

**engesa**

**MILITARY VEHICLES**





**engesa** ENGENHEIROS ESPECIALIZADOS S.A.

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## CASCAVEL and URUTŪ



*The EE-9 and EE-11 vehicles are members of the new family of armoured cars designed and built by Engesa in close cooperation with engineers of the Brazilian Armed Forces, for use in extremely rugged conditions. They are vehicles of high cross-country performance, and operate efficiently under the most adverse climatic conditions.*

*Both vehicles have the same basic mechanical components. All wearing parts are the same already in use on all trucks equipped with Engesa's Total Traction.*

*The exclusive combination of independent suspension system in the front and "boomerang" system in the rear is responsible for the extraordinary crew comfort when traveling cross-country or at high speeds on good paved roads, making long trips easy and without fatigue effects on the crew, or excessive wear on vehicle components. The low specific tire pressure on the ground gives the vehicles outstanding characteristics when traveling over sand or mud.*

**EE-9**

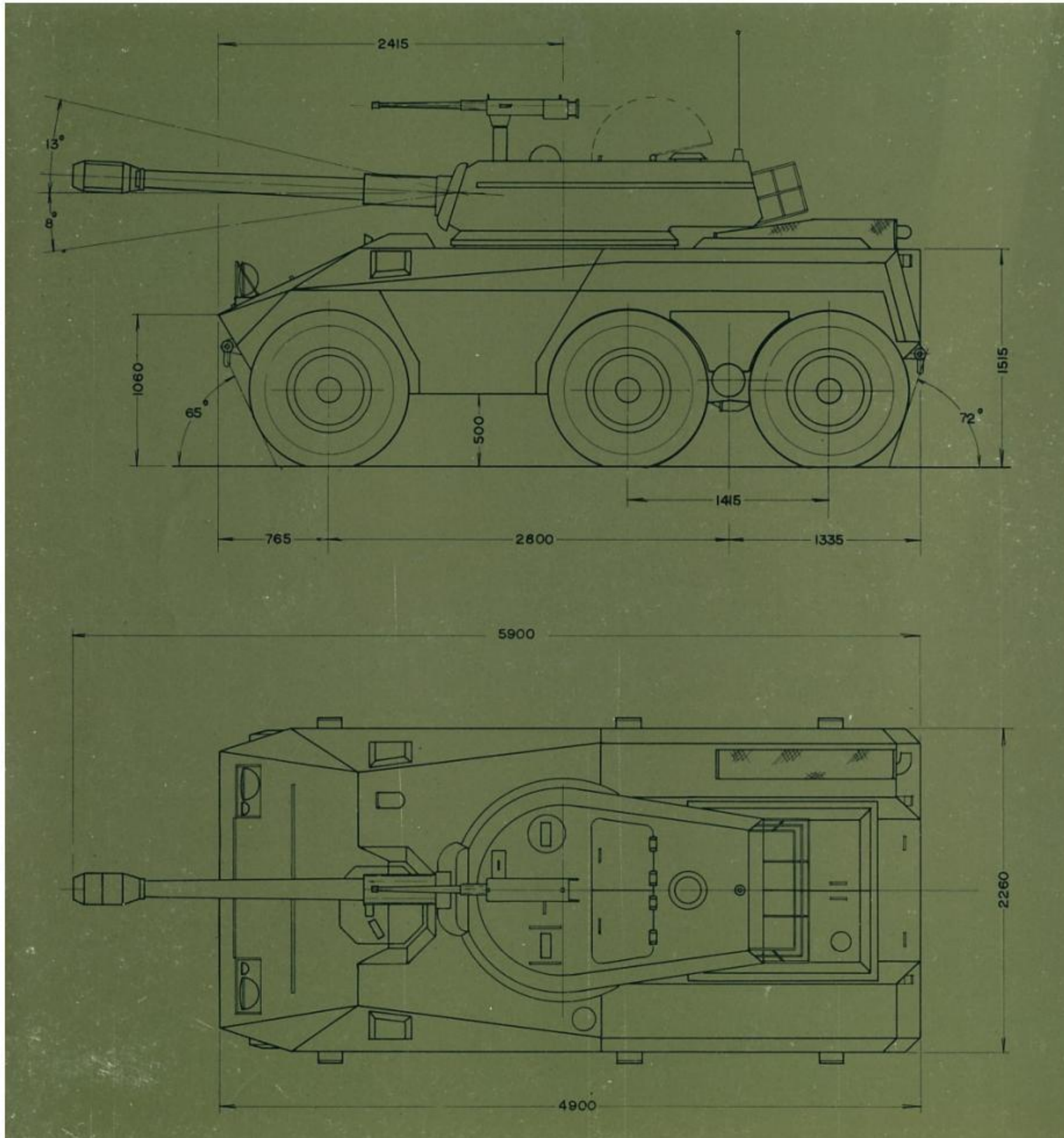
**CASCABEL**

The EE-9 is a totally armoured vehicle, with six wheel drive and high performance. Its design is extremely simple, allowing for low production and maintenance costs, and great ruggedness. Its exceptional mobility in cross-country conditions and its low silhouette, help its very good military characteristics.

Fast, silent, rugged and easy to handle and drive, the EE-9 "Cascavel" is capable of attending to the necessities of conventional military operations as well as internal security duties.

The integral power steering mechanism enables the driver to make long trips without getting tired.





## Technical data

Engine - Option A - Diesel

Make : Perkins, type 6357, 6 cylinders in line.

Compression ratio 18:1 357 cu. in.

