

Self-Propelled Guns

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MOWAG Piranha 5 10x10

Notes: Unlike most of MOWAG's Piranha range of vehicles, the Piranha 10x10 (also known as the Piranha 5) was never designed or meant to be an APC chassis. It was designed from the start as a heavy scout vehicle and tank destroyer. The Piranha 10x10 was a private company design that MOWAG hoped would interest international buyers; the first prototype was completed in 1993, with the development phase being completed in 1994, and presentation to the international arms market in 1995. Later in 1995, the Piranha 10x10 was first demonstrated to several potential Middle

Eastern buyers. However, the eventual customers were primarily European nations – Denmark, Sweden, and Romania. Later, the Spanish acquired several Piranha 5s, including an unknown number for the Spanish Marines, armed with a 120mm gun and having advanced stabilization as standard. In addition, the Piranha 5 was in contention for the fire support elements of Stryker Brigades (though it did not fare well in the air-portable tests). The US has retained 5 Piranha 5s for further testing. The New Zealanders also use the Piranha 5. The Piranha 5 has not seen combat use, except for sporadic combat in a peacekeeping role.

For the most part, each countries' Piranha 5s are the same externally, with most differences being internal. All of these vehicles sold are equipped with a NATO-compatible rifled 105mm GIAT G2 main gun, but a 120mm Rheinmetall gun has always been an available option. The TML 105 turret is equipped with advanced fire control and vision devices, but poor gun stabilization in its basic form. Each has a 40-kilowatt APU for use when the engine is off; Sweden is said to have specifically requested this feature, as their Piranha 5s are to be used for long coastal watches (and patrols), where power may be needed immediately for fire control and to power vision devices. In addition, there are two clusters of seven GALIX grenade launchers, which may be command or automatically-fired. The grenades are larger than standard NATO smoke generation grenades at 80mm.

Power is provided with a 340-horsepower Scania turbocharged diesel coupled to a 7-speed fully automatic ZF transmission. The driver has conventional controls, with power steering on the front four wheels and power/antilock brakes. The tires have central tire pressure regulation, and are puncture-resistant run-flat tires. The driver is on the front right, with his hatch cover rotating open to the left. He has three wide-angle vision blocks to his front and sides; the center one has a night vision channel. To his left is the engine; behind him is a seat for an additional passenger, with a hatch that rotates out to the right. The commander is on the turret left, and the loader's hatch is on the turret right.

The rear of the vehicle carries the fuel tank, 26 rounds of 105mm ammunition or 22 rounds of 120mm, and a small space where the crew can store their gear and which is big enough for a single cot. The rest of the ammunition is in the turret bustle.

The chassis is essentially an extended Piranha II 8x8 chassis. The hull is of all-welded steel, but has only moderate protection in the armor department.

A number of options are available for the Piranha 5, besides the 120mm Gun. The engine may be replaced with a 400 or 450 horsepower engine. Applique armor may be applied to the vehicle's hull and turret, as may lugs for ERA on the front and sides of the hull and turret. If applique armor is installed, it is welded on rather than being bolted on (and giving something else to rocket around the vehicle upon a hit). NBC overpressure or vehicular NBC systems may be installed; all five parties operating these vehicles have taken the NBC Overpressure option. A BMS is available, along with a vehicle state system and GPS. An autoloader can be added to the loading system, but this is not designed to completely replace the loader. Better stabilization is also available, as is a laser designator. A day/night CITS can give the Piranha 5 a hunter/killer capability; the Swedes and Spanish have taken this option. Air conditioning can be added.

Swedish Piranha 5s

The Swedish iteration of the Piranha 5 have an internal soft Kevlar antispalling liner. Swedish Piranha 5s do not use the RWS option; instead, they use an electrically-turning cupola with a Ksp-58 for the commander. They are equipped with NBC Overpressure, with a vehicular NBC backup. Sweden uses a domestic form of a BMS, along with a vehicle state computer, GPS, and a mapping computer. Swedish Piranha 5s have a CITS, enabling a hunter/killer capability. Swedish Piranha 5s are equipped with a 400-horsepower engine. They have a short-range radio jammer (does not jam friendly forces' radios) to keep IED from exploding; this extends under the front third of the vehicle, and the commander gets an alert if anything is found. They are equipped with a full BMS, including vehicle state computer, GPS, and mapping module.

Danish Piranha 5s

Danish Piranha 5s have Kongsberg Protector RWS above the commander's hatch. Denmark adds hard Kevlar panels to the interior molded into the walls, and also have a Kevlar antispalling liner. Danish Piranha 5s use a 400-horsepower turbocharged diesel engine. In addition, Danish Piranha 5s. Danish Piranha 5s have a short-range radio jammer (does not jam friendly forces' radios) to keep IED from exploding; this extends under the front third of the vehicle, and the commander gets an alert if anything is found. Danish Piranha 5s have a Kongsberg Protector RWS above the commander's hatch.

Spanish Piranha 5s

Spain has gone all-out with their Piranha 5s. They armed their Piranha 5s with 120mm Rheinmetall guns, and Spain has elected to equip their Piranha 5s with a mondo-powerful 577-horsepower engine. The vehicles have a full BMS and Vehicle State computer, along with GPS and a mapping module. They have a CITS, giving it a hunter/killer capability. The Spanish have installed a 40-liter chilled water tank in their cargo area. Spanish Piranha 5s also have RWR and LWR. They are equipped with air conditioning with NBC filters.

