

SELF-PROPELLED ARTILLERY

Argentine SP Artillery

Canadian SP Artillery

British SP Artillery

Chinese SP Artillery

Czech SP Artillery

Egyptian SP Artillery

French SP Artillery

German SP Artillery

Indian SP Artillery

Israeli SP Artillery

Italian SP Artillery

Japanese SP Artillery

Romanian SP Artillery

Russian SP Artillery

South African SP Artillery

South Korean SP Artillery

Swedish SP Artillery

Syrian SP Artillery

Turkish SP Artillery

US SP Artillery

VCA-155

Notes: This Argentine self-propelled howitzer began to replace the Mk F3 howitzers in Argentine service in 1997. It is basically the Otobreda Palmara turret placed on a lengthened TAM light tank chassis, with seven roadwheels on each side instead of six. The gun has a basic, if uncomplicated, fire control system, capable of direct fire and requiring normal fire solution calculations for proper targeting. This is normally done by an FDC vehicle, but can be done on a portable computer located in VCA-155. Other additions to the TAM hull include long-range fuel tanks and a 5 kW generator to run the system with the engine off.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$268,759	D, A	500 kg	40 tons	5	14	Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
143/100	30/20	873+400	267	Trtd	T4	TF21 TS8 TR8 HF32 HS6 HR6

Fire Control	Stabilization	Armament	Ammunition
+1	Basic	155mm L/41 Howitzer, MAG (C)	47x155mm, 850x7.62mm

Sexton

Notes: Though the Canadians and British liked the US M-7 Priest self-propelled howitzer, the 105mm howitzer was not a standard issue gun for the Canadians or British during World War 2. The British MOD therefore decided to build a self-propelled howitzer based on the Priest, but using the 25-pounder field gun that was standard with Canadian and British forces. This vehicle became the Sexton. The appearance is very similar to the Priest, but the "pulpit" mount for the M-2HB machinegun was removed, and a projecting rear area was added for increased ammunition storage and to give the gun crew more room to work. Two Bren machineguns were added for local and antiaircraft defense. The last user was India, but this was some time ago.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Early	\$256,453	G, A	500 kg	25.86 tons	6	10	Headlights	Open
Late	\$256,639	G, A	500 kg	26.4 tons	6	10	Headlights	Open

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Early	129/90	30/21	682	236	Std	T5	HF6 HS3 HR3
Late	143/100	33/23	682	281	Std	T5	HF6 HS3 HR3

Vehicle	Fire Control	Stabilization	Armament	Ammunition
(Both)	None	None	25-Pounder (87.6mm) Howitzer, 2xBren	105x87.6mm, 1500x.303

AS-90 Braveheart

Notes: This is the newest self-propelled howitzer to enter British service, growing out of the GBT-155 program in early 1980s. In 1989, it began replacing all other self-propelled artillery in the British Army. Production stopped in 1995, but after a few months, was resumed. It is in a class with the M-109A6 Paladin, PZH-2000, and Slammer, using a 52-caliber gun barrel, inertial navigation system, GPS, and fire control and solution computer. (Most British Army vehicles use a 39-caliber barrel, with about 20% using a 45-caliber barrel and 10% using a 52-caliber barrel. Most Kuwaiti vehicles have a 52-caliber barrel.) The AS-90 can stop and begin a barrage within 15 seconds (3 phases) if the target's location is known. There is a driver's hatch on the front left deck, and two hatches on the turret deck for the commander and loader. In the rear of the turret is a large door for resupply and crew entry. This vehicle is in service with the British Army, and a small amount have been sold to the Kuwaitis.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
39-Caliber	\$343,379	D, A	1 ton	45 tons	5	16	Passive IR, Image Intensification	Shielded
45-Caliber	\$358,538	D, A	1 ton	45.3 tons	5	16	Passive IR, Image Intensification	Shielded
52-Caliber	\$376,142	D, A	1 ton	45.7 tons	5	16	Passive IR, Image Intensification	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
39-Caliber	104/73	20/15	750	229	Trtd	T4	TF10 HS6 TR4 HF12 HS5 HR3
45-Caliber	104/72	20/15	750	229	Trtd	T4	TF10 HS6 TR4 HF12 HS5 HR3
52-Caliber	103/72	20/15	750	229	Trtd	T4	TF10 HS6 TR4 HF12 HS5 HR3

Vehicle	Fire Control	Stabilization	Armament	Ammunition
39-Caliber	+1	Basic	155mm L/39 Howitzer, M-2HB (C)	48x155mm, 1000x.50
45-Caliber	+1	Basic	155mm L/45 Howitzer, M-2HB (C)	48x155mm, 1000x.50
52-Caliber	+1	Basic	155mm L/52 Howitzer, M-2HB (C)	48x155mm, 1000x.50

FV-433 Abbot

Notes: This British-built SP howitzer was developed in the late 1960s, and was for a long time the standard vehicle of its type in the British Army. They were mostly phased out of British service when the AS-90 Braveheart became available, and most of the Abbots were sold off to India or several African nations, but some were kept in reserve or for training purposes. The Abbot is based on a stretched FV-432 APC chassis, topped with a large turret mounting the howitzer. It is amphibious with about 5 minutes of preparation. There is a hatch on the front left deck for the driver, and two hatches on the turret deck for the commander and crew, as well as a door in the rear of the hull for resupply and crew entry.

Twilight 2000 Notes: These vehicles were reactivated in the Twilight War. Some 20 examples were also kept in Canada by the British Army for use in training, and some of them saw service with the Canadian Army against the Russians or Quebecois.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$151,686	D, G, A	400 kg	16.56 tons	4	7	Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
99/69	20/25/2	386	88	Trtd	T4	TF5 TS3 TR3 HF6 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
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Nil

Nil

105mm L/30 Howitzer, Bren L2A4
(C)

40x105mm,
1200x7.62mm

PLZ-45

Notes: This is a 155mm self-propelled howitzer based around the WAC-21 gun/howitzer. This vehicle looks very similar to the US M-109 howitzer, but it is heavier, has a longer gun, larger turret and more roadwheels, which are irregularly spaced. The driver sits at the front of the vehicle on the left with the engine to his right. The turret is at the rear, with the commander's position on the front of the turret on the right. On each side of the turret is a large door, and there is also a large hatch on the left side of the turret roof towards the rear. The PLZ-45 has an inertial direction finder, a gun pointing system and a display for information coming from the fire direction center. The gun is capable of automatic lay from this information. When in firing position, two spades are lowered in the rear of the vehicle for bracing. This gun is capable of firing NATO 155mm projectiles. This vehicle is in service with China, and possibly with Iraq and Iran.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$327,827	D, A	1 ton	32 tons	5	11	Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
112/78	25/15	885	179	Trtd	T5	TF6 TS5 TR4 HF8 HS4 HR3

Fire Control	Stabilization	Armament	Ammunition
+1	Basic	155mm L/45 Gun/Howitzer, DShK (C)	30x155mm, 400x12.7mm

Type 83 Self-Propelled Gun/Howitzer

Notes: The Type 83 152mm SP Gun/Howitzer is the Peoples' Liberation Army's standard heavy howitzer. It entered service in the early-1980s and is present in large numbers. The gun used on it is a version of the Type 66 towed gun/ howitzer, and in shape is very similar to the US M-109A2 except for the gun barrel and roadwheels. The gun is capable of firing standard 152mm howitzer rounds as well as a new RAP round known as the MP-152. The fire control system is operated from a panel. Direct fire sights are provided as well as infrared night sights.

