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I. General

1. Type/Models:

CFM56-7B "SAC"	CFM56-7B20, CFM56-7B22, CFM56-7B22/B1, CFM56-7B24, CFM56-7B24/B1, CFM56-7B26, CFM56-7B26/B1, CFM56-7B26/B2, CFM56-7B27, CFM56-7B27/B1, CFM56-7B27/B3, CFM56-7B27A
CFM56-7B "DAC"	CFM56-7B20/2, CFM56-7B22/2, CFM56-7B24/2, CFM56-7B26/2, CFM56-7B27/2
CFM56-7B "TI"	CFM56-7B20/3, CFM56-7B22/3, CFM56-7B22/3B1, CFM56-7B24/3, CFM56-7B24/3B1, CFM56-7B26/3, CFM56-7B26/3F, CFM56-7B26/3B1, CFM56-7B26/3B2, CFM56-7B26/3B2F, CFM56-7B27/3, CFM56-7B27/3F, CFM56-7B27/3B1, CFM56-7B27/3B1F, CFM56-7B27/3B3, CFM56-7B27A/3
CFM56-7B "E"	CFM56-7B20E, CFM56-7B22E, CFM56-7B22E/B1, CFM56-7B24E, CFM56-7B24E/B1, CFM56-7B26E, CFM56-7B26E/F, CFM56-7B26E/B1, CFM56-7B26E/B2, CFM56-7B26E/B2F, CFM56-7B27E, CFM56-7B27E/F, CFM56-7B27E/B1, CFM56-7B27E/B1F, CFM56-7B27E/B3, CFM56-7B27AE

(See notes 9 and 11)

2. Type Certificate Holder:

CFM International S.A.
2, boulevard du Général Martial Valin
F-75724 Paris Cedex 15
France

Design Organisation Approval No.: EASA.21J.086

3. Manufacturers:

SNECMA 10 allée du Brévent CE 1420 - Courcouronnes F91019 Evry Cedex France	GE Aviation One Neumann Way Cincinnati - Ohio 45215 United States of America
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4. EASA Certification Application Date:

CFM56-7B "SAC"	
CFM56-7B18, CFM56-7B20, CFM56-7B22, CFM56-7B24, CFM56-7B26	16 March 1994
CFM56-7B27	28 November 1995
CFM56-7B26/B1, CFM56-7B27/B1	04 March 1998
CFM56-7B27/B3	30 July 1998
CFM56-7B22/B1, CFM56-7B24/B1	11 June 1997
CFM56-7B27A	08 September 1999
CFM56-7B22/B2, CFM56-7B26/B2	20 August 2001
CFM56-7B "DAC"	
CFM56-7B20/2, 7B22/2, 7B24/2, 7B26/2	06 September 1995
CFM56-7B27/2	28 November 1995

CFM56-7B "TI"	
CFM56-7B18/3, CFM56-7B20/3, CFM56-7B22/3, CFM56-7B22/3B1, CFM56-7B22/3B2, CFM56-7B24/3, CFM56-7B24/3B1, CFM56-7B26/3, CFM56-7B26/3B1, CFM56-7B26/3B2, CFM56-7B27/3, CFM56-7B27/3B1, CFM56-7B27/3B3, CFM56-7B27/3F, CFM56-7B27/3B1F	23 April 2004
CFM56-7B26/3F, CFM56-7B26/3B2F	12 April 2006
CFM56-7B27A/3	02 January 2008

CFM56-7B "E"	
CFM56-7B20E, CFM56-7B22E, CFM56-7B22E/B1, CFM56-7B24E, CFM56-7B24E/B1, CFM56-7B26E, CFM56-7B26E/F, CFM56-7B26E/B1, CFM56-7B26E/B2, CFM56-7B26E/B2F, CFM56-7B27E, CFM56-7B27E/F, CFM56-7B27E/B1, CFM56-7B27E/B1F, CFM56-7B27E/B3, CFM56-7B27AE	28 August 2008