Rating: 142 HP at 3000 rpm 291 lb ft at 1350 rpm

Option B - Gasoline (low octane)

Make : Chrysler, type 318 HD, 8 cylinders in "V".

Compression ratio 6.85 : 1 318 cu. in.

Rating: 196 HP at 4000 rpm 303 lb ft at 2400 rpm

Other engine options: MWM, Caterpillar, GM, Ford or other as per customer needs.

#### TRANSMISSION

5 speed fully synchromech gear-box (5 forward and reverse)

2 speed Engesa transfer case fully utilizable in either reduced or high gear.

Front differential hypoid single-reduction gears

Rear differential double reduction single speed hypoid pinion and gear, and helical gears.

Final reductions with gear-box, transfer case and differential:

1st. reduced = 122.21	1st Normal = 50.93
2nd. reduced = 71.51	2nd Normal = 29.82
3rd reduced = 39.18	3rd Normal = 16.34
4th reduced = 24.16	4th Normal = 10.08
5th reduced = 16.33	5th Normal = 6.81
Rear reduced = 102.86	Rear Normal = 42.89

#### SUSPENSION

Front : Independent, with coil springs, finned double-action telescopic shock absorbers.

Rear - Independent, Engesa's "boomerang" type, with twin semi-elliptic leaf springs on each side.

#### ELECTRICAL SYSTEM

12 volts - Alternator for 60 Amp. Hours.

#### STEERING

Integral hydraulic power steering.

#### WHEELS

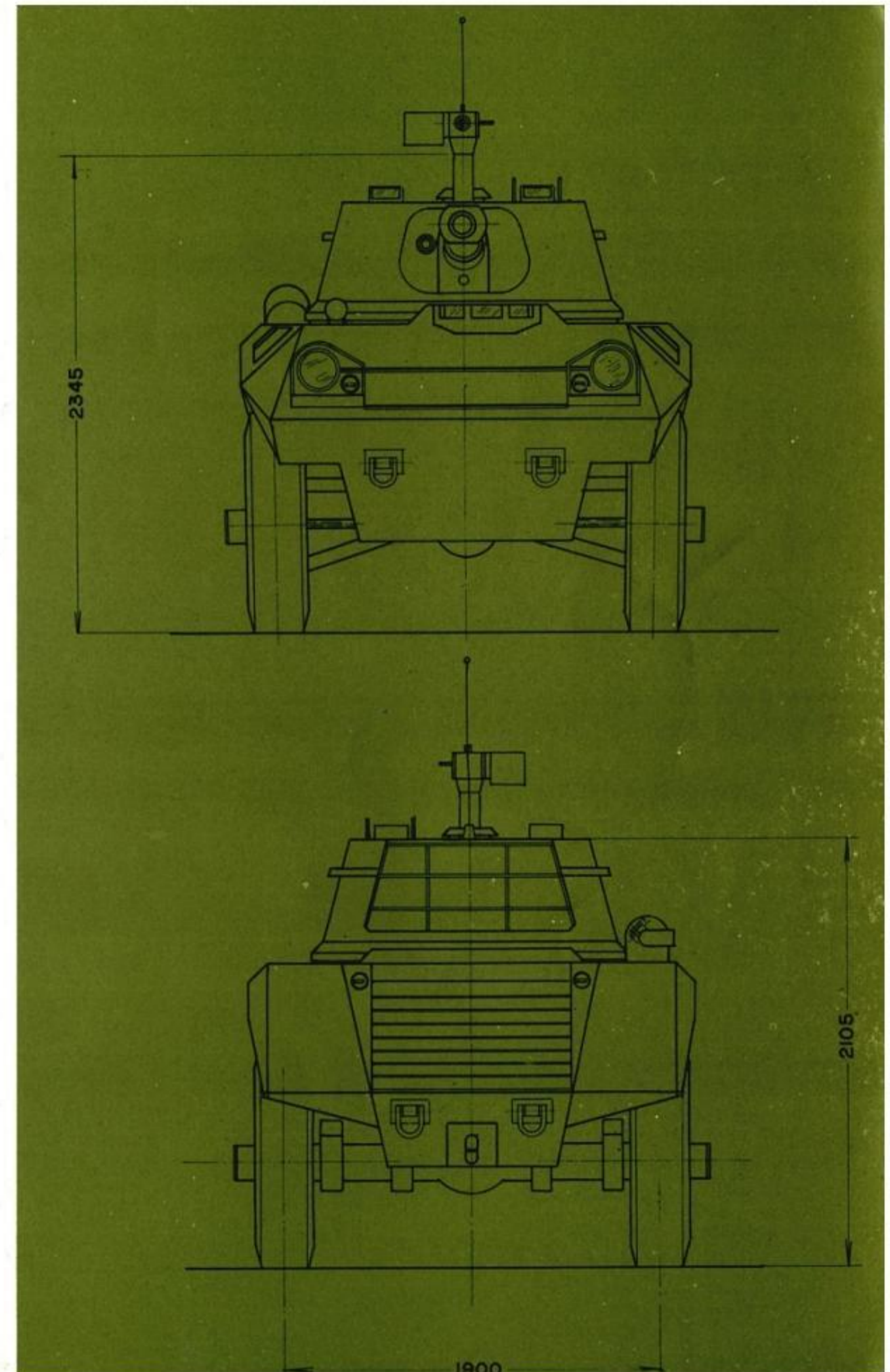
Bisected 20" x 8"

