

TRACKED SELF-PROPELLED ANTI-AIRCRAFT

Brazilian Tracked SP Anti-aircraft
British Tracked SP Anti-aircraft
Canadian Tracked SP Anti-aircraft
Chinese Tracked SP Anti-aircraft
Czech Tracked SP Anti-aircraft
Egyptian Tracked SP Anti-aircraft
Finnish Tracked SP Anti-aircraft
French Tracked SP Anti-aircraft
German Tracked SP Anti-aircraft
Israeli Tracked SP Anti-aircraft
Italian Tracked SP Anti-aircraft
Japanese Tracked SP Anti-aircraft
Lebanese Tracked SP Anti-aircraft
Pakistani Tracked SP Anti-aircraft
Polish Tracked SP Anti-aircraft
Russian Tracked SP Anti-aircraft
Salvadoran Tracked SP Anti-aircraft
South Korean Tracked SP Anti-aircraft
Swedish Tracked SP Anti-aircraft
Turkish Tracked SP Anti-aircraft
US Tracked SP Anti-aircraft

X-1A Antiaircraft Vehicle

Notes: This Brazilian vehicle is an X-1A light tank with the turret replaced with one mounting an M-55 Quad .50 antiaircraft machinegun. This vehicle was designed for antiaircraft use, but more often found use as an antipersonnel/light vehicle weapon.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$48,352	D, A	400 kg	14.2 tons	4	6	Headlights	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
142/58	36/25	320	103	Trtd	T3	TF2 TS2 TR1 HF8 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+1	Basic	M-55 Quad .50 Machinegun	2500x.50

Stormer Starburst/Starstreak

Notes: These vehicles exist, but the machinegun used is an M-2HB.

Twilight 2000 Notes: The Stormer Starburst is a Stormer armored personnel carrier with a turret similar to the Stormer Starstreak below, but mounting Starburst SAMs instead. The turret was also tested on an AMX-10P, M-113A2, and BTR-50 chassis, but only a single prototype each of these vehicles were made for demonstration purposes. The Stormer Starburst was produced at the same time and in the same factories as the Stormer Starstreak, but in greater numbers because it was cheaper and used cheaper missiles.

The Stormer Starstreak is an ADATS version of the Stormer, mounting a turret with a BRG-15 MG and 8 hypervelocity missile tubes.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Starburst	\$283,436	D, G, AvG, A	400 kg	10.6 tons	4	6	Passive IR, Thermal Imaging, Radar	Enclosed
Starstreak	\$296,336	D, G, AvG, A	410 kg	10.4 tons	4	6	Passive IR, Thermal Imaging, Radar	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
(Both)	140/98	35/25/5	405	89	CiH	T3	TF6 TS6 TR6 HF8 HS4 HR4

Vehicle	Fire Control	Stabilization	Armament	Ammunition

Starburst	+2	Basic	8xStarburst SAM Launchers, BRG-15	20xStarburst SAMs, 500x15.2mm
Starstreak	+2	Basic	8xStarstreak SAM Launchers, BRG-15	24xStarstreak SAMs, 500x15.2mm

Tracked Rapier

Notes: This is a modified form of the ground-mounted Rapier SAM pedestal mounted on a highly modified M-548 tracked load carrier. The carrier is lightly armored and thin armor is added to the Rapier mount. The mount is supplied with some degree of stabilization and fire control to allow some degree of fire on the move. Originally designed for the needs of the Iranian Army in the late 1970s, the Tracked Rapier was cancelled by the new Iranian government after it cut ties with Western countries after the revolution. The British Army bought the 50 systems that were already built, and then ordered another 20, then in the early 1990s, ordered series production of the vehicle. The basic M-548 chassis remains intact, with a cab with doors on each side and a roof hatch with a weapon mount. A 60kW APU is located behind the cab to power the weapon systems when the engine is not on. The gunner has a weapons station in the cab linked with the launcher. The Tracked Rapier retains the M-548's amphibious capabilities, but does not have NBC sealing.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$133,134	D, A	500 kg	14.01 tons	3	8	Radar, Passive IR	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
112/78	28/20/3	398	72	Trtd	T2	TF2 TS2 TR2 HF2 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
+4	Basic	4xRapier Launchers, L-7A2 (C)	8xRapier SAMs, 1000x7.62mm

M-113/ADATS

Notes: This mounting of the ADATS missile is used by Canada and the US. It was designed as a mobile air defense/antitank system that can keep up with advancing infantry and with more effectiveness than the Chaparral and M-901 ITV systems. The system consists of eight ADATS tubes in a turret on top of the M-113 chassis, and is equipped with radar, FLIR, and fire-control devices.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$372,349	D, A	500 kg	15.8 tons	3	9	Radar, FLIR, Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
117/81	29/20/2	360	93	Trtd	T2	TF5 TS4 TR4 HF6 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+3	Basic	8xADATS Launchers	16xADATS Missiles

Type 63

Notes: This self-propelled anti-aircraft vehicle is one of the oldest still in the Chinese inventory, and it is also still used by Vietnam. The vehicle consists of a T-34 tank chassis topped with an open turret mounting twin 37mm autocannons. The traverse on the turret and the elevation mechanism on the guns are both manual, so they are slow.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$123,942	D, A	500 kg	32 tons	4	10	Active IR	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
120/84	30/21	590	185	Trtd	T4	TF22 TS8 TR7 HF56 HS14 HR10

Fire Control	Stabilization	Armament	Ammunition
+1	None	2x37mm Autocannons, PKT (Hull)	350x37mm, 1200x7.62mm

