

## ATGM Vehicles



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**Pandur ATGM Vehicle**

Notes: This is a Pandur APC hull fitted with a HOT or TOW launcher turret instead of one of the normal turrets. The HOT-armed version uses the UTM-800 turret, while the TOW-armed model has a K-E Armored Launching Turret.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$206,043	D, A	800 kg	11.44 tons	4	5	Image Intensification, Thermal Imaging	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
221/133	45/27/4	275	94	CiH	W(3)	TF2 TS2 TR2 HF9 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+2	None	4xHOT Launchers or 2xTOW launchers, MAG (C)	10xHOT or TOW ATGM, 2000x7.62mm

**AIFV-B-MIL**

Notes: This is a Belgian variant of the AIFV. In this version, the turret is removed and replaced with a cupola similar to that of the M-113 series. To the right of this cupola is a quick disconnect mount for a Milan ATGM launcher; in this mount, the weapon remains on its tripod and may be removed from the vehicle in one phase. Attached to the mount, the missile can be steered (but not fired) with the vehicle moving at one-half its normal combat speed. While attached to the vehicle, the Milan is aimed, fired, and steered by a downlinked monitor in the vehicle hull.

As an AIFV variant, the AIFV-B-MIL is equipped with a 6V-53T diesel engine with a power of 267 horsepower, coupled to a semiautomatic transmission and on a torsion bar suspension derived from that of an M113 APC. The vehicle does not normally carry passengers (though there is enough room for two or three in extremis), instead carrying crew enough for a dismount team, a ground mount launcher, and reload missiles.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$247,838	D, A	423 kg	13.1 tons	5	9	Active/Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
142/99	39/28/4	416	97	Std	T2	HF6Sp HS4Sp HR4

Fire Control	Stabilization	Armament	Ammunition
None	None	M-2HB (C), Milan II Launcher	1000x.50, 12xMilan II ATGM

**Alvis FV102 Striker ATGM Vehicle**

Notes: This is a Spartan APC fitted with a Swingfire ATGM mount. The launcher is a box with space for five Swingfire missiles. The missiles are loaded manually. The missiles may also be fired by radio remote control, with the gunner up to 100 meters from the vehicle. The Striker has an NBC overpressure system. The commander has a No. 26 cupola equipped with a machinegun. At the front of the vehicle are two 4-barrel smoke grenade dischargers. As a Spartan APC variant, the Striker has a 190-horsepower multifuel engine coupled to a manual transmission and supported by a torsion bar suspension.

In 1995, the British Army began upgrading its Strikers. This upgrade consists of a test set that improves reliability of the launchers and missiles, and a fire-and forget mode for the Swingfires. This work was completed in 1996, with 60 vehicles converted to this standard.

The Belgian Army ordered 43 Strikers in 1976, but they had been withdrawn from service by 1995.

Twilight 2000 Notes: The Striker Upgrade was partially accomplished, with 20 vehicles converted. The Belgians opted to keep their Strikers in service.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$169,872	G, AvG, A	400 kg	8.35 tons	3	6	Image Intensification, Thermal Imaging	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
180/126	50/35/5	350	114	Std	T2	HF6 HS3 HR3

Fire Control	Stabilization	Armament	Ammunition
None	None	5xSwingfire launchers, L7A2 (C)	10xSwingfire ATGM, 3000x7.62mm

**Alvis FV120 Spartan MCT**

Notes: This is a Spartan APC fitted with a turret mounting a Milan ATGM system. The turret has two tubes, and each vehicle also has a tripod ground mount allowing the missiles to be used away from the vehicle. The British Army operates 75 of these vehicles.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$88,928	G, AvG, A	416 kg	8.51 tons	4	6	Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
177/124	49/35/5	390	114	Trtd	T2	TF3 TS3 TR3 HF6 HS3 HR3

Fire Control	Stabilization	Armament	Ammunition
None	None	Twin Milan launcher, L7A2 (C)	14xMilan ATGM, 3000x7.62mm

**GKN FV438**

Notes: This vehicle is the predecessor of the FV102 Striker ATGM vehicle listed above. This vehicle is based on the FV432 chassis, and has a twin mount instead of the quintuple mount as on the Striker. When the Striker came into service, the FV438s were largely converted into the FV435 Wavell configuration; the missile launchers were removed and the vehicles retrofitted with the Wavell Automatic Data Processing system, essentially converting them into mobile computer platforms for higher echelons of command.

The FV438 has a Rolls-Royce K60 multifuel engine developing 240 horsepower, supported by a torsion bar suspension.

Twilight 2000 Notes: These vehicles were going out of service by the Twilight War, but were hurriedly placed back into service, to supplement FV432-based formations and to replace vehicle losses.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$121,376	G, D, A	371 kg	15.6 tons	4	12	Passive IR	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
116/82	32/23	454	89	Trtd	T2	TF3 TS3 TR3 HF6 HS4 HR3

Fire Control	Stabilization	Armament	Ammunition
None	None	2xSwingfire launchers, MAG (C)	14xSwingfire ATGM, 1200x7.62mm

**GKN Simba Antitank Vehicle**

Notes: This is a Simba APC version with a turret mounting two launchers for the TOW or HOT ATGM. The Philippines uses the TOW version, and the UK uses the HOT version. The TOW launcher is a hammerhead mount, like that fitted to the M-901 ITV; the HOT launcher is the MCT turret. The Simba AT Vehicle is powered by a Perkins 210 Ti turbocharged diesel engine developing 210 horsepower. There are hatches on either side of the vehicle in the center and a rear door.

Twilight 2000 Notes: Unlike other members of the Simba family, some of these vehicles were sent to Europe with British forces.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
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\$156,532	D, A	480 kg	11.2 tons	4	5	Passive IR	Enclosed
<b>Tr Mov</b>	<b>Com Mov</b>	<b>Fuel Cap</b>	<b>Fuel Cons</b>	<b>Config</b>	<b>Susp</b>	<b>Armor</b>	
163/82	46/23	296	77	CiH	W(3)	TF2 TS2 TR2 HF8 HS3 HR3	
<b>Fire Control</b>	<b>Stabilization</b>	<b>Armament</b>		<b>Ammunition</b>			
+2	None	Twin TOW II or 4xHOT launchers		10xTOW II or HOT ATGM			

**LAV with Lancelot HOT Turret**

Notes: This is a LAV-25 with the turret replaced with a Lancelot HOT turret. This turret has four HOT ATGM launchers. More reloads are carried inside the vehicle instead of passengers. The turret is a remote casemate, with the controls and gunner sitting inside the hull. This vehicle is used only by Saudi Arabia.

Being built on a LAV II chassis, the LAV with the Lancelot turret is on an 8x4 chassis with the four rear wheels being the drive wheels. The engine is a Detroit Diesel 6V53T (a variant of the M113's engine) supplying 275 horsepower. The vehicle is amphibious, propelled by its wheels in water. The hull may employ the LAST applique armor kit, but the turret may not.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$262,640	D, A	300 kg	12 tons	3	9	Passive IR, Thermal Imaging, Image Intensification	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
190/95	52/26/6	300	102	CiH	W(6)	TF2 TS2 TR2 HF6 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+2	Basic	4xHOT Launchers	12xHOT ATGM

**LAV-LOSAT**

Notes: This vehicle has not been produced in real life, though prototypes have been built

Twilight 2000 Notes: This is a LAV-25 with the normal turret replaced with a 12-tube Hypervelocity Missile launcher turret. This was produced for the US Marines, but a very few were produced, and all of them were deployed to the Middle East. The HVMs were noted for their ability to trash even most opposition main battle tanks.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$767,486	D, A	397 kg	12 tons	3	11	Passive IR, Thermal Imaging	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
190/95	52/26/6	300	102	Trtd	W(6)	TF6 TS4 TR4 HF6 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+3	Fair	12-round HVM launcher, C-6 (C)	24xHVM, 600x7.62mm

**LAV MPLS (Multiple Purpose Launch System)**

Notes: This is a LAV chassis, with the area behind the driver's and commander's positions chopped down and the armor removed to form a flatbed. On this flatbed is a very large turret mounting a quadruple Chaparral mount, a 7-round Hydra-70 rocket pod, and two Hellfire ATGM launchers. Typically, the Chaparrals are for antiaircraft work, the Hydra-70s are for antihelicopter use, and the Hellfires are for antivehicle attacks. The Hydra-70s are also used as artillery rockets in some cases. There is a machinegun mount by the commander's hatch for local defense.

Twilight 2000 Notes: This hybrid system was used only by Saudi Arabia before the Twilight War (in very small numbers) but was manufactured for US and Canadian forces during the war. These vehicles, despite their small numbers, were used to great effect by Saudi and US Marine forces in the Middle East, where they were called "Damnation Machines" by the Russian, Iranian, and Iraqi forces that faced them.

Merc 2000 Notes: An interesting hybrid system, the MPLS very nearly faced a quiet death until the US Military latched onto them for their new Stryker Brigades. (The US Army also experimented with the turret on a Stryker/LAV III chassis, but the resulting vehicle was judged to be too heavy, unwieldy, and expensive.)