#### TIRES

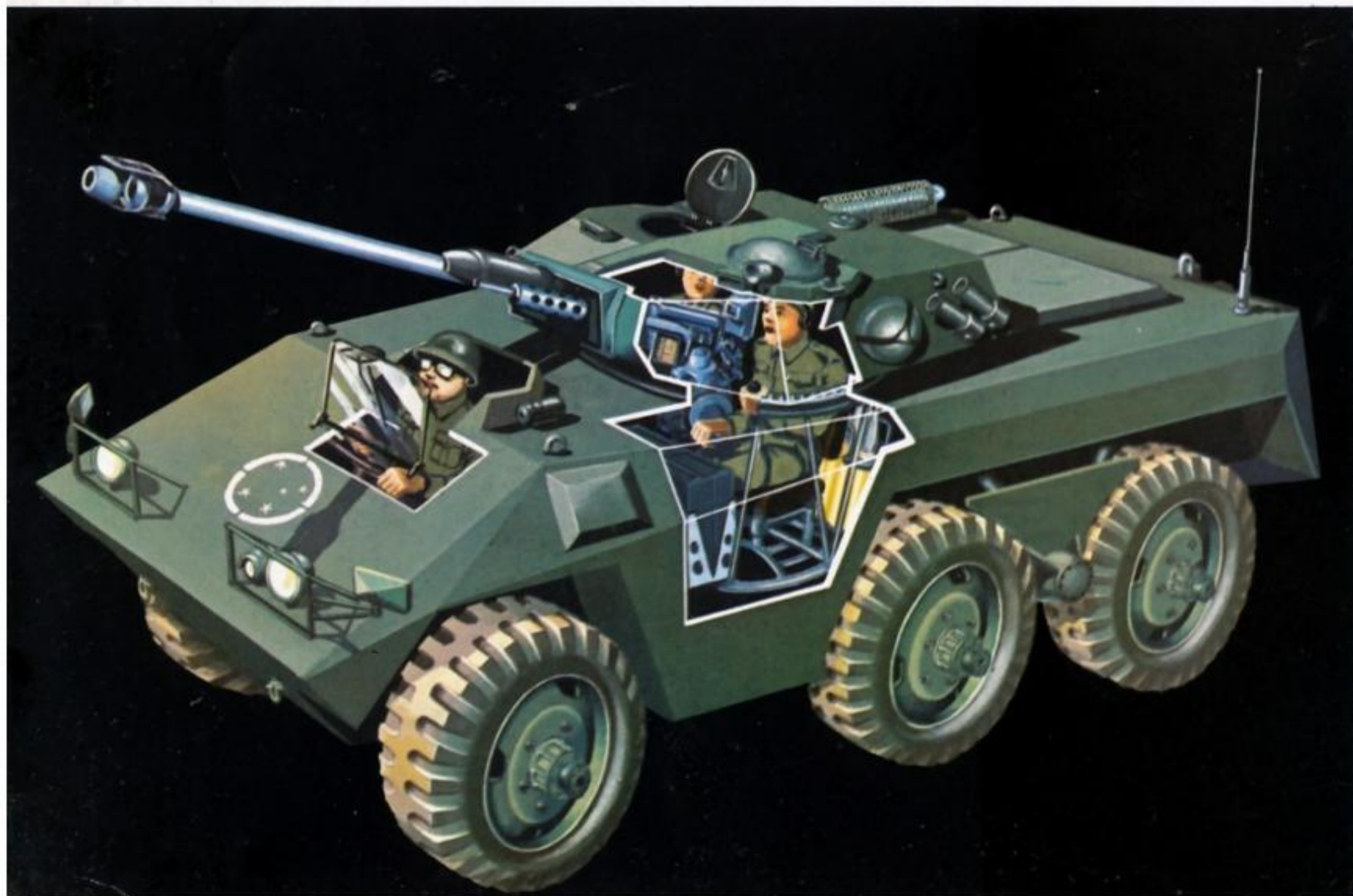
11.000 x 20 bullet-proof

#### OTHER CHARACTERISTICS

Hydro-pneumatic power brakes, unibody construction, conventional lubrication.



**Military data**





#### FUNCTIONS

The EE-9 was designed to perform the following tasks:

- 1) – Reconnaissance, advanced contact and observation
- 2) – Border patrol
- 3) – Anti paratroops and anti helitroops operations
- 4) – Independent deep penetrations
- 5) – Convoy patrol
- 6) – Anti-Guerrilla operations.

#### ARMAMENT

From 37 mm cannon with. 30 machine gun up to 90 mm with 7.62 mm machine gun (not supplied with vehicle)

#### PROTECTION

Totally armoured all around, with special double alloy steel capable of resisting 7.62 mm armour-piercing ammunition fired point-blank at 90.° Alto appropriate protection against mines and artillery shell fragments.

- Protection against "Moloiov Cocktails".
- Bullet-proof tires.
- At front, protection against. 50 bullets shot horizontally.

#### CREW

Three men (driver, commander and gunner).

#### DIMENSIONS

Maximum width: 70.9 in = 1600 mm  
Maximum length: 196.9 in. = 5000 mm  
Maximum height without turret 82.9 in. = 2105 mm  
Ground clearance: 19.7 in. = 500 mm.  
Entrance angle: 60.°  
Exit angle: 70.°  
Combat weight: 9 tons.

#### MOBILITY

Maximum speed: 60 miles/h = 95 kph  
Gradeability: 70%  
Turning radius: 303 in. = 7700 mm  
Range: 435 miles = 700 km  
Maximum vertical obstacle: 25 in. = 0.65 m.  
Maximum trench: 60 in. = 1.5 m.  
Fording capability: 40 in. = 1000 mm  
Rear wheel travel: 35 in. = 900 mm  
Front wheel travel: 8 in. = 200 mm

#### MAINTENANCE

Simple may be performed by non specialized mechanics, at any authorized dealer of the large truck manufacturers.