The Type 83 130mm is a Type 83 Self-Propelled Gun/Howitzer as listed above, but armed with a 130mm gun/howitzer. This was done because there were a number of customers around the world that wished their 130mm M-1946 gun/howitzers to be more mobile. They were not actually taken into

Chinese service, but kits were offered to a number of countries that used the 130mm gun/howitzer, and it is not known how many kits were sold or who bought them.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
152mm	\$201,587	D, A	800 kg	30 tons	5	11	Passive IR	Shielded
130mm	\$241,902	D, A	800 kg	30.9 tons	5	11	Passive IR	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
152mm	139/97	30/20	885	192	Trtd	T4	TF6 TS4 TR4 HF8 HS3 HR3
130mm	136/95	30/20	885	193	Trtd	T4	TF6 TS4 TR4 HF8 HS3 HR3

Vehicle	Fire Control	Stabilization	Armament	Ammunition
152mm	+1	Basic	152mm L/34 Gun/Howitzer, PKT, DShK (C)	30x152mm, 325x7.62mm, 325x12.7mm
130mm	+1	Basic	130mm L/58 Gun/Howitzer, DShK (C)	38x130mm, 520x12.7mm

Type 85 Self-Propelled Howitzer

Notes: This is a self-propelled howitzer variant of the YW-531 armored personnel carrier, used by China. In this role, the basic APC chassis is topped with a fighting compartment housing a Chinese copy of the Russian D-30 122mm howitzer. This fighting compartment is open-topped (but usually covered with a tarpaulin), but has high sides and thus provides some protection from fragments and enemy fire. The driver is seated in left front of the hull and has complete armor protection. A new ERFB (Extended-Range Full Bore) projectile has been developed by China for use in this and other 122mm howitzers. The Type 85 is amphibious with preparation.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$182,018	D, A	600 kg	16.5 tons	6	7	Passive IR	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
135/95	30/20/3	400	118	Trtd	T4	TF3 TS3 TR3 HF4 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
None	None	122mm L/40 D-30 howitzer	40x122mm

Type 90 SP Howitzer

Notes: This is a Type 90 armored personnel carrier with a turret mounting a 122mm D-30 howitzer. This was done to make the D-30s more mobile and to allow for a lighter SP howitzer than can use more questionable roads, bridges, and terrain, as well as provide one with an amphibious capability. In this role, the Type 90 does not carry passengers, as the turret is towards the rear of the vehicle, and this turret and ammunition racks are where the passengers would normally be. The chassis is a stretched version, with 6 roadwheels instead of 5, and has a more powerful engine (360 hp versus the normal 320 hp engine). There is a hatch on the front left deck for the driver, two hatches on the turret deck for the commander and gunner, and a door on the rear face for reloading and the rest of the crew.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$191,286	D, A	500 kg	20.6 tons	5	9	Passive IR, Image Intensification	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
125/87	25/20/3	520	132	Trtd	T4	TF3 TS3 TR3 HF4 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
+2	Basic	122mm L/40 D-30 Howitzer, W-85 (C)	40x122mm, 1050x12.7mm

WZ-551 Self-Propelled Howitzer

Notes: This is a modification of the WZ-551 wheeled armored personnel carrier. The vehicle is topped with a turret mounting a 122mm howitzer. The turret's traverse is limited to 25 degrees left and right of center. The vehicle's hull is lengthened and the suspension has eight instead of six wheels. Before firing, two hydraulic spades at the rear of the hull must be lowered.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$199,201	D, A	750 kg	17.5 tons	5	6	Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
139/84	32/19/3	300	94	Trtd	W(4)	TF4 TS4 TS3 HF5 HS3 HR2

Fire Control	Stabilization	Armament	Ammunition
None	None	122mm D-30 Howitzer, PKT (C)	40x122mm, 1000x7.62mm

Dana (Vzor 77)

Notes: The Dana is an extensively modified Tatra T-815 Kolos truck chassis with a turret in the center mounting a 152mm howitzer. Aside from the turret, the most extensive modification is the fully armored body and the engine that has been moved to the rear of the vehicle. The turret may be traversed 112.5 degrees to the right and left of center. There is a modification of this vehicle with a 155mm NATO howitzer (the Zuzana), as well as a version with the turret mounted on the chassis of a T-72 tank. The cab of the Dana has roof hatches for the driver and commander. The turret is divided into two compartments due the combination of small turret and large gun, and each of these compartments has a door on the side of the turret and a roof hatch. In addition, on the right compartment of the turret (the smaller one), there is a small cupola mounting a heavy machinegun. This vehicle is in service with Czechoslovakia, Libya, and (in relatively small numbers) Poland. An overload of 60 howitzer rounds may be carried, but Travel Move and Combat Move is reduced by 10%.

The Ondova is a Dana with a longer 53-caliber barrel, allowing for extended range. It is otherwise the same as the Dana.

The Zuzana is essentially an upgraded Dana self-propelled howitzer with a 155mm L/45 caliber howitzer mounted in place of the Dana's 152mm gun/howitzer. This vehicle was developed primarily for export purposes, but is used by Slovakia.

Twilight 2000 Notes: The Zuzana does not exist, and the Ondava is very rare.

Merc 2000 Notes: The Zuzana exists, but has not had much export success. The Ondava has for the most part replaced the Dana in Czech service.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Dana	\$243,749	D, G, AvG, A	500 kg	28.1 tons	5	8	Active/ Passive IR	Enclosed
Ondava	\$283,358	D, G, AvG, A	500 kg	28.9 tons	5	9	Active/ Passive IR	Enclosed
Zuzana	\$267,992	D, G, AvG, A	500 kg	28 tons	5	9	Passive IR	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
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Dana	122/73	29/17	690	126	Trtd	W(4)	TF6 TS6 TR6 HF6 HS5 HR4
Ondava	119/72	29/17	690	126	Trtd	W(4)	TF6 TS6 TR6 HF6 HS5 HR4
Zuzana	129/77	30/18	690	130	Trtd	W(4)	TF6 TS6 TR6 HF6 HS5 HR4

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Dana	+1	Basic	152mm L/37 Howitzer, NSV (C)	40x152mm, 300x12.7mm
Ondava	+1	Basic	152mm L/53 Howitzer, NSV (C)	40x152mm, 300x12.7mm
Zuzana	+1	Basic	155mm L/45 Howitzer, NSV (C)	40x155mm, 300x12.7mm

Zuzana T-72M1

Notes: This is the turret of the Zuzana replacing the normal turret of a T-72M1 tank. This modification was done to meet a need for a new Indian tracked self-propelled howitzer. The advantage of the tracked chassis is greater cross-country mobility; however, the tracked chassis is heavier and mechanically more complex than the wheeled chassis. The Zuzana T-72M1 has a 5kW auxiliary power unit to operate the mechanisms and radios while the engine is shut down. The howitzer is equipped with an autoloader that doubles the normal rate of fire. The hoped-for sale to India did not occur; however, the Czechs are actively shopping the design around to other countries.

