrain requires. All this gives the BTR off-road mobility almost on par with a tracked vehicle. The BTR-90 is amphibious after only turning on bilge pumps (requiring only the flicking of a switch) and the raising of a trim vane; once the vehicle is floating, a waterjet is turned on. Preparation takes three minutes. The crew and passengers have an NBC overpressure system with a collective NBC backup, with radiological shielding. The engine starting system is redundant; the primary system is electrical, but a compressed air starting system is also provided. At the front of the vehicle is a winch with a capacity of 7 tons and 60 meters of cable. The BTR-90 has a vehicle-state computer; the computer keeps track and reports on the mechanical state of the vehicle as well as the amount of ammunition on board and the integrity of the sights and mechanical components, as well as the amount of fuel on board. As stated above, armor is heavier than on the BTR-80, and even more attention is paid to mine protection.

The BTR-90's hull has lugs for ERA. Active protection systems, including the Arena and the Drozd, have been mounted

experimentally on the BTR-90.

The BTR-90M

As an experiment and for display at some arms shows (and presumably for export), the BTR-90 has been fitted with the turret of a BMD-3M. This essentially makes the BTR-90M into a sort of MGS, and the dismount squad is drastically reduced.

Twilight 2000 Notes: The stock BTR-90 is a very rare vehicle, found only in Russian service in the Twilight 2000 timeline. The other BTR-90 versions are unavailable.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
BTR-90	$105,305	D, G, AvG, A	1.5 tons	20.9 tons	3+9	10	Passive IR (D, G, C), Image Intensification (G), IR Searchlight (Gun, C)	Shielded
BTR-90M	$352,892	D, G, AvG, A	1 ton	22.6 tons	3+5	12	Passive IR (D, G, C), Image Intensification (G), Thermal Imaging (G)	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
BTR-90	181/97	42/23/4	300	274	Trtd	W(8)	TF11 TS7 TR6 HF8Sp HS5 HR4*
BTR-90M	167/89	39/21/4	300	296	Trtd	W(8)	TF11Sp TS4 TR4 HF8Sp HS5 HR4*

Vehicle	Fire Control	Stabilization	Armament	Ammunition
BTR-90	+1	Fair	30mm 2A42 Autocannon, PKT, AT-4/AT-5 ATGM Launcher, AG-17 AGL	500x30mm, 2000x7.62mm, 5xAT-4/AT-5 ATGMs, 240x30mm Grenades
BTR-90M	+2	Good	100mm 2A70 Gun, 30mm 2A72 Autocannon, PKT	40x100mm, 6xAT-10 ATGM, 500x30mm, 2000x7.62mm

*Roof AV is 4, and Floor AV is 6Sp.

GAZ BTR-40

Notes: This is an ancient Russian vehicle used by Afghanistan, Albania, Croatia, Cuba, Laos, North Korea, Mongolia, Vietnam, and several African nations; it has been used by about another 20 nations in its lifetime. It is a lengthened GAZ-63 chassis with an armored body and an open top, and a slightly more powerful engine to cope with the increased weight. The BTR-40's design process began in 1947, but the BTR-40 did not begin service until 1950; by then, it was already obsolete – it was quickly replaced in Soviet and Warsaw Pact service by the BTR-152, then the BTR-50, BTR-60, and other vehicles. Further, advanced development of the BTR-40 led eventually to the BRDM series. The BTR-40 has seen combat service in several places in the world, including various brushfire wars in Africa, Vietnam, Yemen, the early Middle Eastern wars, and was even in limited use during the Korean War.

The driver sits at the front of the vehicle on the left, with the commander on the right. They have open windows to the front and sides, which may be covered with armored shutters which have vision slits in them. There are two or three firing ports on each side of the troop compartment, and there is a pintle mount behind and between the driver and commander as well as on each side of the troop compartment. These guns are manned by the troops carried in the rear. The firing ports are mere holes in the armor with armored shutters. A spare wheel is carried on the rear of the hull on the center. A saw is carried on the left side of the hull. Some vehicles have a 4.5-ton winch on the front of the hull with 70 meters of cable. The troop compartment is open-topped, and the troops enter and exit by going over the sides; the driver and commander also enter and exit in this manner. The engine is an 80-horsepower GAZ-40 gasoline engine. It has a 4x4 suspension, but the BTR-40 is well known for its poor off-road performance. On a hard service, it does have a turning radius of only 7.5 meters.

The BTR-40V is a BTR-40 with a central tire pressure regulation system. This unfortunately did little to improve its off-road performance.

The BTR-40B is a BTR-40V with overhead protection. Troops mount and dismount through four overhead hatches that open to

the sides; these may be locked in the vertical position, and standing fire may be accomplished by firing though the supplied firing ports in them. The BTR-40B has actual windshields in them, and has a collective NBC system installed. The BTR-40B has a pintle mount on the roof near the front for a weapon, but deletes the side mounts; the pintle mount is usually furnished with a heavier machinegun than those used on the BTR-40. Troop complement is unfortunately reduced.

The BTR-40zhd is a BTR-40 designed to run across train rails (adjustable from Russian/Eastern European gauges of the period to Western gauges). It has no off-road speed, and may not move off the rails. Its purpose was to scout ahead of trains. Only limited amounts of them were made. Any BTR-40 could be made into a BTR-40zhd by simply changing the wheels and adding reinforcing struts, and vice versa.

The BTR-40Kh is an NBC reconnaissance version of the BTR-40B. The primary on-board equipment is a pair of marking flag dispensers with 80 total flags; measuring and metering of radiological and chemical agents is done via hand-held instruments (included in the price below)

Some Indonesian BTR-40Bs were modified with a small, manually-operated cube-shaped turret atop the vehicle. This turret mounted either a machinegun or a 40mm MGL in a flexible mount (I have not been able to determine the exact type; use the Milkor Mk 1 stats until I can). The hull also has a bank of four smoke grenade launchers on each side, and searchlight on the left side of the hull for the use of the commander.

The Israelis used a number of captured BTR-40s in the 1950s; these substituted the usual armament with M-1919A4 machineguns.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
BTR-40/Israeli BTR-40	$20,920	G, A	850 kg	5.3 tons	2+8	4	Headlights	Open
BTR-40B	$18,472	G, A	850 kg	5.6 tons	2+6	4	Headlights	Enclosed
BTR-40zhd	$16,736	G, A	850 kg	5.2 tons	2+8	4	Headlights	Open
BTR-40Kh	$238,428	G, A	425 kg	5.5 tons	4	5	Headlights	Enclosed
Indonesian BTR-40B	$16,777	G, A	750 kg	5.8 tons	3+5	4	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
BTR-40	160/39	37/9	122	39	Stnd	W(2)	HF3 HS2 HR2*
BTR-40B	152/37	35/9	122	41	Stnd	W(2)	HF3 HS2 HR2
BTR-40zhd	163 (Train Rails Only)	38 (Train Rails Only)	122	31	Stnd	W(2)	HF3 HS2 HR2*
BTR-40Kh	158/39	37/9	122	39	Stnd	W(2)	HF3 HS2 HR2
Indonesian BTR-40B	146/35	34/8	122	43	Stnd	W(2)	TF2 TS2 TR2 HF3 HS2 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
BTR-40/BTR-40zhd	None	None	3xSGMB	1250x7.62mm
BTR-40B/BTR-40Kh	None	None	DShK or KPVT	750x12.7mm or 650x14.5mm
Indonesian BTR-40B	None	None	PKT or 40mm MGL	1250x7.62mm or 240x40mm
Israeli BTR-40	None	None	3xM-1919A4	1250x.30-06

*This version has no roof armor.

GAZ BTR-60

Notes: This wheeled armored personnel carrier was developed in the late 1950s to replace the BTR-152 series; like the BTR-40 that the BTR-152 replaced, the BTR-152 also proved to be inadequate and obsolete for the role of APC. By 2010, they are mainly found in the armies of Third World nations, having been replaced in the Russian, Eastern European, and Middle Eastern armies by newer versions of wheeled APCs such as the BTR-70, BTR-80, BTR-90, and the TAB and OT-64 series. The BTR-60 began its design process in 1957, and was first seen in a parade in 1961. The BTR-60 was developed virtually in tandem with the BMP-1, though the BMP-1 did not appear in service until several years later. The design called for several features that were advanced for the time, including an 8x8 suspension, two turnable axles (the front ones), independent suspension for each axle, and an off-road-type suspension with run-flat tires and amphibious capabilities. Throughout the course of its history, the BTR-60 was produced in over 10 versions and used by almost 35 countries. Though for the most part production stopped in 1976, a special production run of 100 BTR-60PBs was done for Iraq in the 1980s.

Early versions (the BTR-60P) had an open-topped troop compartment and a pintle-mounted machinegun; a little later, the troop compartment was enclosed and a commander's hatch with a pintle-mounted weapon was introduced (the BTR-60PA), and soon thereafter the primary version was introduced (the BTR-60PB), which has the now-familiar closed top and turret with a KPV/PKT combination. On the open-topped BTR-60P, the top could be covered with a tarpaulin. Several specialist versions were built, and later modernizations were produced. The Romanian TAB-71 is also a modification of the BTR-60, as is the Polish/Czech OT-64.

BTR-60

The driver and commander of the BTR-60 are in the front of the vehicle, behind bullet-resistant windshields that can be covered with armored shutters with vision slits in them on the BTR-60P and BTR-60PA, though the vision slits were replaced with vision blocks on later versions. The driver and commander also have small bullet-resistant windows to their right and left. They have hatches over their positions which open to the front; the driver's hatch has a space for a night vision block, while the commander has an IR searchlight over his position. On the BTR-60PB and later, the commander also has a night vision block. The troop compartment is in the center of the vehicle, and since the engine is in the rear, the troops must go over the side of the vehicle to enter or exit the vehicle. (Several steps and hand rails are attached to the sides for this purpose.) This is done either by going straight over the sides on the BTR-60P or though roof hatches on the BTR-60PA or later. In the BTR-60PB and other turreted versions, the BTR-60 has a dedicated gunner. The turret is almost identical to that on the BRDM-2 (except for the level of armor protection); and is in fact the first iteration of the BRDM-1 turret. The traverse and elevation are manual, and thus are slower than on newer vehicles. The turret does not have a hatch. On the rear deck is a large hatch for the passengers (if closed-topped); this hatch is the primary method of ingress and egress for the passengers and gunner, since the two doors in the hull are very small and best suited for emergency use, loading supplies and ammunition, or as auxiliary firing ports. There are also two firing ports in each side of the hull on the BTR-60PB and later, and firing ports for the commander and driver in front of their positions were also added. On the BTR-60PB, another small hatch was added on the right side the hull for the gunner, and a full-sized hatch on the left side of the hull. In the front of the vehicle is a winch with a capacity of 4.5 tons.

The BTR-60P, PA, and PB were powered by a pair of GAZ-49B 90-horsepower gasoline engines, each developing 90 horsepower. One engine propels the second and fourth axles, and the second engine propels the first and third axles. Each engine has its own gear box and clutch, and the driver has a dual manual transmission to contend with, making driving challenging to say the least. The dual engine format means that if one engine goes out, the vehicle can still drive at half speed, but causes the driving difficulties as stated. The transmission layout is also quite complicated and prone to breakdown. The suspension, as stated, is 8x8 and of the off-road-type, and shock absorption is surprisingly effective. The BTR-60 is fully amphibious with preparation (a trim vane must be erected in front from the driver's compartment, bilge pumps turned on, and a waterjet turned on when the vehicle is floating; this takes four minutes). On the BTR-60PA and later, a collective NBC system was added.

Later APC-Type Modifications

In Afghanistan, the Soviets experimented with a variety of modifications to the BTR-60, including the addition of a pintle-mounted AGS-17 (for use by troops in the rear) and the use of an early version of the Kliver turret. The second of these had the designation of BTR-60PB-1.

The BTR-60PZ uses the BTR-70 turret, which has a greater elevation and depression. Elevation especially is very high. It is otherwise identical to the standard BTR-60PB.

The Russian Arzamas company has developed an upgrade package for the BTR-60PB called the BTR-60PBM, which includes the installation of a single diesel engine, the same as that found on the BTR-80. This is a KamAZ-7403 260-horsepower turbocharged diesel engine. The turret has been replaced by the BPU-1 turret, which has similar weapons but is enlarged and is situated higher on the vehicle, with elevation and depression increased to almost straight up and -12 degrees. This is the same turret as mounted on the stock BTR-80. Additional appliqué armor has been installed. Updated radios and night vision equipment has been installed. As an alternate turret, a BPPU turret may be installed, which has a 2A72 autocannon instead of the KPV machinegun.

The Russian Murmteplovoz agency has developed an upgrade package using a turret armed with a 2A42 autocannon and a PKT machinegun, as well as an AGS-17 grenade launcher mounted externally on the right side of the turret with remote control. This is the MB2 turret, and it is larger than the standard turret. This turret also has improved fire control and vision devices. The engines are also replaced with a single YaMAZ-236A diesel developing 196 horsepower. The brakes have also been improved, and are antilock brakes.

Kharkiv Morozov (KMDB) of the Ukraine's upgrade includes the replacement of the engines with a single UTD-20 multifuel engine developing 300 horsepower. (The "K" under Fuel below is for kerosene.) This is the BTR-60D. The turret is replaced with an Ingul turret. The Ingul turret is a semi-overhead weapons station armed with an autocannon and coaxial machinegun capable of great elevation (almost straight up) and depression (able to engage enemy troops that are as little as 10 meters from the vehicle). The Ingul turret also has four launchers for AT-14 ATGMs, which are modular and can be replaced by up to four SA-18 SAMs (the missiles on each side of the turret must be replaced in pairs when doing this). The gun and coax are fully stabilized and equipped with modern fire control equipment, and the gunner has excellent day and night vision sights (which may be accessed by the commander via a downlinked monitor). The turret also has a cluster of four smoke grenade launchers on each side.

The Bulgarian BTR-60PB-MD1 is similar to the BTR-60PB, but replaces the engines with a single Cummins ISB 25.30 250-horsepower turbocharged diesel engine, and adds four smoke grenade launchers on each side of its turret. The export version, the BTR-60PB-MD2, is the export version which has a KamAZ-7403 260-horsepower turbocharged diesel engine.

Specialist APC-Types

The BTR-60PAK is a minor command variant of the BTR-60PA with two extra radios (one extra long-range, one extra medium range), and two erectable mast antennas carried atop the vehicle. One troop is a radio operator instead of being part of the dismount crew, and the radios also displace one troop. The BTR-60PBK is similar, but based on the BTR-60PB.

The BTR-60PU is a turretless version of the BTR-60PB, with a greatly rearranged interior for a command staff and two long-range

radios, one medium-range radio, two short-range radios, a radio teletype machine, and a field telephone. Later versions replace the radio teletype with a ruggedized laptop computer. The top of the vehicle has a collapsible AZI frame antenna, an extendible 10-meter radio mast, a 2kW generator, and extendible shelves and three folding chairs. The vehicle has a map board and map storage as well as office and plotting-type supplies. It has bows and a tarpaulin cover that may be erected to either side of the vehicle to increase working space. The BTR-60PU is very similar to the BTR-60PA in appearance, except for the extra antennas. This vehicle is also called the BTR-60R-145BM Chaika.

The BTR-60R-145BM-1 is a signal vehicle with one very long-range (100 km), two long range, and two medium-range radios, a switchboard, 20 field telephones, and a 4kW generator. It has no turret, and antennas like those of the BTR-60R-145BM. There are several similar signals vehicles, which differ primarily in the radios carried.

The BTR-60Z-351BR is essentially a large armored generator vehicle, carrying internally a 15kW generator and operators for it, as well as a fuel tank. The fuel tank for the generator is 90 liters.

Twilight 2000 Notes: The Arzamas and Murmteplovoz upgrades are not available in the Twilight 2000 timeline, nor are the Kharkiv Morozov modification and the BTR-60PB-MD1.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
BTR-60P	$48,302	G, A	1.2 tons	9.1 tons	3+13	6	Passive IR (D)	Open
BTR-60PA	$51,433	G, A	1.2 tons	10 tons	3+11	6	Passive IR (D)	Enclosed
BTR-60PB	$66,738	G, A	1.1 tons	10.3 tons	3+8	6	Passive IR (D)	Enclosed
BTR-60PB w/AGS-17	$67,168	G, A	1 ton	10.3 tons	3+8	6	Passive IR (D, G)	Enclosed
BTR-60PB-1 (Kliver)	$202,935	G, A	1 ton	11 tons	3+8	7	Passive IR (D, G), Image Intensification (G)	Enclosed
BTR-60PM (BPU-1 Turret)	$49,894	D, A	950 kg	11.1 tons	3+8	6	Passive IR (D, G), Image Intensification (G)	Enclosed
BTR-60PM (BPPU Turret)	$69,511	D, A	950 kg	11.1 tons	3+8	6	Passive IR (D, G), Image Intensification (G)	Enclosed
BTR-60PB MB2	$80,211	D, A	1.2 tons	10.8 tons	3+8	6	Passive IR (D, G), Image Intensification (G)	Enclosed
BTR-60D	$180,241	D, K, A	950 kg	12.2 tons	3+8	7	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Enclosed
BTR-60PB-MD1	$46,694	D, A	1.1 tons	10.3 tons	3+8	6	Passive IR (D)	Enclosed
BTR-60PB-MD2	$46,734	D, A	1.1 tons	10.3 tons	3+8	6	Passive IR (D)	Enclosed
BTR-60PAK	$55,883	G, A	900 kg	10.1 tons	4+9	6	Passive IR (D)	Enclosed
BTR-60PBK	$68,313	G, A	850 kg	10.4 tons	4+5	6	Passive IR (D)	Enclosed
BTR-60PU	$61,257	G, A	850 kg	10.5 tons	3+4	7	Passive IR (D)	Enclosed
BTR-60PU (Late)	$97,740	G, A	850 kg	10.5 tons	3+4	8	Passive IR (D)	Enclosed
BTR-60R-145BM-1	$57,918	G, A	850 kg	10.5 tons	4	8	Passive IR (D)	Enclosed
BTR-60Z-351BR	$54,652	G, A	800 kg	10.6 tons	4	7	Passive IR (D)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
BTR-60P	158/80	37/18/5	290	97	Stnd	W(4)	HF5 HS2 HR2
BTR-60PA	144/73	34/16/4	290	107	Stnd	W(4)	HF5 HS2 HR2
BTR-60PB/PB-1 w/AGS-17	139/70	33/16/4	290	110	CiH	W(4)	TF2 TS2 TR2 HF5 HS2 HR2
BTR-60PB-1 (Kliver)	131/66	31/15/4	290	118	CiH	W(4)	TF4 TS4 TR4 HF5 HS2 HR2
BTR-60PM	172/86	40/20/5	290	136	CiH	W(4)	TF3 TS3 TR3 HF7 HS4 HR3
BTR-60PB MB2	137/69	32/16/4	290	99	Trtd	W(4)	TF4 TS4 TR4 HF5 HS2 HR2
BTR-60D	160/81	37/19/5	290	138	CiH	W(4)	TF5 TS5 TR5 HF6 HS3 HR3

BTR-60PB-MD1	174/88	41/20/5	290	130	CiH	W(4)	TF2 TS2 TR2 HF5 HS2 HR2
BTR-60PB-MD2	181/91	42/21/5	290	136	CiH	W(4)	TF2 TS2 TR2 HF5 HS2 HR2
BTR-60PAK	143/73	34/16/4	290	108	Stnd	W(4)	HF5 HS2 HR2
BTR-60PBK	138/69	33/16/4	290	111	CiH	W(4)	TF2 TS2 TR2 HF5 HS2 HR2
BTR-60PU/R-145BM-1	137/69	32/16/4	290	112	Stnd	W(4)	HF5 HS2 HR2
BTR-60Z-351BR	136/69	32/15/4	290	113	Stnd	W(4)	HF5 HS2 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
BTR-60P/R-145BM/60Z-351BR	None	None	PKT	2000x7.62mm
BTR-60PA/PAK	None	None	DShK	1200x12.7mm
BTR-60PB/MD-1/MD-2/PBK	None	None	KPV, PKT	500x14.5mm, 3000x7.62mm
BTR-60PB w/AGS-17	+1	Basic	KPV, PKT, AGS-17	500x14.5mm, 3000x7.62mm, 120x30mm Grenades
BTR-60PB-1 (Kliver)	+2	Fair	30mm 2A72 Autocannon, PKT, AGS-17 AGL, 4xAT-14 ATGM	300x30mm, 2000x7.62mm, 300x30mm Grenades, 4xAT-14 ATGM
BTR-60PBM (BPU-1 Turret)	+1	Fair	KPV, PKT	500x14.5mm, 3000x7.62mm
BTR-60PBM (BPPU Turret)	+2	Fair	30mm 2A72 Autocannon, PKT	250x30mm, 3000x7.62mm
BTR-60PB MB1	+2	Fair	30mm 2A42 Autocannon, PKT, AG-17	250x30mm, 3000x7.62mm, 200x30mm Grenades
BTR-60D	+3	Good	30mm 2A72 Autocannon, PKT, up to 4xAT-15 ATGM and/or 4xSA-18 SAM Launchers	300x30mm, 2000x7.62mm, up to 4xAT-14 ATGM and/or 4xSA-18 SAMs
BTR-60PU	None	None	KPV	1000x14.5mm

KamAZ BPM-97

Notes: The BPM-97 was designed specifically for the Russian Border Guards, and development began in 1997. Progress has been slow, however, and the vehicle is only in limited service in an advanced trials phase. This primarily due to lack of funding – the BPM-97 is essentially ready to go once the money is available to field them in numbers. Though the Russian Border Guards may not get decent numbers of them anytime soon, the BPM-97 has been ordered by Kazakhstan and Azerbaijan, and they will probably get more of them than Russian forces in the immediate future. The Russian State Police has also requested the BPM-97, though it is an open question as to when they will get any. The BPM-97 has also been offered on the international arms market, with several interested parties.

The BPM-97 uses the chassis of a KamAZ-4326 truck, but the chassis is highly-modified to accommodate the armored body. The BPM-97 has a sharply-sloped front end, with moderately-sloped sides. The BPM-97 uses aluminum armor. The driver and commander sit in the front behind the engine with separate bullet-resistant windshields to the front and bullet-resistant windows to the sides. Optionally, these windshields may be furnished with armored shutters with vision slits in them, and the side windows can be fitted with sliding armored shutters. Entry and exit to the vehicle is by a pair of doors in the rear; the driver and commander also enter and exit through this door. Alternatively, the crew and troops may use a two-piece circular hatch in the center of the rear deck. Three firing ports are found in each side of the hull, and one in each rear door. There are also small, half-height doors in the lower hull on each side of the hull; these are rather small and best used for the loading of equipment or as auxiliary firing ports for heavier weapons than small arms. The basic BRM-97 has no turret and is armed only with a machinegun or automatic grenade launcher on a pintle mount by the deck hatch mentioned above. The BPM-97 has a collective NBC system.

The BPM-97 is powered by a KamAZ-740.10-20 240-horsepower diesel engine, coupled to an automatic transmission, with conventional controls for the driver. The BPM-97 has antilock brakes as well as a limited slip differential. The ride may be a bit rough, as the BPM-97 uses only leaf springs for the suspension and not conventional shock absorbers. The suspension, though 4x4, is better suited to road use than off-road use, though the limited slip differential does improve the off-road mobility a little. The tires are run-flat, and the floor armor is slightly reinforced against mines, as is the suspension (but only slightly). The front has a 5-ton

capacity winch with 60 meters of cable.

KamAZ has demonstrated several versions with turrets. One is a turret in a semi-overhead weapons station which has an autocannon and a coaxial machinegun, along with an externally-mounted AG-17 grenade launcher which is reloaded from the deck hatch. The AG-17 has independent elevation and depression and limited independent traverse. Another turret is much simpler, being a small turret armed only with a Kord heavy machinegun. Another turret demonstrated is the turret of the BTR-80 mounted on the BPM-97. Yet another turret is a small turret with a pair of light machineguns. The turrets have four smoke grenade launchers on each side of the turret. So far, no sales of these versions have been made.

Twilight 2000 Notes: The BPM-97 does not exist in the Twilight 2000 timeline.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
BPM-97 (Basic)	$18,733	D, A	1 ton	10.5 tons	3+7	6	Headlights	Enclosed
BPM-97 (Autocannon Turret)	$77,305	D, A	575 kg	12.2 tons	3+6	7	Passive IR (D, G), Image Intensification (G)	Enclosed
BPM-97 (Kord Turret)	$50,816	D, A	900 kg	10.8 tons	3+6	6	Passive IR (D, G), Image Intensification (G)	Enclosed
BPM-97 (BTR-70 Turret)	$48,798	D, A	900 kg	10.8 tons	3+6	6	Passive IR (D, C)	Enclosed
BPM-97 (Twin MG Turret)	$52,374	D, A	900 kg	10.8 tons	3+6	6	Passive IR (D, G), Image Intensification (G)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
BPM-97 (Basic)	217/57	50/14	270	100	Stnd	W(3)	HF6 HS4 HR3*
BPM-97 (Autocannon Turret)	187/49	43/12	270	116	CiH	W(3)	TF3 TS3 TR3 HF6 HS4 HR3*
BPM-97 (Kord Turret)/(BTR-70 Turret)/(Twin MG Turret)	210/55	49/14	270	103	CiH	W(3)	TF3 TS3 TR3 HF6 HS4 HR3*
Shoet II	204/69	48/16	300	70	Stnd	W(3)	HF2 HS2 HR2*

Vehicle	Fire Control	Stabilization	Armament	Ammunition
BPM-97 (Basic)	None	None	Kord/NSV or PKT or AGS-17	1000x12.7mm or 1650x7.62mm or 420x30mm Grenades
Shoet II	+2	Fair	30mm 2A72 Autocannon, PKT, AGS-17	200x30mm, 2000x7.62mm, 120x30mm Grenades
BPM-97 (Kord Turret)	+2	Fair	Kord	1500x12.7mm
BPM-97 (BTR-70 Turret)	+1	Basic	KPV, PKT	500x14.5mm, 3000x7.62mm
BPM-97 (Twin MG Turret)	+2	Fair	2xPKT	2500x7.62mm

*Roof AV is 3; Floor AV is 4.

ZiS BTR-152

Notes: The BTR-152, also known in some early sources as the BTR-140, was designed after the Second World War as a heavier counterpart to the BTR-40 design. It was a competitor to the BTR-40, with design work beginning in 1946, and acceptance into the

Soviet Army in early 1950. It is essentially a medium truck design which has an armored body added. The design failed in the mobility department; nonetheless, it enjoyed a long service career, and some are still in use in some Third World countries. Nearly 50 countries used or still use the BTR-152, and despite its mediocre design, was by numbers a successful vehicle. The BTR-152 has been modified into a bewildering number of variants and fitted with alternate weaponry, often by the countries using them. The last BTR-152 was built in 1962.

The basic BTR-152 was built on the chassis of a Zil-151 6x6 truck (some are based on the Zil-157), with an open-topped all-welded steel body mounted on it. The open top gave it the same vulnerability as the basic BTR-40, though it kept down the weight. This was important, because, despite a stronger engine than the Zil-151 truck, the BTR-152 is well underpowered. Armament is basic, being a single machinegun on a pintle mount in front of the troop compartment between and behind the driver's and commander's positions. On each side of the troop compartment is also a machinegun. Ammunition stowage is unfortunately sparse. The passenger space is large, however, primarily because of the open top and because internal accommodations are spartan. There is a door at the rear of the vehicle. The driver and commander sit in the front of the vehicle behind bullet-resistant windshields which can be covered with an armored shutter with a vision slit in them. The cab has side doors which are hinged at the top; there is no glass in the side doors, however.

The BTR-152 is powered by a ZiS-123 gasoline engine with 110 horsepower (ZiS-137K 107-horsepower for versions based on the Zil-157, but equivalent in game terms). This leaves the BTR-152 not only underpowered, but gives it poor range. The engine is in the front, like a truck. The 6x6 suspension is not very good for off-road use, and better-suited for road use. The tires of the original versions are not run-flat and do not have central tire pressure regulation. The wheels have both leaf springs and hydraulic shock absorbers, and the rear wheels also have torsion bars, and actually give a decent ride. The front bumper has a winch with a capacity of 5 tons and 60 meters of cable.

The original BTR-152 was based on the Zil-151, a truck known for its poor reliability and mechanical problems. These were later replaced with BTR-152s based on the improved Zil-157, a more robust and reliable truck. These are called the BTR-152V. The BTR-152V has central tire pressure regulation, somewhat improving off-road performance, and adding a night vision block for the driver for use with IR headlights added to the vehicle.

Based on the BTR-152V, the BTR-152K has an armored top added to the troop compartment and cab. The BTR-152K does not have a conventional collective NBC system, but does have blowers and a forced air system that allows the commander to blow a large amount of smoke or chemical agents from the vehicle. There are two hatches added to the top of the vehicle for troops to fire out or to enter and exit, and the door in the rear remains. The troop complement is reduced substantially. The BTR-152K variant comprises about a third of all BTR-152s produced.

The Israelis used a large number of captured BTR-152s (mostly BTR-152s and BTR-152Vs) for a time in the 1960s and 1970s. Most were used as is and converted to carry the TCM-20 antiaircraft gun set, but some were used as APCs and by Israeli Police. Israel later began selling them on the international arms market after giving them the Shoet II modification, which sold reasonably well. The Shoet II modification was primarily in the engine and transmission, which on the Shoet II is a 172-horsepower V-53 diesel engine coupled to an automatic transmission which also has a locking differential. Armament is replaced by an M-2HB over and behind the commander's position, an M-1919A4 (converted to 7.62mm NATO) over and behind the driver's position, and a pair of MAGs at the rear. Extra stowage on the sides for water and fuel cans is provided, and the suspension is raised and beefed up to make the Shoet II perform better off-road. The Shoet II has sold to undisclosed customers, mostly as upgrade kits.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
BTR-152	$31,365	G, A	800 kg	8.6 tons	2+18	6	Headlights	Open
BTR-152V	$34,565	G, A	800 kg	8.6 tons	2+18	7	Active IR (D)	Open
BTR-152K	$37,365	G, A	800 kg	9 tons	2+13	7	Active IR (D)	Enclosed
Shoet II	$43,446	D, A	800 kg	8.8 tons	2+16	6	Passive IR (D)	Open

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
BTR-152	150/37	27/8	300	56	Stnd	W(3)	HF2 HS2 HR2*
BTR-152V	150/44	27/10	300	56	Stnd	W(3)	HF2 HS2 HR2*
BTR-152K	144/42	26/10	300	59	Stnd	W(3)	HF2 HS2 HR2
Shoet II	204/69	48/16	300	70	Stnd	W(3)	HF2 HS2 HR2*

Vehicle	Fire Control	Stabilization	Armament	Ammunition
BTR-152	None	None	DShK, 2xPK or SG-43 (Sides)	500x12.7mm, 2500x7.62mm
Shoet II	None	None	M-2HB (Front), M-1919A4 (Front), 2xMAG (Rear)	750x.50, 4500x7.62mm

*These versions have no Roof armor.

VAL Cashuat

Notes: This is an El Salvadoran light APC built on the chassis of the old M-37B1 3/4-ton truck of World War II vintage. The vehicles were assembled in El Salvador using existing M-37B1 trucks and kits imported from the US. These were employed as low-cost troop carriers, convoy escort vehicles, and scout vehicles. They have not been exported; indeed, no other country has expressed any interest in such a primitive carrier. I have not been able to discover whether or not El Salvador is still using these vehicles.

The Cashuat has had steel armor add-on panels added, as well as mesh to pre-detonate HEAT warheads, such as the RPG-2 and RPG-7 which are so common in Latin America. This primitive spaced armor stops only one extra die of damage instead of two dice. Kevlar blankets are added inside this armor to stop spalling, which also adds to the armor. The armor is surprisingly effective given its thin profile, due to the use of duel-hardness sandwich armor on the sides and front. The driver and commander have an armored door, with bullet-resistant glass; the windscreen is also made of bullet-resistant glass, and in the windshield frame on the commander's side is a firing port. The troop section is in the rear and simple, with seats facing inwards. The vehicle is open-topped, but there are three firing ports on each side on a chamfered section at the top of the troop compartment. These firing ports are simple shuttered holes in the armor. The rear is closed off with an armored door in the rear, and a firing port on either side of the door. The engine is a Detroit Diesel 353 110-horsepower diesel, replacing the original gasoline engine.

Two versions of this vehicle exist. The first is troop carrier; these vehicles have no armament. The second type is the weapons carrier; these vehicles have a one-man armored cupola directly to the rear of the driver and commander with a twin weapon mount and a machinegun with an AV2 gun shield on either side of the troop compartment. Recent upgrades have improved off-road performance, but the Cashuat is more an on-road than an off-road vehicle.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Troop Carrier	$4,855	D, A	900 kg	4.5 tons	2+8	2	Headlights	Open
Weapons Carrier	$37,767	D, A	455 kg	4.2 tons	2+4	2	Headlights	Open

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Troop Carrier	230/56	53/13	90	42	Stnd	W(2)	HF2Sp HS2Sp HR2*
Weapons Carrier	242/59	56/14	90	39	CiH	W(2)	TF2 TS2 TR2 HF2Sp HS2Sp HR2*

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Weapons Carrier	None	None	2xM-2HB or 2xMk 19 or 1xM-2HB and 1xMk 19, 2xM-60	1000x.50 or 500x.50 and 160x40mm; 1000x7.62mm

*The troop and crew compartment is open-topped. The front, rear, and sides are covered by mesh armor, similar to a chain-link fence; this primitive spaced armor stops 1D6 damage, instead of 2D6.

Al-Fahd AF-40-8-1

Notes: The Al-Fahd is the first AFV designed and produced by Saudi Arabia. The Al-Fahd comes in a number of versions, including IFV and APCs, mortar carriers, ATGM carriers, recoilless rifle carriers, and a reconnaissance version which is an MGS. Only the APC and IFV versions, the AF-40-8-1, will be discussed here. In addition to Saudi Arabia, the Al-Fahd is used by Pakistan.

The driver and commander of the AF-40-8-1 are in the front of the hull; the commander has conventional vision blocks, while the driver has a night vision block in addition to his conventional vision blocks. Their hatches may be locked partially open (so they are elevated straight out from the hull), or locked open completely. The troop compartment is in the center of the hull; there is a rear ramp at the rear of the hull next to the engine. Firing ports are optional, but usually three are fitted per side and one in the rear door. The basic AF-40-8-1 has four roof hatches, one of which has a pintle mount for a weapon, as well as a pintle mount near one of the rear roof hatches. Turreted IFV versions also exist, with the turrets armed with either a 25mm or 40mm autocannon. The turrets are mounted near the rear of the vehicle, with the rear roof hatches being deleted. The turrets have good fire control as well as vision devices, and have a cluster of four smoke grenade launchers on each side of the turret.

The AF-40-8-1 has a less powerful engine than its AF-40-8-2 counterpart, with the engine being a Deutz 10 400-horsepower diesel. The smaller engine allows for a larger troop compartment and the space for a rear ramp, and is considered acceptable since it is lighter than its AF-40-8-2 counterpart. The transmission is automatic, and driver's controls conventional. The suspension is 8x8 and of the off-road-type, with the drive being switchable to 8x4 for road use (the four middle wheels being the drive wheels in this case). The front four wheels are independently steerable from the rear four vehicles, giving the AF-40-8-1 a tight turning radius. The suspension incorporates conventional hydraulic shock absorbers along with a nitrogen gas spring system which gives the AF-40-8-1 a very smooth ride. The nitrogen gas spring system automatically adjusts to smooth out recoil when weapons are being fired, especially when they are fired on the move. The AF-40-8-1 has an automatic fire detection and suppression system. Armor is of aluminum; lugs for ERA are optional, but not standard. Also not standard is amphibious capability; such is fitted to Pakistani vehicles, but not Saudi vehicles. The vehicle has NBC overpressure with a collective NBC backup, and air conditioning.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Basic APC	$40,887	D, A	2 tons	14 tons	3+9	6	Passive IR (D)	Shielded
25mm-Armed	$129,191	D, A	1.6 tons	15.4 tons	3+8	8	Passive IR (D, G, C), Thermal Imaging (G)	Shielded
40mm-Armed	$138,605	D, A	1.6 tons	15.6 tons	3+8	8	Passive IR (D, G, C), Thermal Imaging (G)	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Basic APC	204/103	47/24/4	550	214	Stnd	W(6)	HF12Sp HS5Sp HR3
25mm-Armed	188/94	43/22/4	550	235	Trtd	W(6)	TF10Sp TS6Sp TR4 HF12Sp HS5Sp HR3
40mm-Armed	185/94	43/22/4	550	238	Trtd	W(6)	TF10Sp TS6Sp TR4 HF12Sp HS5Sp HR3

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Basic APC	None	None	M-2HB, MAG (R)	1000x.50, 2500x7.62mm
25mm-Armed	+2	Good	25mm KBA Autocannon, MAG, MAG (C), 2xTOW II Launchers	840x25mm, 2150x7.62mm, 5xTOW II
40mm-Armed	+2	Good	40mm Bofors L/70, MAG, MAG (C), 2xTOW II Launchers	525x40mm, 2150x7.62mm, 5xTOW II

Tatrapan Armored All-Terrain Vehicle

Notes: This Slovakian vehicle is based upon the chassis of the TATRA T-815 VP 21 265 truck (8-ton). The vehicle has had sales in the Middle East, and is also used by Czech armed forces. The Tatrapan is based on a multipurpose chassis which is also used by the Dana SP howitzer and an MRL. Several APC-type versions are also used like communications, command, and medical vehicles. Later versions have improved protection against mines and IEDs. The Tatrapan has seen combat service with IFOR and KFOR as well as in Afghanistan.

The basic truck chassis layout is reversed for the Tatrapan, though the engine and cab are retained in the front and the drive train layout is also unchanged. The vehicle, therefore, has an unusual 6x6 layout, with the front two wheels being close together, and then there being a space and then the rear axle. The basic truck chassis has welded steel armor, including a heavily armored cab. The windows have armored shutters for the windshield and side cab windows, and the windows and windshield are of bullet-resistant glass. The rear has a double door. There is a ring mount over the commander's position, and another ring mount in the middle of the roof of the cargo hold. Two other hatches are provided on the roof of the cargo area behind the front center hatch, and the doors in the rear have firing ports, as well as hatches on either side over the second wheels, both with firing ports. There are vision blocks behind the cab on both sides, but these do not have firing ports. The two roof hatches often have pintle mounts next to them.

The base version of the Tatrapan, the T1, is a simple APC with troops sitting down the sides. It carries ten troops in the rear, and four more can sit in the aisle in an emergency. The vehicle has a 6x6 layout, with constant all-wheel drive. Only the front axle is steerable. It has a central tire pressure regulation system. The Tatrapan is powered by a Tatra T3-930-51 355-horsepower turbocharged diesel engine, coupled to a manual transmission. The driver has conventional controls. The Tatrapan has an NBC overpressure system for the troops and crew as well as a collective NBC backup. The vehicle is protected by an automatic fire detection and suppression system for the crew, troop and engine compartments as well as for the fuel tanks. The Tatrapan is praised for its roominess inside.

The Tatrapan ZASA is designed for peacekeeping operations, but has also seen service in Afghanistan. It has a reinforced suspension and bottom armor layout, to protect more fully against mines. The troops crew sit in suspended seats to isolate them from blasts, and they will suffer 10% less damage from mine blasts. The structure in general is also reinforced, though armor protection is not improved. The engine is replaced with an uprated version of the T3-930-51 which develops 369 horsepower.

The Tatrapan VESPRA is a command and staff vehicle with two long-range radios (one data-capable), two medium-range radios, and two short-range radios. It has a map board, map stowage, and plotting and office-type supplies. It has a ruggedized laptop computer. The VESPRA has a hand-held thermal imager, image intensifier, and laser rangefinder. There are similar versions for air defense command (the PVO and ASTRA PVO) and artillery command (the DELSYS, BAZUS, and VPG).

The Tatrapan AMB is an armored ambulance with capacity for four stretcher patients, two stretcher patients and four seated patients, or eight seated patients, as well as a medic. It has the equivalent of a doctor's medical bag and 20 personal medical kits, various bandages, splints, burn first aid, and minor medical supplies, a small refrigerator, a blanket warmer, oxygen administration set, and defibrillator. AMBs are unarmed.

The Tatrapan MOD is a new APC version which has an MRAP-type hull, improved armor, stronger tires, and a beefed-up suspension. It is considerably heavier than the standard Tatrapan T1, so the engine has been replaced with an uprated version of the T3-930-51 which develops 400 horsepower.

Twilight 2000 Notes: The Czechs began to use the Tatrapan en masse as they were easy to build or modify from existing trucks.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
T1	$47,165	D, A	2 tons	18.1 tons	2+10	10	Headlights	Shielded
ZASA	$52,415	D, A	1.4 tons	20.6 tons	2+10	10	Headlights	Shielded
VESPRA	$154,387	D, A	1 ton	18.6 tons	2+5	12	Headlights	Shielded
AMB	$54,240	D, A	1 ton	18.5 tons	****	11	Headlights	Shielded
MOD	$56,832	D, A	1.9 tons	24 tons	2+10	10	Headlights	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
T1	150/76	35/18	460	189	Stnd	W(3)	HF6 HS4 HR3*
ZASA	140/70	33/16	460	196	Stnd	W(4)	HF6 HS4 HR3**
VESPRA	146/74	34/17	460	195	Stnd	W(3)	HF6 HS4 HR3*
AMB	147/74	34/18	460	193	Stnd	W(3)	HF6 HS4 HR3*
MOD	133/67	31/16	460	214	Stnd	W(6)	HF8 HS6 HR4***

Vehicle	Fire Control	Stabilization	Armament	Ammunition
T1/ZASA/MOD	None	None	NSV (C), PK (Center, Sides)	500x12.7mm, 3000x7.62mm
VESPRA	None	None	NSV (C), PK	500x12.7mm,

	1000x7.62mm

*Roof and Floor AV for this version is 3.
**Roof AV for this version is 3; Floor AV is 5.
***Roof AV is 3; Floor AV is 6Sp.
****See Notes for Crew and passenger capabilities.