**EE-11**

**URUTŪ**

The EE-11 is an amphibious totally armoured 6 wheel drive vehicle developed as a troop carrier or for reconnaissance operations.

Its basic design may be adapted to various other tasks, such as ambulance, command-car, cargo-transporter, shop car, etc.

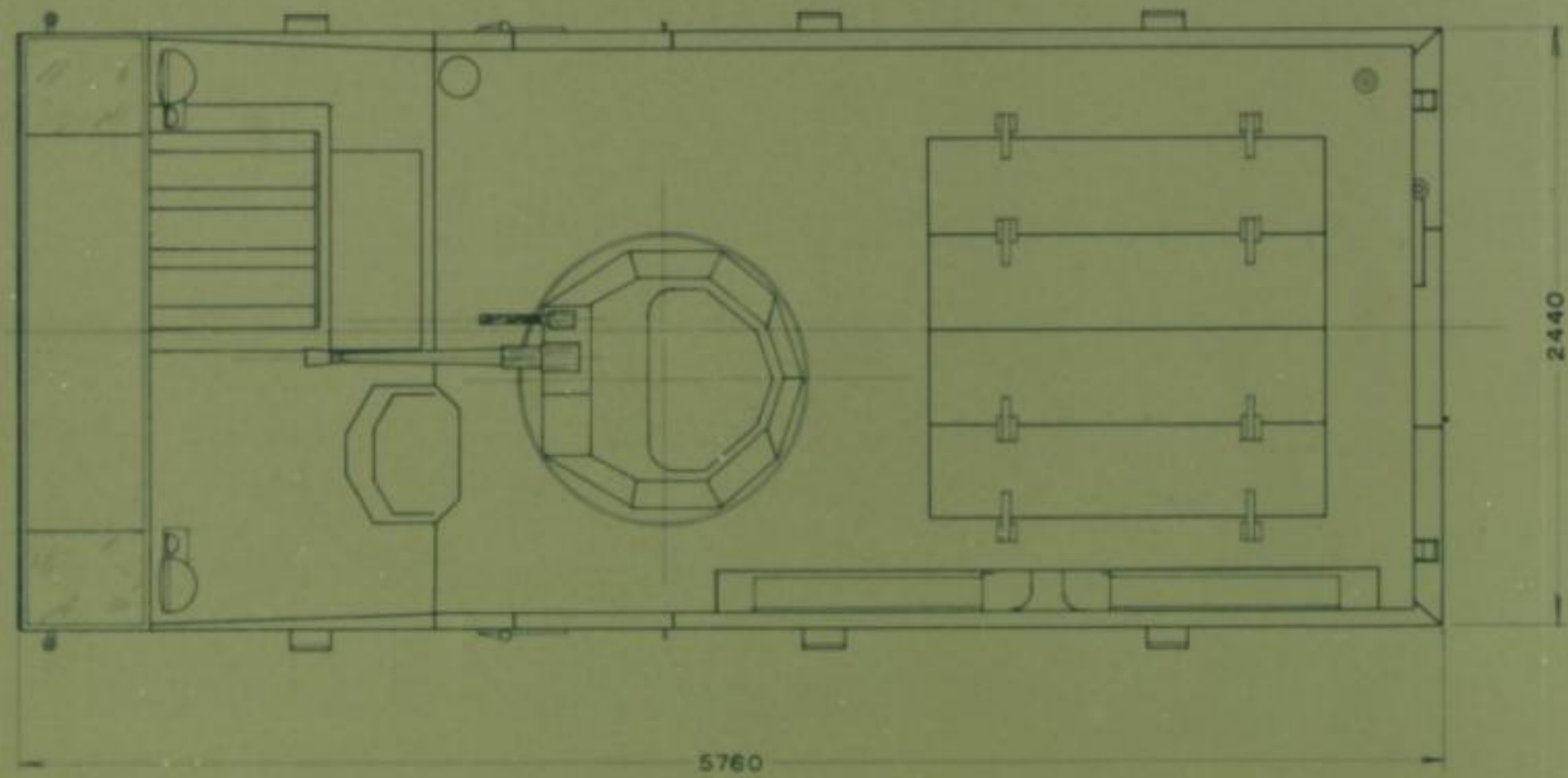
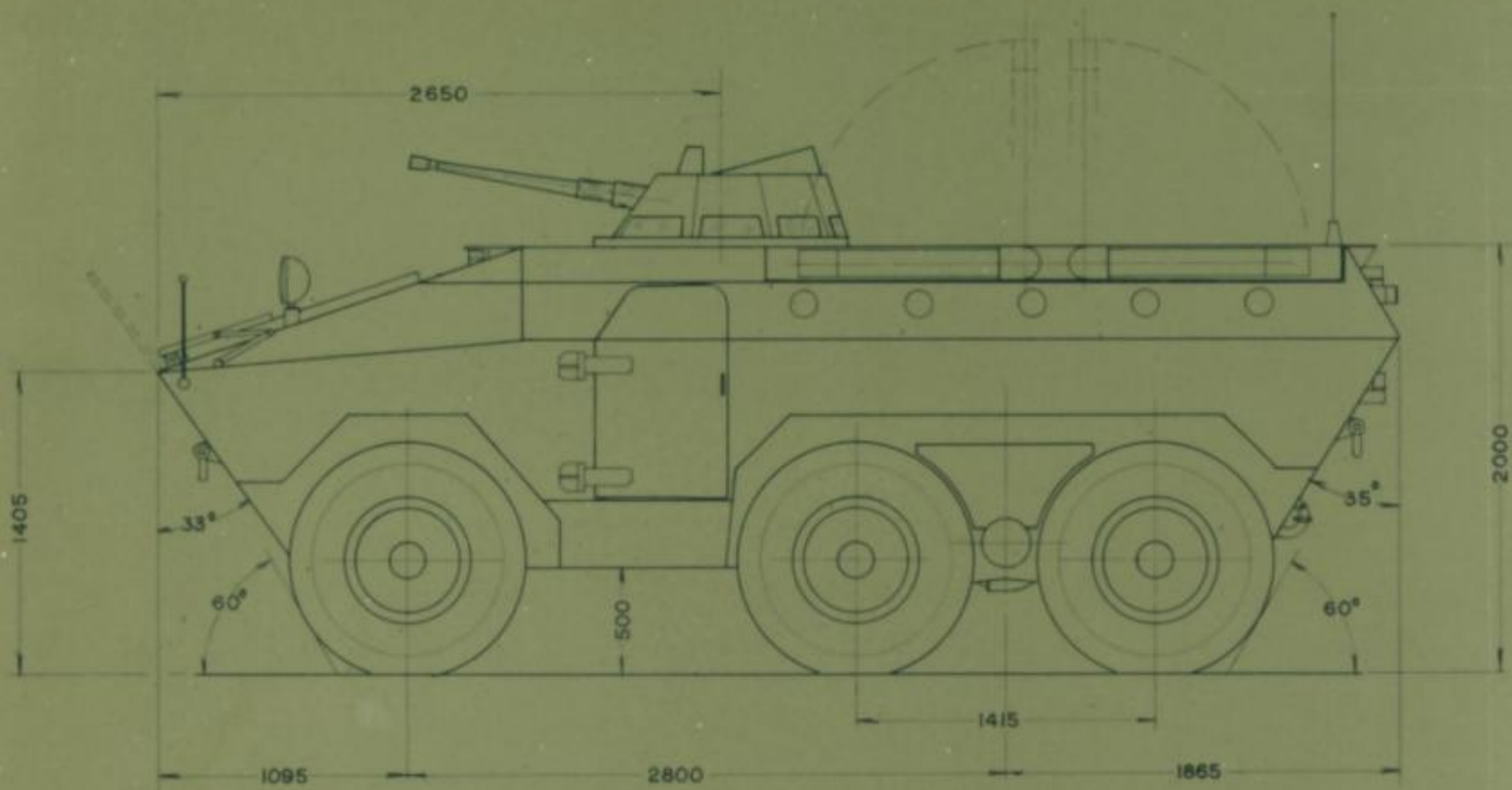
The crew comfort is exceptional, as the design took into consideration all elements of human engineering such as leg and head space; ventilation easy exit and entrance — through 3 large side and rear doors and supper man-holes; low noise level, low vibration level.