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$580,970	D, A	396 kg	14 tons	3	7	Passive IR	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
169/86	47/24/5	300	102	Trtd	W(6)	TF4 TS3 TR3 HF6 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+3	Basic	4xChaparral SAM launchers, 7-round Hydra-70 launcher, 2xHellfire ATGM launchers, C-6 (C)	4xChaparral SAMs, 21xHydra-70 rockets, 8xHellfire ATGM, 1000x7.62mm

**M17 LAV-AT**

Notes: This is the LAV-25 equivalent of the M901 ITV vehicle, originally developed for the US Marines, and then taken into service

by Canada, Kuwait, and Saudi Arabia. The normal turret is replaced with the same turret as mounted on the M-901. The hull is externally almost the same as the standard LAV-25, including the firing ports, except for the hatch layout. The standard driver's hatch is retained, and opposite that is the commander's hatch with a weapon mount. On the rear deck are two large hatches, and below the launcher is another hatch for the gunner. The rear doors are retained.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$76,476	D, A	404 kg	12.29 tons	4	5	Passive IR	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
185/94	52/26/6	300	102	CiH	W(6)	TF2 TS2 TR2 HF6 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+2	Fair	Twin TOW II Launcher, MAG (C)	10xTOW II ATGM, 1620x7.62mm

**WZ504**

Notes: This is a scout/antitank vehicle based on the Type 86 armored personnel carrier chassis. In this role, a pod containing four HJ73 ATGM launchers is mounted in the vehicle, and raised into position before firing. The vehicle also comes with two ground launchers for the missiles to be deployed away from the vehicle if necessary. Being a variant of the Type 86, the WZ504 has a 298-horsepower diesel engine coupled to a manual transmission, and with a torsion bar suspension. The rear ramp/door is retained, as are the Type 86's four firing ports in each side and one in the rear door. However, the front ports on each side are reachable only by the commander and gunner. There is a smaller hatch on the rear of the roof, used by the scouts or sometimes used in reloading the missile launcher.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$170,735	D, A	396 kg	13 tons	3+4	17	Passive IR (D), Image Intensification (G)	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
156/109	43/30/5	460	116	CiH	T3	TF4 TS4 TR4 HF8 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+2	None	4xHJ73 Launchers	16xHJ73 ATGM

**WZ551 Antitank Vehicle**

Notes: This is a version of the standard Type 90 wheeled armored personnel carrier, with a one-man ATGM turret. The turret carries 4 Red Arrow 8 tubes. The WZ551 Antitank Vehicle chassis is a smaller 4x4 version of the Type 90 chassis. The Chinese are using this vehicle; it has also been obtained by Bosnia. The vehicle has a BF8L413F turbocharged diesel engine of 320 horsepower coupled to a manual transmission, with independent wheel suspension. The hatch layout is the same as the ZPT-90 version of the APC, with the rear roof hatch being used to reload the missile launcher tubes. The WZ551 AT Vehicle retains the three firing ports on each side and the one in the rear door, including the front firing ports' ability to take a 7.62mm machinegun.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$144,065	D, A	360 kg	12.5 tons	4	11	Passive IR (D), Image Intensification (G)	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
174/88	49/24/3	300	107	Trtd	W(3)	TF2 TS2 TR2 HF5 HS3 HR2

Fire Control	Stabilization	Armament	Ammunition
+2	None	4xHJ8 launchers	12xHJ8 ATGM

**YW531 Anti-Tank Vehicle**

Notes: This is an anti-tank vehicle based on the chassis of the Type 63 armored personnel carrier. A turret with four Red Arrow 8 ATGM launchers is fitted to the roof of the vehicle, and there is a reloading hatch to the rear of this turret. Based on early versions of the Type 63 APC, it does not have firing ports or vision blocks in its sides, but the driver does not have night vision. The YW531 AT Vehicle was used by Vietnam as well as China, and is retained in reserves by those countries. The YW531 AT Vehicle participated in the final fall of South Vietnam in 1975 as well as the putting down of uprisings in China in the 1960s. The engine is a Type 6150L 260-horsepower diesel, making the YW531 AT Vehicle a bit underpowered, and the transmission is manual and difficult to change gears. Four rubber-tired roadwheels are found on each side; they are large, and no return rollers are used.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$117,540	D, A	413 kg	12.8 tons	4	13	Passive IR (D)	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
144/101	40/28/4	450	109	CiH	T4	TF1 TS1 TR1 HF3 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
+2	None	4xHJ8 launchers	12xHJ8 ATGM

**YW534 Anti-Tank Vehicle**

Notes: This is the same idea as the YW531 anti-tank vehicle above, but based on the Type 89 APC chassis. This vehicle has a raised superstructure so that more ammunition may be carried. This vehicle actually went into production before the YW531 AT vehicle (in 1988) and is much more common than that vehicle. The YW534 AT Vehicle's engine is German-designed and license-built, a BF8L413F 320-horsepower turbocharged diesel. The YW534 AT Vehicle can be equipped with external fuel tanks for long-



range operations in addition to its internal fuel; these are mounted at the rear. The YW534 AT Vehicle is amphibious with a minimum of preparation – a trim vane must be erected at the front of the vehicle. The roadwheels of the YW534 AT Vehicle have an uneven distribution, with a gap between the third and fourth roadwheels (of the five roadwheels present). Behind the launcher is a large hatch for missile reloading; the rear door of the Type 89 is retained. The four vision blocks on the right side and three to the left, and the side three firing ports and one in the rear door are retained.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$132,600	D, A	451 kg	15.16 tons	4	9	Passive IR (D)	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
149/104	41/29/4	500+300	170	CiH	T4	TF1 TS1 TR1 HF4 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
+2	None	4xHJ8 Launchers	16xHJ8 ATGM

**M8 Greyhound TOW Carrier**

Notes: This is basically the standard M8 Greyhound with a TOW II missile launcher mounted on the turret in front of the commander's hatch. The Greyhounds had been previously upgraded by replacing the original gasoline engine with a diesel engine, and the addition of night vision equipment.

Twilight 2000 Notes: These vehicles were used only by Columbia at the start of the Twilight War, and they proved very effective against Peruvian, Venezuelan, and Panamanian armor. This was a result as much of the tactics used in their employment as the missile; the Columbian Army was trained in their use by US Army Special Forces before the Twilight War.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$76,137	D, A	438 kg	9 tons	3	9	Passive IR (D)	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
115/58	32/16	212	44	Trtd	W(3)	TF2 TS2 TR2 HF3 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
+2	None	M2HB, M1919A4, TOW II launcher	400x.50, 1500x.30-06, 8xTOW II ATGM

**XA-188 Tank Destroyer**

Notes: This is an XA-188 APC fitted with a Kvaerner-Eureka Armored Launcher Turret mounting a 4-tube TOW II ATGM launcher. In this role, the passenger compartment is taken up with the turret, the crew, and ammunition for the launchers. The XA-188 Tank Destroyer has a 246-horsepower Valmet 611 diesel engine with an automatic transmission. There are two rear doors each with a firing port, and four BMP-style firing ports in each side. There is a large hatch on the rear deck which is used to reload the missile launchers. At the front, opposite the driver on the right, is the commander's position; he has a pintle machinegun mount. The vehicle has a GPS navigation system with a mapping module.

Patria also shopped around a version of this concept based on the upgraded XA-203 APC, with a more powerful 295-horsepower Valmet engine to move the upgraded armor suite. This version has firing ports only in the rear doors, but is otherwise similar to its XA-188 counterpart.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
XA-188 Tank Destroyer	\$239,356	D, A	484 kg	18.5 tons	4	11	Passive IR (D), Image Intensification (G, C)	Shielded
XA-203 Tank Destroyer	\$265,358	D, A	411 kg	22.8 tons	4	13	Passive IR (D), Image Intensification (G, C), Thermal Imaging (G)	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
XA-188 Tank Destroyer	125/63	29/15	325	134	CiH	W(4)	TF4 TS4 TR4 HF10 HS5 HR4*
XA-203 Tank Destroyer	111/56	25/13	325	168	CiH	W(4)	TF4 TS4 TR4 HF12 HS6 HR4**

Fire Control	Stabilization	Armament	Ammunition
+2	None	4xTOW II ATGM Launchers, MAG or PKT (C)	12xTOW II ATGM, 850x7.62mm

\*Floor armor for this version is 4; roof armor is 3.

\*\*Floor armor for this version is 6; roof armor is 3.

**Raketenjagdpanzer Jaguar**

Notes: This is the original version of the Jaguar, and is itself based on the Jagdpanzer Rakete vehicle (which was armed with SS-11 ATGMs), and 316 of the Jaguar 1s are actually rebuilds of the Jagdpanzer Rakete. This vehicle is virtually identical to the Jaguar 2 and 3, but is armed with a HOT ATGM launcher. Most of these vehicles were phased out of front-line service in the mid-to-late 1980s in favor of the cheaper missile and better night vision on the Jaguar 2.

The Jaguar is powered by a Daimler-Benz DB-838 500-horsepower supercharged diesel which can also run on JP4 jet fuel. The engine and transmission are combined into one powerpack that can be removed as a unit. The suspension is optimized for some of the roughest terrain around. The tracks are US-designed, but can be replaced with German-designed anti-skid tracks. In either case, the tracks have rubber track pads. The Jaguar has a vehicular collective NBC system.

The Jaguar 2 was adopted in the mid-1980s to take advantage of the TOW IIs lesser cost per missile and better sighting system. Better night vision was also added. 162 of these conversions were made, all from Jagdpanzer 90 vehicles.

The Jaguar 3 is a version of the Jaguar with an MCT (Milan Compact Turret) installed on the roof instead of the open mount of the HOT or TOW versions of the Jaguar 1 or 2. It was not put into service.