BAE South Africa Mamba

Notes: The Mamba is one of the vehicles that replaced part of the Casspir fleet in South African service in some roles, and is or was used by 15 other countries. Many countries are of were using them for deployments to Kosovo, Bosnia, Iraq, and Afghanistan; sometimes they are handed off from country to country as a country's troops leave the area of operations. The Australians tested a version called a version called the Taipan in its Bushranger armored vehicle project, but it lost out to the Bushmaster. It is used as an MRAP by several countries, and served as a prototype for similar designs in the US. Several variants have been developed from the Mamba. Several private security contractors also prefer the Mamba – it provides a reasonable level of protection while appearing "less offensive" to the people in the areas they are operating in. They are also used by some civilian assistance agencies operating in dangerous conditions, and some news agencies. The Mamba is a smaller vehicle than the Casspir and for use in less-threatening conditions.

The Mamba Mk 1

The basic Mamba is based on a Unimog U-4000 truck chassis, modified for use in rough South African terrain and given an armored MRAP hull. The primary entry and exit to the vehicle is through a double door in the rear of the vehicle; there is a roof hatch, but it is a small one which is used as a gunner's position. The commander and driver have positions in a cab connected to the troop compartment, the driver on the left and commander on the right. The gunner's weapon is manned by one of the troops in the rear. The troops sit down the sides, on shock-absorbing seats with 4-point harnesses; the crew also have shock-absorbing seats and 4-point harnesses. The front has a large windshield of ballistic glass; the sides of the cab, of the vehicle, and the rear also have large ballistic-glass windows. The gunner's position is normally armed with a single weapon on a pintle mount. A 100-liter water tank is included in the floor, and this also gives some incidental protection against mines.

The Mamba has been criticized as being underpowered, having only a 123-horsepower engine, but the vehicle is light in weight and performance acceptable. The suspension is 4x4 (though 4x2 versions are available and used by some agencies), and designed for off-road use. Power is by a Mercedes-Benz 325N turbocharged engine, coupled to a manual transmission (though automatic transmission is available). The ride is described as being a bit (perhaps more than just a bit) on the bouncy side.

Variants of the Mamba Mk 1 include an armored ambulance, command vehicle, VIP transport, and a logistics vehicle. Further variants include the Springbuck, which also includes an ambulance, weapons carrier, and VIP transport. The Reva version also has command, ambulance, recovery (not discussed here), and VIP transport versions. The Puma version differs primarily in the engine used, which is a Toyota Dyna 7-145 145-horsepower turbocharged diesel engine. It should be noted that the Puma, Reva, and Springbuck versions have seen limited use.

The Springbuck differs primarily in the weapons fit, which consists not only of the standard gunner's station, but a weapon for the commander accessed through an overhead hatch. The weapons stations have low AV2 gun shields. The Springbuck can also be fitted with a more powerful MWN engine developing 135 horsepower; this option is often chosen, as the Springbuck is heavier than the Mamba Mk 1. The Springbuck normally mounts a spare tire on the right side at the rear, and can mount appliqué armor.

The Reva differs primarily in the engine, which is a powerful 177-horsepower Cummins GBT-5.9 TC turbocharged diesel. It also differs in the weapons fit, which includes a hatch and weapon mount for the commander with a low AV2 gun shield, the gunner's mount on a skate rail that runs through 180 degrees with an AV2 gun shield, and a rear machinegun with an AV2 gun shield. The Reva also has two firing ports per side and two in the rear of the troop compartment, and one each in the driver's and commander's side windows and one in the commander's windshield and driver's windshield.

Armored ambulance versions are typically unarmed and can carry two stretcher cases and four seated patients, plus a medic. The roof hatches remain, and the firing ports remain in the Reva model. They have the equivalent of a doctor's medical bag and 10 personal medical kits, an oxygen administration kit, and a defibrillator. Command fits normally have a small map board or a set of map books, two long range (one data-capable), one medium-range, and one short-range radio, and a ruggedized laptop computer. Roof weapons are normally deleted except for those over the commander's position (where applicable). VIP transports are normally more luxuriously fitted out with padded bench car-like seats and amenities such as commercial radios, CD players, hot spots for laptops and smartphones, etc. They carry less passengers and less cargo, and do not normally have the 4-point harnesses for the crew and passengers. They are normally unarmed, but often have firing ports in the sides of the vehicles (up to three). Logistics vehicles have simple flatbed interiors devoid of seats and roof weapon mounts (commander's machineguns are still mounted where applicable), and have rollers in the rear bed to facilitate off-loading of vehicles, along with tie-down and lock-down points. The roof hatches are enlarged to help off-load cargo, and they have a 2-ton-capacity crane to help this. Weapons carriers carry more and heavier weapons and more ammunition in lieu of passengers; they also tend to have a different roof hatch layout befitting their weapons carriage role.

The Mamba Mk 2

The Mamba Mk 2 is for the most part similar to the Mk 1, except for refinements such as an automatic transmission, a simplified power train and suspension (leading unfortunately to a bouncier ride), and improved tires that are more puncture-resistant. The primary difference, however, is the simplification of production methods and more indigenous production of parts – most of the vehicle is South African-made. Like the Mamba Mk 1, the Mk 2 has an ambulance version, command version, VIP transport version, and logistics version. The Mk 2 is slightly heavier than the Mk 1. The Mk 2 has 2-4 firing ports in each side and two in the rear.

The Komanche is a short-wheelbase version that carries a smaller troop load and smaller ammunition load for its weapons. It comes only in a basic APC version. Firing ports are limited to 1-2 in the sides and two in the rear.

The Sabre is the same as the basic version, but the cab is a 4-man cab, and the weapons mount for the gunner's position is a bit further back.

The Springbuck Mk 2 is the Mamba Mk 2 equivalent of the Springbuck. The Reva Mk 2 is the Mamba Mk 2 equivalent of the Reva.

The Mamba Mk 3

The Mamba Mk 3 differs in having substantially improved armor protection and a more powerful Mercedes-Benz 312N engine developing 154 horsepower. SANDF and many other countries who use the Mk 2 anticipate upgrading them to the Mk 3 configuration via a kit. The Mk 3 is substantially heavier due to increased armor. The same variants of the Mk 1 and Mk 2 are available for the Mk 3. A version of the Reva based on the Mk 3 is also available, the Reva Mk 3.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Mamba Mk 1 APC	$14,760	D, A	800 kg	5.6 tons	2+9	2	Headlights	Enclosed
Mamba Mk 1 Ambulance	$16,974	D, A	400 kg	5.7 tons	***	3	Headlights	Enclosed
Mamba Mk 1 Command	$100,156	D, A	400 kg	5.8 tons	2+4	3	Headlights	Enclosed
Mamba Mk 1 VIP Transport	$9,277	D, A	600 kg	5.7 tons	2+5	3	Headlights	Enclosed
Mamba Mk 1 Logistics	$6,046	D, A	1.9 tons	5.2 tons	2	3	Headlights	Enclosed
Puma	$14,837	D, A	800 kg	5.6 tons	2+9	2	Headlights	Enclosed
Springbuck APC	$26,775	D, A	800 kg	5.8 tons	2+9	2	Headlights	Enclosed
Springbuck Ambulance	$30,946	D, A	400 kg	5.9 tons	***	3	Headlights	Enclosed
Springbuck VIP Transport	$9,357	D, A	600 kg	5.9 tons	2+5	3	Headlights	Enclosed
Springbuck Weapons Carrier	$66,329	D, A	400 kg	6 tons	5+1	4	Headlights	Enclosed
Reva APC	$15,672	D, A	800 kg	5.8 tons	2+9	2	Headlights	Enclosed
Reva Command	$104,377	D, A	400 kg	6 tons	2+4	3	Headlights	Enclosed
Reva Ambulance	$18,023	D, A	400 kg	5.9 tons	***	3	Headlights	Enclosed
Reva VIP Transport	$9,478	D, A	600 kg	5.9 tons	2+5	3	Headlights	Enclosed
Mamba Mk 2 APC/Sabre	$14,908	D, A	800 kg	5.7 tons	2+9	2	Headlights	Enclosed
Mamba Mk 2 Ambulance	$17,144	D, A	400 kg	5.8 tons	***	3	Headlights	Enclosed
Mamba Mk 2 Command	$101,158	D, A	400 kg	5.9 tons	2+4	3	Headlights	Enclosed
Mamba Mk 2 VIP Transport	$9,370	D, A	600 kg	5.8 tons	2+5	3	Headlights	Enclosed
Mamba Mk 2 Logistics	$6,107	D, A	1.9 tons	5.3 tons	2	2	Headlights	Enclosed
Komanche	$12,274	D, A	525 kg	4.6 tons	2+6	2	Headlights	Enclosed
Springbuck Mk 2 APC	$27,043	D, A	800 kg	5.9 tons	2+9	2	Headlights	Enclosed
Springbuck Mk 2 Ambulance	$31,256	D, A	400 kg	6 tons	***	3	Headlights	Enclosed
Springbuck Mk 2 VIP Transport	$9,451	D, A	600 kg	6 tons	2+5	3	Headlights	Enclosed
Springbuck Mk 2 Weapons Carrier	$66,993	D, A	400 kg	6.1 tons	5+1	4	Headlights	Enclosed

Reva Mk 2 APC	$15,829	D, A	800 kg	5.9 tons	2+9	2	Headlights	Enclosed
Reva Mk 2 Command	$105,421	D, A	400 kg	6.1 tons	2+4	3	Headlights	Enclosed
Reva Mk 2 Ambulance	$18,204	D, A	400 kg	6 tons	***	3	Headlights	Enclosed
Reva Mk 2 VIP Transport	$9,573	D, A	600 kg	6 tons	2+5	3	Headlights	Enclosed
Mamba Mk 3 APC	$16,679	D, A	900 kg	6.8 tons	2+9	2	Headlights	Enclosed
Mamba Mk 3 Ambulance	$19,181	D, A	450 kg	6.9 tons	***	3	Headlights	Enclosed
Mamba Mk 3 Command	$103,279	D, A	450 kg	7 tons	2+4	3	Headlights	Enclosed
Mamba Mk 3 VIP Transport	$11,482	D, A	675 kg	6.9 tons	2+5	3	Headlights	Enclosed
Reva Mk 3 APC	$31,295	D, A	900 kg	7 tons	2+9	2	Headlights	Enclosed
Reva Mk 3 Command	$112,387	D, A	450 kg	7.2 tons	2+4	3	Headlights	Enclosed
Reva Mk 3 Ambulance	$35,990	D, A	450 kg	7.1 tons	***	3	Headlights	Enclosed
Reva Mk 3 VIP Transport	$13,090	D, A	675 kg	7.1 tons	2+5	3	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Mamba Mk 1 APC	167/84	39/20	200	60	Stnd	W(3)	HF3 HS3 HR2*
Mamba Mk 1 Ambulance/VIP Transport	164/82	38/20	200	61	Stnd	W(3)	HF3 HS3 HR2*
Mamba Mk 1 Command	162/81	38/19	200	62	Stnd	W(3)	HF3 HS3 HR2*
Mamba Mk 1 Logistics	180/91	42/22	200	56	Stnd	W(3)	HF3 HS3 HR2*
Puma	191/96	44/22	200	72	Stnd	W(3)	HF3 HS3 HR2*
Springbuck APC	174/88	41/20	200	66	Stnd	W(3)	HF3 HS3 HR2*
Springbuck Ambulance/VIP Transport	171/86	40/20	200	67	Stnd	W(3)	HF3 HS3 HR2*
Springbuck Weapons Carrier	169/85	40/19	200	68	Stnd	W(3)	HF3 HS3 HR2*
Reva APC	221/111	51/26	200	90	Stnd	W(3)	HF3 HS3 HR2*
Reva Command	214/108	49/25	200	93	Stnd	W(3)	HF3 HS3 HR2*
Reva Ambulance/VIP Transport	217/109	50/25	200	92	Stnd	W(3)	HF3 HS3 HR2*
Mamba Mk 2 APC/Sabre	164/82	38/20	200	61	Stnd	W(4)	HF3 HS3 HR2*
Mamba Mk 2 Ambulance/VIP Transport	162/81	38/19	200	62	Stnd	W(4)	HF3 HS3 HR2*
Mamba Mk 2 Command	159/80	37/19	200	63	Stnd	W(4)	HF3 HS3 HR2*
Mamba Mk 2 Logistics	177/89	41/21	200	57	Stnd	W(4)	HF3 HS3 HR2*
Komanche	193/98	45/22	160	49	Stnd	W(4)	HF3 HS3 HR2*

Springbuck Mk 2 APC	171/86	40/20	200	67	Stnd	W(4)	HF3 HS3 HR2*
Springbuck Mk 2 Ambulance/VIP Transport	169/85	40/19	200	68	Stnd	W(4)	HF3 HS3 HR2*
Springbuck Mk 2 Weapons Carrier	165/84	39/19	200	69	Stnd	W(4)	HF3 HS3 HR2*
Reva Mk 2 APC	217/109	50/25	200	92	Stnd	W(4)	HF3 HS3 HR2*
Reva Mk 2 Command	210/105	48/25	200	95	Stnd	W(4)	HF3 HS3 HR2*
Reva Mk 2 Ambulance/VIP Transport	214/108	49/25	200	93	Stnd	W(4)	HF3 HS3 HR2*
Mamba Mk 3 APC	174/88	41/20	200	77	Stnd	W(4)	HF4 HS4 HR3**
Mamba Mk 3 Ambulance/VIP Transport	172/87	41/20	200	78	Stnd	W(4)	HF4 HS4 HR3**
Mamba Mk 3 Command	169/85	39/19	200	79	Stnd	W(4)	HF4 HS4 HR3**
Reva Mk 3 APC	191/96	44/22	200	109	Stnd	W(4)	HF4 HS4 HR3**
Reva Mk 3 Command	185/93	43/21	200	112	Stnd	W(4)	HF4 HS4 HR3**
Reva Mk 3 Ambulance/VIP Transport	189/95	44/22	200	110	Stnd	W(4)	HF4 HS4 HR3**

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Mamba APC/Puma/Sabre	None	None	Mini-SS or MG-4 or M-2HB	2750x5.56mm or 2000x7.62mm or 1200x.50
Springbuck/Springbuck Mk 2 APC	None	None	2xMini-SS or 2xMG-4 or 1xM-2HB, MG-4 (C)	2750x5.56mm and 1000x7.62mm or 3000x7.62mm or 1200x.50 and 1000x7.62mm
Springbuck/Springbuck Mk 2 Weapons Carrier	None	None	2xMini-SS or 2xMG-4 or 2xM-2HB or Mk 19 AGL, 2x2 MG-4 (Rt Rear Corner, Lt Rear Corner) or M-40A2 Recoilless rifle (Rear), MG-4 (C)	5500x5.56mm and 10000x7.62mm or 15000x7.62mm or 10000x7.62mm and 2400x.50; up to 20x106mm rounds replacing 4000x7.62mm rounds or 950x40mm Grenades replacing 4000x7.62mm as appropriate
Reva APC	None	None	2xMini-SS or 2xMG-4 or 1xM-2HB, MG-4 (C), MG-4 (Rear)	2750x5.56mm and 2000x7.62mm or 4000x7.62mm or 1200x.50 and 2000x7.62mm
Reva Command	None	None	MG-4 (C)	1000x7.62mm
Komanche	None	None	Mini-SS or MG-4 or M-2HB	1650x5.56mm or 1200x7.62mm or 720x.50

*Floor AV is 4Sp.
**Floor AV is 5Sp.
***See Notes for Crew and passenger capacity.

BAE South Africa Ratel IFV

Notes: The Ratel (Afrikaans for a type of animal known in English as the Honey Badger) was designed starting in the late-1960s when the South African fleets of foreign-built vehicles became more difficult to obtain and maintain due to arms embargoes related to apartheid. The Ratel was designed as a decently-armored APC (the South Africans call it an IFV, though the Ratel is strictly an APC). It was originally a product of Sandock-Austral, but the design was bought by Land Systems OMC, a part of BAE. Over a thousand of them were built by South Africa, and used by them and Jordan and Morocco; South African and Jordanian Ratels will be

replaced in the near future by newer vehicles (in South Africa, in particular, by the Hoefyster version of the Patria AMV). The Belgian SIBMAS is a very close copy of the Ratel. Design work was long, and the first Mk 1 versions were not fielded until 1976; later, Mk 2 and Mk 3 versions were produced, with production stopping in 1987. The Ratel has been regarded by some as "one of the best APCs in the world you never heard of." A number of variants have been produced, both APC-type and non-APC-type; only the APC-type versions will be discussed on this page. BAE is still willing to recommence production of the Ratel, though there have been no orders except for spare parts in many years; they have also developed several demonstrator and prototype versions which have not gone into service as of yet (or ever).

The Basic Ratel – The Ratel 20

The Ratel 20 has a roomy driver's compartment at the center front of the vehicle with good visibility through ballistic-glass windows to the front and sides of his position. He can enter and exit through a roof hatch, or though the rear of his position through the troop compartment. The driver can cover his windows with armored shutters for high-threat environments. With the shutters in position, the driver views the area around him though three vision blocks (to the front and sides); the front vision block can be replaced by a night vision block. The driver's controls are conventional, and the seat and steering column are adjustable.

To the rear of the driver's position is a small turret derived from the turret of the Eland armored car which houses the 20mm autocannon and a coaxial machinegun. The turret is two-man, with the commander and gunner having hatches on the deck (the turret is sort of low and flat), and the commander having a pintle-mounted weapon. On either side of the turret towards the rear of the turret are two smoke grenade launchers. Atop the turret is a hand-operated searchlight operated by the commander or gunner through a handle below the turret roof, or it can be trained directly by putting your hand on the searchlight. The commander has all-around vision blocks; the gunner has four vision blocks to his front and left side, as well as telescopic and night vision sights and devices for his weapons. The troops each have a small hatch on the roof on the deck to the rear of the turret, for a total of seven such small hatches. One of these hatches (alternatively the right rear or left rear) is a pintle mount for a machinegun, manned by a member of the infantry squad. There are four firing ports in each side of the Ratel 20, and one in the rear door. The primary method of entry and exit for troops is via that rear door, which is on the right side of the rear face opposite the engine compartment and is a clamshell-type door opening up and down. There is also a clamshell door in either side of the vehicle near the center of the hull.

The Ratel 20 is powered by a Bussing D-3256 BTXF turbocharged diesel produced in South Africa which has an output of 282 horsepower, coupled to a manual transmission. The suspension is 6x6, and is of the off-road type. The suspension is rather high (ground clearance is 35 centimeters). The armor is of all-welded steel; though the Ratel does not have an MRAP hull, additional attention has been paid to the survivability of the suspension, wheels, and tires, which are run-flat and especially puncture-resistant. The floor has additional armor protection, and the troops and crew have shock-absorbing seats/positions and take 10% less damage if the Ratel-20 hits a mine or IED.

The Mk 2 version differs primarily in mechanical details and updated components. The Mk 3 version has these improvements, a few more, and the installation of an ADE 407 TI turbocharged diesel developing 315 horsepower along with an automatic transmission. Ratel Mk 1s and Mk 2s were mostly updated by the use of a kit to the Mk 3 standard.

APC-Type Variants

The Ratel 12.7 Command is a command version of the Ratel armored personnel carrier. The Ratel 12.7 has a two-man turret with an M-2HB, and an MG-4 in a mount on the rear roof. The turret is one-man. The command Ratel has two long-range radios, a medium-range radio, a short-range radio, a tape recorder with time injection, a combined receiver and cassette recorder, internal loudspeakers, a PA system, a pneumatic radio mast, and map boards. Later improvements (in Mk 2 & 3) added a ruggedized laptop computer and data-capable long-range radio. The command version has a map board, map, plotting, and office supply storage, and fold-out shelves for work. The interior arrangement is for a command staff rather than as a standard fighting vehicle. A hand-held thermal imager, image intensifier, and laser rangefinder are carried.

The Ratel 60 is a wheeled infantry support vehicle designed in the early 1970s to circumvent the arms embargo of South Africa during apartheid. The vehicle is equipped with a turret-mounted 60mm gun/mortar, a coaxial MG-4, another MG-4 on a pintle mount for the commander, and yet another pintle-mounted on the rear deck and manned by the infantry squad the Ratel 60 normally carries. Layout is otherwise like that of the Ratel 20.

The Ratel 90 is a wheeled fire support vehicle, similar to the SIBMAS in concept, though not as large. The vehicle is equipped with a turret-mounted 90mm gun, a coaxial MG-4, another MG-4 on a pintle mount for the commander, and yet another MG-4 pintle-mounted on the rear deck like on the Ratel 20. The turret is larger, and the troop compartment smaller and more cramped, but layout is basically similar to the Ratel 20. There are two firing ports on each side and one in the rear. The Ratel 90 is primarily an infantry support vehicle, though it does carry a smaller dismount squad.

iKlwa

The iKlwa (Zulu Stabbing Spear) is a development of the Ratel designed to replace the Ratel in some roles. The SANDF plans to acquire some 50 iKlwas, and the vehicle is being put forward as the replacement for the LAV Coyote in Canadian service under the TAP-C requirement, and is currently undergoing testing as such. Currently the iKlwa is available in prototypical form only, though Mk 1, Mk 2, and Mk 3 versions are already being planned, as well as an IFV with a heavy autocannon; a FISTV, an armored ambulance, a C2V vehicle, and an ATGM carrier. For stats below, only the Mk 1 without specialist versions will be found here, due lack of stats on the Mk 2 and Mk 3 and specialist versions; as well, a possible LAV Coyote replacement will be discussed.

The basic APC version uses an MES RWS armed with variety of weapon choices. A weapon can be mounted at the rear. The entire vehicle is heavier, with heavier armor and better mine protection. The driver's position is offset to the right surrounded by three bullet-resistant windshield; to his rear could be mounted a simple commander's position surrounded by AV2 guns shields or a RWS. The suspension is still 6x6, but higher and beefier, with run-flat puncture-resistant tires and blast-resistant shock absorbers along with an MRAP hull. The RWS is blessed by superior fire control and vision devices, so it is most often mounted. The RWS can also mount a light or heavy autocannon; both have a coaxial machinegun. Engine power increase in enormous, using for power a Cummins 450-horsepower turbocharged diesel engine coupled to an automatic transmission with manual backup. Much of this extra engine power is soaked up by the higher weight of the iKwla. However, the increases in capability over the Ratel are obvious. Two side doors and one rear door are evident, but no firing ports are.

The TAP-C version has a light RWS

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Ratel 20 Mk 1	$91,553	D, A	1 ton	18.5 tons	3+8	10	Passive IR (D, G), WL Searchlight	Enclosed
Ratel 12.7 Command Mk 1	$28,336	D, A	500 kg	18 tons	2+4	11	Passive IR (D, G), WL Searchlight	Enclosed
Ratel 60 Mk 1	$280,595	D, A	900 kg	18.8 tons	3+6	10	Passive IR (D, G), WL Searchlight	Enclosed
Ratel 90 Mk 1	$418,331	D, A	800 kg	19 tons	4+4	10	Passive IR (D, G), WL Searchlight	Enclosed
Ratel 20 Mk 2	$75,222	D, A	1 ton	18.5 tons	3+8	10	Passive IR (D, G), WL Searchlight	Enclosed
Ratel 12.7 Command Mk 2	$175,575	D, A	500 kg	18 tons	2+4	12	Passive IR (D, G), WL Searchlight	Enclosed
Ratel 60 Mk 2	$173,814	D, A	900 kg	18.8 tons	3+6	10	Passive IR (D, G), WL Searchlight	Enclosed
Ratel 90 Mk 2	$311,549	D, A	800 kg	19 tons	4+4	10	Passive IR (D, G), WL Searchlight	Enclosed
Ratel 20 Mk 3	$75,347	D, A	1 ton	18.5 tons	3+8	10	Passive IR (D, G), WL Searchlight	Enclosed
Ratel 12.7 Command Mk 3	$175,701	D, A	500 kg	18 tons	2+4	12	Passive IR (D, G), WL Searchlight	Enclosed
Ratel 60 Mk 3	$173,940	D, A	900 kg	18.8 tons	3+6	10	Passive IR (D, G), WL Searchlight	Enclosed
Ratel 90 Mk 3	$311,675	D, A	800 kg	19 tons	4+4	10	Passive IR (D, G), WL Searchlight	Enclosed
iKlwa	$58,369	D, A	2.4 tons	20.5 tons	2+15	10	Passive IR (G)	Enclosed
iKlwa w/Light RWS	$96,814	D, A	2.3 tons	23.5 tons	2+13	14	Passive IR (D, G), Image Intensification (G), Thermal Imager (G)	Enclosed
iKlwa Medium RWS (20mm)	$100,813	D, A	2.3 tons	23.4 tons	2+11	14	Passive IR (D, G), Image Intensification (G), Thermal Imager (G)	Enclosed

iKlwa Medium RWS (25mm)	$103,963	D, A	2.3 tons	23.4 tons	2+11	14	Passive IR (D, G), Image Intensification (G), Thermal Imager (G)	Enclosed
iKlwa Heavy RWS (30mm)	$106,997	D, A	2.3 tons	23.4 tons	2+11	14	Passive IR (D, G), Image Intensification (G), Thermal Imager (G)	Enclosed
iKlwa Heavy RWS (35mm)	$110,183	D, A	2.3 tons	23.4 tons	2+11	14	Passive IR (D, G), Image Intensification (G), Thermal Imager (G)	Enclosed
TAP-C	$286,917	D, A	2.2 tons	23.7 tons	3	15	Passive IR (D, G), Image Intensification (G), Thermal Imager (G)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Ratel 20 Mk 1/Mk 2	137/69	32/16	430	147	Trtd	W(6)	TF6 TS4 TR3 HF11 HS6 HR4*
Ratel 12.7 Command Mk 1/Mk 2	141/71	33/16	430	143	CiH	W(6)	TF3 TS2 TR2 HF11 HS6 HR4*
Ratel 60 Mk 1/Mk 2	134/68	31/16	430	150	Trtd	W(6)	TF6 TS4 TR3 HF11 HS6 HR4*
Ratel 90 Mk 1/Mk 2	133/67	31/16	430	151	Trtd	W(6)	TF6 TS4 TR3 HF11 HS6 HR4*
Ratel 20 Mk 3	144/74	34/17	430	166	Trtd	W(6)	TF6 TS4 TR3 HF11 HS6 HR4*
Ratel 12.7 Command Mk 3	148/76	35/18	430	161	CiH	W(6)	TF3 TS2 TR2 HF11 HS6 HR4*
Ratel 60 Mk 3	141/73	33/17	430	169	Trtd	W(6)	TF6 TS4 TR3 HF11 HS6 HR4*
Ratel 90 Mk 3	140/73	33/17	430	169	Trtd	W(6)	TF6 TS4 TR3 HF11 HS6 HR4*
iKlwa	186/94	44/20	650	278	Stnd	W(6)	HF13Sp HS8Sp HR5**
iKlwa w/Light RWS/Medium RWS/Heavy RWS	162/82	38/19	650	242	CiH	W(6)	TF3 TS3 TR3 HF13Sp HS8Sp HR5**
TAP-C	160/81	38/18	650	322	CiH	W(6)	TF3 TS3 TR3 HF13Sp HS8Sp HR5**

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Ratel 20	+1	Fair	20mm GI-2 Autocannon, MG-4, MG-4 (C), MG-4 (Rear)	1200x20mm, 6000x7.62mm
Ratel 12.7 Command	+1	Fair	M-2HB, MG-4 (Rear)	300x.50, 3600x7.62mm
Ratel 60	+2	Fair	60mm CB-60 HB Gun/Mortar, MG-4, MG-4 (C), MG-4 (Rear)	90x60mm, 3600x7.62mm
Ratel 90	+2	Fair	90mm GT-2 Gun, MG-4, MG-4 (C), MG-4 (Rear)	60x90mm, 3600x7.62mm
iKlwa	None	None	M-2HB or Mk 19 (C), MG-4/MAG (Rear)	2260x.50, 7600x7,62mm
iKlwa w/Light RWs	+2	Good	M-2HB, MG-4/MAG-4 (C); MG-4/MAG (Rear)	2260x.50, 7200x7.62mm
iKlwa w/Medium RWS	+2	Good	20mm Oerlikon or 25mm M-242 Autocannon (C); MG-4/MAG (Rear)	1435x20mm or 1150x25mm,

iKlwa w/Heavy RWS	+2	Good	30mm Mk 44 Autocannon or 35mm Bushmaster III Autocannon (C); MG-4/MAG (Rear)	7200x7.62mm 950x30mm or 820x35mm, 7200x7.62mm
TAP-C	+2	Good	M-2HB (C)	2160x.50

*Floor AV is 4Sp.
**Floor AV is 6Sp, Roof AV is 3.

BAE South Africa RCV-9 Nonggai

Notes: This is a South African internal security vehicle, used for riot control and to protect high-risk installations such as power grids and airports. It also found use as bullion and currency transport and an armored ambulance as well as a command and control vehicle. This vehicle is also known as the Uklebe or the Falcon. It was replaced in production by the RG-12 Nyala (see below), and is not is production at this time; protection ended in 2007, with production starting in late-1987. The RCV-9 is also used by Columbia, who actually use more than South Africa (60, versus the 50 used by South Africa). A large number of non-governmental organizations, relief organizations, VIP protection units, and news agencies have acquired the RCV-9; although only 110 are used by national forces, over 700 have actually been built and sold.

The RCV-9 is a van-like vehicle. The driver sits in the front in the middle, with the troops sitting in seats down the center of the rear of the vehicle, facing outwards. He has a hatch atop his position, but normally enters and exits through half-sized cab doors (to fit over the top of the wheels). There are doors in either side of the vehicle; the rear of these two doors is about half the size of the front door to clear the rear wheel. Each of the four side doors has a firing port, and the rear has two firing ports. On the roof are three hatches, one of which has a weapon mount; the one with the weapons mount, a commander's position, has a raisable firing step and has a hatch that opens to the rear. The commander has a spotlight next to his position. The two other hatches are to the rear of this hatch and open outwards; they can be locked in the vertical position to provide a shield of sorts. To the rear of this on the roof is a spare tire. The driver has a large two-part bullet-resistant windshield in front, and large bullet-resistant side windows to his cab. The bullet resistant windows have wire mesh screens to stop grenades and other large low-velocity or thrown weapons. The sides have ballistic glass windows, a large one in the forward of the two side doors, and a smaller one about half the size in the rear of the two side doors. The rear has two large bullet-resistant windows.

The engine is at the rear of the vehicle. This engine is a turbocharged diesel developing 120 horsepower, coupled to a manual transmission. The driver has conventional controls, though he has power steering and a power assist for the transmission (with a direct mechanical backup). The standard suspension is 4x2, though a version with 4x4 suspension is available, and the entire suspension is more suited for road use than off-road use (it is very low). There are a lot of optional fittings available, such as floodlights and extra spotlights, shotgun microphones and recorders, wire mesh protection extended to all windows, a tow bar, a roof-mounted wire cutter to protect the commander, a ramming bumper, fire extinguishing bottles, air conditioning, a front-mounted winch with a capacity of 5 tons and 60 meters of cable, and run-flat tires (which are not normally fitted, though the standard tires are puncture-resistant).

The armored ambulance version can carry four stretcher cases or two stretcher cases and four sitting casualties, as well as a medic. It has the equivalent of one doctor's medical bag and 10 personal medical kits, a selection of bandages, splints, burn first aid, and other such materials, an oxygen administration kit, and a defibrillator. The command and control vehicle has two long-range radios (one data-capable), one medium-range radio, and a short-range radio. It has a limited ruggedized laptop computer that is used to update situational information and orders. The vehicle has a number of map books and office-type supplies. The command version has two TV screens which connect to either higher or lower command elements or to the rotating TV camera and shotgun microphone on the roof (which is protected by a wire cage). The TV camera is a low-light TV camera (reflected in the Image Intensifier listing below), and has telescopic zoom.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
RCV-9 (4x2)	$13,711	D, A	880 kg	6.9 tons	2+7	2	WL Spotlight	Enclosed
RCV-9 (4x4)	$13,849	D, A	880 kg	6.9 tons	2+7	2	WL Spotlight	Enclosed
RCV-9 Ambulance (4x2)	$15,768	D, A	440 kg	7 tons	*	3	WL Spotlight	Enclosed
RCV-9 Ambulance (4x4)	$15,927	D, A	440 kg	7 tons	*	3	WL Spotlight	Enclosed
RCV-9 Command (4x2)	$46,591	D, A	440 kg	7 tons	2+4	4	WL Spotlight, Image Intensification	Enclosed
RCV-9 Command (4x4)	$46,660	D, A	440 kg	7 tons	2+4	4	WL Spotlight, Image Intensification	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor

RCV-9 (4x2)	231/22	54/5	200	58	Stnd	W(2)	HF2 HS2 HR2
RCV-9 (4x4)	183/45	43/10	200	58	Stnd	W(2)	HF2 HS2 HR2
RCV-9 Ambulance/Command (4x2)	229/22	54/5	200	59	Stnd	W(2)	HF2 HS2 HR2
RCV-9 Ambulance/Command (4x4)	182/44	43/10	200	59	Stnd	W(2)	HF2 HS2 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
RCV-9/RCV-9 Command	None	None	MG-4 (C)	1950x7.62mm

BAE South Africa RG-12 Nyala

Notes: This is a former South African police and internal security vehicle that has been pressed into military use a peacekeeping role in some cases. Users have gone far beyond South Africa to include several other African nations, The RCMP, Calgary Police, and London Police of Canada, Kuwait, Jordan, Saudi Arabia, the UAE, Italy (the largest user of the RG-12) – even the Port Authority of New York in the US uses three of them, and the Connecticut State Police uses one. The vehicle resembles the RCV-9 in its van-like configuration, and replaced the RCV-9 in sale and production. The RG-12 shares many components with the RG-31 Charger (below).

The RG-12 has two ballistic glass windshields up front, and bullet-resistant windows to the cab sides, three more down the sides, and a one in the rear door. These windows are typically large to afford the crew and passengers a good view of the surrounding situation, but can be made small to increase protection. The windows typically have steel mesh over them to foil grenades and Molotov cocktails. The mesh also covers the floodlights, the flashers, and the headlights. There is a firing port under each window except the cab windows and windshield. There is a full-sized door in each side of the troop compartment in the center of the vehicle. The doors usually swing out; but can be had in sliding doors to facilitate exit when the vehicle is near a building or wall. The rear also has a door. Above the commander's seat is a hatch with a weapon mount by it; this seat is next to the driver in front on the right side. The RG-12 normally has five floodlights atop the vehicle, operated by those inside, with one by the commander's hatch, and the rest being in on the roof of the vehicle near the corners. Troops sit down the center of the vehicle, back-to-back; their seats are padded and relatively comfortable, allowing for long occupancy. The amount of troops depends upon the equipment installed, but a maximum figure is given below – for example, a cage is normally found near the back door for a police dog, which results in the loss of two passenger spaces.

The RG-12 is powered by an ADE 366T diesel engine developing 170 horsepower, coupled to a manual transmission. Variants include the RG-12 CAT, which has a Caterpillar engine of the same horsepower, and a version which uses an Iveco engine of the same power. The standard suspension is 4x2, but a 4x4 version also exists; like the RCV-9, the RG-12 is best suited to on-road rather than off-road travel. The armor is a little better, with the floor slightly reinforced against mines and IEDs. The driver has conventional controls and power steering and brakes, as well as a hydraulic assist for the transmission with a direct mechanical backup.

Variants include the Mk 2, which has a 0.5kW APU-powered air conditioner, a central tire pressure regulation system which gives the vehicle a little better off-road mobility; antilock brakes, and various ergonomic improvements, and a command vehicle based on the Mk 2, built for an unnamed Middle Eastern country. The Mk 2 versions are all 4x4 vehicles. The Mk 2 can also carry the MARS (Mobile Adjustable Ramp System), which provides a raisable adjustable assault and evacuation ramp atop the vehicle to allow the occupants to attack up to a third-story window in force, and is adjustable for any height in between. The ramp is accessed through a ladder on the rear of the vehicle. The installation of the MARS ramp means that the commander's machinegun and mount must be removed. The hatch remains, but cannot be opened when the ramp is folded.

The Mk 2 Command version is appointed in the same manner as the RCV-9 above.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
RG-12 Mk 1 (4x2)	$16,364	D, A	1.3 tons	9.2 tons	2+10	6	5xWL Spotlight (C, Roof)	Enclosed
RG-12 Mk 1 (4x4)	$16,528	D, A	1.3 tons	9.2 tons	2+10	6	5xWL Spotlight (C, Roof)	Enclosed
RG-12 Mk 2	$16,753	D, A	1.3 tons	9.3 tons	2+10	6	WL Spotlight	Enclosed
RG-12 Mk 2 Command	$49,468	D, A	650 kg	9.5 tons	2+4	7	5xWL Spotlight, Image Intensification	Enclosed
RG-12 Mk 2 w/MARS	$18,753	D, A	850 kg	11 tons	2+10	7	4xWL Spotlight (Roof)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor

RG-12 Mk 1 (4x2)	249/24	57/6	250	86	Stnd	W(2)	HF3 HS3 HR2*
RG-12 Mk 1 (4x4)	197/48	45/11	250	86	Stnd	W(2)	HF3 HS3 HR2*
RG-12 Mk 2	196/48	45/11	250	87	Stnd	W(2)	HF3 HS3 HR2*
RG-12 Mk 2 Command	192/47	44/11	250	88	Stnd	W(2)	HF3 HS3 HR2*
RG-12 Mk 2 w/MARS	165/40	38/9	250	104	CiH	W(2)	TF1 TS1 TR1 HF3 HS3 HR2**

Vehicle	Fire Control	Stabilization	Armament	Ammunition
RG-12 (Except w/MARS Ramp)	None	None	MG-4 (C)	2400x7.62mm

*Floor AV is 3Sp.

**Floor AV is 3Sp. The “CiH” rating reflects the MARS ramp and not a standard CiH-type vehicle.

BAE South Africa RG-31 Nyala

Notes: The RG-31 Nyala (yes, the same name as the RG-12, though they are very different vehicles) is a light MRAP that has found a considerable market, particularly among the countries participating in the intervention in Afghanistan, and especially among US forces, who call it the charger and have developed specialized versions working with the US firm of Oshkosh for use in their Category I MRAP requirement. The US is in fact the largest user of the RG-31, with 1963 having been bought and more being produced in the US under license. Other users include Canada, France, Spain, the UAE, Columbia, Rwanda, and South Africa herself. The RG-31 is also used by UN forces in general as well as a number of non-governmental relief agencies, the transport of government and business VIPs, and by various security contractors. Many countries use a variety of options and customizations, from air conditioning and winches to remote weapons stations and a mix of weapon mounts. (Those used by non-military or police agencies are typically unarmed.)

In general, the RG-31 is a development of the Mamba MRAP listed above. It resembles a large, armored SUV, with a large double windshield of ballistic glass, and large side cab windows, two large side windows, and a large rear window of ballistic glass. Exit and entrance for the driver and commander are through cab side doors, and the rest of the troops enter and exit through a rear door. There are two hatches atop the roof; the front one is generally accompanied by a weapon mount or occupied with an RWS or small turret; weapon mounts by themselves are typically surrounded by AV2 gun shields. The RG-31 has an MRAP hull, and this hull has proven very effective at protecting the occupants from mines and IEDs. The crew and troops are seated on shock-absorbing seats and have 4-point harnesses. Depending upon appointments, the troop complement can vary. Firing ports, up to three per side and two in the rearm are an option often taken.

The base engine of the RG-31 range is the Mercedes-Benz OM-352A diesel, developing 123 horsepower. This has proven to be underpowered, and most users have taken the option of one of several more powerful engines. The engine is coupled to an automatic transmission with a manual backup. The suspension is reasonably high to help protect against mines and IEDs, and is a 4x4 suspension with good off-road characteristics. The all-welded steel armor offers increased armor protection over the Mamba except in its base form. A spare tire is often carried on the dies of the vehicle behind the cab doors. Tires are run-flat and have additional puncture resistance. Air conditioning is virtually standard, and interior heating is adequate as well. A variety of optional features are available, including flashing lights and sirens, loudspeakers, video systems, ramming bumpers, automatic fire detection and suppression systems, and roof spotlights.

Engine options for the RG-31 include a Caterpillar diesel developing 125 horsepower, an Iveco Tector F4AE0681D diesel developing 210 horsepower, a Detroit Diesel engine developing 260 horsepower, and a Cummins QSB-6700 diesel engine developing 275 horsepower.

Variants include the RG-31M; the upgrade includes a military-standard wiring harness, central tire pressure regulation, and various engineering and mechanical improvements. It is normally fitted out as a weapons carrier, and has a plethora of weapons including a heavy RWS and a rear roof hatch with a weapons mount. It carries a large amount of ammunition, and carries only weapons operators. The Mk 2 uses the Detroit Diesel engine discussed above; and is most often found in a VIP transport configuration, and as such has extra side doors. It has slightly better armor protection. It is also sometimes found in a troop-carrying configuration. The Mk 3 was built primarily for export and has an Iveco Tector engine as described above as well as the improvements of the RG-31M and the ballistic improvements of the Mk 2; however, the Mk 3 is used by the US Army, with them using some 148 of them. On the Mk 3 or later, there are often two clusters of three smoke grenade launchers on the front corners of the vehicle or the front roof corners.

The Mk 3A is basically an upgraded Mamba with the more powerful Iveco Tector engine as well as the improvements of the RG-31M; for game purposes, it is identical to the Mk 3. The RG-31 Mk 3 Charger for US forces is equipped with the Detroit Diesel above and the ballistic improvements of the Mk 2. The RG-31 Sabre is a logistics/cargo version of the Mk 3 which has a bare rear area, roof hatches and a small 2-ton crane for cargo handling, and rollers on the floor, lock-down points, and tie-down points.

The Mk 5 was designed specifically for US forces, and features the Cummins engine stated above. The Mk 5E has an extended

wheelbase and larger passenger/weapon capability. The Mk 6E is a version of the Mk 5E which has superior armor protection, particularly against mines and IEDs. The Mk 5A1S was designed for US SOCOM forces, and is essentially a “gun truck” carrying extra weapons, gear, and radios. The Mk 5A1 is fitted out by the US Army as a scout vehicle and carries more weapons, radios, and gear and less troops. Some are also fitted out as VIP transport versions. Both the Mk 5A1 and Mk 5A1S carry 2 long-range radios (one data-capable), one medium-range radio, and one short-range radio; the Mk 5A1S also carries two specialist radios for communicating with aircraft. Mk 5s and Mk 6s are considered Category II MRAPs by the US military, except for the Mk 5As (essentially a Mk 5 with some automotive and electrical improvements) and the base Mk 5, which is still a Category I.

US forces can have a variety of weapons installations and crew and passenger configurations; some representative installations are shown below. These can range from simple pintle mounts to small turrets and RWSs.