Its integral hydraulic power steering helps the driver to an easy non-tiring ride.

Fast and silent on water or land, it has an exceptional cross-country performance and high speed on the road.

It does not need specialized driver or crew, being easily handled like a conventional truck, both on water or in solid ground.





## Technical data

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Make : Perkins, type 6357, 6 cylinders in line.  
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**TRANSMISSION**

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2 speed Engesa transfer case fully utilizable in either reduced  
or high gear.

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**SUSPENSION**

Front : Independent, with coil springs, finned double-action  
telescopic shock absorbers.

Rear - Independent, Engesa's "boomerang" type, with twin  
semi-elliptic leaf springs on each side.

**ELECTRICAL SYSTEM**

12 volts — Alternator for 60 Amp. Hours.

**STEERING**

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**WHEELS**

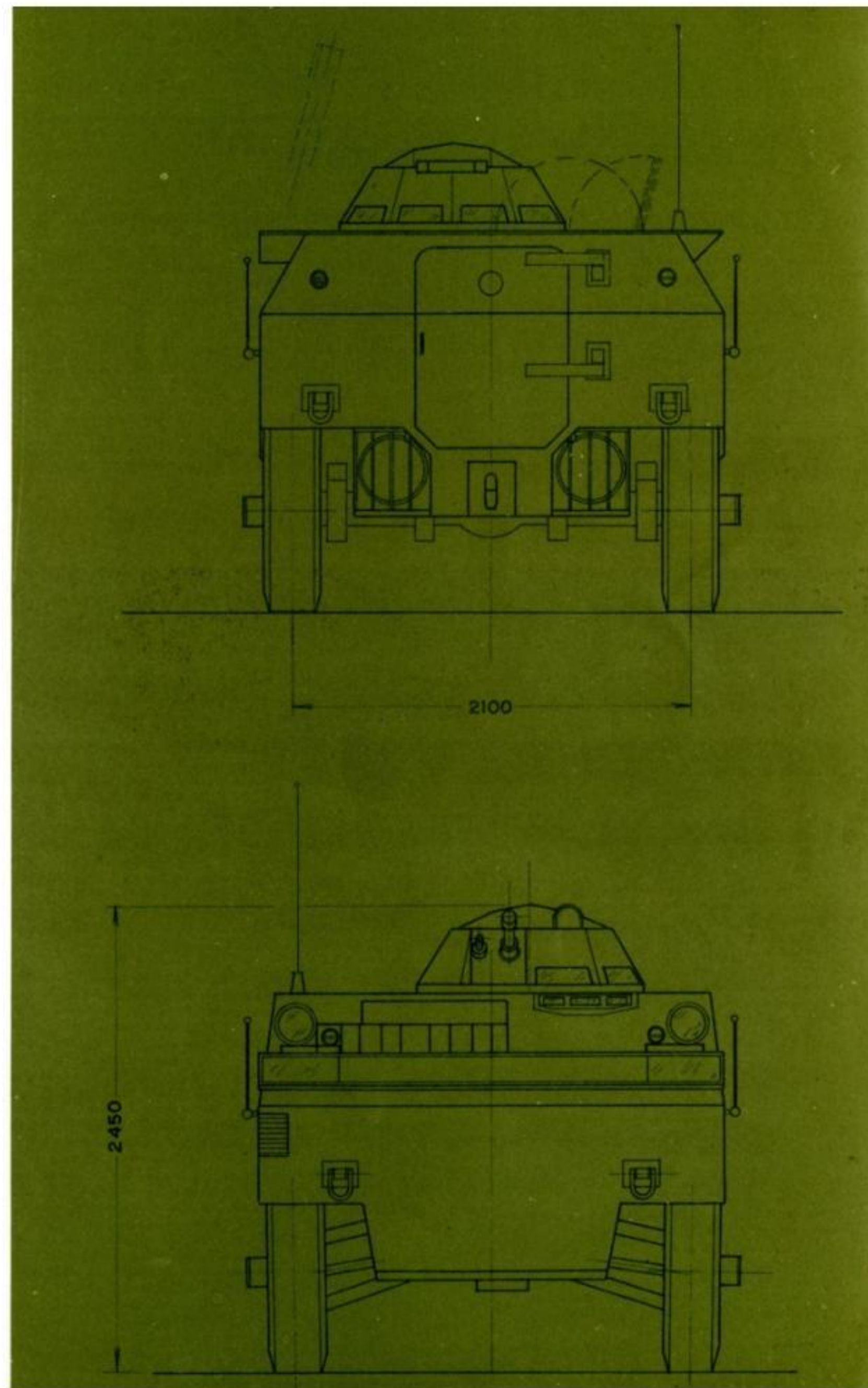
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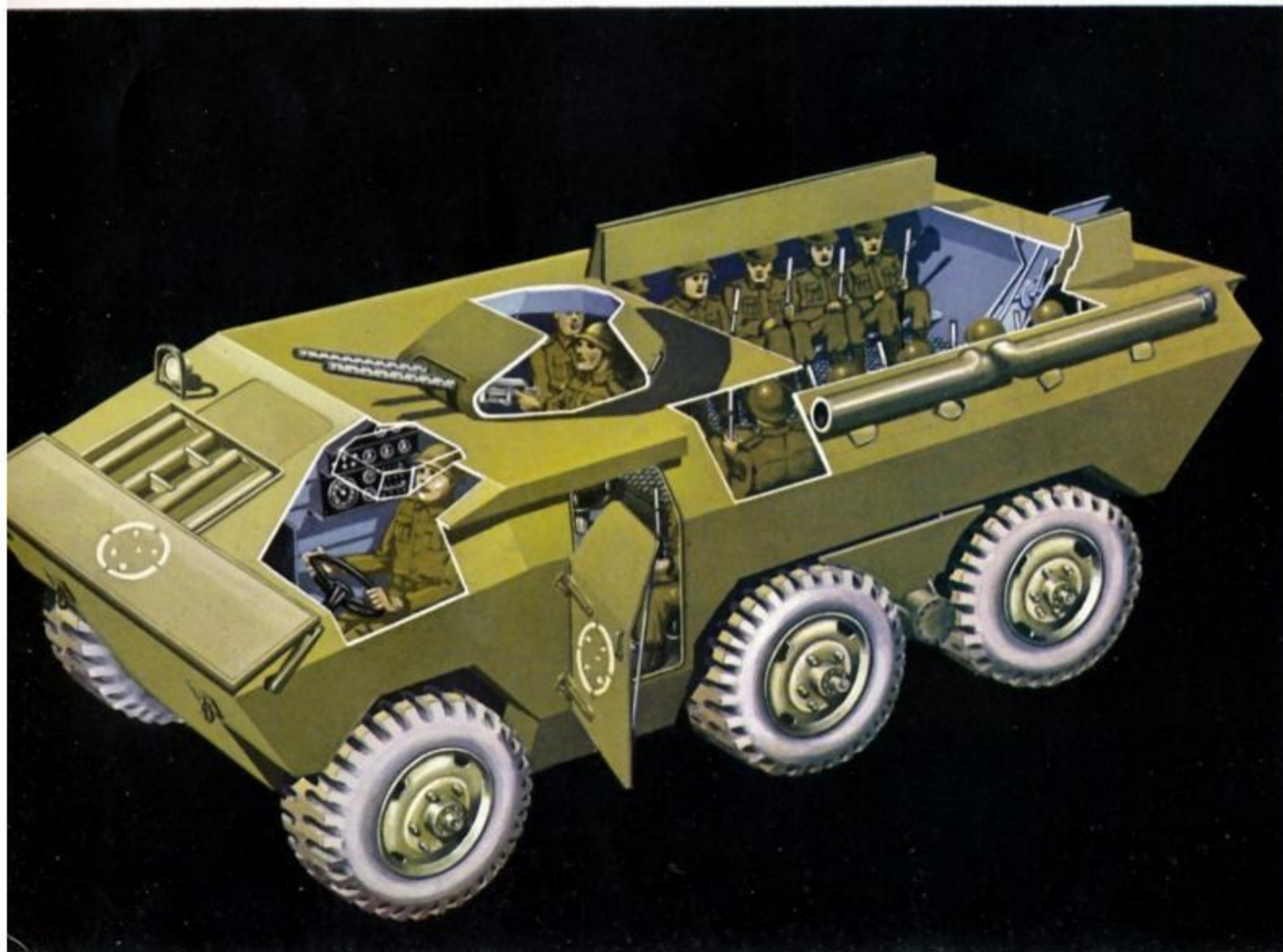
**TIRES**

11.000 x 20 bullet-proof

**OTHER CHARACTERISTICS**

Hydro-pneumatic power braks, unibody construction, conven-  
tional lubrication.