Twilight 2000 Notes: As Notes, except that the Jaguar 3 exists only in the Twilight 2000 World. Only about 40 of these conversions were made before air strikes finally put the conversions of these vehicles to an end. All of these vehicles were converted from Jagdpanzer 90 vehicles.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Jaguar 1	\$97,413	D, G, AvG, A	432 kg	25.5 tons	4	17	Passive IR (D)	Shielded
Jaguar 1A3	\$193,413	D, G, AvG, A	432 kg	25.6 tons	4	17	Thermal Imaging (G), Passive IR (D)	Shielded
Jaguar 2	\$197,349	D, G, AvG, A	435 kg	25.6 tons	4	17	Thermal Imaging (G), Passive IR (D)	Shielded
Jaguar 3	\$215,354	D, G, AvG, A	443 kg	25.65 tons	4	17	Thermal Imaging (G), Passive IR (D)	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Jaguar 1&2	139/97	39/27	470	183	Std	T6	HF27 HS14 HR10
Jaguar 3	139/97	39/27	470	183	CiH	T6	TF3 TS3 TR3 HF27 HS14 HR10

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Jaguar 1	None	None	HOT launcher, MG3 (C)	20xHOT ATGM, 3200x7.62mm
Jaguar 2	+2	None	TOW II Launcher, MG3 (C)	20xTOW II ATGM, 3200x7.62mm
Jaguar 3	+2	None	2xMilan Launchers, MG3 (C)	26xMilan II ATGM, 3200x7.62mm

**M-113A1G HOT Vehicle**

Notes: This is a German ATGM carrier featuring twin HOT launchers on an M-113A1 hull. The HOT launchers are raised through an enlarged version of the standard M-113A1 rear deck hatch. The gunner aims and fires via a downlinked sight and firing mechanism. The M113A1G base has a 6V53T diesel engine with 275 horsepower, a semiautomatic transmission and a torsion bar suspension with a shock absorber on each rear roadwheel.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$189,201	D, A	374 kg	12 tons	4	9	Passive IR (D)	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
141/99	39/27/4	360	98	Std	T2	HF6 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+2	None	2xHOT Launchers	10xHOT ATGM

**Panther**

Notes: This is a tank destroyer based on the hull of the Leopard 1 chassis. They were converted by removing the turret and fitting an elevating arm with a 3-round pod firing Trigat ATGM. The arm can be raised to a height of 5 meters and contains all the sensors needed to target and guide the missiles. The sight is downlinked to a gunner's position in the hull, which guides the missiles via a TV monitor. There is a hatch on the center front deck for the driver, one on the right deck behind the driver for the commander, and a large hatch behind the elevating arm for reloading of missiles. This program was cancelled in the early 1990s after only one prototype was built.

The Leopard 1 chassis is powered by a Daimler-Benz DB-838 500-horsepower supercharged diesel which can also run on JP4 jet

fuel, and has a manual transmission and a torsion bar suspension.

Twilight 2000 Notes: A few of these conversions were done before the war, but the program was actually cancelled for a short time; more were done after the war commenced.

Merc 2000 Notes: Germany, Switzerland, Austria, and Italy use this vehicle.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$604,238	D, G, AvG, A	466 kg	38.7 tons	3	15	Thermal Imaging (G), Image Intensification (G), Passive IR (D)	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
102/71	28/20	985	183	CiH	T6	TF4 TS4 TR4 HF27 HS14 HR10

Fire Control	Stabilization	Armament	Ammunition
+4	None	3xTrigat Launchers, MG3 (C)	20xTrigat ATGM, 4000x7.62mm

### Wiesel Antitank Vehicles

Notes: This version of the Wiesel 1 was developed for the needs of German Army Airborne and Airmobile units. It is a small, lightweight, quick vehicle that is easy to produce and maintain; in fact, many of the automotive components are common to European automobiles, motorcycles, and farm vehicles. The TOW-carrying variant was built to provide light, mobile antitank capability to light infantry forces of various types. The TOW carrier has a hatch on the front right deck for the driver, and hatches on either side of the TOW launcher for the commander and gunner.

The Wiesel HOT/ATM is a Wiesel fitted with the Euromissile HOT/ATM turret, in which two HOT launchers are mounted on a turret with an elevating sensor pod. The pod contains night vision, a laser rangefinder, and a TV camera. The pod may elevate to 1.5 meters over the roof of the Wiesel, and is unmanned, the missiles being guided by a gunner inside the hull of the vehicle via a downlinked TV monitor.

Twilight 2000 Notes: This cheap, fast, and effective tank destroyer was built by the hundreds by the Germans before the Twilight War and employed in a large amount of successful "shoot and scoot" antiarmor ambushes. They were employed not only by Germany, but also in smaller numbers by the US 82<sup>nd</sup> Airborne Division and 75<sup>th</sup> Ranger Regiment during the Twilight War, where their small size made them very suitable for airdropping or carrying in or slinging from helicopters. In addition, 7 of them were converted by TACOM in the US to robotic assault vehicles, and field/combat-tested in the Middle East.

Merc 2000 Notes: Like much of the Wiesel line, sales of these vehicles multiplied in the Merc 2000 World.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Wiesel 1 TOW	\$49,827	G, A	294 kg	2.8 tons	3	5	Passive IR (D)	Enclosed
Wiesel HOT/ATM	\$177,936	G, A	306 kg	2.91 tons	3	5	Thermal Imaging (G), Image Intensification (G), Passive IR (D)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Wiesel 1 TOW	193/135	54/38	80	31	Std	T2	HF4 HS2 HR2
Wiesel 1 HOT/ATM	187/131	52/36	80	31	Std	T2	TF2 TS2 TR2 HF4 HS2 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Wiesel 1 TOW	+1	None	TOW II Launcher	7xTOW II ATGM
Wiesel 1 HOT/ATM	+3	None	2xHOT Launcher	6xHOT ATGM

**Namica**

Notes: This Indian vehicle is a Sarath (BMP-2) with the turret removed and replaced with an extendable mount for Nag ATGM. The mount carries three missiles. The vehicle is equipped with advanced fire control and night vision gear and may fire to a limited extent on the move. Development of this vehicle has been slow (because of the missile system, not the vehicle itself), and it is rather rare.

The Namica's hull is for the most part the same as that of the BMP-2/Sarath, except that the rear of the hull is raised to make more room for missile reloads. Despite the missile storage, the rear of the Namica is rather roomy, giving the loader a good amount of space to work. The engine is a locally-produced version of the Russian UTD-20/3 300-horsepower diesel engine. The Namica has a manual transmission and torsion bar suspension, with five large roadwheels, a drive sprocket and rear idler wheel. The turret is larger than that of the BMP-2, and the commander's hatch on the front right has a pintle-mounted machinegun. To the rear of the turret is a large loader's hatch. The BMP-2's firing ports are deleted, with the ports being faired over; the vision blocks are retained. The rear doors are unchanged from those of the Sarath/BMP-2.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$469,559	D, G, AvG, A	554 kg	14.5 tons	4	9	Thermal Imaging (G), Image Intensification (D, G)	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor*
146/102	41/28/4	462	157	Trtd	T2	TF4 TS4 TR4 HF8 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+4	Basic	3xNag ATGM launchers, MAG (C)	12xNag ATGM, 2000x7.62mm

\*Hull floor armor for the Namica is 3, except in the part of the vehicle under the driver and turret, where it is 4.

**ASCOD ATGM Vehicle**

Notes: This is the ASCOD IFV chassis with the turret replaced by a twin armored mount for TOW missiles, similar in concept to that of the M901 ITV, though not in design. The missiles are reloaded through a hatch on the rear deck. The vehicle gives a decent amount of protection to its crew and good mobility. The engines are equipped as per the countries' national variants.

The Spanish Pizarro-based version uses a 600-horsepower MTU 8V-183-TEE22 supercharged diesel. It is equipped with a Sapa Placancia SG 850 automatic transmission, which can be switched by the driver to manual transmission if necessary. Suspension is by torsion bar with rotary dampers at the ends. The Pizarro also has lugs for SABBLIR ERA at the lower half of the glacis, at the lower sides of the turret sides, and on the hull sides. The vehicle has a laser warning system, which alerts the crew that the vehicle is being lased by ATGM or aircraft lasers or vehicle rangefinders or designation beams: A detection triggers two smoke grenades, the some of which has a prismatic component to block the lasers. The Pizarro is also equipped with an optical chemical sniffer. The system is aimed by the Indra Mk-10, which gives the Pizarro-based ATGM vehicle a full solution digital computer, day channel, thermal channel and laser rangefinder. The gunner interfaces the Mk-10 through an LCD screen, and essentially designates targets while the Mk-10 does the final aiming and firing. The Pizarro-based ATGM vehicle has an NBC overpressure system with a collective NBC backup.

The Austrian Ulan-based version uses a more powerful (but also physically larger) MTU 8V-199-TE22 engine which develops 720 horsepower. The Ulan-based version has an NBC overpressure system with a collective NBC backup. The vehicle is equipped with the Kollsman Day/Night Range Sight (DNRS), which integrates a digital ballistic computer, day vision and night vision channels and a laser rangefinder. The Kollsman system also has an automatic target tracker; the gunner lases a target and the turret slews to put the missiles on target. The commander has a cupola with all-around vision blocks; the center front block has a magnification of x2.8; he also has an LCD screen which projects what the gunner is seeing; he does not have his own thermal imager.

All the versions below have a BMS, GPS, Vehicle State Computer, and mapping computer. The ASCOD hull can take the applique armors of their IFV counterparts, but the turret cannot.

Twilight 2000 Story: Only Austria and Spain got any of these ASCOD variants, and they got only a few of them at that.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
ASCOD ATGM (Pizarro-Based)	\$474,055	D, A	486 kg	24.9 tons	4	16	Thermal Imaging (G), Image Intensification (G, C), Passive IR (D)	Shielded
ASCOD ATGM (Pizarro-Based, Applique)	\$479,063	D, A	470 kg	26.25 tons	4	16	Thermal Imaging (G), Image Intensification (G, C), Passive IR (D)	Shielded
ASCOD ATGM (Ulan-Based)	\$437,547	D, A	444 kg	26.6 tons	4	22	Thermal Imaging (G), Image Intensification (G, C), Passive IR (D)	Shielded
ASCOD ATGM (Ulan-Based, Applique)	\$451,156	D, A	401 kg	27.65 tons	4	22	Thermal Imaging (G), Image Intensification (G, C), Passive IR (D)	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
ASCOD ATGM (Pizarro-Based)	171/120	48/33	860	233	CiH	T3	TF4 TS4 TR4 HF18Cp HS8Cp HR6
ASCOD ATGM (Pizarro-Based, Applique)	164/115	46/32	860	233	CiH	T3	TF4 TS4 TR4 HF22Cp HS10Cp HR6*
ASCOD ATGM (Ulan-Based)	183/129	51/35	860	267	CiH	T3	TF4 TS4 TR4 HF18Cp HS8Cp HR6
ASCOD ATGM (Ulan-Based, Applique)	182/128	51/35	860	267	CiH	T3	TF4 TS4 TR4 HF24Cp HS12Cp HR6**

Vehicle	Fire Control	Stabilization	Armament	Ammunition
ASCOD ATGM (Pizarro-Based)	+3	None	Twin TOW II launcher, MG3 (C)	12xTOW II ATGM, 1500x7.62mm
ASCOD ATGM (Ulan-Based)	+3	None	Twin TOW II launcher, MAG (C)	12xTOW II ATGM, 1500x7.62mm

\*Belly armor is 6Sp.

