Thai Military and Asian Region

Latest News & Weapons from around the world

Stingray light tank

The Stingray light tank was developed by Cadillac Gage as a private venture. It was aimed at the export customers. The first prototype was completed in 1985. **It entered service with the Royal Thai army in 1988. Thailand purchased a total of 106 Stingray light tanks.**

The Stingray was developed to with increased strategic and tactical mobility in mind. This light tank is air transportable. It can be airlifted by C-130 Hercules or similar cargo aircraft.

RTA Stingray on the move to the Thai – Cambodian border during clashes at Phra Viharn Temple in 2010

Gun and turret of the Stingray are similar to those of the Cadillac Gage V600 Commando fire support vehicle, which was also developed as a private venture in the early 1980s.

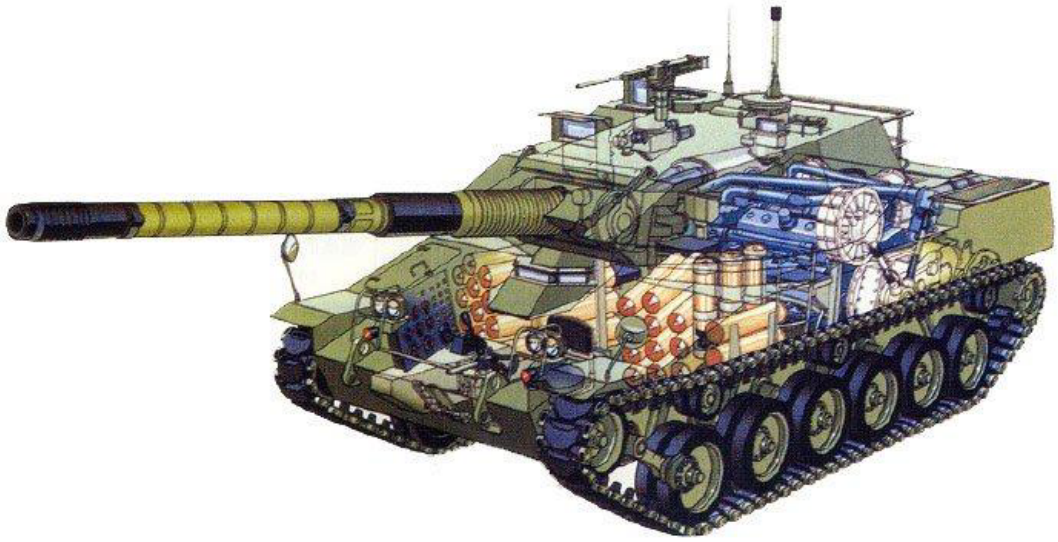
The stingray is very lightly armed. **Front armor can only withstand 14.5-mm ammunition, however additional armor protection can be fitted.**

Stingray tank with RPG cage

The Stingray is armed with a fully-stabilized 105-mm Low Recoil Force rifled gun, derived from the **British L7A3**. This gun is identical in performance to the one used on the M1 Abrams main battle tank. It can fire a full range of NATO ammunition. This gun is loaded manually. Eight rounds of ready ammunition are carried in the turret. Remaining rounds are stored in the hull.

Secondary armament consists of coaxial 7.62-mm machine gun and 12.7-mm machine gun, mounted on top of the roof.

The Stingray light tank has a crew of four, including commander, gunner, loader and driver.



The layout of the Stingray is conventional, with the driver's compartment at the front, fighting compartment in the centre and power pack at the rear.

The driver sits in the centre of the hull at the front and has a single-piece hatch cover that is hinged at the rear and can be locked open. The hatch cover has three integral day periscopes, which give good visibility over 120º of the vehicle's front. The centre periscope can be replaced by a passive periscope for night driving. The driver has an adjustable seat and would normally enter his position via the turret. With the turret traversed fully left or right or with the 105 mm gun in its travel lock, the driver can easily enter via his hatch.

Driver

Image @thaidefense-news.blogspot.com

Image @thaidefense-news.blogspot.com

Image @thaidefense-news.blogspot.com

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The driver steers the Stingray with an oval steering wheel rather than the more usual sticks. Either side of the driver's position are 14 rounds of 105 mm ammunition. When in a combat area, an optional spall blanket is hung to the sides and rear of the driver's position for added protection. The Stingray has additional internal stowage space above the tracks with an access hatch in the glacis plate either side of the driver. **Source army-guide.com**

Vehicle is fitted with a **Detroit Diesel 8V-92TA diesel engine**, developing 535 horsepower. Engine, transmission, suspension and tracks of the Stingray are standard components, used to reduce procurement and servicing costs.

Detroit Diesel 8V-92TA diesel engine

Image @usdieselremanufacturing.com

The initial powerplant was a standard-issue Detroit Diesel Allison 8V-92TA 535 hp (399 kW) engine, **but the serial model (for the Thai Royal Army) was a liquid cooled turbo charged 2 stroke V-8 diesel engine which developed 550 hp (410 kW).**

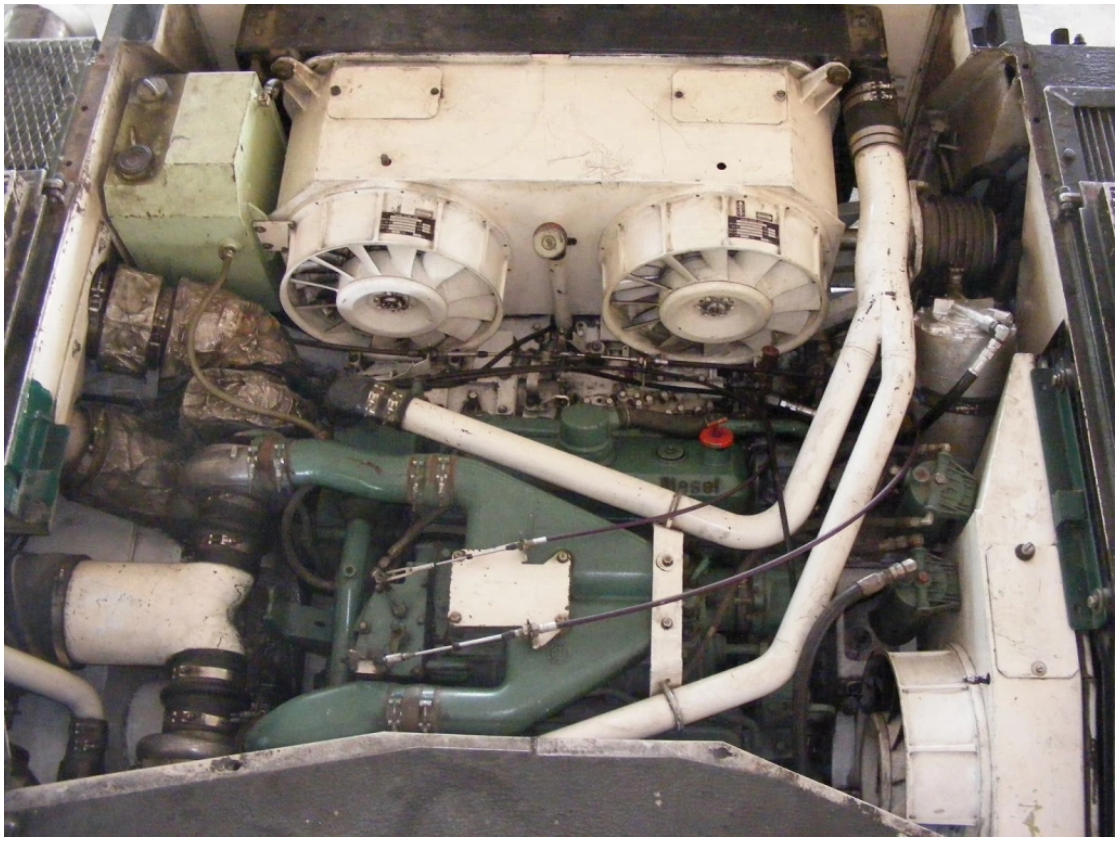
Suspension either side has six small road wheels with idler front, drive sprocket rear and three track-return rollers, no side skirts. **Source tanks-encyclopedia.com**

The engine is coupled to an **Allison Transmission XTG-411-2A automatic transmission**, which has an automatic lock-up torque converter with a torque multiplication of 2.4, geared steer and clutch and brake steering. The 4:1 planetary final drive gearboxes have been designed and built by the company specifically for the Stingray.