## Military data

### FUNCTIONS

The Urutú was designed to perform the following tasks:

- 1) – Troop carrier
- 2) – Troop disembark
- 3) – Riot control
- 4) – Reconnaissance, advanced contact and observation
- 5) – Armoured ambulance, command car, shop car
- 6) – Border patrol
- 7) – Deep independent suspension
- 8) – Anti-guerrilla warfare.

### ARMAMENT

Amphibious troop carrier equipped with 7.62 mm MAG type machine, gun, or 2 — 20 mm anti-aircraft guns, or as desired. Version with 90 mm gun for light combat car duties.

### PROTECTION

- Totally armoured all around, with special double alloy steel capable of resisting 7.62 mm armour-piercing ammunition fired point-blank at 90°. Also appropriate protection against mines and artillery shell fragments.
- Protection against "Molotov Cocktails".
- Bullet-proof tires.
- At front, protection against 50 bullets shot horizontally.

#### CREW

Fifteen combat-equipped men when armed with 7.62 mm. heavy machine gun.

Ten combat-equipped men when armed with two 20 mm guns.

Three combat-equipped men when armed with 90 mm gun.

#### DIMENSIONS

Maximum width: 96.1 in. = 2440 mm.

Maximum length: 226, 8 in. = 5760 mm.

Maximum height without turret: 78.7 in. = 2000 mm.

Ground clearance: 19.7 in. = 500 mm

Entrance angle: 60.°

Exit angle: 60.1

Combat weight: 10.5 ton.

#### MOBILITY

Maximum speed on land: 60 mph = 95 kph

Gradeability: 70%

Turning radius: 303 in = 7700 mm

Range on land: 435 miles = 700 km.

Range on water: 44 miles

Maximum vertical obstacle: 23 in. = 0,60 m.