\*\*Belly Armor is 8Cp; Roof Armor is 5Sp.





**VCC-ITV**

Notes: This is an ATGM vehicle used by Italy and Saudi Arabia. It is the VCC-1 with an ITV system mounted on the deck, and the requisite automatic reloading machinery, as in the M-901 ITV. The MG42/59 MG is retained as the commander's machinegun. The interior is taken up with the mount for the ITV system and ammunition storage.

The original engines were the same as the M113A2 – a 6V53 diesel engine – but the engine output is somewhat different at 215 horsepower. The driver's controls are improved, including a driver's yoke, gas pedal, and brake pedal. Later modifications have had an increase to 275 horsepower along with a new transmission. For operations in Somalia, Iraq, and Afghanistan, some VCC-ITVs were fitted with a further appliqué armor kit; ridged aluminum, developed from that used on the US AAPV7A1, was added to sides of the vehicle, while frontal armor was improved by the addition of flat aluminum plates.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
VCC-ITV	\$86,720	D, A	721 kg	12 tons	4	9	Passive IR (D)	Shielded
VCC-ITV	\$87,562	D, A	646 kg	12.3 tons	4	9	Passive IR (D)	Shielded
w/Applique								
VCC-ITV	\$86,990	D, A	731 kg	12.1 tons	4	9	Passive IR (D)	Shielded
(Improved)								
VCC-ITV	\$87,832	D, A	656 kg	12.4 tons	4	9	Passive IR (D)	Shielded
(Improved)								
w/Applique)								

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor			
VCC-ITV	135/95	38/26/4	360	111	CiH	T2	TF2	TS2	TR2	HF12 HS8Sp HR6
VCC-ITV	133/93	37/26/4	360	111	CiH	T2	TF2	TS2	TR2	HF14Sp HS10Sp HR6
w/Applique										
VCC-ITV	163/114	45/32/5	360	145	CiH	T2	TF2	TS2	TR2	HF12 HS8Sp HR6
(Improved)										
VCC-ITV	160/112	44/31/4	360	145	CiH	T2	TF2	TS2	TR2	HF14Sp HS10Sp HR6
(Improved)										
w/Applique)										

Fire Control	Stabilization	Armament	Ammunition
None	None	Twin TOW II launchers, MG42/59 (C)	12xTOW II ATGM, 1000x7.62mm

**Type 60 Antitank Vehicle**

Notes: This Japanese vehicle is a tank destroyer version of the Type 60 armored personnel carrier. In this version there is a launcher for the Type 64 MAT antitank missile on either side of the rear deck by the large troop hatch. Instead of passengers, the vehicle carries a small crew and ammunition for the missile launchers.

Power is provided by a Mitsubishi 8 HA 21 WT turbocharged diesel developing 230 horsepower, coupled to a manual transmission. The hull is of all-welded steel. Suspension consists of conventional torsion bars, with three out of the five roadwheels on each side having shock absorbers. The Type 60 is not amphibious. The bow machinegun is retained, and normally manned by the commander. The relatively small fighting compartment at the rear is accessed by two large hatches in the rear face, and the rear deck has a large 2-piece hatch opening to the left and right.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$63,486	D, A	617 kg	11.2 tons	4	9	Headlights	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
151/105	42/29	370	120	Std	T2	HF5 HS3 HR3

Fire Control	Stabilization	Armament	Ammunition
+1	None	2xType 64 MAT Launchers, Type 62 (Bow)	12xType 64 MAT ATGM, 2200x7.62mm

**Scorpion TOW Vehicle**

Notes: During the first Persian Gulf War between Iran and Iraq in the 1980s, Iraq captured several Iranian Scorpion light tanks. In trade for some spare parts for its US-made vehicles, Iraq gave Jordan 19 of the Scorpions. (Iraq used older US equipment and vehicles, as she was a US ally until Saddam Hussein came into power.) Jordan took the turrets off these vehicles and replaced them with a TOW II ATGM launcher. The engine is a Perkins Jaguar J60 Mk 100b 4.2-litre gasoline engine, a variant of a sports car engine, which develops 195 horsepower, giving this vehicle incredible agility and speed for a tracked vehicle. The usual Scorpion turret is removed and replaced by an elevating turntable for the TOW launcher, and the interior given over to a ground launcher, equipment, and ammunition storage. To the right of the launcher and gunner's station is a commander's position, with a pintle-mounted machinegun.

Twilight 2000 Story: These vehicles were rarely used outside of Jordan during the Twilight War, though some were used on the West Bank of the Jordan River against Israeli forces.

Merc 2000 Story: Jordan is marketing its modification to countries who want some more mobile TOW platforms.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$77,801	G, A	313 kg	7 tons	4	5	Passive IR (D, G)	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
198/139	55/39/4	423	130	CiH	T3	TF1 TS1 TR1 HF6 HS3 HR3

Fire Control	Stabilization	Armament	Ammunition
+2	None	TOW II Launcher, MAG (C)	9xTOW II ATGM, 3000x7.62mm

**Type 85 AT-3 Carrier**

Notes: This is an ATGM vehicle used by North Korea. It is a Chinese Type 85 armored personnel carrier, with a launching box for AT-3 Sagger ATGMs in the rear of the vehicle. The front armor is sharply-sloped, and the side armor is moderately-sloped, providing good armor protection in relation to the thickness of the armor. The engine is at the front left, with the driver to the right of it; his hatch opens to the left, and he has three vision blocks to the front. The center block can be removed and replaced with a night vision block. The commander is to the rear of the driver. He has a cupola that gives him all-around vision, but no night vision. There is a mount for a KPV machinegun near the commander's hatch. Instead of passengers, the passenger compartment of this vehicle carries reloads for the Sagger launcher. On either side of the hull front, about halfway down the glacis and to the sides, are a cluster of four smoke grenade launchers. The passengers enter and exit through a large door in the rear, which has a firing port. In addition, two small circular hatches are found near the front of the fighting compartment (though these have no vision blocks; they are just simple hatches), these hatches are used by the crew to reload the missile launchers. The fighting compartment has four vision blocks on the right side and three to the left, but the each side has only three firing ports. The Type 85 has a collective NBC system for the crew, as well as an automatic fire detection and suppression system for the crew compartment, fighting compartment, engine compartment, and fuel tanks.

The Type 85's engine is German-designed and license-built, a BF8L413F 320-horsepower turbocharged diesel. It can be equipped with external fuel tanks for long-range operations in addition to its internal fuel; these are mounted at the rear. The Type 85 is amphibious with a minimum of preparation – a trim vane must be erected at the front of the vehicle.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$128,346	D, A	750 kg	12.75 tons	4	9	Passive IR (D)	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
183/128	51/36/5	400+300	160	CiH	T4	TF1 TS1 TR1 HF6 HS3 HR2

Fire Control	Stabilization	Armament	Ammunition
+2	None	4xAT-3 Launchers, KPV (C)	16xAT-3 ATGM, 500x14.5mm

**NM-142**

Notes: This Norwegian anti-tank vehicle is an M113A2 with an Armored Launching Turret (ALT) fitted into the passenger bay. This is the same turret mounted on the TIFV-ATV (see Turkish ATGM Vehicles). Norway converted 100 of these vehicles. Also mounted on the turret are four forward-firing smoke grenade launchers. These launchers permit the use of colored smoke or IR screening smoke as well. The grenades are electrically fired, with a control box on the top of the wall of the engine compartment in front of the commander's position.

The engine is the turbocharged 6V53T, which develops 212 horsepower and has an improved cooling system. The NM-142 has neutral (pivot) steering capability, with the pivot steering handles being located at the front of the driver's compartment above and in front of the tillers; however, most NM-142s have them disconnected as it was found that the NM-142 easily throws tracks under pivot steering, even when simply turning in place.

The increased weight of the NM-142 made swimming perilous; the tech manuals say that an NM-142 has a freeboard of 14 inches when fully loaded, but in practice, the freeboard is typically 10 inches or less, and it is quite possible for NM-142s to sink in even moderately choppy water. For this reason, normal practice is to leave all top hatches of a swimming NM-142 open so that the occupants can quickly escape if the vehicle sinks. In the late 1980s, the amphibious requirement for the NM-142 series was dropped, and the vehicle was to swim only in emergencies.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$250,049	D, A	455 kg	12.25 tons	4	7	Active/Passive IR (D), Image Intensification (G)	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
136/96	30/20/3	360	124	Trtd	T2	TF4 TS4 TR4 HF6 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+2	None	2xTOW II Launchers, M-2HB (C)	10xTOW II ATGM, 1000x.50

**BRDM-1 ATGM Vehicle**

Notes: This is the basic BRDM-1 scout car fitted with a large opening in the rear and racks mounting AT-1, AT-2, or AT-3 antitank guided missiles. Its purpose was to provide rapid mobile antiarmor capability to mechanized units, and also provide an antitank vehicle light enough to be airdropped or sling-loaded and be used by Naval Infantry. It is still in use by some Third World countries, but has largely been replaced by BRDM-2-based ATGM vehicles; this is especially true with the AT-1 and AT-2 missile carriers.

