RB199 turbofan engine
Proven power
The RB199 is a product of the partner companies Rolls-Royce, MTU Aero Engines and Avio Aero. Two RB199 engines power the Tornado multirole combat aircraft, which is in service with the armed forces of Great Britain, Germany, Italy and Saudi Arabia. 2,500 engines have been delivered since 1979 to the armed forces, which have accumulated close to 7.0 million engine flying hours. The RB199 was designed to give the Tornado outstanding performance. In order to meet the varying mission requirements of the Tornado, in particular extreme low-level missions, a three-shaft design with afterburner and thrust reverser was selected. The Digital Engine Control Unit (DECU) reduces the pilot’s workload during operation and supports on-condition maintenance.

The fact that the RB199 is still a very modern combat engine with future growth potential is a confirmation of its advanced design. Modular construction allows damaged modules to be replaced within the minimum turnaround time, thus ensuring greater availability of the aircraft. Its unprecedented reliability has not only been demonstrated in hostile environmental conditions but also in combat. The most recent production standard, Mk105, powers the German ECR (Electronic Combat Reconnaissance) Tornado.

**Key features:**
- Three-shaft turbofan with afterburner
- Thrust reverser
- Single-crystal turbine blades
- Modular construction
- Digital engine control
- On-condition maintenance

**RB199 engine specifications (Mk103)**

- Max. thrust
  - Reheated: 70kN
  - Dry: 40kN
- Air flow rate: 70 kg/s
- Bypass ratio: 11:1
- Pressure ratio: 23:1
- Turbine entry temperature: approx. 1,600 K
- Length: 3,300 mm
- Max. diameter: 731 mm
- Weight, including thrust reverser: 1,084 kg