Romanian Piranha 5s

Romanian Piranha 5s also have a Kongsberg Protector RWS, but it is differently-armed than the Danish Protector. They are outfitted with the 450-horsepower engine. Romanian Piranha 5s do not have a BMS, but they do have a vehicle state computer and GPS with a mapping computer. They are equipped with air conditioning with NBC filters.

New Zealander Piranha 5s

New Zealander Piranha 5s are very similar to Danish Piranha 5s; they have a CROWS-type OHWS, they have hard molded-in Kevlar panels as well as an antispalling blanket. have a short-range radio jammer (does not jam friendly forces' radios) to keep IED from exploding; this extends under the front third of the vehicle, and the commander gets an alert if anything is found. The New Zealander Piranha 5s, however, use an uprated 450-horsepower engine. New Zealander Piranha 5s have a full BMS with Vehicle State computer and GPS with a mapping module. They have AC with NBC Filters. Their Piranha 5s have a 50-liter chilled drinking water tank, as well as a ration cooker and water heater. New Zealander Piranha 5s have RWR, LWR, and IFF; it is rumored that this is preparation for the installation of an APS in the future.

I have included versions below for Piranha 5s with all the options installed, just for the heck of it, in both 105mm and 120mm versions. Drinking water tanks, chilled or room-temperature, can be installed in the cargo space' the Spanish and New Zealanders have elected to install a 40-liter chilled tank. Spanish Piranha 5s also have Radar and Laser Warning Receivers, as do New Zealander Piranha 5s.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Piranha 5 (Swedish)	\$982,080	D, A	838 kg	30 tons	4	23	Passive IR (D, G), Thermal Imaging (G, C), 2 nd Gen Image Intensification (G, C)	Shielded
Piranha 5 (Swedish, w/Applique)	\$1,006,904	D, A	572 kg	30.53 tons	4	23	Passive IR (D, G), Thermal Imaging (G, C), 2 nd Gen Image Intensification (G, C)	Shielded
Piranha 5 (Danish)	\$1,212,529	D, A	515 kg	30.3 tons	4	26	Passive IR (D, G), FLIR (G), 2 nd Gen Image Intensification (G, C)	Shielded
Piranha 5 (Danish, w/Applique)	\$1,237,353	D, A	505 kg	30.83 tons	4	26	Passive IR (D, G), FLIR (G), 2 nd Gen Image Intensification (G, C)	Shielded
Piranha 5 (Spanish)	\$1,322,213	D, A	517 kg	30.43 tons	4	26	Passive IR (D, G), 2 nd Gen FLIR (G, C), 2 nd Gen Image Intensification (G, C), Day/Night Backup Camera	Shielded
Piranha 5 (Spanish, w/Applique)	\$1,353,993	D, A	527 kg	30.96 tons	4	27	Passive IR (D, G), 2 nd Gen FLIR (G, C), 2 nd Gen Image Intensification (G, C), Day/Night Backup Camera	Shielded
Piranha 5 (Romanian)	\$976,319	D, A	495 kg	30.3 tons	4	27	Passive IR (D, G), 2 nd Gen Thermal Imaging	Shielded

Piranha 5 (Romanian, w/Applique)	\$985,309	D, A	479 kg	30.83 tons	4	28	(G, C), 2 nd Gen Image Intensification (G, C), Day/Night Backup Camera Passive IR (D, G), 2 nd Gen Thermal Imaging (G, C), 2 nd Gen Image Intensification (G, C), Day/Night Backup Camera	Shielded
Piranha 5 (New Zealander)	\$1,127,859	D, A	572 kg	30.5 tons	4	27	Passive IR (D, G), 2 nd Gen FLIR (G, C), 2 nd Gen Image Intensification (G, C), Day/Night Backup Camera	Shielded
Piranha 5 (New Zealander w/Applique)	\$1,475,457	D, A	567 kg	31.03 tons	3	28	Passive IR (D, G), 2 nd Gen FLIR (G, C), 2 nd Gen Image Intensification (G, C), Day/Night Backup Camera	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Piranha 5 (Swedish)	117/58	32/16	300	148	Trtd	W(8)	TF12 TS6 TR3 HF10 HS7 HR4*
Piranha 5 (Swedish, w/Applique)	116/58	32/16	300	148	Trtd	W(8)	TF15Sp TS9Sp TR3 HF16Sp HF10Sp HR5**
Piranha 5 (Danish)	115/58	32/16	300	148	Trtd	W(8)	TF13 TS7 TS4 HF11 HS8 HR5*
Piranha 5 (Danish, w/Applique)	114/58	32/16	300	148	Trtd	W(8)	TF16Sp TS10Sp TR4 HF17Sp HS11Sp HR6**
Piranha 5 (Spanish)	152/77	42/22	300	214	Trtd	W(8)	TF13 TS7 TR4 HF11 HS8 HR5*
Piranha 5 (Spanish w/Applique)	150/75	41/21	300	214	Trtd	W(8)	TF15Sp TS9Sp TR3 HF16Sp HF10Sp HR5**
Piranha 5 (Romanian)	127/64	36/18	300	167	Trtd	W(8)	TF13 TS7 TS4 HF11 HS8 HR5*
Piranha 5 (Romanian, w/Applique)	124/63	34/18	300	167	Trtd	W(8)	TF16Sp TS10Sp TR4 HF17Sp HS11Sp HR6**
Piranha 5 (New Zealander)	125/63	34/18	300	167	Trtd	W(8)	TF15 TS9 TS6 HF13 HS10 HR6**
Piranha 5 (New Zealander w/Applique)	124/62	34/18	300	167	Trtd	W(8)	TF19Sp TS13Sp TR4 HF16Sp HS13SP HR7**