Most other countries use stock base RG-31s, but the Canadians use a version of the Mk 3 with the Protector M-151 RWS. The Spanish also use an RWS on theirs, a Samson RWS in their case; they use them on Mk 5Es. The UAE use Mk 5s customized with small turrets atop them, often armed with autocannons.

Twilight 2000 Notes: At the time of the Twilight War, it was an open question as to which of those two vehicles would remain in production, but with the crisis, both vehicles were used by South Africa. The later versions of the RG-31, other than the RG-31M, do not exist in the Twilight 2000 timeline. The US, Britain, and Israel do, however, use RG-31 Mk 1s (in the Middle East only) – the US with the Caterpillar engine, the rest with the Mercedes-Benz engine.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
RG-31 Mk 1	$15,852	D, A	965 kg	7 tons	2+6	2	Headlights	Enclosed
RG-31 Mk 1 (Caterpillar Engine)	$15,857	D, A	965 kg	7 tons	2+6	2	Headlights	Enclosed
RG-31M	$56,358	D, A	485 kg	7.2 tons	2+3	3	Headlights	Enclosed
RG-31 Mk 2	$21,455	D, A	1.3 tons	7.2 tons	2+6	2	Headlights	Enclosed
RG-31 Mk 3	$20,738	D, A	1.1 tons	7.3 tons	2+6	2	Headlights	Enclosed
RG-31 Mk 3 (US)	$21,455	D, A	1.2 tons	7.4 tons	2+6	2	Headlights	Enclosed
RG-31 Sabre	$19,400	D, A	2.3 tons	6.8 tons	2	3	Headlights	Enclosed
RG-31 Mk 5 (Standard)	$22,511	D, A	1.1 tons	7.4 tons	2+6	2	Headlights	Enclosed
RG-31 Mk 5 (RWS)	$99,750	D, A	1 ton	7.7 tons	3+5	5	Passive IR (G), Image Intensification (G)	Enclosed
RG-31 Mk 5E (Standard)	$22,787	D, A	1.1 tons	7.9 tons	2+8	4	Headlights	Enclosed
RG-31 Mk 5E (RWS)	$100,089	D, A	1 ton	8.1 tons	3+7	6	Passive IR (G), Image Intensification (G)	Enclosed
RG-31 Mk 5A1 (Standard)	$30,816	D, A	500 kg	7.5 tons	3+3	4	Headlights	Enclosed
RG-31 Mk 5A1 (RWS)	$107,656	D, A	400 kg	7.8 tons	3+3	6	Passive IR (G), Image Intensification (G)	Enclosed
RG-31 Mk 5A1S	$59,908	D, A	500 kg	7.7 tons	3+3	5	Headlights	Enclosed
RG-31 Mk 6E (Standard)	$25,254	D, A	1 ton	8.4 tons	2+8	6	Passive IR (G), Image Intensification (G)	Enclosed
RG-31 Mk 6E (RWS)	$102,107	D, A	900 kg	8.6 tons	3+7	6	Headlights	Enclosed
RG-31 Mk 3 (Canadian)	$37,506	D, A	1 ton	7.6 tons	3+5	5	Passive IR (G), Image Intensification (G)	Enclosed

RG-31 Mk 5E (Spanish Samson Jr RWS)	$41,508	D, A	1 ton	8 tons	3+7	5	Passive IR (G), Image Intensification (G)	Enclosed
RG-31 Mk 5E (Spanish Mini-Samson RWS)	$39,790	D, A	1 ton	8.1 tons	3+7	5	Passive IR (G), Image Intensification (G)	Enclosed
RG-31 Mk 5E (Spanish Samson RWS)	$55,441	D, A	725 kg	9.4 tons	3+6	5	Passive IR (G), Image Intensification (G)	Enclosed
RG-31 Mk 5 (UAE Small RWS)	$40,108	D, A	1 ton	7.5 tons	3+5	5	Passive IR (G), Image Intensification (G)	Enclosed
RG-31 Mk 5 (UAE Medium RWS)	$38,050	D, A	1 ton	7.6 tons	3+5	5	Passive IR (G), Image Intensification (G)	Enclosed
RG-31 Mk 5 (UAE Large RWS)	$53,902	D, A	725 kg	8.9 tons	3+4	5	Passive IR (G), Image Intensification (G)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
RG-31 Mk 1	142/72	33/17	215	60	Stnd	W(3)	HF3 HS3 HR2*
RG-31 Mk 1 (Caterpillar Engine)	143/73	33/17	215	60	Stnd	W(3)	HF3 HS3 HR2*
RG-31M	141/71	33/16	215	62	Stnd	W(3)	HF3 HS3 HR2*
RG-31 Mk 2	259/130	60/30	215	136	Stnd	W(3)	HF4 HS3 HR2*
RG-31 Mk 3	213/107	49/25	215	108	Stnd	W(3)	HF3 HS3 HR2*
RG-31 Mk 3 (US)	253/127	58/30	215	139	Stnd	W(3)	HF4 HS3 HR2*
RG-31 Sabre	225/114	53/26	215	59	Stnd	W(3)	HF3 HS3 HR2*
RG-31 Mk 5 (Standard)	265/134	62/31	215	144	Stnd	W(3)	HF4 HS3 HR2*
RG-31 Mk 5 (RWS)	254/129	60/30	215	150	CiH	W(3)	TF2 TS2 TR2 HF4 HS3 HR2*
RG-31 Mk 5E (Standard)	249/126	56/29	215	154	Stnd	W(3)	HF4 HS3 HR2**
RG-31 Mk 5E (RWS)	241/122	56/28	215	157	CiH	W(3)	TF2 TS2 TR2 HF4 HS3 HR2**
RG-31 Mk 5A1 (Standard)	263/133	61/31	215	145	Stnd	W(3)	HF4 HS3 HR2**
RG-31 Mk 5A1 (RWS)	252/127	59/29	215	151	CiH	W(3)	TF2 TS2 TR2 HF4 HS3 HR2**
RG-31 Mk 5A1S	254/129	60/30	215	150	Stnd	W(3)	HF4 HS3 HR2**
RG-31 Mk	234/118	53/27	215	163	Stnd	W(4)	HF4 HS4 HR3***

6E (Standard)							
RG-31 Mk 6E (RWS)	229/116	52/27	215	168	CiH	W(4)	TF2 TS2 TR2 HF4 HS4 HR3***
RG-31 Mk 3 (Canadian)	204/103	47/24	215	112	CiH	W(3)	TF2 TS2 TR2 HF3 HS3 HR2*
RG-31 Mk 5E (Spanish Samson Jr RWS)	247/125	55/29	215	156	CiH	W(3)	TF2 TS2 TR2 HF4 HS3 HR2**
RG-31 Mk 5E (Spanish Mini-Samson RWS)	244/123	55/28	215	157	CiH	W(3)	TF2 TS2 TR2 HF4 HS3 HR2**
RG-31 Mk 5E (Spanish Samson RWS)	209/106	47/24	215	183	CiH	W(3)	TF2 TS2 TR2 HF4 HS3 HR2**
RG-31 Mk 5 (UAE Small RWS)	263/133	61/31	215	145	CiH	W(3)	TF2 TS2 TR2 HF4 HS3 HR2*
RG-31 Mk 5 (UAE Medium RWS)	257/130	60/30	215	148	CiH	W(3)	TF2 TS2 TR2 HF4 HS3 HR2*
RG-31 Mk 5 (UAE Large RWS)	220/111	51/26	215	173	CiH	W(3)	TF2 TS2 TR2 HF4 HS3 HR2*

Vehicle	Fire Control	Stabilization	Armament	Ammunition
RG-31 Mk 1/Mk 2/Mk 3	None	None	Mini-SS or Minimi or M-249 or MG-4 or MAG or M-2HB or Mk 19 AGL	2950x5.56mm or 2150x7.62mm or 1285x.50 or 400x40mm Grenades
RG-31M/Mk 5A1S	None	None	Mini-SS or Minimi or M-249 or MG-4 or MAG or M-2HB or Mk 19 AGL; Mini-SS or M-249 or MG-4 or MAG or M-2HB or Mk 19 AGL C), MG-4 or MAG or M-2HB (Left, Right Side); 2xAT-4 or other LAW; MG-4 or MAG (Rear)	5900x5.56mm or 4300x7.62mm or 2750x.50 or 800x40mm Grenades; plus 4300x7.62mm or 1285x.50; and 2xAT-4 or other LAW; plus 2150x7.62mm
RG-31 Sabre	None	None	Mini-SS or Minimi or M-249 or MG-4 or MAG or M-2HB or Mk 19 AGL (C)	1475x5.56mm or 1075x7.62mm or 645x.50 or 200x40mm Grenades
RG-31 Mk 5/Mk 5E/Mk 6E	None	None	Minimi or M-249 or MAG or M-2HB or Mk 19 AGL	2950x5.56mm or 2150x7.62mm or 1285x.50 or 400x40mm Grenades
RG-31 Mk 5/Mk 5E	+2	Fair	M-2HB	2000x.50

(RWS)/Mk 3 (Canadian) RG-31 Mk 5A1	None	None	Minimi or M-249 or MAG/M-240 or M-2HB or Mk 19 AGL; plus MAG/M-240 (Rear)	2950x5.56mm or 2150x7.62mm or 1285x.50 or 400x40mm Grenades; plus 1075x7.62mm
RG-31 Mk 5E (Spanish Samson Jr RWS)	+2	Fair	Minimi, MG-3	3000x5.56mm, 1700x7.62mm
RG-31 Mk 5E (Spanish Mini-Samson RWS)	+2	Fair	M-2HB or HK GMG	2000x.50 or 640x40mm Grenades
RG-31 Mk 5E (Spanish Samson RWS)	+2	Fair	20mm Oerlikon KAA or 25mm M-242 ChainGun or 30mm Mk 44 ChainGun	2000x20mm or 1600x25mm or 1350x30mm
RG-31 Mk 5 (UAE Small RWS)	+2	Fair	Minimi, MAG	3000x5.56mm, 1700x7.62mm
RG-31 Mk 5 (UAE Medium RWS)	+2	Fair	M-2HB or Mk 19 AGL	2000x.50 or 640x40mm Grenades
RG-31 Mk 5 (UAE Large RWS)	+2	Fair	20mm Oerlikon KAA or M-242 ChainGun	2000x20mm or 1600x25mm

*Floor AV is 4Sp.
**Floor AV is 5Sp.
***Floor AV is 5Sp, Roof AV is 3.

BAE South Africa RG-32 Scout

Notes: The RG-32 is based on the RG-31, and is sort of an “RG-31 Light.” It was designed primarily for police and VIP transport roles, though military versions were produced and fielded as light scout aircraft, hence its appellation. In addition to its use by South Africa, The RG-32 is in general UN use for peacekeeping operations and by Finland, Sweden, Egypt, Ireland, and Slovakia, almost all in police and VIP transport forms and in almost all cases in small numbers. Only Finland and Sweden, in fact, other than South Africa, employ the RG-32 in a military role. A further development of the RG-32, the RG-32M Galten, is also available; this is employed in a military role by South Africa, Sweden, Finland, and Ireland. The RG-32M is produced exclusively in a military version, and is meant as more of a light scout vehicle than an APC. The RG-32 has seen combat use in Afghanistan.

Being derived from the RG-31, the RG-32 follows the same form: an armored SUV. Armor protection is not as heavy as on the RG-31, and the mine blast protection is also not as pronounced. The entire vehicle resembles a short-wheelbase version of the RG-31, with a front cab and engine and rear troop compartment which is smaller than that of the RG-31. The side cab doors and rear door remains, though there is only one door in the rear instead of two. There are also two side doors for the troop compartment. The large bullet-resistant windshield remains, along with the large side cab windows, two pairs of side windows in the troop section, and a relatively small rear windows. All are bullet-resistant. The rear door often has a spare tire mounted on it. No firing ports are evident, though there is a roof hatch for a weapons mount in the military versions (the hatch remains, though there is no weapons mount, in the VIP/Police versions. An Air conditioner is found on the roof. VIP transports are normally more luxuriously fitted out with padded bench car-like seats and amenities such as commercial radios, CD players, hot spots for laptops and smartphones, etc. They carry less passengers and less cargo, and do not normally have the 4-point harnesses for the crew and passengers. They are normally unarmed, but often have firing ports in the sides of the vehicles (up to two). Police versions typically have flashing lights, a siren, an extra-loud horn, a ramming bumper, and a 3-ton capacity winch in the front bumper with 60 meters of cable. Finnish and Swedish RG-32s are specially winterized. The suspensions are meant for more on-road than off-road use, especially in the 4x2 versions. Military versions have clusters of three smoke grenade launchers on each side of the front bumper of each front corner of the roof.

Two types of engines are available to the RG-32: the MBT-900 190-horsepower turbocharged diesel or the 200-horsepower VM Motori RA-428 turbocharged gasoline engine. Suspension can be 4x2 or 4x4, and the RG-32 can be manual or automatic transmission. (Military versions are all 4x4 and diesel-powered.) The RG-32 has an MRAP hull, but just a hint of a V-shaped exterior and thus does not offer much better protection than a flat bottom. The RG-32 has power brakes and power steering with direct actuation backups.

The RG-32M is a much more beefy model which has an mine-hardened hull and more armor protection, on par with an RG-31 in its early Marks. It has seen combat use in Afghanistan. The RG-32 is designed to use as many off-the-shelf components as possible, borrowing many from the RG-31 as well as standard RG-32. The RG-32 comes in standard and long-wheelbase versions; the latter can be easily mistaken with the RG-31 in its early marks. The latest version of the RG-32M, the RG-32M LTV, has an even better MRAP hull and is higher inside; this allows it to carry more mission-specific equipment. Despite the higher weight, it is powered by a 181-horsepower Steyr M16TCA turbocharged engine. This increases range without cutting the power too much.

Twilight 2000 Notes: The RG-32 does not appear in the Twilight 2000 timeline.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
RG-32 Police 4x2 (Gas)	$4,489	G, A	870 kg	4.5 tons	2+4	3	Headlights	Enclosed
RG-32 Police 4x2 (Diesel)	$4,445	D, A	870 kg	4.5 tons	2+4	3	Headlights	Enclosed
RG-32 VIP Transport 4x2 (Gas)	$8,161	G, A	385 kg	4.6 tons	2+4	3	Headlights	Enclosed
RG-32 VIP Transport 4x2 (Diesel)	$8,081	D, A	385 kg	4.6 tons	2+4	3	Headlights	Enclosed
RG-32 Military	$21,490	D, A	770 kg	4.7 tons	2+4	2	Headlights	Enclosed
RG-32M	$24,647	D, A	1.2 tons	7.5 tons	3+3	4	Headlights	Enclosed
RG-32M LWB	$24,726	D, A	1.4 tons	7.8 tons	3+5	4	Headlights	Enclosed
RG-32M LTV	$26,735	D, A	700 kg	9.5 tons	3+3	4	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Police 4x2 (Gas)	497/48	115/11	125	137	Stnd	W(2)	HF2 HS2 HR2*
Police 4x2 (Diesel)	472/46	109/11	125	97	Stnd	W(2)	HF2 HS2 HR2*
VIP Transport 4x2 (Gas)	492/48	114/11	125	138	Stnd	W(2)	HF2 HS2 HR2*
VIP Transport 4x2 (Diesel)	467/46	108/11	125	98	Stnd	W(2)	HF2 HS2 HR2*
RG-32 Military	360/88	84/32	125	101	Stnd	W(2)	HF2 HS2 HR2*
RG-32M	239/59	55/22	125	92	Stnd	W(2)	HF3 HS3 HR2**
RG-32M LWB	229/55	52/21	125	96	Stnd	W(3)	HF3 HS3 HR2**
RG-32M LTV	188/47	43/17	125	117	Stnd	W(3)	HF4 HS3 HR2***

Vehicle	Fire Control	Stabilization	Armament	Ammunition
RG-32 (Military Versions)	None	None	2xMini-SS or 2xMinimi or 2xMG-4 or 2xMAG or M-2HB or 2xMGL-40 or Mk 19 AGL	1950x5.56mm or 1400x7.62mm or 850x.50 or 250x40mm LV Grenades or 200x40mm HV Grenades

*Floor AV is 3.
**Floor AV is 4; Roof AV is 3.
***Floor AV is 5Sp; Roof AV is 3.

BAE South Africa RG-34 Iguana

The Iguana was originally a product of the Belgian company Sabiex. Sabiex introduced the Iquana in 2002 at Eurosatory, but by 2007, they had received no orders for it, despite aggressive marketing and some almost-orders. They were ready to drop the design from the market. However, BAE saw enough promise in the Iguana that they bought the design in 2007, and gave it over to their South African subsidiary for further development and production as the RG-34. Despite the further development and being ready for production, there are still no orders for the RG-34 as of January of 2011. BAE South Africa has shown a number of demonstrators and prototypes to various countries and as several arms shows. (Only the basic APC will be detailed below, as it is the only one for which I have any decent data.) The RG-34 is designed for use by military, police, and NGOs alike.

The RG-34 has a forward driver position on its boxy hull, and this may be on the left or right in accordance with the buyer's desires. (Right-hand drive is envisioned to be the standard.) The driver has conventional controls, with power brakes and steering, with manual backups. The driver's position is surrounded on three sides by ballistic glass plates. The commander's position is to the rear of the driver's compartment (on a right-hand-drive position) or to the rear and opposite the driver's position (on a left-hand-drive version). The standard commander's position is a low cupola with a pintle mount for a weapon; however, a number of RWSs, turrets, and weapon stations can be installed (or merely a bare hatch). To the rear of the cupola is space for the troop complement. Small ballistic-glass windows are found three per side and two in the rear on either side of the door; firing ports are an option but not standard. However, above each troop position is a small hatch, which can be locked open and used for the soldier to stand in and fire or observe. To the left of the cupola is storage for ammunition and crew and vehicle equipment. Air conditioning is optional.

It should be noted that the RG-34 does not have an MRAP hull, but it is "mine-hardened." The RG-34 has a high road clearance, large-diameter run-flat puncture-resistant tires, and a specially-designed multi-link hydro-pneumatic suspension mounted on a very rigid structure. This not only gives the vehicle an excellent turning radius and good off-road performance, it does provide some protection from mines and IEDs – sort of like an MRAP, but with only a 10% decrease in damage to interior crew, troops, and components. The armor is of specially-hardened steel, and has a good slope on the front and moderate slope on the sides. Protection is therefore better than what one would expect for such a light and compact vehicle.

Power is provided by a 218-horsepower Cummins turbocharged diesel engine, coupled to an automatic transmission with a

manual backup.

Twilight 2000 Notes: The RG-34 is not available in the Twilight 2000 timeline.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
$20,118	D, A	2 tons	9.5 tons	2+6	6	Headlights	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
181/91	42/21	215	113	Stnd	W(3)	HF8 HS5 HR3*

Fire Control	Stabilization	Armament	Ammunition
None	None	Mini-SS/Minimi/M-249 or MG-4/MAG/M-240 or M-2HB or Mk 19	2750x5.56mm or 2000x7.62mm or 1200x.50 or 380x40mm Grenades

*Floor AV is 3Sp; Roof AV is 3.

BAE South Africa RG-35

Notes: Officially listed by BAE as a “Crossover Tactical Vehicle,” able to fulfill many roles, from APC to command vehicle to specialist vehicles. It is based in part on the RG-31, with a high degree of parts interchangeability. The RG-35 is currently being evaluated and on the short list to supplement or replace the Mamba in certain roles, and certain other countries are said to be evaluating or considering them, including Britain for its LPPV requirement, and Canada, for their TAP-S requirement. First shown at the DSEi 2009 exposition in 2009, and it has not had the chance to really take off yet. Current APC-type plans include an APC with a RWS, an Ambulance, a weapons carrier, and a command post carrier.

The RG-35 has a large 3-piece bullet-resistant windshield at the front for the commander and gunner, and a bullet-resistant window to each side of the cab. Cab access is through a door on either side. The nose is blunt; the crew sits in a cabover configuration, and the engine is on the left side of the vehicle behind the driver. The driver has a hatch above his compartment, or may enter through the troop compartment. The troop section is in the rear, separated from the cab by part of the engine compartment, including a fireproof bulkhead. The troop compartment has hatches on the roof and large double doors in the rear. There are three bullet-resistant windows on the right side and two in the left, and two in the rear doors. Being an MRAP hull, the trip seats are appropriately designed. Three firing ports are found on each side of the hull and one in each of the rear doors. The RWS on the roof in the gunner’s position can carry weapons of up to 20mm, and gives the RG-35 a high degree of fire control and vision devices.

Power is supplied by a turbocharged Cummins diesel providing 550 horsepower, along with an automatic transmission. This provides an abundance of power. Driver’s controls are conventional, with power steering and power brakes. Turn radius is small for a vehicle of its size, only 15 meters for 180 degrees. Off-road mobility is excellent, with a high ground clearance, antilock brakes, puncture-resistant and run-flat tires, and a beefy suspension with all-wheel drive. The RG-35 has central tire pressure regulation. Suspension may be 6x6 or 4x4. Armor is of welded steel, and better than what you might expect from such a vehicle; appliqué armor can also be mounted. For crew comfort, an air conditioner is standard. Fuel tanks are self-sealing. A winch with a 6-ton capacity and 60 meters of cable is mounted in the front bumper.

Ambulance versions are equipped with the equivalent of 2 doctor’s medical bags, 20 personal medical kits, an oxygen administration set, a defibrillator, a small refrigerator, a blanket warmer, and a hot plate. Room is provided in the rear for four stretcher patients or two stretcher patients and five seated patients, plus a medic. The vehicle is unarmed, but all the roof hatches, including a commander’s cupola, is retained; the firing ports are also retained. The Ambulance has an NBC overpressure system with a collective NBC backup, but is not radiologically shielded.

The Command Post carrier has two long-range radios (one data capable), two medium range radios, and two long-range radios. Small computer system is provided, sort of a “BMS-lite,” which allows about 50% of the information flow and storage of a standard Western-type BMS and does not record vehicle state, and uses inertial navigation instead of GPS navigation. Conventional map stowage/map book stowage is provided, and office-type and plotting-type supplies are available. The CPC has an NBC overpressure system with a collective NBC backup, but is not radiologically shielded. All firing ports except the rear firing ports are deleted, though the roof hatches are retained. A hand-held thermal imager, image intensifier, and laser rangefinder are carried.

The weapons carrier generally has a heavier weapon for the RWS and more pintle mounts around the hatch layout, and carries more ammunition at the expense of troop space. The weapons carrier is generally based around the 4x4 version; this has the same essential layout as the 6x6 version, but is shorter. The roof hatches can be locked open in the vertical to provide faux gun shields, and the hatches are rotatable.

Twilight 2000 Notes: The RG-35 does not exist in the Twilight 2000 timeline.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
RG-35 APC	$70,895	D, A	1.9 tons	14.9 tons	3+12	8	Passive IR (G), Image Intensification (G), Thermal Imaging (G)	Enclosed
RG-35 Ambulance	$81,530	D, A	950 kg	15.2 tons	**	9	Headlights	Enclosed
RG-35	$144,181	D, A	950	15.3	3+5	10	Passive IR (G), Image Intensification (G),	Enclosed

Command Post Carrier			kg	tons			Thermal Imaging (G)	
RG-35 Weapons Carrier	$90,691	D, A	830 kg	12.9 tons	3+6	9	Passive IR (G), Image Intensification (G), Thermal Imaging (G)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
RG-35 APC	270/136	62/32	535	296	Stnd	W(6)	HF8 HS5 HR4*
RG-35 Ambulance	265/133	61/31	535	302	Stnd	W(6)	HF8 HS5 HR4*
RG-35 Command Post Carrier	262/132	60/31	535	305	Stnd	W(6)	HF8 HS5 HR4*
RG-35 Weapons Carrier	304/154	70/36	465	256	Stnd	W(4)	HF8 HS5 HR4*

Vehicle	Fire Control	Stabilization	Armament	Ammunition
RG-35 APC	+2	Good	2xMG-4/MAG or MG-4/MAG and M-2HB or Mk 19 AGL or 20mm KAB Autocannon	2000x7.62mm or 960x7.62mm and 600x.50 or 380x40mm Grenades or 760x20mm
RG-35 Weapons Carrier	+2	Good	2xMG-4/MAG or MG-4/MAG and M-2HB or Mk 19 AGL or 20mm KAB Autocannon or 25mm M-242 ChainGun; Mini-SS/Minimi or MG-4/MAG	3000x7.62mm or 1440x7.62mm and 900x.50 or 570x40mm Grenades or 1140x20mm or 910x25mm; 4100x5.56 or 3000x7.62mmm or combination

*Roof AV is 3; Floor AV is 7Sp.

CSIR Casspir

Notes: The Buffel was a revolutionary vehicle which offered considerable advantages in mine-strewn South African Border Wars, but it had a number of problems – poor armor protection, poor off-road performance, and being underpowered. In the mid-1980s, design work began on the Buffel's successor – the Casspir (an amalgamation of the SAP – South African Police – and CSIR – Council for Scientific and Industrial Research). Though the initial customers were to be the South African Police to deploy in townships to enforce apartheid, the Casspir also saw considerable use by SANDF in the South African Border Wars. Peru is a known export customer; India is the largest export user, with them having 255. Other users include Angola, Indonesia, Nepal (the second-largest export user), and several other African nations. The Casspir was the prototype of the US Marines' MRAP project, and the US Army and Marines used several Casspirs (less than 10) during de-mining operations in Croatia and Afghanistan at Bagram Air Base. The last US use of the Casspir, however, was in 2003. South Africa still employs some 370 of them, though they are steadily being replaced by more modern vehicles. There are several marks of the Casspir as well as several variants; APC-type variants include an armored ambulance, an armored logistics vehicle, a weapons carrier, an armored tanker, and a police riot control version.

Originally a product of CSIR, production of the Casspir was taken over by TFM in 1981, with the Mk 2 version. The design was later bought by Reumech, which was then taken over by Vickers Defence, which was then taken over by Alvis, and then by BAE, since 2004, BAE has been the place to go for the Casspir and its parts.

Like the Buffel, the Casspir has an MRAP-type hull and suspension, along with the appropriate seating. This includes 4-point harnesses for the crew and troops to help protect them in the case that a mine or IEDs turns the Casspir on its side or roof, or causes it to roll over. Like the Buffel, the Casspir has a water tank for crew and troop consumption, in this case holding 200 liters; set in the floor, this also provides some incidental protection against mines and IEDs. The Mk 1 version of the Casspir had an open roof; it was, however, produced only in limited quantities (about 200, most later modified into later marks) for a few months in 1979 and 1980. The commander and driver have a forward cab behind the truck-like front end, with a front-mounted windshield of ballistic glass and windows to the sides of ballistic glass. Access to the vehicle is by two doors in the rear or climbing over the sides. The commander has a mount for a weapon under his windshield with limited traverse, elevation, and virtually no depression; this is normally an MG-4. At the front of the troop compartment is a mount (or double mount) for a weapon, which may be of several different types; this is manned by one of the troops in the rear. The troops sit down the center facing outwards; five firing ports are found on each side, and two in the rear. The sides have three long rectangular windows of ballistic glass, and each rear door has a square window. The Mk 1 is powered by 166-horsepower Mercedes-Benz OM-352 turbocharged diesel engine, which unfortunately still leaves it a bit underpowered. The suspension, however, is more suited for off-road use, though once again the stiff leaf-spring-type suspension is used and the ride can be a bit rough. The transmission is manual, and the driver has conventional controls.

The primary difference between the Mk 1 and Mk 2 is the armored roof of the Mk 2. Some improvements to the transmission have been made, such as the use of a limited-slip differential. The roof has four hatches in it, including one by which the weapon mount can be manned. Troops and crew may enter and exit through these hatches, but primary access is through the double door at the rear. The Mk 3 gives the Casspir an automatic transmission with a manual backup and uses a domestically-produced ADE turbocharged diesel developing 170 horsepower.

The armored ambulance, based on the Mk 2, has space for four stretcher patients, two stretchers and four seated patients, or

eight seated patients, along with a medic. The armored ambulance is unarmed. The armored ambulance has the equivalent of one doctor's medical bag, 20 personal medical kits, an oxygen administration kit, a defibrillator, and a small refrigerator.

The armored logistics carrier, the Blesbok, does not have troop appointments and has drop sides. It has no roof; however, it is based on the Mk 2. It has a crane with a 2-ton capacity to help handle cargo. It does not have the weapons station of the Casspir, only the commander's machinegun. The crew consists of the driver, commander, and crane operator/logistics specialist, who is the only one to have a seat in the rear.

The weapons carrier is primarily a carrier for a 106mm recoilless rifle, and the top parts of the sides and rear can be dropped. It has no roof, but is based on the Mk 2. It does carry a small dismount crew, but is primarily a weapons carrier, and the additional troops normally provide additional help with the recoilless rifle or defensive fire support for the vehicle. It does not have the weapons station of the standard Casspir, only the commander's machinegun.

Twilight 2000 Notes: The Mk 3 does not exist in the Twilight 2000 timeline.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Casspir Mk 1	$20,580	D, A	1.5 tons	10.3 tons	2+12	4	Headlights	Open
Casspir Mk 2	$24,600	D, A	1.3 tons	10.9 tons	2+12	4	Headlights	Enclosed
Casspir Mk 3	$24,615	D, A	1.3 tons	10.9 tons	2+12	4	Headlights	Enclosed
Casspir Ambulance	$28,290	D, A	650 kg	11.1 tons	***	5	Headlights	Enclosed
Blesbok	$16,379	D, A	5 tons	9.7 tons	3	4	Headlights	Enclosed
Casspir Weapons Carrier	$145,322	D, A	650 kg	11 tons	4+4	5	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Casspir Mk 1	138/70	32/16	220	83	Stnd	W(4)	HF5 HS3 HR3*
Casspir Mk 2	133/67	31/16	220	88	Stnd	W(4)	HF5 HS3 HR3**
Casspir Mk 3	135/68	31/16	220	89	Stnd	W(4)	HF5 HS3 HR3**
Casspir Ambulance	130/66	30/16	220	90	Stnd	W(4)	HF5 HS3 HR3**
Blesbok	143/72	33/17	220	78	Stnd	W(4)	HF5 HS3 HR3*
Casspir Weapons Carrier	130/66	30/15	220	89	Stnd	W(4)	HF5 HS3 HR3*

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Casspir Mk 1/Mk 2/Mk 3	None	None	2xMini-SS or 2xMG-4 or 2xM-2HB or 20mm KAB Autocannon, MG-4 (C)	4100x5.56mm or 3000x7.62mm or 1800x.50 or 1150x20mm
Blesbok	None	None	MG-4 (C)	1000x7.62mm
Casspir Weapons Carrier	None	None	M-40A2 Recoilless Rifle, MG-4 (C)	25x106mm, 1000x7.62mm

*Floor AV is 6Sp. There is no roof AV.

**Floor AV is 6Sp.

***See Notes for Crew and passenger capacity.

Reumech Buffel

Notes: In the 1980s, the South African National Defense Force (SANDF) had a problem, in its wars with guerillas both in South Africa and in neighboring countries, they were losing a lot of vehicles and troops to mines and IEDs. This led them to develop the first of the MRAPs, vehicles which were not as easily damaged by such weapons and which saved the lives of the crew and troops they were carrying when they did hit a mine or IED. After some experimentation, they came up with the first service examples of the MRAP" the Buffel. Some 1400 of them were built for use by South Africa, where they have since been replaced by newer vehicles. A number of them, however, are still in use by Sri Lanka (who call them the Unicorn), who have similar problems with Tamil rebels in their own country. Some were also used by Rhodesia, and later inherited by Zimbabwe. 31 of them were sold to Uganda in 2004.

The Buffel has a sort of interesting design history; at its base, it uses the chassis of a Unimog truck, modified almost beyond recognition. Original Buffels used the same Mercedes Benz engine, but these were later replaced by an indigenously-built version made by Atlantis Diesel Engines. The Buffel has an odd appearance; the driver sits in a separate cab at the front right of the vehicle, which is separated from the rest of the vehicle by an armored bulkhead and accessed from the top. The cab gives the Buffel a sort of lopsided appearance. To the left of the cab is a spare tire. The troop space is to the rear, with a commander's station at the front left

with a double pintle mount. The troop compartment has seats down the center which have the troops sitting high in the vehicle, and the seats have been specially designed to absorb shock to give them additional protection against mine blasts. The troops have large armored shutters to provide firing ports. On the Mk 1 version, the driver's and troop compartments are open-topped, while on the Mk 2 version, the driver's compartment has a top hatch and the troop compartment has a roof, with a hatch for the commander and a door in the rear. Troops enter and exit by climbing over the sides of the hull, and steps are provided near the front of the troop compartment and on the left side of the driver's compartment to help them climb in. Steps are also found at the rear of the troop compartment. In the floor of the troop compartment is a plastic tank which holds 100 liters of water for consumption by the troops and crew.

The Buffel uses a 125-horsepower diesel engine, and the suspension is 4x4 and unusually high. The wheels themselves are rather small by comparison, inherited from their Unimog ancestry. Though the suspension is high, the Buffel is still better suited to road use and hard-packed earth than most off-road use. The ride can be a bit bouncy due to the stiff leaf-spring suspension, designed more for mine protection than crew and troop comfort. Variants include a mortar carrier, a mount for a 20mm antiaircraft gun, and a cargo carrier (basically an armored truck with a drop rear). (Only the last will be included here.) The Log version (as they are called) have a low-capacity (2-ton) crane to help load and unload cargo. They have no troop seats and only a step for the commander, though they are armed.

The South Africans later developed another version of the Buffel called the Bulldog, though they fielded them in much less numbers than the Buffel, as they were built primarily for airfield security by the South African Air Force rather than for the SANDF. These differed primarily in being based on a SAMIL 20 truck chassis. They were based on the Buffel Mk 1 and are all open-topped. The cab of the Bulldog is connected to the troop compartment and the driver enters his compartment through the troop compartment; the driver's compartment is closed-topped. The Bulldog uses a less-powerful 106-horsepower diesel engine, and as the Bulldog is heavier, performance is significantly less than the Buffel, especially since the chassis is heavier.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Buffel Mk 1	$17,648	D, A	860 kg	6.1 tons	2+9	2	Headlights	Open
Buffel Mk 2	$20,462	D, A	760 kg	6.7 tons	2+9	2	Headlights	Enclosed
Buffel Log	$13,477	D, A	2.5 tons	5.6 tons	2	2	Headlights	Open
Bulldog	$16,898	D, A	500 kg	7.7 tons	2+9	3	Headlights	Open

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Buffel Mk 1	201/50	48/12	200	49	Stnd	W(3)	HF2 HS2 HR2*
Buffel Mk 2	193/47	45/11	200	54	Stnd	W(3)	HF2 HS2 HR2**
Buffel Log	219/53	50/12	200	45	Stnd	W(3)	HF2 HS2 HR2*
Bulldog	156/38	36/9	200	40	Stnd	W(3)	HF2 HS2 HR2*

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Buffel Mk 1/Mk 2/Bulldog	None	None	2xMini-SS or 2xMG-4 or 2xM-2HB (C)	1900x5.56mm or 1400x7.62mm or 850x.50
Buffel Log	None	None	Mini-SS or MG-4 or M-2HB (C)	1400x5.56mm or 1100x7.62mm or 640x.50

*Floor AV is 6Sp. There is no roof AV.

**Floor AV is 6Sp.

Santa Barbara BLR

Notes: This is a wheeled armored personnel carrier in use by the Spanish Marines and Guardia Civil (National Guard). It was developed to be a low-cost armored carrier which could do border patrol duties, internal security, airport security, and amphibious operations. Though the Spanish Marines employ them, more are used by police units operating in rural areas than anywhere else. The only export customer so far has been Ecuador. Though several variants have been proposed and discussed over the years, but only a basic APC version and an internal security have been produced, and there are no plans for upgrading the BLR. Production of the BLR ceased in the mid-1990s, but the vehicle is still used by Spain (and Ecuador) pending the arrival of more up-to-date vehicles.

The BLR is a vehicle with a large, box-shaped hull and a small cupola with a machinegun mount. The driver is in the front right with two large bullet-resistant windshields to his front, and smaller bullet-resistant windows to his sides on the angle of where the front meets the sides. Armored shutters can be lowered over the windshields, with vision slits in them. The driver has conventional controls, and though he has no vehicle-mounted night vision, the commander and driver usually have night vision goggles at their position (not included in the price below). The commander occupies the cupola, which is raised and has vision blocks to the front, sides, and rear. The cupola is in the center of the vehicle just behind the driver/passenger position. This cupola has a pintle-mounted weapon and often is surrounded with low AV2 gun shields. The front of the vehicle also has a seat on the left, sometimes occupied by the infantry squad commander but often left empty. The driver and front passenger have hatches above their position and access to their positions through the troop compartment. The interior is considered roomy for an armored vehicle, and has four vision blocks along the sides and one in each rear door (though no firing ports). The troops are seated along sides of the vehicle, facing inwards. Two hatches are found on the roof.

Power for the BLR is provided by a Pegaso turbocharged diesel developing 220 horsepower, coupled to a manual transmission. The engine is unusually mounted, below the rear floor and mounted so that it wraps around the rear part of the drive train and the rear axle. This, unfortunately, makes it vulnerable to mines and IEDs as well as everyday rough terrain such as projecting rocks. It does, however, leave a large open area at the rear while making the vehicle shorter and smaller. The 4x4 suspension is more suited to road use and is not particularly effective off-road. The BLR has run-flat tires and a winch with a capacity of 4.5 tons and 50 meters of cable; the winch is in the center, but the cable leads out through the front of the vehicle through a channel. Armor is of all-welded steel, but geared more towards protecting against small arms and shell fragments and unlikely to protect against even light and medium machinegun bullets. Frontal armor is moderately sloped, while the sides and rear are straight-sided.

The internal security version is basically the same as the military BLR, has a either a barricade-clearing blade or a full dozer blade at the front which may be raised or lowered as necessary. If the BLR has a barricade-clearing blade, the blade is 50% likely to be hit by frontal shots, adding 5Sp to the frontal armor rating. If the BLR has a full dozer blade, frontal shots are resolved the same, but the AV increase is 8Sp. The barricade-clearing blade is sort of a super ramming bumper, and cannot dig fighting positions or clear terrain. The dozer blade can be used for any task which may be expected of a dozer blade. Other additional equipment includes flashing lights, a siren, a loudspeaker system, and a spotlight on the cupola and another on the roof. The internal security version has a system to automatically put out fires on the tires or in the wheel wells. Note that run-flat tires are not always present on the internal security version. The windshields of the internal security vehicle have a double wiper system; one deals with water and other such liquids and the other id designed for use against paint and suchlike and can spray a solvent solution to help clear it away. The normal cupola armament is replaced by a discharger for irritant gas, which can fire up to 25 3-second blasts erupting in a 30-degree 50-meter-long arc.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
BLR (Military)	$12,643	D, A	2 tons	12 tons	2+12	8	Headlights	Enclosed
Internal Security	$9,074	D, A	1.7 tons	13 tons	2+10	8	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
BLR (Military)	199/49	46/11/5	200	114	Stnd	W(3)	HF3 HS3 HR3
Internal Security	183/45	42/10/4	200	123	Stnd	W(3)	HF3 HS3 HR3

Vehicle	Fire Control	Stabilization	Armament	Ammunition
BLR (Military)	None	None	MG-3 (C)	1000x7.62mm
Internal Security	None	None	Irritant Gas Discharger	25xIrritant Gas Blasts

Santa Barbara BMR-600

Notes: This is a Spanish armored personnel carrier also in service with Egypt Peru, Morocco, and Saudi Arabia. It shares many components with the VEC armored car (see Spanish Light Armored Vehicles), and 50% of the parts can be interchanged. The Spanish Army issued the requirements for the BMR-600 in 1972; first deliveries began in 1979. Some 1500 were built for the Spanish

and for export customers. The BMR-600 has seen combat service in Desert Storm with the Spanish Army, and as part of IFOR in Yugoslavia, in UN service in Lebanon, and in Iraq and Afghanistan. Several variants were built, including one with an alternate turret for the commander, an armored ambulance, a command vehicle, a communications vehicle, and an engineer vehicle (not discussed on this page), as well as other variants not discussed here such as ATGM carriers and a mortar carrier. All Spanish BMR-600s were upgraded in the mid-1990s under the “BMR-2” program; these are designated BMR-M1.

The driver of the BMR-600 is on the front left in a separate cabin which projects forward of the glacis plate. The driver has a large bullet-resistant windshield with armored shutters to his front and smaller windows to each side. The driver has a hatch atop his position, and in this hatch is a port for a night vision block. The commander is directly behind him; he mans an RWS with an M-2HB and has all-around vision blocks. To the rear of this on the deck are two more hatches, opening right and left. At the rear of the troop compartment is a powered ramp with a door in it. There are three firing ports on each side of the hull, and two in the rear. The troops sit four to each side facing inwards and two at the front of the compartment facing the rear.

The BMR-600 uses a Pegaso 9157/8 306-horsepower diesel engine, coupled to an automatic transmission. The BMR-600 has 6x6 drive, and all wheels have independent suspension making it quite adept off-road. The transmission further has a limited-slip differential, and the tires are run-flat. The BMR-600 has a winch at the rear which can be led out the front, and has a 4.5-ton capacity with 50 meters of cable.

The BMR-M1 upgraded version have new Scania DS9 61A 24S 310-horsepower turbocharged diesel engines, which run cleaner and are easier to service, and smaller in size. They are fitted with additional appliqué armor and air conditioning units. They have been made amphibious, and have had waterjets installed at the rear to help in this capacity. The BMR-M1 also has a number of automotive and electrical system upgrades and fixes, and has been equipped with puncture-resistant, run-flat tires. They have a new Dragar one-man turret with heavier armament. Most of the variants have also been equipped with this upgrade, with the exception of the turret. Radiation shielding has been fitted. The driver’s steering wheel is adjustable for height, and the BMR-M1 has an automatic fire detection and suppression system, as well as self-sealing fuel tanks. Three smoke grenade launchers have been added to either side of the turret.

The BMR-600 Armored Command Vehicle (ACV) is a variant of the BMR-600 fitted out to a commander's needs. The vehicle is equipped with 2 short range, one medium range, and one long range radio (which is data-capable), a ruggedized laptop computer, inertial land navigation equipment, a map board, and a folding table and chairs, as well as storage for maps and office-type and plotting-type supplies. The work area can be expanded during halts by a tent as long as the vehicle. The vehicle also has a 5kW generator on the roof to power the equipment when the engine is off. A hand-held thermal imager, image intensifier, and laser rangefinder is carried.

