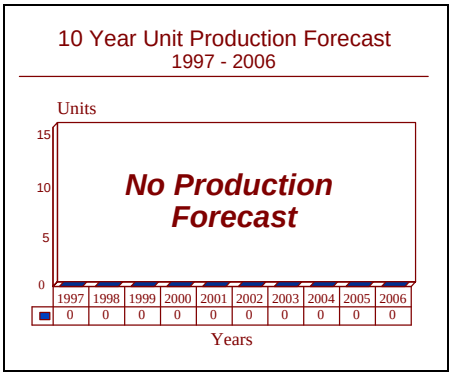
Schützenpanzer Marder- Archived 7/98

Outlook

- Production of the Schützenpanzer Marder is complete for domestic and export sales
- Several variants have been developed
- A total of 3,111 Schützenpanzer Marder vehicles were manufactured
- There will be an increasing level of modernization and retrofit potential related to this vehicle



Orientation

Description. A tracked vehicle

Sponsor. The development and German procurement of the Schützenpanzer Marder has been sponsored by the Federal Republic of Germany's Federal Ministry of Defense through the Rüstungsabteilung (Armament Department) and the Bundeswehrverwaltungsamt (Federal Office of Defense Administration) through the Bundesampt für Wehrtechnik und Beschaffung (Federal Office for Military Technology and Procurement) and German Army.

Contractors. This vehicle was developed and manufactured by Rheinstahl (now Thyssen-Henschel) of Kassel; Federal Republic of Germany as the lead contractor. MaK System Gesellschaft (formerly Krupp Maschinenbau Kiel) of Kiel was the follower contractor. Major subcontractors include Keller and Knappich, Motoren- und Turbinen-Union, Rheinmetall Industrie and Renk.

Licensees. None

Status. The manufacture of the Schützenpanzer Marder for the initial orders was completed in 1975; the production line manufacturing the base chassis for variants ran into 1983. The vehicle remains in service in Germany with a number of modernization and retrofit programs in various stages of development and implementation.

Total Produced. A total of 3,111 Schützenpanzer Marder vehicles plus ten pre-production vehicles had been manufactured.

Application. A mechanized infantry combat vehicle for the transportation of light infantry squads with the ability to conduct defensive and offensive operations as required.

Price Range. In equivalent 1974 United States dollars and based on the procurement of 975 vehicles, the Schützenpanzer Marder had a unit price of $882,000. This vehicle has not been traded on the foreign military sales or open markets.

Technical Data

Crew. Eight: commander, gunner, driver and five infantrymen

Armor. The Schützenpanzer Marder is fabricated from conventional steel armor with various types of appliqué armor in the latest 1A3 model.

Dimensions. The following data are for the latest 1A3 standard.

	SI units	US units
Length	6.88 meters	22.57 feet
Width	3.38 meters	11.09 feet
Height	3.02 meters	9.91 feet
Combat weight	35.0 tonnes	38.58 tons
Fuel capacity	652 liters	173.4 gallons

Performance. Before the A3 upgrade, which added 1.6 tonnes (1.76 tons) of armor to the vehicle, the top speed was 75 kilometers per hour (46.6 miles per hour). This figure, as well as the other automotive performance data below, is on a metalled road. The fording figure is with preparation.

Maximum speed	65 kilometers per hour	40.4 miles per hour
Maximum range	500 kilometers	310.5 statute miles
Step	1.0 meters	3.28 feet
Trench	2.5 meters	8.2 feet
Slope	30%	30%
Gradient	60%	60%
Fording	2.5 meters	8.2 feet

Engine. Motoren- und Turbinen-Union supplies the MB 833 Ea 500 six-cylinder liquid cooled diesel engine rated at 447.6 kilowatts (600 horsepower) at 36.67 revolutions per second (2,200 revolution per minute). The power-to-weight ratio is 12.78 kilowatts per tonne (15.55 horsepower per ton). A 24 volt electrical system with six 12 volt batteries is standard equipment.

Gearbox. Renk Aktiengesellschaft supplies the HSWL 194 gearbox with four forward and two reverse gear ratios. This gearbox features integral steering and braking components.

Suspension and Running Gear. The Schützenpanzer Marder uses a torsion bar (reinforced in the 1A3) type suspension with six dual tired road wheels and three track return rollers on each side. The first, second, fifth and sixth road wheel stations are provided with hydraulic shock dampers.

Armament. The main armament of this vehicle is a turret mounted Rheinmetall Industrie Rh 202 twenty millimeter cannon. This cannon is mounted in a Keller & Knappich two-man turret. The elevation and depression of this weapon is +65° and -17° respectively. A 7.62 millimeter MG3 machine gun is coaxially mounted while another MG3 is in a remote control mount on top of the turret. This latter weapon, in the remote control mount designed by Motorwagenfabrik of Switzerland, can be elevated 60° and depressed -15°; traverse is 180°. A MILAN anti-tank missile launcher is mounted on the right side of the turret of most vehicles. Six electrically operated smoke grenade launchers are mounted to the left of the cannon. A total of 1,250 rounds of 20 millimeter ammunition are carried while 5,000 rounds are carried for the machine guns.

