



COMMERCIAL AIRCRAFT ENGINES

CFM56-7B

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Digital product definition for optimized maintenance

Low cost of ownership built on undisputed CFM56 reliability

Over 6,000 engines, which have logged over 94 million flight hours

Selected by the Boeing Company as the exclusive powerplant for its Next-Generation 737 family, the advanced CFM56-7B engine maintains CFM International's leadership position in the aviation industry. Ranging from 19,500 to 27,300 pounds in takeoff thrust, the CFM56-7B, jointly certified in 1996 by the US Federal Aviation Administration (FAA) and the French Direction Générale de l'Aviation Civile (DGAC), is perfectly tailored for the short-to-medium range 737-600/-700/-800 and -900 aircraft, as well

as to the Boeing Business Jet models, taking full advantage of CFM International's vast experience while providing substantial improvements versus the industry-leading CFM56-3.

From the early stages of the airplane and engine design process, CFM International and Boeing used integrated commercial and technical teams, coordinating inputs from airline customers to ensure that the CFM56-7B engine would be able to offer operators better performance, greater reliability, lower costs and better environmental acceptability.

The CFM56-7B improvements are mainly due to its 61-inch diameter solid titanium wide-chord fan and its new core and low pressure turbine turbomachinery, all designed with the most advanced three-dimensional (3D) aerodynamic design methods. The CFM56-7B also incorporates a generation of electronic engine control (FADEC: Full Authority Digital Engine Control).

Using the N5 single-crystal material in the high pressure turbine, the CFM56-7 offers, compared to

the CFM56-3:

- ▶ Lower operating temperatures with higher Exhaust Gas Temperature margins for greater engine on-wing durability.
- ▶ A significant fuel improvement of 8 percent.

By using the latest digital tools at all stages of the CFM56-7B installation design, Line Replaceable Units (LRU) removal and replacement times have been reduced by up to 80 percent compared to the CFM56-3 and engine replacement can be performed within a single shift.

Another important design objective of the CFM56-7B was to provide operators with a 15 percent reduction in maintenance costs as compared to the CFM56-3C1 engine at its maximum 23,500 pounds (lb) rating. This has been achieved while retaining the exemplary reliability record of its predecessor allowing the Next-Generation 737 family of aircraft to receive 180 minutes ETOPS (Extended range twin engine Operations) from the US Federal Aviation Administration (FAA) less than two years after entry into service.

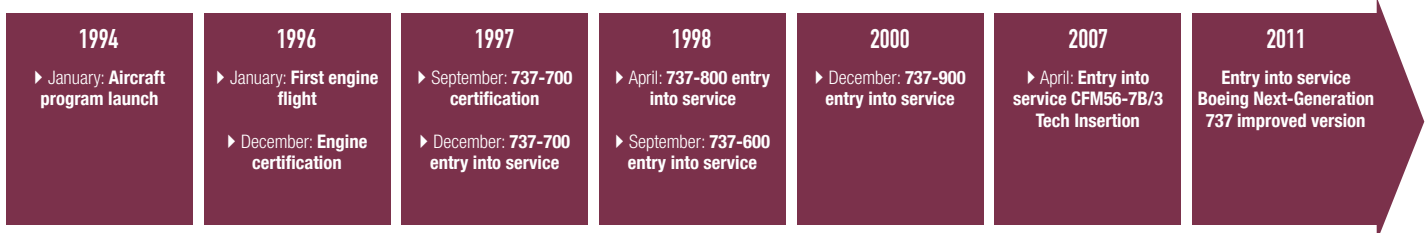
The benefits of the CFM56-7-powered 737 are being applied to military customers as well: the CFM56-7B also powers the Boeing 737 Airborne Early Warning & Control aircraft and the Navy's C-40 transport aircraft. In June 2004, it has been selected to power Boeing's P-8 MMA (Multimission Maritime Aircraft), replacement for the US Navy P-3-Orion.

On April 2009, CFM International launched the CFM56-7BE engine program to power the Boeing Next-Generation 737 improved version, with an entry into service planned in mid-2011. The improvements made by Boeing on the Boeing 737 and by CFM International on the CFM56-7BE will provide the airplane with a 2% improvement in fuel consumption, which means a 2 percent reduction in carbon emission.

ENGINE FEATURES

	-7B18/3	-7B20/3	-7B22/3	-7B24/3	-7B26/3	-7B27/3
Max. takeoff thrust (lbs)	19,500	20,600	22,700	24,200	26,300	27,300
Flat rate temperature (°F)	86 (30 °C)	86 (30 °C)	86 (30 °C)	86 (30 °C)	86 (30 °C)	86 (30 °C)
Total airflow	667	696	728	752	779	792
Bypass ratio	5.50	5.40	5.30	5.30	5.10	5.10
Max. climb thrust (lbs) 35 000 ft – Mach 0.8 – ISA Engine installed	5,960	5,960	5,960	5,960	5,960	5,960
Overall pressure ratio at max. climb	32.70	32.70	32.70	32.70	32.70	32.70
Length (in)	103.50	103.50	103.50	103.50	103.50	103.50
Fan diameter (in)	61	61	61	61	61	61
Applications	737-600	737-600 737-700	737-600 737-700	737-700 737-800 737-900	737-700 737-800 737-900 BBJ	737-700 737-700 737-900 BBJ-BBJ2 AEW&C

PROGRAM MILESTONES



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