

BRAZIL



Background: Following three centuries under the rule of Portugal, Brazil became an independent nation in 1822 and a republic in 1889. By far the largest and most populous country in South America, Brazil overcame more than half a century of military intervention in the governance of the country when in 1985 the military regime peacefully ceded power to civilian rulers. Brazil continues to pursue industrial and agricultural growth and development of its interior. Highly unequal income distribution remains a pressing problem.

Geography: Location: Eastern South America, bordering the Atlantic Ocean. Area: total: 8,511,965 sq km. note: includes Arquipelago de Fernando de Noronha, Atol das Rocas, Ilha da Trindade, Ilhas Martin Vaz, and Penedos de Sao Pedro e Sao Paulo. Area - comparative: slightly smaller than the US. Land boundaries: total: 16,884 km. Border countries: Argentina 1,261 km, Bolivia 3,423 km, Colombia 1,644 km, French Guiana 730 km, Guyana 1,606 km, Paraguay 1,365 km, Peru 2,995 km, Suriname 593 km, Uruguay 1,068 km, Venezuela 2,199 km. Coastline: 7,491 km. Climate: mostly tropical, but temperate in south. Terrain: mostly flat to rolling lowlands in north; some plains, hills, mountains, and narrow coastal

belt. Natural resources: bauxite, gold, iron ore, manganese, nickel, phosphates, platinum, tin, uranium, petroleum, hydropower, timber. Natural hazards: recurring droughts in northeast; floods and occasional frost in south. Environment - current issues: deforestation in Amazon Basin; air and water pollution in Rio de Janeiro, Sao Paulo, and several other large cities; land degradation and water pollution caused by improper mining activities; wetland degradation; severe oil spills. Geography - note: largest country in South America; shares common boundaries with every South American country except Chile and Ecuador. (CIA Factbook 2006)

1921 Car, Armd, 4x2. White-Laffly.



Remarks: White-Laffly's were purchased from French stocks.

1924 Car, Armd, 4x2. Sao Paulo Improved AC.



Remarks: Built by revolutionaries in Sao Paulo, Brazil in 1924, the vehicle was too heavy to be operated off of hard roads. The second vehicle completed used wood rather than steel for protection.

Imp AC Data: Drive, 4x2. *Capacity:* Fuel, gasoline. *Engine:* (1) gasoline. Location, front. Cooling, liquid. *Transmission:* Manual. *Suspension System:* Type, leaf spring. Wheels Steerable, front pair. No of wheels, 4. Tires, hard rubber. *Usage:* Only one steel covered armored car was completed. *Manufacturer:* Improvised.

1930 Car, Armd, 4x2. Chevrolet Improved AC.



Remarks: One of two improvised armored cars produced in Minas Gerais province in 1930. The vehicle was very similar in shape to improvised armored cars used in Spain. A fully rotating turret with a light machine gun was mounted on the roof. Probably only the single vehicle was completed to this design.

Chevrolet Imp AC Data: *Armament:* (1) LMG. Elevation & traverse, manual. *Capacity:* Fuel, gasoline. *Engine:* Chevrolet, gasoline. Location, front. Cooling, liquid. *Transmission:* Manual. Mfr, GM. *Suspension System:* Leaf spring. Wheels Steerable, front pair. No of wheels, 4. *Usage:* Used by Brazilian rebels during the 1930 Revolution. *Manufacturer:* Local.

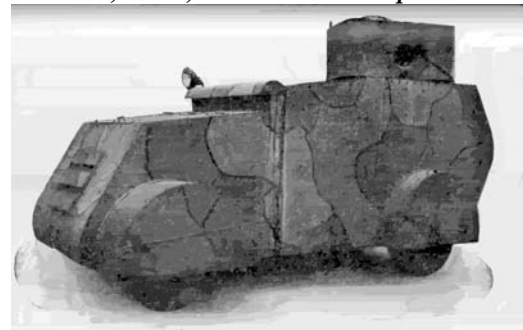
1930 Car, Armd, 4x2. Brazil Imp AC Type 1.



Remarks: One of two improvised armored cars produced in Minas Gerais province in 1930. (The other being the Chevrolet Improved AC above). The vehicle had shields over the rear wheels; no turret was fitted to the vehicle. Probably only the single vehicle was completed to this design.