Allison Transmission XTG-411

Pic shows XTG-411-5 model – Image @nimda.co.il

Cooling is by three-vane axial fans, each of which moves 9,000 cfm. The radiators and oil coolers are sized to provide adequate cooling to 120ºC. The air inlets are above the engine compartment, with the air outlet at the left rear of the hull and the exhaust outlet on the right side of the hull. **Special attention has been given to making the infra-red signature of the vehicle as small as possible.** An extra heavy-duty air cleaner scavenges heavier dirt into the engine exhaust.



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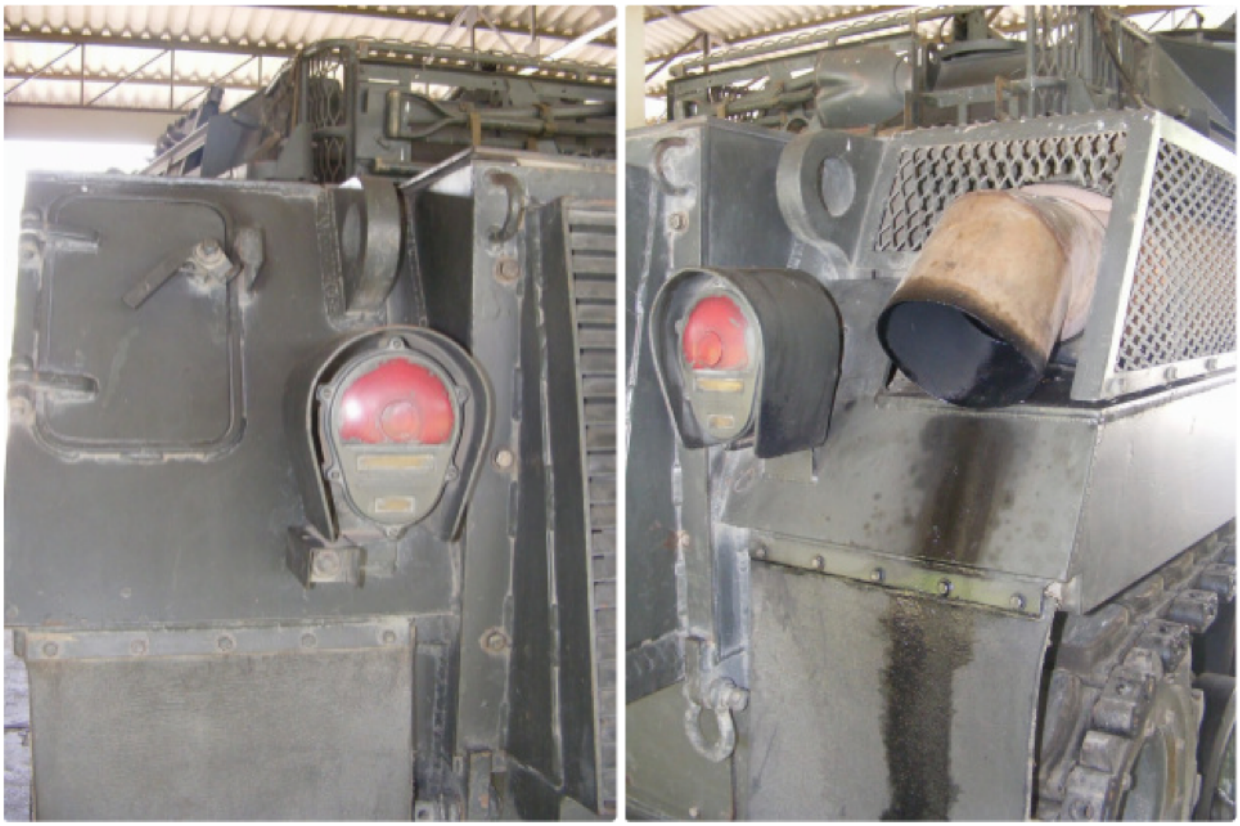