Type 69-37-2

Notes: This is a Type 69 tank with the turret replaced with one mounting twin 37mm autocannons. This is a clear-weather-only system, as no radar is provided (a few rare Type 69-37-2s do have radar). The commander is seated on the left inside the turret and the gunner is on the right, with the autocannons between them.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
No Radar	\$111,397	D, A	800 kg	35 tons	3	11	Passive IR	Enclosed

Radar	\$151,397	D, A	800 kg	35 tons	3	13	Radar, Passive IR	Enclosed
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Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
No Radar	126/88	32/22	935	215	Trtd	T6	TF16 TS6 TR6 HF40 HS10 HR8
Radar	122/84	31/21	935	215	Trtd	T6	TF16 TS6 TR6 HF40 HS10 HR8

Vehicle	Fire Control	Stabilization	Armament	Ammunition
No Radar	+1	None	Twin 37mm Autocannons	500x37mm
Radar	+2	None	Twin 37mm Autocannons	500x37mm

Type 80

Notes: This is an older Chinese self-propelled anti-aircraft gun, similar to the Russian ZSU-57-2, being a large, open-topped turret mounting twin S-60 autocannons on a Type 69-II tank chassis. Slightly larger than the ZSU-57-2, it carries more ammunition, has better gun stabilization, and better sights. There is a wire cage on the rear of the turret for the crew to deposit empty shell casings and links. Unlike most other Chinese weapons and vehicles, the Type 80 was not exported.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$131,161	D, A	550 kg	31 tons	6	11	Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
136/96	34/24	935	215	Trtd	T6	TF16 TS6 TR6 HF40 HS10 HR8

Fire Control	Stabilization	Armament	Ammunition
+1	Fair	2x57mm S-60 autocannons	400x57mm

BVP-1 Strop

Notes: As Czechoslovakia's M-53/59 self-propelled antiaircraft guns based on an armored truck chassis were getting old and the truck chassis were not very mobile off-road, Czechoslovakia decided to start, in the mid-1980s, to remove the antiaircraft guns from the M-53/59s and placing them on the chassis of BVP-1 infantry fighting vehicles, which were being phased out in favor of BVP-2s. A new commander's hatch is installed to the front right of the turret, which is further to the rear than on a BVP-1. The turret is a two-man version, but it has no hatches, and the crew enters through the rear doors. Besides Czechoslovakia, this vehicle has also been seen in the hands of Angolan and Cuban soldiers.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$798,052	D, A	400 kg	14.68 tons	4	6	Active/ Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
126/88	32/22/3	460	111	Trtd	T2	TF3 TS3 TR2 HF8 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+2	Fair	2x30mm M-53 Autocannons	1000x30mm

Sinai-23

Notes: This is an Egyptian modification of the M-113A3 armored personnel carrier. In this role, the M-113 is fitted with a turret mounting twin ZU-23 autocannons and four launchers for Sakr Eye SAMs (an Egyptian improved SA-7 Grail SAM). The vehicle also has a radar set and a fire control computer with stabilization for the guns.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$148,877	D, A	300 kg	12 tons	4	7	Radar, Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
110/78	28/20/3	360	114	Trtd	T2	TF5 TS5 TR5 HF6 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+3	Fair	Twin 23mm ZU-23 autocannons, 4xSakr Eye Launchers	1400x23mm, 6xSakr Eye SAMs

T-55/Marksman

Notes: This is a Finnish self-propelled antiaircraft gun using a T-55 chassis with a GEC-Marconi Marksman turret (the same turret fitted to the German Gepard AAA gun). The T-55/Marksman is radar-equipped and all upgrades were completed by 1993.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$189,168	D, A	500 kg	36 tons	4	13	Radar, Active/ Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
114/80	29/20	812 +380	192	Trtd	T6	TF27 TS10 TR6 HF67 HS16 HR8

Fire Control	Stabilization	Armament	Ammunition
+4	Fair	Twin 35mm KDA Autocannons	240x35mm

AMX-13 DCA

Notes: This is the hull of the AMX-13 light tank topped with a large turret housing an antiaircraft gun system. They are generally used in a mix with SP antiaircraft missile systems to provide a layered mix of weapons. They are fairly light vehicles with decent armor (especially against civilians and under-equipped partisans) and good maneuverability. There is a driver's hatch on the front deck, and a commander's hatch on the turret deck; the gunner uses the commander's hatch. The hull can use the same appliqué armor as the standard AMX-13 light tank.

Twilight 2000 Notes: In the Twilight War, the AMX-13 DCAs were used to grisly effect in the Middle East and the Dead Zone against personnel in the open and in soft skinned vehicles, and used to terrorize and kill refugees in the Dead Zone along the Franco-German border, as well as against partisans in Belgium, Luxembourg, and the Netherlands.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$102,450	G, A	300 kg	17.2 tons	3	8	Radar, Passive IR	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
88/62	22/16	415	139	Trtd	T3	TF5 TS4 TR3 HF6 HS3 HR2

Fire Control	Stabilization	Armament	Ammunition
+2	Fair	2x 30mm Giat 30 M 781	600x30mm

Roland/AMX-30

Notes: This is the same Roland SAM turret as on the Roland SPAA featured in the *NATO Combat Vehicle Handbook*, but mounted on a modified AMX-30 tank chassis. It is used by France, Iraq, Qatar, and Spain. Missile launchers are automatically reloaded when empty. The Roland system has both night vision and self-contained radar for the missiles, and may be fired by optical tracking in a heavily jammed environment.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$228,490	D, G, A	500 kg	34 tons	4	13	Thermal Imaging, Radar	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
144/100	36/25	970	253	Trtd	T6	TF12 TS5 TR3 HF30 HS8 HR4

Fire Control	Stabilization	Armament	Ammunition
+3	None	Twin Roland Launcher, AAT-F1 (C)	8xRoland Missiles, 750x7.62mm

Shahine

Notes: This is a self-propelled SAM launcher built by France. The system consists of Crotale SAMs mounted on a modified AMX-30 main battle tank chassis. The system has radar that can track 18 targets at once and engage two of them at a time with missiles. The vehicle is normally followed by a number of heavy trucks equipped with extra missiles and a crane for reloading the launcher.