5. Certification Reference Date: 16 March 1994

6. EASA Certification Date:

CFM56-7B "SAC"	
CFM56-7B20, CFM56-7B22, CFM56-7B24, CFM56-7B26, CFM56-7B27	17 December 1996
CFM56-7B26/B1, CFM56-7B27/B1, CFM56-7B27/B3	30 October 1998
CFM56-7B22/B1, CFM56-7B24/B1	09 May 2000
CFM56-7B27A	27 April 2001
CFM56-7B26/B2	25 April 2003

CFM56-7B "DAC"	
CFM56-7B20/2, CFM56-7B22/2, CFM56-7B24/2, CFM56-7B26/2, CFM56-7B27/2	14 November 1997

CFM56-7B "TI"	
CFM56-7B20/3, CFM56-7B22/3, CFM56-7B22/3B1, CFM56-7B24/3, CFM56-7B24/3B1, CFM56-7B26/3, CFM56-7B26/3F, CFM56-7B26/3B1, CFM56-7B26/3B2, CFM56-7B26/3B2F, CFM56-7B27/3, CFM56-7B27/3B1, CFM56-7B27/3B3, CFM56-7B27/3F, CFM56-7B27/3B1F	14 June 2006
CFM56-7B27A/3	17 October 2008

CFM56-7B "E"	
CFM56-7B20E, CFM56-7B22E, CFM56-7B22E/B1, CFM56-7B24E, CFM56-7B24E/B1, CFM56-7B26E, CFM56-7B26E/F, CFM56-7B26E/B1, CFM56-7B26E/B2, CFM56-7B26E/B2F, CFM56-7B27E, CFM56-7B27E/F, CFM56-7B27E/B1, CFM56-7B27E/B1F, CFM56-7B27E/B3, CFM56-7B27AE	30 July 2010

(See note 11)

II. Certification Basis

1. EASA Certification Basis:

1.1 Airworthiness Standards:

CFM56-7B "SAC"	
CFM56-7B18, CFM56-7B20, CFM56-7B22, CFM56-7B24, CFM56-7B26, CFM56-7B27 CFM56-7B26/B1, CFM56-7B27/B1, CFM56-7B27/B3 CFM56-7B22/B1, CFM56-7B24/B1 CFM56-7B27A	JAR-E Change 8 (04 May 1990) as amended by Orange Paper E/91/1 (27 May 1991) and Orange Paper E/93/1 (10 May 1993)
CFM56-7B22/B2, CFM56-7B26/B2	JAR-E Change 8 (04 May 1990) as amended by Orange Paper E/91/1 (27 May 1991) and Orange Paper E/93/1 (10 May 1993) JAR-E 790 "Ingestion of Rain and Hail" JAR-E 800 "Bird Strike and Ingestion" (Amendment 11 dated 01 November 2001)

CFM56-7B "DAC"	
CFM56-7B20/2, CFM56-7B22/2, CFM56-7B24/2, CFM56-7B26/2, CFM56-7B27/2	JAR-E Change 8 (04 May 1990) as amended by Orange Paper E/91/1 (27 May 1991) and Orange Paper E/93/1 (10 May 1993)

CFM56-7B "TI"	
CFM56-7B18/3, CFM56-7B20/3, CFM56-7B22/3, CFM56-7B22/3B1, CFM56-7B22/3B2, CFM56-7B24/3, CFM56-7B24/3B1, CFM56-7B26/3, CFM56-7B26/3F, CFM56-7B26/3B1, CFM56-7B26/3B2, CFM56-7B26/3B2F, CFM56-7B27/3, CFM56-7B27/3F, CFM56-7B27/3B1, CFM56-7B27/3B1F, CFM56-7B27/3B3, CFM56-7B27A/3	JAR-E Change 8 (04 May 1990) as amended by Orange Paper E/91/1 (27 May 1991) and Orange Paper E/93/1 (10 May 1993) JAR-E 515 "Critical Parts Integrity" (Amendment 11 dated 01 November 2001) CS-E 650 "Vibration Surveys" CS-E 745 "Engine Acceleration" CS-E 790 "Ingestion of Rain and Hail" CS-E 800 "Bird Strike and Ingestion" CS-E 840 "Rotor Integrity" CS-E 850 "Compressor/Fan and Turbine Shafts" (CS-E dated 24 October 2003)