The Radio Communications Vehicle (RCV) uses the same basic chassis and interior as the ACV, but carries a small group of technicians, 3 long-range radios (one data-capable for relaying digital information to a command post), one medium-range radio, one short-range radio, a radio teletype machine (deleted after the BMR-M1 update), 20 field telephones, a switchboard, 2000 meters of commo wire on spools, and a limited amount of spare communications equipment parts. On the roof is a 10kW generator.

The BMR-3560.54 is an armored ambulance version of the BMR-600 armored personnel carrier. In this version, the vehicle carries a refrigerator for perishable medical supplies, a defibrillator, a respirator, the equivalent of one doctor's medical bag, 20 personal medical kits, and four stretchers. The vehicle is equipped with air conditioning and heating. Unlike most armored ambulances, the BMR-3560.54 is armed, with a cupola for the commander with a searchlight to help it spotlight and find casualties as well as a pintle-mounted gun and a small ammunition supply. It can carry four stretcher patients or two stretcher patients and four seated patients, plus a medic in the rear.

The BMR VRAC-NBQ is an NBC reconnaissance version of the BMR-600, equipped with radiation shielding. It has optical chemical sniffers, radiation detectors and dosimeters, sampling equipment (including an extendible arm to sample ground and plants), and an additional long-range radio (data-equipped). The vehicle has limited computer equipment to assist in its findings and studies as well as the ability to transmit those findings to other units.

The BMR GEL is an EW vehicle, used primarily to jam radio communications, but also with a limited radar jamming capability. The BMR GEL’s equipment can jam all frequencies of the spectrum within 40 kilometers, but only two bands at a time (such as VHF and HF, etc). It can jam ground vehicle, GSR, aircraft radar, and shipborne radar, but only one type at a time, and with a range of only 30 kilometers. The BMR GEL’s equipment can also detect and locate radio transmissions within 40 kilometers, scanning up to three bands at a time. Radio jamming reduces the ability to transmit by two levels, and radar jamming by one level. The BMR GEL also has recording equipment for the radio detection and location equipment, and a small computer relevant to its EW functions. On the roof is a 10kW generator.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
BMR-600	$31,421	D, A	2 tons	14 tons	2+10	8	Passive IR (D)	Enclosed
BMR-600 (Toucan Turret)	$68,800	D, A	1.9 tons	14.7 tons	2+9	8	Passive IR (D, G), Image Intensification (G)	Enclosed
BMR-600 ACV	$181,536	D, A	950 kg	14.5 tons	2+4	9	Passive IR (D)	Enclosed
BMR-600 RCV	$83,325	D, A	950	14.5	5	10	Passive IR (D)	Enclosed

			kg	tons				
BMR-3560.54	$36,135	D, A	950 kg	14.3 tons	**	9	Passive IR (D), WL Searchlight (G)	Enclosed
BMR VRAC-NBQ	$221,983	D, A	860 kg	15.1 tons	5	10	Passive IR (D, Roof Camera), Image Intensification (Roof Camera)	Shielded
BMR GEL	$854,319	D, A	850 kg	15.2 tons	5	11	Passive IR (D)	Enclosed
BMR-M1	$45,070	D, A	1.5 tons	16 tons	2+9	8	Passive IR (G, C), Image Intensification (G)	Shielded
BMR-M1 ACV	$152,439	D, A	800 kg	15.6 tons	2+4	8	Passive IR (D)	Shielded
BMR-M1 RCV	$73,078	D, A	800 kg	15.6 tons	5	10	Passive IR (D)	Shielded
BMR-M1-3560.54	$51,831	D, A	900 kg	14.9 tons	**	9	Passive IR (D), WL Searchlight (G)	Shielded
BMR-M1 VRAC-NBQ	$235,007	D, A	750 kg	15.7 tons	5	10	Passive IR (D, Roof Camera), Image Intensification (Roof Camera)	Shielded
BMR-M1 GEL	$474,266	D, A	700 kg	15.8 tons	5	11	Passive IR (D)	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
BMR-600	177/89	41/20	400	162	CiH	W(4)	TF2 TS2 TR2 HF8 HS4 HR4
BMR-600 (Toucan Turret)	168/85	39/19	400	170	CiH	W(4)	TF2 TS2 TR2 HF8 HS4 HR4
BMR-600 ACV/RCV	172/86	40/19	400	168	CiH	W(4)	TF2 TS2 TR2 HF8 HS4 HR4
BMR-3560.54	173/87	40/20	400	165	Stnd	W(4)	HF8 HS4 HR4
BMR VRAC-NBQ	165/83	38/19	400	175	CiH	W(4)	TF2 TS2 TR2 HF8 HS4 HR4
BMR GEL	163/82	38/17	400	177	CiH	W(4)	TF2 TS2 TR2 HF8 HS4 HR4
BMR-M1	162/82	37/19/4	400	164	Trtd	W(5)	TF4 TS4 TR3 HF10Sp HS6 HR4*
BMR-M1 ACV/RCV	167/84	38/20/4	400	159	CiH	W(5)	TF2 TS2 TR2 HF10Sp HS6 HR4*
BMR-M1-3560.54	175/89	40/21/4	400	153	Stnd	W(5)	HF10Sp HS6 HR4*
BMR-M1 VRAC-NBQ	165/84	38/19/4	400	161	CiH	W(5)	TF2 TS2 TR2 HF10Sp HS6 HR4*
BMR-M1 GEL	164/83	37/19/4	400	162	CiH	W(5)	TF2 TS2 TR2 HF10Sp HS6 HR4*

Vehicle	Fire Control	Stabilization	Armament	Ammunition
BMR-600/ACV/RCV/VRAC-NBQ/GEL	None	None	M-2HB (C)	1100x.50
BMR-600 (Toucan Turret)	+1	Basic	20mm M-693 Autocannon, MG-3	750x20mm, 2100x7.62mm
BMR-3560.54/3560.54-M1	None	None	MG-3 (C) or M-2HB (C)	1000x7.62mm or 600x.50
BMR-M1	+2	Good	25mm M-811 Autocannon or LAG-40 AGL, MG-3	600x25mm or 375x40mm Grenades, 2100x7.62mm
BMR-M1 ACV/RCV/VRAC-NBQ/GEL	None	None	M-2HB (C)	1100x.50

*Roof AV is 3; Floor AV is 4.

**See Notes for Crew and passenger capacity.

SKPF m/42

Notes: This armored personnel carrier has been Swedish service for a very long time, having been developed during World War 2. In the 1950s and 1960s they were modernized, with new brakes, new headlights, more modern weapons mounts, additional armor, and a door for the rear of the compartment. A cupola was added for the weapon mount in 1971. These vehicles are still being used in Latvia and Lithuania, though they are being phased out of Swedish service. In Swedish service, this vehicle is most commonly used as an armored ambulance.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
$18,492	G, A	1.2 tons	8.5 tons	2+13	4	Headlights	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
122/73	30/18	360	42	Stnd	W(3)	HF2 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
None	None	2xMAG	1150x7.62mm

XA-203S

Notes: Based on an upgraded version of the XA-188, this is the version used by Sweden. The XA-203S is largely the same as the XA-188, except for some engine and drive train improvements, and the turret (the same as the turret on the Pbv-302). They are used to replace some of the Pbv-302s now in service, but they are primarily meant as armored logistics vehicles instead of APCs.

Twilight 2000 Notes: Deliveries of this vehicle to Sweden began before the war, and continued during the conflict, including one notable incident in which deliveries were made through a hail of autocannon fire to forward elements of the Swedish Army engaged with a Russian motorized infantry battalion. The vehicles were sorely needed to replace losses, and turned the tide in favor of the Swedish. During this battle, Finnish and Swedish soldiers were, for a short time, fighting on the same side (the Finns had escorted the shipment with a combined arms company).

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
$188,069	D, A	2.5 tons	22 tons	3+10	6	Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
130/78	30/15/3	290	62	CiH	W(4)	TF2 TS2 TR2 HF9 HS4 HR3

Fire Control	Stabilization	Armament	Ammunition
+2	None	20mm Rh-202 autocannon	505x20mm

MOWAG Grenadier

Notes: This is basically an updated version of the Roland; it did not see many sales, but is used by Greek and Argentine police, and a prototype of a military version was built. Production began in 1967, but proceeded for only a few years. A number of variants were envisioned, but in the end only police versions and a few military versions for Argentina were built; military versions are also shown below for comparison purposed and "what if." Though refurbishment and upgrades never took place by MOWAG, Greece and Argentina have done several refurbishment programs, primarily to the drive train.

The body is basically the same as the Roland, but has a lower profile turret. It is a larger vehicle than the Roland and can carry more troops and cargo. The driver is on the front left of the hull and has conventional controls. He has two vision blocks to the front, but these are wide-angle vision blocks and there is a limited amount of side vision since they are angled. He can also raise his seat so that he can put his head out of his hatch. The driver and commander do not have night vision as standard, though there is an IR headlight and they can use high vision goggles. The turret is to the rear and right of the driver (though not quite in the center) and is topped with a ring of wide-angle vision blocks. The turret is manually-operated. The turret is low profile and only the head and part of the chest will fit in the turret; there is no hatch in the turret though which the commander can do more than put his head out. The commander of the basic APC version of the Grenadier or the police version is armed with a machinegun which can be aimed and fired without the commander putting his head out of the hatch, though he must at least put his arms out of the hatch to reload the machinegun n. (On the military version, there are two full-sized hatches on the turret.) Another turret exists for the military version, one with a 20mm or 25mm autocannon and improved vision devices. Versions with an ATGM launcher on the turret roof was also shown. On the sides of each turret towards the rear of the sides are a pair of smoke grenade launchers, one designed for more forward firing and angled as to fire the smoke grenade at a nearly upward angle. The standard sight for the gun is a 4x sight. Military versions with autocannons use a 2-man turret. The troops enter and exit through the rear door and sit down the sides of the vehicle facing inwards. There is one circular hatch on the rear deck, about large enough for four troops to squeeze into and stand up or two troops comfortably. The basic Grenadier has no firing ports, but MOWAG at the time indicated that it would be willing to put firing ports, whether true firing ports or shuttered openings, in the sides and rear of the vehicle, though these were never shown on prototypes or at arms shows.

The Grenadier is powered by a diesel engine developing 202 horsepower, which coupled with its light weight makes for excellent performance under most circumstances. This is coupled to a manual transmission. The engine is mounted to the right of the driver and separated from him by a fireproof bulkhead. The performance is somewhat mitigated by the fact that the 4x4 suspension is suited more for road use than cross-country performance, and the standard tires are not run-flat. The axles are rigid, though they combine leaf springs and hydraulic shock absorbers, and the rear wheels have self-locking differentials. The Grenadier is amphibious and propelled in the water by two steerable propellers at the rear. The 4x4 suspension is switchable to 4x2 for road use, with the rear wheels becoming the drive wheels. Brakes are all-wheel, with the rear wheels having mechanical rear brakes for greater braking power. MOWAG offered several upgrades at the time of its inception, with only air conditioning and run-flat/puncture resistant tires being taken. Other optional gear included an IR vision block for the driver and commander, a ventilation system which could clear out chemical agents to an extent (though this not an NBC overpressure system), a cross-country suspension and tires, and a ramming bumper. Police versions often have flashing lights, a siren, a loudspeaker system, and sometimes a TV camera on the roof (though night vision is rare for this camera). Version 2 is most common for Greek police; version 1 is most common for Argentine police.

Twilight 2000 Notes: In the Twilight 2000 timeline: the military version was put into production by the Swiss for the Swiss Army, German Mountain units, and French Foreign Legion in the late 1980s. Nonetheless, they were small in number, and were used primarily as scout vehicles, with the passenger space taken up mostly or all by extra provisions, personal gear, and extra ammunition. The Greeks and Argentines also converted some of their police versions into military versions by use of a kit; the Argentine versions "kit" was sent to the Argentines in the form of an internet transmission and page showing how to do it, along with limited technical phone support and online support as long as possible. Most of these military versions were Military Version 1, with small numbers of Version 2, smaller numbers of Version 3, and very small numbers of Version 4 and 5.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Grenadier Police (Version 1)	$14,796	D, A	850 kg	6.1 tons	2+7	2	Headlights	Enclosed
Grenadier Police (Version 2)	$17,428	D, A	650 kg	6.4 tons	2+6	4	Headlights	Enclosed
Grenadier Military (Version 1)	$15,431	D, A	850 kg	6.1 tons	2+7	2	Headlights	Enclosed
Grenadier Military (Version 2)	$51,372	D, A	650 kg	6.8 tons	3+6	4	Passive IR (G), Image Intensification (G)	Enclosed

Grenadier Military (Version 3)	$54,255	D, A	650 kg	6.8 tons	3+6	4	Passive IR (G), Image Intensification (G)	Enclosed
Grenadier Military (Version 4)	$82,855	D, A	650 kg	6.9 tons	3+5	5	Passive IR (G), Image Intensification (G)	Enclosed
Grenadier Military (Version 5)	$88,738	D, A	650 kg	6.9 tons	3+5	5	Passive IR (G), Image Intensification (G)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Grenadier Police (Version 1)/Military (Version 1)	149/75	71/18/7	180	104	CiH	W(2)	TF2 TS2 TR2 HF3 HS3 HR2
Grenadier Police (Version 2)	142/71	67/17/7	180	108	CiH	W(2)	TF2 TS2 TR2 HF3 HS3 HR2
Grenadier Military (Version 2)/(Version 3)	133/67	62/16/6	180	115	Trtd	W(2)	TF2 TS2 TR2 HF3 HS3 HR2
Grenadier Military (Version 4)/(Version 5)	131/66	62/16/6	180	118	Trtd	W(2)	TF2 TS2 TR2 HF3 HS3 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Grenadier Police (Version 1)	None	None	M-51 (C)	1000x7.5mm
Grenadier Police (Version 2)	None	None	Irritant Gas Discharger (C)	25xIrritant Gas Blasts
Grenadier Military (Version 1)	None	None	M-51 (C)	1250x7.5mm
Grenadier Military (Version 2)	+1	Basic	20mm KAA Autocannon, M-81	500x20mm, 625x7.5mm
Grenadier Military (Version 3)	+1	Basic	25mm KAB Autocannon, M-81	375x25mm, 625x7.5mm
Grenadier Military (Version 4)	+1	Basic	20mm KAA Autocannon, M81, Milan ATGM Launcher	500x20mm, 625x7.5mm, 4xMilan ATGM
Grenadier Military (Version 5)	+1	Basic	25mm KAB Autocannon, M-81, Milan ATGM Launcher	375x25mm, 625x7.5mm, 4xMilan ATGM

MOWAG MR 8

Notes: This may be broadly regarded as the ancestor of the Roland and the Grenadier; first deliveries began in 1959 during LRIP,

with production eventually reaching 600 vehicles. The MR 8 was originally used by the West German Border Guard, though some were later transferred to the West German (and later German) police. The MR 8 was not used outside of Germany. They have in most roles been replaced by later armored cars, but some remain in service. Though the design and initial production was undertaken by MOWAG, most MR 8s were produced under license in Germany by Bussing and Henschel.

The MR 8 is essentially a low, lozenge-shaped vehicle, with moderately sloped sides, front, and rear. The driver is at the front of the hull on the left with the commander on the right, with a windshield to the front which is only moderately bullet-resistant (half the frontal armor value, 30% chance to hit). The windshield may be covered with armored shutters with vision slits in them. The primary exit and entrance to the vehicle is through large double doors in the sides, though there is a cupola and two hatches on the rear deck. The driver and commander have small vision blocks to the sides of their positions, and there are two other small vision blocks in each side of the hull. The vision block on the rear part of the door has a firing port. In the rear is a clamshell door on the right side which itself has a vision block and a firing port. On the SW1 version, the cupola is unarmed and merely has the hatches which open to the right and left. The cupola has all-around vision blocks and the hatches can be locked open vertically. On the SW2, the cupola is replaced with a one-man manually-operated turret armed with an autocannon. On some SW1s used by the police, the front has an obstacle-clearing blade; this is not strong enough to dig fighting positions or be used as a mine plow, but is instead sort of a super ramming bumper. This blade is 50% likely to be hit on a frontal hit, and adds 8Sp to the frontal armor. To the rear of the cab on the SW1 version there is a pronounced step-up of about 200mm which goes into the troop compartment; on the SW2 there is no step-up and the troop complement is much smaller.

The engine is in the left rear and is a 161-horsepower Chrysler R-361 gasoline engine coupled to a manual transmission. The automotive and drive components are very sturdy and robust and do not break down easily – surviving MR 8s kept in reasonable condition can be still be expected to run reliably today. The suspension is 4x4, but better suited for road use rather than off-road use. Armor is surprisingly effective for such a light vehicle, and the angling of the armor helps this. Armor is of all-welded steel.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
MR 8 SW1	$5,631	G, A	600 kg	8.2 tons	2+5	4	Headlights	Enclosed
MR 8 SW1 w/Blade	$5,831	G, A	600 kg	8.4 tons	2+5	4	Headlights	Enclosed
MR 8 SW2	$21,484	G, A	450 kg	8.8 tons	3+3	4	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
MR 8 SW1	204/50	48/12	150	87	Stnd	W(2)	HF8 HS5 HR5
MR 8 SW1 w/Blade	202/49	47/11	150	89	Stnd	W(2)	HF8 HS5 HR5
MR 8 SW2	194/48	45/11	150	93	Trtd	W(2)	TF3 TS3 TR2 HF8 HS5 HR5

Vehicle	Fire Control	Stabilization	Armament	Ammunition
MR 8 SW2	+1	Basic	20mm Rh-202 Autocannon	500x20mm

MOWAG Roland

Notes: This light APC is in many ways an evolution of the MR 8, though it's body shape is a bit more squarish and the vehicle lighter and smaller in general. It was taken into mainstream military service with 6 countries before and in service with 5 countries (mostly the same countries which also use them in a military role) as police vehicles. Manufacture stopped in 1980, except for spare parts. The Roland was first developed in the early 1960s, not long after the MR 8, and is a very basic APC. The Swiss themselves do not use the Roland, nor does MOWAG's frequent customer for such vehicles, Germany; the only other European user is in fact Greece, which employs 187 in a military role and 20 in a police role (making them by far the largest users of the Roland). The other countries using them include Mexico (who use 20), and four South American countries, including Peru's 100. Though several variants have been proposed over the years, including ambulances, command vehicles, and even ATGM carriers, only basic APCs (with and without turrets) and police versions have ever been built. Greece and Peru primarily use their military versions as scout vehicles. Only limited upgrades of the basic Roland have been done; only refurbishment work has been done to extend their service lives, and most Rolands remain in service with their users. The Roland has not been produced since the early 1980s, though MOWAG still produces spare parts.

The basic APC version of the Roland normally has a small conical manual turret, topped with a small hatch and a light or medium machinegun that can be aimed and fired (but nor reloaded) from inside the turret. The turret has all-around vision blocks and a sight for the machinegun that is 1x. Sometimes, the machinegun is mounted in an elevated remote mount which can traverse to a limited extent independently of the turret and contains a downlinked magnified sight for the commander/gunner. The hatch of the turreted version is rather small and is a tight squeeze the the commander, and is not normally used for entering or exiting the vehicle. The driver is in the front left, with a hatch which opens to the right. The driver has three vision blocks to the front and one to the right; the middle front vision block can be replaced by a night vision block, and the seat may be raised to allow the driver to put his head outside of the vehicle. A clear plastic windscreen can be erected in front of the driver's position to protect him from weather and

terrain hazards (such as splashed mud and water) when his head is outside of the vehicle. The right block is in the side of the hull, is protected by a grill, and has a firing port below it. The commander is in that turret directly behind and in the center of the vehicle. The turret is on some versions replaced by a simple ring mount with a pintle-mounted weapon. The ring mount has vision blocks on the front, left, right, and rear, though they would make a poor weapon sight, and the commander would literally have to extend his arms up to the weapon to fire it. The troops sit on either side of the vehicle facing to the center, except for where the side doors are. The exception is the two troop seats behind the driver, which face to the rear. Access is through these clamshell doors which are just behind the commander's position, or through a rear door to the left of the engine. Each door has a vision block with a firing port below it; the firing ports are simple shuttered holes in the doors. True firing ports and an extra pair of firing ports in the sides are optional features taken by some users.

The Roland is powered by a Duro 202-horsepower gasoline engine, coupled to a manual transmission. The engine is separated from the troop compartment by a fireproof bulkhead. The suspension is 4x4 and gives decent off-road performance; it has a locking differential and traction control where needed. The suspension is similar in concept to that of the MR 8, with leaf springs and hydraulic shock absorbers. Tires are run-flat and puncture-resistant. Armor is all-welded steel, but fairly light. Several fire extinguishing bottles are provided, but there is no special extinguishing system.

A late version of the Roland has an extended wheelbase and is somewhat heavier than the standard Roland. They allow for more passengers or gear and have an automatic instead of a manual transmission.

Police versions of the Roland have the same basic configuration. Though in most countries they retain their machinegun armament, some have outfitted them with irritant gas dischargers, and this is the type listed below. For police versions, optional features such as flashing lights, sirens, and loudspeakers are often fitted, as is an obstacle-clearing blade up front (which is included in the stats below). This is not strong enough to dig fighting positions or be used as a mine plow, but is instead sort of a super ramming bumper. This blade is 30% likely to be hit on a frontal hit, and adds 8Sp to the frontal armor. Police versions use a ring mount.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Roland (Ring Mount)	$22,259	G, A	400 kg	4.4 tons	2+4	2	Passive IR (D)	Enclosed
Roland (Turret)	$23,159	G, A	400 kg	4.7 tons	2+4	2	Passive IR (D)	Enclosed
Roland (LWB)	$23,702	G, A	400 kg	4.9 tons	2+6	2	Passive IR (D)	Enclosed
Roland (Police)	$25,250	G, A	400 kg	4.8 tons	2+2	3	Passive IR (D)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Roland (Ring Mount)	311/157	72/36	180	110	Stnd	W(2)	HF5 HS3 HR3
Roland (Turret)	293/148	68/34	180	118	CiH	W(2)	TF2 TS2 TR2 HF5 HS3 HR3
Roland (LWB)	283/143	65/33	180	123	CiH	W(2)	TF2 TS2 TR2 HF5 HS3 HR3
Roland (Police)	289/146	67/34	180	120	Stnd	W(2)	HF5 HS3 HR3

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Roland (Ring Mount)	None	None	MG-3/MAG or M-2HB (C)	1000x7.62mm or 600x.50
Roland (Turret)	+1	Basic	MG-3/MAG (C)	1250x7.62mm
Roland (LWB)	+1	Basic	MG-3/MAG (C)	1400x7.62mm
Roland (Police)	None	None	Irritant Gas Discharger	25xIrritant Gas Blasts

MOWAG Piranha I

Notes: The Piranha I is the genesis of the armored vehicle line which eventually became a long line of armored vehicles using many common components and hulls of several sizes. The original Piranha I was developed by MOWAG in the early 1970s as a private venture, put on the international arms market, and quickly took off. The Piranha I came to be used by six countries, including Canada, Ghana, Liberia, Nigeria, and Sierra Leone. The Piranha was always meant to be the basis of several variants and subtypes, though only the APC-type versions will be covered here. The Piranha I has long been superseded in production by more modern

versions.

The Piranha I comes in 4x4, 6x6, and 8x8 versions. (The 8x8 version did not sell, but is included here for completeness.) The driver is on the front left behind the glacis plate, with three vision blocks in the front of his hatch, the center of which can be replaced with a night vision block. The vehicle has a weapon station to the rear and center of the driver's position; depending on the position and armament, this may be manned by the commander in a cupola or one-man turret or have a full turret manned by a commander and gunner. The troops access the hull through two rear doors, and there are two hatches on the roof of the troop compartment. The Piranha I has two firing ports in each side of the hull and one in each rear door.

The 4x4 version normally mounts light armament, with choices including a turret with a 20mm autocannon, turrets with one or two 7.62mm machineguns, a turret with an M-2HB and a 7.62mm weapon, a pair of remote-operated 7.62mm machineguns, or a remote-operated M-2HB machinegun. The 6x6 version can mount the same armament or heavier armament, including 25mm, 30mm, or 35mm autocannons, or the same turret as the British Scorpion (with a greatly reduced dismount crew). The 8x8 version generally mounts the same armament, but carries more ammunition and/or more troops. The version with a pair of remote 7.62mm machineguns is a special case, as seen below; both them and the remote M-2HB version have downlinked controls which are essentially periscope sights and hand controls to aim, elevate, and depress the weapons(s). The 7.62mm cannot be reloaded from inside the vehicle. In the case of the twin remote 7.62mm guns, they are in lieu of a turret, are separately mounted on the roof, and the commander controls one gun and a gunner's station is provided for the other gun. The may be controlled separately, or both controlled from the commander's station. They are not conventional RWSs, and cannot be reloaded from inside the vehicle. The autocannon turrets are sort of lower-tech RWSs, with the gun on a central mount where the commander's hatch was and extending beyond that to the rear; it is a one-man RWS with only a small part of the commander inside the turret, and only a small hatch in the turret (a tight squeeze; the commander is better off entering the turret through the troop compartment from the bottom). Smoke grenade launchers, with clusters from two to four on each side, are optional with most turrets, and come with the Scorpion turret.

The engine is in the front to the right of the driver, and is a 6V-53 developing 216 horsepower for the 4x4 version, or a 6V53T developing 300 horsepower for the 6x6 and 8x8 versions. These are all coupled to the same automatic transmission, with the driver having conventional controls. Suspension is all-wheel independent, and very suited for off-road work. The Piranha I is amphibious, propelled in the water by wheel motion.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Piranha 4x4 (20mm Turret)	$63,512	D, A	900 kg	8.9 tons	2+7	6	Passive IR (D, C), Image Intensification (C)	Enclosed
Piranha 4x4 (7.62mm Turret)	$40,182	D, A	1 ton	8.2 tons	2+8	6	Passive IR (D, C)	Enclosed
Piranha 4x4 (2x7.62mm Turret)	$44,945	D, A	1 ton	8.4 tons	2+8	6	Passive IR (D, C)	Enclosed
Piranha 4x4 (M-2HB Turret)	$25,250	D, A	900 kg	8.8 tons	2+8	6	Passive IR (D, C)	Enclosed
Piranha 4x4 (2xRemote 7.62mm)	$40,451	D, A	1 ton	8.2 tons	3+7	6	Passive IR (D)	Enclosed
Piranha 4x4 (M-2HB Remote)	$33,161	D, A	1 ton	8.4 tons	2+8	6	Passive IR (D)	Enclosed
Piranha 6x6 (20mm Turret)	$66,587	D, A	2.5 tons	11.6 tons	2+11	6	Passive IR (D, C), Image Intensification (C)	Enclosed
Piranha 6x6 (7.62mm Turret)	$41,309	D, A	2.6 tons	11.1 tons	2+12	6	Passive IR (D, C)	Enclosed
Piranha	$45,356	D, A	2.6 tons	11.3 tons	2+12	6	Passive IR (D, C)	Enclosed

6x6 (2x7.62mm Turret)								
Piranha 6x6 (M-2HB Turret)	$57,451	D, A	2.5 tons	11.5 tons	2+12	6	Passive IR (D, C)	Enclosed
Piranha 6x6 (2xRemote 7.62mm)	$40,821	D, A	2.5 tons	10.9 tons	3+11	6	Passive IR (D)	Enclosed
Piranha 6x6 (M-2HB Remote)	$35,667	D, A	2.5 tons	11 tons	2+12	6	Passive IR (D)	Enclosed
Piranha 6x6 (25mm Turret)	$69,672	D, A	2.5 tons	11.7 tons	2+11	6	Passive IR (D, C), Image Intensification (C)	Enclosed
Piranha 6x6 (30mm Turret)	$73,045	D, A	2.2 tons	12.8 tons	2+10	9	Passive IR (D, C), Image Intensification (C)	Enclosed
Piranha 6x6 (35mm Turret)	$76,143	D, A	2 tons	13.7 tons	2+10	9	Passive IR (D, C), Image Intensification (C)	Enclosed
Piranha 6x6 (Scorpion Turret)	$301,305	D, A	1.5 tons	15.6 tons	3+4	10	Passive IR (D, C)	Enclosed
Piranha 8x8 (20mm Turret)	$67,776	D, A	3.2 tons	13.4 tons	2+12	10	Passive IR (D, C), Image Intensification (C)	Enclosed
Piranha 8x8 (7.62mm Turret)	$42,152	D, A	3.4 tons	12.7 tons	2+13	10	Passive IR (D, C)	Enclosed
Piranha 8x8 (2x7.62mm Turret)	$46,599	D, A	3.3 tons	12.9 tons	2+13	10	Passive IR (D, C)	Enclosed
Piranha 8x8 (M-2HB Turret)	$58,803	D, A	3.3 tons	12.8 tons	2+13	10	Passive IR (D, C)	Enclosed
Piranha 8x8 (2xRemote 7.62mm)	$41,940	D, A	3.4 tons	12.7 tons	3+12	10	Passive IR (D)	Enclosed
Piranha 8x8 (M-2HB Remote)	$36,637	D, A	3.3 tons	12.8 tons	2+13	10	Passive IR (D)	Enclosed
Piranha 8x8 (25mm Turret)	$71,038	D, A	3.2 tons	13.5 tons	2+12	10	Passive IR (D, C), Image Intensification (C)	Enclosed
Piranha	$73,018	D, A	2.7 tons	14.6 tons	2+12	10	Passive IR (D,	Enclosed

8x8 (30mm Turret)							C), Image Intensification (C)	
Piranha 8x8 (35mm Turret)	$76,049	D, A	2.6 tons	15.7 tons	2+12	10	Passive IR (D, C), Image Intensification (C)	Enclosed
Piranha 8x8 (Scorpion Turret)	$309,897	D, A	2.2 tons	17.4 tons	3+5	10	Passive IR (D, C)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Piranha 4x4 (20mm Turret)	186/94	43/22/4	200	111	Trtd	W(4)	TF3 TS2 TR2 HF6 HS4 HR3
Piranha 4x4 (7.62mm Turret)	199/100	46/23/5	200	102	Trtd	W(4)	TF2 TS2 TR2 HF6 HS4 HR3
Piranha 4x4 (2x7.62mm Turret)	195/98	45/23/5	200	105	Trtd	W(4)	TF2 TS2 TR2 HF6 HS4 HR3
Piranha 4x4 (M-2HB Turret)	189/95	44/22/4	200	110	Trtd	W(4)	TF3 TS2 TR2 HF6 HS4 HR3
Piranha 4x4 (2xRemote 7.62mm)	199/100	46/23/5	200	102	CiH	W(4)	TF1 TS1 TR1 HF6 HS4 HR3*
Piranha 4x4 (M-2HB Remote)	195/98	45/23/5	200	105	CiH	W(4)	TF2 TS1 TR1 HF6 HS4 HR3
Piranha 6x6 (20mm Turret)	200/101	46/23/5	200	158	Trtd	W(6)	TF3 TS2 TR2 HF6 HS4 HR3
Piranha 6x6 (7.62mm Turret)	206/104	48/24/5	200	151	Trtd	W(6)	TF2 TS2 TR2 HF6 HS4 HR3
Piranha 6x6 (2x7.62mm Turret)	204/103	47/23/5	200	155	Trtd	W(6)	TF2 TS2 TR2 HF6 HS4 HR3
Piranha 6x6 (M-2HB Turret)	202/102	46/23/5	200	156	Trtd	W(6)	TF3 TS2 TR2 HF6 HS4 HR3
Piranha 6x6 (2xRemote 7.62mm)	212/107	48/24/5	200	149	CiH	W(6)	TF1 TS1 TR1 HF6 HS4 HR3*
Piranha 6x6 (M-2HB	210/106	48/24/5	200	150	CiH	W(6)	TF2 TS1 TR1 HF6 HS4 HR3

Remote)												
Piranha 6x6 (25mm Turret)	198/100	46/23/5	200	160	Trtd	W(6)	TF3	TS2	TR2	HF6	HS4	HR3
Piranha 6x6 (30mm Turret)	182/92	42/21/4	200	174	Trtd	W(6)	TF3	TS2	TR2	HF6	HS4	HR3
Piranha 6x6 (35mm Turret)	170/86	39/20/4	200	186	Trtd	W(6)	TF3	TS2	TR2	HF6	HS4	HR3
Piranha 6x6 (Scorpion Turret)	148/75	34/17/3	200	212	Trtd	W(6)	TF5	TS4	TR4	HF6	HS4	HR3
Piranha 8x8 (20mm Turret)	179/90	42/21/4	300	158	Trtd	W(8)	TF3	TS2	TR2	HF6	HS4	HR3
Piranha 8x8 (7.62mm Turret)	190/95	45/22/5	300	150	Trtd	W(8)	TF2	TS2	TR2	HF6	HS4	HR3
Piranha 8x8 (2x7.62mm Turret)	186/94	44/22/4	300	152	Trtd	W(8)	TF2	TS2	TR2	HF6	HS4	HR3
Piranha 8x8 (M-2HB Turret)	188/95	44/22/4	300	152	Trtd	W(8)	TF3	TS2	TR2	HF6	HS4	HR3
Piranha 8x8 (2xRemote 7.62mm)	190/95	45/22/5	300	150	CiH	W(8)	TF1	TS1	TR1	HF6	HS4	HR3*
Piranha 8x8 (M-2HB Remote)	188/95	44/22/4	300	152	CiH	W(8)	TF2	TS1	TR1	HF6	HS4	HR3
Piranha 8x8 (25mm Turret)	177/89	42/21/4	300	160	Trtd	W(8)	TF3	TS2	TR2	HF6	HS4	HR3
Piranha 8x8 (30mm Turret)	165/83	39/19/4	300	172	Trtd	W(8)	TF3	TS2	TR2	HF6	HS4	HR3
Piranha 8x8 (35mm Turret)	152/77	36/18/4	300	185	Trtd	W(8)	TF3	TS2	TR2	HF6	HS4	HR3
Piranha 8x8 (Scorpion Turret)	138/69	32/16/3	300	207	Trtd	W(8)	TF5	TS4	TR4	HF6	HS4	HR3

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Piranha 4x4	+1	Basic	20mm KAA Autocannon, MAG (C)	400x20mm,

(20mm Turret)				2000x7.62mm
Piranha 4x4 (7.62mm Turret)	+1	Basic	MAG (C)	3000x7.62mm
Piranha 4x4 (2x7.62mm Turret)	+1	Basic	2xMAG (C)	3000x7.62mm
Piranha 4x4 (M-2HB Turret)	+1	Basic	M-2HB, MAG (C)	2000x.50, 2000x7.62mm
Piranha 4x4 (2xRemote 7.62mm)	None	None	MAG (C), MAG	3000x7.62mm
Piranha 4x4 (M-2HB Remote)	+1	Basic	M-2HB (C)	2000x.50
Piranha 6x6 (20mm Turret)	+1	Basic	20mm KAA Autocannon, MAG (C)	600x20mm, 2400x7.62mm
Piranha 6x6 (7.62mm Turret)	+1	Basic	MAG (C)	3000x7.62mm
Piranha 6x6 (2x7.62mm Turret)	+1	Basic	2xMAG (C)	3000x7.62mm
Piranha 6x6 (M-2HB Turret)	+1	Basic	M-2HB, MAG (C)	2400x.50, 2400x7.62mm
Piranha 6x6 (2xRemote 7.62mm)	None	None	MAG (C), MAG	3000x7.62mm
Piranha 6x6 (M-2HB Remote)	+1	Basic	M-2HB (C)	2400x.50
Piranha 6x6 (25mm Turret)	+1	Basic	25mm KBA Autocannon, MAG (C)	480x25mm, 2400x7.62mm
Piranha 6x6 (30mm Turret)	+1	Basic	30mm KCA Autocannon, MAG (C)	400x30mm, 2000x7.62mm
Piranha 6x6 (35mm Turret)	+1	Basic	35mm KDE Autocannon, MAG (C)	345x35mm, 2000x7.62mm
Piranha 6x6 (Scorpion Turret)	+2	Fair	76mm Cockerill Gun, EX-34	40x76mm, 3000x7.62mm
Piranha 8x8 (20mm Turret)	+1	Basic	20mm KAA Autocannon, MAG (C)	630x20mm, 2500x7.62mm
Piranha 8x8 (7.62mm Turret)	+1	Basic	MAG (C)	3200x7.62mm
Piranha 8x8 (2x7.62mm Turret)	+1	Basic	2xMAG (C)	3200x7.62mm
Piranha 8x8 (M-2HB Turret)	+1	Basic	M-2HB, MAG (C)	2550x.50, 2550x7.62mm
Piranha 8x8	None	None	MAG (C), MAG	3200x7.62mm

(2xRemote 7.62mm)				
Piranha 8x8 (M-2HB Remote)	+1	Basic	M-2HB (C)	2550x.50
Piranha 8x8 (25mm Turret)	+1	Basic	25mm KBA Autocannon, MAG (C)	510x25mm, 2550x7.62mm
Piranha 8x8 (30mm Turret)	+1	Basic	30mm KCA Autocannon, MAG (C)	430x30mm, 2100x7.62mm
Piranha 8x8 (35mm Turret)	+1	Basic	35mm KDE Autocannon, MAG (C)	365x35mm, 2100x7.62mm
Piranha 8x8 (Scorpion Turret)	+2	Fair	76mm Cockerill Gun, EX-34	43x76mm, 3200x7.62mm

*Fire against each gun is resolved separately. Damage to one gun may not affect the other.

MOWAG Piranha III

Notes: MOWAG largely sold its designs for the Piranha II to the Canadian division of General Dynamics, who turned them into many vehicles, including the LAV-25, Coyote, Bison, Cougar, and ASLAV, and let the Canadians take the major role in developing and distributing the Piranha II. MOWAG, meanwhile, went to work on the Piranha III, a more powerful and versatile version of the Piranha II; MOWAG also outsourced some of their Piranha III work, which became the LAV III, NZLAV, and Stryker. Piranha III is used by some 12 countries in various guises, but the Stryker will be discussed elsewhere. The Piranha III is a modular chassis which can be kitted out to a variety of roles, and range in suspension from 6x6 to 10x10. Only Sweden is known to use the 10x10 Piranha III, in an anti-ship shore defense role; Finland was interested, and their version is shown below, but it lost in the out to the XA-185 series. The Piranha III is now the current production standard for MOWAG.

The layout of the Piranha III is largely similar to the Piranha I, but the external shape is more boxy, the nose sharper, and the sides and back more squared. The driver is on the front right; he has a single rear-opening hatch with three vision blocks to the front, the center of which can be replaced with a night vision block. The driver has conventional controls and an adjustable seat which allows him to put his head and shoulders outside of the hatch. A plastic windshield is an optional feature which can be erected in front of the driver's hatch. Though a variety of turrets, cupolas, and RWSs are possible, the basic layout is a commander's cupola to the rear of the driver which has all-around vision blocks and is elevated to give the commander good visibility. This cupola has a pintle-mounted weapon. However, the Piranha III is more likely to be fitted with a variety some of those alternate cupolas, turrets, and RWSs. The 6x6 model can be fitted with a small turret with a 20mm autocannon, small turrets with a 7.62mm machinegun or a double 7.62mm machinegun set, an M2HB/7.62mm machinegun arrangement, RWSs with M-2HBs, 20mm autocannons, or automatic grenade launchers, or one-man centrally-mounted 25mm, 30mm, or 35mm autocannons. The 8x8 version can mount these weapons (but does not normally use the heavier one-man autocannon turrets), or heavier two-man turrets with enhanced fire control and vision devices and possibly ATGM launchers. 10x10 versions have been shown only as demonstrator or static models; the Swedes use a 10x10 mobile shore battery version (see Swedish Self-Propelled Guns), while a version with a 40mm autocannon (using the turret of the CV-90) and coaxial machinegun was almost selected instead of the XA-183 series, but lost out due to costs and protests by the Finnish Army that the vehicle was more than was than required for their needs. The troop compartment in the rear is considered cramped, but seats a good number of troops in individual folding seats. The standard Piranha III does not have firing ports, though they are an option. Separate vision blocks can also be fitted, whether or not firing ports are fitted. Primary access is through a powered ramp at the rear, with a large rear-opening hatch on the rear deck.

It should be stressed that all available turret/pintle options are not used by all countries who use the Piranha III; they are shown only because they have been demonstrated or prototyped, and could possibly used in the future, and for the sake of variety.

Several engines are possible for the Piranha III. The standard engine for the 6x6 version is a Detroit Diesel 6V-53TA turbocharged diesel developing either 300 or 350 horsepower and coupled to an automatic transmission. For the 8x8 version, the standard engine is the same engine, but in a version developing 350 horsepower or 400 horsepower. For the 10x10 version, the standard engine is an MTU 6V183 TE 22 turbocharged diesel engine capable of either 400 horsepower or 450 horsepower (the Finnish version shown below uses a 450-horsepower engine). For the 6x6 and 8x8 versions, alternate engines of the same power are available – the Cummins 6CTAA 8.3-T350, or the Caterpillar 3126. The engines use air filtration systems to help them cope with dry, dusty climates, and preheaters to help them start in cold climates. The engine, transmission, electrical, and drive train have several redundant systems. The suspension is beefy and of the off-road type, with puncture-resistant run-flat tires. The tires have central tire pressure regulation to allow them to adapt to the terrain on the fly. The suspension is independent on all wheels and have a new hydropneumatic shock absorption device for each wheel, giving a smooth ride on and off-road. Optionally, the Piranha III is amphibious, with propellers at the rear which are steerable. Another optional feature is a front-mounted 8-ton winch with 60 meters of cable; this winch can be a drum-type in the front of the hull, or a capstan-type in the glacis plate. Other optional features include an

air conditioner, an arctic heater, an NBC overpressure system or collective NBC system, an automatic fire detection and suppression system, and a satellite navigation system.

The armor is of high-hardness all-welded steel, and is specially shaped and rounded to minimize the radar signature. Similarly, the engine compartment and exhaust are shielded to minimize the IR signature. IR and radar-absorbing paint is optional, as is CARC chemical agent-resistant paint. MEXAS appliqué armor can be added to the vehicle to increase protection, adding 3Cp to the hull front, and 3Sp to the hull side. The MEXAS adds 0.3 tons to the weight of the vehicle and slows the vehicle by 8%; if used with a two-man turret, it adds 0.5 tons and slows the vehicle by 11%. The MEXAS costs $537, or $895 with a turret job.

Other APC-Type Variants

Several other variants of the Piranha III have been proposed, demonstrated, or actually produced and sold. These range from engineer vehicles to recovery and/or repair vehicles to ambulance, command, and signals variants, amongst others.