The second part of Shahine is a target acquisition unit. This is a radar vehicle mounted on a modified AMX-30 chassis. The radar vehicle can track up to 40 targets at once at a range of 18.5 km. It feeds data to the Shahine firing unit through a radio link.

Twilight 2000 Notes: The French did not use this system before the Twilight War, but was instead used only by Saudi Arabia; shipments were diverted when the Foreign Legion deployed to the Middle East, for use by those forces.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Firing Vehicle	\$286,291	D, G, A	400 kg	38 tons	4	14	Passive IR, Radar	Shielded

Radar Vehicle	\$174,452	D, G, A	500 kg	32.7 tons	4	12	Passive IR, Radar	Shielded
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Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Firing Vehicle	130/90	33/23	970	245	Trtd	T6	TF12 TS5 TR3 HF30 HS8 HR4
Radar Vehicle	146/102	37/26	970	250	CiH	T6	TF2 TS2 TR2 HF30 HS8 HR4

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Firing Vehicle	+4	None	6xCrotale SAM Launchers	6xCrotale Missiles
Radar Vehicle	None	None	AAT-F1 (C)	1000x7.62mm

Gepard

Notes: This is a *flakpanzer* (antiaircraft tank) used by Germany, the Netherlands (where it is known as the CA-1), and Belgium. The turret, called the Marksman, is also used on a T-55 chassis by Finland and on a G-6 chassis by South Africa. The Gepard itself is basically a much-modified Leopard 1 chassis topped with a large turret housing the antiaircraft gun system, including a radar for search purposes and a shorter-ranged radar for tracking targets and directing the guns. It has a superficial resemblance to the ZSU-57-2, but as the latter system was not encountered much in Europe and the Gepard was rare in areas where the ZSU-57-2 was common, few mistakes were made. Dutch CA-1s are easily distinguished by their differently-shaped radars; the CA-1's search radar is T-shaped, and the tracking radar has a larger dish, and in addition, there are typically 4 smoke grenade launchers on each side of the turret on German and Belgian Gepards, while there are 6 smoke grenade launchers on each side of the CA-1's turret. Otherwise, there is a driver's hatch on the front right deck, and a commander's hatch on the turret deck.

Twilight 2000 Notes: It was common to put a weapon mount by the commander's hatch, but Gepards were not issued that way.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Standard	\$251,443	D, G, AvG, A	500 kg	47.3 tons	3	14	Radar, Passive IR	Shielded
Late Production	\$342,443	D, G, AvG, A	500 kg	47.4 tons	3	14	Radar, Passive IR, Image Intensification, Thermal Imaging	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
(Both)	126/88	32/22	985	293	Trtd	T6	TF15 HS6 TS6 HF38 HS10 HR8

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Standard	+4	Fair	2x35mm KDA Autocannons	660x35mm

Late Production	+4	Good	2x35mm KDA Autocannons	660x35mm
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Ozelot

Notes: This is a Wiesel light combat vehicle fitted with a turret mounting a SAM launcher. Either Stingers or SA-16s may be used. The launcher has four tubes, and these weapons may be dismounted and used separate from the vehicle. The turret is also equipped with a passive air defense alert device.

There is also a version of the Ozelot, known as the platoon/battalion command post, which has no missiles, but instead has a rotary 3-D radar of Swedish make, known as HARD (Helicopter and Airplane Radio/radar Detection). These vehicles are normally linked to the Ozelot SAM vehicles. This allows a fire control rating of +2.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
SAM Vehicle	\$111,806	D, A	300 kg	4.2 tons	3	3	Passive IR	Enclosed
Radar Vehicle	\$67,095	D, A	300 kg	4.13 tons	3	6	Radar, Passive IR	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
(Both)	158/110	40/28	450	40	Trtd	T3	TF1 TS1 TR1 HF4 HS2 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
SAM Vehicle	+1 (+2 if linked with radar vehicle)	None	4xStinger or SA-16 Launchers	8xStinger or SA-16 SAMs
Radar Vehicle	None	None	MG-3 (C)	450x7.62mm

Radarpanzer

Notes: This is a modified Marder IFV fitted with a raised roofline and a turntable mounting a Siemens air defense radar system. The radar can be raised 10 meters above ground level, and has a range of 30 km. The vehicle is primarily meant to provide targeting information for Roland and Gepard air defense systems, but may be used with other air defense systems.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$109,205	D, A	400 kg	35 tons	4	14	Radar, Passive/Active IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
112/78	28/20/3	652	217	Trtd	T4	TF2 TS2 TR2 HF15 HS6 HR6

Fire Control	Stabilization	Armament	Ammunition
None	None	MG-3 (C)	2500x7.62mm

Roland 2/Roland 3/Marder

Notes: This is the Roland surface-to-air missile system mounted on the chassis of the Marder IFV. The Marder is heavily modified for this role, not only using a different turret, but also carrying automatic reloading machinery in the rear of the vehicle instead of passengers. The Roland 2 and 3 are similar, but the Roland 3 has four missiles launching tubes instead of two. The result is an accurate SAM vehicle that can keep up with armored formations and is used for their protection. The commander and driver's hatch are on the front deck; the turret and the gunner have no hatch. The rear ramp is deleted, as are the firing ports.