The launchers are simple missile racks and are linked to a raised sight for the gunner. The gunner actually sits in the hull under armor during launch and guiding the missile to the target. AT-1 launchers are at the rear of the vehicle; AT-2 and AT-3 launchers are on top of the vehicle. Like the standard BRDM-1, the roof is open-topped near the center of the fighting compartment for reloading of missiles and to provide local defense. Such defense is limited to the crew's small arms, grenades, and weapons. The engine is a GAZ-40PB 6-cylinder in-line gasoline engine providing 90 horsepower.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
BRDM-1/AT-1	\$116,949	G, A	634 kg	5.7 tons	3	5	Active IR (D)	Enclosed
BRDM-1/AT-2	\$140,402	G, A	634 kg	5.75 tons	3	5	Active IR (D)	Enclosed
BRDM-1/AT-3	\$184,830	G, A	634 kg	5.8 tons	3	5	Active IR (D)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
BRDM-1/AT-1	134/68	38/19/3	150	52	Std	W(4)	HF4 HS2 HR2
BRDM-1/AT-2	134/67	37/18/3	150	52	Std	W(4)	HF4 HS2 HR2
BRDM-1/AT-3	133/67	37/18/3	150	52	Std	W(4)	HF4 HS2 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
BRDM-1/AT-1	None	None	3xAT-1 Launchers	6xAT-1 ATGM
BRDM-1/AT-2	None	None	4xAT-2 Launchers	8xAT-2 ATGM
BRDM-1/AT-3	None	None	6xAT-3 Launchers	12xAT-3 ATGM

**BRDM-2 ATGM Vehicle**

Notes: This vehicle is a tank destroyer version of the BRDM-2 scout car, along the same lines as the BRDM-1 ATGM Vehicle. They were first seen in public used by Egyptian and Syrian forces against the Israelis in the 1973 Yom Kippur war, carrying AT-2 or AT-3 missiles, and have been steadily upgraded since then. The launcher can be raised for firing or lowered under armor protection if necessary, and the gunner stays under armor protection while firing and guiding the missiles. The launchers consist of launch boxes on an elevating mount. Normally, the launcher is lowered under armor for reloading, but it can be reloaded while raised if desired. Raising the mount for firing takes two phases (10 seconds). The engine is a GAZ-41 V-8 gasoline engine, connected to a rather clunky and balky transmission. Amphibious operation only requires that the trim vane be erected at the front, which also actuates the waterjets, propellers, and closes the various openings on the outside of the vehicle that are normally open. It is also recommended, but not strictly required, that the missile launcher be withdrawn into the hull and the opening sealed.

By 2000, the AT-2-armed version was almost never seen, and the AT-3-armed version rare; most versions of this vehicle are armed with AT-4 or AT-5 missiles, and these versions can be armed with a mixture of both depending on the wishes of the crew and the availability of supply.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
BRDM-2/AT-2	\$179,711	G, AvG, A	640 kg	7 tons	3	5	Passive IR (D, G), IR Spotlight	Shielded
BRDM-2/AT-3	\$225,316	G, AvG, A	640 kg	7.05 tons	3	5	Passive IR (D, G), IR Spotlight	Shielded
BRDM-2/AT-4/5	\$317,536	G, AvG, A	640 kg	7.15 tons	3	5	Passive IR (D, G), IR Spotlight	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
BRDM-2/AT-2	157/79	43/22/4	290	81	CiH	W(4)	TF1 TS1 TR1 HF6 HS3 HR2
BRDM-2/AT-3	155/78	43/22/4	290	81	CiH	W(4)	TF1 TS1 TR1 HF6 HS3 HR2
BRDM-2/AT-4/5	154/78	43/22/4	290	81	CiH	W(4)	TF1 TS1 TR1 HF6 HS3 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
BRDM-2/AT-2	+2	None	4xAT-2 Launchers	8xAT-2 ATGM
BRDM-2/AT-3	+2	None	6xAT-3 Launchers	14xAT-3 ATGM
BRDM-2/AT-4/5	+2	Basic	10xAT-4/AT-5 Launchers	15xAT-4 or 15xAT-5 ATGM (Or Mix)

**BTR-RD Robot**

Notes: Despite the name, this is not a robot in the western sense of the word; instead, this is an ATGM carrier version of the BTR-D airborne combat vehicle. A large single-piece hatch is provided at the front part of the vehicle, and a retractable AT-4/5 ATGM launcher is raised and lowered through this hatch. (Raising or lowering the launcher takes 2 phases – 10 seconds.) This weapon can be operated via a remote control at a range of 20 meters. The BTR-RD also carries a tripod-mounted AT-4 ATGM launcher as part of its basic load. For the bow machineguns, traverse is limited, allowing 15 degrees up and down and only about 25 degrees from side to side.

The engine is 270-horsepower 5D-20 diesel engine, giving the BTR-RD good power for its light weight; the transmission is manual. The suspension is specially designed for the BTR-RD's role; it is a variable-height hydropneumatic suspension that allows the BTR-RD to "squat" when being carried in aircraft and being airdropped. The roadwheels are likewise small, and the tracks are a mere 230mm wide. A side-effect of this suspension appears to be a relatively decent ride. The BTR-RD is amphibious with a little preparation – a trim vane must be erected, bilge pumps turned on, and a periscope must be inserted into a socket and extended by the driver. The bilge pump has a manual backup. This takes 10 minutes. Propulsion in the water is by hydrojets. The hydrojets have shutters which allow for surprising maneuverability when swimming – the BTR-RD can turn a complete circle in place while floating. This is aided by the hydrojets' being able to suck in water as well as expel it.

The driver has three vision blocks to the front; the left bow machinegunner has vision blocks to his front and left side, and the right bow machinegunner, though he has no hatch, has vision blocks to his front and right side. All three can remove their front vision blocks and replace them with night vision blocks. The three firing ports on each side of the vehicle are retained. There is no rear door, with all troops entering and exiting through the various roof hatches. The commander's position has no night vision, though he does have all-around vision blocks and an IR/white light searchlight, and a traversable periscope. The crew is protected by a collective NBC system.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$141,755	D, A	451 kg	9.5 tons	5	9	Passive IR (D, 2xBG), Image Intensification (G)	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
189/132	53/37/13	300	113	Std	T4	HF8 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
None	None	AT-5 launcher, Tripod-Mounted AT-4 launcher, 2xPKD (bow)	12xAT-5 ATGM, 12xAT-4 ATGM, 2000x7.62mm

**KBM Khризantema**

Notes: The KBM Khризantema (Chrysanthemum) tank destroyer is an ATGM vehicle based upon the BMP-3 chassis. Armament consists of a twin AT-15 Chrysanthemum ATGM launcher on a telescoping mast. The vehicle has a two-man crew; the driver sits on the front left, and the commander on the front right. The commander aims and fires the missiles via a downlinked sight. It is possible for the commander to engage two targets at once if he uses a different method of guidance for each missile. Guidance is fire and forget once the targets are locked on. The missiles are automatically reloaded when the mast is retracted into the vehicle. The Russians are actively seeking buyers for this advanced tank destroyer.

The driver of the Khризantema sits in the center front of the vehicle, with the engine and transmission to his front in a unified powerpack. He has three vision blocks, and the center block can be removed and replaced with a night vision block. His controls are a conventional steering yoke with a gas and brake pedal; the transmission is automatic. Early production versions of the Khризantema were equipped with a 450-horsepower UTD-29 supercharged diesel engine, but this was quickly replaced in production with the 500-horsepower UTD-29M version, and most early-production Khризantemas were retrofitted with this engine. The longer hull uses six roadwheels and three return rollers on each side, with the return rollers being under a shallow side skirt that is there primarily to increase floatation. The Khризantema is amphibious with preparation (a trim vane must be extended at the front and a bilge pump turned on); once in the water, propulsion is switched to hydrojets until the tracks touch ground again on the other side of the water obstacle. Maneuverability in the water is similar to that of the BMD-1, though due to the heavier weight the Khризantema is not as susceptible to water currents. The Khризantema also normally carries a snorkel device – the Khризantema, when swimming, does not have a lot of freeboard and the snorkel is used when the water is too deep to simply drive across, but not deep enough for the Khризantema to float. The BMP-3 chassis' base has proven itself to be quite adept at operations in desert terrain, even to the point that it is mechanically quite capable of continuing to operate at full speed in a Middle East dust storm (seeing where you're going and finding a target are of course another matter). The Khризantema has also been praised by several export buyers for its ability to overcome vertical obstacles and trenches that might stop another tracked IFV. Navigation is aided by an inertial navigation with both a gyroscopic and transceiver backup; these are available to both the driver and commander. Each roadwheel on the Khризantema has separate hydropneumatic suspension elements, giving the Khризantema a ride that is remarkably smooth compared to previous Russian tracked vehicles.

The rear fighting compartment of the Khризantema is rather cramped due to the large size of the AT-15 missiles stored there, though well laid out. Raising and lowering the launcher mast takes three phases (15 seconds). The mast must be retracted to reload missiles. Once raised again and a target acquired, it takes one phase (5 seconds) to lock on to the target. The crew does not have

any local defense systems which may be mounted, other than small arms, grenades, and other possible personal weapons. The crew is protected by NBC Overpressure with a collective vehicle backup, but the launcher cannot be reloaded while the Khrizantema is NBC-sealed. The Khrizantema is equipped with the Shtora-1 soft-kill APS system. The Shtora-1 consists of sensors and equipment mounted atop the hull and control systems mounted inside the hull; the primary controls for the Shtora-1 on the Khrizantema are at the commander's station. The Shtora-1 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 Khrizantema). A laser warning system is also included with the Shtora-1; when the Khrizantema is being lased by a laser designator, an alarm sounds inside the Khrizantema, and a pair of smoke grenades are automatically launched to help obscure the Khrizantema 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 Khrizantema has six smoke grenade launchers on each side of the hull. The Shtora-1 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 Shtora-1 and other sensors together.

Twilight 2000 Notes: This vehicle was unheard of outside of Russia until units of the Panzergruppe Oberdorf encountered them in late 1998 near Kalisz.