Maximum trench: 60 in. = 1.5 m

Rear wheel travel: 35 in = 900 mm

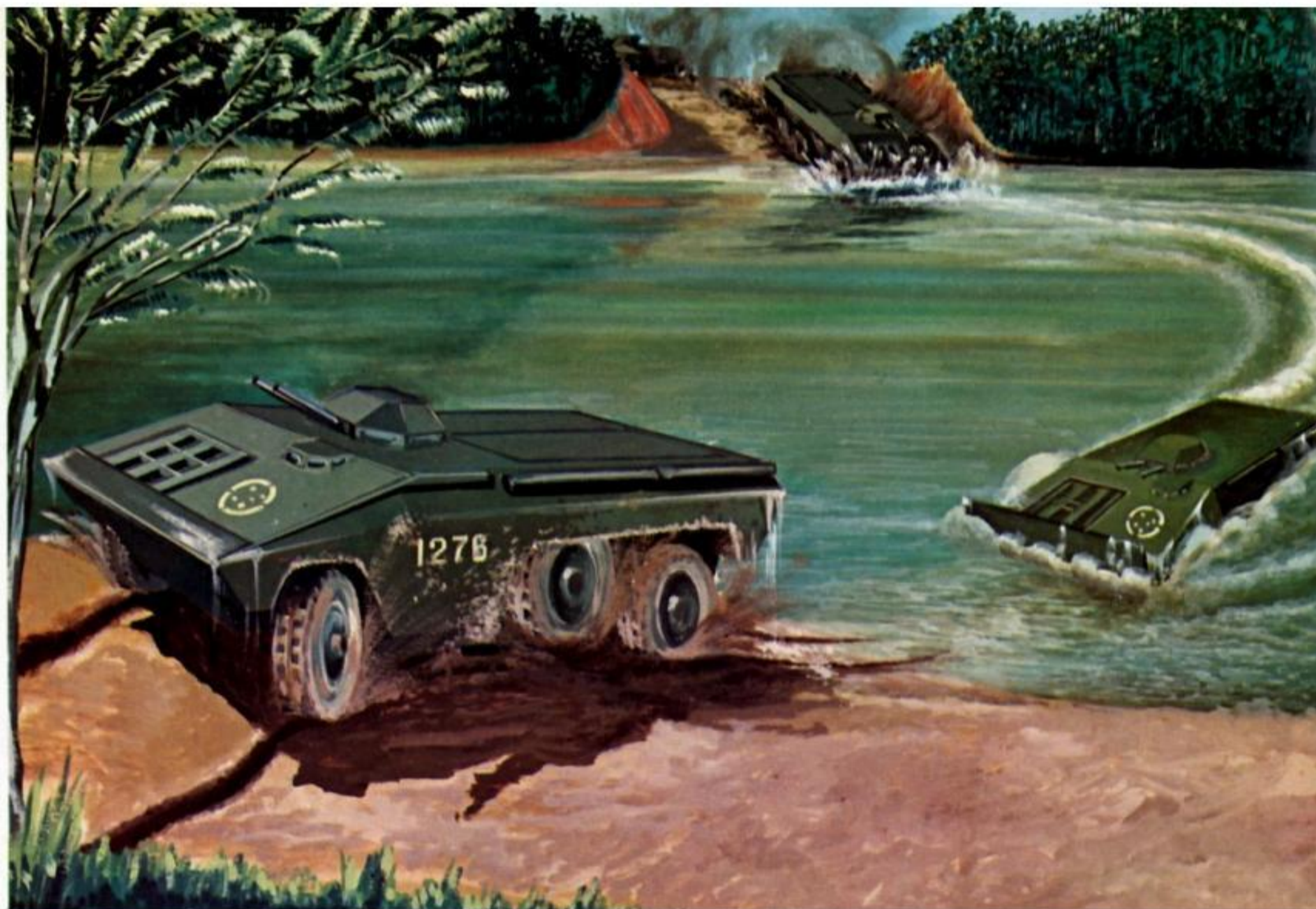
Front wheel travel: 8 in. = 200 mm

Maximum speed on water: 12 kph = 7.5 mph

Capable of operating at sea with 10 ft waves:

#### MAINTENANCE

Simple may be performed by non specialized mechanics, at any authorized dealer of the large truck manufacteres.



*The optional version for high seas operation (marines etc) includes the following equipment:*

*1 – Propellers and rudders*

*2 – Bilge pumps, high capacity (200 GPM each)*

*2 – Retractable air intake snorkles for use on turbulent waters.*