Twilight 2000 Notes: Besides the Germans, this system was also used by Brazil in the Twilight War.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Roland 2	\$190,183	D, A	500 kg	32.5 tons	3	14	Radar, Passive IR, Image Intensification	Shielded
Roland 3	\$228,411	D, A	500 kg	33 tons	4	14	Radar, Passive IR, Image Intensification	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
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(Both)	118/84	30/21/3	652	217	Trtd	T4	TF2 TS2 TR2 HF15 HS6 HR6
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Vehicle	Fire Control	Stabilization	Armament	Ammunition
Roland 2	+3	None	2xRoland Launchers, MG-3 (C)	10xRoland SAMs, 1200x7.62mm
Roland 3	+3	None	4xRoland Launchers, MG-3 (C)	10xRoland SAMs, 1200x7.62mm

Machbet

Notes: This is an Israeli variation of the M-741A6 PIVADS vehicle, used only by that country. It is almost identical to the M-163, but atop the turret is a launching box with 4 Stinger launchers. This vehicle was a surprise to enemy pilots who felt they had spotted a standard PIVAD and thought they were out of range of it.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$194,236	D, A	200 kg	12.43 tons	3	7	Passive IR, Radar	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
106/74	27/19/3	360	98	Trtd	T2	TF3 TS3 TR3 HF6 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+2	Basic	20mm M-163 Vulcan Autocannon, 4xStinger Launchers	1800x20mm, 8xStinger SAMs

Otomatic

Notes: This is a heavy anti-aircraft gun built on the chassis of the Leopard 1 tank, many of which the Italians had after adopting the C-1 Ariete in the early 1990s. The regular tank turret is removed and replaced with a larger turret mounting a 76mm radar-directed anti-aircraft gun known as the OTO-Breda Super Rapid, a gun more normally found on ships rather than land mountings. The fire control equipment is advanced, with radar ranging and computer-controlled acquisition, with laser sights and backup TV sights and optical sights for use against land vehicles. The vehicle also incorporates a laser designator for use in conjunction with units firing laser-guided missiles. The Otomatic is equipped with a very efficient fire suppression system, NBC overpressure and radiological shielding, and an APU to generate power when the engine is switched off.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$214,461	D, G, AvG, A	500 kg	47 tons	4	15	Radar, Active/Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
124/86	31/22	985	285	Trtd	T6	TF30 TS12 TR11 HF38 HS10 HR8

Fire Control	Stabilization	Armament	Ammunition
+4	Fair	76mm OTO-Breda Autocannon, MG-43/59 (C)	90x76mm, 1000x7.62mm

SIDAM-25

Notes: This is a light anti-aircraft system based on the M-113 chassis. A turret is added, with quadruple 25mm KBA autocannons. In addition, the engine is replaced with a more powerful engine, and the fuel tanks are moved to the rear, on either side of the ramp (in the same manner as the M-113A3).

The SIDAM-25/Mistral is a rare Italian air defense vehicle that is a standard SIDAM-25 with three launchers for Mistral SAMs mounted above each bank of autocannons. Sights appropriate for the missiles are added along with an enhanced night vision suite. The first of these modifications was done in late 1996, so they are relatively rare.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
SIDAM-25	\$100,679	D, A	200 kg	15.1 tons	3	6	Passive IR	Shielded
SIDAM-25/ Mistral	\$316,863	D, A	200 kg	15.3 tons	3	7	Passive IR, Thermal Imaging, Image Intensification	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
SIDAM-25	96/66	24/17/3	360	99	Trtd	T2	TF5 TS5 TR5 HF6 HS4 HR4
SIDAM-25/ Mistral	92/64	23/16/2	360	99	Trtd	T2	TF5 TS5 TR5 HF6 HS4 HR4

Vehicle	Fire Control	Stabilization	Armament	Ammunition
SIDAM-25	+2	Fair	4x25mm KBA Autocannons	1400x25mm
SIDAM-25/ Mistral	+3	Fair	4x25mm KBA Autocannons, 6xMistral Launchers	1400x25mm, 6xMistral SAMs

Type 87

Notes: This is a Japanese self-propelled antiaircraft gun based on the chassis of the Type 74 tank. The turret is similar to the German Gepard gun, and the autocannons used are the same as that vehicle. The guns are radar-directed.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$153,461	D, A	500 kg	44 tons	4	14	Radar, Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
128/90	32/23	950	278	Trtd	T6	TF22 TS8 TR7 HF56Sp HS14 HR10

Fire Control	Stabilization	Armament	Ammunition
+4	Fair	2x35mm KDA Autocannons, M-2HB (C)	600x35mm, 500x.50

M-113A1/ZU-23-2

Notes: This jury-rigged vehicle is a local modification by Lebanese forces. It is an M-113A1 with a ZU-23-2 anti-aircraft gun installed on the rear deck. The rear deck hatch is retained, as is the rear ramp, but the commander's hatch is blocked by the gun installation. The base vehicle is largely unchanged and can be easily converted back to the APC version, and with a limited ammunition load can still be used in that role. Ammunition in this vehicle is normally carried in cans or in the crates the ammunition is shipped in, but some have been modified with improvised racks. Elevation and traverse are manual and unable to keep up with fast aircraft; as such, the vehicle is normally used against helicopters or in a ground support role. There is a gun shield on the front of the weapon, but otherwise, the crew operating the gun is unprotected.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$58,621	D, A	1 ton	11.95 tons	4	5	Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
108/76	27/19	360	98	Trtd	T2	TF2 TS0 TR0 HF6 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+1	None	ZU-23-2 Twin 23mm Autocannons	1100x23mm