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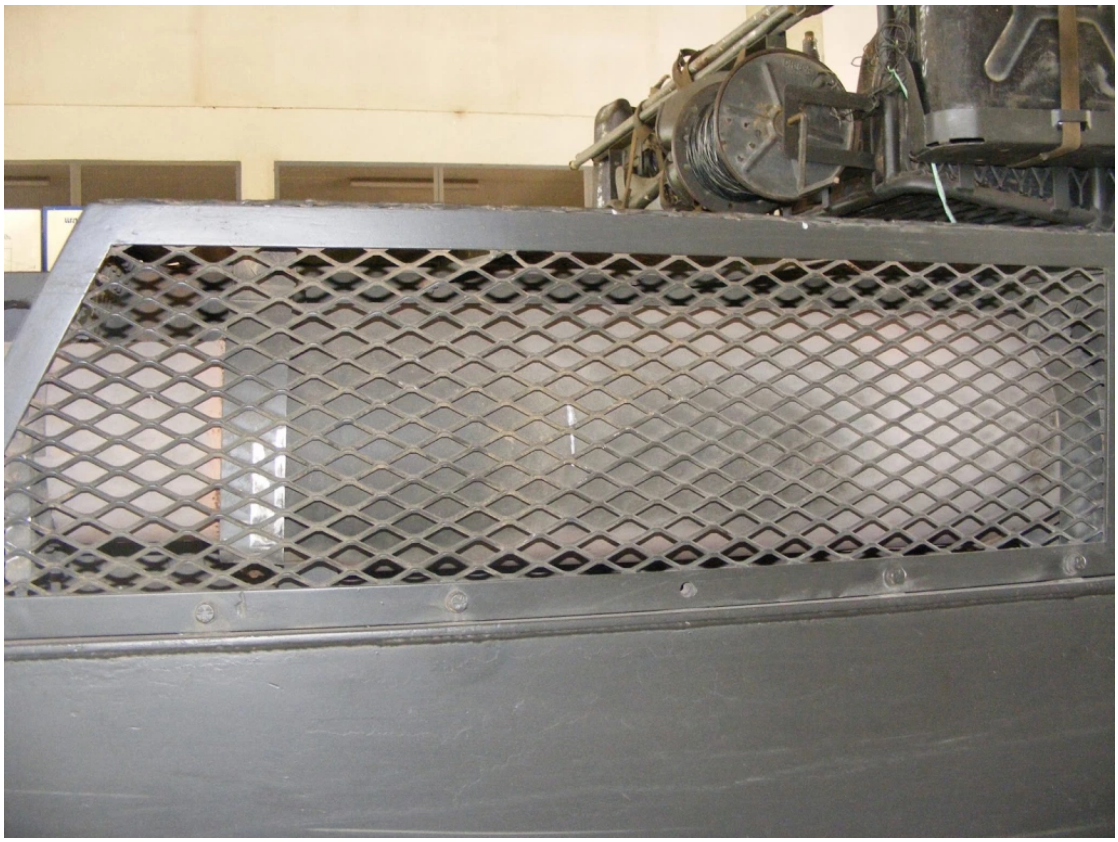
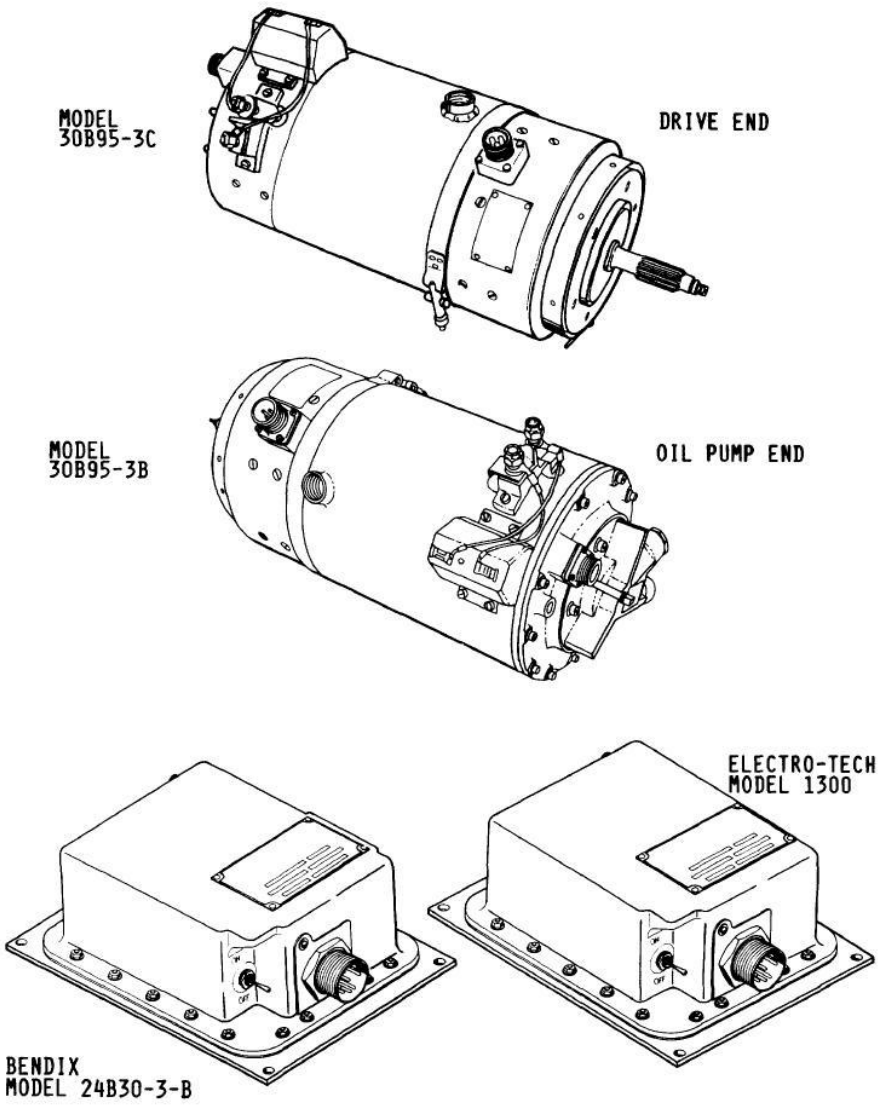


Image @thaidefense-news.blogspot.com

Exhaust outlet on the right side of the hull – Image @thaidefense-news.blogspot.com

Electrical power is provided by a 650 A oil-cooled generator and stored in six batteries in the left side of the hull. Access to these batteries for daily checks is via a door in the side of the hull. The batteries are capable of furnishing start-up current in temperatures as low as -25ºF.

650 A oil-cooled generator



For illustration purpose may not be same model – Image: Integrated Publishing

The 650-ampere generator is an oil-cooled brushless, direct-current type (the generator generates an alternating current which is rectified within the unit to produce a direct current). The generator uses filtered oil from the engine main gallery line for cooling. Oil circulation is provided by a pump integral within the generator and equipped with an appropriate by-pass valve to limit oil pressure and flow. The generator is completely enclosed and waterproofed and will function equally well in or out of water.
Source automotiveenginemechanics.tpub.com

The rear engine compartment panels fold down for access to the engine while those on top fold rearwards. Daily checks can easily be carried out on the engine.

The 757 litre fuel tank is integral and located between the crew and engine compartments.

The now **BAE Systems Land Systems 105 mm Low-Recoil Force (LRF) gun has a muzzle brake added**, a redesigned fume extractor, a cradle design and a new recoil system. The new cradle design is a monocoque structure that combines high rigidity with light weight.

Image @thaidefense-news.blogspot.com

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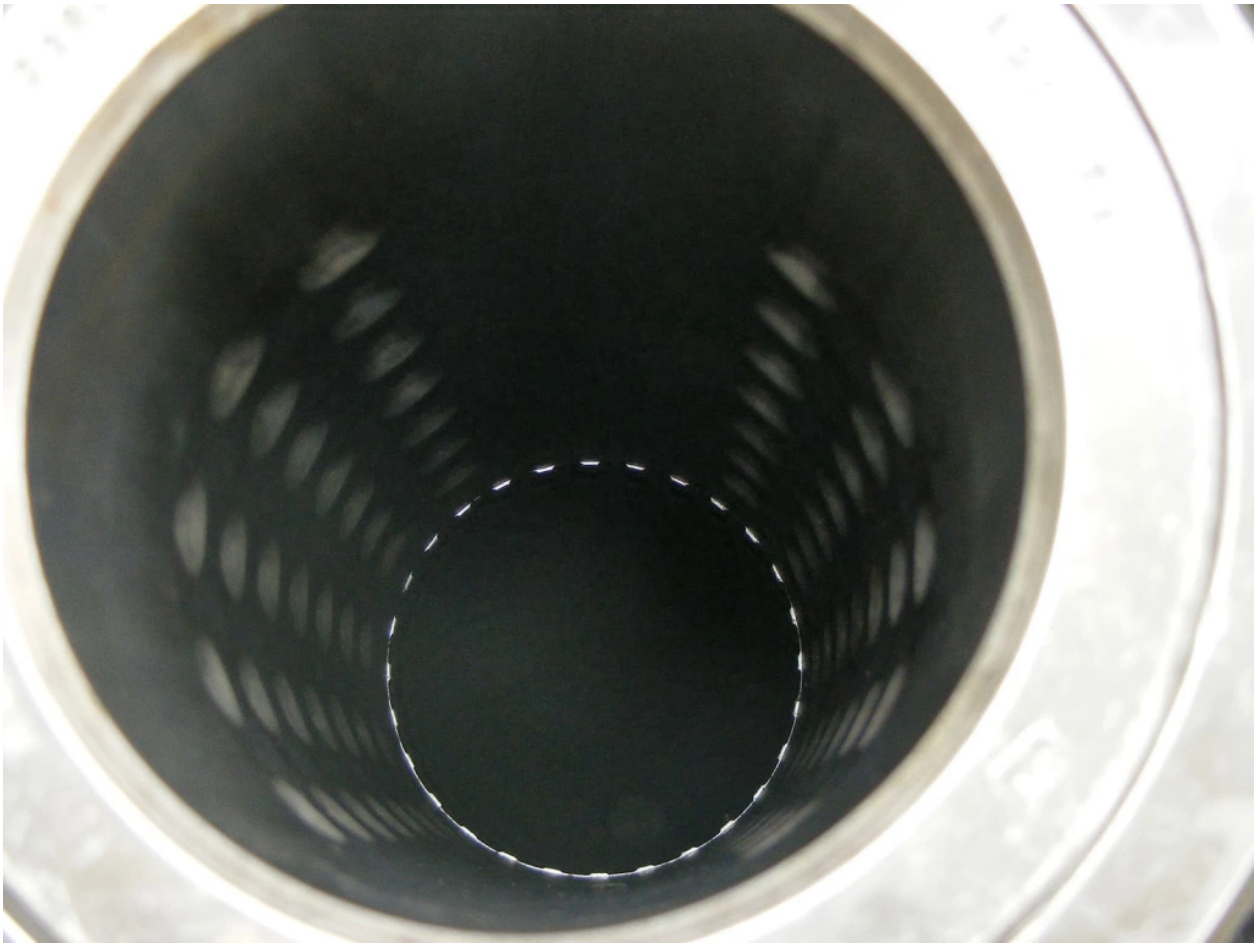
Fume extractor – Image @thaidefense-news.blogspot.com