Merc 2000 Notes: Though Russia eventually built some for themselves, the first customers of this vehicle were actually the South Koreans.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$397,953	D, G, AvG, A	718 kg	19.4 tons	2	14	Passive IR (D), Image Intensification (G), Radar (G) (3000m)	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
165/116	40/25/6	690	251	CiH	T3	TF2 TS2 TR2 HF10Sp HS6Sp HR5*

Fire Control	Stabilization	Armament	Ammunition
+3	None	Twin AT-15 launcher	15xAT-15 ATGM

\*Hull floor AV is 6.

### Volsk Kornet-E/BMP-3

Notes: This is an ATGM vehicle used by Russia, based upon the BMP-3 chassis. (See the Khrizantema entry above for the automotive particulars.) The turret has been replaced by a twin launcher for AT-14 Kornet missiles. This launcher is retracted into the hull between firings, where it is automatically reloaded. The Volsk Kornet-E/BMP-3 also carries a ground mount for the missiles, which can be dismounted and used away from the vehicle. The bow machineguns of the standard BMP-3 have also been removed, as have firing ports, troop hatches, and rear door. The vehicle mount is reloaded from two 6-round internal magazines; one is typically loaded with HEAT rounds and one with thermobaric rounds. The driver is seated in the center of the front with the gunner to the rear of him, and the commander to the right of the driver. The crew does not have any local defense systems which may be mounted, other than small arms, grenades, and other possible personal weapons.

Compared with the Khrizantema, the Kornet-E/BMP-3 does not have the defensive systems, nor does it have the advanced fire control system or as advanced missiles. It is, however, less expensive, both in RL and game terms.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$366,005	D, G, AvG, A	720 kg	19.4 tons	3	13	Passive IR (D), Image Intensification (G, C), Thermal Imaging (G, C)	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
165/116	40/25/6	690	251	CiH	T3	TF2 TS2 TR2 HF10Sp HS6Sp HR5*

Fire Control	Stabilization	Armament	Ammunition
+2	None	Twin AT-14 launcher	14xAT-14 ATGM

\*Hull floor AV is 6.

### Volsk AT-6/MT-LB

Notes: This version of the MT-LB APC was first fielded in 1990. It is a standard MT-LB with an external mount for a single AT-6 Spiral missile launcher. This launcher can be retracted under armor protection for reloading purposes, though it is then manually reloaded. The AT-6/MT-LB is fitted with night vision devices and sights for the missiles. The vehicle is otherwise identical to the standard MT-LB.

The MT-LB chassis takes the form of a long-low box, with a hatch in the front left for the driver with the commander on the right side



of the front. The driver can replace his front vision block with a night vision block, and the commander has a small, short-range WL/IR searchlight with a range of about 40 meters; this is primarily to aid the driver when driving at night. The engine is in the front of the vehicle. A small aisle between the commander and driver gives access to the fighting compartment. On the roof of the troop compartment are two large rectangular hatches. The fighting compartment has two large doors in the rear face, and four firing ports, one of which are in each side and one of which is in each rear door.

The engine of the MT-LB chassis is a 240-horsepower YaMZ-238 diesel engine. This engine, while only modest in power for an armored vehicle, generates considerable torque and the AT-6/MT-LB is capable of towing 6.5 tons. The treads can be replaced with tracks almost twice as wide as normal (585mm) for even better performance in snow and swamps. Like most Soviet-designed vehicles of the period, the AT-6/MT-LB's suspension is of conventional torsion bars and has shock absorbers on the first and last set of roadwheels. Construction of the MT-LB chassis is largely of steel and armor is rather thin, especially on the sides and rear.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$228,353	D, A	656 kg	12.3 tons	3	11	Passive IR (D), Image Intensification (G), WL/IR Searchlight (C)	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
167/117	46/32/5	450	100	CiH	T3	TF1 TS1 TR1 HF5 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
None	None	AT-6 launcher	13xAT-6 ATGM

**Al-Fahd AF-40-8-2 Anti-Armor Vehicle**

Notes: This is a basic Al-Fahd APC with a hammerhead mount, similar to that on the M901 ITV vehicle, for TOW ATGMs. In this version, the rear ramp is deleted, and the passenger space is largely taken up by the turret and ammunition. The seat to the right of the driver is retained, and may be used for a passenger. The driver and commander are in tandem to each other in the front of the hull, with the commander behind the driver. The driver has a night vision block in addition to his normal vision blocks; the commander has a special elevated night vision block. Their hatches may be locked partially open (so they are elevated straight out from the hull), or locked open completely. The commander is armed with a pintle-mounted weapon. Firing ports are optional, but usually three are fitted per side and one in the rear. The large rear deck hatches are normally used to raise and lower the hammerhead mount and to provide working space for the ATGM crew.

The AF-40-8-2 has a more powerful engine than its AF-40-8-1 counterpart, with the engine being a Deutz 12 550-horsepower diesel. 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-40-8-2 a tight turning radius. The suspension incorporates conventional hydraulic shock absorbers along with a nitrogen gas spring system which gives the AF-40-8-2 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-40-8-2 has an automatic fire detection and suppression system. Armor is of aluminum; lugs for ERA are optional, but not standard. The vehicle has NBC overpressure with a collective NBC backup, and air conditioning.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$127,337	D, A	550 kg	15.3 tons	4+1	7	Passive IR (D), Image Intensification (G, C), Thermal Imaging (G)	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
258/130	71/36/6	550	214	CiH	W(6)	TF4 TS4 TR4 HF12Sp HS5Sp HR3

Fire Control	Stabilization	Armament	Ammunition
+2	None	Twin TOW II Launcher, MAG (C)	14xTOW II, 1100x7.62mm

**Ratel ZT-3**

Notes: This is a Ratel-20 APC with the turret replaced with one mounting a triple Ingwe ATGM launcher, a coaxial MAG machinegun, and two smoke grenade launchers on either side of the turret. The gunner is seated on the right side of the turret and the commander on the left.

The Ratel ZT-3 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 through 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 through 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.

In front of the commander's position 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 five such small hatches. There are four firing ports in each side of the Ratel ZT-3, 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 ZT-3 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.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$158,822	D, A	668 kg	19.23 tons	3	12	Passive IR (D, G), WL Spotlight (C)	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
138/70	38/19	430	147	Trtd	W(6)	TF6 TS3 TR3 HF11 HS6 HR4*

Fire Control	Stabilization	Armament	Ammunition
None	None	Triple Ingwe launcher, MG4 (C)	12xZT-3 Ingwe ATGM, 800x7.62mm

\*Floor AV is 4Sp.

**Bv-2063/Bv-2064**

Notes: These are light antitank vehicles based on the Bv-206 all-terrain vehicle. In this role, the top of each section is cut down. On the forward section there is a railing framework, and either a TOW launcher (Bv-2063) or Bill or Bill 2 launcher (Bv-2064). Inside the rear section are lockers for missiles. The launcher can be easily dismantled and used from the ground. These vehicles are primarily used by Swedish Norrlands Brigades, due to their over-the-snow capability.

The Bv-2063 and 2064 are otherwise similar to the standard Bv-206, with a front section containing the crew, engine, and some of the passengers and cargo. An articulating joint that allows greater off-road mobility than one long vehicle and also transmits power to the rear section connects the two sections; turn radius is surprisingly tight. The heater in the Bv-206 is very efficient, able to maintain a comfortable temperature in the front or back in temperatures as cold as -40 degrees Celsius. The body is made from a fiberglass-reinforced plastic exterior and a PVC interior, with insulation sandwiched between the two. Fuel is contained in two equally-sized tanks; flow may be shifted manually or automatically, with normal flow being from the left tank, then the right. There are two doors on either side of the front section and one on either side of the rear section; each section also has a roof hatch. The engine is a 2.8L 99 kW Ford Cologne V6 diesel developing 132 horsepower.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Bv-2063	\$47,973	D, A	344 kg	6.5 tons	4	6	Passive IR (D)	Open
Bv-2064	\$52,710	D, A	344 kg	6.5 tons	4	6	Passive IR (D, G)	Open

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
(Both)	143/100	40/28/4	360	49	Std	T2	HF1 HS1 HR1

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Bv-2063	+2	None	TOW II Launcher	8xTOW II ATGM
Bv-2064	+2	None	Bill Launcher	8xBill or Bill 2 ATGM

**PbRbBv-452**

Notes: This Swedish ATGM vehicle made its first appearance in early 1999, though it was not type standardized until late 1999. It is an MT-LB with a triple Bill launcher mounted above the hull on an elevated mount. The launchers are reloaded through large rectangular hatches on the rear deck. The engine of the MT-LB is a 240-horsepower YaMZ-238 diesel engine. This engine, while only modest in power for an armored vehicle, generates considerable torque and the PbRbBv-452 is capable of towing 6.5 tons; it also performs well in moving the PbRbBv-452's light weight. The treads can be replaced with tracks almost twice as wide as normal (585mm) for even better performance in snow and swamps. Like most Soviet-designed vehicles of the period, the PbRbBv-452's suspension is of conventional torsion bars and has shock absorbers on the first and last set of roadwheels. Construction of the PbRbBv-452 is largely of steel and armor is rather thin, especially on the sides and rear.

Twilight 2000 Notes: These vehicles proved to be a thorn in the side of Russian forces in the late years of the Twilight War and during the border incidents afterwards.