M-113/Anza

Notes: This is a Pakistani development of the M-113A1, with a turret mounting a quadruple launcher for the Anza 1 (copy of the Chinese HN-5 SAM) and two KPV machineguns. The weapons have a coincidence gunsight, but are not stabilized or otherwise increased in accuracy.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$138,580	D, A	400 kg	12.05 tons	4	6	Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
108/76	27/19/3	360	98	Trtd	T2	TF2 TS2 TR2 HF6 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+1	None	4xHN-5 Launchers, 2xKPV	8xHN-5 SAMs, 1750x14.5mm

M-113/RBS-70

Notes: This is a Pakistani M-113 with a pedestal in the rear mounting an elevating RBS-70 SAM and a seat for the gunner. The weapon is carried under armor and elevated before launch. The SAM is equipped with a laser rangefinder and sight.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$76,909	D, A	400 kg	11.68 tons	3	6	Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
110/78	28/20/3	360	97	Std	T2	HF6 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+3	None	RBS-70 launcher, DShK (C)	8xRBS-70 SAMs, 2000x12.7mm

Sopel

Notes: The system is based on a stretched MT-LB, topped with a turret mounting an autocannon and missile launchers. Early versions were armed with SA-7 missiles, but most versions were armed with SA-14 missiles, and a few were made with SA-16 missiles. The early versions have ZU-23 autocannons, but most of the Sopels are armed with 2A38 30mm autocannons (the same as mounted on the ZSO-30-4).

Twilight 2000 Notes: This Polish vehicle began production just before the Twilight War, and as it was produced by the same factories as the BMP-40 and BWP-2000, the production facilities were destroyed early in the war, and few examples of the Sopel were made.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
23mm	\$212,326	D, A	500 kg	16 tons	3	10	Thermal Imaging, Passive IR	Enclosed
30mm	\$225,110	D, A	500 kg	16.12 tons	3	10	Thermal Imaging, Passive IR	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
(Both)	108/79	27/19	450	79	Trtd	T4	TF3 TS3 TR3 HF4 HS2 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
23mm	+3	Fair	2x23mm ZU-23 Autocannons, 2xSA-7 or SA-14 Launchers, PKT (C)	1800x23mm, 8xSA-7 or SA-14 SAMs, 1000x7.62mm

30mm	+3	Fair	2x30mm 2A38 Autocannons, 2xSA-7 or SA- 14 Launchers, PKT (C)	1800x30mm, 8xSA-7 or SA-14 SAMs, 1000x7.62mm
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BTR-ZD

Notes: This is a BTR-D topped with a turret containing a ZU-23-2 anti-aircraft gun setup. It is designed for local air defense and fire support for airborne and naval infantry units. The turret is open-topped and only has a frontal gun shield. It is not normally found outside of Russian, Polish, and Czech units, though a few were supplied to Iraq before the war.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$70,376	D, A	600 kg	11 tons	4	4	Active/Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
164/115	38/27/7	300	88	Trtd	T4	TF2 TS0 TR0 HF8 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+2	Basic	ZU-23-2 Twin 23mm Autocannon, 2xPKT (Bow)	1120x23mm, 2000x7.62mm

SA-4 Ganef ADA

Notes: The Russian designation of this system is the ZRD-SD. It is used by that country and by Bulgaria, Hungary, and Poland. It stretches the limits of the designation "tactical" due to its size, but is used in that role. The complete system includes the launcher described below; a radar vehicle also described below, and Ural-375 trucks for resupply. The radar vehicles are essential; the firing vehicle has no radar or guidance equipment for the missiles. The Long Track tracking radar unit is based on an AT-T chassis, while the Pat Hand fire control radar is based on the same chassis as the Ganef.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Firing Unit	\$270,039	D, A	400 kg	30 tons	5	16	Active/Passive IR	Shielded
Long Track Radar Unit	\$257,092	D, A	400 kg	27.75 tons	5	14	Headlights	Shielded

Pat Hand Radar Unit	\$73,013	D, A	400 kg	30 tons	5	13	Active/ Passive IR	Shielded
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Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Firing Unit	139/97	32/23	850	153	Trtd	T6	TF1 TS1 TR1 HF6 HS4 HR4
Long Track Radar Unit	70/49	17/12	1415	82	CiH	T4	TF1 TS1 TR1 HF2 HS2 HR2
Pat Hand Radar Unit	134/94	31/22	850	146	CiH	T6	TF1 TS1 TR1 HF6 HS4 HR4

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Firing Unit	+3	None	Twin SA-4 Launcher	2xSA-4 SAMs
Radar Units	None	None	PKT (C)	1000x7.62mm