CFM56-7B "E"	
CFM56-7B20E, CFM56-7B22E, CFM56-7B22E/B1, CFM56-7B24E, CFM56-7B24E/B1, CFM56-7B26E, CFM56-7B26E/F, CFM56-7B26E/B1, CFM56-7B26E/B2, CFM56-7B26E/B2F, CFM56-7B27E, CFM56-7B27E/F, CFM56-7B27E/B1, CFM56-7B27E/B1F, CFM56-7B27E/B3, CFM56-7B27AE	JAR-E Change 8 (04 May 1990) as amended by Orange Paper E/91/1 (27 May 1991) and Orange Paper E/93/1 (10 May 1993) JAR-E 515 "Critical Parts Integrity" (Amendment 11 dated 01 November 2001) CS-E 650 "Vibration Surveys" CS-E 745 "Engine Acceleration" CS-E 790 "Ingestion of Rain and Hail" CS-E 800 "Bird Strike and Ingestion" CS-E 840 "Rotor Integrity" CS-E 850 "Compressor/Fan and Turbine Shafts" CS-E 890 "Thrust Reverser Tests" CS-E 1030 "Time Limited Dispatch" (CS-E dated 24 October 2003)

1.2 Special Conditions:

CFM56-7B "SAC"	
CFM56-7B18, CFM56-7B20, CFM56-7B22, CFM56-7B24, CFM56-7B26, CFM56-7B27 CFM56-7B26/B1, CFM56-7B27/B1, CFM56-7B27/B3 CFM56-7B22/B1, CFM56-7B24/B1 CFM56-7B27A	C.S. N° 1 – Bird strikes: Large bird strike / Medium and small bird strikes C.S. N° 2 – Inclement weather: AIA "Advisory Circular" proposal PC 338-1 dated June 1990 (DGAC letter dated 14 November 1994)
CFM56-7B22/B2, CFM56-7B26/B2	None

CFM56-7B "DAC"	
CFM56-7B20/2, CFM56-7B22/2, CFM56-7B24/2, CFM56-7B26/2, CFM56-CFM56-7B27/2	C.S. N° 1 – Bird strikes: Large bird strike / Medium and small bird strikes C.S. N° 2 – Inclement weather: AIA "Advisory proposal" PC 338-1 dated June 1990 (DGAC letter dated 14 November 1994)

CFM56-7B "TI"	
CFM56-7B18/3, CFM56-7B20/3, CFM56-7B22/3, CFM56-7B22/3B1, CFM56-7B22/3B2, CFM56-7B24/3, CFM56-7B24/3B1, CFM56-7B26/3, CFM56-7B26/3F, CFM56-7B26/3B1, CFM56-7B26/3B2, CFM56- 7B26/3B2F, CFM56-7B27/3, CFM56-7B27/3F, CFM56- 7B27/3B1, CFM56-7B27/3B1F, CFM56-7B27/3B3, CFM56-7B27A/3	None

CFM56-7B "E"	
CFM56-7B20E, CFM56-7B22E, CFM56-7B22E/B1, CFM56-7B24E, CFM56-7B24E/B1, CFM56-7B26E, CFM56-7B26E/F, CFM56-7B26E/B1, CFM56-7B26E/B2, CFM56-7B26E/B2F, CFM56-7B27E, CFM56-7B27E/F, CFM56-7B27E/B1, CFM56-7B27E/B1F, CFM56- 7B27E/B3, CFM56-7B27AE	None