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Piranha 5 (Swedish)	+2	Basic	105mm GIAT G2 Gun, Ksp-58 (C), Kso-39	48x105mm, 4000x7.62mm

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Piranha 5 (Danish)	+3	Fair	105mm GIAT G2 Gun, M2HB (RWS), MAG	48x105mm, 2400x.50, 4000x7.62mm
Piranha 5 (Spanish)	+3	Fair	120mm Rheinmetall Gun, MG3 (C), MG3	42x120mm, 4000x7.62mm
Piranha 5 (Romanian)	+2	Basic	105mm GIAT G2 Gun, Mk 19 AGL (RWS), MAG	48x105mm, 4000x7.62mm, 760x40mm Grenades
Piranha 5 (New Zealander)	+3	Fair	105mm GIAT G2 Gun, Mk 19 AGL, MAG (CROWS), MAG	48x105mm, 4000x7.62mm, 760x40mm Grenades

*Hull and Turret Roof AV for these versions is 5. Hull floor AV is 7Sp.

**Hull and Turret Roof AV for these versions is 6. Hull floor AV is 8Sp

M-113A1 Recoilless Rifle Carrier

Notes: This is an Australian modification of the M-113A1, used as an antiarmor vehicle and support vehicle. In this version, an M-40A2 106mm recoilless rifle has been mounted on the deck on the right side of the vehicle behind the commander's cupola. There is a modified Carl Gustav M-2 ammunition box mounted on the floor of the interior to hold ammunition for the recoilless rifle, but more boxes are often carried in the passenger area. The weapon is operated from the open hatch on the rear deck.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$96,270	D, A	1.63 tons	11.96 tons	4	6	Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
117/82	25/20/3	360	98	Std	T2	HF6 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
None	None	M-40A2 106mm recoilless rifle, M-2HB (C)	16x106mm, 2000x.50

LAV-90

Notes: This is a variant of the MOWAG Piranha 8x8 (a version of this vehicle, armed with a 25mm turret, is known to the US as the LAV-25), is armed with a 90mm TS-90 turret. This is the same turret as found on the ERC-90. There is another version of this vehicle, using a Cockerill LCTS 90mm turret. Saudi Arabia uses the TS-90 version, and Oman and Qatar use the Cockerill turret version. This version of the LAV has an increased fuel capacity, a small hatch on the left side of the hull, and a winch with a capacity of 6.8 tons.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$186,840	D, A	500 kg	13 tons	4	8	Passive IR, Image Intensification	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
154/62	39/16/4	300	94	Trtd	W(6)	TF5 TS5 TR5 HF6 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+3	Fair	90mmf or 90mmNATO gun, MAG	43x90mmf or 43x90mm, 1620x7.62mm

LAV-105

Notes: This is a tank destroyer version of the LAV-25, used by US Army light divisions and by the US Marines. It is a standard LAV-25 chassis with a new turret mounting a 105mm NATO cannon. A stronger engine, transmission, and suspension have been used to cope with the increased weight. The gun is equipped with an autoloader.

Twilight 2000 Notes: The LAV-105 was also used in the Twilight War in limited numbers by the US Army's 82nd Airborne Division, 101st Airborne Division, 173rd Airborne Brigade, and by the Canadian military.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$234,976	D, A	700 kg	14.52 tons	3	7	Passive IR, Image Intensification	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
152/56	36/14/4	300	93	Trtd	W(6)	TF5 TS5 TR5 HF6 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+4	Good	105mm NATO Gun, MAG, M-2HB (C)	30x105mm, 1000x7.62mm, 500x.50

LAV III/90 Bobcat I

Notes: As the LAV III was selected for service with Canada and the US in late 1993 (known to the Canadians as the Kodiak, and the Americans as the LAV III or LAV 3rd Generation), the utility of the more robust chassis was immediately realized and other vehicles based on this chassis were drawn up. One of these was the fire support and tank destroyer vehicle known as the Bobcat I to the Canadians and the LAV III/90 FSV to the Americans. These vehicles were placed into service with Canadian units, primarily in scout squadrons. The Bobcat I is a standard Kodiak chassis topped with a turret similar to that of the LAV-90, but with increased armor protection. The Bobcat I also has a better night vision suite and a laser detection system that detects targeting lasers and automatically launches smoke grenades in the direction of the beam. The turret is that of the Scorpion-90, but with extra armor and better fire control.