Twilight 2000 Notes: When the Twilight War began in earnest, the Zuzana T-72M1 was placed into service with the Czech military in small numbers, until the plant was shut down by allied bombing in 1999.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$313,435	D, G, AvG, A	750 kg	38 tons	4	16	Active/Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
142/99	30/20	1000 +400	289	Trtd	T6	TF6 TS6 TR6 HF100 HS14 HR8

Fire Control	Stabilization	Armament	Ammunition
+1	Basic	155mm L/45 Howitzer, NSV (C)	40x155mm, 300x12.7mm

SP 122

Notes: This is an Egyptian self-propelled howitzer that is basically a US M-109 with the 155mm howitzer replaced by a 122mm D-30 howitzer. This was done because the Egyptian Army had a large number of towed D-30 guns that they wished to be more mobile. The D-30 in this role has a direct-fire capability with sights appropriate to this purpose. 100 of these vehicles were built between 1987 and 1998.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$281,562	D, A	1 ton	23.18 tons	5	10	Headlights	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
122/85	25/20	511	150	Trtd	T4	TF8 TS4 TR4 HF10 HS3 HR3

Fire Control	Stabilization	Armament	Ammunition
+1	Basic	122mm D-30 L/40 Howitzer, M-2HB (C)	85x122mm, 500x.50

AMX-GCT

Notes: This was designed to replace all of the 105mm and 155mm self-propelled howitzers then in French service, and entered service in 1979. Before that, the first ones produced were actually bought by Saudi Arabia in 1977. Later production included vehicles for Iraq and Kuwait. The French designation for the GCT is actually the AUF-1. In 1988, production was switched to the AUF-1 T, with a 52-caliber length barrel. The AUF-1 T also has a 40 kW APU (as opposed to the 10kW APU on the standard GCT), a better automatic loading system, and better fire control and gun laying; the AUF-1 T can fire within 6 phases of a halt, and accurately fire at any target within range without help from an FDC if the target location is known. The chassis is a modified form of that of the AMX-30 tank. The driver is at the front of the vehicle on the left. The turret is large and stretched from the center to the rear of the hull, with hatches on the roof for the commander and the rest of the gun crew. The weapon mount is at the crew hatch and is normally operated by the loader. In the rear of the turret are two large doors for ammunition resupply, and there is a small hatch on each side of the turret for crew entry. The turret was also mounted on a T-72 chassis for entry into the Indian howitzer competition; this vehicle did not win the competition, but the Indians used the two such vehicles produced in their conflicts with Pakistan.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
AUF-1/ GCT	\$257,612	D, A	400 kg	42 tons	4	14	Passive IR	Shielded
AUF-1 T	\$298,930	D, A	400 kg	42.65 tons	4	16	Passive IR, Image Intensification	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
AUF-1/ GCT	120/84	25/20	970	267	Trtd	T6	TF10 TS6 TR4 HF12 HS5 HR3
AUF-1 T	119/83	25/20	970	267	Trtd	T6	TF10 TS6 TR4 HF12 HS5 HR3

Vehicle	Fire Control	Stabilization	Armament	Ammunition

AUF-1/ GCT	+1	Basic	155mm L/40 Howitzer; AAT-F1 (C), MAG (C), or M-2HB (C)	42x155mm; 2050x7.62mm or 800x.50
AUF-1 T	+2	Fair	155mm L/52 Howitzer; AAT-F1 (C), MAG (C), or M-2HB (C)	42x155mm; 2050x7.62N or 800x.50BMG

Caesar

Notes: Caesar is a 52-caliber barrel 155mm howitzer mounted on a lightly armored Unimog 2450L truck chassis. The vehicle is highly mobile and air-portable and droppable inside C-130 aircraft and larger. This vehicle was deployed as a demonstration for the French Army and Abu Dhabi, and is not yet in production except as required for field testing. The driver and commander sit at the front in the cab, the crew to the rear of them in a split cab, and the howitzer is in the rear of the vehicle. Before firing, the howitzer must be raised and spades lowered at the rear (6 phases). Once per 10 minutes, the Caesar may increase fire rate to one per phase for 3 phases. Normal fire rate is one round per two phases. Traverse for the gun is 15 degrees to either side of center; larger changes in deflection require repositioning of the vehicle.

Twilight 2000 Notes: This vehicle was placed into limited production in 1995 for use by French Forces.

Merc 2000 Notes: This vehicle was viewed by some countries as an inexpensive alternative to heavier tracked guns.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$222,186	D, A	2 tons	18.5 tons	6	6	Headlights	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
131/79	31/19	160 or 220	88	Std	W(3)	HF6 HS3 HR3

Fire Control	Stabilization	Armament	Ammunition
None	None	155mm L/52 Howitzer	30x155mm

Mk F3

Notes: This French vehicle is based on the AMX-13 light tank chassis, and looks like a smaller version of the US M-107 and M-110 howitzers. As with those vehicles, the crew of the Mk F3 ride inside the vehicle or in other vehicles for transport, but when operating the howitzer, stand on the deck around the weapon and have no armor or NBC protection during this time. There is a driver's hatch on the front left deck, with a hatch for the commander behind that. The other crewmembers ride in other vehicles (normally AMX VCAs) for transport. If necessary, 4 members of the crew can ride on the outside of the vehicle. Separate vehicles must also carry almost all of the ammunition for the gun. By 2000, almost all French Mk F3's had been replaced by the AMX-GCT, and most of the Mk F3's in the service of other countries had been upgraded to an L/39 gun barrel. Some of these had also been fitted with diesel engines instead of gasoline engines; in addition to being more economical, the diesel engine used is more powerful than the gasoline engine.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
L/33 Gun, Gas Engine	\$117,780	G, A	250 kg	17.4 tons	2 (+8)	6	Active IR	Enclosed
L/39 Gun, Gas Engine	\$132,939	G, A	250 kg	17.7 tons	2 (+8)	7	Active IR	Enclosed
L/33 Gun, Diesel Engine	\$117,895	D, A	250 kg	17.6 tons	2 (+8)	7	Active IR	Enclosed
L/39 Gun, Diesel Engine	\$133,054	D, A	250 kg	17.9 tons	2 (+8)	7	Active IR	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
L/33 Gun, Gas Engine	98/69	20/15	450	103	Trtd	T3	TF1 TS1 TR1 HF4 HS2 HR2
L/39 Gun, Gas Engine	96/68	20/15	450	103	Trtd	T3	TF1 TS1 TR1 HF4 HS2 HR2
L/33 Gun, Diesel Engine	107/75	25/15	450	92	Trtd	T3	TF1 TS1 TR1 HF4 HS2 HR2
L/39 Gun, Diesel Engine	105/74	25/15	450	92	Trtd	T3	TF1 TS1 TR1 HF4 HS2 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
L/33 Gun, Either Engine	None	None	155mm L/33 Howitzer, AAT-52 or AAT-F1 (C)	4x155mm, 1000x7.5mm or 7.62mm
L/39 Gun, Either Engine	None	None	155mm L/39 Howitzer, AAT-52 or AAT-F1 (C)	4x155mm, 1000x7.5mm or 7.62mm