1.3 Equivalent safety findings:

CFM56-7B "SAC"	
CFM56-7B18, CFM56-7B20, CFM56-7B22, CFM56- 7B24, CFM56-7B26, CFM56-7B27 CFM56-7B26/B1, CFM56-7B27/B1, CFM56-7B27/B3 CFM56-7B22/B1, CFM56-7B24/B1 CFM56-7B27A	JAR-E Change 8 (04 May 1990) JAR-E 840(a)(2): Compressor and Turbine Rotor Integrity Tests JAR-E Change 8 (04 May 1990) JAR-E 890(b): Thrust Reverser Tests
CFM56-7B22/B2, CFM56-7B26/B2	JAR-E Change 8 (04 May 1990) JAR-E 840(a)(2): Compressor and Turbine Rotor Integrity Tests JAR-E Change 8 (04 May 1990) JAR-E 890(b): Thrust Reverser Tests

CFM56-7B "DAC"	
CFM56-7B20/2, CFM56-7B22/2, CFM56-7B24/2, CFM56-7B26/2, CFM56-CFM56-7B27/2	JAR-E Change 8 (04 May 1990) JAR-E 840(a)(2): Compressor and Turbine Rotor Integrity Tests JAR-E Change 8 (04 May 1990) JAR-E 890(b): Thrust Reverser Tests

CFM56-7B "TI"	
CFM56-7B18/3, CFM56-7B20/3, CFM56-7B22/3, CFM56-7B22/3B1, CFM56-7B22/3B2, CFM56-7B24/3, CFM56-7B24/3B1, CFM56-7B26/3, CFM56-7B26/3F, CFM56-7B26/3B1, CFM56-7B26/3B2, CFM56- 7B26/3B2F, CFM56-7B27/3, CFM56-7B27/3F, CFM56- 7B27/3B1, CFM56-7B27/3B1F, CFM56-7B27/3B3, CFM56-7B27A/3	JAR-E Change 8 (04 May 1990) JAR-E 890(b): Thrust Reverser Tests

CFM56-7B "E"	
CFM56-7B20E, CFM56-7B22E, CFM56-7B22E/B1, CFM56-7B24E, CFM56-7B24E/B1, CFM56-7B26E, CFM56-7B26E/F, CFM56-7B26E/B1, CFM56-7B26E/B2, CFM56-7B26E/B2F, CFM56-7B27E, CFM56-7B27E/F, CFM56-7B27E/B1, CFM56-7B27E/B1F, CFM56- 7B27E/B3, CFM56-7B27AE	None

1.4 Deviations:

CFM56-7B "SAC"	
CFM56-7B18, CFM56-7B20, CFM56-7B22, CFM56-7B24, CFM56-7B26, CFM56-7B27 CFM56-7B26/B1, CFM56-7B27/B1, CFM56-7B27/B3 CFM56-7B22/B1, CFM56-7B24/B1 CFM56-7B27A	JAR-E Change 8 (04 May 1990) JAR-E 890(a): Thrust Reverser Tests
CFM56-7B22/B2, CFM56-7B26/B2	JAR-E Change 8 (04 May 1990) JAR-E 890(a): Thrust Reverser Tests
CFM56-7B "DAC"	
CFM56-7B20/2, CFM56-7B22/2, CFM56-7B24/2, CFM56-7B26/2, CFM56-CFM56-7B27/2	JAR-E Change 8 (04 May 1990) JAR-E 890(a): Thrust Reverser Tests
CFM56-7B "TI"	
CFM56-7B18/3, CFM56-7B20/3, CFM56-7B22/3, CFM56-7B22/3B1, CFM56-7B22/3B2, CFM56-7B24/3, CFM56-7B24/3B1, CFM56-7B26/3, CFM56-7B26/3F, CFM56-7B26/3B1, CFM56-7B26/3B2, CFM56-7B26/3B2F, CFM56-7B27/3, CFM56-7B27/3F, CFM56-7B27/3B1, CFM56-7B27/3B1F, CFM56-7B27/3B3, CFM56-7B27A/3	JAR-E Change 8 (04 May 1990) JAR-E 890(a): Thrust Reverser Tests
CFM56-7B "E"	
CFM56-7B20E, CFM56-7B22E, CFM56-7B22E/B1, CFM56-7B24E, CFM56-7B24E/B1, CFM56-7B26E, CFM56-7B26E/F, CFM56-7B26E/B1, CFM56-7B26E/B2, CFM56-7B26E/B2F, CFM56-7B27E, CFM56-7B27E/F, CFM56-7B27E/B1, CFM56-7B27E/B1F, CFM56-7B27E/B3, CFM56-7B27AE	None

