

Daimler-Benz DB 605



A DB 605 Engine at the [RAF Museum](#) in [London](#).



Daimler-Benz DB 605A

The **Daimler-Benz DB 605** was a [German aircraft engine](#), built during [World War II](#) . Developed from the [DB 601](#) the DB 605 was used from 1942 to 1945 in [Messerschmitt Bf 109](#) and [Bf 110](#) fighters and in some other aircraft. License-built versions of the DB 605 were used in the [MC.205 Veltro](#), [G.55 Centauro](#) and some other Italian aircraft.

The primary difference between the 605 and 601 was the displacement. Through careful study, the engineers were able to determine that the existing block could be bored out to a larger diameter without seriously affecting the strength of the engine block. The difference was minimal, increasing from the 601's 150 mm to the 605's 154 mm, but given the 12 cylinders this increased the overall displacement from 33.9 liters to 35.7. Altered valve timing increased the inlet period and improved the scavenging to give greater [volumetric efficiency](#) at higher speeds, which improved the maximum allowable RPM to 2800 from the 601's 2600. The combination of these changes improved power from 1,350 PS (1,332 hp) to 1,475 PS (1455 hp). The engine was otherwise similar, notably in size which was identical to the 601. However, weights did increase from 700 to 756 kg.

In other ways the engine was essentially identical to the 601. Both used dual Bosch [magnetos](#) firing twin [spark plugs](#) for ignition. Fuel injection was powered by a pump supplying up to 90 bar, and the oil system used three pumps with a separate 35 liter oil tank. The [supercharger](#) was fairly advanced for the era, it used a barometrically controlled hydraulic clutch ([fluid coupling](#)) which allowed the system to automatically compensate for changes in altitude.

Like the 601, the 605 was designed to run on "B4" fuel, at 87 octane. In 1944 a series of newer engines was introduced, allowing the engine to run on the 100 octane "C3" fuel and optionally including fittings for various optional power-boosting agents, [MW50](#) and [GM-1](#). The DB 605AM

running initially on C3 and MW-50 improved performance to 1,800 PS (1775 hp) for takeoff, in mid 1944 the requirement for C3 was dropped and B4 + MW-50 was used. The DB 605AS(M) improved the maximum rated altitude by using a larger supercharger taken from the [DB 603](#) but was otherwise similar to the A(M). The DB 605ASB improved takeoff performance to 1,800 PS (1,775 hp), while maintaining the high-altitude performance of the ASM. The final version of the A-series was the DB 605ASC of 1945, further improving takeoff performance to 2,000 PS (1,973 hp).

Daimler had also be working on an upgraded D-series as early as 1942, capable of running on either C2 or C3 fuel. These engines did not see service until 1944, and were quickly followed by the 1,800 PS (1,775 hp) DB 605DB (running on B4 + MW-50 or C-3 without MW-50) and 2,000 PS (1,973 hp) DB 605DC. These engines saw use on the late-war Bf 109 G-10 and Bf 109 K-4.

Production versions

- **DB 605 A(M)** Standard fighter engine, up to 1475 PS, 605 AM with [MW-50](#) system up to 1800 PS
 - **DB 605 B** Same as 605 A but for use in twin-engined aircraft like [Me 110](#), [Me 210](#) (different prop/gear ratio)
- **DB 605 AS(M)** Altitude optimized version of 605 A using the larger [DB 603](#) supercharger, up to 1435 PS, ASM with MW-50 system and up to 1800 PS
 - **DB 605 ASB(M)** Altitude optimized late-war version of 605 AS using B4 fuel, ASBM with MW-50 system and up to 1800 PS
 - **DB 605 ASC(M)** Altitude optimized late-war version of 605 AS using C3 fuel, ASCM with MW-50 system and up to 2000 PS
- **DB 605 DM** First DB 605 D version, standard MW-50 equipment, up to 1700 PS
 - **DB 605 DBM** Improved 605 DM, standard MW-50 equipment, first version up to 1850 PS, later reduced to 1800 PS, B4 fuel
 - **DB 605 DCM** Improved 605 DM, standard MW-50 equipment, up to 2000 PS, C3 fuel
- **DB 610** Two DB 605 coupled to work on a single propeller shaft for use in [Heinkel He 177](#)

Prototype/pre-production versions

- **DB 605 BS** proposed version for twin-engined aircraft, derived from DB 605 AS
- **DB 605 E** proposed version for twin-engined aircraft, derived from DB 605 D
- **DB 605 L** Similar to 605 D but with two-stage supercharger, 2000+ PS

Note: All power ratings in PS (metric horsepower). Unless otherwise noted takeoff/emergency power at sea level.

Engine Specifications (DB 605AM)



Partially sectioned



DB 610 in front

(also known as DB 605 G during development)

General characteristics

- **Type:** 12-cylinder liquid-cooled supercharged 60° [inverted Vee](#) aircraft piston engine
- **Bore:** 154 mm (6.06 in)
- **Stroke:** 160 mm (6.30 in)
- **Displacement:** 35.7 L (2,180 in³)
- **Length:** 2,303 mm (90.67 in)
- **Diameter:** 845 mm (33.27 in)
- **Dry weight:** 730 kg (1,642 lb)

Components

- **Valvetrain:** Two intake and two [sodium](#)-cooled exhaust valves per cylinder actuated via a single [overhead camshaft](#) per cylinder block.
- **Supercharger:** Single-stage variable-speed [centrifugal type supercharger](#) driven through a barometrically controlled clutch; [MW50](#) injection into the supercharger intake.
- **Fuel system:** Direct [fuel injection](#)
- **Oil system:** [Dry sump](#) with one pressure and two scavenge pumps
- **Cooling system:** Liquid-cooled, pressurized

Performance

- **Power output:**
 - 1,324 kW (1,800 PS - 1,775 hp) at 2,800 rpm for takeoff with MW-50 injection
 - 1,250 kW (1,700 PS - 1,677 hp) at 2,800 rpm at 4,000 m (13,120 ft) for maximum power with MW-50 injection
 - 794 kW (1,080 PS - 1,065 hp) at 2,300 rpm at 5,500 m (18,000 ft) for max continuous
- **Specific power:** 35.0 kW/L (0.77 hp/in³)
- **Compression ratio:** 7.5/7.3:1 with 87-octane fuel; 8.5/8.3:1 with 100-octane fuel
- **Power-to-weight ratio:** 1.68 kW/kg (1.02 hp/lb)