Fire Control. The commander and gunner are provided with the PERI Z 11 sight for both ground and anti-aircraft use. This sight is a dual magnification type with powers of two and six. An infrared periscope can replace the Z 11 if desired. The commander is provided with eight periscopes and the gunner three.

Variants/Upgrades

Variants. In addition to the TH 300 and TH 301 tanks, which are covered in a separate report in Tab A, there have been a number of variants of the Schützenpanzer Marder developed, most of which have yet to be brought to production status.

Clovis. This proposal integrates the Schützenpanzer Marder with the FL-20 turret mounting a 105 millimeter cannon. This proposal went dormant in 1988.

Driver Training Tank. Krauss-Maffei delivered 36 modified Schützenpanzer Marder vehicles to the German Army. The turrets have been removed and replaced by a fixed cupola. Additional seating for the pupils is provided.

35 millimeter Support Tank. This was a proposal by Thyssen Henschel for fitting the Marder with a new two-man turret armed with an externally mounted 35 millimeter cannon, anti-tank guided missile system and a coaxially mounted 7.62 millimeter machine gun. This vehicle would have a combat weight of 30 tonnes (33.07 tons).

Flak Zwilling. This was a proposal for a self-propelled anti-aircraft artillery system. The program was canceled in favor of the Gepard.

Beobachtungs Panzer Artillerie. This was a proposal for an artillery observation vehicle that was subsequently canceled in favor of the cheaper M113 based alternative.

120 millimeter Mortar Carrier. This proposal integrated a 120 millimeter mortar in a modified Schützenpanzer Marder chassis. Although 245 were ordered in 1969, the order was subsequently canceled in favor of a modified M113 mounting the same mortar.

Rapier/Marder. This was a joint British Aerospace and Rheinstahl proposal to integrate the Rapier surface to air missile system with a modified Marder.

Roland Surface to Air Missile System. A total of 148 Schützenpanzer Marder chassis (144 for Germany and four for Brazil) were manufactured for the Roland surface-to-air missile system. Two missiles are ready with eight in reserve.

Other Proposals. The Schützenpanzer Marder chassis, in modified form, has also been proposed for an ambulance (called the 2HK 2/2), a cargo carrier (RU121) and for integration with a multiple launch rocket system.

Modernization and Retrofit Overview. As of mid-1997, the Schützenpanzer Marder has been put through the following upgrades; these are not new production vehicles.

DESIGNATION	NUMBER	ENHANCEMENTS
Schützenpanzer Marder 1A1(+)	674	Initial complete upgrade with new passive sights, thermal pointer, ammunition feed, other features.
Schützenpanzer Marder 1A1(-)	350	As 1A1(+) but without thermal pointer.
Schützenpanzer Marder 1A1A	1112	As 1A1(+) but without passive vision devices.
Schützenpanzer Marder 1A2	3111	Fire control, thermal imaging equipment (for 1,462), chassis and suspension enhancements.
Schützenpanzer Marder 1A3	2100	Appliqué armor, automotive and suspension upgrades, turret and hull modifications for storage, ease of use, fightability

The 1A3 program began in 1988 and is to cover a period of ten years.

Radarpanzer Tiefflieger Überwachungs-Radar. This radar vehicle is based on the Schützenpanzer Marder chassis. The first prototypes, based on existing albeit extensively modified chassis, were delivered to the German Army for evaluations in October 1981. The raised hull mounts a hydraulically operated arm with a Siemens MPDR 3002-S radar on top in place of the normal turret. The arm raises the radar to a ten meter (32.8 feet) height for operation. The interior of the vehicle has been extensively modified to allow increased space for the crew and required equipment.

The following data are for the latest standard Radarpanzer Tiefflieger Überwachungs-Radar vehicle.

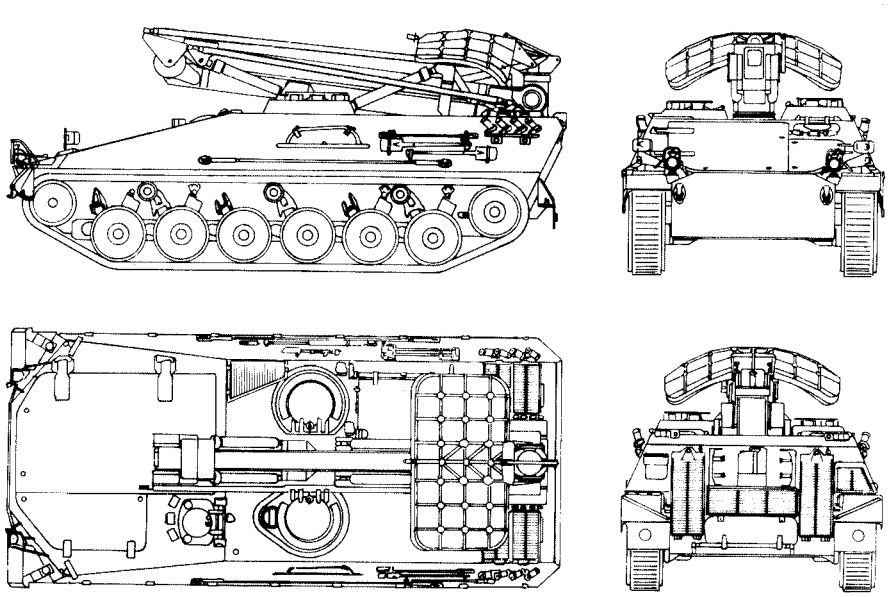
	SI units	US units
Length	7.20 meters	23.62 feet
Width	3.27 meters	10.72 feet
Height	3.58 meters	11.74 feet
Fuel capacity	652 liters	173.4 gallons
Combat weight	35.0 tonnes	38.58 tons