Chevrolet Type 1 Data: *Armament:* Hand held rifles. *Capacity:* Fuel, gasoline. *Engine:* Type, gasoline. Location, front. Cooling, liquid. *Transmission:* Manual. *Suspension System:* Leaf spring. Wheels Steerable, front pair. No of wheels, 4. *Usage:* Used by Brazilian rebels during the 1930 Revolution. *Manufacturer:* Local.

1932 Car, Armd, 4x2. Chevrolet Imp AC.



Remarks: The Chevrolet improvised armored car was produced in Sao Paulo during the 1932 Revolution. This vehicle had pneumatic tires, armored wheel covers and a rotating turret. Both the Ford and Chevrolet vehicles used much the same armor pattern.

Chevrolet Data: Drive, 4x2. *Armament:* (1) Light machine gun. Elevation, manual. Traverse, manual. *Capacity:* Fuel, gasoline. *Engine:* Mfr, Chevrolet. Location, front. Cooling, liquid. *Transmission:* Type, manual. Mfr, GM. *Suspension System:* Type, leaf spring. Wheels Steerable, front pair. No of wheels, 4. Tires, pneumatic. *General Data:* Elec Voltage, 6V. *Usage:* Used by Brazilian rebels during the 1932 Revolution

in Sao Paulo. *Manufacturer:* Improvised.

1932 Car, Armd, 4x2. Ford Improved AC.



Remarks: The Ford improvised armored car was produced in Sao Paulo during the 1932 Revolution. This vehicle had pneumatic tires, armored rear wheel covers and a rotating turret. It was very similar to the Ford Improved AC built at the same time.

Ford Data: Drive, 4x2. *Armament:* (1) Light machine gun. Elevation, manual. Traverse, manual. *Capacity:* Fuel, gasoline. *Engine:* Mfr, Ford. Location, front. Cooling, liquid. *Transmission:* Manual. Mfr, Ford. *Suspension System:* Type, leaf spring. Wheels Steerable, front pair. No of wheels, 4. Tires, pneumatic. *Usage:* Used by Brazilian rebels during the 1932 Revolution in Sao Paulo. *Manufacturer:* Improvised.

1932 Car, Armd, 4x2. Sao Paulo Imp AC Type 3.



Remarks: Improvised armored car produced in Sao Paulo by the Polytechnica School during the 1932 Constitutionalist Revolution. This vehicle

had hard rubber tires with armored shields attached to the wheels, no turret was fitted to the vehicle. Probably only the single vehicle was completed to this design.

Sao Paulo Data: *Armament:* (1) Light machine gun. Elevation & Traverse, manual. *Capacity:* Fuel, gasoline. *Engine:* Type, gasoline. Location, front. Cooling, liquid. *Transmission:* Manual. *Suspension System:* Leaf spring. Wheels Steerable, front pair. No of wheels, 4. *Usage:* Used by Brazilian rebels during the 1932 Revolution in Sao Paulo. *Manufacturer:* Polytechnica School.

1943 Car, Armd, 6x6. M8 Light Armored Car.



Remarks: Brazil initially received a total of 20 M8s under the Lend-Lease program by the end of 1946, Plus a further 16 Greyhounds from the US under the Military Assistance Program (MAP) during the late 1950's, early 1960's. Brazil later re-equipped these cars with diesel engines (see US for vehicle details).

1943 Veh, Recce, 4x4, Car, Scout, M3A1. (see US for vehicle details).

1944 Car, Armd, 6x6. T17 Boarhound.

Remarks: A total of 54 of these cars (nearly the complete production run), were delivered to Brazil as part of the Lend-Lease program by the end of 1946 (see US for vehicle details).

1968 Car, Armd, 4x4, M8 Brasileiro CRR

1969 Veh, Recce, Carro De Reconhecimento Sobre Rodas (CRR)

1972 Veh, Recce, Carro De Reconhecimento Sobre Rodas (CRR).



1972 Carr, Pers, Armd, 6x6. Engesa EE-11 Urutu. From 1972 through 2002, carriers were delivered to: Angola (24), Bolivia (12), Brazil (223), Chile (37), Colombia (56), Dubai (132), Ecuador (32), Gabon (12), Iraq (148) 1983-84, Jordan (82), Lybia (40), Nigeria (5), Paraguay (12), Surinam (16), Tunisia (18), United Arab Emirates (120), Venezuela (38), Zimbabwe (7).