M-109A3G

Notes: This is an upgraded version of the M-109A3 modified for the German Army. The vehicle has a longer 45 caliber barrel which allows longer range. The M-109A3G also has door locks, a new travel lock, and auxiliary driving controls in the main compartment, a supercharged engine, and modifications which allow the power pack to be changed more easily.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$241,014	D, A	1 ton	25.5 tons	6	11	Headlights	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
113/79	25/15	511	150	Trtd	T4	TF8 TS4 TR4 HF10 HS3 HR3

Fire Control	Stabilization	Armament	Ammunition
+1	Basic	155mm L/45 Howitzer, M-2HB (C)	36x155mm, 500x.50

PZH-2000

Notes: This vehicle began to replace the M-109A3G in German service shortly before the war. The vehicle features heavier armor than the M-109, radiation protection, an automatic shell loader for rapid fire and restocking of ammunition, a 52-caliber gun barrel for increased range, and increased ammunition stowage. The PZH-2000 has an integral fire solution and control computer so that it may operate without an FDC, and may fire accurately within 3 phases if the target's location is known. The PZH-2000 has frequency-hopping radios and a GPS system for land navigation and fire plotting. A computer controls the entire array, and fire solutions are largely automatic. A 5kW generator is provided to run the system with the engine off. An outstanding feature of the PZH-2000 is its ability to engage targets with direct fire while moving.

Twilight 2000 Notes: Comparable to the US M-109A6 Paladin, the PZH-2000 was in short supply in the Twilight War.

Merc 2000 Notes: Budget cuts resulted in the PZH-2000 production being cut by almost two-thirds.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$410,744	D, A	1 ton	55.33 tons	5	19	Passive IR, Image Intensification	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
124/87	25/20	970	355	Trtd	T5	TF11 TS8 TR7 HF14 HS7 HR5

Fire Control	Stabilization	Armament	Ammunition
+2	Fair	155mm L/52 howitzer, MG3 (C)	60x155mm, 2000x7.62mm

Bhim

Notes: Since the South Africans were not getting too far in the competition for a new Indian self-propelled howitzer with its T-6 (based on a T-72 chassis), tried mounting the T-6 turret on the chassis of India's main battle tank, the Arjun. The results were good and Denel presented its design to the Indian government. The Indians, seeing the possibility of being able to build the vehicle in their own country, reacted positively to the design and purchased manufacturing rights and equipment from Denel. The new vehicle was called the Bhim after a hero from Indian folklore (Bhima). The turret has ammunition-loading hatches on the right and left, and a conveyor belt may be extended from either of these hatches for ammunition loading or direct feeding of the gun from a ground pile. There are two hatches on the roof of the turret. The vehicle is equipped with GPS and a fire control computer for direct laying of the gun, or firing at a target where the location is known. It can do so within 4 phases of a halt is the target location is known. One of the crucial factors in the success of this design is the high angle the gun is able to achieve, along with the fast slew rates of the turret; these are needed for fighting in the Himalayan passes that India often finds itself in during its hostilities with Pakistan. Another big factor was the use of the Arjun chassis; with the influx of cheap T-90S tanks from Russia, the Indians decided not to fund the Arjun and production could be diverted to the Bhim.

Twilight 2000 Notes: This vehicle does not exist.

Merc 2000 Notes: The Indians decided to buy a modified 2S19 model (with a 155mm gun) from Russia instead of the Bhim.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$362,921	D, A	550 kg	54 tons	6	21	Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
168/118	35/25	1610	504	Trtd	T6	TF16 TS10 TR8 HF20 HS8 HR6

Fire Control	Stabilization	Armament	Ammunition
+1	Basic	155mm L/52 howitzer, M-2HB (C)	45x155mm, 550x.50

Catapult

Notes: During the 1990s Indo-Pakistan wars, India had a large number of M-46 130mm field guns that they wished to be more mobile, and a number of Vijayanta tanks that they wished to retire from service. Rather than buy more self-propelled guns from an outside source and junking the Vijayantas, they combined 400 of these weapons into single self-propelled howitzers. These first saw action in Kashmir in 1996. The vehicle retains the driver's position, but the center of the vehicle has an open area for the gun and crew, with a frame that has a metal roof for overhead protection.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$270,420	D, G, AvG, A	500 kg	40 tons	5	14	Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
102/71	20/15	1000	198	Std	T6	HF38 HS13 HR7

Fire Control	Stabilization	Armament	Ammunition
+2	Basic	130mm Gun/Howitzer	40x130mm

Doher

Notes: This is an M-109 series self-propelled howitzer upgraded by Israel for use by its armed forces. Israel has upgraded at least 429, and possibly as many as 530. The weapon on the Doher has a longer, 45-caliber barrel, along with fire control equipment and computers that allow it to fire within 25 seconds (5 phases) of a halt if the target location is known. The Doher also has GPS and mapping software for its computers to allow it to work with the minimum amount of information from FIST teams or FDCs. Appliqué armor has been added, and the Doher has the ability to lay a smoke screen by injecting diesel fuel into its exhaust, a capability the M-109 lacks. Finally, night vision is added and better direct fire sights and stabilization are provided. There is extensive external stowage.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$238,345	D, A	1 ton	28.2 tons	7	11	Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
107/75	25/15	511	150	Trtd	T4	TF11 TS6 TR6 HF14 HS5 HR4

Fire Control	Stabilization	Armament	Ammunition
+2	Fair	155mm L/45 Howitzer, M-2HB (C)	36x155mm, 500x.50

L-33

Notes: This is a self-propelled howitzer built by Soltam of Israel on the chassis of the M-4 Sherman tank, which Israel had many of at the time. The howitzer is mounted in a fighting compartment consisting of a raised superstructure running from the rear to the middle of the vehicle. The driver is seated at the front left with a bullet resistant windshield to his front and sides. The commander is to the rear of the driver on top of the raised superstructure. There is a cupola to the right of the commander with a machinegun. The crew enters and leaves via a hatch on either side of the vehicle. A longer-length barrel is available which allows normal range, but this version is very rare, as it was never mass-produced. The engine in the L-33 has been replaced with a more powerful model to cope with the increased weight.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
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L-33	\$276,586	D, A	500 kg	41.5 tons	8	15	Passive IR	Enclosed
L-39	\$291,745	D, A	500 kg	41.8 tons	8	15	Passive IR	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
L-33	83/58	20/10	820	170	Std	T5	HF6 HS3 HR2
L-39	82/58	20/10	820	170	Std	T5	HF6 HS3 HR2