The armored ambulance version of the Piranha III does not have armament, though it does have a cupola with all-around vision blocks and hatches which open to the right and left. It carries medical supplies like the equivalent of two doctor's medical bags, 20 personal medical kits, burn treatments, an assortment of bandages and splints, and other minor medical supplies. It has a small refrigerator for perishable medical supplies, a hot plate, and a blanket warmer. It has room for four stretcher cases of two stretcher cases and four seated casualties.

Some command variants have been proposed or produced. They have simple cupolas like the one described above for regular Piranha III. Some have a map board, map storage, office and plotting-type supplies, and six radios – two long-range, two medium range, and two short-range, with one of the long-range radios being data-capable. (This is the Command 1 listed below.) Another version adds a ruggedized laptop computer. (This is Command 2.) The most "deluxe" version has a battlefield management system with appropriate monitors, computers and data storage, and GPS with or without inertial navigation backup. (This is Command 3.) In general, a hand-held thermal imager, image intensifier, and laser rangefinder are carried. Subtypes of the command version, including versions for varying levels of the chain of command, as well as an artillery or air defense command post, have been proposed and demonstrated.

A signals version has been demonstrated, used in concert with command posts to help provide communications. Such versions carry three long-range, one medium-range, and one short-range radios, with one of the long-range radios being data capable. They have a switchboard, 20 field telephones, and 3000 meters of commo wire, along with a small selection of communications spare parts. (This is listed as Signals 1.) A subtype of the signals variant has one of the long-range radios replaced by a SATCOM radio. (This is listed as Signals 2.) In either case, the vehicle has a small computer designed to ease the workload on the operators by coordinating and partially controlling the communications equipment.

An EW variant has been proposed. This version is used to jam radio and radar; it can jam up to 5 bands of radio (up to two bands at a time), and three types of radar (one at a time). Radio jamming range is 40 km, and radar jamming range is 30 km. This version carries three long-range radios (one data capable), one medium-range radio, and one short-range radio. (This is EW 1.) Another EW version is designed to intercept and locate enemy radio and radar; this version can scan five bands of radio and two bands of radar at a time, and intercept radio broadcasts on up to five frequencies at a time and monitor and locate one band of radar at the same time. It can also conduct meaconing on up to 2 bands of radio at once. It has digital and computer equipment to automatically record enemy radio conversations and to help the operators decipher code words and CEOIs, and it carries three long-range radios and two short-range radios. One of the long-range radios is data-capable, primarily to transmit its findings to other friendly units. Detection range is 50 km for radio and 40 km for radar. (This is EW 2.)

Twilight 2000 Notes: The Piranha III was introduced shortly before the leadup to the Twilight War, and only a few countries have them. These countries have only a small amount of them. These countries include Belgium, Denmark, Spain, and Switzerland. Each of these countries had less the 20 of them before the Twilight War.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Piranha III 6x6 (Pintle Mount, 300 hp)	$24,760	D, A	1.5 tons	12.5 tons	2+12	6	Passive IR (D)	Shielded
Piranha III 6x6 (Pintle Mount, 350 hp)	$24,945	D, A	1.5 tons	12.5 tons	2+12	6	Passive IR (D)	Shielded
Piranha III 6x6 (7.62mm Turret, 300 hp)	$30,340	D, A	1.5 tons	12.7 tons	2+12	8	Passive IR (D, C)	Shielded
Piranha III 6x6 (7.62mm	$30,525	D, A	1.5 tons	12.7 tons	2+12	8	Passive IR (D, C)	Shielded

Turret, 350 hp)								
Piranha III 6x6 (2x7.62mm Turret, 300 hp)	$35,103	D, A	1.4 tons	12.9 tons	2+12	8	Passive IR (D, C)	Shielded
Piranha III 6x6 (2x7.62mm Turret, 350 hp)	$35,214	D, A	1.4 tons	12.9 tons	2+12	8	Passive IR (D, C)	Shielded
Piranha III 6x6 (M-2HB Turret, 300 hp)	$44,088	D, A	1.3 tons	13.3 tons	2+12	8	Passive IR (D, C)	Shielded
Piranha III 6x6 (M-2HB Turret, 350 hp)	$44,273	D, A	1.3 tons	13.3 tons	2+12	8	Passive IR (D, C)	Shielded
Piranha III 6x6 (AGL Turret, 300 hp)	$48,568	D, A	1.3 tons	13.3 tons	2+12	8	Passive IR (D, C)	Shielded
Piranha III 6x6 (AGL Turret, 350 hp)	$48,753	D, A	1.3 tons	13.3 tons	2+12	8	Passive IR (D, C)	Shielded
Piranha III 6x6 (20mm Turret, 300 hp)	$49,619	D, A	1.3 tons	13.4 tons	2+12	8	Passive IR (D, C), Image Intensification (C)	Shielded
Piranha III 6x6 (20mm Turret, 350 hp)	$49,804	D, A	1.3 tons	13.4 tons	2+12	8	Passive IR (D, C), Image Intensification (C)	Shielded
Piranha III 6x6 (M-2HB RWS, 300 hp)	$47,972	D, A	1.4 tons	12.9 tons	2+12	8	Passive IR (D, C), Image Intensification (C)	Shielded
Piranha III 6x6 (M-2HB RWS, 350 hp)	$48,157	D, A	1.4 tons	12.9 tons	2+12	8	Passive IR (D, C), Image Intensification (C)	Shielded
Piranha III 6x6 (AGL RWS, 300 hp)	$52,501	D, A	1.4 tons	12.9 tons	2+12	8	Passive IR (D, C), Image Intensification (C)	Shielded
Piranha III 6x6 (AGL RWS, 350 hp)	$52,696	D, A	1.4 tons	12.9 tons	2+12	8	Passive IR (D, C), Image Intensification (C)	Shielded
Piranha III 6x6 (20mm RWS, 300	$52,433	D, A	1.4 tons	13 tons	2+12	8	Passive IR (D, C), Image Intensification (C)	Shielded

hp)								
Piranha III 6x6 (20mm RWS, 350 hp)	$52,618	D, A	1.4 tons	13 tons	2+12	8	Passive IR (D, C), Image Intensification (C)	Shielded
Piranha III 6x6 (25mm Turret, 300 hp)	$52,603	D, A	1.2 tons	13.6 tons	2+11	8	Passive IR (D, C), Image Intensification (C)	Shielded
Piranha III 6x6 (25mm Turret, 350 hp)	$52,788	D, A	1.2 tons	13.6 tons	2+11	8	Passive IR (D, C), Image Intensification (C)	Shielded
Piranha III 6x6 (30mm Turret, 300 hp)	$55,676	D, A	1 ton	14.5 tons	2+11	8	Passive IR (D, C), Image Intensification (C)	Shielded
Piranha III 6x6 (30mm Turret, 350 hp)	$55,861	D, A	1 ton	14.5 tons	2+11	8	Passive IR (D, C), Image Intensification (C)	Shielded
Piranha III 6x6 (35mm Turret, 300 hp)	$58,775	D, A	475 kg	16.6 tons	2+11	8	Passive IR (D, C), Image Intensification (C)	Shielded
Piranha III 6x6 (35mm Turret, 350 hp)	$58,960	D, A	475 kg	16.6 tons	2+11	8	Passive IR (D, C), Image Intensification (C)	Shielded
Piranha III 8x8 (Pintle Mount, 350 hp)	$26,420	D, A	3 tons	16.5 tons	2+14	8	Passive IR (D)	Shielded
Piranha III 8x8 (Pintle Mount, 400 hp)	$26,605	D, A	3 tons	16.5 tons	2+14	8	Passive IR (D)	Shielded
Piranha III 8x8 (7.62mm Turret, 350 hp)	$32,127	D, A	3 tons	16.7 tons	2+14	8	Passive IR (D, C)	Shielded
Piranha III 8x8 (7.62mm Turret, 400 hp)	$32,312	D, A	3 tons	16.7 tons	2+14	8	Passive IR (D, C)	Shielded
Piranha III 8x8 (2x7.62mm Turret, 350 hp)	$37,016	D, A	2.9 tons	16.9 tons	2+14	8	Passive IR (D, C)	Shielded
Piranha III	$37,201	D, A	2.9 tons	16.9 tons	2+14	8	Passive IR (D,	Shielded

8x8 (2x7.62mm Turret, 400 hp)							C)	
Piranha III 8x8 (M-2HB Turret, 350 hp)	$48,229	D, A	2.8 tons	17.3 tons	2+14	8	Passive IR (D, C)	Shielded
Piranha III 8x8 (M-2HB Turret, 400 hp)	$48,504	D, A	2.8 tons	17.3 tons	2+14	8	Passive IR (D, C)	Shielded
Piranha III 8x8 (AGL Turret, 350 hp)	$50,972	D, A	2.8 tons	17.3 tons	2+14	8	Passive IR (D, C)	Shielded
Piranha III 8x8 (AGL Turret, 400 hp)	$51,147	D, A	2.8 tons	17.3 tons	2+14	8	Passive IR (D, C)	Shielded
Piranha III 8x8 (20mm Turret, 350 hp)	$51,654	D, A	2.8 tons	17.4 tons	2+14	8	Passive IR (D, C), Image Intensification (C)	Shielded
Piranha III 8x8 (20mm Turret, 400 hp)	$51,829	D, A	2.8 tons	17.4 tons	2+14	8	Passive IR (D, C), Image Intensification (C)	Shielded
Piranha III 8x8 (M-2HB RWS, 350 hp)	$49,844	D, A	2.9 tons	16.9 tons	2+14	8	Passive IR (D, C), Image Intensification (C)	Shielded
Piranha III 8x8 (M-2HB RWS, 400 hp)	$50,029	D, A	2.9 tons	16.9 tons	2+14	8	Passive IR (D, C), Image Intensification (C)	Shielded
Piranha III 8x8 (AGL RWS, 350 hp)	$54,261	D, A	2.9 tons	16.9 tons	2+14	8	Passive IR (D, C), Image Intensification (C)	Shielded
Piranha III 8x8 (AGL RWS, 400 hp)	$54,446	D, A	2.9 tons	16.9 tons	2+14	8	Passive IR (D, C), Image Intensification (C)	Shielded
Piranha III 8x8 (20mm RWS, 350 hp)	$54,192	D, A	2.9 tons	17 tons	2+14	8	Passive IR (D, C), Image Intensification (C)	Shielded
Piranha III 8x8 (20mm RWS, 400 hp)	$54,377	D, A	2.9 tons	17 tons	2+14	8	Passive IR (D, C), Image Intensification (C)	Shielded
Piranha III 8x8	$100,919	D, A	2.6 tons	18.1 tons	3+11	10	Passive IR (D, G, C), Image	Shielded

(25mm Full Turret, 350 hp)							Intensification (G), Thermal Imaging (G)	
Piranha III 8x8 (25mm Full Turret, 400 hp)	$101,104	D, A	2.6 tons	18.1 tons	3+11	10	Passive IR (D, G, C), Image Intensification (G), Thermal Imaging (G)	Shielded
Piranha III 8x8 (25mm Full Turret w/ATGM, 350 hp)	$133,719	D, A	2.5 tons	18.3 tons	3+11	10	Passive IR (D, G, C), Image Intensification (G), Thermal Imaging (G)	Shielded
Piranha III 8x8 (25mm Full Turret w/ATGM, 400 hp)	$133,904	D, A	2.5 tons	18.3 tons	3+11	10	Passive IR (D, G, C), Image Intensification (G), Thermal Imaging (G)	Shielded
Piranha III 8x8 (30mm Full Turret, 350 hp)	$103,975	D, A	2.6 tons	18.1 tons	3+11	10	Passive IR (D, G, C), Image Intensification (G), Thermal Imaging (G)	Shielded
Piranha III 8x8 (30mm Full Turret, 400 hp)	$104,160	D, A	2.6 tons	18.1 tons	3+11	10	Passive IR (D, G, C), Image Intensification (G), Thermal Imaging (G)	Shielded
Piranha III 8x8 (30mm Full Turret w/ATGM, 350 hp)	$136,775	D, A	2.5 tons	18.3 tons	3+11	10	Passive IR (D, G, C), Image Intensification (G), Thermal Imaging (G)	Shielded
Piranha III 8x8 (30mm Full Turret w/ATGM, 400 hp)	$136,960	D, A	2.5 tons	18.3 tons	3+11	10	Passive IR (D, G, C), Image Intensification (G), Thermal Imaging (G)	Shielded
Piranha III 8x8 (35mm Full Turret, 350 hp)	$107,090	D, A	2.6 tons	18.1 tons	3+11	10	Passive IR (D, G, C), Image Intensification (G), Thermal Imaging (G)	Shielded
Piranha III 8x8 (35mm Full Turret, 400 hp)	$107,275	D, A	2.6 tons	18.1 tons	3+11	10	Passive IR (D, G, C), Image Intensification (G), Thermal Imaging (G)	Shielded
Piranha III 8x8	$139,890	D, A	2.5 tons	18.3 tons	3+11	10	Passive IR (D, G, C), Image	Shielded

(35mm Full Turret w/ATGM, 350 hp)							Intensification (G), Thermal Imaging (G)	
Piranha III 8x8 (35mm Full Turret w/ATGM, 400 hp)	$140,075	D, A	2.5 tons	18.3 tons	3+11	10	Passive IR (D, G, C), Image Intensification (G), Thermal Imaging (G)	Shielded
Finnish Piranha III Prototype		D, A	3 tons	25.7 tons	3+11	10	Passive IR (D, G, C), Image Intensification (G, C), Thermal Imaging (G)	Shielded
Piranha III 6x6 Ambulance (300 hp)	$28,474	D, A	750 kg	12.8 tons	*	7	Passive IR (D)	Shielded
Piranha III 6x6 Ambulance (350 hp)	$28,659	D, A	750 kg	12.8 tons	*	7	Passive IR (D)	Shielded
Piranha III 8x8 Ambulance (350 hp)	$30,383	D, A	1.5 tons	16.8 tons	*	9	Passive IR (D)	Shielded
Piranha III 8x8 Ambulance (400 hp)	$30,568	D, A	1.5 tons	16.8 tons	*	9	Passive IR (D)	Shielded
Piranha III 6x6 Command 1 (300 hp)	$65,736	D, A	650 kg	13.4 tons	2+4	7	Passive IR (D)	Shielded
Piranha III 6x6 Command 1 (350 hp)	$65,921	D, A	650 kg	13.4 tons	2+4	7	Passive IR (D)	Shielded
Piranha III 6x6 Command 2 (300 hp)	$138,413	D, A	650 kg	13.5 tons	2+4	7	Passive IR (D)	Shielded
Piranha III 6x6 Command 2 (350 hp)	$138,598	D, A	650 kg	13.5 tons	2+4	7	Passive IR (D)	Shielded
Piranha III 6x6 Command 3 (300 hp)	$237,583	D, A	590 kg	13.8 tons	2+4	10	Passive IR (D)	Shielded
Piranha III 6x6 Command 3 (350 hp)	$237,768	D, A	590 kg	13.8 tons	2+4	10	Passive IR (D)	Shielded
Piranha III 8x8 Command 1 (350 hp)	$67,452	D, A	1.5 tons	17.3 tons	2+5	9	Passive IR (D)	Shielded
Piranha III	$67,637	D, A	1.5 tons	17.3 tons	2+5	9	Passive IR (D)	Shielded

8x8 Command 1 (400 hp)								
Piranha III 8x8 Command 2 (350 hp)	$140,129	D, A	1.5 tons	17.4 tons	2+5	9	Passive IR (D)	Shielded
Piranha III 8x8 Command 2 (400 hp)	$140,314	D, A	1.5 tons	17.4 tons	2+5	9	Passive IR (D)	Shielded
Piranha III 8x8 Command 3 (350 hp)	$239,299	D, A	1.4 tons	17.7 tons	2+5	10	Passive IR (D)	Shielded
Piranha III 8x8 Command 3 (400 hp)	$239,484	D, A	1.4 tons	17.7 tons	2+5	10	Passive IR (D)	Shielded
Piranha III 6x6 Signals 1 (300 hp)	$86,605	D, A	665 kg	13.2 tons	4	10	Passive IR (D)	Shielded
Piranha III 6x6 Signals 1 (350 hp)	$86,790	D, A	665 kg	13.2 tons	4	10	Passive IR (D)	Shielded
Piranha III 6x6 Signals 2 (300 hp)	$89,105	D, A	650 kg	13.3 tons	4	10	Passive IR (D)	Shielded
Piranha III 6x6 Signals 2 (350 hp)	$89,290	D, A	650 kg	13.3 tons	4	10	Passive IR (D)	Shielded
Piranha III 8x8 Signals 1 (350 hp)	$88,515	D, A	1.3 tons	17.2 tons	4	10	Passive IR (D)	Shielded
Piranha III 8x8 Signals 1 (400 hp)	$88,700	D, A	1.3 tons	17.2 tons	4	10	Passive IR (D)	Shielded
Piranha III 8x8 Signals 2 (350 hp)	$91,015	D, A	1.3 tons	17.3 tons	4	10	Passive IR (D)	Shielded
Piranha III 8x8 Signals 2 (400 hp)	$91,200	D, A	1.3 tons	17.3 tons	4	10	Passive IR (D)	Shielded
Piranha 6x6 EW 1 (300 hp)	$718,212	D, A	550 kg	14 tons	4	10	Passive IR (D)	Shielded
Piranha 6x6 EW 1 (350 hp)	$718,397	D, A	550 kg	14 tons	4	10	Passive IR (D)	Shielded
Piranha 6x6 EW 2 (300 hp)	$121,872	D, A	600 kg	13.8 tons	4	10	Passive IR (D)	Shielded

Piranha 6x6 EW 2 (350 hp)	$122,057	D, A	600 kg	13.8 tons	4	10	Passive IR (D)	Shielded
Piranha 8x8 EW 1 (350 hp)	$720,122	D, A	1.1 tons	18 tons	4	10	Passive IR (D)	Shielded
Piranha 8x8 EW 1 (400 hp)	$722,307	D, A	1.1 tons	18 tons	4	10	Passive IR (D)	Shielded
Piranha 8x8 EW 2 (350 hp)	$123,782	D, A	1.2 tons	17.8 tons	4	10	Passive IR (D)	Shielded
Piranha 8x8 EW 2 (400 hp)	$123,967	D, A	1.2 tons	17.8 tons	4	10	Passive IR (D)	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Piranha III 6x6 (Pintle Mount, 300 hp)	189/95	44/22/4	200	159	Stnd	W(6)	HF9Sp HS6Sp HR5
Piranha III 6x6 (Pintle Mount, 350 hp)	214/108	49/25/5	200	186	Stnd	W(6)	HF9Sp HS6Sp HR5
Piranha III 6x6 (7.62mm Turret, 300 hp)	186/94	43/22/4	200	161	Trtd	W(6)	TF2 TS2 TR2 HF9Sp HS6Sp HR5
Piranha III 6x6 (7.62mm Turret, 350 hp)	211/106	49/25/5	200	189	Trtd	W(6)	TF2 TS2 TR2 HF9Sp HS6Sp HR5
Piranha III 6x6 (7.62mm Turret, 300 hp)	184/93	43/22/4	200	184	Trtd	W(6)	TF2 TS2 TR2 HF9Sp HS6Sp HR5
Piranha III 6x6 (7.62mm Turret, 350 hp)	209/105	48/24/5	200	192	Trtd	W(6)	TF2 TS2 TR2 HF9Sp HS6Sp HR5
Piranha III 6x6 (M-2HB/AGL Turret, 300 hp)	180/91	42/21/4	200	169	Trtd	W(6)	TF3 TS2 TR2 HF9Sp HS6Sp HR5
Piranha III 6x6 (M-2HB/AGL Turret, 350 hp)	203/102	47/24/5	200	198	Trtd	W(6)	TF3 TS2 TR2 HF9Sp HS6Sp HR5
Piranha III 6x6 (20mm Turret, 300 hp)	179/90	42/21/4	200	170	Trtd	W(6)	TF3 TS2 TR2 HF9Sp HS6Sp HR5

Piranha III 6x6 (20mm Turret, 350 hp)	202/102	47/24/5	200	199	Trtd	W(6)	TF3	TS2	TR2	HF9Sp	HS6Sp	HR5
Piranha III 6x6 (M-2HB/AGL RWS, 300 hp)	184/93	43/22/4	200	164	CiH	W(6)	TF2	TS2	TR2	HF9Sp	HS6Sp	HR5
Piranha III 6x6 (M-2HB/AGL RWS, 350 hp)	208/105	48/24/5	200	192	CiH	W(6)	TF2	TS2	TR2	HF9Sp	HS6Sp	HR5
Piranha III 6x6 (20mm RWS, 300 hp)	183/92	42/21/4	200	165	CiH	W(6)	TF2	TS2	TR2	HF9Sp	HS6Sp	HR5
Piranha III 6x6 (20mm RWS, 350 hp)	206/104	48/24/5	200	193	CiH	W(6)	TF2	TS2	TR2	HF9Sp	HS6Sp	HR5
Piranha III 6x6 (25mm Turret, 300 hp)	178/90	41/21/4	200	173	Trtd	W(6)	TF3	TS2	TR2	HF9Sp	HS6Sp	HR5
Piranha III 6x6 (25mm Turret, 350 hp)	200/101	46/23/5	200	202	Trtd	W(6)	TF3	TS2	TR2	HF9Sp	HS6Sp	HR5
Piranha III 6x6 (30mm Turret, 300 hp)	169/86	39/20/4	200	184	Trtd	W(6)	TF3	TS2	TR2	HF9Sp	HS6Sp	HR5
Piranha III 6x6 (30mm Turret, 350 hp)	191/96	44/22/4	200	216	Trtd	W(6)	TF3	TS2	TR2	HF9Sp	HS6Sp	HR5
Piranha III 6x6 (35mm Turret, 300 hp)	154/78	36/18/4	200	221	Trtd	W(6)	TF3	TS2	TR2	HF9Sp	HS6Sp	HR5
Piranha III 6x6 (35mm Turret, 350 hp)	172/87	40/20/4	200	247	Trtd	W(6)	TF3	TS2	TR2	HF9Sp	HS6Sp	HR5
Piranha III 8x8 (Pintle Mount, 350 hp)	173/87	40/20/4	300	245	Stnd	W(8)				HF9Sp	HS6Sp	HR5
Piranha III	192/97	44/22/4	300	255	Stnd	W(8)				HF9Sp	HS6Sp	HR5

8x8 (Pintle Mount, 400 hp)												
Piranha III 8x8 (7.62mm Turret, 350 hp)	172/86	40/20/4	300	248	Trtd	W(8)	TF2	TS2	TR2	HF9Sp	HS6Sp	HR5
Piranha III 8x8 (7.62mm Turret, 400 hp)	190/96	44/22/4	300	258	Trtd	W(8)	TF2	TS2	TR2	HF9Sp	HS6Sp	HR5
Piranha III 8x8 (2x7.62mm Turret, 350 hp)	170/86	39/20/4	300	251	Trtd	W(8)	TF2	TS2	TR2	HF9Sp	HS6Sp	HR5
Piranha III 8x8 (2x7.62mm Turret, 400 hp)	189/95	44/22/4	300	261	Trtd	W(8)	TF2	TS2	TR2	HF9Sp	HS6Sp	HR5
Piranha III 8x8 (M-2HB/AGL Turret, 350 hp)	162/85	39/20/4	300	257	Trtd	W(8)	TF3	TS2	TR2	HF9Sp	HS6Sp	HR5
Piranha III 8x8 (M-2HB/AGL Turret, 400 hp)	185/94	43/22/4	300	267	Trtd	W(8)	TF3	TS2	TR2	HF9Sp	HS6Sp	HR5
Piranha III 8x8 (AGL Turret, 350 hp)	168/85	39/20/4	300	257	Trtd	W(8)	TF3	TS2	TR2	HF9Sp	HS6Sp	HR5
Piranha III 8x8 (AGL Turret, 400 hp)	184/93	43/22/4	300	267	Trtd	W(8)	TF3	TS2	TR2	HF9Sp	HS6Sp	HR5
Piranha III 8x8 (20mm Turret, 350 hp)	167/84	38/20/4	300	258	Trtd	W(8)	TF3	TS2	TR2	HF9Sp	HS6Sp	HR5
Piranha III 8x8 (20mm Turret, 400 hp)	183/93	43/22/4	300	269	Trtd	W(8)	TF3	TS2	TR2	HF9Sp	HS6Sp	HR5
Piranha III 8x8 (M-2HB/AGL RWS, 350 hp)	170/86	39/20/4	300	251	CiH	W(8)	TF2	TS2	TR2	HF9Sp	HS6Sp	HR5
Piranha III 8x8 (M-2HB/AGL RWS, 400	188/95	43/22/4	300	261	CiH	W(8)	TF2	TS2	TR2	HF9Sp	HS6Sp	HR5

hp)							
Piranha III 8x8 (20mm RWS, 350 hp)	169/86	39/20/4	300	252	CiH	W(8)	TF2 TS2 TR2 HF9Sp HS6Sp HR5
Piranha III 8x8 (20mm RWS, 400 hp)	188/94	43/22/4	300	263	CiH	W(8)	TF2 TS2 TR2 HF9Sp HS6Sp HR5
Piranha III 8x8 (Full Turret, 350 hp)	161/82	37/19/4	300	269	Trtd	W(8)	TF7Sp TS6Sp TR4 HF9Sp HS6Sp HR5
Piranha III 8x8 (Full Turret, 400 hp)	179/90	42/21/4	300	279	Trtd	W(8)	TF7Sp TS6Sp TR4 HF9Sp HS6Sp HR5
Piranha III 8x8 (Full Turret w/ATGM, 350 hp)	160/81	37/19/4	300	272	Trtd	W(8)	TF7Sp TS6Sp TR4 HF9Sp HS6Sp HR5
Piranha III 8x8 (Full Turret w/ATGM, 400 hp)	176/89	41/21/4	300	283	Trtd	W(8)	TF7Sp TS6Sp TR4 HF9Sp HS6Sp HR5
Finnish Piranha III Prototype	143/72	33/17/3	400	333	Trtd	W(8)	TF14 TS8 TR6 HF9Sp HS6Sp HR5
Piranha III 6x6 Ambulance (300 hp)	185/93	43/22/4	200	162	Stnd	W(6)	HF9Sp HS6Sp HR5
Piranha III 6x6 Ambulance (350 hp)	210/106	48/25/5	200	190	Stnd	W(6)	HF9Sp HS6Sp HR5
Piranha III 8x8 Ambulance (350 hp)	170/85	39/20/4	300	250	Stnd	W(8)	HF9Sp HS6Sp HR5
Piranha III 8x8 Ambulance (400 hp)	188/95	43/22/4	300	260	Stnd	W(8)	HF9Sp HS6Sp HR5
Piranha III 6x6 Command 1 (300 hp)	176/88	41/21/4	200	170	Stnd	W(6)	HF9Sp HS6Sp HR5
Piranha III 6x6 Command 1 (350 hp)	199/100	46/23/5	200	190	Stnd	W(6)	HF9Sp HS6Sp HR5
Piranha III 6x6 Command 2 (300 hp)	176/88	41/21/4	200	172	Stnd	W(6)	HF9Sp HS6Sp HR5

Piranha III 6x6 Command 2 (350 hp)	199/100	46/23/5	200	201	Stnd	W(6)	HF9Sp	HS6Sp	HR5
Piranha III 6x6 Command 3 (300 hp)	170/86	40/20/4	200	176	Stnd	W(6)	HF9Sp	HS6Sp	HR5
Piranha III 6x6 Command 3 (350 hp)	193/97	44/23/4	200	206	Stnd	W(6)	HF9Sp	HS6Sp	HR5
Piranha III 8x8 Command 1 (350 hp)	164/83	38/19/4	300	257	Stnd	W(8)	HF9Sp	HS6Sp	HR5
Piranha III 8x8 Command 1 (400 hp)	182/92	42/21/4	300	268	Stnd	W(8)	HF9Sp	HS6Sp	HR5
Piranha III 8x8 Command 2 (350 hp)	164/83	38/19/4	300	258	Stnd	W(8)	HF9Sp	HS6Sp	HR5
Piranha III 8x8 Command 2 (400 hp)	182/92	42/21/4	300	269	Stnd	W(8)	HF9Sp	HS6Sp	HR5
Piranha III 8x8 Command 3 (350 hp)	161/81	37/19/4	300	262	Stnd	W(8)	HF9Sp	HS6Sp	HR5
Piranha III 8x8 Command 3 (400 hp)	179/90	41/20/4	300	273	Stnd	W(8)	HF9Sp	HS6Sp	HR5
Piranha III 6x6 Signals 1 (350 hp)	180/90	42/21/4	200	169	Stnd	W(6)	HF9Sp	HS6Sp	HR5
Piranha III 6x6 Signals 1 (400 hp)	203/103	47/24/5	200	197	Stnd	W(6)	HF9Sp	HS6Sp	HR5
Piranha III 6x6 Signals 2 (300 hp)	178/89	41/21/4	200	169	Stnd	W(6)	HF9Sp	HS6Sp	HR5
Piranha III 6x6 Signals 2 (350 hp)	201/102	46/24/5	200	197	Stnd	W(6)	HF9Sp	HS6Sp	HR5
Piranha III 8x8 Signals 1 (350 hp)	166/84	38/19/4	300	255	Stnd	W(8)	HF9Sp	HS6Sp	HR5
Piranha III 8x8 Signals 1 (400 hp)	184/93	42/21/4	300	265	Stnd	W(8)	HF9Sp	HS6Sp	HR5

Piranha III 8x8 Signals 2 (350 hp)	164/83	38/19/4	300	257	Stnd	W(8)	HF9Sp	HS6Sp	HR5
Piranha III 8x8 Signals 2 (400 hp)	182/92	41/21/4	300	268	Stnd	W(8)	HF9Sp	HS6Sp	HR5
Piranha 6x6 EW 1 (300 hp)	168/85	39/20/4	200	178	Stnd	W(6)	HF9Sp	HS6Sp	HR5
Piranha 6x6 EW 1 (350 hp)	190/96	43/22/4	200	208	Stnd	W(6)	HF9Sp	HS6Sp	HR5
Piranha 6x6 EW 2 (300 hp)	170/86	40/20/4	200	175	Stnd	W(6)	HF9Sp	HS6Sp	HR5
Piranha 6x6 EW 2 (350 hp)	193/97	44/23/4	200	205	Stnd	W(6)	HF9Sp	HS6Sp	HR5
Piranha 8x8 EW 1 (350 hp)	159/80	37/18/4	300	267	Stnd	W(8)	HF9Sp	HS6Sp	HR5
Piranha 8x8 EW 1 (400 hp)	177/89	40/20/4	300	278	Stnd	W(8)	HF9Sp	HS6Sp	HR5
Piranha 8x8 EW 2 (350 hp)	161/81	37/19/4	300	265	Stnd	W(8)	HF9Sp	HS6Sp	HR5
Piranha 8x8 EW 2 (400 hp)	179/90	41/20/4	300	275	Stnd	W(8)	HF9Sp	HS6Sp	HR5

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Piranha III 6x6 (Pintle Mount)/Command/Signals/EW	None	None	MAG or M-2HB or Mk 19 (C)	3000x7.62mm or 1800x.50 or 570x40mm Grenades
Piranha III 6x6 (7.62mm Turret)	+1	Basic	MAG (C)	3000x7.62mm
Piranha III 6x6 (2x7.62mm Turret)	+1	Basic	2xMAG (C)	3000x7.62mm
Piranha III 6x6 (M-2HB Turret)	+1	Basic	M-2HB (C), MAG (C)	2000xM-2HB, 2000x7.62mm
Piranha III 6x6 (AGL Turret)	+1	Basic	Mk 19 or HK GMG (C), MAG (C)	635x40mm Grenades, 2000x7.62mm
Piranha III 6x6 (20mm Turret)	+1	Basic	20mm KAA Autocannon (C), MAG (C)	600x20mm, 2400x7.62mm
Piranha III 6x6 (M-2HB RWS)	+2	Fair	M-2HB (C)	1800x.50
Piranha III 6x6 (AGL RWS)	+2	Fair	Mk 19 or HK GMG (C)	575x40mm Grenades
Piranha III 6x6 (20mm RWS)	+2	Fair	20mm KAA Autocannon (C)	1140x20mm
Piranha III 6x6 (25mm Turret)	+1	Basic	25mm KBA Autocannon, MAG (C)	480x25mm, 2400x7.62mm
Piranha III 6x6 (30mm Turret)	+1	Basic	30mm KCA Autocannon, MAG (C)	400x30mm, 2400x7.62mm
Piranha III 6x6 (35mm Turret)	+1	Basic	35mm KDE Autocannon, MAG (C)	345x35mm, 2400x7.62mm
Piranha III 8x8 (Pintle	None	None	MAG or M-2HB or Mk 19 (C)	3300x7.62mm or

Mount)/Command/Signals/EW				2000x.50 or 630x40mm Grenades
Piranha III 8x8 (7.62mm Turret)	+1	Basic	MAG (C)	3300x7.62mm
Piranha III 8x8 (2x7.62mm Turret)	+1	Basic	2xMAG (C)	3300x7.62mm
Piranha III 8x8 (M-2HB Turret)	+1	Basic	M-2HB, MAG (C)	2200x.50. 2200x7.62mm
Piranha III 8x8 (8x8 Turret)	+1	Basic	Mk 19 or HK GMG (C), MAG (C)	700x40mm Grenades, 2200x7.62mm
Piranha III 8x8 (20mm Turret)	+1	Basic	20mm KAA Autocannon (C), MAG (C)	660x20mm, 2640x7.62mm
Piranha III 8x8 (M-2HB RWS)	+2	Fair	M-2HB (C)	2000x.50
Piranha III 8x8 (AGL RWS)	+2	Fair	Mk 19 or HK GMG (C)	630x40mm Grenades
Piranha III 8x8 (20mm RWS)	+2	Fair	20mm KAA Autocannon (C)	1250x20mm
Piranha III 8x8 (Full 25mm Turret)	+2	Fair	25mm KBA Autocannon, MAG, MAG (C)	620x25mm, 3000x7.62mm
Piranha III 8x8 (Full 25mm Turret, w/ATGM)	+2	Fair	25mm KBA Autocannon, MAG, MAG (C), 2xTOW II or Milan or Spike Launchers	620x25mm, 3000x7.62mm, 5xTOW II or Milan or Spike
Piranha III 8x8 (Full 30mm Turret)	+2	Fair	30mm KCA Autocannon, MAG, MAG (C)	515x30mm, 3000x7.62mm
Piranha III 8x8 (Full 30mm Turret, w/ATGM)	+2	Fair	30mm KCA Autocannon, MAG, MAG (C), 2xTOW II or Milan or Spike Launchers	515x30mm, 3000x7.62mm, 5xTOW II or Milan or Spike
Piranha III 8x8 (Full 35mm Turret)	+2	Fair	35mm KDE Autocannon, MAG, MAG (C)	445x35mm, 3000x7.62mm
Piranha III 8x8 (Full 35mm Turret, w/ATGM)	+2	Fair	35mm KDE Autocannon, MAG, MAG (C), 2xTOW II or Milan or Spike Launchers	445x35mm, 3000x7.62mm, 5xTOW II or Milan or Spike
Finnish Piranha III Prototype	+3	Good	40mm Bofors L/70, PKT	475x40mm, 4500x7.62L

Otokar Arma

Notes: The Arma is a medium wheeled APC just beginning its career in Turkey, and getting some interest from foreign buyers. It is a simple APC designed with modular weaponry, advanced armor technology with the ability to take appliqué armor, and the ability to be used as a platform for a number of tactical vehicles. Otokar began development of the Arma as a private venture in 2007, when Turkey was undergoing a number of measures to modernize its armed forces; though it started the project with no sure future, the Turkish Army chose it to re-equip part of its mechanized forces recently. Turkey plans to have a force of 336 Armas in varying roles by 2015.

At its heart, the layout of the Arma is conventional, with a driver's position on the front right, a commander's position behind it, and the troop compartment at the rear. The driver has conventional controls and has a small bullet-resistant windshield to his front and wedge-shaped bullet-resistant windows to his sides; there are no provisions for night vision integrated into the driver's compartment, but the driver is normally issued night vision goggles and the Arma does have a pair of IR headlights. The commander's position is normally to the rear of the driver and slightly offset towards the left. This position can be as simple as having a simple hatch ringed with vision blocks and armed with a pintle mounted weapon, or it can have an RWS or small turret. If the driver's hatch is locked open (which is in the vertical), the hatch unfortunately obstructs the commander's position on a normal pintle mount, with the weapon barely being able to fire over it. The Turkish Army plans for most of its Armas to be armed with one of three differently-armed RWSs, with Armas having simple commander's stations being reserved for specialist vehicles (such as the variants announced so far). Troop access is primarily via a large door in the rear, two firing ports are found in each side and one in rear door. The troops sit down the sides of the vehicle; interior space is fairly cramped for the troops inside, but includes a number of lockers and underseat storage bins for equipment. Four smoke grenade launchers are found on each side of the vehicle, at the top of the side plates towards the rear of the vehicle. The APC version has a GPS set.

The Arma is powered by a 450-horsepower turbocharged engine and has an automatic transmission. The fuel tanks are at the rear and external to the vehicle (like those on the M-113A3), though fully armored and with self-sealing features. The armor is more protective than one might expect from its class of vehicle due to its utilization of modern armor composition standards, and the Turkish Army is expected to take advantage of MEXAS appliqué composite armor in some roles. The Arma does not have an MRAP hull, but the high ground clearance and advanced armoring on the belly make it more resistant to mines and IEDs; the crew and troops also have seats designed to help take up the shock of mine explosions. The 6x6 off-road suspension can be switched to 6x4 for road use, and has decent hydropneumatic shock absorption. The Arma is amphibious, propelled by steerable propellers at the rear in the water, and those propellers being controlled by the driver by the use of joystick controllers on either side of him. Steering is by the front wheels, but they can be steered to extreme angles and the Arma's turning radius is only 7.85 meters.

The Turkish have announced a number of variants, including a longer 8x8 version of the APC in late 2011. (It should be noted that the 8x8 version is switchable to 8x4 for road use.) A fire control version is expected with a heavy autocannon (not featured on this page). APC-type variants include a command version (in 6x6 and 8x8 configurations), an NBC reconnaissance vehicle, an intelligence version with a ground surveillance radar and enhanced night vision equipment, and an EW version which is both a radar/radio finder and signals intelligence vehicles designed to detect enemy electromagnetic emissions and conduct signals intelligence.

The command version is equipped with a Battlefield Management System, and is basically a motorized and computerized command post. It has the general features of a BMS-equipped vehicle, with the computer and digital storage space and stations, monitors for combat information and mapping, and monitoring of friendly and known enemy positions. There is space for conventional command supplies such as maps and office/plotting gear well as simple radio information and the means to change friendly codes remotely as on the SINGARS system. The command version is typically armed with a simple pintle-mounted weapon. It carries two long-range radios, one of which is fully data capable to allow BMSs to talk to each other or for the BMS to transmit to independent tactical computers and systems. It also has two medium-range radios and one short-range radio, as well as a mast which can be erected during halts to increase radio range. The command version has a short, external mast with a laser rangefinder and vision equipment.

The NBC reconnaissance version is fully NBC sealed and has the means and instruments to detect, analyze, and categorize such threats, including sampling of outside air and taking samples off of the ground or other surfaces and plants through the use of two manipulator arms. The NBC reconnaissance version normally has an RWS, since it may have to fight while NBC-sealed and has an overpressure system. It has air conditioning and adequate heating, since it is sealed. It has one data-capable long-range radio, a second long-range radio, and two short-range radios. It also has a small computer to help the crew to analyze NBC threats and transmit its findings to higher headquarters. NBC reconnaissance versions are 6x6,

The EW version's primary mission is signals intelligence. As such, it's equipment can scan up to six bands of radio at one time, with the vehicle's onboard computer searching for various keywords and phrases and transmission patterns. The crew can actively listen in on up to four frequencies. It can listen in on these frequencies and scan the bands at a range of 40 kilometers. Radio detection range is 50 kilometers. It can also detect radar, at a range of 40 kilometers. It can also sort out whether the radio communications are voice streams or data streams. To a limited extent, it can detect the electronic emissions of computers, though it cannot hack into these devices; range for this is 10 kilometers. The EW version has a simple commander's station. As far as radios, the EW version has one long-range data-capable radio, one medium-range radio, and one short-range radio. EW versions are 6x6.

Twilight 2000 Notes: The Arma is not available in the Twilight 2000 timeline.