SA-6 Gainful

Notes: This Russian SAM vehicle is known as the ZRK-SD Kub in Russian service. (The export version is called the Kvadrat, but is identical.) Two versions exist; the standard SA-6 consists of a radar vehicle and one or more launcher vehicles, while the SA-6b does not require a separate radar vehicle. Reloads are carried by modified Zil-131 trucks. It is also a large missile for a tactical deployment, though not as large as the SA-4. The standard SA-6 vehicle requires a radar vehicle, as it does not carry tracking equipment of its own. This system is used by a variety of countries, including Russia, Algeria, Bulgaria, Cuba, Czechoslovakia, Egypt, Hungary, India, Iraq, Libya, Poland, Romania, Syria, Tanzania, Vietnam, Yemen, and Yugoslavia. The SA-6b version is primarily used by members of the Warsaw Pact and Syria.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
SA-6a	\$129,983	D, A	400 kg	14 tons	3	10	Active/ Passive IR	Enclosed
SA-6b	\$149,987	D, A	400 kg	14.25 tons	4	11	Radar, Passive IR	Enclosed

Straight Flush Radar Vehicle	\$96,106	D, A	400 kg	13.95 tons	3	10	Radar, Active/Passive IR	Enclosed
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Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
SA-6a	137/96	32/22	250	70	Trtd	T4	TF1 TS1 TR1 HF3 HS2 HR2
SA-6b	135/95	32/22	250	70	Trtd	T4	TF1 TS1 TR1 HF3 HS2 HR2
Straight Flush Radar Vehicle	132/92	31/22	250	70	CiH	T4	TF1 TS1 TR1 HF3 HS2 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
SA-6a/b	+3	None	Triple SA-6 Launcher	3xSA-6 SAMs
Straight Flush Radar Vehicle	None	None	PKT (C)	1000x7.62mm

SA-13 ADA

Notes: The SA-13 ADA is a tracked, armored, surface-to-air missile system. It carries the SA-13 SAM on an MTLB chassis. The missiles are carried on the top of the vehicle in erectable launcher rails. Some versions have a radar link to an air defense radar. The layout is the same as the MTLB except for the hatches on the rear deck. This vehicle is used by Russia, Afghanistan, Algeria, Bulgaria, Cuba, Czechoslovakia, Hungary, India, Iraq, Jordan, Libya, Poland, and Syria.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$176,817	D, A	2 tons	12.08 tons	4	8	Radar, Active IR	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
146/102	34/34/4	450	83	Trtd	T3	TF2 TS2 TR2 HF4 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
None	None	Quadruple SA-13 launcher, PKT (C)	8xSA-13 SAMs, 750x7.62mm

SA-15

Notes: This is a newer Russian-made air defense vehicle used by Russia and in small numbers by China (perhaps 15 in all by that country). The vehicle has the missiles and radar contained within it for a self-contained system. The radar can track 48 targets at once and can guide missiles to two targets simultaneously, with tracking range out to 25 km. The SA-15 (known as the ZRK Tor to the Russians) is normally accompanied by one or more resupply vehicles on the same chassis carrying 16 missiles each and a crane for reloading. The chassis is the same as the ZSO-30-4.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$246,224	D, A	600 kg	34 tons	3	15	Radar, Image Intensification	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
151/106	35/25	880	271	Trtd	T4	TF2 TS2 TR2 HF3 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
+3	None	8xSA-15 SAM Launchers	8xSA-15 SAMs

ZSU-23-4

Notes: The Shilka, as it is known to the Russians, is one of the most common self-propelled anti-aircraft gun systems in the world, being used by over 25 countries in its 35-year history. The chassis is shared by the BTR-50, PT-76, and SA-6 systems. Despite its replacement in many countries by the later 2S6M, the Shilka

was still preferred by many crews due to the massive volume of firepower it could produce, against air as well as ground targets. The turret is known for its fast traverse rate and it was one of the first self-propelled anti-aircraft guns to have radar direction for its weapons. It is also equipped with a land navigation system that greatly helps finding remote places. NATO soldiers often refer to this weapon as the "Zoo-23."

Starting in 1995, at first as an experiment, but later as a standard modification, ZSU-23-4 "Shilka" self-propelled anti-aircraft guns were modified by adding a 3-round launcher for SA-16 surface-to-air missiles above the turret. The missiles are aimed and launched from within the turret. No reloads are carried within the vehicle, though often crates were carried on the rear deck or slung from the sides of the vehicle in the field.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
ZSU-23-4	\$154,659	D, A	800 kg	20.5 tons	4	9	Radar, Active IR	Enclosed
ZSU-23-4 Without Radar	\$125,989	D, A	800 kg	20.87 tons	4	8	Passive IR, Image Intensification	Enclosed
ZSU-23-4 Upgrade	\$191,251	D, A	800 kg	20.53 tons	4	10	Radar, Passive IR, Image Intensification	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
ZSU-23-4	111/78	26/18	250	74	Trtd	T3	TF4 TS4 TR4 HF5 HS3 HR3
ZSU-23-4 Without Radar	117/82	27/19	250	82	Trtd	T3	TF4 TS4 TR4 HF5 HS3 HR3
ZSU-23-4 Upgrade	116/82	27/19	250	80	Trtd	T3	TF4 TS4 TR4 HF5 HS3 HR3

Vehicle	Fire Control	Stabilization	Armament	Ammunition
ZSU-23-4	+2	Fair	4x23mm Autocannons	2000x23mm

ZSU-23-4 Without Radar	+2	Fair	4x23mm Autocannons	4000x23mm
ZSU-23-2 Upgrade	+3	Fair	4x23mm Autocannons, 3xSA-16 Launchers	2000x23mm, 3xSA- 16 SAMs