Vehicle	Fire Control	Stabilization	Armament	Ammunition
L-33	None	None	155mm L/33 howitzer, MAG (C)	60x155mm, 1000x7.62mm
L-39	None	None	155mm L/39 Howitzer, MAG (C)	60x155mm, 1000x7.62mm

M-50

Notes: This is another modification of the Sherman tank chassis by Israel, this time to carry a French-designed Model 50 155mm howitzer. This vehicle was first introduced in the late 1950s, and was in reserve status by 2000, and most of them never made it outside of Israel's borders during that war. The layout is similar to the Ambutank, but the rear area is open-topped and taken up by the howitzer and ammunition.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$262,533	D, A	500 kg	31 tons	6	13	Headlights	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
101/71	20/15	820	170	Std	T5	HF5 HS3 HR2

Fire Control	Stabilization	Armament	Ammunition
None	None	155mm L/28 Howitzer, 2xMAG or 2xM-2HB	60x155mm, 2000x7.62mm or 1000x.50

Rascal

Notes: This is a light 155mm self-propelled howitzer developed by Israel to be air-transportable and not cause so much damage to roads and to be able to use smaller bridges. The driver sits on the front left, and the crew has a compartment to the rear of the driver and engine. The gun compartment is open and the crew must come out from under cover to load and fire the howitzer. The gun comes in a 39 caliber or 52 caliber version, and there is a machinegun mount by the commander's hatch in the center of the vehicle. The ammunition and charges are carried exposed in racks on the sides of the vehicle. A winch is provided at the front of the vehicle. This vehicle is also known as the Diabillo.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
L/39 Gun	\$231,874	D, A	750 kg	19.5 tons	4	8	Passive IR	Shielded*
L/52 Gun	\$264,637	D, A	750 kg	20.2 tons	4	8	Passive IR	Shielded*

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
L/39 Gun	127/89	25/20	500	129	Std	T4	HF4 HS2* HR1
L/52 Gun	124/87	25/20	500	129	Std	T4	HF4 HS2* HR1

Vehicle	Fire Control	Stabilization	Armament	Ammunition

L/39 Gun	None	None	155mm L/39 Howitzer, MAG (C)	40x155mm, 1000x7.62mm
L/52 Gun	None	None	155mm L/52 Howitzer, MAG (C)	40x155mm, 1000x7.62mm

*Hull side armor does not protect the gun crew when they are operating the howitzer. They are also not protected against radiological effects when they are operating the howitzer.

Slammer

Notes: The Slammer is a heavily armored artillery gun mounted on a modified Merkava Mk1 chassis. Many of these vehicles are Merkava Mk1s that were retired after the Mk 2s and Mk 3s came into service. The Slammer has a long 52-caliber gun barrel that allows longer range. Reload speed may be decreased to 1 for one minute every 10 minutes through use of an automatic loader. Ammunition racks are large. The Slammer is ready for autonomous operation (without an FDC) if the target's location is known within 15 seconds of a halt, using GPS, inertial navigation, and an internal fire control computer. The Slammer is also capable of direct fire on the move.

Twilight 2000 Notes: These vehicles were just entering production at the outset of the Twilight War, and are rather rare.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$530,079	D, A	800 kg	45 tons	4	18	Thermal Imaging, Image Intensification	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
134/93	30/20	1250	317	Trtd	T6	TF35 TS19 TR17 HF44 HS16 HR12

Fire Control	Stabilization	Armament	Ammunition
+2	Fair	155mm L/52 Howitzer, M-2HB (C)	75x155mm, 1000x.50

M-109L

Notes: This is an upgraded M-109 used by the Italian Army. This vehicle has a longer barrel, which allows longer range. This gun has a longer recoiling length, so less ammunition is carried on board. This basically brings the M-109s and M-109A1s upon which they are based up to M-109A3 standards. 283 of these conversions were made between 1986 and 1992.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$204,225	D, A	1 ton	24.8 tons	6	11	Headlights	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
115/81	25/15	511	150	Trtd	T4	TF8 TS4 TR4 HF10 HS3 HR3

Fire Control	Stabilization	Armament	Ammunition
+1	Basic	155mm L/39 howitzer, M-2HB (C)	28x155mm, 500x.50

Palmaria

Notes: This Italian-built self-propelled howitzer had sales only from Nigeria, who bought them in large amounts. The weapon mounted on this vehicle is a 155mm howitzer 41 calibers long, and is roughly equivalent to the standard 155mm NATO howitzer in performance. The fire rate of this weapon can be increased to 1 per phase for 1 minute every 10 minutes. The turret is also used on the Libyan and Argentine VCA-155 systems (see Argentine self-propelled howitzers).

Twilight 2000 Notes: When vehicle losses mounted after the Italian campaign against the Germans, the Italian military put in an open order for all available vehicles, including the Palmaria, and they were produced for the Italian Army. Later, some were given to the Greeks for use against the Turkish and NATO forces in the Balkans.

Merc 2000 Notes: Sales were also made to Libya.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$235,055	D, G, AvG, A	1.5 tons	46 tons	5	15	Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
114/80	25/15	800	272	Trtd	T5	TF26 TS14 TR11 HF32 HS12 HR8

Fire Control	Stabilization	Armament	Ammunition
+1	Basic	155mm L/41 Howitzer, MG-3 (C)	30x155mm, 850x7.62mm

Type 74

Notes: Very few of these Japanese vehicles were built, perhaps 20 in all, as a decision was made to concentrate on production of the Type 75 self-propelled howitzer instead. The Type 74s that went into service were assigned to mountain units in the northern Japanese island of Hokkaido. In appearance, the Type 74 is similar to the British Abbot SPH. The driver is in the front right, and the rest of the crew in the turret to the rear. The turret has both roof and side hatches, two in the roof and one on each side for ammunition loading. The vehicle is amphibious with 3 minutes of preparation.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$137,767	D, A	650 kg	16.5 tons	5	7	Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
122/86	25/20/3	425	111	Trtd	T4	TF3 TS3 TR3 HF4 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
+1	Basic	105mm L/32 Howitzer, M-2HB (C)	28x105mm, 650x.50

Type 75

Notes: This is the standard Japanese self-propelled howitzer. The driver is at the front right, and radio operator directly behind him. The rest of the crew is in the turret. The turret has two hatches on the roof, and the hull has large ammunition loading doors in the rear. The commander and gunner are on the right of the gun, and the two loaders on the left. The ammunition is usually Japanese-made, but it can also fire NATO ammunition.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
189,219	D, A	1 ton	25.3 tons	6	10	Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
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124/87	25/20	650	166	Trtd	T4	TF3 TS3 TR3 HF4 HS2 HR2
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Fire Control	Stabilization	Armament	Ammunition
+1	Basic	155mm L/30 Howitzer, M-2HB (C)	28x155mm, 1000x.50