1.5 EASA environmental protection requirements:

CFM56-7B "SAC"	
CFM56-7B18, CFM56-7B20, CFM56-7B22, CFM56-7B22/B1, CFM56-7B22/B2, CFM56-7B24, CFM56-7B24/B1, CFM56-7B26, CFM56-7B26/B1, CFM56-7B26/B2, CFM56-7B27, CFM56-7B27/B1, CFM56-7B27/B3, CFM56-7B27A	ICAO Annex 16 Volume II, second edition, including Amendment 2, effective 11 November 1993, as applicable to turbofan engines. NOx Standard in accordance with Part III, Chapter 2, § 2.3.2, b) (CAEP/2)
CFM56-7B "DAC"	
CFM56-7B20/2, CFM56-7B22/2, CFM56-7B24/2, CFM56-7B26/2, CFM56-CFM56-7B27/2	ICAO Annex 16 Volume II, second edition, including Amendment 2, effective 11 November 1993, as applicable to turbofan engines. NOx Standard in accordance with Part III, Chapter 2, § 2.3.2, b) (CAEP/2)
CFM56-7B "TI"	
CFM56-7B18/3, CFM56-7B20/3, CFM56-7B22/3, CFM56-7B22/3B1, CFM56-7B22/3B2, CFM56-7B24/3, CFM56-7B24/3B1, CFM56-7B26/3, CFM56-7B26/3F, CFM56-7B26/3B1, CFM56-7B26/3B2, CFM56-7B26/3B2F, CFM56-7B27/3, CFM56-7B27/3F, CFM56-7B27/3B1, CFM56-7B27/3B1F, CFM56-7B27/3B3	ICAO Annex 16 Volume II, second edition, including Amendment 4, effective 04 November 1999, as applicable to turbofan engines. NOx Standard in accordance with Part III, Chapter 2, § 2.3.2, c) (CAEP/4)
CFM56-7B27A/3	ICAO Annex 16 Volume II, second edition, including Amendment 5, effective 24 November 2005, as applicable to turbofan engines. NOx Standard in accordance with Part III, Chapter 2, § 2.3.2, d) (CAEP/6)

CFM56-7B "E"	
CFM56-7B20E, CFM56-7B22E, CFM56-7B22E/B1, CFM56-7B24E, CFM56-7B24E/B1, CFM56-7B26E, CFM56-7B26E/F, CFM56-7B26E/B1, CFM56-7B26E/B2, CFM56-7B26E/B2F, CFM56-7B27E, CFM56-7B27E/F, CFM56-7B27E/B1, CFM56-7B27E/B1F, CFM56-7B27E/B3, CFM56-7B27AE	ICAO Annex 16 Volume II, third edition, including Amendment 7, effective 17 November 2011, as applicable to turbofan engines. NOx Standard in accordance with Part III, Chapter 2, § 2.3.2, e) (CAEP/8)

(See note 12)

III. Technical Characteristics

1. Type Design Definition:

Engine type is identified by an engine part list reference and an engine identification plug reference:

CFM56-7B "SAC"	Engine part list reference
CFM56-7B20, CFM56-7B22, CFM56-7B22/B1, CFM56-7B24, CFM56-7B24/B1, CFM56-7B26, CFM56-7B26/B1, CFM56-7B26/B2, CFM56-7B27, CFM56-7B27/B1, CFM56-7B27/B3	9324M60G01 9324M60G02 9324M60G03 9324M60G04 9324M60G05 9324M60G06 9324M60G07 9324M60G08 9324M60G09
CFM56-7B27A	9325M60G01 9325M60G02

CFM56-7B "DAC"	Engine part list reference
CFM56-7B20/2, CFM56-7B22/2, CFM56-7B24/2, CFM56-7B26/2, CFM56-7B27/2	1887M40G01 1887M40G04 1887M40G05 1887M40G06 1887M40G07