Although this vehicle has not been fitted with the 1.6 tonne (1.76 ton) armor enhancement of the A3 version of the Schützenpanzer Marder, its top speed is reduced by the addition of the radar equipment. The automotive performance data is on a metalled road. The fording figure is with preparation.

Maximum speed	60 kilometers per hour	37.3 miles per hour
Maximum range	570 kilometers	353.9 statute miles
Step	1.0 meters	3.28 feet
Trench	2.5 meters	8.2 feet
Slope	30%	30%
Gradient	60%	60%
Fording	2.5 meters	8.2 feet

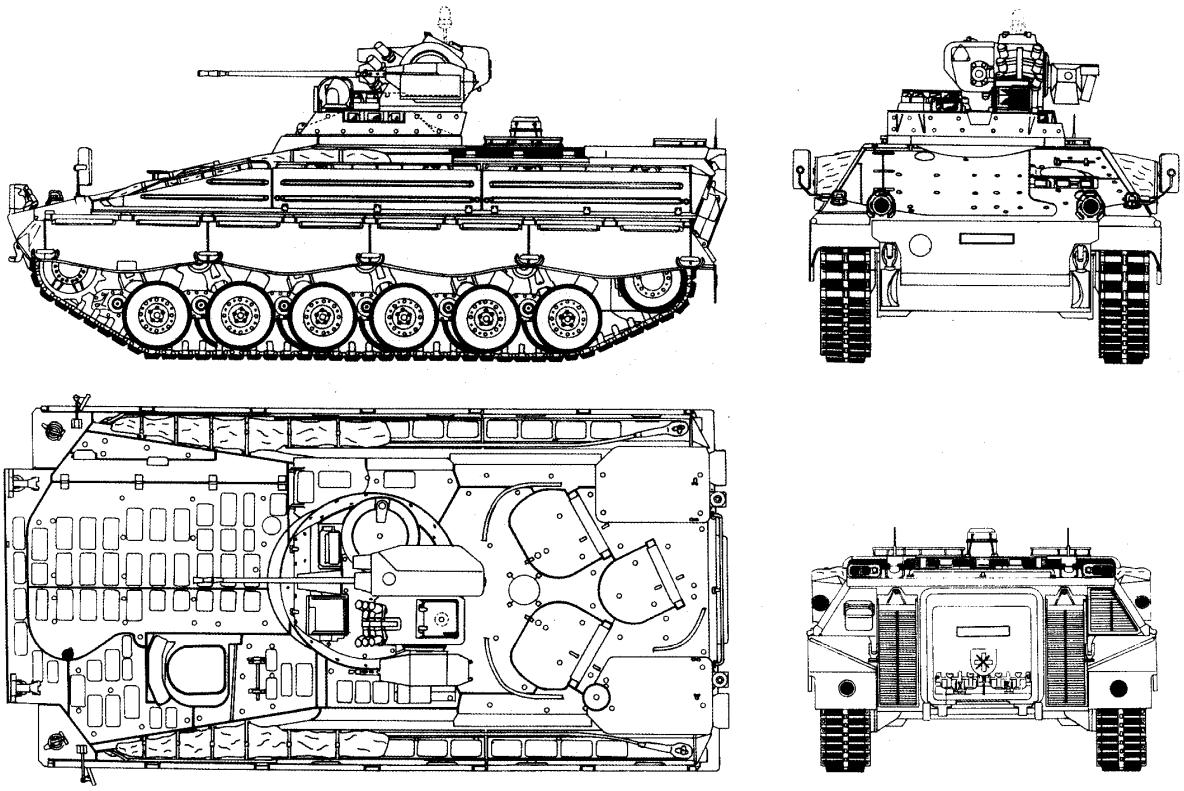
The engine, gearbox and running gear remain the same as in the basic Marder. Two banks of four smoke dischargers are mounted on either side of the rear of the hull and an MG3 7.62 millimeter machine gun is mounted at each cupola. This vehicle, based on the modification of existing Marder chassis, is expected to be ordered in the near future.

* * * * *



Radarpanzer Tiefflieger Uberwachungs - Radar

Source: Thyssen Henschel



SCHÜTZENPANZER MARDER 1A3

Source: Thyssen Henscher