Vehicle	Price	Fuel	Load	Veh	Crew	Mnt	Night Vision	Radiological

		Type		Wt				
Arma APC (6x6)	$127,872	D, A	2.25 kg	18.5 tons	2+8	10	Passive IR (G), Image Intensification (G)	Shielded
Arma APC (8x8)	$128,154	D, A	2.25 kg	18.8 tons	2+10	10	Passive IR (G), Image Intensification (G)	Shielded
Arma APC (6x6) w/Appliqué	$133,505	D, A	1.9 tons	19.8 tons	2+8	11	Passive IR (G), Image Intensification (G)	Shielded
Arma APC (8x8) w/Appliqué	$133,787	D, A	1.9 tons	20.1 tons	2+10	11	Passive IR (G), Image Intensification (G)	Shielded
Arma Command (6x6)	$291,186	D, A	1.13 kg	19 tons	2+4	12	Passive IR (Mast), Image Intensification (Mast), Thermal Imaging (Mast)	Shielded
Arma Command (8x8)	$291,468	D, A	1.13 kg	19.3 tons	2+5	12	Passive IR (Mast), Image Intensification (Mast), Thermal Imaging (Mast)	Shielded
Arma Command (6x6) w/Appliqué	$297,101	D, A	780 kg	20.4 tons	2+4	13	Passive IR (Mast), Image Intensification (Mast), Thermal Imaging (Mast)	Shielded
Arma Command (8x8) w/Appliqué	$297,383	D, A	705 kg	20.7 tons	2+5	13	Passive IR (Mast), Image Intensification (Mast), Thermal Imaging (Mast)	Shielded
Arma NBC Reconnaissance	$483,332	D, A	1.13 tons	19 tons	4	12	Passive IR (G), Image Intensification (G)	Shielded
Arma NBC Reconnaissance w/Appliqué	$488,965	D, A	780 kg	20.4 tons	4	13	Passive IR (G), Image Intensification (G)	Shielded
Arma EW	$766,748	D, A	1.03 tons	19.4 tons	4	10	Headlights	Shielded
Arma EW w/Appliqué	$772,381	D, A	905 kg	19.9 tons	4	10	Headlights	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Arma APC (6x6)	178/90	41/21/6	435	216	CiH	W(6)	TF3 TS2 TR2 HF8Sp HS6Sp HR5*
Arma APC (8x8)	174/88	40/21/6	435	220	CiH	W(8)	TF3 TS2 TR2 HF8Sp HS6Sp HR5*
Arma APC (6x6) w/Appliqué	166/84	38/20/6	435	231	CiH	W(6)	TF3 TS2 TR2 HF12Cp HS8Cp HR7**
Arma APC (8x8) w/Appliqué	164/83	38/19/6	435	235	CiH	W(8)	TF3 TS2 TR2 HF12Cp HS8Cp HR7**
Arma Command (6x6)	173/87	40/20/6	435	222	Stnd	W(6)	HF8Sp HS6Sp HR5*
Arma Command (8x8)	171/86	39/30/6	435	225	Stnd	W(8)	HF8Sp HS6Sp HR5*
Arma Command (6x6) w/Appliqué	158/80	36/19/5	435	242	Stnd	W(6)	HF12Cp HS8Cp HR7**
Arma Command (8x8) w/Appliqué	158/80	36/19/5	435	242	Stnd	W(8)	HF12Cp HS8Cp HR7**
Arma NBC Recon	173/87	40/20/6	435	222	CiH	W(6)	TF3 TS2 TR2 HF8Sp HS6Sp HR5*
Arma NBC Recon w/Appliqué	158/80	36/19/5	435	242	CiH	W(6)	TF3 TS2 TR2 HF12Cp HS8Cp HR7**
Arma EW	169/86	39/30/6	435	227	Stnd	W(6)	HF8Sp HS6Sp HR5*
Arma EW w/Appliqué	166/84	37/30/6	435	233	Stnd	W(6)	HF12Cp HS8Cp HR7**

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Arma APC/NBC	+3	Fair	M-2HB or Mk 19 or	1000x.50 or 320x40mm

Reconnaissance Arma Command/EW	None	None	20mm Oerlikon KAA (C) M-2HB (C)	Grenades or 635x20mm 1000x.50

*Roof AV is 3; Floor AV is 6Sp.
**Roof AV is 4; Floor AV is 7Sp.

Otokar Akrep APC

Notes: This is a stretched version of the Akrep (Scorpion) light armored vehicle, and is basically an armored truck based on the Land Rover Defender 90/100 chassis. The Akrep is basically a simple vehicle that is little more than an armored truck. Aside from Turkey, the only other user is Iraq (the new Iraq Army and police); The Iraqis are actually the largest users of the Akrep, with 600 vehicles bought.

The driver and commander are in a front cab, behind the engine compartment. The commander and driver have a large two-piece bullet-resistant windshield to the front and good-sized bullet-resistant windows to their sides. They enter and exit through doors in the sides of the cab, and can also reach their position through the troop compartment. The troops can be seated down the center of the vehicle or along the sides, and have three firing ports on the on the left side, two on the right side, one in the rear, and one in the right rear corner. The roof has a hatch surrounded by a rotating gun AV 2 shield, and the rear hull has a large door for troops to enter and depart. The gunner has a raisable platform for him to stand on. The gunner's position has WL spotlight for him to operate.

Engine power is a 134-horsepower diesel engine, with 4x4 suspension. Nonetheless, the Akrep APC is best suited for road use instead of off-road use. The vehicle has run-flat tires and a winch in the front bumper with a capacity of 3.6 tons. Optional equipment includes sirens, flashing lights, loudspeakers, smoke grenade launchers, and other such equipment.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
$14,098	D, A	1.08 tons	3.6 tons	2+6	2	WL Spotlight	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
328/80	76/19	85	88	Stnd	W(2)	HF3 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
None	None	MAG (C)	1620x7.62mm

Otokar Cobra

Notes: This is a Turkish light armored personnel carrier based on an expanded version of the HMMWV chassis. Variants include two types of reconnaissance cars, a command vehicle, an ambulance, a mortar carrier, and a TOW II ATGM carrier; only the APC-type versions will be detailed on this page. The Cobra is a light and agile light APC, used by 19 countries. It has seen combat service in Georgia and South Ossetia (Georgia is the largest user of the Cobra), in use by Slovenia as part of IFOR and KFOR, and in Algeria during various border wars and internal instabilities. The Turks have used them against Kurdish rebels, even sending some into raids into northern Iraq. In 2010, the Bangladeshi Police bought 7 of them, and the Bangladeshi Army is currently evaluating 24 examples loaned from Otokar and will probably buy them and more.

The Cobra has been altered almost unrecognizably from its HMMWV roots, though a look under the armor and at the interior would tell the observer that it is a HMMWV wearing armor. The driver and commander ride up front, behind bullet-resistant windshields. They have one bullet-resistant windshield on each side of them. They have no separate doors; they enter and exit through the crew compartment. There are doors on either side of the hull for crew access, and a large door in the rear of the hull for rapid dismount of troops. There are two firing ports in either side of the passenger compartment. On the roof is a small turret with a weapon. Alternatively, the weapon can be externally mounted and aimed and fired from either a hatch in the roof or remotely from inside the hull. To the rear of the turret are two small hatches on the rear deck.

The Cobra is powered by a 190-horsepower turbocharged diesel, coupled to a manual transmission. The Cobra is amphibious, powered by propellers in the water; the driver controls these propellers via joysticks, and can turn them 180 degrees. The frontal armor is sharply-raked, and the side armor and rear armor is moderately sloped, providing better protection than might be expected from such a light vehicle. The Cobra has an MRAP hull.

APC-type variants include an ambulance. As the Cobra is a rather small vehicle, it makes for a sort of barebones type of ambulance, though it does have an improved shock absorption system to ease the ride. The Cobra Ambulance does have room for a small refrigerator, the equivalent of one doctor's medical bag and 10 personal medical kits, and a small assortment of slings, bandages, burn treatments, and splints. Though up to four stretcher cases can be carried, the room for the medic to attend to his charges is very limited; more commonly, two stretcher cases and up to 4 seated casualties, or six seated casualties are carried. The Cobra ambulance is equipped with air conditioning as well as an improved heater. The Ambulance is unarmed.

The Cobra CCV (Command and Control Vehicle) is fitted with at least three radios (one long-range with data capability, one medium-range, and one short-range), a map board, and a ruggedized laptop computer, as well as a set of folding tables and chairs (strapped to the outside). On the roof of the vehicle is fitted a dish for a ground surveillance radar and a mast for long-range antennas, and inside is also a SATCOM terminal, a video camera, GPS, and better night vision. The night vision output can be relayed to the onboard computer. The CCV is meant to carry the equipment for a mobile command post; the actual command personnel ride in other vehicles. The CCV has a simple pintle mount with a light weapon.

Twilight 2000 Notes: This vehicle does not exist in the Twilight 2000 timeline.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
APC	$17,286	D, A	1.2 tons	6.2 tons	3+6	2	Passive IR (G), WL Spotlight (G)	Enclosed
Ambulance	$19,879	D, A	600 kg	6.4 tons	*	3	Headlights	Enclosed
CCV	$123,879	D, A	600 kg	6.8 tons	4	4	Image Intensification (G), Thermal Imaging (G), Radar (Mast), WL Spotlight (G)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
APC	223/113	52/26/5	145	98	CiH	W(3)	TF3 TS2 TR2 HF5 HS3 HR3**
Ambulance	216/110	50/25/5	145	101	Stnd	W(3)	HF5 HS3 HR3**
CCV	203/103	47/24/5	145	108	Stnd	W(3)	HF5 HS3 HR3**

Vehicle	Fire Control	Stabilization	Armament	Ammunition
APC	+1	Basic	MAG or M-2HB or Mk 19	850x7.62mm or 500x.50 or 160x40mm
CCV	None	None	MAG (C)	850x7.62mm

*See Notes for Crew and passenger capacity.
**Floor AV is 4Sp.

Otokar Kaya

Notes: The Kaya is Turkey's first domestically-produced MRAP-hull vehicle, based on a Unimog 500 cross-country truck and given an armored hull and V-shaped floor. As early 2011, the production lines stand open, but no orders have yet been made for the Kaya. The Kaya was a private venture by Otokar, but with the success of the Arma, Otokar has a reasonable chance to expect sales of the Kaya any day now.

The Kaya essentially takes the form of an armored truck, with the engine at the front, a cab behind it, and a rear troop compartment with a gunner's position included. In that, it looks like many current MRAP designs. The front cab is behind a large frontal bullet-resistant windshield and a window to either side; the driver and commander enter the cab through doors in the sides of the cab and the cab is separated from the troop compartment by an armored bulkhead. The gunner's position can be as simple as a cupola ringed by gun shields or be an RWS with various types of weapons. The troops have typical shock-absorbing seats that are found in an MRAP. Three firing ports are found on each side and one in the rear; access for the troops is via a large door in the rear. Seating is down the sides of the rear, except for the gunner's position. The front bumper or top of the rear sides have a bank of four grenade launchers on each side.

The Kaya is powered by a 218-horsepower turbocharged diesel engine, coupled to an automatic transmission. The driver has conventional controls as one might find on a truck. The suspension is 4x4 and has a high ground clearance with specially-designed, beefed-up suspension components, including heavy-gauge axles, more-than-adequate shock absorption, and puncture-resistant, run-flat tires. The hull channels away blasts from the body of the vehicle; a blown-off wheel can be replaced in less than an hour with proper service vehicles and parts. In addition to the MRAP hull, more advanced armor is employed. No appliqué armor is currently envisioned, but this is a possibility for the future.

The only currently-announced variant is a logistics carrier, which takes away the troop section and replaces it with a flatbed, open cargo-carrying section with rollers, tie-down, and lock-down points and a light crane for materiel handling and with a capacity of 2 tons. The cargo section is covered by a truck-like canvas and bows. The commander's position has a roof hatch, and this has a pintle-mounted weapon.

Twilight 20000 Notes: The Kaya is not available in the Twilight 2000 timeline.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Kaya (Pintle-Mount)	$26,086	D, A	2 tons	12.5 tons	3+9	10	Headlights	Enclosed
Kaya (RWS)	$67,744	D, A	1.9 tons	12.9 tons	3+9	11	Passive IR (G), Image Intensification (G)	Enclosed
Kaya Logistics	$26,043	D, A	4.54 tons	10.4 tons	3	7	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Kaya (Pintle-	147/74	34/17	290	111	Stnd	W(3)	HF10Sp HS6Sp HR6*

Mount)							
Kaya (RWS)	143/72	33/15	290	114	CiH	W(3)	TF3 TS2 TR2 HF10Sp HS6Sp HR6*
Kaya Logistics	167/84	39/20	290	92	Stnd	W(3)	HF10Sp HS6Sp HR6**

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Kaya (Pintle-Mount)	None	None	MAG or M-2HB or Mk 19 AGL	1700x7.62mm or 1000x.50 or 325x40mm Grenades
Kaya (RWS)	+3	Fair	M-2HB or Mk 19 or 20mm Oerlikon KAA Autocannon	1100x.50 or 355x40mm Grenades or 700x20mm
Kaya Logistics	None	None	MAG or M-2HB or Mk 19 AGL (C)	1275x7.62mm or 750x.50 or 245x40mm Grenades

*Floor AV is 6Sp.

**Floor AV is 6Sp. However, only the cab is fully armored; the rear cargo section has drop sides which only cover about one-quarter of the cargo section when raised, and these have an AV of 2, and no roof AV.

KMDB BTR-94

Notes: A heavy modification of the BTR-80, the BTR-94 is for use as a combination armored personnel carrier and scout vehicle, as well as providing some antiaircraft capability. The chief modification on the BTR-94 is the turret, the BAU-23x2. In addition to Ukraine, the Jordanians ordered the BTR-94; however, when the BTR-3U became available (see International Wheeled APCs), Jordan gave its 50 BTR-94s to the new Iraqi Army. These vehicles were acquired by Jordan in 1997 and then by Iraq in 2004. Though KMDB sells the turret as being applicable to other armored vehicles, no such modifications of other vehicles have been yet made; tests of these additional mountings include the BTR-70 and Ratel (for demonstration only).

The basic hull is virtually identical to that of the BTR-80, with the driver in the front right and the commander to his right side. The windshield and window layout is largely the same, as is that of the driver's and commander's controls and vision blocks. The rear troop area is likewise largely the same, with the troops having three firing ports in each side of the vehicle and the driver and commander having a firing port in the sides of their compartment. The driver and commander have night vision blocks to their front. The troops. Like on an BTR-80, enter and exit through roof hatches or through enlarged side clamshell hatches. The BTR-94 has air conditioning.

The new turret is a one-man turret with enhanced night vision and normal vision devices, as well as a ground and air surveillance radar set with a short range of 20 kilometers against ground targets and 30 kilometers against air targets. Unlike the BTR-80, the gun elevation of the BAU-23x2 turret is manual, while deflection and turret rotation are electrical. Elevation is wide, from -4 to +55 degrees. The turret is a semi-overhead weapon system, with only the gunner's head, shoulders, and very upper body being inside the turret. The gunner therefore has limited vulnerability and is mostly protected by the armor envelope of the hull, despite the size of the turret. The gunner does have a hatch atop his turret. On each side of the turret are six smoke grenade launchers. The turret also carries an additional long-range data-capable radio, both to transmit findings from the radar and to transmit a video picture from a video camera in the sighting system. The datalink can also transmit data from the radar to friendly AAA guns and missiles to assist in targeting enemy aircraft and vehicles. The guns have a laser rangefinder that doubles as a laser designator.

As said above, the body is basically a BTR-80s body, but the vehicle has a new 300-horsepower multifuel engine, along with an automatic transmission. The suspension is raised somewhat, making it marginally more resistant to mines and IEDs. The standard BTR-80 armor has been supplemented with a Kevlar antispalling liner. Suspension is 8x8 and of the off-road-type, with run-flat tires. The BTR-94 is amphibious with preparation; when floating, a waterjet at the rear is turned on. The BTR-94 has an NBC overpressure system with collective NBC backup, and radiological shielding. The BTR-94 has a winch in the front with a capacity of 4.5 tons and 60 meters of cable.

Twilight 2000 Notes: This vehicle is very rare in the Twilight 2000 timeline; perhaps 40 were produced before the war, and they were issued only certain to Category 1 units.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
$206,603	D, G, AvG, A	1.7 tons	15 tons	3+10	7	Passive IR (G, D, C), Image Intensification (G), Radar (G)	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
144/72	34/17/4	300	161	CiH	W(6)	TF4 TS4 TR4 HF6Sp HS4 HR3*

Fire Control	Stabilization	Armament	Ammunition
+2	Fair	2x23mm 2A7M Autocannons, KT-7.62	400x23mm, 2000x7.62mm

*This vehicle has a floor AV of 5Sp and a roof AV of 3.

KMDB DOZOR-B

Notes: This light APC is basically an armored version of the DOZOR-A (see Ukrainian Light Unarmored Vehicles). It is thus a light truck-based APC rather like the various up-armored versions of the US HMMWV, but has more versions, including a basic APC version, VIP transport version, NBC reconnaissance version, armored ambulance, scout vehicle, etc. The DOZOR-B is so far used only by Ukraine. It is designed as a modular vehicle able to take on a variety of roles.

The DOZOR-B flows the lines of the DOZOR-A, though it has a new armored body and floor. Armor is of aluminum and the body is rather boxy, with large bullet-resistant windows to the front and sides of the cab and another large bullet-resistant window in the rear door. There are two doors on the sides of the cab and a large door in the rear. Firing ports in the sides and rear of the vehicle are an option; up to three can be fitted per side and two in the rear door. There is also a hatch on the rear deck along with the gunner's cupola. The driver and commander are in the front cab; the bullet-resistant double windshield in front has a moderate slope, while the hood and front itself has a sharply-raked slope. The sides and rear are square, except near the bottom of the sides. A large bullet-resistant window is found in the rear door. The commander has a simple hatch arrangement, though the weapon is controlled from the gunner's position in the hull or directly by standing up in the hatch. The gunner can aim and fire (but not load) his weapon from inside the cab. The commander and driver have access to a GLONASS receiver for navigation. There are no built-in night vision features, but the driver and commander normally wear night vision glasses at night. The DOZOR-B has air conditioning and heating.

There are three choices of engine: 122 horsepower turbocharged diesel with a manual transmission, 136 horsepower

turbocharged diesel with a manual transmission, or 197 horsepower turbocharged diesel with a choice of automatic or manual transmission. The front bumper has a winch with a capacity of 4.18 tons. The suspension is 4x4, but the vehicle is more suited for on-road rather than off-road use.

Though several possible variants have been suggested, only the basic APC and an unarmed police variant have been produced.

Twilight 2000 Notes: This vehicle does not exist in the Twilight 2000 timeline.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
122 hp Engine	$35,738	D, A	1 ton	6.3 tons	3+8	2	Passive IR	Enclosed
136 hp Engine	$35,788	D, A	1 ton	6.3 tons	3+8	2	Passive IR	Enclosed
197 hp Engine	$36,018	D, A	1 ton	6.3 tons	3+8	2	Passive IR	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
122 hp Engine	180/44	42/10	137	52	Stnd	W(3)	HF4 HS3 HR 2
136 hp Engine	197/48	45/11	137	59	Stnd	W(3)	HF4 HS3 HR 2
197 hp Engine	277/57	64/16	137	94	Stnd	W(3)	HF4 HS3 HR 2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
(All)	None	None	KT-7.62 or NSBT or AGS-30 (C)	750x7.62mm or 450x12.7mm or 190x30mm Grenades

Arrowpointe Dragoon-300

Notes: The Dragoon-300 is based on the hull of the LFV-90 Dragoon reconnaissance car and fire support vehicle. Preliminary design work began in the late 1970s, with Arrowpoint and a partner company, Verne, and was based broadly on the Cadillac Gage V-100 and V-150 vehicles. The Dragoon-300 (and the LFV-90) was designed in response to a US Army requirement, but the US Army and Navy acquired only 13 of them between them; however, Turkey, Thailand, and Venezuela use several variants of the Dragoon-300. US Army versions (six of them) were procured in several configurations for use in the 9th ID when it was still a test division -- 9th ID was particularly interested in the MEWS version. Some US police departments also use unarmed versions of the Dragoon-300. Production took place most of the 1980 decade, but has long since stopped, and most spare parts for the Dragoon-300 are actually made in Spain. It should be noted that Arrowpointe was taken over by GDLS in the 1990s. Further development led to the Textron ASV-150 (see below).

The Basic Dragoon-300

The driver and commander are in the front, with the driver on the right and commander beside him. They have a small bullet-resistant windshield in front of them, and vision blocks to the sides. Vision blocks are also present in front of the hatches for use when the vehicle is buttoned up. They have hatches above them and can also reach their stations trough the troop compartment. Their hatches have night vision blocks, which can be removed and replaced with an armored block. The driver has a conventional control set, though he has power brakes. The driver and commander have electrically-powered raising and lowering of their seats.

Troops enter and exit through wide doors on either side, and they have three hatches on the hull deck. The troops sit down the sides of the vehicle and have two firing ports on each side and one in the rear. These are not true firing ports, but merely shuttered openings in the hull. They have folding seats, allowing for more cargo or standing troops to be carried in an emergency. The Dragoon-300 has air conditioning as standard. The Dragoon-300 has a heater, and this heater has a booster for the driver/commander compartment.

The gunner's station and armament can vary greatly, from a simple cupola with a pintle-mounted weapon to a turret with a heavy machinegun. Armament includes a pintle-mounted APC, a turret-mounted heavy machinegun, the LFV-40 and LFV-50 have either a turret similar to that of the AAPV-7A1 or a modified version armed with a heavy and light machinegun, and three which are armed with progressively heavier autocannons. Vision equipment varies by turret, but they all have similar fire control and stabilization features. All are one-man turrets with a hatch on top for the gunner.

The Dragoon-300 borrows the starter, vision blocks, bilge pumps, control knobs and electrical and hydraulic components from the M-113A2 APC; automotively, many components are the same as on the M-809 medium truck, particularly in the suspension. The engine of the Dragoon-300 is a Detroit Diesel 6V-53T 300-horsepower turbocharged diesel engine (again, a modified version of that of the M-113), coupled to an automatic transmission. The Dragoon-300 has a flood-type Halon fire suppression system, but this must be manually triggered. There is one for the troop/front compartment and one for the engine compartment. The suspension is 4x4 and of the off-road-type, and the Dragoon-300 has run-flat tires and central tire pressure regulation. Armor is moderate, but angling of the front and sides helps the situation, giving it protection greater than might be expected for such a vehicle. Armor is acceptable for such a vehicle, though appliqué armor kits are available. All Dragoon-300s and variants have a front-mounted winch with a capacity of 5 tons and 53.34 meters of cable. The Dragoon-300 is amphibious, powered by wheel rotation in the water, and steered by the front wheels as if on land. Bilge pumps must be turned on before entering the water, but other than that, there is no preparation required for amphibious operations (and turning on the bilge pumps only requires the flipping of a switch by the driver). The driver may also fully inflate the tires using the central tire inflation system before amphibious operations to increase flotation, an operation that requires only 15 seconds. Amphibious speed is slow, and steering response is sluggish.

The Dragoon-300 APC-Type Variants

The ACV (Armored Command Vehicle) is a standard sort of armored command vehicle, though interior space is short and therefore equipment and personnel are more restricted. The ACV has a long-range radio with data capability, one more long-range radio, a medium-range radio, and a short-range radio for general use. The ACV has a ruggedized long-range radio and a GPS receiver. It has storage for maps and for office/plotting-type supplies, a map board, and carriage for a folding table, three folding chairs, and a small tent to extend working space (normally carried above the right hull door). On the hull roof near the rear is a 3kW generator. Above the hull is a communications harness which includes the normal radios, and this gives the radios more range than vehicular radio installations normally provide. A radio mast is carried which may be erected during halts. The ACV is armed with a simple cupola with a pintle mount.

The MEWS (Mobile Electronic Warfare System) is packed with electronic warfare equipment, including radio and radar-finding equipment and analysis, MIJI (Meaconing, Intrusion, Jamming, and Interference) capability, as well as visual surveillance capability to allow it to act as a scout vehicle. Radio detection range is 50 km, with radar detection range being 30 km. The MEWS can produce a radio jamming signal over three bands (out of a total is six) of radio at a range of 40 km, or simple interference (such as random static or dropped signals) over 50 km. Intrusion, meaconing, and interception of enemy signals can be made at a range of 30 km. The MEWS has an extendable antenna to facilitate these functions, as well as a small computer related to its functions with digital storage. The MEWS has an enlarged turret armed with an autocannon, which houses enhanced night vision gear, day vision gear, and a set of video cameras. The MEWS has a short-range radio and two long-range radios with data capability to transmit the data from its radio interceptions and visual surveillance activities. Atop the commander's position is a ring mount for a light machinegun. The MEWS carries a 10kW generator on the rear roof to power vehicle systems while the engine is off. This APU has an exhaust and

noise dampening system attached to it, and the entire vehicle uses IR dampening measures.

The ALSV (Armored Logistics Support Vehicle) is sort of an armored truck version of the Dragoon-300. In this version, the rear area of the Dragoon-300 is replaced by a large open-topped area, sometimes covered with canvas bows and a tarp cover. The load bed is designed for standard containers, and has rollers and tie-down and lock-down points for cargo. The sides and rear of the load area drop to help offload cargo. The ALSV has a materiel-handling crane with a capacity of one ton. The armament of the ALSV is shifted to a pintle mount by the commander's hatch, which carries a light machinegun. Appliqué armor for the ALSV is applied only cab/forward area and the floor.

The ASV (Armored Security Vehicle), also known as the Patroller, is the version of the Dragoon APC that is in service with several US law enforcement agencies. The vehicle is a little higher to allow standing, and the weapon mount is replaced with a rotating box that carries the surveillance equipment. The windows are larger, as are the firing ports and vision blocks; the windows are bullet-resistant. The vehicle is equipped with several surveillance devices, including a low-light TV, video camera, VCR or digital storage equipment, computer, shotgun microphone, and night vision gear. Common modifications to the ASV include the installation of a ramming bumper and pole, extra protection for vehicle lights, one or more spotlights, flashing lights and sirens, and PA systems. Gas evacuation systems are also sometimes installed, as are obstacle-clearing blades at the front. These blades are not strong enough to dig emplacements or clear mines, but can provide a bonus of 8Sp if they are hit (25% chance). ASVs cannot use appliqué armor.

The Dragoon 2

The Dragoon 2 is an improved version of the Dragoon-300, with improvements from the minor to the major. Improvements included better tires and a beefier suspension, improved headlights and other exterior lighting, improved brush guards, upgraded heating and air conditioning (which requires less power consumption), a better instrument panel layout for the driver, an improved electrical system, some IR dampening features, a feature to help empty the interior of gas (not the same as full overpressure), and improved frontal and belly armor. The Dragoon 2 was introduced in 1997, but no sales have been made; so far, only the basic APC version has been shown in full performance versions.

Twilight 2000 Notes: The Dragoon 2 in the Twilight 2000 timeline has been acquired primarily by some security concerns, such as those patrolling nuclear power plants, as USAF security vehicles for ICBM farms, and by the US Navy for patrolling docks (particularly those berthing nuclear subs and aircraft carriers). The US 9th ID is the only US unit to have the Dragoon in any large numbers, with them being taken into regular service in that unit.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Basic APC	$42,615	D, A	3.4 tons	10.8 tons	3+9	6	Passive IR (D, C)	Enclosed
Basic APC (w/Appliqué)	$43,794	D, A	3.3 tons	11.2 tons	3+9	6	Passive IR (D, C)	Enclosed
APC (MG Turret)	$53,615	D, A	2.9 tons	12.8 tons	3+9	8	Passive IR (D, G, C)	Enclosed
APC (MG Turret w/Appliqué)	$54,904	D, A	2.8 tons	13.3 tons	3+9	8	Passive IR (D, G, C)	Enclosed
LFV-40	$165,209	D, A	2.6 tons	13.8 tons	3+7	10	Passive IR (D, G, C)	Enclosed
LFV-40 (w/Appliqué)	$166,498	D, A	2.5 tons	14.3 tons	3+7	10	Passive IR (D, G, C)	Enclosed
LFV-50	$159,288	D, A	2.6 tons	13.8 tons	3+7	10	Passive IR (D, G, C)	Enclosed
LFV-50 (w/Appliqué)	$160,577	D, A	2.5 tons	14.3 tons	3+7	10	Passive IR (D, G, C)	Enclosed
MGTS-25	$169,956	D, A	2.5 tons	14.2 tons	3+5	10	Passive IR (D, G, C), Thermal Imaging (G)	Enclosed
MGTS-25 w/Appliqué	$171,245	D, A	2.4 tons	14.7 tons	3+5	10	Passive IR (D, G, C), Thermal Imaging (G)	Enclosed
MGTS-30	$173,030	D, A	2.5 tons	14.3 tons	3+5	10	Passive IR (D, G, C), Thermal Imaging (G)	Enclosed
MGTS-30 w/Appliqué	$174,319	D, A	2.4 tons	14.8 tons	3+5	10	Passive IR (D, G, C), Thermal Imaging (G)	Enclosed
MGTS-35	$176,095	D, A	2.5 tons	14.3 tons	3+5	10	Passive IR (D, G, C), Thermal Imaging (G)	Enclosed
MGTS-35 w/Appliqué	$177,384	D, A	2.4 tons	14.8 tons	3+5	10	Passive IR (D, G, C), Thermal Imaging (G)	Enclosed
ACV	$119,101	D, A	1.6	11.1	3+4	8	Passive IR (D, C)	Enclosed

			tons	tons				
ACV	$120,390	D, A	1.5 tons	11.6 tons	3+4	8	Passive IR (D, C)	Enclosed
w/Appliqué								
MEWS	$436,942	D, A	750 kg	14.6 tons	4	12	Passive IR (D, G, C), Image Intensification (G, C), Thermal Imaging (G)	Enclosed
MEWS w/Appliqué	$438,231	D, A	650 kg	15.1 tons	4	12	Passive IR (D, G, C), Image Intensification (G, C), Thermal Imaging (G)	Enclosed
ASLV	$32,898	D, A	5.2 tons	9 tons	3	5	Passive IR (D, C)	Enclosed
ASLV w/Appliqué	$33,543	D, A	5.1 tons	9.3 tons	3	5	Passive IR (D, C)	Enclosed
ASV Patroller	$130,104	D, A	2.8 tons	13 tons	3+5	10	Passive IR (D, Turret), Image Intensification x2 (Turret)	Enclosed
Dragoon 2	$34,098	D, A	3.1 tons	12.1 tons	3+9	6	Passive IR (D, C)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Basic APC	211/106	49/25/3	350	158	Stnd	W(4)	HF8 HS4 HF4
Basic APC (w/Appliqué)	192/102	47/24/2	350	164	Stnd	W(4)	HF10Sp HS4 HF4*
APC (MG Turret)	177/89	41/21/2	350	188	CiH	W(4)	TF2 TS2 TR2 HF8 HS4 HR4
APC (MG Turret w/Appliqué)	171/86	40/20/2	350	194	CiH	W(4)	TF4 TS3 TR2 HF10Sp HS4 HF4*
LFV-40/50	165/83	38/20/2	350	202	Trtd	W(4)	TF6 TS6 TR5 HF8 HS4 HR4
LFV-40/50 (w/Appliqué)	161/81	37/19/2	350	209	Trtd	W(4)	TF8 TS7 TR5 HF10Sp HS4 HF4*
MGTS-25	161/81	37/19/2	350	207	Trtd	W(4)	TF4 TS4 TR3 HF8 HS4 HR4
MGTS-25 w/Appliqué	154/77	36/18/2	350	215	Trtd	W(4)	TF6 TS5 TR3 HF10Sp HS4 HF4*
MGTS-30/35	161/81	37/19/2	350	209	Trtd	W(4)	TF4 TS4 TR3 HF8 HS4 HR4
MGTS-30/35 w/Appliqué	154/77	36/18/2	350	216	Trtd	W(4)	TF6 TS5 TR3 HF10Sp HS4 HF4*
ACV	207/104	48/25/3	350	163	Stnd	W(4)	HF8 HS4 HF4
ACV w/Appliqué	196/99	46/23/2	350	169	Stnd	W(4)	HF10Sp HS4 HF4*
MEWS	156/78	36/19/2	350	213	Trtd	W(4)	TF4 TS4 TR3 HF8 HS4 HR4
MEWS w/Appliqué	150/75	35/18/2	350	221	Trtd	W(4)	TF6 TS5 TR3 HF10Sp HS4 HF4*
ASLV	253/127	59/30/3	350	131	Stnd	W(4)	HF8 HS4 HF4**
ASLV w/Appliqué	245/123	57/29/3	350	136	Stnd	W(4)	HF10Sp HS4 HF4***
ASV Patroller	175/88	41/21/2	350	190	Stnd	W(4)	HF8 HS4 HF4
Dragoon 2	188/94	44/22/2	350	177	Stnd	W(4)	HF10Sp HS5 HR5*

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Basic APC/ACV/Dragoon 2	None	None	M-2HB	1150x.50
APC (MG Turret)	+1	Basic	M-2HB	1150x.50
LFV-40	+2	Fair	Mk 19 AGL, M-2HB	200x40mm Grenades, 400x.50
LFV-50	+2	Fair	M-2HB, MAG	650x.50, 1300x7.62mm
MGTS-25	+2	Fair	25mm M-242 Chaingun, MAG	330x25mm, 2600x7.62mm
MGTS-30	+2	Fair	30mm Mk 44 Bushmaster II, MAG	275x30mm, 2600x7.62mm
MGTS-35	+2	Fair	35mm Bushmaster III, MAG	235x35mm, 2600x7.62mm
MEWS	+2	Fair	25mm M-242 Chaingun, MAG (C)	150x25mm, 1500x7.62mm
ALSV	None	None	MAG (C)	1500x7.62mm

*Floor AV is 4Sp.

**The AV presented here is for the cab alone. The rest of the vehicle is open and has no armor value, except for the sides when raised. These extend about one-third the way above the load bed and have an AV of 1.

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Cadillac-Gage V-100/V-150/LAV-150

Notes: The history of what became the LAV-150 goes all the way back to 1963, when the prototype of its ancestor, the V-100 Commando, first appeared. Service use of the V-100 began in 1964, with their being type-standardized as the XM-706 and entering use with the US Army Military Police and the USAF Security Police (then called the Air Police), for the patrol of flight lines and rear areas. Deployment began in 1965 to Vietnam with the Air Force only; shortly thereafter, the ARVN received V-100s for police and patrol work. At first, the US Army did not deploy any M-706s to Vietnam, but they took several XM-706s as loaners from the ARVN in 1967 and then began deploying their own in 1968, after which the vehicle received the M-706 designation. US Army M-706s received an ignoble end after Vietnam; though some very small numbers were used into the late 1970s, most ended up as targets on gunnery ranges. USAF M-706s remained in use until the mid-1980s, but after that were most were sold for scrap (though some made it into US police departments, where they are still used). Some 22 countries were customers of the V-100, and in about half these countries, they are still in use as of 2011; some other countries are not using them operationally, but keep them in maintained storage, due to their sheer versatility. V-100s are often kept running through cannibalization of V-100s that are no longer running. The later V-150 was essentially a hybrid of the V-200 and V-100 (the V-200 came before the V-150 despite the designation). They use many of the automotive components of 5-ton trucks used by the US Army, and are enlarged over the V-100. Most automotive and electrical components of the V-150 were upgraded, the engine was upgraded, armor was upgraded, and the vehicle in general improved. The V-150 was later renamed by Textron the LAV-150. It should be noted that in the late 1990s, Cadillac Gage became a subsidiary of Textron. Further development of the LAV-150 begat the ASV-150 (below).

The V-100

The Terra-Space of Cadillac-Gage began the first design work on what became the V-100 in the early 1960s. After several abortive designs, they came up with the definitive V-100; their first prototype was built in 1963, and limited production for the USAF and US Army began in 1964. In the late 1960s and through most of the 1970s, foreign orders dominated their production of the V-100.

The driver of the V-100 is on the front right, and commander beside him on the left. Originally, the driver and commander were to have of the same type as on the M-113, but they were judged too vulnerable and were removed on production versions, replaced with special vision blocks which offered more protection. In the upper glacis plate on the driver's and commander's side are further vision blocks. The driver has essentially conventional controls in his compartment, as well as controls for the bilge pump. Above the driver's and commander's position are two hatches; the commander and driver may raise their seats to see out of the hatches. The commander's position has no armament; he primarily reads maps and handles navigation, as he does not have the best view of the surrounding situation.

The gunner's position was made into a plethora of turrets, non-turrets, and armament, fire control, and vision choices. The gunner could man a conventional pintle-mounted weapon (often surrounded with AV2 gun shields), or have a variety or turrets with a variety of weapons. An attempt to show the weapon choices will be shown in the stats below, but that list is by no means exhaustive; many different weapon installations were tried, often on an ad-hoc basis, in Vietnam, and more were made by other countries using the V-100 after the Vietnam War.

The crew sat down the sides of the vehicle. They had four firing ports in each side (these were merely shuttered holed in the sides of the vehicle, and not true firing ports). The troops enter and exit through a side hatch on both sides of the vehicle; the commander and gunner could also get to their positions through the troop compartment. A long hatch was found on the hull roof on the right side near the rear beside the engine. The side hatches are actually clamshell doors, with a step in the lower door to help exit. There was also a small door in the rear of the vehicle on the right; this entry was a bit narrow, and was a two-piece door like those on the sides, but only half the width. Six smoke grenade launchers are found on each side of the vehicle.

Power for the V-100 was the Chrysler M-75 gasoline 191-horsepower engine, a derivative of the same engine that powered the original M-113. (A diesel engine would not be fitted until the advent of the V-150.) The engine was coupled to a manual transmission. The original first gear proved to be geared to low and damaged the transmission, so a fix had to be made to the transmission and first gear restricted to four-wheel drive operations. The axles were taken from the M-44 2.5-ton truck. The tires were specially designed by Cadillac Gage and were run-flat and designed to run even in heavy mud without bogging down. The tires were also puncture resistant. The front had a 10-ton-capacity winch in it, and the vehicle carried a 5-ton snatch block to increase the winching power. The vehicle is fully amphibious, requiring only that bilge pumps be turned on.

V-150/LAV-150

The V-150 (later called the LAV-150 after the Textron takeover) was essentially an all-around improvement of the V-100, ranging from electrical and automotive components to armor and suspension and engine. Chief amongst the improvements are the 202-horsepower Cummins diesel, necessary to move the heavier weight; however, this also reduces fuel consumption. Interior appointments are largely the same, and externally, the vehicle is similar to the V-100, though LAV-150s almost always have turrets, and there is a more extensive array of turrets available. Fire control and vision equipment are likewise improved. More interior room is given over to equipment and ammunition, with a corresponding decrease in troop capacity. The LAV-150 is available in many more variants; APC-type variants include a command version. The command version is sort of a "command-lite" version, carrying one long-range data-capable radio, one medium-range radio, and one short-range radio. The command version has space for map

storage and office/plotting-type supplies, CEOIs and codebooks, and a map board, as well as a ruggedized laptop computer.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
V-100 Basic APC	$54,321	D, A	1.2 tons	10 tons	4+8	6	Headlights	Open
V-100 (Twin 7.62mm Turret)	$29,695	D, A	1.2 tons	10.2 tons	3+9	6	Headlights	Enclosed
V-100 (.50/7.62 Turret)	$37,519	D, A	1.1 tons	10.3 tons	3+9	6	Headlights	Enclosed
V-100 (20mm Turret)	$46,702	D, A	1.1 tons	10.3 tons	3+8	6	Headlights	Enclosed
V-100 (GL Turret)	$39,817	D, A	1.1 tons	10.3 tons	3+9	6	Headlights	Enclosed
V-100 (Minigun Turret)	$40,826	D, A	1.1 tons	10.4 tons	3+7	6	Headlights	Enclosed
LAV-150 Basic APC	$63,511	D, A	1 ton	10.9 tons	4+6	6	Passive IR (D)	Enclosed
LAV-150 (Twin 7.62mm Turret)	$54,359	D, A	1 ton	11.1 tons	3+7	6	Passive IR (D, G)	Enclosed
LAV-150 (.50/7.62mm Turret)	$165,363	D, A	925 kg	11.2 tons	3+7	6	Passive IR (D, G)	Enclosed
LAV-150 (20mm Turret)	$170,387	D, A	925 kg	11.2 tons	3+7	6	Passive IR (D, G)	Enclosed
LAV-150 (GL Turret)	$163,142	D, A	925 kg	11.2 tons	3+7	6	Passive IR (D, G)	Enclosed
LAV-150 (25mm Turret)	$173,471	D, A	875 kg	11.4 tons	3+6	6	Passive IR (D, G)	Enclosed
LAV-150 (30mm Turret)	$176,411	D, A	875 kg	11.4 tons	3+6	6	Passive IR (D, G)	Enclosed
LAV-150 (Command)	$110,179	D, A	400 kg	11.3 tons	3+3	7	Passive IR (D)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
V-100 Basic APC	157/78	36/18/4	303	98	Stnd	W(3)	HF6 HS3 HR3
V-100 Twin 7.62mm Turret	154/78	36/18/4	303	100	Trtd	W(3)	TF3 TS3 TR3 HF6 HS3 HR3
V-100.50/7.62 Turret/20mm Turret/GL Turret	153/77	36/18/4	303	101	Trtd	W(3)	TF3 TS3 TR3 HF6 HS3 HR3
V-100 Minigun Turret	151/75	35/17/4	303	102	Trtd	W(3)	TF3 TS3 TR3 HF5 HS3 HR3
LAV-150 Basic APC	154/78	36/18/4	303	104	Stnd	W(3)	HF7 HS4 HR3
LAV-150 (Twin 7.62mm Turret)	151/76	35/18/4	303	106	Trtd	W(3)	TF5 TS3 TR3 HF7 HS4 HR3
LAV-150 .50/7.62mm Turret/20mm Turret/GL Turret	149/76	35/17/4	303	107	Trtd	W(3)	TF5 TS3 TR3 HF7 HS4 HR3
LAV-150 25mm Turret/30mm Turret	151/75	35/17/4	303	109	Trtd	W(3)	TF5 TS3 TR3 HF7 HS4 HR3
LAV-150 (Command)	151/75	35/17/4	303	108	Stnd	W(3)	HF7 HS4 HR3

Vehicle	Fire Control	Stabilization	Armament	Ammunition
V-100 Basic APC	None	None	2xM-1919A4 or M-60 or MAG (Right, Left), M-2HB (Front), Mk 19 (Rear)	2000x7.62mm or .30-06, 600x.50, 200x40mm
V-100 (Twin 7.62mm Turret)	+1	None	2xMAG or M-60 or M-1919A4	2000x7.62mm or .30-06
V-100(.50/7.62 Turret)	+1	None	M-2HB, MAG or M60 or M-1919A4	540x.50, 3200x7.62mm or .30-06
V-100 (20mm Turret)	+1	None	20mm Oerlikon KAA, MAG or M-60 or M-1919A4, MAG or M-60 of M-1919A4 (C)	400x20mm, 3200x7.62mm or .30-06
V-100 (GL Turret)	+1	None	Mk19, M-2HB	166x40mm Grenades, 540x.50
V-100 (Minigun	+1	Basic	M-134 Minigun, MAG or M-60	4500x7.62mm or 3500x7.62mm

Turret)			or M-1919A4 (C)	and 1000x.30-06
LAV-150 Basic APC	None	None	2xMAG (Right, Left), M-2HB (Front), Mk 19 (Rear)	2500x7.62mm, 750x.50, 250x40mm
LAV-150 (Twin 7.62mm Turret)	+1	Basic	2xMAG	3000x7.62mm
LAV-150 (.50/7.62mm Turret)	+2	Fair	M-2HB, MAG	660x.50, 5000x7.62mm
LAV-150 (20mm Turret)	+2	Fair	20mm Oerlikon KAA, MAG	500x20mm, 5000x7.62mm
LAV-150 (GL Turret)	+2	Fair	Mk19, M-2HB	210x40mm Grenades, 675x.50
LAV-150 (25mm Turret)	+2	Fair	25mm M-242 ChainGun, MAG	400x25mm, 5000x7.62mm
LAV-150 (30mm Turret)	+2	Fair	30mm Mk 44 Bushmaster II, MAG	330x30mm, 5000x7.62mm
LAV-150 (Command)	None	None	M-2HB (C)	750x.50

Cadillac Gage V-300/LAV-300

Notes: Though thought by some to merely be a larger version of the LAV-150, the LAV-300 (originally the V-300 before the Cadillac Gage merger with Textron) is a separate vehicle on a very different chassis with different automotive components (though some turrets are common to the LAV-300 and LAV-150). First prototypes appeared in 1979, and production occurred as orders came in. The LAV-300 is offered in 15 configurations (not all of which will be featured on this page), and is currently used in various configurations by Kuwait (the largest user), Panama, the Philippines, and its newest user, Iraq. Some US police departments are also using (unarmed) LAV-300s. The LAV-300 hits sort of a sweet spot between cost and capabilities, and its flexibility is also appreciated by its users. In some configurations, the LAV-300 can be mistaken for a LAV-25, though they have nothing in common.