Twilight 2000 Notes: A half a dozen were deployed to both the 82nd and 101st Airborne Divisions, but those divisions preferred the lighter weight and smaller size of the earlier generation of LAV-25 based vehicles, and those LAV IIIs were the only examples of those

vehicles deployed by those divisions. More substantial use was made of the LAV III/90 by US Light Divisions and the US Marines.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$288,604	D, A	670 kg	16.77 tons	3	7	Passive IR, Image Intensification, Thermal Imaging	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
172/68	43/17/5	300	139	Trtd	W(6)	TF7Sp TS6Sp TR7 HF9Sp HS5Sp HR4

Fire Control	Stabilization	Armament	Ammunition
+3	Good	90mm NATO Gun, MAG, MAG (C)	50x90mm, 2175x7.62N

LAV III/105 Bobcat II

Notes: This is basically the same thing to the LAV-105 that the Bobcat I is to the LAV-90; being a tank destroyer based on the Kodiak chassis, but armed with a 105mm gun instead of the 90mm gun of the Bobcat I. In general, the Bobcat I was meant for fire support, while the Bobcat II was more of a dedicated tank destroyer. The turret is a modified form of that used by the M-8 Buford AGS; though this turret has the same blow-out panels as the M-8, the modular armor cannot be fitted to this modified turret. Instead, the armor on the turret was upgraded directly.

Twilight 2000 Notes: As with the Bobcat I, these vehicles were primarily assigned to Canadian and US units, but a small number were also purchased by Australia and New Zealand. Two were assigned to the 82nd and 101st Airborne Divisions, but these vehicles were hated by riggers and loadmasters due to their large size and the extra work required to land their weight safely by parachute or LAPES.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$284,554	D, A	670 kg	18.73 tons	3	8	Passive IR, Image Intensification, Thermal Imaging	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
160/64	40/16/4	300	139	Trtd	W(6)	TF7Sp TS6Sp TR7 HF9Sp HS5Sp HR4

Fire Control	Stabilization	Armament	Ammunition
+4	Good	105mm NATO Gun, MAG, MAG (C)	34x105mm, 2175x7.62N

Type 89 Antitank Gun

Notes: This self-propelled antitank gun was first fielded in China in small numbers in the late 1980s. The chassis is the same as that of the Type 83 152mm self-propelled gun/howitzer. The M-1989 has a driver's compartment at the front left and the engine compartment on the front right. The turret is mounted on the rear of the vehicle, with a door on the rear of the vehicle for crew entry. The 120mm gun is fitted with a thermal sleeve and fume extractor. The commander has a cupola on the right side of the turret with a machinegun mount. There are stowage baskets on either side of the turret rear. The ammunition is of Chinese make, similar to the NATO 120mm ammunition, but no APFSDSDU ammunition is made in China for this weapon. The gun can fire NATO ammunition, however, including APFSDSDU rounds. There are four smoke grenade launchers on each side of the turret.

Note that unlike other Chinese weapons systems, the Type 89 was never offered for sale outside of China.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$255,707	D, A	800 kg	30 tons	4	11	Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
139/97	30/20	885	192	Trtd	T8	TF7 TS4 TR4 HF8 HS3 HR3

Fire Control	Stabilization	Armament	Ammunition
+1	Fair	120mm gun, W-85 (C)	60x120mm, 650x12.7mm

M-113/TS-90

Notes: This is an M-113 modification offered as an upgrade to customers around the world, but most sales were made to countries in the Far East and Southeast Asia. It is an M-113 (which may be an A1, A2, or A3) fitted out with the TS-90 turret, as found on many French-designed armored vehicles. The turret turns the M-113 into a light tank destroyer and support vehicle. In this role, the M-113's passenger compartment is taken up with the turret and ammunition, and the rear deck hatches and commander's cupola are removed; the fuel tanks, if the base vehicle is an A1 or A2, are moved to the rear.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$180,805	D, A	500 kg	13 tons	3	6	Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
109/76	25/15/2	360	98	Trtd	T2	TF3 TS3 TR3 HF6 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+1	Basic	90mmf Gun, MAG, MAG (C)	45x90mm, 2200x7.62mm

Jagdpanzer Kanone

Notes: Also known as the Jagdpanzer-90, this is a tank destroyer based on the chassis of the Leopard 1 tank. They have been largely phased out of service or converted to artillery observation post vehicles or Jaguar ATGM carriers, but a few cannon-armed versions still serve on, mostly as infantry support vehicles. These vehicles were used only by Germany and Belgium. The Jagdpanzer Kanone has a raised superstructure instead of a turret and the gun mounted in the glacis plate. These vehicles were further upgraded, with laser rangefinders, better night vision, and braces of flare and smoke grenade launchers. There is a hatch on the front left deck for the driver, another behind that for the commander, and another on the rear right deck for the rest of the crew. Some are equipped with searchlights above the gun. German Jagdpanzers have MG-3 machineguns, while Belgian vehicles have MAG machineguns.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Jagdpanzer-90	\$200,327	D, G, AvG, A	500 kg	27.5 tons	4	10	Passive IR, (Some) WL/IR Searchlight	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Jagdpanzer-90	126/88	29/21	470	185	Std	T6	HF27 HS14 HR10

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Jagdpanzer-90	+4	Fair	90mm NATO Gun, MG-3 or MAG, MG-3 or MAG (C)	51x90mm, 4000x7.62mm

Type 60

Notes: This is a Japanese tank destroyer using twin M-40 106mm recoilless rifles. The driver is seated on the left side of the vehicle towards the front, the commander to in the middle of the hull to the left of the recoilless rifle mounting, and the loader to the left of the commander. The engine is at the rear. The right recoilless rifle has a .50 caliber spotting rifle. The recoilless rifles are raised for firing, and lowered for traveling.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Type 60A	\$109,562	D, A	500 kg	8 tons	3	4	Headlights	Enclosed
Type 60B	\$110,049	D, A	500 kg	8 tons	3	4	Headlights	Enclosed
Type 60C	\$110,126	D, A	500 kg	8.1 tons	3	4	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Type 60A	91/64	21/15	77	31	Std	T2	HF4 HS2 HR2
Type 60B	91/64	21/15	77	31	Std	T2	HF6 HS3 HR2
Type 60C	112/78	26/18	77	40	Std	T2	HF6 HS3 HR3