ZSU-57-2

Notes: This is an older anti-aircraft system consisting of twin 57mm S-60 autocannons mounted on a lightened T-55 chassis, distinguished by its four roadwheels instead of five. The turret is open-topped and enlarged to accommodate the gun system. There is a driver's hatch on the left front deck, and he is the only member of the crew to have complete armor protection.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$196,826	D, A	500 kg	28 tons	6	11	Active IR (Driver only)	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
146/102	34/24	812 +280	154	Trtd	T4	TF10 TS10 TR8 HF12 HS8 HR6

Fire Control	Stabilization	Armament	Ammunition
None	None	Twin 57mm S-60 Autocannons	316x57mm

M-114 SPAA

Notes: This odd vehicle has an interesting history. In 1978, El Salvador took delivery of 27 used Woodmaster tractors – essentially M-114s stripped of their armor and rebuilt as agricultural tractors. Mastranza in El Salvador immediately got to work on them, re-plating them and otherwise trying to get into working order. They produced three variants: an APC (which US officials at first mistook for an M-113, as the El Salvadoran APC looks quite similar at first glance), a sort of gun carrier with a turret armed with several machineguns pointing in several directions, and the AAA vehicle. It is believed that no more than four of these vehicles have been built.

The biggest problem that Mastranza had was the engines. The Woodmaster does not have the same engine as the M-114 – it used a different engine, a Chevy V-8 gasoline engine that produces 160 horsepower. The gasoline engines were limited in range, unreliable, prone to breakdowns, and tended to overheat when used in their new role in armored vehicles. Within a year, Mastranza replaced those engines with LDT-465IC V-6 diesels adapted from M-35 2.5-ton trucks. Though the range was improved, speed was decreased, and the engines still regularly overheated. This means that the M-114 SPAA (I don't really know what else to call it) is primarily a reaction or static support weapon rather than being able to keep up with most vehicle convoys to support them in a dynamic roles.

The M-114 SPAA has faces built up with thin armor plate; they are sloped on both the front and sides. There are seats for the driver and commander at the front; these have slits with windows at the front and hatches above them. At the rear is what looks like a ridiculously-large turret, housing a Yugoslavian-built M-55A2 triple-20mm autocannon system (which uses three M-52 autocannons); this system uses manual traverse and elevation. The turret has no back at all.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Gas Engine	\$119,558	G, A	300 kg	10.4 tons	3	9	Headlights	Enclosed
Diesel Engine	\$119,558	D, A	300 kg	10.89 tons	3	8	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Gas Engine	91/64	20/16	303	54	Trtd	T3	TF3 TS2 TR0 HF5 HS3 HR2
Diesel Engine	79/55	17/14	303	31	Trtd	T3	TF3 TS2 TR0 HF5 HS3 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
(Both)	None	None	3x20mm M-55 Autocannon Set	300x20mm

K-30 Biho

Notes: The Biho (Flying Tiger) is a South Korean anti-aircraft gun that shares a chassis with the Daewoo FAASV (see South Korean Self-Propelled Artillery). The Biho is used to take out aircraft that have penetrated the missile umbrella of more long-range defenses and to provide cover for mechanized forces. It is much more heavily armored than the Daewoo FAASV, and has a high hit probability against even fast-moving aircraft. The twin 30mm guns are radar controlled, and the radar has a tracking range of 7 km.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$232,910	D, A	500 kg	25 tons	4	12	FLIR, Radar	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
144/101	34/24	500	169	Trtd	T3	TF6 TS5 TR5 HF8 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+4	Good	2x30mm KCB Autocannons, M-2HB (C)	600x30mm, 500x.50

K-263A1

Notes: This is a KIFV fitted with a PIVAD anti-aircraft gun and associated equipment. The K-263 does not carry passengers; instead, the passenger compartment is taken up with the gun turret and ammunition stowage. The vehicle is equipped with radar and night vision gear.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$108,276	D, A	300 kg	13.2 tons	4	8	Radar, Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
155/108	36/25/4	400	98	Trtd	T3	TF2 TS2 TR2 HF8Sp HS5Sp HR4

Fire Control	Stabilization	Armament	Ammunition
+3	Fair	20mm Vulcan Autocannon, M-60E2 (C)	1800x20mm, 750x7.62mm

LvRbBv-701

Notes: Sister vehicle to the PvRbBv-551 tank destroyer, the LvRbBv-701 mounts a RBS-70 surface-to-air missile launcher. The launcher is retracted under armor during traveling, and raised for firing. For details on development, see the PvRbBv-551 under Swedish Self-Propelled Guns.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$154,576	G, A	1 ton	9.7 tons	4	6	Passive IR, Thermal Imaging, Image Intensification	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
99/69	23/16	240	76	Std	T2	HF3 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
None	None	RBS-70 SAM Launcher, MAG (C)	12xRBS-70 Missiles, 1500x7.62mm

TriAD

Notes: This is the anti-aircraft gun version of the Swedish CV-90 family. It uses the same hull and autocannon, but the autocannon on the TriAD is capable of being elevated to +50 degrees and is radar-controlled. This version of the CV-9040 does not have the overhead hatches in the passenger compartment. The TriAD also is fitted with an IFF receiver so it does not shoot down friendly targets. The radar is capable of actively tracking six targets simultaneously.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$391,560	D, A	1 ton	26 tons	5	11	Radar, Passive IR, Thermal Imaging	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
109/76	25/18	525	140	Trtd	T4	TF14 TS8 TR6 HF18 HS7 HR4

Fire Control	Stabilization	Armament	Ammunition
+3	Good	40mm L/70 Autocannon, MAG	234x40mm, 3000x7.62mm