Muzzel break – Image @thaidefense-news.blogspot.com



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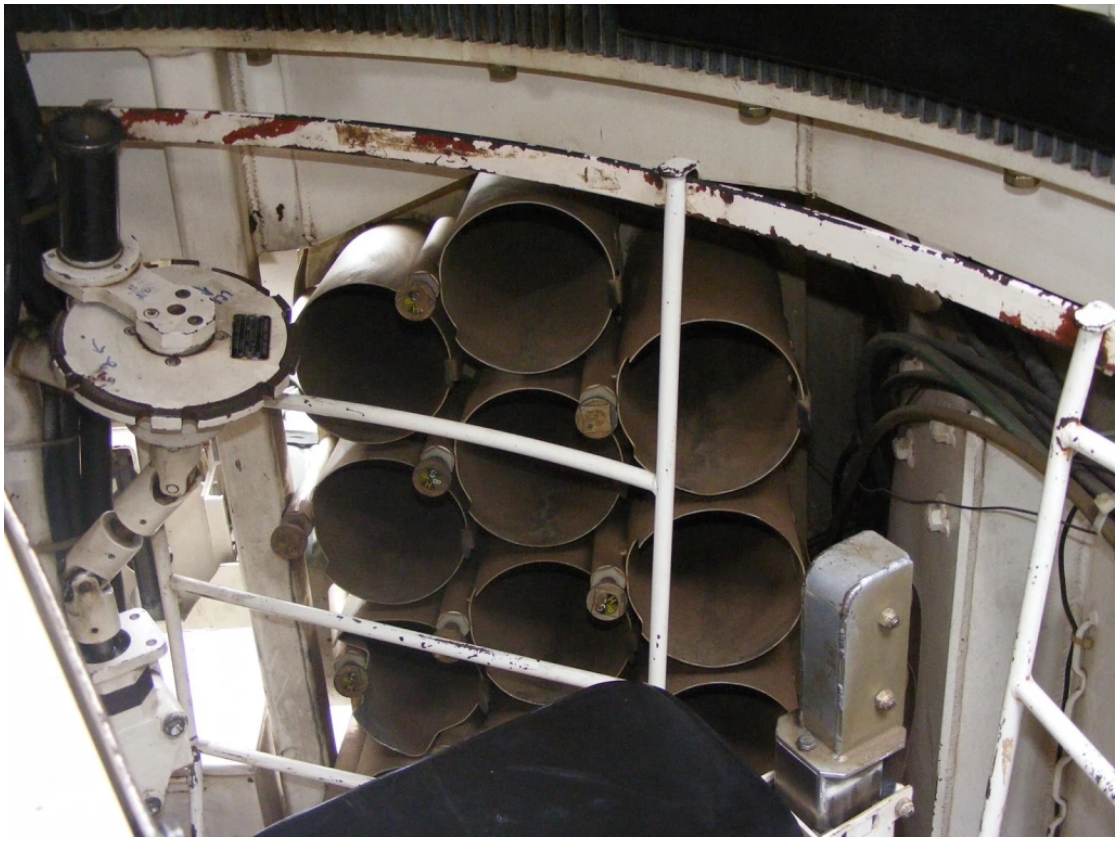
There are 32 rounds of 105 mm ammunition carried, all of which are stowed below the turret ring. Eight rounds are stowed in the turret, three of which are for immediate use, stowed vertically to the left of the breech and the remainder under the spent case ejection bag. The three ready rounds are kept in special individual racks, which are configured to accept all types of 105 mm ammunition.

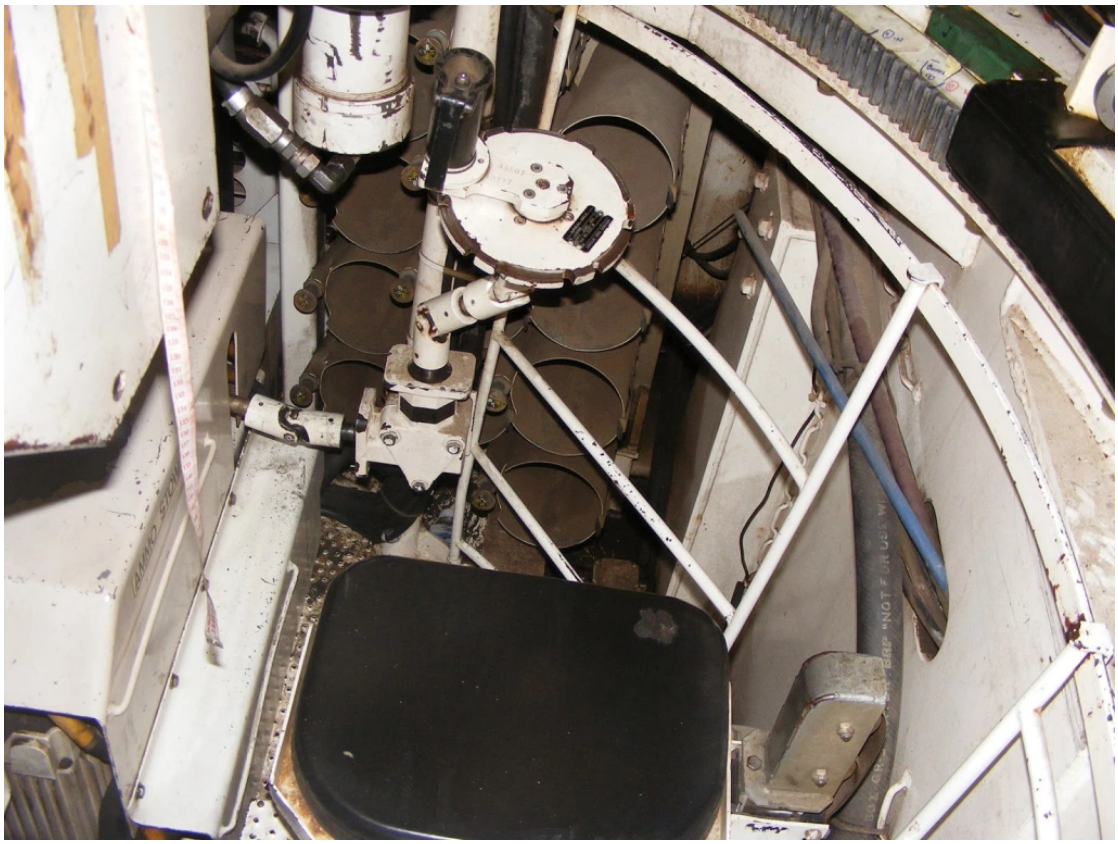
Main gun – Image @thaidefense-news.blogspot.com

Maon gun breech – Image @thaidefense-news.blogspot.com

Once the loader releases the catch the first ready round swings forward as it is pivoted at the base. The spent case ejection bag holds five cases which can be disposed of through the ammunition resupply hatch in the left side of the turret.