Merc 2000 Notes: These vehicles were experimented with, but never mass-produced.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$212,784	D, A	515 kg	13.36 tons	3+3	8	Passive IR (D), Thermal Imaging (G), Image Intensification (G)	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
156/109	43/30/4	450	100	Trtd	T4	TF2 TS2 TR2 HF5 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
+3	None	Triple Bill Launcher	18xBill 1 or Bill 2 ATGM

**PbRbBv-91**

Notes: This is a Swedish ATGM vehicle based on the Ikv-91 chassis. The turret of the base Ikv-91 vehicle has been removed, and in its place are a single TOW missile launcher and two large hatches for the gunner. There is another hatch on the deck added for the commander. This vehicle was produced because the TOW missile was superior in damaging potential than the Ikv-91's main gun. The chassis otherwise remains the same, powered by a Volvo Penta TD 120A turbocharged diesel engine developing 330 horsepower, coupled to an automatic transmission. Suspension is by torsion bar.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$74,942	D, A	461 kg	12 tons	4	7	Active/Passive IR (D)	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
184/129	51/36/5	400	114	Std	T4	HF10 HS6 HR4

Fire Control	Stabilization	Armament	Ammunition
+3	None	TOW II Launcher, Ksp m/39 (C)	12xTOW ATGM, 1100x7.62mm

**PbRbBv-551**

Notes: This is a Swedish ATGM vehicle, armed with a TOW II launcher. It is based on an older infantry cannon vehicle, the Ikv-102/3, which was obsolete and was withdrawn from service. The Ikv-102's hulls were still serviceable and redesigned into the PbRBBv-551.

The engine of the Ikv-102 was replaced with a version of the 2.8L Ford Cologne V6 diesel of the Bv-206 tracked prime mover developing 136 horsepower, and the roadwheels and running gear are similar to an extended version of the Bv-206. Track skirts have been added. The transmission has been replaced with an automatic transmission, the crew compartment has been extended to the rear of the hull, and armor protection has been improved (the base chassis had virtually no armor of import).

The TOW launcher is carried inside the hull and raised on a pedestal before firing. Before this, a two-piece hatch is opened above it. The commander's hatch has a pintle-mounted machinegun by it.

Twilight 2000 Notes: 57 PbRbBv-551 conversions were accomplished before the Twilight War began. Few PbRbBv-552 conversions were made before the Twilight War, though several were done once the war commenced.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
PbRbBv-551	\$68,697	D, A	451 kg	9.7 tons	4	9	Passive IR (G)	Enclosed
PbRbBv-552	\$114,866	D, A	413 kg	9.77 tons	4	9	Passive IR (G)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
PbRbBv-551	108/76	30/21	260	79	Std	T2	HF3 HS2 HR2
PbRbBv-552	108/75	30/21	260	79	CiH	T2	TF2 TS2 TR2 HF3 HS2 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
PbRbBv-551	+2	None	TOW II Launcher, Ksp m/58 (C)	12xTOW II ATGM, 1500x7.62mm
PbRbBv-552	+3	None	Triple Bill Launcher, Ksp m/58 (C)	18xBill 1 or 2 ATGM, 1500x7.62mm

**Cobra TOW Carrier**

Notes: This is a Cobra armored personnel carrier with the turret deleted and a mount for a TOW II ATGM replacing it. Instead of carrying passengers, the interior carries the crew and missiles for the TOW launcher.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$48,291	D, A	400 kg	6.2 tons	5	5	Passive IR	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
261/157	40/24/4	145	70	Std	W(3)	HF4 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
+2	None	TOW II Launcher	8xTOW II ATGM

**TIFV-ATV**

Notes: The TIFV-ATV (Armored TOW Vehicle) is an ATGM vehicle based on the TIFV chassis. The turret is replaced with one mounting a twin TOW launcher of Turkish design.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$100,151	D, A	600 kg	13.69 tons	4	8	Active/Passive IR, Image Intensification	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
149/105	30/20/3	416	111	Trtd	T2	TF4 TS4 TR4 HF8Sp HS4Sp HR3Sp

Fire Control	Stabilization	Armament	Ammunition
+2	None	Twin TOW launcher, M-2HB (C)	10xTOW II ATGM, 500x.50

### Arrowpointe Dragoon TOW Vehicle

Notes: This is a Dragoon basic APC with the rear area taken up by a turntable-mounted TOW launcher and ammunition. 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 through 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.

The crew may enter and exit through wide doors on either side, and they have three hatches on the hull deck. The hatch design for the gunner is similar to the Dragoon Armored Mortar Carrier, with the sliding hatch being replaced with two large hatches opening right and left. The two firing ports on each side and one in the rear are retained. These are not true firing ports, but merely shuttered openings in the hull. The gunner has a folding seat on a stand under his gunner's position. The Dragoon TOW Vehicle has air conditioning as standard. The Dragoon TOW Vehicle has a heater, and this heater has a booster for the driver/commander compartment.

The Dragoon TOW Vehicle borrows the starter, vision blocks, bilge pumps, control knobs and electrical and hydraulic components from the M113A2 APC; automotively, many components are the same as on the M809 medium truck, particularly in the suspension. The engine of the Dragoon is a Detroit Diesel 6V-53T 300-horsepower turbocharged diesel engine (again, a modified version of that of the M113), coupled to an automatic transmission. The Dragoon TOW Vehicle 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 TOW Vehicle 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 TOW Vehicles and variants have a front-mounted winch with a capacity of 5 tons and 53.34 meters of cable. The Dragoon TOW Vehicle 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 amphibious steering response is sluggish.

Twilight 2000 Notes: The US 9<sup>th</sup> ID is the only US unit to have the Dragoon TOW Vehicle 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
Dragoon TOW Vehicle	\$59,768	D, A	606 kg	11 tons	3	9	Passive IR (D, G)	Enclosed
(With Applique)	\$61,267	D, A	606 kg	11.4 tons	3	9	Passive IR (D, G)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Dragoon TOW Vehicle	216/110	60/30/3	350	158	Std	W(4)	HF8 HS4 HF4
(With Applique)	211/106	59/30/3	350	158	Std	W(4)	HF10Sp HS4 HF4*

Fire Control	Stabilization	Armament	Ammunition
+2	None	TOW II Launcher, M2HB	6xTOW II ATGM, 600x.50BMG

\*Floor AV is 4Sp.

### HMMWV LOSAT

Notes: The HMMWV LOSAT (Line-Of-Sight Anti-Tank) is a HMMWV M1044A1 modified to carry a quadruple Hypervelocity Missile System over the roof in a fairing. It is otherwise like the M1044A1, with its Kevlar armor panels and a winch in the front bumper, with 60 meters of cable and a capacity of 2.7 tons. The LOSAT system is used by pointing the HMMWV in the general direction of the target, with aiming done with a mast-mounted sight coupled to night vision and telescopic-vision devices. Guidance is fire-and-forget once missiles are launched; lock-on is by laser designation and a computerized tracking system onboard the missile. Aiming and designation are done via a downlink to the MMS to the gunner in a station in the rear seat of the HMMWV. To the gunner's rear are a rack of reload missiles. The HMMWV LOSAT also commonly towed an armored trailer based on the HMMWV suspension and cargo box, carrying eight reload missiles.

The HMMWV chassis has a 190-horsepower Cummins turbodiesel engine coupled to an automatic transmission. The suspension is switchable from 4x4 to 4x2 for more efficient road use. The engine is built for power instead of speed and has considerable torque. Forging is 0.76 meters when unmodified, though an extended exhaust kit can be added which increases forging to 1.52 meters, literally over the heads of the seated occupants. The HMMWV has the ability to accelerate to 50 kmh in 8 seconds and climb 60%

slopes or negotiate 40% side slopes.

The HMMWV-LOSAT never got beyond the LRIP prototype stage and was never type-standardized, though the LOSAT missiles themselves were type-standardized. Only 12 advanced prototype HMMWV-LOSATs were produced, and though tests were successful, the program was terminated along with the rest of the Ground Combat Vehicle program.

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

Merc 2000 Notes: This vehicle was first seen in service in 2007.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$365,406	D, G, A	198 kg	5.08 tons	3	8	Passive IR (G), Image Intensification (G), FLIR (G)	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
268/134	74/38	95	55	Std	W(3)	HF2 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
+2	None	4xMGM-166A LOSAT Launchers	8xLOSAT

### HMMWV TOW Carrier M1046A1

Notes: This is a standard Armored Weapons Carrier HMMWV fitted with a TOW launch system and supplemental armor consisting of Kevlar panels. The rear area is fitted with racks for TOW missiles and a ground-mount system to be used if necessary or the situation permitted this. The TOW missile system is fitted with a Thermal Imager, and the gunner stands in the open top hatch of the HMMWV to aim and fire his weapon, and to guide the missile to its target. Generally, the gunner is accompanied by a loader who takes the missiles from the back via a large hatch in the rear or through the gunner's hatch. The driver remains in his seat, ready to evade incoming fire. The TOW missile system is mounted beside the gunner's hatch on the HMMWV.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$83,458	D, G, A	286 kg	5.04 tons	3	7	Passive IR (G), Thermal Imaging (G)	Open

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
269/136	74/38	95	55	Std	W(3)	HF2 HS2 HR2

Fire Control	Armament	Ammunition
None	TOW Launcher	10 x TOW ATGM

### LAV-150 TUA

Notes: This is a LAV-150 fitted with a hammerhead mount for a TOW weapons system, similar to that mounted on the M901 ITV. It is a rare system.

The normal LAV-150 gunner's position is removed on the TUA, being replaced with a variant of the M901 ITV twin TOW launcher, this elevates for firing and lowers flat against the top of the hull for reloading. The LAV-150 chassis is not large and there is not a lot of room for reloads or for the crew to work. There are no weapons mounted for close fighting and defense depends upon the crew's personal weapons. The firing ports are deleted on the TUA, being plated over. Six smoke grenade launchers are found on each side of the vehicle.

The driver of the LAV-150 TUA is on the front right, and commander beside him on the left. Originally, the driver and commander were to have the same type of vision blocks 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 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. The side hatches are actually clamshell doors, with a step in the lower door to help exit. There is also a small door in the rear of the vehicle on the right; this entry was a bit narrow, and is a two-piece door like those on the sides, but only half the width.