1975 Car, Armd, 6x6. Engesa EE-9 Cascavel Mk 1.



Remarks: Completed in two versions, the differences were all internal with no external variation. The main change was the replacement of the modified M8 open topped turret with the complete turret assembly from excess M3A1 light tanks. 16 of the first production set were completed, followed by an additional 50 with improved transmission and other mechanical updates. The Cascavel 1 was only used by the Brazilian Army most vehicles being later converted to Cascavel 2s.

Cascavel 1 Data: Length, 204 in. (5180 mm). Width, 102 in. (2590 mm). Height, 124 in. (3150 mm). Ground Clr, 14.2 in. (360 mm). Wheel Base, 148 in. (3760 mm). Drive, 6x6. Armor: turret (from Light Tank M3A1), hull (welded). NBC Protection, No. **Armament:** 37mm cannon and (2) .30 cal machine guns. Elevation, Manual.

Traverse, 360°. Crew, 3. **Engine:** (1) Mercedes-Benz, OM321 liquid-cooled, 6-cyl, diesel. Producing 120 hp (89 kW) @ 2800 rpm. Location, rear. **Transmission:** Allison, MT 640, manual with Fwd/Rev, 4/1. **Suspension System:** (Ft) Coil (Rear) Beam. Steering, front pair. No of wheels, 6. Tire Size, 12.00 x 20 in. **General Data:** Elec Voltage, 12/24V. Intercom, Yes. Night Vision Devices, No. **Performance:** Speed, 62 mph (100 km/h). Range, 466 mi. (750km). Fording, 39.4 in. (1000 mm). Max Grade, 65%. **Usage:** Brazilian Army. **Manufacturer:** Engesa, Brazil.

1977 Car, Armd, 6x6. Engesa EE-17 Sucuri I.

1977 Car, Armd, 6x6. Engesa EE-9 Cascavel Mk 2.



Remarks: Because of customer requests, the Cascavel II was fitted with the same Hispano-Suiza H-90 turret as mounted on the French AML-90 armored car. Primarily intended as an export vehicle for countries that wanted more firepower. Cascavel IIs were used by the Brazilian Army as well as exported to Libya, Togo and Iraq.

EE-9 Mk 2 Data: Weight, 23,788 lbs. (10,800kgs). Wheel Base, 148 in. (3760 mm). Length, 204 in. (5180 mm). Width, 105 in. (2660 mm). Height, 103 in. (2620 mm). Ground Clr, 14.2 in. (360 mm). NBC Protection, No. **Armament:** (1) 90mm cannon and (2) 7.62mm machine guns. Elevation, Power. Traverse, 360 degrees. Crew, 3. **Engine:** Mercedes-Benz, OM352A, 6-cyl, diesel. Producing, 172 hp @ 2800 rpm. Location, rear. Cooling, liquid. **Transmission:** Allison, MT 640, manual. No of speeds Fwd/Rev, 4/1. **Suspension System:** Type, (Ft) Coil (Rear) Beam. Wheels, steering, front pair. No of wheels, 6. Tire Size, 12.00 x 20 in. **General Data:** Elec Voltage, 12/24V. Intercom, Yes. Night Vision Devices, No. **Performance:** Speed/Land 62 mph (100 km/h). Range, 466 mi. (750km). Fording, 39.4 in. (1000 mm). Max Grade, 65%. Drive, 6x6. **Usage:** Brazilian Army

as well as Libya, Togo and Iraq. *Manufacturer:* Engesa, Brazil.

1979 Car, Armd, 6x6. Engesa EE-9 Cascavel Mk 3.



Remarks: The third mark of the Cascavel series, the Mk 3 had an Engesa designed and built 90mm turret (ET-90-I) without a raised commander's cupola. The new turret, 90mm gun and OM-352A engine are all made in Brazil to maximize local production and content. The Mk 3 was only in production for a short while before the Mk 4 was introduced, with Mk 3s being upgraded to the new standard.