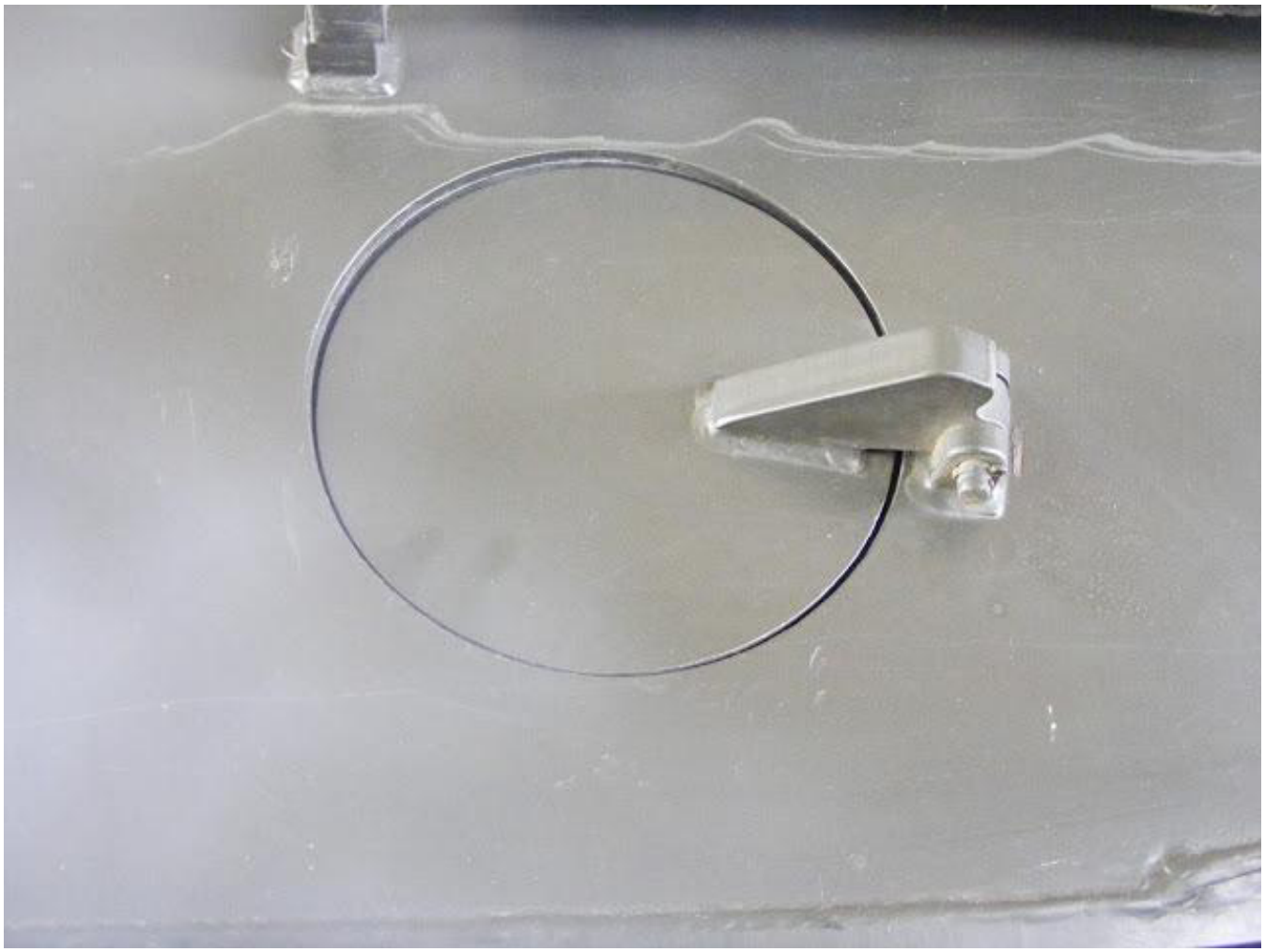


Ammo storage for main gun – mage @thaidefense-news.blogspot.com



Ammo storage for main gun – Image @thaidefense-news.blogspot.com

Ammunition resupply hatch



Ammunition resupply hatch – Image @thaidefense-news.blogspot.com

Following initial trials with the prototype Stingray, **a muzzle reference system was fitted to the 105 mm LRF gun** and a collapsing breech guard fitted to allow for improved crew movement in the turret.

A 7.62 mm M240 machine gun is mounted coaxially to the left of the main armament and is provided with 400 rounds of ready use ammunition. A further 2,000 rounds of 7.62 mm ammunition are stowed in the turret area in 200-round boxes. It takes the loader 7 seconds to replenish the ready use ammunition for the coaxial machine gun.

7.62 mm M240 machine gun is mounted coaxially

A 7.62 mm M240 (with 200 rounds of ready use ammunition) or **a 12.7 mm M2 machine gun (with 100 rounds of ready use ammunition) is mounted externally at the commander's station for anti-aircraft use.** A total of 1,000 rounds of 12.7 mm machine gun ammunition is carried for the M2 anti-aircraft weapon.

7.62 mm M240 machine gun – Image @thaidefense-news.blogspot.com

7.62 mm M240 machine gun – Image @thaidefense-news.blogspot.com

12.7 mm M2 machine gun

A bank of **four electrically operated grenade dischargers** is mounted either side of the turret, for which 16 grenades are carried.

Grenade dischargers

Electrically operated grenade dischargers @thaidefense-news.blogspot.com

Electrically operated grenade dischargers @thaidefense-news.blogspot.com

The turret is of all-welded Cadloy steel armour construction providing the same level of protection as the hull. The use of flat plates in the construction of the turret enables the user to up-armour the turret at a later date without extensive rework.

Image @thaidefense-news.blogspot.com

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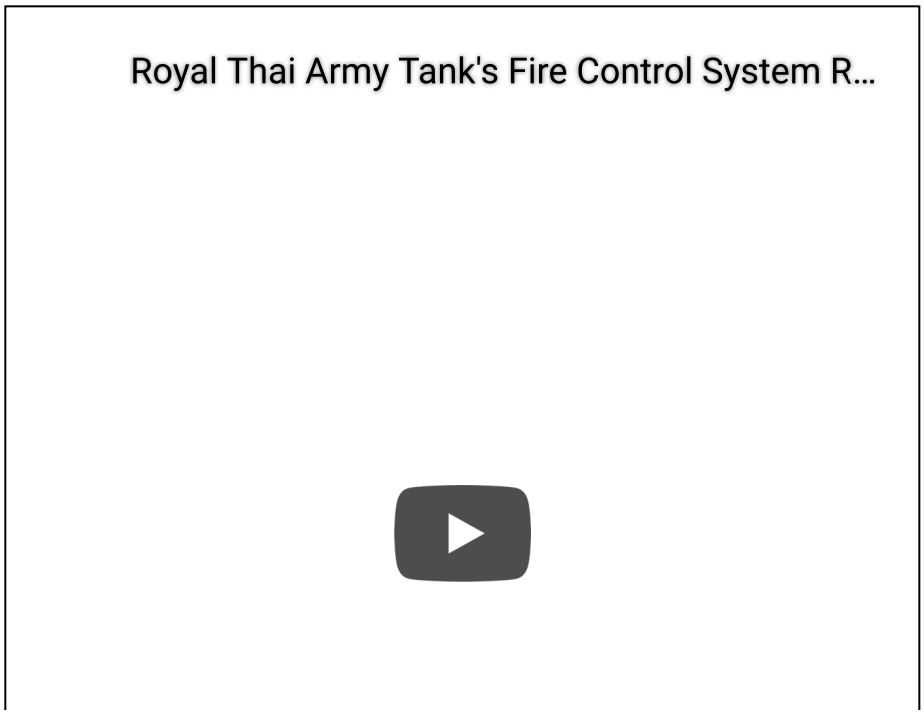
The commander sits on the right of the turret with the gunner below and to his front and the loader on the left. **The gunner has a roof-mounted Optic-Electronic Corporation M36E1 day/night sight.** As an option this can be replaced by an M36E1 SIRE day/night sight incorporating a laser range-finder or a thermal sight. **The commander has an NV-52 day/night sight**, seven periscopes for all-round observation and a single-piece hatch cover that opens to the rear.



