

V2 and Meilerwagen History

The Aggregat 4 (A4) rocket, better known as the V2, had its beginnings in the late thirties. The A1, A2, and the A3 rocket programs preceded the A4 program and each lent no small part to its success. Static firing of the motor for the V2 began at Peenemünde in March 1940. The first complete V2 rocket was statically tested on 18 March, 1942, which resulted in an explosion. Nevertheless, tests and launchings continued and on 22 December, 1942, the go-ahead for production was granted. A major setback for the program was the RAF bombing attack on Peenemünde on 17 August, 1943 which many key personnel were killed or wounded. Production facilities were constructed underground at Nordhausen. From this manufacturing center, 86 V2s were delivered in July 1944, and from Sept. on, over 600 V2s were delivered every month. Approximately 6000 V2s were completed, only about 3000 were actually launched. After launching, 1,054 V2s fell in England, 60 off the coast, and 1,675 fell on the continent. London, the prime target received 517 hits while Antwerp received 1,265 hits.

The development of the motor was supervised by Dr. Walter Thiel. Liquid oxygen and alcohol were chosen as the propellents. Both liquids were already in commercial production and at a reasonable cost, and liquid oxygen gave a minimum of problems with mixing, ignition, and atomization and combined with alcohol, combustion temperatures could be kept down. To obtain the performance required, 129 kg (284 lb) per second of propellant was injected into the combustion chamber, a new pumping system was devised. The propellents were fed into the combustion chamber through 18 mixing cups. To start the motor, the pyrotechnic igniter was lit inside the combustion chamber and then the propellant valves were opened to allow fuel to flow to the motor under pressure. With this reduced flow, a thrust of only 6,800 kg (14,962 lb) resulted, while not enough for launching, provided a check that the motor was running properly. If so, hydrogen peroxide was then allowed to flow which produced steam for the pump turbine, and the increased propellant flow enabled the lift-off thrust to be obtained. A self-contained control system was located behind the warhead incorporating two gyroscopes, one sensing pitch errors and the other sensing roll and yaw errors, which sent signals to the aerodynamic rudders in unison with the graphite exhaust rudders for correction. The fusing arrangement for the warhead consisted of a central exploder tube where a radio device was fitted. This radio sent out signals and received them from the ground which was set to ignite at a height of 3 m. (10 ft) from the ground prior to impact. The V2 took 12,950 man hours to complete at a cost of 38,000 Reichs Marks.

After the launch sites at Peenemünde were discovered and bombed by the RAF, a means of transporting and launching the V2 to a given site was developed. The V2 was delivered close to the launch site by train and then loaded on the Meilerwagen transporter. The Meilerwagen was a specially designed trailer in which the V2 could be transported anywhere, erected, and launched with few problems. The common tow vehicle for the Meilerwagen was an armored SdKfz 7 halftrack in which the launch was controlled. To launch the V2, the Meilerwagen was uncoupled from the halftrack, and 2 outriggers were extended. The start ramp was raised by a motor carried on the trailer. This took from 5 to 10 minutes to erect the rocket into firing position. It then took 12 minutes to fuel the V2 and when completed, it was fired by remote control.