EE-9 Mk 3 Data: Weight of vehicle: 13,438kgs (29,600 lbs.). Length, 204 in (5190 mm). Width, 105 in (2660 mm). Height, 93 in (2360 mm). Ground clearance, 14.8 in (375 mm). Fording, 39.4 in (1000 mm). Armor: .33 to .63 in (8.25 to 16mm) Crew, 3. *Armament:* (1) 90mm cannon and (1) 7.62mm machine gun. *Transmission:* Automatic with 4-forward and 1-reverse gear w/2-spd trnsf case. *Engine:* (1) Mercedes-Benz, OM-352A diesel. Horsepower, 174 hp. Fuel, 95 gal (360 ltrs). *Performance:* Max. speed, 62 mph (100 km/h). Cruising range, 466 mi (750 km). *Manufacturer:* Engesa, Brazil.

1979 Veh, Util, Guegel X15, 4x4

1979 Veh, Util, Guegel X2, 4x4

1980 Car, Armd, 6x6. Engesa EE-9 Cascavel Mk 4.

Remarks: The fourth version of the Cascavel series, the Mk 4 included a new engine option (Detroit Diesel) and the addition of a central tire inflation system and disk brakes (instead of

drums as on the Mk 3). The Mk 4 also included a commander's cupola with a new machine gun mount on the ET-90-II turret. The option of a laser rangefinder for the main gun was also available. Changes to the Mk V/VI/and VII were all internal with production ending with the Mk VII when Engesa went out of business.

EE-9 Mk 4 Data: Weight, 26,432 lbs (12,000kgs). Length, 207 in (5250 mm). Width, 102 in (2590 mm). Height, 102 in (2600 mm). Ground Clr, 14.8 in (375 mm), Armor, .33 to .63 in (8.25 to 16 mm). *Armament:* (1) 90mm cannon and (2) 7.62mm machine guns. Elev, manual, -8 to +15 degrees. Traverse, manual 360 degrees. *Capacity:* Fuel, 95 gal (360 ltrs). Ammo/Qty, 90mm (44 rds). Crew/Passengers, 3. *Engine:* GM Detroit Diesel, Model 6V-53, 212 hp @ 2800 rpm. Location, rear. Cooling, liquid. *Transmission:* Allison, Model MT-643, automatic, No of speeds Fwd/Rev, 4/1 w/2-spd trnsf case. *Suspension System:* Independent front, walking beam rear. Steering, front pair. Tire size, 12.00x20 in. No of wheels, 6. Drive, 6x6. *General Data:* Elec Voltage, 24V. *Performance:* Speed/Land, 62 mph (100 km/h). Range, 466 mi (750km). Fording, 39.4 in (1000 mm). Max Grade, 60%. Step, 23.6 in (600 mm). *Usage:* Total production all marks, reached over 2,000 units, which were originally divided as follows. Bolivia (24), Brazil (409), Chile (106), Colombia (128), Cyprus (124), Equator (32), Gabon (12), Iran (?) captured from Iraq, Iraq (1025) between 1980-89, Libya (400), Paraguay (32), Qatar (20), Sudan (?) captured from Libya, Suriname (6), Togo (10), Uruguay (15), and Zimbabwe (90). *Manufacturer:* Engesa, Sao Jose, Brazil.

1980 Veh, Recce, 4x4, Engesa EE-3 Jacaraca, Cars were delivered to: Cyprus (Greek) (280) 1984-85

1983 Carr, Wpns, Tectan, MLRS, 6x6.

1987 Car, Armd, 6x6. EE-18 Sucuri II.



Remarks: 105mm armed fire support vehicle. The next development from the Sucuri I with a French turret, the Sucuri II was introduced in 1987 as a Cavalry fire support vehicle/tank destroyer. While a mobile and well-armed vehicle, the Sucuri II was introduced just as Engesa began to lose money and went bankrupt putting an end to the development of the vehicle in Brazil. A total of three pilot vehicles were completed and tested.