Model 89

Notes: This Romanian self-propelled howitzer is basically the turret of the 2S1 fitted onto the chassis of a modified MLI-84 IFV. The resulting vehicle is lighter than the 2S1, somewhat cheaper, and better able to travel on the flimsy roads and bridges often found in Romania, as well as better handling on the mountain paths in southern Romania. The Model 89 also has the advantage of waterjets to propel it in the water.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$191,620	D, A	500 kg	17.5 tons	5	9	Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
141/99	30/20/3	600	132	Trtd	T3	TF6 TS6 TR6 HF8 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+1	Basic	122mm L/40 D-30 Howitzer	40x122mm

2S1 (SO-122) Gvozdika

Notes: This Russian 122mm self-propelled howitzer was first seen in a parade in Poland in 1974, and for that reason, is often called the M1974 in the West. The Russian designation is SO-122, but it more commonly known to its crews as the Gvozdika (Carnation). It is the modified hull of an MT-LB (the ACRV), topped with a large, low turret armed with a 122mm D-30 howitzer. In this role, the gun is useful for direct as well as indirect fire. It can be made amphibious with very little preparation (less than 2 minutes), and the suspension can be raised and lowered according to the terrain and tactical situation. Normal tracks are 400mm wide, but 670mm-wide ones can be fitted if travel must be done over deep snow, sand, or swampy terrain. There is a driver's hatch on the front deck, and commander and loader's hatches on the turret deck. A weapons mount is sometimes placed by the commander's hatch, but this is rare. There is a large door in the rear of the hull to resupply the vehicle with ammunition.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$188,074	D, A	600 kg	15.7 tons	4	8	Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
127/89	25/20/3	550	110	Trtd	T4	TF6 TS6 TR6 HF4 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
+1	Basic	122mm L/40 D-30 Howitzer	40x122mm

2S3 (SO-152) Akatsiya

Notes: This vehicle was introduced at about the same time as the 2S1, first appearing to the West in 1973, and thus often known to NATO as the M1973. It is based on the heavier chassis of the same type as used on the SA-4 Ganef SAM system, but has six rather than seven roadwheels. The driver's and engine compartment are at the front of the hull, with a large turret in the rear. There is one hatch on the left turret deck for the commander, with a weapon mount. In the rear of the hull are two small hatches through which ammunition may be passed; they are not designed for personnel, but with some squeezing, it can be done. On the right side of the turret a large hatch through which the turret crew

normally enters the vehicle.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$241,106	D, A	800 kg	27.5 tons	6	12	Passive IR, WL/IR Searchlight	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
134/94	30/20	830	192	Trtd	T4	TF3 TS3 TR3 HF4 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
+1	Basic	152mm L/34 D-20 Howitzer, PKT (C)	46x152mm, 1500x7.62mm

2S5 Giatsint

Notes: This 152mm self-propelled howitzer has been in Russian service since 1972. It looks very much like a smaller version of the SO-203. The vehicle uses a mounted version of the 2A36 towed artillery piece. The howitzer is mounted in an open position on the rear deck of the vehicle; when firing, a spade is lowered in the rear to brace the vehicle. When traveling, the vehicle commander is seated in a raised superstructure behind the driver, and has a cupola with a machinegun and a white light/IR spotlight. The engine is to the right of the driver. The other crewmembers are seated in the rear of the vehicle when traveling and have a ramp in the rear face. When the weapon is in action, the gunner sits to the left of the gun, with a shield to his front only. This vehicle is known as the Telak 91 in Finnish service.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$211,362	D, AvG, A	500 kg	28.2 tons	5	12	Active IR, WL/IR Spotlight	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
124/87	25/20	400	192	Trtd	T8	TF1 TS1 TR1 HF4 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
None	None	152mm L/53 gun/howitzer, PKT (C)	20x152mm, 1000x7.62mm

2S7 (SO-203) Pion

Notes: This is the heaviest self-propelled howitzer employed by the Russian Army. It is normally a front-level asset, used for heavy bombardment of fortified positions and heavy enemy troop concentrations, and to support large attacks. When the crew is operating the howitzer, it does not have any protection from attack, and there is no Kevlar shield set as there is on the similar US M-107 and M-110 self-propelled howitzers. The Pion is normally followed around by a variety of command and resupply vehicles; most of these are heavy trucks or vehicles based on the MT-LB, PTS-M or PTS-2, or AT-T. A light machinegun and a SAM launcher are issued with the vehicle, but are not actually mounted on the vehicle.

Twilight 2000 Notes: Though the 2S7 is capable of firing nuclear weapons, and there were a few recorded incidents of this being done during the Twilight War, Russian commanders were either loathe doing that (as some of the thermal, radiation, and fallout effects could engulf the gun position) or did not have many of them.

Merc 2000 Notes: The size and expense of operating the Pion meant that it was rarely used.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$233,624	D, A	500 kg	46.5 tons	7	17	Passive IR, WL Spotlight	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
125/88	25/20	500	311	Trtd	T6	TF1 TS1 TR1 HF4 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
None	None	203mm L/42 Howitzer, PK, SA-16 Launcher	4x203mm, 1000x7.62mm, 3xSA-16 SAMs

2S19

Notes: This replacement for the SO-152 was first seen in 1989 in Russia. There are no known exports of this vehicle. The 2S19 chassis is based upon tank parts, primarily the T-72 and T-80. The 2S19 has a considerable increase in mobility over the SO-152.

The driver sits in the front left, with the large turret in the center of the vehicle. There is a dozer blade in front of the vehicle, which can be used to clear obstacles and brace the vehicle when firing the howitzer. The gunner is on the left side of the turret and the commander on the right. The commander has machinegun mount by his hatch that may be aimed and fired from within the vehicle. The howitzer has a long gun barrel that allows for extra range, and has a fume extractor and automatic loader. The 2S19 also has a 16kW auxiliary power unit that allows the vehicle's radios and gun mechanisms to be powered without running the engine. The 2S19 can lay a smoke screen by injecting diesel fuel into its exhaust.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$305,377	D, A	500 kg	42 tons	5	15	Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
139/97	30/20	1000	311	Trtd	T6	TF19 TS10 TR8 HF24 HS8 HR6

Fire Control	Stabilization	Armament	Ammunition
+1	None	152mm L/53 gun/howitzer, NSVT (C)	50x152mm, 300x12.7mm

G-6

Notes: This is the standard South African self-propelled howitzer, and is also in service with Oman and the United Arab Emirates. It is a standard NATO-pattern 155mm howitzer on a wheeled chassis, as wheeled vehicles use less fuel than tracked vehicles. The G-6 uses the same howitzer as the G-5 towed howitzer. The G-6 has a fire control computer that takes into account weather and other variables. The G-6 is able to compute a firing solution without an FDC. The driver sits at the front between the two front wheels, and the rest of the crew is in the turret. The turret has two hatches on the roof and a door on the right rear of the turret, and two firing ports on each side of the turret. The G-6 is equipped with a 34kW APU to power the systems when the engine is off. A modified version of this vehicle has an L/52 gun for added range.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
L/45 Gun	\$299,423	D, A	750 kg	47 tons	6	12	Image Intensification, Passive IR	Enclosed
L/52 Gun	\$317,027	D, A	750 kg	47.4 tons	6	12	Image Intensification, Passive IR	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
L/45 Gun	113/68	28/17	700	190	Trtd	W(4)	TF14 TS7 TR7 HF18 HS6 HR5
L/52 Gun	112/67	28/17	700	190	Trtd	W(4)	TF14 TS7 TR7 HF18 HS6 HR5