Vehicle	Fire Control	Stabilization	Armament	Ammunition
(All)	None	None	2xM-40 106mm Recoilless Rifles	8x106mm

M-113A1 Twin Recoilless Rifle Carrier

Notes: This Pakistani modification of the M-113A1 uses a mount on the forward part of the hull instead of the normal commander's cupola for a twin M-40A2 106mm recoilless rifle installation. The vehicle carries a small crew and a large amount of ammunition for its launchers. The mount includes a laser rangefinder for the recoilless rifles to increase accuracy. The weapons are fired by a gunner standing in the open rear hatch.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$126,750	D, A	400 kg	12.72 tons	4	6	Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
111/78	26/18/3	360	98	Std	T2	HF6 HS4 HR4

Fire Control	Stabilization	Armament	Ammunition
+2	None	Twin M-40A2 106mm recoilless rifles	20x106mm

1K17 Szhatie

Why is this vehicle in an SP Guns page? Simply because I don't know where else put it, and the closest the page is the closest match.

The Szhatie (Compression) is essentially a heavy-duty, but relatively low-power, laser system mounted on a 2S19 Msta-S chassis. Though first prototypes of the Szhatie appeared on Soviet proving grounds in the late 1970s and early 1980s, it was not known outside of Russia until after Soviet Union dissolved. Rumors, rough drawings, and approximate (and wildly varying) specifications were known to US, Canadian, and NATO intelligence services, there was not enough information during the cold war to fill more than a thin folder. Two prototypes were eventually built and continually modified and improved, but in the end, the Szhatie was deemed too expensive to maintain and operate, and in the late 1980s, one was put into the Army Technology Museum near Moscow and the other scrapped. The situation may have remained the same, but in 2016, the Russians appear to have to put the Szhatie into a very low LRIP. This version appears to be much more powerful than the original model. The first was delivered to the Russian Army in 2017.

When the existence of this vehicle was discovered, there were anguished, outraged cries in Geneva and The Hague, mainly that it must violate one or more Conventions. Despite continual analysis of the documents (which continues to this day), none of the diplomats and lawyers have been able to pin down which Conventions the Szhatie was violating. (I'm guessing that in the near future, new Conventions will be added to the Main Documents.) Mr Putin seems to have taken this for a tacit permission to develop an even more powerful version of the Szhatie.

At first, the purpose was to produce a vehicle which could blind thermal viewers and image intensifiers and other optics in a wide arc in front of the vehicle. It achieved this by focusing the light through 30 kilograms of artificial rubies, which produced a laser beam that could be shot through up to 12 emitters. Each emitter was composed of a mirror and prism system that focused 13 laser tubes into each emitter, producing a single output at the emitter. The Russians also know that anyone looking through optics when the beam was fired would at least temporarily, if not permanently blinded. Estimates of the laser battery's output varies with source, but most sources put a full battery discharge at 15 kilowatts. However, the gunner of the Szhatie may elect to not fire one or more lasers, with each emitter not fired increasing power output by 2 kilowatts. The divergence of the full-output beam is about 10 degrees, with less emitters having correspondingly less divergence. The effects of the emitters is hard to quantify, but a 15 kW beam will burn out or temporarily blind (50/50 chance) fire control optics, thermal, image intensifying, and CCD optics equipment. It can also (roll of 12 on d20) cause spontaneous launching of laser decoys and actuation of their their sensor systems. At max output (22kW Using only one emitter), the effects include (roll 8 on d20) setting personnel on fire, blinding them, causing them to believe they are about to be set on fire and doing a stop-drop-roll. Such a beam also has a penetration of 20/10/5/3; if ERA is struck, the block is ruined and penetrated without the ERA going off. (NERA gives normal protection.) As composite armor contains materials that are ablative, they also halve the results of the beam's penetration. Spaced armor does not have its normal effect, it merely acts as more armor for the beam to penetrate. It is also possible that external fuel tanks, crew equipment or other equipment stowed on the surface of the vehicle, or items like boards or plastic may also catch on fire (Roll 12 on d20).

Using the emitters does require a roll to hit – but only a 1, 2, or 3 is actually a “miss.” Catastrophic Failure means that 1d6 emitters are blown (depending upon how many emitters were used in the attack), and a 2 or 3 means that the power generation batteries failed to transmit the required power to the emitters. The commander is also the gunner of the Szhatie.

The Szhatie is also useful against aircraft and UAVs. The emitters are also very vulnerable to ground fire, and particularly automatic rifle, machinegun, and sniper attacks. In addition, when figuring maintenance, the turret should be considered a separate component, requiring the same amount of maintenance as the vehicle itself.

The 2016 iteration of the Szhatie benefits from nearly 30 years of laser development. For the most part, this manifests itself as an increase in laser power, though Russian laser research does match Western laser research. Using all the emitters gives a beam cluster of 21 kW, which allows for a +2 in operation rolls. A full-power one-emitter beam is at 28kW, again yielding a +1 on operational rolls and a penetration of 30/15/8/4.