Atilgan

Notes: This Turkish air defense vehicle is an M-113A2 armored personnel carrier with the fuel tanks moved to the rear and the deck and passenger compartment fitted with a Turkish variation of the Pedestal-Mounted Stinger System (PMSS). The vehicle was exported to other Middle Eastern countries and also used by the Turkish armed forces for mobile SHORAD. Instead of a crewmember sitting inside the turret, the crew is under armor protection inside the hull, with a downlink to the firing system from the PMSS.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$224,607	D, A	500 kg	12.25 tons	3	7	Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
115/81	27/19/3	360	98	Trtd	T2	TF2 TS2 TR2 HF6 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+3	Basic	8xStinger launchers, M-2HB	16xStinger missiles, 1000x.50

M-6 Bradley-Linebacker

Notes: The Linebacker is a standard M-2A2 Bradley with a modified turret and ammunition bins, designed for SHORAD (SHORT-Range Air Defense) duties. The turret's TOW ATGM launcher is replaced with a four-tube Stinger launcher, and internal ammunition bins have been modified to store the longer and thinner Stinger missiles. The Stinger launcher uses one of the launcher boxes of an HMMWV-Avenger SAM system.

Twilight 2000 Notes: By 1998, 60 units of this vehicle had been completed and delivered.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$375,002	D, A	1 ton	29.94 tons	4	13	Passive IR, Thermal Imaging	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
138/97	32/23/3	662	190	Trtd	T4	TF11Sp TS11Sp TR6 HF13 HS8Sp HR6

Fire Control	Stabilization	Armament	Ammunition
+2	Good	4xStinger Launchers, 25mm ChainGun, MAG	10xStinger SAMs, 900x25mm, 2200x7.62mm

M-42 Duster

Notes: This was one of the first anti-aircraft vehicles produced by the US after World War 2, in the early 1950s. It had been long out of service by US active duty forces by the time of the Twilight War, but could still be found in small numbers in the National Guard. The primary users of the M-42 were foreign countries; in small numbers by Saudi Arabia, Japan, and Turkey, and large numbers in Austria, Greece, Guatemala, Jordan, Lebanon, Thailand, Tunisia, Venezuela, and Vietnam, and especially Taiwan, who used large amounts of them in both anti-aircraft and ground support roles. The vehicle is based on the chassis of the M-41 light tank. Note that the turret does not have any overhead protection, only a gun shield, and the gun crew is not protected by armor in an overhead attack.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$78,310	G, A	590 kg	22.45 tons	6	9	Headlights	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
167/117	39/27	530	370	Trtd	T3	TF3 TS2 TR1 HF6 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+1	Basic	2x40mm Bofors L/60, M-1919A4 (C)	480x40mm, 1750x.30-06

M-48 Chaparral

Notes: This vehicle is a modified M-548 chassis with the rear area taken up by a quadruple mount for Chaparral surface-to-air missiles. The Chaparral is basically a Sidewinder air-to-air missile with a minimum of modifications to suit it for the SAM role. This system has been in use by US Army forces for almost 40 years, using ever-more capable missiles and better target acquisition and fire control equipment. The rear area and cab can be covered by bows and tarpaulin covers, making it virtually indistinguishable from normal M-548 load carriers (a lower priority target); the bows and tarpaulins can be removed in 5 minutes. In addition to the US, the Chaparral is used by Egypt, Israel, Morocco, Taiwan, and Tunisia.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
M-48	\$359,669	G, A	500 kg	11.5 tons	5	7	FLIR	Open
M-48A1	\$489,709	D, A	500 kg	13.02 tons	5	8	FLIR	Open
M-48A2	\$369,709	D, A	500 kg	12.89 tons	5	8	FLIR	Open

M-48A3	\$319,709	D, A	500 kg	12.84 tons	5	8	FLIR	Open
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Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
M-48	142/99	33/23/3	401	148	Trtd	T2	TF1 TS1 TR1 HF1 HS1 HR1
M-48A1	129/90	30/21/3	401	75	Trtd	T2	TF1 TS1 TR1 HF1 HS1 HR1
M-48A2	132/92	31/22/3	401	76	Trtd	T2	TF1 TS1 TR1 HF1 HS1 HR1
M-48A3	133/93	31/22/3	401	77	Trtd	T2	TF1 TS1 TR1 HF1 HS1 HR1

Vehicle	Fire Control	Stabilization	Armament	Ammunition
M-48	+2	Basic	4xChaparral Launchers	4xChaparral SAMs
M-48A1/ A2	+2	Basic	4xChaparral Launchers	12xChaparral SAMs
M-48A3	+3	Basic	4xChaparral Launchers	12xChaparral SAMs

M-163A1 PIVAD

Notes: This is an M-113A2 chassis topped by a turret armed with a 20mm Vulcan gatling gun, coupled to ranging radar and, in some later versions, a FLIR viewer. In many countries, the M-163A1 is used as a ground support weapon, being able to saturate an area with large amounts of cannon fire. The hull is similar to the standard M-113, but the commander's station is removed and the large rear deck hatch is replaced with a much smaller one. Besides the US (in decreasing numbers), the M-163A1 is used by Israel, Jordan, Morocco, Portugal, Sudan, Thailand, and Yemen.

Twilight 2000 Notes: This was one of the standard air defense weapons of the US Army at the start of the Twilight War, though it was being rapidly phased out in favor of systems like the Linebacker and Blazer.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$103,780	D, A	400 kg	12.31 tons	4	7	Ranging Radar, FLIR, Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
115/80	26/19/3	360	98	Trtd	T2	TF3 TS2 TR2 HF6 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+2	Basic	20mm Vulcan	2280x20mm