Vehicle	Fire Control	Stabilization	Armament	Ammunition
L/45 Gun	+1	Basic	155mm L/45 Howitzer, M-2HB (C)	45x155mm, 550x.50

L/52 Gun	+1	Basic	155mm L/52 Howitzer, M-2HB (C)	45x155mm, 550x.50
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K-9

Notes: This is an advanced South Korean self-propelled howitzer, similar in concept and performance to SP howitzers such as the US M-109A6 Paladin, German PZH-2000, and Israeli Slammer. The K-9 features a 52-caliber length gun, GPS, fire control computers, a land navigation system, inertial navigation, and automatic fire solution input from FIST vehicles. The K-9 can begin to fire within 3 phases of a halt and begin to lay fire without the aid of an FDC if the target's location is known. With the help of fire input from a FIST vehicle or FDC, the K-9 may fire immediately after a halt. By use of an automatic rammer, the K-9 may decrease reload time to 1 for one minute every ten minutes.

Twilight 2000 Notes: This vehicle does not exist.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$364,215	D, A	1.09 tons	46.3 tons	5	16	Passive IR, Image Intensification	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
143/100	30/20	850	356	Trtd	T3	TF11 TS8 TR8 HF14 HS6 HR4

Fire Control	Stabilization	Armament	Ammunition
+2	Fair	155mm L/52 Howitzer, M-2HB (C)	48x155mm, 500x.50

Bandkanon 1A

Notes: This is a Swedish artillery vehicle featuring a 52-caliber 155mm howitzer that allows extended range over normal 155mm howitzers. The gun is fed from a 14-round magazine (the gun includes a crane for loading this magazine), which allows a fire rate of one round per phase until the magazine is exhausted. Reloading a magazine takes 24 phases (2 minutes). The gun is cocked manually, which requires one phase. The Bandkanon has an inertial land navigation system that allows it to take somewhat inaccurate shots (-1 to skill rolls) without input from an FDC.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$217,208	D, G, AvG, A	1 ton	53 tons	5	17	Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
80/56	15/10	1445	262	Trtd	T5	TF19 TS10 TR7 HF24 HS8 HR5

Fire Control	Stabilization	Armament	Ammunition
None	None	155mm L/52 Howitzer, MAG (C)	14x155mm, 1000x7.62mm

FH-77AD

Notes: This Swedish vehicle is a modified FH-77 towed howitzer on all-terrain truck chassis. Spades are lowered at the rear of the vehicle before firing the howitzer. The cab of the FH-77AD is armored, and the HF armor figure is applied to all angles of fire against the cab, instead of just fire originating from the front of the vehicle. This vehicle was designed to quickly lead to more mobile artillery.

Twilight 2000 Notes: This work had just begun as the Twilight War commenced, and only about 30 of these vehicles had been manufactured at the outset of the war. Though production continued at a slow rate during the war, not many more FH-77AD's were made until well after the Twilight War.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$195,330	D, A	650 kg	30 tons	6	9	Headlights	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
97/58	25/15	500	92	Std	W(3)	HF4 HS1 HR1

Fire Control	Stabilization	Armament	Ammunition
None	None	155mm L/38 Howitzer	24x155mm

T-34/122

Notes: In the late 1960s, Syria was unable to receive regular shipments of 2S1 self-propelled howitzers from Russia. Needing more mobile artillery, it used obsolete T-34 tank chassis and D-30 field guns and created a self-propelled howitzer. The gun is mounted on the front of the vehicle, and fired over the rear of the vehicle. Controls, including elevation and traverse, are manual, so they are slow. There is a collapsible firing platform mounted on the rear of the vehicle, which is raised when firing the gun. The crew does not have any armor protection when manning the gun. The gun can rotate 360 degrees, but practical considerations (such as loading the weapon in conditions of extreme traverse) limit traverse to 120 degrees from center.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$181,739	D, A	600 kg	29 tons	6	11	Headlights	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
115/80	25/15	590	185	Trtd	T4	TF1 TS1 TR1 HF16 HS6 HR4

Fire Control	Stabilization	Armament	Ammunition
None	None	122mm D-30 Howitzer, PKT (C)	40x122mm, 1000x7.62mm

M-44T

Notes: This is an upgrade of the old M-44 155mm self-propelled howitzer, which Turkey bought from the United States in the 1950s. The original gasoline engine was replaced with a more fuel-efficient diesel engine, the transmission was replaced in accordance with this new power pack, the fuel tank size was increased, the electrical system was upgraded, and the gun was replaced with a standard NATO 155mm howitzer.

Twilight 2000 Notes: 186 of these vehicles were converted beginning in 1986, and saw extensive service in Northern Iraq and Eastern Europe during the Twilight War.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$190,169	D, A	750 kg	29.03 tons	5	12	Headlights	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
111/78	25/15	780	166	Stnd	T4	HF6 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
+1	Basic	155mm L/39 Howitzer, M-2HB (C)	24x155mm, 900x.50

M-52T K/M Obus

Notes: This is an upgraded version of the old M-52 105mm self-propelled howitzer, which Turkey bought from the US in the 1950s. Improvements include the replacement of the howitzer with a 155mm NATO howitzer, replacement of the original gasoline engine with a diesel engine, improvement of the transmission, and the mounting of the gun in a larger turret. Computer fire control is also added, allowing the crew to accurately fire if the target location is known. As the electrical system was not up to par with the new systems, this has been upgraded as well; the suspension has also been upgraded to allow the increased weight. The higher power gun also required the addition of a recoil spade at the rear of the chassis, which must be lowered before firing of the gun.

Twilight 2000 Notes: 365 of these conversions were available at the beginning of the Twilight War.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
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\$212,358	D, A	1 ton	29.5 tons	5	12	Passive IR	Shielded
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Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
109/77	25/15	780	166	Trtd	T4	TF5 TS3 TR3 HF6 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
+2	Basic	155mm L/39 Howitzer, M-2HB (C)	30x155mm, 500x.50

M-7 Priest

Notes: Though this vehicle was officially named the Sherman Fire Support Vehicle, the name "Priest" was given to it by British crews who looked at its pulpit-like commander's station. Based on the chassis of the M-4 Sherman series, the M-7 has no turret, an open top, and mounts a 105mm howitzer instead of more normal Sherman armament. The Priest was, like the Sherman, widely exported, but by 2000, remained in service only by Yugoslavia, Israel (in a reserve role), and some South American and Southeast Asian countries.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$198,365	G, A	500 kg	22.97 tons	7	9	Headlights	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
103/72	20/15	677	260	Std	T5	HF6 HS3 HR2