Optic-Electronic Corporation M36E1 day/night sight

Gunners sight – Image @thaidefense-news.blogspot.com

Gunners control panel – Image @thaidefense-news.blogspot.com

Royal THAI's Army Stingray Tank Practice

NV-52 & M36E1 day/night sight

Image @thaidefense-news.blogspot.com

Commanders sight – Image @thaidefense-news.blogspot.com

Commanders station – Image @thaidefense-news.blogspot.com

Commanders control stick – Image @thaidefense-news.blogspot.com

Communication radio – Image @thaidefense-news.blogspot.com

The loader has a single-piece hatch cover that opens to the rear and a single forward-facing periscope for observation.

Turret traverse and weapon elevation are via an HR Textron Incorporated electrohydraulic system with a manual back-up. Controls are provided for both the commander and gunner and turret traverse is a full 360º at 40º/s, with weapon elevation from -7.5 to +20º at a similar speed. An automatic deck clearance system is fitted as standard and as an option, a **two-axis electrohydraulic stabilisation system** can be fitted, enabling the 105 mm gun to be laid and fired while Stingray is moving across country.

Electrohydraulic stabilisation system

Image @thaidefense-news.blogspot.com

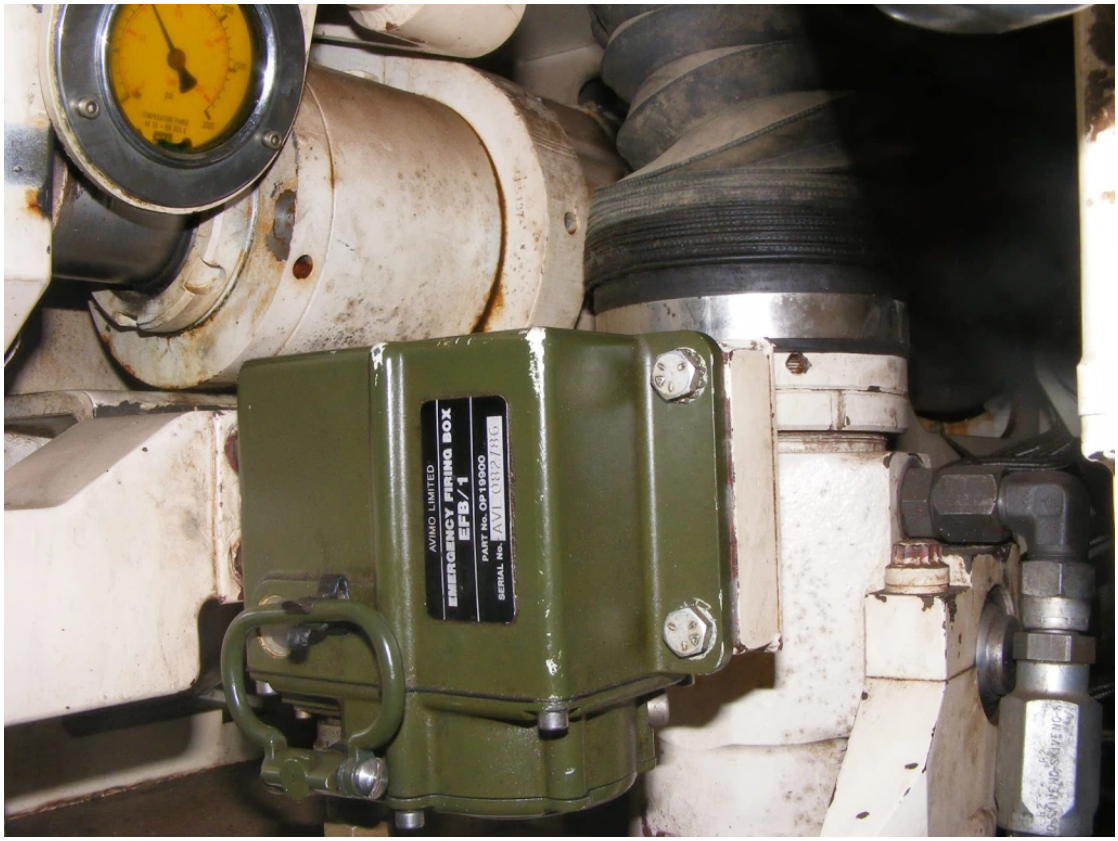


Image @thaidefense-news.blogspot.com

Prototypes and production Stingray light tanks have been fitted with the then Marconi Electronic Systems, Land and Naval Systems Group, Digital Fire-Control System (DFCS). Marconi Electronic Systems is now part of BAE Systems Land Systems and is no longer involved in tank fire-control systems.

The Stingray could be fitted with the standard **M13A1 ventilated face mask system for NBC protection** and the vehicle can be painted in chemical-resistant paint.

As an option Stingray can be fitted with a land navigation system and an engine smoke generator that injects diesel oil into the exhaust to create a smoke-screen behind the tank. The prototype is fitted with an **HTL engine fire warning and suppression system** as well as a fire detection/suppression system for the crew compartment. Radios and crew intercom depend on the user's requirements. **Source army-guide.com**

Further development of the Stingray became the Stingray II. It has a number of improvements, including increased armor protection, mobility and improved fire control system. However the Stingray II has not entered service with any country yet.