In either case, the absolute damaging or blinding limit, whether 12 beams or one, is 3000 meters. It does have short, medium, long, and extreme ranges, at a rate of 375/750/1500/3000 meters. At any shot, if an emitter scores catastrophic failure, the emitter (roll for each emitter that fired) is burned out and will not function until an appropriate level of maintenance is reached. On a roll of 2, 1d6 emitters failed to fire.

As noted above, the chassis of the Szhatie is a 2S19 Msta-S chassis. However, the Szhatie uses the 840-horsepower turbocharged diesel engine of a T-72A tank, and has a battery-powered system that allows the Szhatie to power up to eight full 12-emitter shots. If the engine is running, the batteries can charge off of the engine, but this takes 10 minutes for each emitter to be powered., and 1.5 hours to charge enough to allow eight further shots. The driver's position is in the center of the glacis, with the commander atop the turret, armed with a heavy machinegun or its equivalent. The gunner is in the turret. The firing and commander's stations are of high technology, and the original vehicle has only minimal night vision, while the 2016 model has somewhat better optics and electronics. The original Szhatie has inertial navigation; the 2016 version has GPS with a full mapping module with screens for the commander and driver. The 2016 version is also equipped with a better fire control system a vehicle state computer, and a full BMS.

A laser system based on the ZSU-23-4, with the guns replaced by laser emitters ,has apparently been developed. I do not have enough information to stat this out right now.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Szhatie (1980's)	\$38,908,710	D, A	874 kg	41 tons.	2	48	Image Intensification (D), Backup Day/Night Camera	Shielded

Model)								(D), Thermal Imaging (G/C)	
Szhatie (2016 Model)	\$55,697,508	D, A	510 kg	39 tons	2	63		Image Intensification (D, G/C), Day/Night Backup Camera (D), FLIR (G/C)	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Szhatie (1980's Model)	143/100	40/28	1200+400	307	Trtd	T6	TF10 TS36 TR10 HF70Sp HS11Sp HR12
Szhatie (2016 Model)	151/106	42/29	1200+400	292	Trtd	T6	TF12Sp TS40Sp TR10 HF70Sp HS11Sp HR12

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Szhatie (1980's Model)	+1	None	20kW Laser, NSVT (C)	Laser Ammunition Special, 1000x12.7mm
Szhatie (2016 Model)	+3	Basic	28kW Laser, Kord (C)	Laser Ammunition Special, 1500x12.7mm

ASU-57

Notes: This vehicle was designed specifically for use by Russian airborne troops in the mid-1950s. They were some of the first Russian vehicles making extensive use of aluminum armor instead of steel. They were not meant to be tank destroyers; it was recognized that its low-caliber gun could not destroy the tanks of even that period in most cases. Instead, the ASU-57 was meant to provide fire support and anti-fortification firepower to airborne infantry. The only country believed to still be using the ASU-57 is Yugoslavia, in small numbers.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$355,841	G, A	300 kg	3.35 tons	3	4	Headlights	Enclosed

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
107/75	25/18	140	32	Std	T2	HF4 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
+1	Basic	57mm Ch-51 or Ch-51M Gun, SGM (C)	30x57mm, 1000x7.62mm

ASU-85

Notes: This assault gun is one of the older vehicles that were still in active Russian service in 2000, being introduced in 1960. It was being quickly replaced by the 2S9, but there will still a large number of them in service with Category 2, 3, and Mobilization Only units at the time of the Twilight War. The ASU-85 was never exported, even to other Pact members, and is very rare outside of Russian service. The vehicle consists of a large, boxy chassis with an 85mm gun mounted in the glacis plate and a coaxial machinegun. The gun can be traversed 12 degrees to the left and right, but most laying of the gun is done by pivoting the vehicle on its tracks. About half of those encountered also have a weapon by the commander's hatch.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Early Model	\$188,514	D, A	600 kg	15.5 tons	4	6	Active IR, WL/IR Searchlight	Enclosed
Late Model	\$188,614	D, A	600 kg	15.65 tons	4	6	Active IR, WL/IR Searchlight	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Early Model	104/73	24/17	250+285	71	Std	T4	HF10 HS4 HR4
Late Model	118/83	28/19	250+285	83	Std	T4	HF10 HS4 HR4

Vehicle	Fire Control	Stabilization	Armament	Ammunition
(Both)	+1	Basic	85mm Gun, PKT, DShK (C)	40x85mm, 2000x7.62mm, 500x12.7mm

SU-100

Notes: This is a Russian assault gun built on the T-55 chassis. Like other Russian assault guns, it has no turret and an enlarged fighting compartment. Hatches for the commander and driver are located on the roof. All other crewmembers use the commander's hatch. The SU-100 is also considered obsolete, but can still be found in Category III and Third-World units.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Early Model	\$213,076	D, A	700 kg	31.6 tons	4	10	Active IR	Shielded
Late Model	\$213,149	D, A	700 kg	31.7 tons	4	10	Active IR	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Early Model	104/73	24/17	812+380	148	Std	T6	HF18 HS6 HR6
Late Model	109/76	25/18	812+380	157	Std	T6	HF18 HS6 HR6

Vehicle	Fire Control	Stabilization	Armament	Ammunition
(Both)	+1	None	100mm gun, PK (C)	44x100mm, 2000x7.62mm

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Al-Fahd AF-40-8-2 Fire Support Vehicle

Notes: This is a basic Al-Fahd APC mounting an M-40 106mm recoilless rifle. It is intended for direct fire support of infantry and for the attacking of fortified positions. In this version, the rear ramp is deleted and the passenger space largely taken up by the recoilless rifle, ammunition, and crew. The seat to the right of the driver is retained, and may be used for a passenger (usually taken by a unit commander).