The LAV-300 has a driver's position on the front right, with a hatch above him and three vision blocks to the front and one to each side. The center front vision block can be replaced with a night vision block. On the basic APC, the commander's position is to the rear of the driver's position and in the center of the vehicle, and has a simple cupola with a pintle mount. However, it is much more common for the LAV-300 to have a turret of some sort, either one-man or two-man, with several weapon options available. These can range from a light turret with two light machineguns to a 40mm autocannon (which has been trialed, but not sold). The Filipinos use a unique turret, a one-man model with a CIS 40 AGL and a MAG. On either side of the hull in the troop compartment are three firing ports, and there is one more in each rear door. In the sides of the vehicle, at about the center of the vehicle on the right side, is a hatch in the sides of the hull, but it looks like a tight squeeze. One of the firing ports on the right side is in this hatch, and the hatch can conceivably be opened to allow the firing of heavier weapons like grenade launchers. At the rear of the hull on the roof are a pair of hatches. The troops sit down the sides of the vehicle, except for one seat behind the driver facing to the rear. On the roof near the rear on each side, or on each side of the turret, are banks or clusters of four smoke grenade launchers.

The LAV-300 is powered by a 270-horsepower Cummins VT-504 turbocharged diesel engine, coupled to an automatic transmission. The suspension is 6x6 and of an off-road type, with puncture-resistant tires (though they are not run-flat). Ground clearance is decent and the floor armor is strengthened as a measure against mines. The LAV-300 can have added appliqué armor. The LAV-300 is amphibious after turning on bilge pumps and erecting a trim vane (5 minutes), but speed is quite slow.

The LAV-300 Mk II is a new version of the LAV-300, introduced in 1999; it is the version which Iraq uses. The primary improvement is in the armor – the armor is more advanced and offers better protection without seriously increasing the vehicle weight. Like the LAV-300, the LAV-300 Mk II can have added appliqué armor. The engine is slightly stronger at 278 horsepower, but the primary engine improvement is in serviceability and torque. The entire power pack, including transmission, has received this serviceability improvement. Fuel tanks are larger, with the single fuel tanks of the LAV-300 replaced with two fuel tanks. The twin doors in the rear have been replaced with a ramp. Optional waterjets for amphibious operation can be fitted, tripling water speed. The suspension has been beefed up, and load carrying capability is greater. Vision blocks for the driver (and commander, if a conventional cupola is used) are larger. The LAV-300 has individual seats, but the Mk II has bench seats, which allow for quicker exits and entrances. The tires have been replaced by run-flat tires which have central tire pressure regulation and are puncture resistant. Air conditioning is an option.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Basic APC	$35,765	D, A	1.3 tons	15 tons	2+10	8	Passive IR (D)	Enclosed
Basic APC w/Appliqué	$38,566	D, A	1.2 tons	15.5 tons	2+10	8	Passive IR (D)	Enclosed
Twin 7.62mm Turret	$41,890	D, A	1.3 tons	15.2 tons	2+10	8	Passive IR (D)	Enclosed
Twin 7.62mm Turret w/Appliqué	$45,391	D, A	1.2 tons	15.9 tons	2+10	8	Passive IR (D)	Enclosed
.50/7.62mm Turret	$153,579	D, A	1.2 tons	15.3 tons	2+10	8	Passive IR (D,	Enclosed

							G)	
.50/7.62mm Turret w/Appliqué	$157,080	D, A	1 ton	16 tons	2+10	8	Passive IR (D, G)	Enclosed
GL Turret 1	$152,182	D, A	1.2 tons	15.3 tons	2+10	8	Passive IR (D, G)	Enclosed
GL Turret 1 w/Appliqué	$155,683	D, A	1 ton	16 tons	2+10	8	Passive IR (D, G)	Enclosed
GL Turret 2	$149,136	D, A	1.2 tons	15.3 tons	2+10	8	Passive IR (D, G)	Enclosed
GL Turret 2 w/Appliqué	$152,637	D, A	1 ton	16 tons	2+10	8	Passive IR (D, G)	Enclosed
One-Man 20mm Turret	$151,668	D, A	1.2 tons	15.3 tons	2+10	8	Passive IR (D, G)	Enclosed
One-Man 20mm Turret w/Appliqué	$155,169	D, A	1 ton	16 tons	2+10	8	Passive IR (D, G)	Enclosed
Two-Man 20mm Turret	$183,300	D, A	1.2 tons	15.5 tons	3+9	8	Passive IR (D, G), Image Intensification (G)	Enclosed
Two-Man 20mm Turret w/Appliqué	$186,801	D, A	1 ton	16.2 tons	3+9	8	Passive IR (D, G), Image Intensification	Enclosed
25mm Turret	$186,385	D, A	1.1 tons	15.6 tons	3+9	8	Passive IR (D, G), Image Intensification	Enclosed
25mm Turret w/Appliqué	$189,886	D, A	1 ton	16.3 tons	3+9	8	Passive IR (D, G), Image Intensification	Enclosed
30mm Turret	$189,458	D, A	1.1 tons	15.6 tons	3+9	8	Passive IR (D, G), Image Intensification	Enclosed
30mm Turret w/Appliqué	$192,959	D, A	1 ton	16.3 tons	3+9	8	Passive IR (D, G), Image Intensification	Enclosed
40mm Turret	$195,615	D, A	1.1 tons	15.7 tons	3+9	8	Passive IR (D, G), Image Intensification	Enclosed
40mm Turret w/Appliqué	$199,116	D, A	975 kg	16.4 tons	3+9	8	Passive IR (D, G), Image Intensification	Enclosed
Mk II Basic APC	$30,527	D, A	2 tons	16.3 tons	2+10	8	Passive IR (D)	Enclosed
Mk II Basic APC w/Appliqué	$34,728	D, A	1.8 tons	17.1 tons	2+10	8	Passive IR (D)	Enclosed
Mk II Twin 7.62mm Turret	$36,254	D, A	2 tons	16.5 tons	2+10	8	Passive IR (D)	Enclosed
Mk II Twin 7.62mm Turret w/Appliqué	$41,506	D, A	1.8 tons	17.5 tons	2+10	8	Passive IR (D)	Enclosed
Mk II .50/7.62mm Turret	$62,443	D, A	1.9 tons	16.6 tons	2+10	8	Passive IR (D, G)	Enclosed
Mk II .50/7.62mm Turret w/Appliqué	$67,695	D, A	1.8 tons	17.6 tons	2+10	8	Passive IR (D, G)	Enclosed
Mk II GL Turret 1	$61,045	D, A	1.9 tons	16.6 tons	2+10	8	Passive IR (D, G)	Enclosed
Mk II GL Turret 1 w/Appliqué	$66,297	D, A	1.8 tons	17.6 tons	2+10	8	Passive IR (D, G)	Enclosed
Mk II GL Turret 2	$57,999	D, A	1.9 tons	16.6 tons	2+10	8	Passive IR (D, G)	Enclosed
Mk II GL Turret 2 w/Appliqué	$63,251	D, A	1.8 tons	17.6 tons	2+10	8	Passive IR (D, G)	Enclosed

Mk II One-Man 20mm Turret	$60,532	D, A	1.9 tons	16.6 tons	2+10	8	Passive IR (D, G)	Enclosed
Mk II One-Man 20mm Turret w/Appliqué	$65,784	D, A	1.8 tons	17.6 tons	2+10	8	Passive IR (D, G)	Enclosed
Mk II Two-Man 20mm Turret	$74,664	D, A	1.9 tons	16.8 tons	3+9	8	Passive IR (D, G), Image Intensification (G)	Enclosed
Mk II Two-Man 20mm Turret w/Appliqué	$79,916	D, A	1.8 tons	17.8 tons	3+9	8	Passive IR (D, G), Image Intensification	Enclosed
Mk II 25mm Turret	$77,749	D, A	1.8 tons	16.9 tons	3+9	8	Passive IR (D, G), Image Intensification (G)	Enclosed
Mk II 25mm Turret w/Appliqué	$83,001	D, A	1.7 tons	17.9 tons	3+9	8	Passive IR (D, G), Image Intensification	Enclosed
Mk II 30mm Turret	$80,822	D, A	1.8 tons	16.9 tons	3+9	8	Passive IR (D, G), Image Intensification (G)	Enclosed
Mk II 30mm Turret w/Appliqué	$86,074	D, A	1.7 tons	17.9 tons	3+9	8	Passive IR (D, G), Image Intensification	Enclosed
Mk II 40mm Turret	$86,979	D, A	1.8 tons	17 tons	3+9	8	Passive IR (D, G), Image Intensification	Enclosed
Mk II 40mm Turret w/Appliqué	$92,231	D, A	1.7 tons	18 tons	3+9	8	Passive IR (D, G), Image Intensification	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Basic APC	152/77	36/18/1	200	141	Stnd	W(4)	HF8 HS5 HR4*
Basic APC w/Appliqué	146/74	35/17/1	200	148	Stnd	W(4)	HF10Sp HS6Sp HR4**
Twin 7.62mm Turret	150/76	36/18/1	200	142	Trtd	W(4)	TF5 TS3 TR3 HF8 HS5 HR4*
Twin 7.62mm Turret w/Appliqué	143/73	34/17/1	200	150	Trtd	W(4)	TF6Sp TS4 TR3 HF10Sp HS6Sp HR4**
.50/7.62mm Turret/GL Turret 1/2 & One-Man 20mm	149/75	35/18/1	200	144	Trtd	W(4)	TF5 TS3 TR3 HF8 HS5 HR4
.50/7.62mm Turret w/Appliqué/GL Turret 1/2 w/Appliqué & One-Man 20mm w/Appliqué	143/73	34/17/1	200	151	Trtd	W(4)	TF6Sp TS4 TR3 HF10Sp HS6Sp HR4**
Two-Man 20mm Turret	147/75	35/17/1	200	145	Trtd	W(4)	TF4 TS4 TR4 HF8 HS5 HR4*
Two-Man 20mm Turret w/Appliqué	141/72	33/17/1	200	152	Trtd	W(4)	TF5Sp TS5 TR4 HF10Sp HS6Sp HR4**
25mm Turret/30mm Turret	145/74	35/17/1	200	147	Trtd	W(4)	TF4 TS4 TR4 HF8 HS5 HR4*
25mm Turret w/Appliqué/30mm Turret w/Appliqué	140/71	33/17/1	200	154	Trtd	W(4)	TF5Sp TS5 TR4 HF10Sp HS6Sp HR4**
40mm Turret	146/74	35/17/1	200	148	Trtd	W(4)	TF4 TS4 TR4 HF8 HS5 HR4*
40mm Turret w/Appliqué	138/70	33/16/1	200	154	Trtd	W(4)	TF5Sp TS5 TR4 HF10Sp HS6Sp HR4**
Mk II Basic APC	145/74	34/17/3	435	146	Stnd	W(5)	HF10Sp HS6Sp HR5***

Mk II Basic APC w/Appliqué	138/70	33/16/3	435	153	Stnd	W(5)	HF13Sp HS7Sp HR5****
Mk II Twin 7.62mm Turret	144/73	34/17/3	435	147	Trtd	W(5)	TF7Sp TS4Sp TR3 HF10Sp HS6Sp HR5***
Mk II Twin 7.62mm Turret w/Appliqué	135/69	32/16/3	435	156	Trtd	W(5)	TF8Sp TS5Sp TR3 HF13Sp HS7Sp HR5****
Mk II .50/7.62mm Turret/GL Turret 1/2 & One-Man 20mm Turret	142/73	33/16/3	435	149	Trtd	W(5)	TF7Sp TS4Sp TR3 HF10Sp HS6Sp HR5***
Mk II .50/7.62mm Turret w/Appliqué/GL Turret 1/2 & One-Man 20mm Turret	135/69	32/16/3	435	158	Trtd	W(5)	TF8Sp TS5Sp TR3 HF13Sp HS7Sp HR5****
Mk II Two-Man 20mm Turret	141/72	33/16/3	435	150	Trtd	W(5)	TF5Sp TS5Sp TR4 HF10Sp HS6Sp HR5***
Mk II Two-Man 20mm Turret w/Appliqué	132/67	31/15/3	435	159	Trtd	W(5)	TF6Sp TS6Sp TR4 HF13Sp HS7Sp HR5****
Mk II 25mm Turret/30mm Turret	139/71	33/16/3	435	152	Trtd	W(5)	TF5Sp TS5Sp TR4 HF10Sp HS6Sp HR5***
Mk II 25mm Turret w/Appliqué/30mm Turret w/Appliqué	132/67	31/15/3	435	161	Trtd	W(5)	TF6Sp TS6Sp TR4 HF13Sp HS7Sp HR5****
Mk II 40mm Turret	139/67	33/16/3	435	152	Trtd	W(5)	TF5Sp TS5Sp TR4 HF10Sp HS6Sp HR5***
Mk II 40mm Turret w/Appliqué	132/67	31/15/3	435	161	Trtd	W(5)	TF6Sp TS6Sp TR4 HF13Sp HS7Sp HR5****

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Basic APC	None	None	MAG or M-2HB (C)	3000x7.62mm or 900x.50
Twin 7.62mm Turret	+1	Basic	2xMAG	3000x7.62mm
.50/7.62mm Turret	+2	Fair	M-2HB, MAG	800x.50, 4800x7.62mm
GL Turret 1	+2	Fair	Mk19, M-2HB	315x40mm Grenades, 1000x.50
GL Turret 2	+2	Fair	CIS 40 AGL, MAG	315x40mm Grenades, 1700x7.62mm
One-Man 20mm Turret	+2	Fair	20mm KAA Autocannon, MAG	730x20mm, 1700x7.62mm
Two-Man 20mm Turret	+2	Fair	20mm KAA Autocannon, MAG, MAG (C)	900x20mm, 3200x7.62mm
25mm Turret	+2	Fair	25mm M-242 Chaingun, MAG, MAG (C)	720x25mm, 3200x7.62mm
30mm Turret	+2	Fair	30mm Mk 44 Bushmaster II, MAG (C)	600x30mm, 3200x7.62mm
40mm Turret	+2	Fair	40mm Bofors L/70, MAG, MAG (C)	450x40mm, 3200x7.62mm

*Floor AV is 4.
**Roof AV is 3; Floor AV is 5Sp.
***Roof AV is 4; Floor AV is 5Sp.
****Roof AV is 4; Floor AV is 6Sp.

Cadillac Gage Ranger

Notes: The Ranger was designed in response to a US Air force requirement for a simple armored vehicle to patrol airbases and air force bases as well as missile farms. Cadillac Gage's entry was chosen, and called the Peacekeeper by the US Air Force. The US Navy later took up the Ranger for various patrol duties. By 1994, some 708 Rangers had been built and sold to the US and other countries, but by 1994, the Ranger was no longer being marketed. The only combat use of the Ranger was in Bosnia by the IFOR. Currently, the only country still using them is Indonesia, though police departments worldwide also have them on their rolls.

The Ranger is basically a Chrysler truck chassis fitted with an armored body. As an armored truck, the Ranger has a cab with the driver and commander in it. The driver and commander have a large bullet-resistant windshield in front of them, doors in with side of the cab that can be opened and locked back against the sides of the vehicle. There is a firing port between the two front windshields.

Two doors are in the rear of the vehicle, and these also have firing ports. The troop compartment is at the rear with a gunner's position atop the troop compartment at the front. Each rear door has a firing port, and there is a firing port in each side of the vehicle. These firing ports mentioned are shuttered openings in the hull instead of true firing ports. The troops sit down the sides of the vehicle; available space is sometimes taken up by accommodations for prisoners, dogs, etc. There is access at the front of the troop compartment to the roof hatch, which takes the form of a manually-operated cupola with a pintle-mounted weapon, usually with an AV2 gun shield to the front.

The Ranger is powered by a 180-horsepower gasoline engine originally, coupled to an automatic transmission. This was later replaced in most Rangers by a diesel engine of the horsepower. Armor is angled on all sides, including the front which has an angled windshield and grill. The suspension is 4x4, but suited more for road use than as an off-road vehicle. Appliqué armor can be applied, though limits of engine power limit the amount of appliqué armor. Air conditioning is standard, and there is also s system to flush the interior air of contaminants (not an overpressure system). Options include a ramming bumper, flashing lights, sirens, a PA system, a winch, a spotlight, and grenade launching clusters.

Variants include a command vehicle with one long-range radio (data capable), one medium-range radio, and one short-range radio, along with a small map board, map stowage, and plotting/office-type supplies. The data-capable radio was for a radio teletype machine, and later a ruggedized laptop computer. An armored ambulance version was designed, with room for two stretcher cases and three seated patients, plus a medic in the rear. It has the equivalent of one doctor's medical bag, 10 personal medical kits, a selection of splints, bandages, cravats, and burn treatment kits, and other minor medical supplies. A light reconnaissance version was designed; this differed from the standard Ranger in that it had an additional long-range radio, and a small turret on the roof with a pair of machineguns and enhanced vision gear.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Ranger APC	$22,407	G, A or D, A	950 kg	4.5 tons	3+6	2	Headlights	Enclosed
Ranger Command	$14,491	G, A or D, A	475 kg	4.6 tons	3+3	3	Headlights	Enclosed
Ranger Ambulance	$24,088	G, A or D, A	475 kg	4.6 tons	*	3	Headlights	Enclosed
Ranger Recon	$56,730	G, A or D, A	850 kg	4.8 tons	3+4	3	Passive IR (G), Image Intensification (G)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Ranger APC	357/87	83/20	112	92 or 61	Stnd	W(3)	HF3 HS3 HR3
Ranger Command/Ambulance	350/85	81/20	112	94 or 62	Stnd	W(3)	HF3 HS3 HR3
Ranger Recon	336/82	78/19	112	98 or 65	CiH	W(3)	TF2 TS2 TR2 HF3 HS3 HR3

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Ranger APC	None	None	M-2HB (C) or MAG (C) or 2xMAG (C)	2100x.50 or 3500x7.62mm
Ranger Command	None	None	MAG (C)	1750x7.62mm
Ranger Recon	+1	Basic	M-2HB, MAG	2100x.50, 3500x7.62mm

*See Notes for Crew and passenger capacity.

Force Protection Cougar

Notes: The Cougar is the first MRAP designed and built in the US, and is used by US forces in Afghanistan, as well as the British, Canada, Croatia (who use four donated by the US for duties in Afghanistan), Poland (40 on loan from the US for their troops in Afghanistan), Iraq, Yemen, and three by Hungary with possible further orders. British versions differ in some details, mostly in the integration of Battlefield Management electronics and appliqué armor. Force Protection is building the Cougar as quickly as possible in response to heavy orders from various countries. In the US Military, the Cougar was at first a Marine Corps vehicle, but the Air Force, Navy, and Army later ordered some of their own. Production as of 2011 has reached at least 4000 vehicles. Cougars have literally had their entire suspensions blown out from beneath them, with no serious injury to the occupants – in 2004, the US Marines reported that in 300 IED and mine attacks on Cougars, no Marines had died or been seriously wounded.

The Cougar

The Cougar is very truck-like in design, though it is clearly not a truck and is not based on any truck manufactured so far. The 4x4 version is the Cougar H, and the 6x6 version the Cougar HE. The driver sits on the right side of the cab, and the commander on the left; they have a bullet-resistant double windshield to their front and their doors in the cab have large double windows (split roughly down the middle). The troops inside sit down the sides of the vehicle, the sides of the vehicle have three large rectangular windows on the 6x6 model or one large window on the 4x4 model, each with a firing port. The rear of the vehicle has a double door with two

rectangular windows, each with a firing port. Another double hatch is found on the left rear of the vehicle. The interior is fitted with two air conditioning systems and an overpressure system. Large lockers are found on the right and rear fenders for equipment stowage. The gunner may have a pintle-mounted weapon on a cupola and surrounded by AV2 gun shields; alternately, the weapon may be placed on a CROWS EWS. (The pintle-mounted weapon station is more common on the Cougar H.) As is becoming more common in Afghanistan, the pintle-mounted gun stations' gun shields have bullet-resistant glass set in the front, sides, and rear for more visibility. In each case, the weapon may be aimed fired from inside the vehicle; the CROWS mount also allows for reloading from inside the vehicle and beings additional vision and fire control equipment. The gunner's position is near the front of the vehicle in the center. Four smoke grenade launchers are often found on the roof near the front on each side.

The Cougar uses a Caterpillar C7 330-horsepower turbocharged diesel coupled to an automatic transmission. It sits on either a 4x4 or 6x6 off-road suspension, with run-flat puncture-resistant tires. Of course, it has an MRAP hull, and the seemingly-luxurious padding of the troop and crew seats is part of this protection. The seats also have seat belts. Armor is average for such a vehicle, but the Cougar can take a variety of appliqué armor, ERA, and armor like bar-slat armor. (It should be noted that the Cougar is not air-portable with appliqué or bar/slat armor bolted on.) The Cougar has an automatic fire detection and protection system, one for the cab, one for the troop compartment, and one for the engine/powerpack. The fuel tanks are self-sealing. A spare tire is normally carried on the right side just forward of the rear wheel (on the Cougar H) or the second wheel (on the Cougar HE). The Cougar also employs thermal dampening technology which presents a -2 penalty to those trying to detect it by IR/thermal-based vision devices or when an IR-guided weapon tries to lock on.

The Badger is also known as the ILAV (Iraqi Light Armored Vehicle) It's primary difference is that it's 6x6 frame carries an in-between-sized hull. The Yemenis have also ordered this version. Versions with an RWS and pintle-mounted weapon are both seen, though the overwhelming majority have the pintle-mounted weapon and gun shields.

The Cougar JERRV (Joint EOD Rapid Response Vehicle) may be 4x4 or 6x6, and carries a reduced combat engineer team and their equipment, as well as an EOD robot. (They will be covered in US Wheeled Engineer Vehicles, eventually.)

The Cougar ISS is based on the 4x4 version, and has an integrated independent response suspension system that increases off-road mobility. Rumors have it that this version is used by certain NATO special operations teams.

British Versions

The British use two versions of the cougar – the Mastiff (their 6x6 version) and the Ridgeback (their 4x4 version). (They use a further version of the 6x6, the Wolfhound, which is used as a prime mover for howitzers and field guns, and will not be covered on this page.) As stated above, the Mastiff and Ridgeback are fitted with the British version of BMS. The Mastiffs versions are almost always armed with an RWS, typically an Enforcer RWS; about half the Ridgebacks have the Enforcer RWS, and the rest use pintle-mounted weapons with all-around AV2 gun shields. The stats below assume the use of an Enforcer RWS. The Mastiff and Ridgeback have NBC overpressure systems.

Twilight 2000 Notes: the Cougar and its variants are not available in the Twilight 2000 timeline.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Cougar H (Pintle-Mounted)	$32,604	D, A	1.5 tons	14.5 tons	3+4	6	Headlights	Enclosed
Cougar H (Pintle-Mounted) w/Appliqué	$33,687	D, A	1.4 tons	15.3 tons	3+4	8	Headlights	Enclosed
Cougar H (Pintle-Mounted) w/Bar/Slat	$33,010	D, A	1.4 tons	14.8 tons	3+4	8	Headlights	Enclosed
Cougar H (Pintle-Mounted) w/Appliqué & Bar/Slat	$34,093	D, A	1.2 tons	15.6 tons	3+4	8	Headlights	Enclosed
Cougar H (RWS)	$81,604	D, A	1.4 tons	14.8 tons	3+4	9	Passive IR (G), Image Intensification (G), Thermal Imaging (G)	Enclosed
Cougar H (RWS) w/Appliqué	$82,687	D, A	1.3 tons	15.6 tons	3+4	9	Passive IR (G), Image Intensification (G),	Enclosed

							Thermal Imaging (G)	
Cougar H (RWS) w/Bar/Slat	$82,010	D, A	1.3 tons	15.1 tons	3+4	9	Passive IR (G), Image Intensification (G), Thermal Imaging (G)	Enclosed
Cougar H (RWS) w/Appliqué & Bar/Slat	$83,093	D, A	1.1 tons	15.9 tons	3+4	9	Passive IR (G), Image Intensification (G), Thermal Imaging (G)	Enclosed
Cougar HE (Pintle-Mounted)	$36,013	D, A	1.5 tons	19 tons	3+12	8	Headlights	Enclosed
Cougar HE (Pintle-Mounted) w/Appliqué	$37,291	D, A	1.4 tons	20 tons	3+12	10	Headlights	Enclosed
Cougar HE (Pintle-Mounted) w/Bar/Slat	$36,490	D, A	1.4 tons	19.4 tons	3+12	10	Headlights	Enclosed
Cougar HE (Pintle-Mounted) w/Appliqué & Bar/Slat	$37,768	D, A	1.2 tons	20.4 tons	3+12	10	Headlights	Enclosed
Cougar HE (RWS)	$85,013	D, A	1.4 tons	19.3 tons	3+12	9	Passive IR (G), Image Intensification (G), Thermal Imaging (G)	Enclosed
Cougar HE (RWS) w/Appliqué	$86,291	D, A	1.3 tons	20.3 tons	3+12	11	Passive IR (G), Image Intensification (G), Thermal Imaging (G)	Enclosed
Cougar HE (RWS) w/Bar/Slat	$85,490	D, A	1.3 tons	19.7 tons	3+12	9	Passive IR (G), Image Intensification (G), Thermal Imaging (G)	Enclosed
Cougar HE (RWS) w/Appliqué & Bar/Slat	$86,768	D, A	1.1 tons	20.7 tons	3+12	11	Passive IR (G), Image Intensification (G), Thermal Imaging (G)	Enclosed
Badger (Pintle-Mounted)	$34,436	D, A	1.4 tons	17.6 tons	3+10	8	Headlights	Enclosed
Badger (Pintle-Mounted) w/Appliqué	$35,714	D, A	1.3 tons	18.6 tons	3+10	8	Headlights	Enclosed
Badger (Pintle-Mounted) w/Bar/Slat	$34,913	D, A	1.3 tons	18 tons	3+10	8	Headlights	Enclosed
Badger (Pintle-Mounted) w/Appliqué & Bar/Slat	$36,191	D, A	1.1 tons	19 tons	3+10	8	Headlights	Enclosed

Badger (RWS)	$83,438	D, A	1.4 tons	17.9 tons	3+10	9	Passive IR (G), Image Intensification (G), Thermal Imaging (G)	Enclosed
Badger (RWS) w/Appliqué	$84,716	D, A	1.3 tons	18.9 tons	3+10	9	Passive IR (G), Image Intensification (G), Thermal Imaging (G)	Enclosed
Badger (RWS) w/Bar/Slat	$83,915	D, A	1.3 tons	18.3 tons	3+10	9	Passive IR (G), Image Intensification (G), Thermal Imaging (G)	Enclosed
Badger (RWS) w/Appliqué & Bar/Slat	$85,193	D, A	1.1 tons	19.3 tons	3+10	11	Passive IR (G), Image Intensification (G), Thermal Imaging (G)	Enclosed
Cougar ISS (Pintle-Mounted)	$32,931	D, A	1.5 tons	14.5 tons	3+4	6	Headlights	Enclosed
Cougar ISS (Pintle-Mounted) w/Appliqué	$34,024	D, A	1.4 tons	15.3 tons	3+4	8	Headlights	Enclosed
Cougar ISS (Pintle-Mounted) w/Bar/Slat	$33,341	D, A	1.4 tons	14.8 tons	3+4	8	Headlights	Enclosed
Cougar ISS (Pintle-Mounted) w/Appliqué & Bar/Slat	$34,434	D, A	1.2 tons	15.6 tons	3+4	8	Headlights	Enclosed
Cougar ISS (RWS)	$82,421	D, A	1.4 tons	14.8 tons	3+4	9	Passive IR (G), Image Intensification (G), Thermal Imaging (G)	Enclosed
Cougar ISS (RWS) w/Appliqué	$83,494	D, A	1.3 tons	15.6 tons	3+4	9	Passive IR (G), Image Intensification (G), Thermal Imaging (G)	Enclosed
Cougar ISS (RWS) w/Bar/Slat	$82,831	D, A	1.3 tons	15.1 tons	3+4	9	Passive IR (G), Image Intensification (G), Thermal Imaging (G)	Enclosed
Cougar ISS (RWS) w/Appliqué & Bar/Slat	$83,924	D, A	1.1 tons	15.9 tons	3+4	9	Passive IR (G), Image Intensification (G), Thermal Imaging (G)	Enclosed
Ridgeback	$286,117	D, A	1.4 tons	14.9 tons	3+4	9	Passive IR (G), Image Intensification (G), Thermal Imaging	Shielded

							(G)	
Ridgeback w/Appliqué	$287,395	D, A	1.3 tons	15.7 tons	3+4	9	Passive IR (G), Image Intensification (G), Thermal Imaging (G)	Shielded
Ridgeback w/Bar/Slat	$286,523	D, A	1.3 tons	15.2 tons	3+4	9	Passive IR (G), Image Intensification (G), Thermal Imaging (G)	Shielded
Ridgeback w/Appliqué & Bar/Slat	$287,606	D, A	1.1 tons	16 tons	3+4	9	Passive IR (G), Image Intensification (G), Thermal Imaging (G)	Shielded
Mastiff	$285,978	D, A	1.4 tons	19.3 tons	3+12	9	Passive IR (G), Image Intensification (G), Thermal Imaging (G)	Shielded
Mastiff w/Appliqué	$287,256	D, A	1.3 tons	20.3 tons	3+12	11	Passive IR (G), Image Intensification (G), Thermal Imaging (G)	Shielded
Mastiff w/Bar/Slat	$286,455	D, A	1.3 tons	19.7 tons	3+12	9	Passive IR (G), Image Intensification (G), Thermal Imaging (G)	Shielded
Mastiff w/Appliqué & Bar/Slat	$287,733	D, A	1.1 tons	20.7 tons	3+12	11	Passive IR (G), Image Intensification (G), Thermal Imaging (G)	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Cougar H (Pintle-Mounted)	182/92	42/21	420	175	Stnd	W(5)	HF8Sp HS5Sp HR5 (1)
Cougar H (Pintle-Mounted) w/Appliqué	173/87	40/20	420	186	Stnd	W(5)	HF10Sp HS7Sp HR6 (2)
Cougar H (Pintle-Mounted) w/Bar/Slat	178/90	41/21	420	179	Stnd	W(5)	HF9Sp HS6Sp HR5 (2)
Cougar H (Pintle-Mounted) w/Appliqué & Bar/Slat	169/86	39/20	420	189	Stnd	W(5)	HF11Sp HS8Sp HR5 (3)
Cougar H (RWS)	178/90	41/21	420	179	CiH	W(5)	TF2 TS2 TR2 HF8Sp HS5Sp HR5 (1)
Cougar H (RWS) w/Appliqué	169/86	39/20	420	189	CiH	W(5)	TF2 TS2 TR2 HF10Sp HS7Sp HR6 (2)

Cougar H (RWS) w/Bar/Slat	174/88	40/20	420	182	CiH	W(5)	TF2 TS2 TR2 HF9Sp HS6Sp HR5 (2)
Cougar H (RWS) w/Appliqué & Bar/Slat	166/84	38/19	420	193	CiH	W(5)	TF2 TS2 TR2 HF11Sp HS8Sp HR5 (4)
Cougar HE (Pintle-Mounted)	150/76	35/18	480	229	Stnd	W(8)	HF8Sp HS5Sp HR5 (1)
Cougar HE (Pintle-Mounted) w/Appliqué	143/72	33/17	480	240	Stnd	W(8)	HF10Sp HS7Sp HR6 (2)
Cougar HE (Pintle-Mounted) w/Bar/Slat	147/74	34/18	480	234	Stnd	W(8)	HF9Sp HS6Sp HR5 (2)
Cougar HE (Pintle-Mounted) w/Appliqué & Bar/Slat	141/71	33/17	480	245	Stnd	W(8)	HF11Sp HS8Sp HR5 (3)
Cougar HE (RWS)	147/74	34/18	480	234	CiH	W(8)	TF2 TS2 TR2 HF8Sp HS5Sp HR5 (5)
Cougar HE (RWS) w/Appliqué	141/71	33/17	480	245	CiH	W(8)	TF2 TS2 TR2 HF10Sp HS7Sp HR6 (5)
Cougar HE (RWS) w/Bar/Slat	144/71	33/17	480	245	CiH	W(8)	TF2 TS2 TR2 HF9Sp HS6Sp HR5 (6)
Cougar HE (RWS) w/Appliqué & Bar/Slat	137/69	32/16	480	250	CiH	W(8)	TF2 TS2 TR2 HF11Sp HS8Sp HR5 (7)
Badger (Pintle-Mounted)	161/81	37/19	480	213	Stnd	W(6)	HF8Sp HS5Sp HR5 (1)
Badger (Pintle-Mounted) w/Appliqué	153/78	36/18	480	224	Stnd	W(6)	HF10Sp HS7Sp HR6 (2)
Badger (Pintle-Mounted) w/Bar/Slat	161/81	37/19	480	215	Stnd	W(6)	HF9Sp HS6Sp HR5 (2)
Badger (Pintle-Mounted) w/Appliqué & Bar/Slat	150/76	35/18	480	229	Stnd	W(6)	HF11Sp HS8Sp HR5 (3)
Badger (RWS)	159/81	37/19	480	215	CiH	W(6)	TF2 TS2 TR2 HF8Sp HS5Sp HR5 (5)
Badger (RWS) w/Appliqué	152/77	35/18	480	227	CiH	W(6)	TF2 TS2 TR2 HF10Sp HS7Sp HR6 (5)
Badger (RWS)	156/79	36/19	480	220	CiH	W(6)	TF2 TS2 TR2 HF9Sp HS6Sp HR5

w/Bar/Slat							(6)
Badger (RWS) w/Appliqué & Bar/Slat	147/74	34/18	480	234	CiH	W(6)	TF2 TS2 TR2 HF11Sp HS8Sp HR5 (7)
Cougar ISS (Pintle-Mounted)	182/104	42/24	420	175	Stnd	W(5)	HF8Sp HS5Sp HR5 (1)
Cougar ISS (Pintle-Mounted) w/Appliqué	173/98	40/23	420	186	Stnd	W(5)	HF10Sp HS7Sp HR6 (2)
Cougar ISS (Pintle-Mounted) w/Bar/Slat	178/101	41/24	420	179	Stnd	W(5)	HF9Sp HS6Sp HR5 (2)
Cougar ISS (Pintle-Mounted) w/Appliqué & Bar/Slat	169/93	39/23	420	189	Stnd	W(5)	HF11Sp HS8Sp HR5 (3)
Cougar ISS (RWS)	178/101	41/24	420	179	CiH	W(5)	TF2 TS2 TR2 HF8Sp HS5Sp HR5 (5)
Cougar ISS (RWS) w/Appliqué	169/97	39/23	420	189	CiH	W(5)	TF2 TS2 TR2 HF10Sp HS7Sp HR6 (5)
Cougar ISS (RWS) w/Bar/Slat	174/99	40/23	420	182	CiH	W(5)	TF2 TS2 TR2 HF9Sp HS6Sp HR5 (6)
Cougar ISS (RWS) w/Appliqué & Bar/Slat	166/95	38/21	420	193	CiH	W(5)	TF2 TS2 TR2 HF11Sp HS8Sp HR5 (7)
Ridgeback	177/89	40/20	420	180	CiH	W(5)	TF2 TS2 TR2 HF8Sp HS5Sp HR5 (5)
Ridgeback w/Appliqué	169/74	39/20	420	189	CiH	W(5)	TF2 TS2 TR2 HF10Sp HS7Sp HR6 (5)
Ridgeback w/Bar/Slat	173/87	40/20	420	184	CiH	W(5)	TF2 TS2 TR2 HF9Sp HS6Sp HR5 (6)
Ridgeback w/Appliqué & Bar/Slat	164/83	38/19	420	193	CiH	W(5)	TF2 TS2 TR2 HF11Sp HS8Sp HR5 (7)
Mastiff	144/73	33/18	480	239	CiH	W(8)	TF2 TS2 TR2 HF8Sp HS5Sp HR5 (5)
Mastiff w/Appliqué	138/70	32/17	480	251	CiH	W(8)	TF2 TS2 TR2 HF10Sp HS7Sp HR6 (5)
Mastiff w/Bar/Slat	141/71	33/17	480	243	CiH	W(8)	TF2 TS2 TR2 HF9Sp HS6Sp HR5 (6)
Mastiff w/Appliqué & Bar/Slat	134/67	31/16	480	255	CiH	W(8)	TF2 TS2 TR2 HF11Sp HS8Sp HR5 (7)

Vehicle	Fire Control	Stabilization	Armament	Ammunition

Cougar H (Pintle-Mounted)	None	None	M-2HB (C) or MAG (C) or Mk 19 (C)	2300x.50 or 3800x7.62mm or 730x40mm Grenades
Cougar H/ISS/Ridgeback (RWS)	+1	Fair	M-2HB or MAG or Mk 19	2300x.50 or 3800x7.62mm or 730x40mm Grenades
Cougar HE (Pintle-Mounted)	None	None	M-2HB (C) or MAG (C) or Mk 19 (C)	2600x.50 or 4300x7.62mm or 830x40mm Grenades
Cougar HE/Mastiff (RWS)	+1	Fair	M-2HB or MAG or Mk 19	2600x.50 or 4300x7.62mm or 830x40mm Grenades
Badger (Pintle-Mounted)	None	None	M-2HB (C) or MAG (C) or Mk 19 (C)	2400x.50 or 4000x7.62mm or 770x40mm Grenades
Badger (RWS)	+1	Fair	M-2HB or MAG or Mk 19	2400x.50 or 4000x7.62mm or 770x40mm Grenades

(1) Roof AV is 4; Floor AV is 5Sp.
(2) Roof AV is 4; Floor AV is 6Sp.
(4) Roof AV is 4; Floor AV is 6Sp. The combination of appliqué and bar/slat armor can give a sort of “double spaced” effect; remove 4d6 damage from incoming HE-type shells if both are hit (the hit has to go through both sets of add-on armor).
(5) Roof AV is 4; Floor AV is 6Sp.
(6) Roof AV is 4; Floor AV is 7Sp.
(7) Roof AV is 4; Floor AV is 7Sp. The combination of appliqué and bar/slat armor can give a sort of “double spaced” effect; remove 4d6 damage from incoming HE-type shells if both are hit (the hit has to go through both sets of add-on armor).

FMC HMMWV M-1152P1

The M-1152P1 variant was designed after US and other counties’ experience with the HMMWV and similar light vehicles in Afghanistan, Iraq, Kosovo, Bosnia, and other war zones. The major change was the addition of MEXAS-type armor for the body, roof, and belly of the HMMWV. The engine is a more powerful one, a Optimizer 6500 turbocharged fuel-injected diesel (or JP8; this is the standard fuel for US Army vehicles), The engine develops 190 horsepower and a torque of 380 foot-pounds. The suspension is 4x4, with armored wheels and run-flat, puncture-resistant tires. The transmission is automatic; 2WD and 4WD modes are selectable. Brakes are four-wheel brakes, and the steering is power-assisted.

The M-1152P1 can actually take heavier armor packages than the standard MEXAS-type applied as standard to the vehicle. In particular, a layer of aluminum may be added to the floor and to the roof of the vehicle. The rear of the HMMWV forms a cubular box, atop which is a weapons position; in addition a RWS may be added instead of a simple weapon mount. The windows are bullet resistant, as are the side windows and the rear window. The windshield can be made thicker on the lower one-third, to increase armor protection. The rear door is of aluminum (thick aluminum). The seats are energy-absorbing, and if the crewmembers are buckled in, they take only one-half damage from roll-overs, ramming attempts, and generally impact damage.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
M-1152P1 HMMWV (Standard Armor)	$3,751	D, G, A, AvGas, JP8	1.9 tons	5.22 tons	2+4	4	Headlights	Enclosed
M-1152P1 HMMWV (Aluminum Roof & Floor Appliqué)	$7,425	D, G, A, AvGas, JP8	1.87 tons	5.35 tons	2+4	4	Headlights	Enclosed
M-1152P1 HMMWV (Enhanced Armor)	$14,855	D, G, A, AvGas, JP8	1.52 tons	7.88 tons	2+4	4	Headlights	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
M-1152P1 HMMWV (Standard Armor)	134/44	34/11	94	65	Stnd	W(3)	HF3Cp HS3Cp HR3Cp*
M-1152P1 HMMWV	133/43	33/11	94	67	Stnd	W(3)	HF3Cp HS3Cp HR3Cp**

(Aluminum Roof & Floor Appliqué) M-1152P1 HMMWV (Enhanced Armor)	133/43	33/11	94	99	Stnd	W(3)	HF5Cp HS5Cp HR4Cp***

*Floor and roof AV are 2.
**Floor Armor is 4Sp. Roof Armor is 3Sp.
***Floor and Roof Armor are 4Sp.

GDLS M-1026 Stryker

Notes: The Stryker has long been a subject of controversy, even before the final vehicle was chosen and the program that produced was known as the Interim Armored Vehicle. It is still a subject of controversy, though its performance in Iraq has partially stilled that criticism. The criticism includes lack of off-road mobility due to its wheeled suspension, the vulnerability of the tires on that suspension, that the vehicle is too light and not heavily-armed enough for the job, that the Stryker is not air-portable except on the Air Force's biggest planes when appliqué armor is attached, or at all when its signature bar/slat armor cage is attached, and that the Stryker has to be air-delivered in a knock-down configuration that requires 17 minutes to reassemble before the Stryker is combat-capable after unloading. The Stryker has also received criticism for being underpowered. Nonetheless, Stryker crews love them, and they have proven to be remarkably tough vehicles in Iraq. Many vehicles were trialed for the job, but a variant of the Canadian LAV III was finally chosen; Strykers are heavily modified for their mission over the basic LAV III chassis. The Stryker entered service in 2002 and saw its first combat action in Iraq in early 2004.