The engine is a 202-horsepower Cummins diesel, coupled to a manual transmission. The axles are taken from the M44 2.5-ton truck. The tires are specially designed by Cadillac Gage and are run-flat and designed to run even in heavy mud without bogging down. The tires are also puncture resistant. The front has a 10-ton-capacity winch in it, and the vehicle carries a 5-ton snatch block to increase the winching power. The vehicle is fully amphibious, requiring only that bilge pumps be turned on.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$82,515	D, A	476 kg	10.3 tons	4	9	Passive IR (D), Thermal Imaging	Enclosed



(G)

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
169/86	47/24/4	303	104	CiH	W(3)	TF2 TS2 TR2 HF7 HS4 HR3

  

Fire Control	Stabilization	Armament	Ammunition
+2	None	Twin TOW II launcher	8xTOW II

**LAV-300 TUA**

Notes: The LAV-300 TUA (TOW Under Armor) is a 6x6 wheeled armored vehicle manufactured by Cadillac Gage, but was not adopted by the US Army. Panama and Kuwait adopted it. The vehicle uses a modified M901 ITV hammerhead TOW launcher system; this is the same launcher as mounted on the LAV-150 TUA above.

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. The commander has a cupola to the rear of the driver, with a weapon mount on a pintle. The normal LAV-300 firing ports are deleted and plated over. 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, similar to those on a LAV-150. At the rear is a ramp, normally used for loading of ammunition. On the roof near the rear on each side 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 amphibious speed is quite slow.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
LAV-300 TUA	\$187,136	D, A	459 kg	15.33 tons	4	11	Passive IR (D), Thermal Imaging (G)	Enclosed
With Applique	\$189,937	D, A	459 kg	15.83 tons	4	11	Passive IR (D), Thermal Imaging (G)	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
LAV-300 TUA	157/79	43/22/1	435	141	CiH	W(4)	TF2 TS2 TR2 HF8 HS5 HR4*
With Applique	153/77	42/22/1	435	141	CiH	W(4)	TF2 TS2 TR2 HF10Sp HS6Sp HR4**

Fire Control	Stabilization	Armament	Ammunition
+2	None	Twin TOW launcher, MAG (C)	10xTOW II ATGM, 2000x7.62mm

\*Floor AV is 4.

\*\*Hull Roof AV is 3; Floor AV is 5Sp.

**M233A1**

Notes: This was the US Army's solution to making TOW ATGM launchers more mobile before the advent of the M901A1, and it is still being used by many countries. It is basically a standard M113A1 with a stand for a TOW II ATGM launcher in the passenger area, and racks for reload missiles. The TOW launcher may be raised and lowered through the deck hatch, which is enlarged for this role. The gunner must put his head and chest outside the vehicle to aim and fire the launcher. In Israeli service, this vehicle is also used with the MAPATS launcher.

The engine chosen for the M113A1 series, including the M233A1, was the General Motors 6V53, which developed 212 horsepower, and was coupled to an automatic transmission. On the M233A1, a separate, temperature-sensitive mechanism heated the coolant before it circulated through the engine and also supplied heat to an exchanger in the battery box as appropriate. At the center front of the M113 is a small cupola for the commander; this is rotated by the commander simply unlocking the cupola and pulling him around in whichever direction desired. The cupola has periscopic vision blocks for all-around vision when buttoned up, and a platform with a seat that can be raised and lowered as necessary. The driver's position is in the left front of the hull; his hatch is above him, to the front and left of the commander's cupola. The driver has vision blocks that cover everything except the rear and part of the right-side arcs, and the front one can be easily removed and replaced with a passive IR periscope. The seat for the driver can be raised and lowered so that the driver may drive with his head outside the hatch or buttoned up. The controls consist of a gearshift, a gas pedal, and a pair of tillers to steer and brake the vehicle using differential steering. The M233A1 is amphibious with a minimum of preparation (the trim vane must be lowered to its swimming configuration, which takes no more than 15 seconds) – but the M233A1 must already have rubber track skirts installed. These bolt onto the sides of the M233A1 over the top part of the tracks; when the

M233A1 enters the water, an air bubble forms over the top of the tracks to give the M233A1 the extra buoyancy needed for it to float. Propulsion is by the movement of its tracks.

Twilight 2000 Notes: This vehicle was still found in several US National Guard units and in the Israeli inventories at the time of hostilities, and went to war with those units.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$200,841	D, A	744 kg	11.8 tons	4	9	Passive IR (D, G)	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
130/91	36/25/4	360	124	Std	T2	HF6 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+2	None	TOW II Launcher	10xTOW II ATGM

### **M901 ITV**

Notes: The ITV (Improved TOW Vehicle) is a development of the M113A2 armored personnel carrier designed to provide mobile antiarmor capability to mechanized infantry formations. The base M113A2 chassis is equipped with a roof-mounted twin launcher for TOW missiles; these launchers are essentially M220 TOW launchers of the ground-mount type fixed into the vehicular mount. This launcher is a "hammerhead" mount that may be raised for firing or lowered to allow the launchers to be reloaded with minimum crew exposure to hostile fire. The missiles are aimed and fired from a downlinked position inside the vehicle. The launcher may be rotated 360 degrees and accepts any type of TOW missile except the TOW III. The hammerhead mount has been adapted to over a dozen vehicles throughout the world. Besides the US (who deployed them in large numbers), the ITV is used by Egypt, Greece, Jordan, Kuwait, Pakistan, and Thailand.

The engine of the M901 and M901A1 is the turbocharged 6V53T, which develops 212 horsepower and has an improved cooling system. The transmission is also improved, with an additional forward speed. The M113A2 chassis also added neutral (pivot) steering capability, with the pivot steering handles being located at the front of the driver's compartment above and in front of the tillers; however, most M113A2 series vehicles have them disconnected as it was found that the vehicle easily throws tracks under pivot steering, even when simply turning in place. The M901 and M901A1 also have a smoke grenade launcher kit; this consists of a pair of four-tube launchers mounted on either side of the front of the hull, above the fenders. Originally designed specifically for white or dark smoke vehicular grenades, these launchers were later modified to permit the use of colored smoke or IR screening smoke as well. The grenades are electrically fired, with a control box on the top of the wall of the engine compartment in front of the commander's position. The M113-type commander's cupola is retained, and is normally fitted with an M60 or M240 machinegun; the M2HB is a bit too large to fit into the allotted space, and would obstruct the missile launcher's field of fire.

The primary difference between the M901 and M901A1 is the variant of M220 launcher used; the M901 uses the M220A1 launcher, sights, and tracker, while the M901A1 uses the improved M220A2. This translates as differences in the night vision as well as differences in the telescopic day vision (3x for the M220A1 and 6x for the M220A2).

The M901A3 is based on the better M113A3 chassis, with its 275-horsepower RISE powerpack. The M901A3 has what drivers have been wanting for a long time: a conventional steering yoke and a brake pedal instead of the differential steering and braking system. This greatly reduced driver fatigue. The passive IR periscopic sight was replaced with a thermal imager. An improved neutral steering system was fitted, restoring the pivot steer capability. Kevlar anti-spalling liners were fitted to increase protection for the occupants. Finally, the external fuel cells were made standard equipment on the M901A3, also greatly increasing crew survivability. The M901A3 has further upgraded sights, with better night vision and improved 10x range on the telescopic sights.

Twilight 2000 Notes: These vehicles were beginning to be replaced by the M3 variant of the Bradley in US service before the Twilight War, but most US stocks were returned to duty during that conflict. M901A3s do not exist in the Twilight 2000 timeline.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
M901	\$103,966	D, A	718 kg	11.7 tons	4	7	Passive IR (D, G)	Shielded
M901A1	\$186,766	D, A	715 kg	11.79 tons	4	7	Passive IR (D), Thermal Imaging (G)	Shielded
M901A3	\$185,848	D, A	725 kg	12 tons	4	7	Thermal Imaging (D), 2 <sup>nd</sup> Gen Thermal Imaging (G)	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
M901	131/92	36/26/4	360	124	CiH	T2	TF4 TS4 TR4 HF6 HS4 HR4
M901A1	130/91	36/25/4	360	124	CiH	T2	TF4 TS4 TR4 HF6 HS4 HR4
M901A3	158/111	44/31	360	136	CiH	T2	TF4 TS4 TR4 HF6 HS5 HR4

	<b>Fire Control</b>	<b>Stabilization</b>	<b>Armament</b>	<b>Ammunition</b>
M901	+2	Fair	Twin M220A1 TOW Launcher, M60 or M240 (C)	10xTOW II ATGM, 1000x7.62mm
M901A1	+2	Fair	Twin M220A2 TOW Launcher, M60 or M240 (C)	10xTOW II ATGM, 1000x7.62mm
M901A3	+2	Fair	Twin M220A2 TOW Launcher, M60 or M240 (C)	10xTOW II ATGM, 1000x7.62mm

**FDSP BOV-1 ATGM Vehicle**

Notes: This is a BOV-VP armored personnel carrier fitted with launchers for AT-3 or Maljutka missiles. These vehicles were very common antitank vehicles in Yugoslavian service and in her splinter republics, as they were cheap and easy to maintain. The vehicle retains its two firing ports in each side, and

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 right, and has no armament of his own, though he has a firing port to the rear of his windshield under the side window. 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 gunner has a hatch on the center front of the vehicle, and by this hatch is a sight and tracker for the missiles. The gunner must put his head and chest outside the hatch in the roof to use the sight for the missiles, and must stay upright in this hatch during the entire flight of the missiles. Behind the missile launchers is another hatch, used when reloading the missile launchers. The missile launchers are in a large rack on the center roof of the vehicle in a 3x3 configuration, and reload missiles are slid onto the rack from behind.

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.

The BOV-1 is currently being replaced by variants of the Finnish AMV and Lazar APC, except in Serbian service.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$172,214	D, A	334 kg	9 tons	4	9	Passive IR (D, G), WL Spotlight (G)	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
150/76	42/21	220	60	Trtd	W(3)	TF1 TS1 TR1 HF4 HS3 HR 2*

Fire Control	Stabilization	Armament	Ammunition
+1	None	6xAT-3/Maljutka launchers	6xAT-3 or Maljutka ATGM

\*Floor AV is 2Sp.