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$119,562	D, A	750 kg	14.2 tons	3+1	5	Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
256/102	64/26/6	550	204	Std	W(6)	HF12Sp HS5Sp HR3

Fire Control	Stabilization	Armament	Ammunition
None	None	106mm Recoilless Rifle, MAG (C)	50x106mm, 1100x7.62mm

Al-Fahd AF-40-8-2 Reconnaissance Vehicle

Notes: This is an Al-Fahd with a larger turret mounting a 105mm NATO gun. In this version, the rear ramp is deleted, and passenger and cargo space is largely taken up by the turret and ammunition for the gun. The seat to the right of the driver is retained and may be used for a passenger.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$334,450	D, A	750 kg	16.3 tons	4+1	7	Thermal Imaging, Image Intensification	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
214/86	54/22/6	550	185	Trtd	W(6)	HF10Sp HS6Sp HR4 TF12Sp HS5Sp HR3

Fire Control	Stabilization	Armament	Ammunition
+4	Good	105mm NATO gun, MAG, M-2HB (C)	45x105mm, 1100x7.62mm, 650x.50

Ikv-91/Ikv-93

Notes: This vehicle belongs to Sweden's previous generation of tank destroyers, and yet was not out of service at the turn of the century. 210 of these vehicles were produced. The Ikv-91 is armed with a 90mm gun compatible with standard 90mm NATO ammunition. The commander, loader, and gunner exit through hatches in the turret deck, while the driver has a hatch on the deck on the front left side. The commander and gunner have periscopes that are the equivalent of binoculars as well as night vision devices. The Ikv-91 is designed for operations in northern Sweden, and is sure-footed on difficult terrain. The engine has a preheater to ensure that it starts in cold weather. The commander can control the gun as well as the gunner, but the commander has no access to the fire control computer, and his shots are at +2 at best.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Ikv-91	\$202,238	D, A	600 kg	16.3 tons	4	7	Active/Passive IR	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Ikv-91	130/91	30/21/3	400	114	Trtd	T4	TF8 TS7 TR6 HF10 HS6 HR4

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Ikv-91	+3	Fair	90mm NATO gun, MAG, MAG (C)	59x90mm, 4250x7.62mm

Ikv-98/99

Notes: This is a tank destroyer based on the CV-9040 chassis. Instead of the normal turret, the Ikv-98 mounts a GIAT TML turret armed with a NATO 105mm gun. This vehicle was produced in tandem with the Ikv-99; originally meant for export purposes, the Swedes have been aggressively marketing this vehicle and the Ikv-99.

The Ikv-99 is a tank destroyer based on the CV-9040 chassis. Instead of the normal turret, the Ikv-99 mounts a larger turret armed with a 120mm Rheinmetall cannon. This vehicle was meant to replace the much older Ikv-91, since that vehicle's 90mm gun lacks the penetration to defeat newer tanks.

Twilight 2000 Notes: Both of these vehicles were placed into mass production and used by Sweden in the Twilight War.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
Ikv-98	\$321,657	D, A	750 kg	28 tons	4	11	Thermal Imaging, Passive IR, Image Intensification	Shielded
Ikv-99	\$337,819	D, A	400 kg	28.33 tons	4	11	Thermal Imaging, Passive IR, Image Intensification	Shielded

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
Ikv-98	132/92	31/22	525	194	Trtd	T4	TF14 TS8 TR6 HF18 HR7 HS4
Ikv-99	131/92	31/21	525	194	Trtd	T4	TF14 TS8 TR6 HF18 HR7 HS4

Vehicle	Fire Control	Stabilization	Armament	Ammunition
Ikv-98	+3	Good	105mm NATO gun, MAG, MAG (C)	55x105mm, 3000x7.62mm
Ikv-99	+3	Good	120mm gun, MAG, MAG (C)	50x120mm, 3000x7.62mm

MOWAG Piranha II

Notes: This is a longer, 10-wheeled, more heavily armed, tank destroyer variant of the MOWAG Piranha (the base vehicle for the LAV-25 and related vehicles). The vehicle is built in Switzerland, but the only customer has been the Swedish Navy, who bought 44 of them for coastal defense roles to use against landing craft and hovercraft. Armor is heavier as well. The versions for Sweden are equipped with two secure vehicular radios each. The versions for Sweden are also upgraded, with gun stabilization, thermal imaging, and a computerized land navigation system.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$232,588	D, A	800 kg	18 tons	4	6	Thermal Imaging, Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
160/64	40/16/4	400	116	Trtd	W(8)	TF5Sp TS5Sp TR5 HF6Sp HS4Sp HR4

Fire Control	Stabilization	Armament	Ammunition
+3	Good	105mm M-68 gun, MAG, MAG (C)	38x105mm, 4000x7.62mm

M-3 GMC

Notes: This is an elderly tank destroyer based on the chassis of the M-3A1 half-track armored personnel carrier of World War 2. The 75mm gun is mounted in the rear compartment and has limited traverse, firing over the front of the vehicle. Three pintle mounts are included on the rear and both side walls, as well as a heavy machinegun mount, for local and anti-aircraft defense.