Fire Control	Stabilization	Armament	Ammunition
None	None	105mm L/33 Howitzer, M-2HB (C)	69x105mm, 1000x.50

M-44

Notes: This elderly self-propelled howitzer dates from US use in the early 1950s. It went out of US service in 1962, but during the Twilight War was still being used by Greece, Jordan, Spain, and Taiwan. Turkey also used them, but these were upgraded in the 1980s to the M-44T standard (see Turkish Self-Propelled Artillery). The 155mm L/30 gun has much shorter range than normal NATO standard 155mm howitzers (see Howitzers, under Large-Caliber Guns), but can fire all 155mm rounds. The fighting compartment is open-topped, and there is a cupola for a machinegun. A door in the rear allows for resupply.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$163,804	G, A	750 kg	28.35 tons	5	10	Headlights	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
117/82	25/20	568	371	Std	T4	HF6 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
None	Basic	155mm L/30 Howitzer, M-2HB (C)	24x155mm, 900x.50

M-52

Notes: These ancient self-propelled howitzers were still being used by Greece, South Korea, and Spain at the turn of the century. Turkey upgraded their M-52s to the M-52T standard in the late 1980s and early 1990s (see Turkish Self-Propelled Artillery). The M-52 uses the shorter-range 105mm howitzer, and the turret has large doors in the rear for ammunition resupply. There are two hatches on the turret roof for the commander and gunner, and the commander's hatch has a machinegun mount. The driver is in the front hull on the left.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$276,288	G, A	900 kg	24.04 kg	5	11	Headlights	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
134/94	30/20	678	370	Trtd	T4	TF5 TS3 TR3 HF6 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
None	Basic	105mm L/30 Howitzer, M-2HB (C)	102x105mm, 900x.50

M-107

Notes: This self-propelled howitzer was developed in the 1950s at the same time as the M-110 203mm SP howitzer. It has been long phased out of service in most armies that once used them, including the US, but in 2000 was still being used by Greece, Iran, Israel, South Korea, and Turkey. The vehicle is normally accompanied by a drove of M-548 tracked load carriers or M-992 FAASvs, carrying the ammunition and 8 members of the gun crew. The chassis is the same as used on the M-110A2, but

like the rest of the vehicle, the gun hasn't been produced since 1980, and parts for it are getting hard to find by 2000 except in countries actively using them. The gun is carried on top of the chassis of the vehicle. This gives no protection to the crew from small arms fire or artillery splinters; to remedy this, a tubular framework was issued with the vehicle that could be erected around the firing position; over which Kevlar shields are placed. Most of the time, these were considered too cumbersome and difficult to use, and they were typically left strapped to the side of the vehicle or abandoned in the rear areas. Without these shields, the turret armor value from all directions is 0.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$159,718	D, A	800 kg	28.17 tons	5 (+8)	12	Headlights	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
101/71	20/15	1137	149	Trtd	T4	TF1 TS1 TR1 HF4 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
None	None	175mm L/42 Howitzer	2x175mm

M-108

Notes: This elderly self-propelled howitzer is still being used by Brazil, Spain, Taiwan, and Turkey. The driver has a hatch on the front left deck, the commander and gunner have hatches on the turret roof, and there are large doors on either side of the turret and in the rear of the turret for ammunition loading. The vehicle is not NBC protected. It is amphibious with preparation (takes 3 minutes) through inflatable bags that attach to the hull above the tracks.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$243,986	D, A	1 ton	22.45 tons	5	10	Passive IR	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
119/83	25/20/3	511	149	Trtd	T4	TF8 TS4 TR4 HF10 HS3 HR3

Fire Control	Stabilization	Armament	Ammunition
+1	Basic	105mm L/30 Howitzer, M-2HB (C)	87x105mm, 500x.50

M-109A2

Notes: The M-109A2 self-propelled howitzer was designed on the same chassis as the M-108 SP howitzer, and also shares most of the turret components. The M-109, however, uses a 155mm howitzer, and the M-109 far outlasted the M-108, still being produced until today in several countries and used by over 25, with a bewildering array of modifications and refits, as well as different barrel lengths for increasing range. The M-109 has a hatch on the front left deck for the driver, and there are two hatches on the turret deck for the commander and gunner, with a weapon mount in front of the commander's hatch. There is a large door in either side of the turret, as well as a double door in the rear of the turret for ammunition loading. The M-109 is amphibious, with preparation; floats must be attached to each roadwheel and several more to the hull; this takes 15 minutes.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$229,000	D, A	1 ton	24.95 tons	6	11	Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
109/76	25/15/2	511	149	Trtd	T4	TF8 TS4 TR4 HF10 HS3 HR3

Fire Control	Stabilization	Armament	Ammunition
+1	Basic	155mm L/39 Howitzer, M-2HB (C)	36x155mm, 500x.50BMG

M-109A6 Paladin

Notes: This is a significant upgrade of the M-109A2/A3. Delivery of these vehicles was completed by October 1998.

The new cannon has an advanced bore evacuator, a new breech housing, and longer length that allows for longer range. The armor on the turret is improved and has Kevlar ballistic lining; a new fire control system is fitted, with GPS, onboard fire control computers, inertial navigation system, and automatic fire control input; frequency-hopping radios, night vision gear, a 5kW generator, a water heater (for heating rations), and a reduction in crew required to four. The Paladin is capable of laying and firing the howitzer without input from the FDC if the target's location is known, via the Automatic Fire-Control System (AFCS). The Paladin may decrease reload time to 1 for one minute.

Externally, the Paladin is distinguishable by its large bustle on the turret rear and the longer gun barrel.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$342,319	D, A	850 kg	28.85 tons	4	12	Passive IR, Image Intensification	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
104/73	20/15	504	147	Trtd	T4	TF11 TS7 TR7 HF14 HS5 HR5

Fire Control	Stabilization	Armament	Ammunition
+2	Basic	155mm L/52 howitzer, M-2HB (C)	39x155mm, 500x.50

M-110A2

Notes: This self-propelled howitzer quickly replaced the earlier M-110 and M-110A1, both of which used the far shorter-barreled and ranged L/25 guns. The M-110A2 uses the same chassis as the M-107, and at the time of the Twilight War was still being used in small numbers by the US and in larger numbers in 13 other countries. As there is almost no room for ammunition on the vehicle, and also no room for 8 of the crew members, the M-110A2 is normally followed by a large amount of support vehicles carrying these members and the ammunition, such as the M-548, M-648, or FAASV. The gun is carried on top of the chassis of the vehicle. This gives no protection to the crew from small arms fire or artillery splinters; to remedy this, a tubular framework was issued with the vehicle that could be erected around the firing position; over which Kevlar shields are placed. Most of the time, these were considered too cumbersome and difficult to use, and they were typically left strapped to the side of the

vehicle or abandoned in the rear areas. Without these shields, the turret armor value from all directions is 0.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$142,514	D, A	500 kg	28.35 tons	5 (+8)	12	Headlights	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
101/71	20/15	1137	149	Trtd	T4	TF1 TS1 TR1 HF4 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
None	None	203mm Howitzer	2x203mm