EE-18 Data: *Weight:* Empty, 37,445 lbs (17000 kg). Loaded, 40,749 lbs (18500 kg). *Length (OA),* 305 in (7750 mm). *Length (hull),* 230 in (5840 mm). *Width,* 110 in (2800 mm). *Height,* 99 in (2515 mm). *Ground Clearance,* 16 in (400 mm). *Wheel Base,* 159 in (4040 mm). *Drive,* 6x6. *Armor,* double hardness rolled plate. *Armament:* (1) 105mm cannon and (1) coax 7.62mm LMG. *Model,* (105mm) Oto Melara. *Elevation,* -6 to +15 degrees. *Traverse,* power and stabilized. *Fire Control,* optical w/laser RF. *Aux wpn,* (1) .50 cal HMG. *Capacity:* *Fuel,* 127 gals (480 liters) diesel. *Ammo/Qty,* 105mm (40 rds) and 7.62mm (3200 rds). *Crew,* 4. *Engine:* Turbo-charge 6-cyl diesel producing 380 hp (279 kW) @ 2100 rpm. *Model,* DSI-11. *Location,* front right. *Cooling,* liquid. *Transmission:* ZF6HP-600 Automatic with 6-Fwd and 1-Rev gears. *Suspension System:* Coil spring. *Wheels Steerable,* front pair. *No of wheels,* 6. *Tire Size,* 14.00x22.5. *Other,* central tire air inflation system. *General Data:* *Elec Voltage,* 24V. *Intercom,* yes. *Night Vision Devices:* *Driver,* Commander, *Gunner,* passive. *Performance:* *Speed,* 62 mph (100 km/h). *Range,* 435 mi (700 km). *Fording Depth,* 51 in (1300 mm). *Max Grade,* 60%. *Trench Crossing,* 79 in (2000 mm). *Step,* 23.5 in (600 mm). *Usage:* Prototypes only tested by the Brazilian Army. *Manufacturer:* Engesa, Brazil.

2004 Veh, Util. Troller T4-M LMPV.



Above: Troller T4-M with canvas top but without roll-bars installed. (Photo: Troller Veiculos Especiais s.a.)

Remarks: Part of the group of light vehicles classified by the military as an LMPV (Light Multi-Purposes Vehicle), the Troller T4-M is mainly meant for transporting and supporting troops in difficult access areas. It can also be used as a reconnaissance vehicle with optional roll-bars and, with the addition of optional modular armor; as a combat vehicle in low intensity conflict. Having a very low profile when the top has been removed and the windshield folded, the T4-M can be transported by medium lift aircraft or carried inside larger helicopters. Since the vehicle can cross a water obstacle of up to 39 inches (1 meter), when equipped with a snorkel, it also can be used for landings, "over the beach".

T4-M Data: *Weight:* Empty, 3,660 lbs (1660 kg). Loaded, 4,829 lbs (2190 kg). *Length,* 161 in (4085 mm). *Width,* 82 in (2080 mm). *Height,* 79 in (2000 mm). *Ground Clearance,* 8.5 in (215 mm). *Wheel Base,* 95 in (2405 mm). *Wheel Tread (est),* 78 in (1980 mm). *Drive,* selective 4x2 or 4x4. *Armor,* optional light armor available. *NBC Protection,* individual. *Armament:* As fitted by user, 7.62, 12.7 mm MG or 40mm GL. *Capacity:* *Fuel,* 19 gals (72 L) diesel plus a spare can of 5 gals (20 L). *Crew,* 4 to 5. *Engine:* (1) 2.8 liter, MWM 4-cylinder, liquid-cooled, inline turbo diesel producing 132 hp (98 kW) @ 3200 rpm. *Location,* front. *Transmission:* Eaton manual with 5-forward and 1-reverse gear. *Suspension System:* Coil spring. *Wheels Steerable,* front pair. *Turning Radius,* 20 ft (6 m). *No of wheels,* 4. *Tire Size,* 235/85Rx16. *General Data:* *Elec Voltage,* 12V (2-12V batteries) one for the radios. *Cargo Vol/weight,* 1,168 lbs (530 kg). *Night Vision Devices:* As fitted by user. *Performance:* *Speed,* 96 mph (155 km/h). *Range,* 404 mi (650 km). *Fording Depth,* 31.5 to 39 in (800 mm w/snorkel 1000 mm). *Usage:* Production of military version T4M started in 2004, in use with Brazilian Army in limited numbers. *Manufacturer:* Troller Veiculos Especiais s.a., Ceará, Brazil.