A 4, Fernrakete,

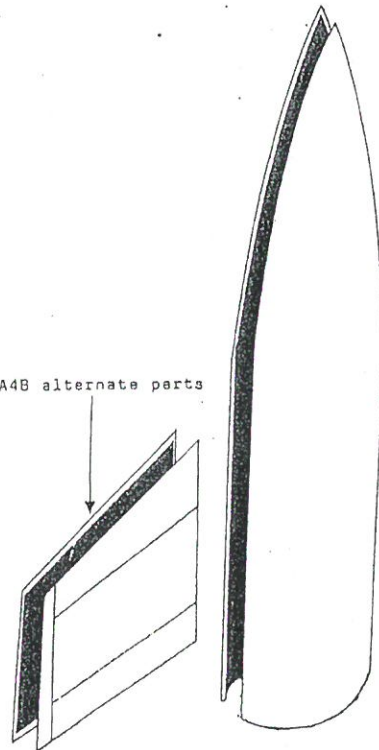
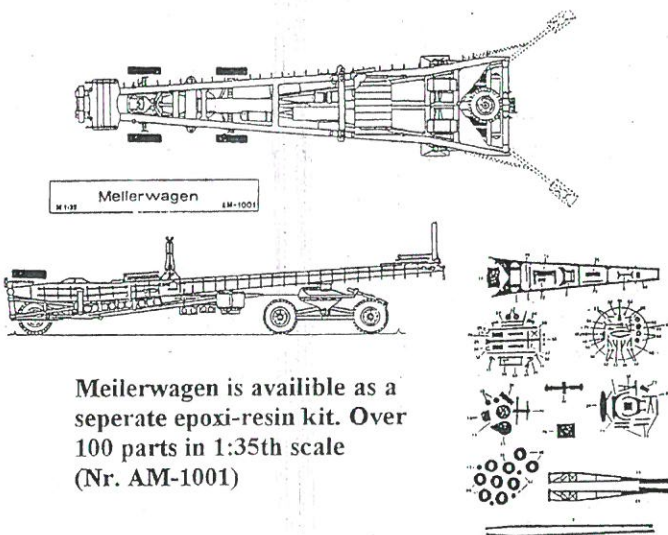
als V 2 bekannt. 27000 kp Schub für 67s.
Ballistische Rakete mit Selbststeuerung, Kreuzleitwerk, Graphitrudern im Gasstrahl, 750 kg Amatol-Sprengstoff in der Spitze, dahinter die Steuerungsanlage. Dann folgten die Tanks für 75%-igen Äthylalkohol (3965 kg) und Flüssigsauerstoff (4970 kg). Anschließend folgte die Pumpenanlage mit zwei Kreiselpumpen für die Brennstoff-Förderung, angetrieben von einer 670PS-Dampfturbine (4000 U/min), mit chemisch erzeugtem Dampf durch Aufsprühen von 80%-igem Wasserstoffsperoxyd auf Kaliummanganat mittels Stickstoff-Druckförderung, und schließlich die Brennkammer mit der Düse. Verbrennungstemperatur 2700°C, Druck 15,45 ata, Ausströmgeschwindigkeit 2050 m/s.
1. Prüfstandversuch der Brennkammer im März 1940. Die ersten 3 Starts mißglückten, der erste erfolgreiche Start erfolgte am 3. Oktober 1942. Einsatz ab September 1944.

Airmodel - Assembly diagram

A 4b, Versuchsrakete,

umgebaute A 4 mit kurzen Pfeilflächen zur Reichweitenerhöhung. 1. Start am 27. Dezember 1944 mißglückte, der 2. Start am 24. Januar 1945 war erfolgreicher, wengleich auch beim Wiedereintauchen eine Fläche brach. Vorstufe zur A 9. Weitere Versuche wurden nicht mehr durchgeführt.

A4B alternate parts



Meilerwagen is available as a separate epoxy-resin kit. Over 100 parts in 1:35th scale (Nr. AM-1001)

V2 Specifications

Maximum Velocity: 5,580 km/h (3,466 mph)
Impact Velocity: 2,900 km/h (1,800 mph)
Average Range: 305 km (189 miles)
Trajectory Height: 97 km (60 miles)
Total Flight Time: 3. min. 40 sec.
Weight (Fueled): 12,900 kg (28,380 lb)
Weight (Empty; minus fuels and warhead): 3,950 kg (8,803 lb)
Weight of Liquid Oxygen: 4,900 kg (10,789 lb)
Weight of Alcohol: 3,700 kg (8,300 lb)
Weight of Other Fuels: 160 kg (352 lb)
Weight of Warhead: 975 kg (2,145 lb)
Total Fuel Capacity: 11,375 litres (2,500 Imp. Gal.)
Rocket Motor Thrust: 25,000 kg (55,125 lb) for 68. sec.
Length: 14 meters (46 feet)
Diameter: 1.65 meters (5 feet 5 inches)