Image @thaidefense-news.blogspot.com

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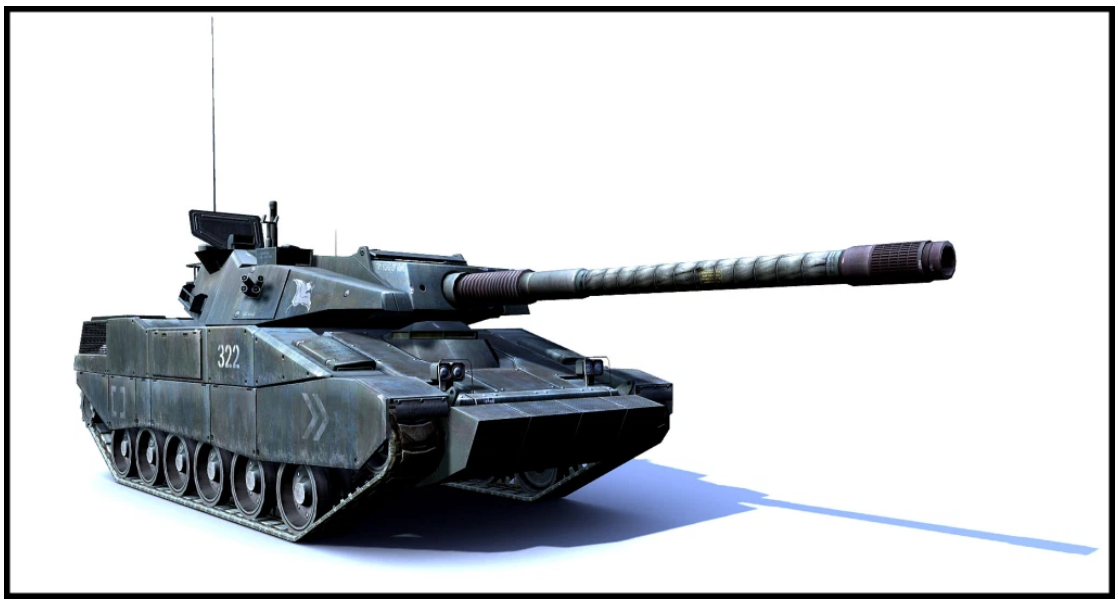
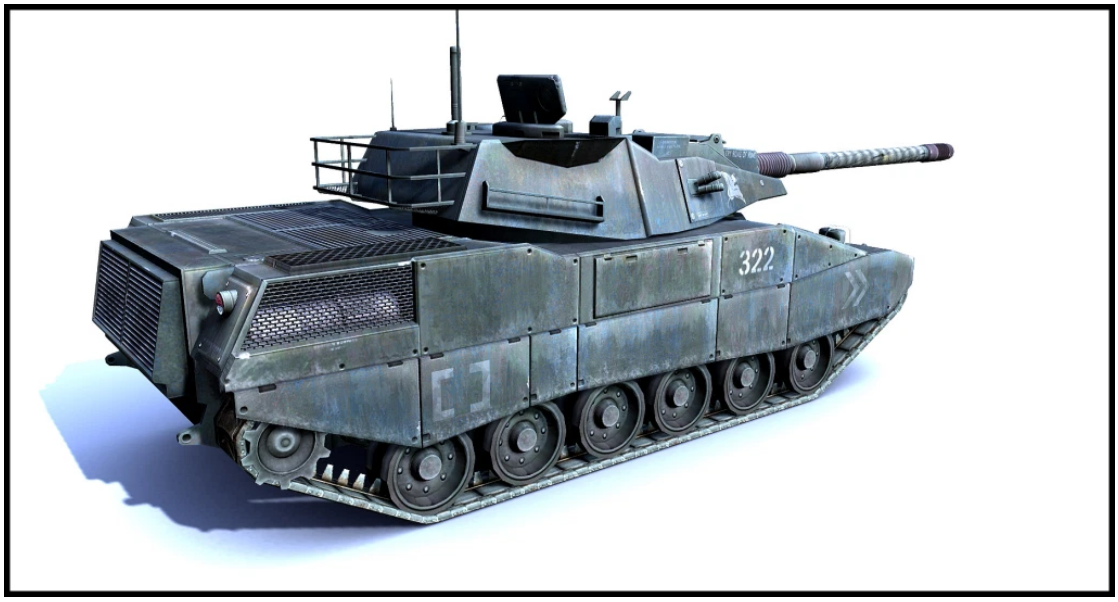
Stingray II



The **Stingray II** is an upgrade version of the Stingray, developed by Cadillac Gage as a private-venture armored fighting vehicle (AFV) for the export market. The light tank's baseline armor, while thin, is adequate for a cavalry, reconnaissance or light infantry fire support role; it protects its occupants from armor-piercing, heavy machine gun rounds up to 14.5 mm in size. Additional armor appliqué can be fitted to increase ballistic protection. Operational range is increased by about 25 miles (about 40 kilometers) if one assumes a travel speed of about

30 mph (48 km/h). In addition, the engine on the Stingray II has been upgraded to 410 kW (550 horsepower) at 2,300 rpm.



The Stingray's main armament is a low recoil force (LRF) version of the British Royal Ordnance L7 105 mm rifled gun installed in a well-angled and electro-hydraulically powered turret having manual backup as is usually found on tanks, together with duplicate turret controls for the gunner and the commander, providing redundancy. Dimensions of the turret were deliberately designed to allow it to be refitted to M41 Walker Bulldog and M-551 Sheridan vehicles as an upgrade.

M41 Walker Bulldog with Stingray turret

M-551 Sheridan with Stingray turret

The gun has optional stabilization in two axes, and eight rounds, with another 24 rounds stored in the hull. Complementing the main gun is a 7.62 mm co-axial machine gun with 2,400 rounds, as well as a 12.7 mm M2 Browning anti-aircraft machine gun with 1,100 rounds on the commander's hatch. The Stingray II is fitted with 16 protective smoke grenade launch tubes, with 8 of them on each side. The optic system for the gunner is composed of a two-axis stabilized day/night thermal imaging system called 'Hughes Hire,' made by the company then known as Hughes Electronics, together with a laser rangefinder. For the commander, there is another optical system that has seven different periscopes, and there is also a repeater display for the same thermal image seen by the gunner.

The main improvements offered in the Stingray II are a more capable digital fire-control system, NBC equipment, enhanced mobility and superior target-engagement capabilities. The Stingray II also improves the armor to provide protection from 23 mm rounds.