*1 – 10 ton winch with stedd cable*

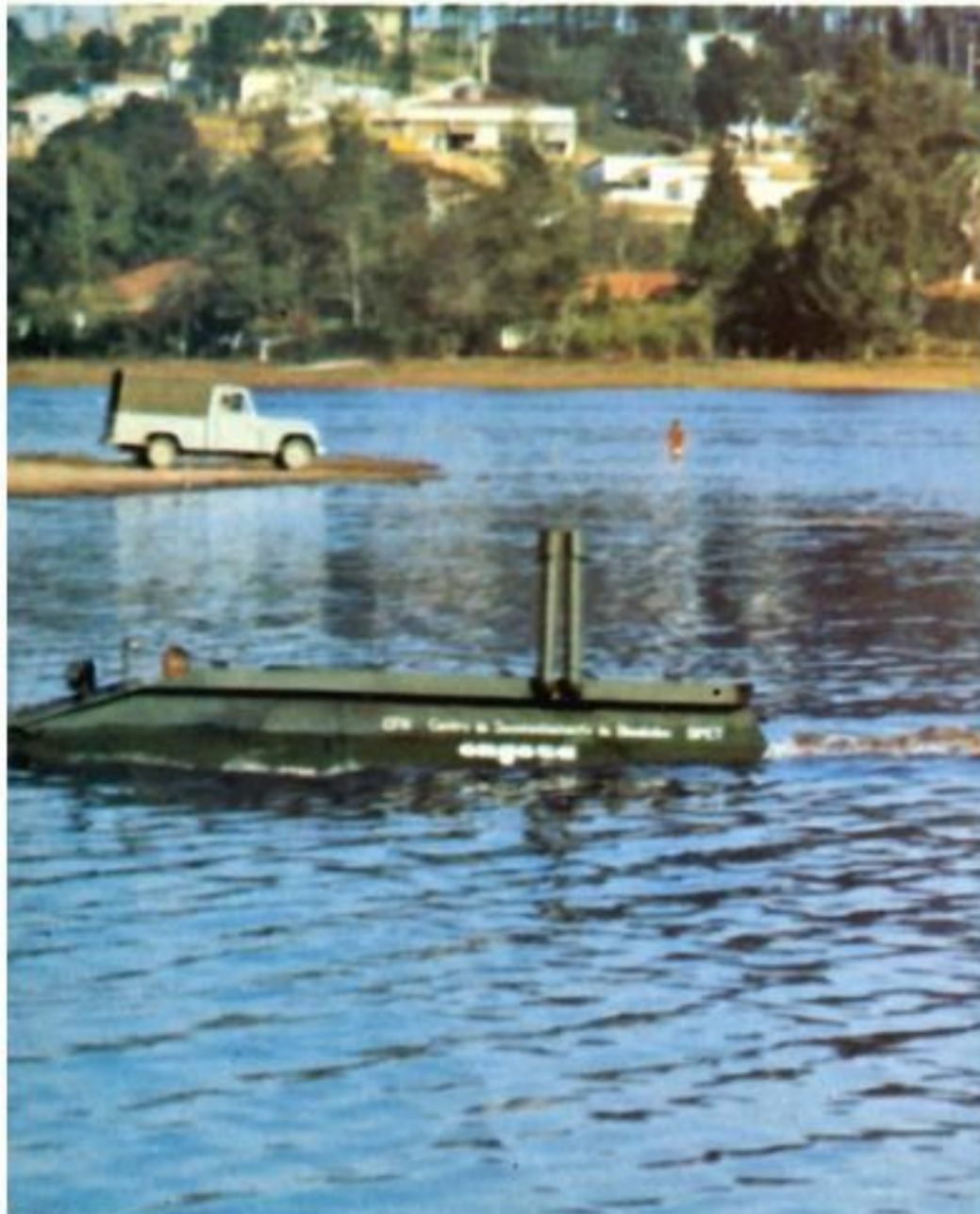
*1 – Transfer case with electro-pneumatic controls with dashboard control levers. Two speeds, reversion, power*

*2 – take-offs for differentials, winch, for bilge pumps and right and left propellers.*

*Pressurisation for underwater mechanical components.*







*Engesa manufactures a complete line of traction and suspension kits for military trucks from ¾ ton to 10 ton,  
as well as special winches up to 30 ton.  
Consult us.*



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