Twilight 2000 Notes: This vehicle was very rare in the Twilight War, but still used by a few Latin and South American countries.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$170,409	G, A	1.5 tons	10.8 tons	5	4	Headlights	Open

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
104/52	26/11	277	74	CiH	W(3)	TF3 TS2 TR0 HF2 HS2 HR2

Fire Control	Stabilization	Armament	Ammunition
+1	None	75mm gun, M-1919A4 (x3), M-2HB (C)	59x75mm, 900x.30-06, 300x.50

M-10

Notes: This is a tank destroyer based on the M-4A2 Sherman tank chassis. It was developed to provide fast, lightweight antiarmor vehicles, but was used primarily for infantry support as it could not go toe to toe with German tanks. By 2004, most of these vehicles were found in South American countries to provide fire support to mechanized infantry units, rarely being used to combat tanks.

The M-10A1 is the same vehicle as above, but based on the M-4A3 Sherman instead of the M-4A2. It uses a shorter-range gasoline engine and is somewhat lighter.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
M-10	\$169,570	D, A	300 kg	29.6 tons	5	11	Headlights	Enclosed
M-10A1	\$169,756	G, A	300 kg	29.03 tons	5	11	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
M-10	86/60	20/14	750	111	Trtd	T5	TF11 TS5 TR3 HF27 HS8 HR4
M-10A1	102/71	24/17	750	266	Trtd	T5	TF11 TS5 TR3 HF27 HS8 HR4

Vehicle	Fire Control	Stabilization	Armament	Ammunition
(Both)	+1	None	76.2mm gun, M-2HB (C)	54x76.2mm, 300x.50

M-18 Hellcat

Notes: This old World War 2 tank destroyer is still in use by some South American and Southeast Asian countries, most notably Venezuela, who uses them in fairly large numbers. It was designed to be smaller, faster, and lighter than a tank, while using a more powerful gun (for the time). By 2004, most of these vehicles were in infantry fire support roles or static anti-tank defensive positions. The vehicle is hampered by high fuel consumption.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
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350 hp Engine	\$139,070	G, A	200 kg	17.04 tons	5	6	Headlights	Enclosed
400 hp Engine	\$139,194	G, A	200 kg	17.04 tons	5	6	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
350 hp Engine	130/91	30/21	625	207	Trtd	T3	TF5 TS5 TR5 HF6 HS4 HR4
400 hp Engine	146/102	34/24	625	237	Trtd	T3	TF5 TS5 TR5 HF6 HS4 HR4

Vehicle	Fire Control	Stabilization	Armament	Ammunition
(Both)	+1	None	76mm gun, M-2HB (C)	45x76mm, 840x.50

M-36 Jackson

Notes: This old warhorse is still in use by some South American and Southeast Asian countries. By 2004, is it being used primarily as an infantry support vehicle or in the static antitank role by South American and Southeast Asian countries. The Jackson is similar to the M-10A1, but has a 90mm gun instead of the 76mm gun.

Vehicle	Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
M-36	\$178,056	G, A	300 kg	27.67 tons	5	10	Headlights	Enclosed
M-36B1	\$183,796	G, A	300 kg	30.84 tons	5	10	Headlights	Enclosed
M-36B2	\$177,869	D, A	300 kg	29.94 tons	5	10	Headlights	Enclosed

Vehicle	Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
M-36	106/74	25/17	727	267	Trtd	T5	TF11 TS5 TR3 HF27 HS8 HR4
M-36B1	97/68	23/16	636	267	Trtd	T5	TF11 TS5 TR3 HF27 HS8 HR4
M-36B2	85/60	20/14	625	111	Trtd	T5	TF11 TS5 TR3 HF27 HS8 HR4

Vehicle	Fire Control	Stabilization	Armament	Ammunition
M-36/M-36B2	+1	None	90mm Gun, M-2HB (C)	47x90mm, 1000x.50
M-36B1	+1	None	90mm Gun, M-1919A4 (Bow), M-2HB (C)	47x90mm, 450x.30-06, 1000x.50

T-55/M-18

Notes: This is a T-55 chassis with the turret replaced by that of the M-18 Hellcat tank destroyer. This modification is seen with some regularity inside the borders of the former Yugoslavia, but rarely outside that area. The reason why this modification was done in the first place is not clear (the first ones were done in the early 1980s), but reasons from combining T-55s with non-functioning turrets and M-18s with non-functioning hulls to the production of a cheap infantry support vehicle have been proposed. About the only modifications that have been done to the turret were slightly better stabilization, night sights, and modifications needed to mate it to the T-55 chassis.

Price	Fuel Type	Load	Veh Wt	Crew	Mnt	Night Vision	Radiological
\$176,152	D, A	500 kg	33.5 tons	4	13	Active/Passive IR	Shielded

Tr Mov	Com Mov	Fuel Cap	Fuel Cons	Config	Susp	Armor
118/83	28/19	812+380	215	Trtd	T6	TF5 TS5 TR5 HF67 HS16 HR8

Fire Control	Stabilization	Armament	Ammunition
+1	Basic	76mm gun, M-2HB (C)	45x76mm, 840x.50BMG