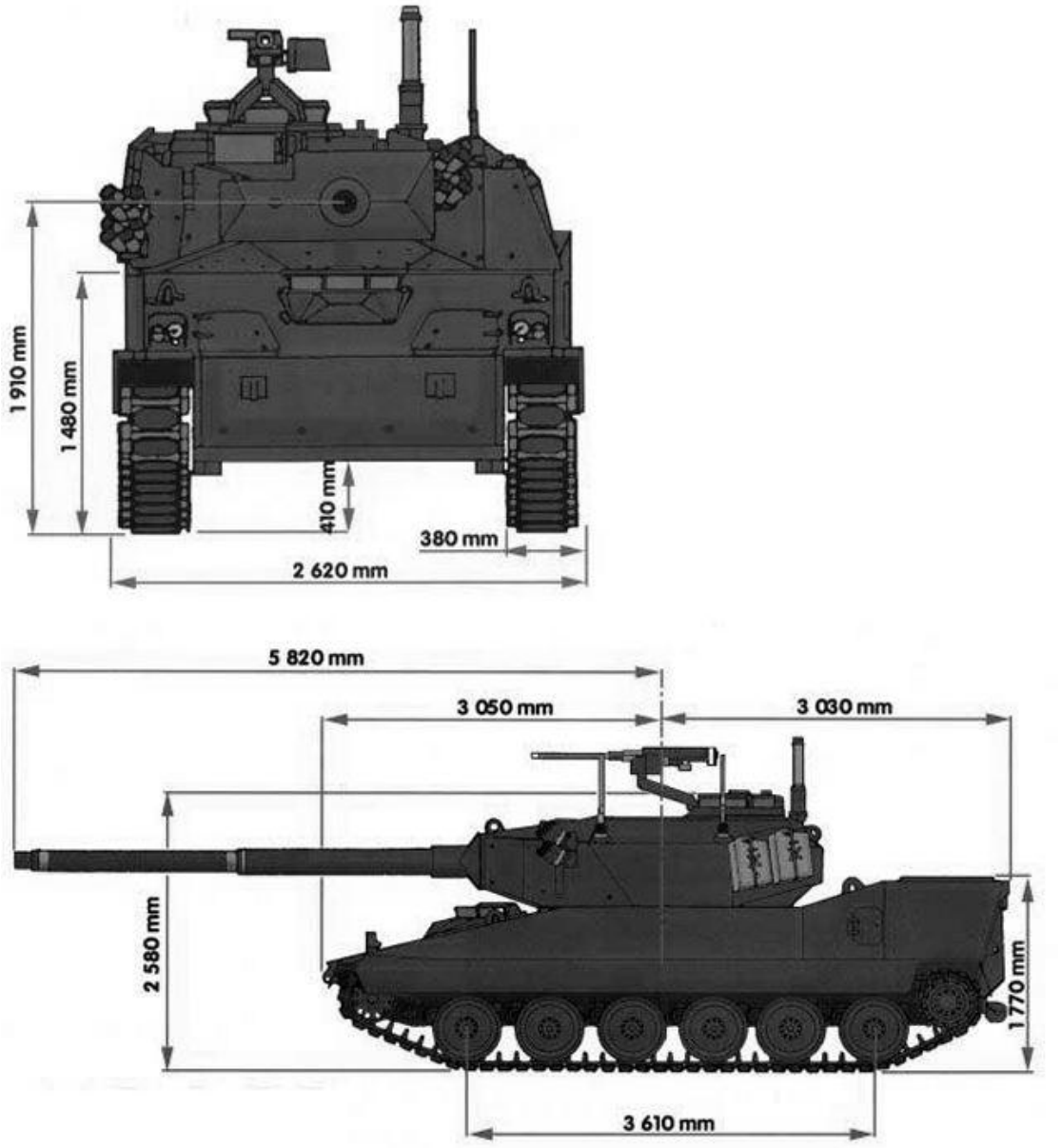
Other versions

AGS-Stingray

Stingray modified for the AGS competition but lost to the FMC/UDLP/BAE Close Combat Vehicle Light which became the type-classified M8 Armored Gun System.

M8 AGS Light Armoured Gun System

The M8 is a light tracked armoured gun system which was designed by U.S. Company FMC Corporation, Ground Systems Division. Following an international competition, in mid-1992 the US Army selected the FMC Corporation, Ground Systems Division (now United Defense LP), to design and build its Armored Gun System (AGS) to replace the **M551 Sheridan** light reconnaissance vehicle uses mainly by U.S. airborne troops. The M551 has now been retired from the US Army without replacement. A total of six prototypes were eventually built for the U.S. Army under the designation of the XM8 AGS. The M8 was later type-classified by the U.S. Army in late 1995 and initially slated for production in 1996. The M8 project was canceled in 1997 for funding reasons for other priorities of U.S. Army. The M8 also had the ability to be aidropped by military transport aircraft. A new version of the M8 under the project name of Light Expeditionary Light Tank was showed at AUSA defense exhibition in October 2015.



Armament

One M35 105mm, one 7.62mm coaxial machine gun,one 12.7mm heavy machine gun

Country users

–

Designer Country

United States

Accessories

Thermal imaging night vision, laser range finder, computerized fire control,

Crew

3

Armor

Standard protection against firing of small arms and shell splinters, in option add-on armour

Weight

18,052 kg empty with standard armour

Speed

72 km/h

Range

450 km

a

Dimensions

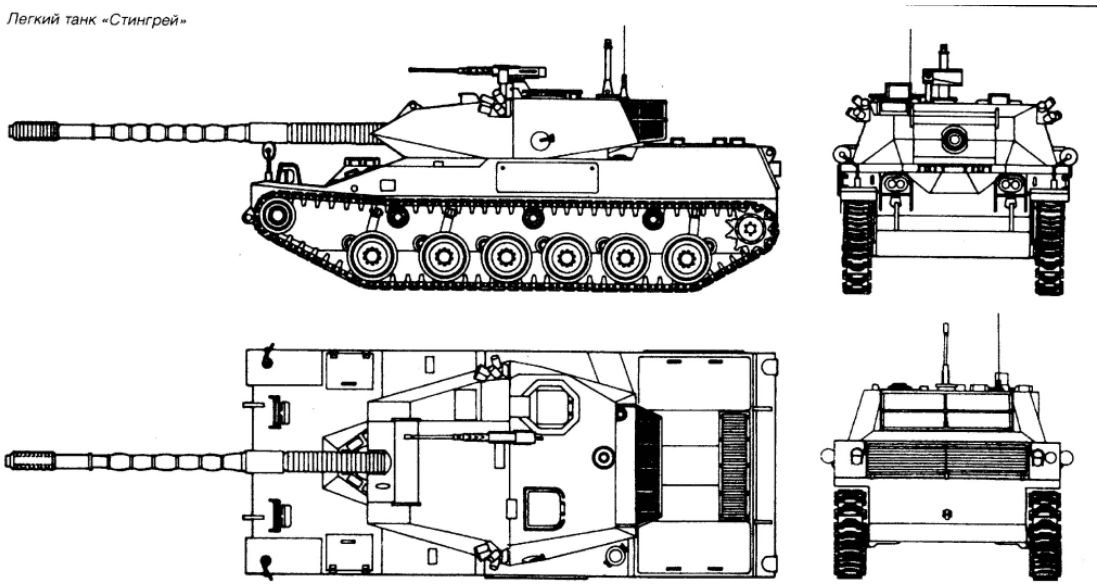
Length: 8.97 m; Width: 2.69 m; Height: 2.55 m

M8 AGS data armyrecognition.com

AGS-Sheridan

The AGS-Sheridan was a mating of the standard M551 Sheridan hull with the turret of the Stingray light tank. It was entered for the Armored Gun System competition but lost to the FMC/UDLP/BAE Close Combat Vehicle

Light which became the type-classified M8 Armored Gun System.



Stingray: General

Date of first acceptance	1988	**Total acceptances**	108
Manufacturer	Cadillac Gage Co.	**Crew**	4 men: • Commander in turret right rear • Gunner in turret right front • Loader in turret left • Driver in hull center front

Stingray: Dimensions

Combat weight	44,500lbs 20,200kg	**Height**	100" 250cm
Length without gun	248" 630cm	**Gun overhang forward**	117" 297cm
Width	107"	**Ground clearance**	18"

	272cm		46cm
Ground pressure, zero penetration	10.2psi .72kg/cm²		

Stingray: Armament

Type	Mount	Ammunition	Traverse
105mm Gun LRF	Turret	32 rounds (8 ready)	360°
12.7mm M2HB MG	Commander's cupola	1100 rounds	360° (manual)
7.62mm M240C MG	Coaxial to 105mm gun	2400 rounds	360°

Night vision
M36E1 day/night sight for gunner

Stingray: Armor

Assembly
Welding

Type
Cadalloy steel

Stingray: Automotive

Engine	Detroit Diesel 8V-92TA; 8 cylinder, 2 cycle, vee, turbocharged diesel		
Horsepower	535@2300rpm	**Fuel capacity**	170gal 640L

Transmission	Allison XTG-411-2A

Stingray: Suspension

Type	Road wheels	Track return rollers
Torsion bar	6 dual/track	3 dual/track
Drive sprockets	**Idlers**	**Shock absorbers**
Rear drive	Dual at front of track	3/track

Stingray: Track

Center guide, double pin, steel with detachable rubber pad

Width	15" 38cm	**Pitch**	6" 15cm

Stingray: Performance

Max level road speed	42mph 68kph	**Max trench**	84" 210cm
Max grade	60%	**Max vertical obstacle**	30" 76cm
Max fording depth	42" 110cm	**Cruising range**	300mi 480km

Specification data afvdb.50megs.com

Main material source military-today.com

Updated Mar 19, 2017

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