Action in Iraq revealed an unforeseen transmission problem in the Stryker; they have been the subject of a $111 transmission refurbishment program since 2006 as a result.

The Basic Stryker

The base member of the Stryker family is the M-1126 Infantry Carrier Vehicle (ICV). The base LAV III chassis is obvious, though the Stryker is noticeably longer and wider than the LAV III. The driver is in the front right of the vehicle, and has a conventional set of controls. He has vision blocks that ring his position except in the rear. The driver has an AN/VAS-5 Driver's Vision enhancer, which provides image intensification and a backup camera, with a passive IR viewer. The commander is slightly to the rear and on the left side of the vehicle, and mans the Kongsberg RWS. The RWS is normally fitted with an M-2HB, but can be fitted with an M-3M or Mk 19 for greater firepower. (It can also be fitted with a simple M-240D machinegun if light work is expected and more ammunition carriage is desired.) The RWS unit is equipped with advanced vision equipment, a small spotlight, and two clusters of four smoke grenade launchers on each side of the RWS. None troops sit in the rear, four on each side and one behind the commander facing to the rear. There are no firing ports or vision blocks for them. There is a double hatch on the roof of the passenger compartment and a ramp in the rear with a door in it. The Stryker has an NBC overpressure system and radiation shielding.

The M-1126 is equipped with a full BMS system, providing the crew and troops with information on enemy and friendly positions, navigation, and intelligence updates. The commander has screens that give him this information and information on the vehicle state; the driver has a navigational screen and one that gives him the vehicle state as far as automotive condition is concerned. The squad leader and troops can access information on the battle state through a screen inside their compartment. The BMS, of course, includes a ruggedized internal computer and copious digital storage space. The BMS system includes GPS with an inertial navigation backup.

The Stryker is equipped with a 350-horsepower turbocharged diesel engine coupled to an automatic transmission. Some of the automotive components have redundancies. The engine used is unusually quiet, and when burning JP8 fuel, also has a reduced exhaust plume. The Stryker has ABS and traction control for more positive braking and traction, especially off-road, and it has a locking differential. The ABS is on the last three axles, and those wheels also have power brakes. The tires are run-flat and puncture-resistant. The Stryker is normally 8x8, but can be switched to 8x4 for road use; in this case, the four rear wheels become the drive wheels. The Stryker has central tire pressure regulation. The crew and troop compartments have air conditioning and heating, as well as an automatic fire detection and suppression system. The engine compartment and fuel tanks also have an automatic fire detection and suppression system. Boxes are mounted on the rear third of the sides of the Stryker to store vehicle, crew, and troop equipment; nonetheless, like virtually all military vehicles in the field or combat, crew and troop equipment is often carried strapped to the top, sides, or glacis. (Incidentally, this strapped-on equipment can provide some minor "armor.")

The base armor of the Stryker is a steel/ceramic sandwich, giving it the equivalent of spaced armor over much of its hull. The floor and suspension are also reinforced to give it enhanced mine and IED protection. However, the Stryker is almost never seen in combat with its cage of bar/slat armor, which surrounds the vehicle except for the area of the rear where the ramp opens and closes (shots at the rear of the Stryker are 20% likely to hit the cage before they hit the vehicle). This protection extends to about 30 centimeters above the deck of the vehicle. The Stryker can also take a MEXAS composite appliqué armor kit, which can be applied to every face of the vehicle, to varying degrees. The bar/slat armor and the MEXAS appliqué armor can be used in conjunction with each other to provide superior protection to the vehicle, but this does substantially increase the weight and mobility of the Stryker. IR

suppression is also employed on the Stryker; detection by IR devices, thermal imagers, and FLIRs is one level more difficult, as is targeting with IR-guided missiles. When not equipped with the bar/slat armor, the rounded shape gives it some stealth characteristics; detection by radar in this case is at -3 and targeting by radar-guided weapons is one level more difficult. (The use of bar/slat armor negates this advantage.)

The M-1127 Stryker Reconnaissance Vehicle (RV)

This vehicle provides a vehicle for scout platoons and squadrons, and carries enhanced sensor equipment. The M-1127's enhanced sensor suite includes the Long-Range Advanced Scout Surveillance System (LRAS3) includes a second set of day and night vision devices, including a FLIR sensor, a rangefinder which has GPS and laser channels, and a video camera with an attached image intensifier; the vehicle's electronics and radio equipment allows this video feed to be transmitted to other units or higher headquarters. The video camera system can also be routed through the FLIR. The image intensifiers used on the M-1127 are very advanced and allow observation at a range of 15 kilometers, including the ability to identify specific vehicles and structures at that range and just make out personnel present at that range. It may be noted that the LRAS3 can be used dismounted, on a tripod, but at almost 200 kilograms, ground-mounted use is impractical except in a static position. The M-1127 also includes a hand version of an image intensifier (normal capabilities), thermal imager, and laser rangefinder. The M-1127 also has the BMS system. The dismount crew is reduced, and interior space is a bit more at a premium. The LRAS3 system is mounted on a second ring mount/hatch to the rear of the driver. The RV has a second long-range radio with data capability and a second short-range radio.

The M-1130 Stryker Command Vehicle (CV)

The primary difference in the M-1130 is the internal fit – it carries multiple user stations for the BMS and radios. The BMS system, the FBCB2, is beefed up over the standard Stryker BMS, giving the vehicle multiple stations and switchable screens and more computer power and storage. The CV uses a "Tactical Internet" system to allow full digital communications, and the Enhanced Position Location Reporting System (EPLRS) to give more up-to-date, precise positioning of friendly units and the positions of enemy units that intelligence and scout vehicles provide. Two long-range, two medium-range, and two short-range radios are carried, with the two long-range radios being data-capable. The M-1130 can receive and store imaging from advanced forward elements who are capable of sending such imaging, including those from the M-1127. The M-1130 does not have an RWS, but it does have an M-2HB, which can be supplemented with a Mk 19 if desired. The M-2HB (and Mk 19, if so equipped) are mounted in soft mounts to reduce recoil and are often equipped with clip-on image intensifiers or thermal imagers. These weapons are mounted on cupolas, one where the RWS normally is and the other to the rear of the driver (if equipped with a Mk 19); these cupolas are electrically-rotating and ringed with seven vision blocks. The CV's BMS can access these vision blocks for a quick look outside the vehicle while under armor. The cupolas are sometimes surrounded with low-profile AV2 gun shields. The cupola(s) are also equipped with thermal imagers, and the one mounting an M-2HB is also equipped with a laser rangefinder. A video camera system, with attached image intensifier, is also mounted on the roof on a flexible mount.

The M-1133 Medical Evacuation Vehicle (MEV)

The MEV is the primary ambulance platform of a Stryker Brigade. Of course, the MEV is unarmed, like almost all military medical vehicles, but a simple commander's cupola is retained with all-around vision blocks and a central image intensifier. The MEV can carry four stretcher patients, two stretcher patients and four seated patients, or six seated patients. The MEV has assisted stretcher loading for the medic in the rear and the assisting troops – the troops must simply carry the stretcher to the back of the vehicle (and the rampway is larger than an M-113/M-577-based ambulance), pull out a tray, put the stretcher on it and strap it down, and slide the tray and stretcher into the vehicle and lock it. The upper stretcher positions also have a power lifting system to make loading those positions easier and quicker. The MEV carries the equivalent of two doctor's medical bags and 20 personal medical kits, as well as an assortment of bandages, splints, burn treatment kits, cravats, and minor medical supplies. The MEV has a small refrigerator for perishable medical supplies, and a blanket warmer and hot plate, primarily to warm liquids. The MEV has a ruggedized internal computer with digital storage, used to provide a database to assist the medics in treating patients. The MEV has a pared-down version of the BMS, which primarily gives the vehicle state, navigation information (with GPS and backup inertial navigation), and one-way information about friendly and enemy positions. The MEV has a long-range radio which is data-capable, and a short-range radio. A 20-liter water tank provides drinking and treatment water. The MEV has a raised roofline to allow the medics to stand and treat the upper stretcher patients more effectively, as well as provide more room for medical supplies.

The M-1135 Stryker NBC Reconnaissance Vehicle (NBC RV)

The NBC RV is meant to replace the M-93A1 Fox in Stryker Brigades, and may eventually totally replace the M-93A1. The NBC RV has an integrated NBC sensor and analysis suite, including three optical chemical detectors, one direct chemical sniffer, a radiation meter which measures the intensity or radiation and composition of contamination (radioactive elements present as well as the amount of alpha, beta, and gamma radiation), and two movable and retractable arms to directly sample contamination on plants, the ground, structures, etc. These arms can bring the samples into the vehicle, where they are placed in protected areas of the vehicle. Biological contamination can also be sampled and analyzed, using air samples. These protected areas can discharge the samples and clean the sample vessels as well. Air samples can also be taken into the vehicle in protected areas, and similarly discharged. The NBC RV has a ruggedized vehicle computer to assist in analysis of agents, radiation, and biological contamination, in addition to the standard BMS suite of the Stryker series. The rear half of the rear area of the NBC RV is raised to provide more

room and allow standing; if at all possible, the crew of the NBC RV is to keep their personal equipment inside the vehicle, due to its mission. The NBC RV is typically armed with the same RWS as on the ICV, including its vision suite. The NBC RV has two data-capable long-range radios and a short-range radio.

Other Variants

The M-1128 MGS, M-1129 Mortar Carrier, M-1131 FSV, M-1132 ESV, M-1134 ATGM Carrier, and the prototypical Stryker SP 105mm Howitzer will be handled on the appropriate areas of the site.

Twilight 2000 Notes: The Stryker is not available in the Twilight 2000 timeline.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
M-1126 ICV	$302,770	D, A	2 tons	17.2 tons	2+9	8	Passive IR (D Rear, C), Image Intensification (D, C), Thermal Imaging (C), WL Spotlight	Shielded
M-1126 ICV w/Bar/Slat	$304,916	D, A	1.9 tons	17.7 tons	2+9	12	Passive IR (D Rear, C), Image Intensification (D, C), Thermal Imaging (C), WL Spotlight	Shielded
M-1126 ICV w/MEXAS	$307,428	D, A	1.4 tons	19.5 tons	2+9	12	Passive IR (D Rear, C), Image Intensification (D, C), Thermal Imaging (C), WL Spotlight	Shielded
M-1126 ICV w/MEXAS & Bar/Slat	$309,574	D, A	1.3 tons	20 tons	2+9	12	Passive IR (D Rear, C), Image Intensification (D, C), Thermal Imaging (C), WL Spotlight	Shielded
M-1127 RV	$427,513	D, A	2 tons	17.1 tons	2+5	9	Passive IR (D Rear), Advanced Image Intensification (LRAS3), Image Intensification (D), FLIR (LRAS3), Thermal Imaging (LRAS3)	Shielded
M-1127 RV w/Bar/Slat	$429,659	D, A	1.9 tons	17.6 tons	2+5	9	Passive IR (D Rear), Advanced Image Intensification (LRAS3), Image Intensification (D), FLIR (LRAS3), Thermal Imaging (LRAS3)	Shielded
M-1127 RV w/MEXAS	$432,171	D, A	1.4 tons	19.4 tons	2+5	12	Passive IR (D Rear), Advanced Image Intensification (LRAS3), Image Intensification (D),	Shielded

M-1127 RV w/MEXAS & Bar/Slat	$434,317	D, A	1.3 tons	19.9 tons	2+5	12	FLIR (LRAS3), Thermal Imaging (LRAS3) Passive IR (D Rear), Advanced Image Intensification (LRAS3), Image Intensification (D), FLIR (LRAS3), Thermal Imaging (LRAS3)	Shielded
M-1130 CV	$446,860	D, A	900 kg	17.6 tons	2+4	10	Passive IR (D Rear), Image Intensification (D, C, Camera), Thermal Imager (Cupola)	Shielded
M-1130 CV w/Bar/Slat	$471,303	D, A	800 kg	18.1 tons	2+4	10	Passive IR (D Rear), Image Intensification (D, C, Camera), Thermal Imager (Cupola)	Shielded
M-1130 CV w/MEXAS	$475,961	D, A	700 kg	19.9 tons	2+4	12	Passive IR (D Rear), Image Intensification (D, C, Camera), Thermal Imager (Cupola)	Shielded
M-1130 CV w/MEXAS & Bar/Slat	$453,664	D, A	600 kg	20.4 tons	2+4	12	Passive IR (D Rear), Image Intensification (D, C, Camera), Thermal Imager (Cupola)	Shielded
M-1133 MEV	$348,186	D, A	1 ton	17.5 tons	(5)	9	Passive IR (D Rear), Image Intensification (D)	Shielded
M-1133 MEV w/Bar/Slat	$350,332	D, A	900 kg	18 tons	(5)	11	Passive IR (D Rear), Image Intensification (D)	Shielded
M-1133 MEV w/MEXAS	$352,844	D, A	425 kg	19.8 tons	(5)	11	Passive IR (D Rear), Image Intensification (D)	Shielded
M-1133 MEV w/MEXAS & Bar/Slat	$354,990	D, A	300 kg	20.3 tons	(5)	11	Passive IR (D Rear), Image Intensification (D)	Shielded
M-1135 NBC RV	$665,918	D, A	1 ton	17.6 tons	4	10	Passive IR (D Rear, C), Image Intensification (D, C), Thermal Imaging (C), WL Spotlight	Shielded
M-1135 NBC RV w/Bar/Slat	$668,064	D, A	900 kg	18.1 tons	4	10	Passive IR (D Rear, C), Image Intensification (D, C), Thermal Imaging (C), WL Spotlight	Shielded

M-1135 NBC RV w/MEXAS	$670,576	D, A	425 kg	19.9 tons	4	12	Passive IR (D Rear, C), Image Intensification (D, C), Thermal Imaging (C), WL Spotlight	Shielded
M-1135 NBC RV w/MEXAS & Bar/Slat	$672,722	D, A	300 kg	20.4 tons	4	12	Passive IR (D Rear, C), Image Intensification (D, C), Thermal Imaging (C), WL Spotlight	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
M-1126 ICV	148/74	34/18	201	176	CiH	W(8)	TF2 TS2 TR2 HF9Sp HS6Sp HR6 (1)
M-1126 ICV w/Bar/Slat	144/73	34/18	201	183	CiH	W(8)	TF2 TS2 TR2 HF11Sp HS8Sp HR8Sp (2)
M-1126 ICV w/MEXAS	131/66	31/15	201	200	CiH	W(8)	TF2 TS2 TR2 HF15Cp HS10Cp HR7Sp (3)
M-1126 ICV w/MEXAS & Bar/Slat	128/65	30/15	201	206	CiH	W(8)	TF2 TS2 TR2 HF17Cp HS12Cp HR8Sp (4)
M-1127 RV	150/75	35/18	201	176	Stnd	W(8)	HF9Sp HS6Sp HR6 (1)
M-1127 RV w/Bar/Slat	146/74	34/18	201	180	Stnd	W(8)	HF11Sp HS8Sp HR8Sp (2)
M-1127 RV w/MEXAS	131/66	31/15	201	200	Stnd	W(8)	HF15Cp HS10Cp HR7Sp (3)
M-1127 RV w/MEXAS & Bar/Slat	128/65	30/15	201	206	Stnd	W(8)	HF17Cp HS12Cp HR8Sp (4)
M-1130 CV	146/74	34/18	201	180	Stnd	W(8)	HF9Sp HS6Sp HR6 (1)
M-1130 CV w/Bar/Slat	142/72	34/16	201	186	Stnd	W(8)	HF11Sp HS8Sp HR8Sp (2)
M-1130 CV w/MEXAS	128/65	30/15	201	206	Stnd	W(8)	HF15Cp HS10Cp HR7Sp (3)
M-1130 CV w/MEXAS & Bar/Slat	124/63	28/15	201	224	Stnd	W(8)	HF17Cp HS12Cp HR8Sp (4)
M-1133 MEV	145/73	33/18	201	180	Stnd	W(8)	HF9Sp HS6Sp HR6 (1)
M-1133 MEV w/Bar/Slat	141/79	32/17	201	185	Stnd	W(8)	HF11Sp HS8Sp HR8Sp (2)
M-1133 MEV w/MEXAS	129/64	30/16	201	202	Stnd	W(8)	HF15Cp HS10Cp HR7Sp (3)
M-1133	126/63	29/15	201	208	Stnd	W(8)	HF17Cp HS12Cp

MEV w/MEXAS & Bar/Slat							HR8Sp (4)
M-1135 NBC RV	145/73	33/18	201	180	CiH	W(8)	TF2 TS2 TR2 HF9Sp HS6Sp HR6 (1)
M-1135 NBC RV w/Bar/Slat	141/79	32/17	201	185	CiH	W(8)	TF2 TS2 TR2 HF11Sp HS8Sp HR8Sp (2)
M-1135 NBC RV w/MEXAS	127/64	29/15	201	204	CiH	W(8)	TF2 TS2 TR2 HF15Cp HS10Cp HR7Sp (3)
M-1135 NBC RV w/MEXAS & Bar/Slat	126/63	29/15	201	206	CiH	W(8)	TF2 TS2 TR2 HF17Cp HS12Cp HR8Sp (4)

Vehicle	Fire Control	Stabilization	Armament	Ammunition
M-1126 ICV/M-1135 NBC RV	+2	Fair	M-2HB or M-3M or Mk 19 or M-240D (C)	2000x.50 or 430x40mm Grenades or 3200x7.62mm
M-1127 RV	None	None	M-2HB or M-3M or Mk 19 or M-240D (C)	2000x.50 or 430x40mm Grenades or 3200x7.62mm
M-1130 CV	None	None	M-2HB or M-3M or Mk 19 or M-240D (C)	1000x.50 or 215x40mm Grenades of 1600x7.62mm

(1) Roof AV is 3; Floor AV is 4Sp.
(2) The bar/slat armor provides a sort of “double spaced armor” effect depending upon the face it hits – if the front or sides are hit, 4D6 damage is removed from the hit’s penetration if the Stryker is hit by HE-type rounds. The rear face’s bar/slat armor protects the rear face only on 20% of hits – the rest of rear face hits have only an AV of 6. Roof AV is 3, Floor AV is 4Sp.
(3) Roof AV is 4, Floor AV is 5Sp. Hits from certain angles (front and sides) will have a “composite-spaced” armor effect – divide incoming hits by two for HE-type warhead hits, then subtract 2D6.
(4) Roof AV is 4, Floor AV is 5Sp. Hits from certain angles (front and sides) will have a “spaced-composite-spaced” effect – divide incoming hits by two for HE-type warhead hits, then subtract 4D6.
(5) See Notes for Crew and passenger capacity.

Textron ASV-150

Notes: The ASV-150 has had a long lineage -- is it a development of the LFV-90 Dragoon armored car, which it itself a development of the Cadillac Gage LAV-150 (for former V-150), which is itself a development of the Cadillac Gage V-100 armored car/APC. The US Air Force acquired 190 vehicles for its Security Police in 1998, and modified 10 as Mobile Ordinance Disruptor Systems to deal with bombs on Air Force installations, before they were type standardized by the US. The vehicle was type-standardized as first the XM-1117, then the M-117 when it was proven in Iraq, and taken up by US Military Police and convoy Security Units in Iraq to replace the up-armored HMMWV in some roles. The ASV-150 was before them field tested by US Army Military Police in Kosovo, who found the successful, though they were the victim of budget cuts when only 49 had been acquired. Recently, Bulgaria and the new Iraqi Army have bought the ASV-150, and the new Afghanistan Army has 50 on order. Though not an MRAP, the ASV-150 has proven itself multiple times against mines and IEDs, to one point blowing off all four wheels while protecting the crew inside,

The driver sits on the front left of the vehicle, in a compartment which is air conditioned. To his left is the commander, and they sit behind bullet-resistant windshields with further bullet resistant windows to their sides. In the standard APC version, the vehicle has a gunner and carries four troops in the rear. The troops do not have firing ports, though there is a roof hatch on the rear deck, and two large side hatches. The troops sit down the sides of the vehicle and have blast-resistant seats. They have air conditioning and NBC sealing.

The Air Force Mobile Ordinance Disruptor System (MODS) is armed with a standard turret which is also armed with an Ordinance-Disposal laser; this laser is not strong enough to be used as a weapon, but has sufficient strength to melt electronic parts and explosives. This laser has a total of 39 shots available to it (from an internal capacitor and batteries). The laser is eye-safe and can cause no more than 1/2D6 damage per shot to other targets, with Nil penetration; generally, about a one-second burn is required to cause damage. (The standard burn is one second; disrupting an explosive charge can take up to 10 seconds of burning, counting as 10 one-second burns for ammunition purposes.) The MODS version has a crew of four; one member is an EOD specialist to check the explosive and dismounts in full EOD armor. The vehicle also carries the equivalent of 5 personal medical kits and an assortment of splints, bandages, tourniquets, and burn first aid. (The US Army now uses this version as the M-1200 Armored Knight.)

The standard turret is the same as found of the US Marines AAPV-7A1, and armed with the same weaponry. The turret has a dedicated gunner, and has the same vision, sights, and night vision as the AAPV-7A1 turret. The turret has a large basket in the rear

for troop supplies, and there is a cluster four smoke grenade launchers on either side of the turret. The weapons can be depressed to -10 and elevated to 60 degrees.

The ASV-150 is powered by Cummins CTA-8.3 260-horsepower turbocharged diesel engine which is also able to run off the US Military's standard of JP8 jet fuel. This is coupled to an automatic transmission. The suspension is 4x4 and off-road, with puncture-resistant and run-flat tires and a decent ground clearance, giving it mine resistance. The armor is a special advanced modular design from IBD, which is sort of a ceramic/steel sandwich. This can be supplemented by MEXAS appliqué composite armor, and lugs for ERA. A simple passive armor appliqué kit is available for the ASV-150. Armor is angled along all faces to improve the armor situation. The vehicle is not an MRAP vehicle, but does have a minor V-shape to the floor. Ride is described as soft, due to the mine-absorbing suspension. In the hull is a winch with a capacity of 6.8 tons and 100 meters of cable.

APC-type variants include a command vehicle with two long-range radios (one data-capable), and a short-range radio, a ruggedized laptop computer, map stowage and posting/office/type supplies (a reduced selection), and extra night vision for the turret. The turret has a laser rangefinder which may double as a laser designator. The RSTA (Reconnaissance and Surveillance Target Acquisition) version has a one long-range (data-capable), one medium-range, and one short-range radio, a reduced crew, and additional target acquisition devices such as enhanced night vision and a laser rangefinder/designator, as well as enhanced day observation devices and a small computer related to fire direction and surveillance activities and relaying them to other units. It is equipped with GPS.

The Ambulance version is a small ambulance, able to carry two stretcher cases or four seated patients plus a medic. It has the equivalent of one doctor's medical bag, 10 personal medical kits, and a small selection of bandages, splints, and burn treatment kits. The Ambulance version is unarmed and has no turret.

Twilight 2000 Notes: The ASV-150 is available in small numbers in the Twilight War; however, the MEXAS armor kit is not available, nor are the command or ambulance versions.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
ASV-150 MODS	$79,969	D, A	750 kg	13.2 tons	4	9	Passive IR (D, C, G)	Enclosed
ASV-150 MODS w/MEXAS	$83,637	D, A	425 kg	14.5 tons	4	10	Passive IR (D, C, G)	Enclosed
ASV-150 MODS w/Appliqué	$80,989	D, A	650 kg	13.7 tons	4	9	Passive IR (D, C, G)	Enclosed
ASV-150 APC	$68,184	D, A	1.5 tons	13.4 tons	3+6	8	Passive IR (D, C, G)	Enclosed
ASV-150 APC w/MEXAS	$71,852	D, A	1.2 tons	14.7 tons	3+6	10	Passive IR (D, C, G)	Enclosed
ASV-150 APC w/Appliqué	$69,184	D, A	1.4 tons	13.9 tons	3+6	8	Passive IR (D, C, G)	Enclosed
ASV-150 Command	$158,909	D, A	650 kg	13.7 tons	3+3	9	Passive IR (D, C, G)	Enclosed
ASV-150 Command w/MEXAS	$162,577	D, A	325 kg	15 tons	3+3	11	Passive IR (D, C, G)	Enclosed
ASV-150 Command w/Appliqué	$159,929	D, A	550 kg	14.2 tons	3+3	9	Passive IR (D, C, G)	Enclosed
ASV-150 RSTA	$197,432	D, A	700 kg	13.8 tons	5	9	Passive IR (D, C, G), Image Intensification (G, C), Thermal Imaging (C)	Enclosed
ASV-150 RSTA w/MEXAS	$201,100	D, A	375 kg	15.1 tons	5	11	Passive IR (D, C, G), Image Intensification (G, C), Thermal Imaging (C)	Enclosed
ASV-150 RSTA	$198,452	D, A	575 kg	14.3 tons	5	9	Passive IR (D, C, G), Image	Enclosed

w/Appliqué							Intensification (G, C), Thermal Imaging (C)	
ASV-150 Ambulance	$78,412	D, A	650 kg	13.7 tons	***	9	Passive IR (D, C)	Enclosed
ASV-150 Ambulance w/MEXAS	$81,349	D, A	400 kg	14.7 tons	***	11	Passive IR (D, C)	Enclosed
ASV-150 Ambulance w/Appliqué	$79,228	D, A	550 kg	14.1 tons	***	9	Passive IR (D, C)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
ASV-150 MODS	162/82	37/19	264	135	Trtd	W(4)	TF6 TS6 TR5 HF12Sp HS7Sp HR7*
ASV-150 MODS w/MEXAS	151/76	35/18	264	148	Trtd	W(4)	TF8Cp TS8Sp TR6 HF16Cp HS9Sp HF8**
ASV-150 MODS w/Appliqué	158/79	37/18	264	140	Trtd	W(4)	TF8 TS7 TR5 HF14Sp HS8Sp HR7*
ASV-150 APC	160/81	37/19	264	137	Trtd	W(4)	TF6 TS6 TR5 HF12Sp HS7Sp HR7*
ASV-150 APC w/MEXAS	146/74	33/17	264	150	Trtd	W(4)	TF8Cp TS8Sp TR6 HF16Cp HS9Sp HF8**
ASV-150 APC w/Appliqué	154/78	35/18	264	142	Trtd	W(4)	TF8 TS7 TR5 HF14Sp HS8Sp HR7*
ASV-150 Command	152/76	34/18	264	140	Trtd	W(4)	TF6 TS6 TR5 HF12Sp HS7Sp HR7*
ASV-150 Command w/MEXAS	143/72	33/17	264	154	Trtd	W(4)	TF8Cp TS8Sp TR6 HF16Cp HS9Sp HF8**
ASV-150 Command w/Appliqué	151/76	34/18	264	146	Trtd	W(4)	TF8 TS7 TR5 HF14Sp HS8Sp HR7*
ASV-150 RSTA	156/79	36/18	264	142	Trtd	W(4)	TF6 TS6 TR5 HF12Sp HS7Sp HR7*
ASV-150 RSTA w/MEXAS	143/72	33/17	264	154	Trtd	W(4)	TF8Cp TS8Sp TR6 HF16Cp HS9Sp HF8**
ASV-150 RSTA w/Appliqué	151/76	34/18	264	146	Trtd	W(4)	TF8 TS7 TR5 HF14Sp HS8Sp HR7*
ASV-150 Ambulance	152/76	34/18	264	140	Stnd	W(4)	HF12Sp HS7Sp HR7*
ASV-150 Ambulance w/MEXAS	146/74	33/17	264	150	Stnd	W(4)	HF16Cp HS9Sp HF8**
ASV-150 Ambulance w/Appliqué	152/77	35/18	264	144	Stnd	W(4)	HF14Sp HS8Sp HR7*

Vehicle	Fire Control	Stabilization	Armament	Ammunition
ASV-150 MODS	+2	Fair	M-2HB, Mk 19, OD Laser	175x.50, 350x40mm Grenades, 39 Laser Burns
ASV-150 APC	+2	Fair	M-2HB, Mk 19	500x.50, 350x40mm Grenades
ASV-150 Command/RSTA	+2	Fair	M-2HB, Mk 19	300x.50, 250x40mm Grenades

*Floor AV is 5Sp.
**Roof AV is 5; Floor AV is 6Sp.
***See Notes for Crew and passenger capacity.

FDSP BOV

Notes: This light wheeled APC is found in service only with the various former Yugoslavian republics, and in Croatia, they have been mostly replaced with the LOV APC. The BOV can be mistaken at a distance with the basic version of the LAV-150, and is in fact roughly the same size and shape as that vehicle. There are several known variants, with the antiaircraft versions (BOV-3 and BOV-30) being more common by 2010 than the APC or ATGM carriers. (The AAA and ATGM variants will not be covered on this page.) APC variants are often used by home defense units these days. The BOV-VP and several of its subtypes is being replaced by the Finnish AMV and possibly the Lazar MRAP.

The Basic BOV APC – The BOV-VP

The driver's compartment is in the front center, and is surrounded on three sides by large bullet-resistant windows. He has a hatch above his position, though he doesn't need to drive much with the hatch open due to the excellent visibility given to him by his windows. The driver has a large, wide-angle vision block on the hatch, which may be replaced by an IR vision block. The commander is to the tight, and has no armament of his own, though he has a firing port to the rear of his windshield under the side window. A gunner is behind this position, armed with a pintle-mounted weapon and often surrounded by AV2 gun shields. (Later versions have an RWS.) The gunner is taken from one of the troops in the rear, but does not normally leave the vehicle, providing fire support instead. The troop compartment is in the rear, with troops seated down the center of the vehicle. There are three firing ports on each side of the vehicle; instead of simple vision blocks, the troops have small bullet-resistant windows above each firing port. The rear has a bullet-resistant window, but not a firing port. The troops enter and leave through a large clamshell door in each side of the troop compartment; each door carries one of the firing ports and window. On each side of the forward hull is a cluster of three smoke grenade launchers.

The engine is a Deutz F6L413 diesel engine developing 150 horsepower. This is adequate for the weight of the vehicle. The driver has a conventional control set, though the transmission is manual. Steering is power-assisted on the front wheels, though all four wheels are steerable to reduce turn radius. The tires have a central tire pressure regulation system. Brakes are air-hydraulic with a manual parking brake. Suspension is 4x4 and of the off-road type, though the ground clearance is rather high and this helps protect against mines. Suspension is by simple leaf springs, which can lead to a bouncy off-road ride. The suspension has a locking differential. Armor is light, and a superstructure extends from the driver/commander's position to about halfway back.

APC-Type Variants

The BOV-M is designed for the *Milicja* (sort of a more heavily-armed SWAT team also used for antiriot duties). It is essentially the same externally as the BOV-VP, though the interior troop space is often taken up with a cage for a police dog and a locker for CS grenades. They are normally equipped with flashing lights, a siren, and a PA system, as well as an extra spotlight used by the commander.

The BOV-SN is an armored ambulance version which is unarmed, though the cupola with its vision blocks is retained. The BOV-SN has room for four stretcher patients, two stretcher patients and three seated patients, or six seated patients, plus a medic in the rear. Space is at a premium, and the BOV-SN has the equivalent of one doctor's medical bag, 10 personal medical kits, and a small assortment of splints, bandages, burn kits, cravats, and minor medical supplies. It carries four blankets, though it has no capacity to warm them, or give warm fluids.

Yugoimport (Yugoslavia/Serbia's current company for military weapons) has recently offered an armored reconnaissance version, which has no designation as of yet. This version has a much-reduced dismount crew, and instead has much heavier armament – a turret with an M-55 autocannon, a coaxial PKT, and a launcher on either side of the turret for a Malyutka ATGM. As customer request, the double Malyutka launcher may be replaced by a single AT-5 launcher. The Armored Reconnaissance variant has one extra long-range radio.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
BOV-VP	$36,444	D, A	1 ton	9.1 tons	3+7	6	Passive (D), WL Spotlight (G)	Enclosed
BOV-SN	$41,911	D, A	500 kg	9.3 tons	**	6	Passive (D), WL Spotlight (Cupola)	Enclosed
Armored Reconnaissance	$36,018	D, A	1 ton	9.6 tons	3+3	6	Passive IR (D, G), Image Intensification (G), Thermal Imaging (G)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
BOV-VP	139/70	32/16	220	60	Stnd	W(3)	HF4 HS3 HR 2*
BOV-SN	136/69	31/16	220	61	Stnd	W(3)	HF4 HS3 HR 2*
Armored Reconnaissance	132/67	30/15	220	63	Trtd	W(3)	TF3 TS3 TR2 HF4 HS3 HR 2*

Vehicle	Fire Control	Stabilization	Armament	Ammunition
BOV-VP	None	None	M-2HB or DShK or PKT	500x.50 or 500x12.7mm or 850x7.62mm
Armored Reconnaissance	+2	Fair	20mm M-55 Autocannon, PKT, 2xMalyutka ATGM Launchers	500x20mm, 1000x7.62mm, 4xMalyutka ATGM

*Floor AV is 2Sp.
**See Notes for Crew and passenger capacity.

Yugoimport Lazar BVT

Notes: Not currently yet in service with any nation, the Lazar (named after a 14th century prince of Serbia) is being aggressively marketed both to the Serbian Army and on the international market (Yugoimport, for example, has been pursuing Iraq hard). Designed for urban and rural anti-infantry patrol and transport, the Lazar is an MRAP. The chassis started as a simple redesign and armored version of the TAM-150 truck, but the design quickly moved away from these roots and the vehicle became larger, taller, more robust, and grew from a 4x4 to an 8x8 configuration. In testing, the Lazar met all parameters except weight (especially with appliqué armor), but with its powerful engine this was not seen as a severe deficit. The Lazar may have a big future – several countries are interested in it – or it may fade away in the face of competing and in many cases more advanced MRAP designs; the Lazar's novel armor may give it an edge. There is also a tendency for the worldwide arms market not to trust Serbian or former Yugoslavian designs.

In keeping with its truck roots, the Lazar has a frontal cab containing the driver and commander. They have doors in each side of the cab. Those doors have large bullet-resistant windows, and the front has a large double bullet-resistant windshield. From the roof of the driver's and commander's positions are brackets to allow the mounting of night vision blocks. To the rear of the cab is the gunner's position, which may have as armament a number of cupolas or small turrets. The small turrets are almost RWSs; the gunner only has his head and shoulders inside the turret. The cupolas are like smaller versions of this, with a ring of vision blocks and the gunner placing his head inside the cupola to aim and fire. Both have small hatches in the roofs. The rear area has its troops sitting down the center. The troops not only have three firing ports down each side and two in the rear; the sides may be hinged upwards at the top to give the troops inside more visibility and the ability to fire heavy weapons from inside such as grenade launchers and machineguns. The troop compartment also has a large double hatch on the rear deck, and a large double hatch on the rear face (each with a firing port in it). A cluster of four smoke grenade launchers are found on the ends of each front bumper; these launchers can fire normal smoke, IR smoke, or chaff, depending what is loaded in the tubes.

The Lazar is powered by a 440-horsepower turbocharged diesel of new design; this engine is said to have rapid power response both up and down, giving excellent acceleration and deceleration, and the ability to operate at long periods of high speed and low speed. The engine is coupled to an automatic transmission, though manual transmission is available as a backup of to those who prefer it. The engine gives the Lazar excellent speed and mobility in its base form; however, put on the appliqué armor package, and the Lazar turns into a dud. The 8x8 suspension is of the off-road type; steering is on the first four wheels, and the tires are run-flat, puncture-resistant, and have central tire pressure regulation. Particular attention has been given to the strength of the suspension, as well as its mobility – each wheel has independent suspension and can move up and down and to a very limited extent side-to-side independently of the other wheels. The engine compartment and fuel tanks have an automatic fire detection and suppression system, as does the cab and troop compartment.

Perhaps the most interesting part about the Lazar is its armor. Armor is moderately angled on the front, and a little less angled on the sides, though enough to benefit protection. The base outer armor is of steel, but it also incorporates the new concept of NERA (Non-Explosive Reactive Armor). NERA uses a classified composition of rubber with a specific (and also classified) composition and consistency, sandwiched between light metal plates. NERA has almost no effect against KE penetrators (acting as a mere 4 points of extra armor against these projectiles), but against HE and HEAT-type rounds, the protection is dramatic – the equivalent of an extra 60 points of armor against these rounds. In addition, NERA is only about a quarter of the weight and half the cost of ERA. (In addition, the lack of the use of explosives in NERA means that it could also be used on soft-skinned vehicles.) Finally, since there are no explosives to detonate, a NERA tile is not destroyed on that first hit by an incoming round – studies have shown that a NERA tile can remain effective after 6-12 hits (I'll use the figure of 8 hits for game purposes). And just to round things out, a tandem warhead will not destroy a NERA tile so that the main charge can penetrate the vehicle's skin – in game terms, each individual warhead in a tandem warhead fired against NERA is resolved as a separate attack, with that same NERA tile getting in the way of penetration.

Lugs are attached to the hull front, hull sides, and if equipped with a turret, turret front and sides for conventional ERA modules. In addition, the Lazar can take a pretty comprehensive (and heavy) appliqué armor package – it almost doubles the weight of the Lazar so equipped, and provides protection similar to the MEXAS composite armor package.

Projected and demonstrated variants include non-APC- types (not covered here) such as an AAA/SAM vehicle and cancelled variants such as a light howitzer, a tracked version, and an amphibious version. APC-type versions projected and/or demonstrated include a shorter, lighter 4x4 version, and an armored ambulance. The armored ambulance has the equivalent of two doctor's medical bags, 20 personal medical kits, an assortment of bandages, splints, cravats, burn treatment kits, and minor medical supplies, as well as a small refrigerator for perishable medical supplies. It can carry four stretcher patients, two stretcher patients and four

seated patients, or eight seated patients, plus a medic in the rear. It is unarmed, though it retains a rotating cupola with all-around vision blocks. I have not been able to find enough solid information on the 4x4 version, so it will not be presented here until I find some.

Twilight 2000 Notes: the Lazar is not available in the Twilight 2000 timeline.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Lazar BVT (Cupola)	$86,274	D, A	1.5 tons	16.3 tons	3+10	6	Thermal Imaging (D, C)	Enclosed
Lazar BVT (Cupola) w/Appliqué	$90,894	D, A	770 kg	28 tons	3+10	16	Thermal Imaging (D, C)	Enclosed
Lazar BVT (Turret 1)	$144,751	D, A	1.5 tons	16.5 tons	3+10	6	Thermal Imaging (D, G, C), Image Intensification (G)	Enclosed
Lazar BVT (Turret 1) w/Appliqué	$149,971	D, A	770 kg	28.2 tons	3+10	16	Thermal Imaging (D, G, C), Image Intensification (G)	Enclosed
Lazar BVT (Turret 2)	$147,787	D, A	900 kg	16.6 tons	3+10	8	Thermal Imaging (D, G, C), Image Intensification (G)	Enclosed
Lazar BVT (Turret 2) w/Appliqué	$153,007	D, A	670 kg	28.3 tons	3+10	18	Thermal Imaging (D, G, C), Image Intensification (G)	Enclosed
Lazar BVT (Turret 3)	$154,036	D, A	900 kg	16.7 tons	3+10	8	Thermal Imaging (D, G, C), Image Intensification (G)	Enclosed
Lazar BVT (Turret 3) w/Appliqué	$159,256	D, A	670 kg	28.4 tons	3+10	18	Thermal Imaging (D, G, C), Image Intensification (G)	Enclosed
Lazar BVT (Turret 4)	$152,385	D, A	900 kg	16.7 tons	3+10	8	Thermal Imaging (D, G, C), Image Intensification (G)	Enclosed
Lazar BVT (Turret 4) w/Appliqué	$157,605	D, A	670 kg	28.4 tons	3+10	18	Thermal Imaging (D, G, C), Image Intensification (G)	Enclosed
Lazar BVT Ambulance	$99,216	D, A	450 kg	16.6 tons	***	9	Thermal Imaging (D, C)	Enclosed
Lazar BVT Ambulance w/Appliqué	$103,836	D, A	335 kg	28.3 tons	***	19	Thermal Imaging (D, C)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Lazar BVT (Cupola)	168/105	48/24	400	234	Stnd	W(8)	HF11Ne HS8Ne HR 6*
Lazar BVT	97/61	28/14	400	400	Stnd	W(8)	HF19Cp HS13Cp

(Cupola) w/Appliqué							HR 10**
Lazar BVT (Turret 1)	166/104	48/24	400	236	CiH	W(8)	TF5Sp TS5Sp TR3 HF11Ne HS8Ne HR 6*
Lazar BVT (Turret 1) w/Appliqué	97/61	28/14	400	405	CiH	W(8)	TF6Sp TS6Sp TR3 HF19Cp HS13Cp HR 10**
Lazar BVT (Turret 2)	165/103	47/24	400	239	CiH	W(8)	TF5Sp TS5Sp TR3 HF11Ne HS8Ne HR 6*
Lazar BVT (Turret 2) w/Appliqué	97/61	28/14	400	408	CiH	W(8)	TF6Sp TS6Sp TR3 HF19Cp HS13Cp HR 10**
Lazar BVT (Turret 3/4)	165/103	47/24	400	239	CiH	W(8)	TF5Sp TS5Sp TR3 HF11Ne HS8Ne HR 6*
Lazar BVT (Turret 3/4) w/Appliqué	96/60	27/14	400	408	CiH	W(8)	TF6Sp TS6Sp TR3 HF19Cp HS13Cp HR 10**
Lazar BVT Ambulance	165/103	47/24	400	239	Stnd	W(8)	HF11Ne HS8Ne HR 6*
Lazar BVT Ambulance w/Appliqué	97/61	28/14	400	408	Stnd	W(8)	HF19Cp HS13Cp HR 10**

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Lazar BVT (Cupola)	None	None	PKT or AG-17	1500x7.62mm or 380x30mm Grenades
Lazar BVT (Turret 1)	+2	Fair	NSVT, PKT	900x12.7mm, 1500x7.62mm
Lazar BVT (Turret 2)	+2	Fair	20mm M-55 Autocannon, PKT	570x20mm, 1500x7.62mm
Lazar BVT (Turret 3)	+2	Fair	30mm KCB Autocannon, PKT	380x30mm, 1500x7.62mm
Lazar BVT (Turret 4)	+2	Fair	20mm M-55 Autocannon, AG-17	570x20mm, 380x30mm Grenades

*Roof AV is 4; Floor AV is 6Sp. The “Ne” refers to NERA armor.

**Roof AV is 5, Floor AV is 7Sp. Hits to the hull front and hull sides have sort of a “double armor” effect – first the special protection of composite armor is applied, then the special protection of NERA is applied.

***See Notes for Crew and passenger capacity.