CFM56-7B "TI"	Engine part list reference
CFM56-7B20/3, CFM56-7B22/3, CFM56-7B22/3B1, CFM56-7B24/3, CFM56-7B24/3B1, CFM56-7B26/3, CFM56-7B26/3B1, CFM56-7B26/3B2, CFM56-7B27/3, CFM56-7B27/3B1, CFM56-7B27/3B3	9324M60G10
CFM56-7B26/3F, CFM56-7B26/3B2F, CFM56-7B27/3F, CFM56-7B27/3B1F	9324M60G11
CFM56-7B27A/3	9324M10G01 9324M10G02

CFM56-7B "E"	Engine part list reference
CFM56-7B20E, CFM56-7B22E, CFM56-7B22E/B1, CFM56-7B24E, CFM56-7B24E/B1, CFM56-7B26E, CFM56-7B26E/F, CFM56-7B26E/B1, CFM56-7B26E/B2, CFM56-7B26E/B2F, CFM56-7B27E, CFM56-7B27E/F, CFM56-7B27E/B1, CFM56-7B27E/B1F, CFM56-7B27E/B3	9324M60G12
CFM56-7B27AE	9324M10G04

CFM56-7B "SAC"	Engine identification plug reference				
	with BSV with Pmux	with BSV without Pmux	without BSV with Pmux	without BSV without Pmux	hybrid connector
CFM56-7B20	340-131-712-0	340-131-717-0	340-198-850-0	340-198-950-0	340-203-201-0
CFM56-7B22	340-131-721-0	340-131-726-0	340-199-250-0	340-199-350-0	340-203-301-0
CFM56-7B22/B1	340-142-001-0	340-142-101-0	340-199-450-0	340-199-550-0	340-203-311-0
CFM56-7B24	340-131-732-0	340-131-737-0	340-200-050-0	340-200-150-0	340-203-401-0
CFM56-7B24/B1	340-142-201-0	340-142-301-0	340-200-250-0	340-200-350-0	340-203-411-0
CFM56-7B26	340-131-742-0	340-131-747-0	340-200-850-0	340-200-950-0	340-203-501-0
CFM56-7B26/B1	340-143-201-0	340-143-301-0	340-201-050-0	340-201-150-0	340-203-511-0
CFM56-7B26/B2	N/A	N/A	N/A	N/A	340-203-521-0
CFM56-7B27	340-131-752-0	340-131-757-0	340-201-450-0	340-201-550-0	340-203-601-0
CFM56-7B27/B1	340-142-801-0	340-142-901-0	340-201-650-0	340-201-750-0	340-203-611-0
CFM56-7B27/B3	340-143-441-0	340-143-451-0	340-202-050-0	340-202-150-0	340-203-631-0
CFM56-7B27A	N/A	N/A	N/A	N/A	340-203-701-0

N/A = Not Applicable
BSV = Burner Staging Valve
Pmux = Performance Monitoring option

CFM56-7B "DAC"	Engine identification plug reference		
	with Pmux	without Pmux	hybrid connector
CFM56-7B20/2	340-138-710-0	340-138-715-0	340-203-201-0
CFM56-7B22/2	340-138-720-0	340-138-725-0	340-203-301-0
CFM56-7B24/2	340-138-730-0	340-138-735-0	340-203-401-0
CFM56-7B26/2	340-138-740-0	340-138-745-0	340-203-501-0
CFM56-7B27/2	340-138-750-0	340-138-755-0	340-203-601-0

CFM56-7B "TI"	Engine identification plug reference
	hybrid connector
CFM56-7B20/3	340-203-201-0
CFM56-7B22/3	340-203-301-0
CFM56-7B22/3B1	340-203-311-0
CFM56-7B24/3	340-203-401-0
CFM56-7B24/3B1	340-203-411-0
CFM56-7B26/3	340-203-501-0
CFM56-7B26/3F	340-205-101-0
CFM56-7B26/3B1	340-203-511-0
CFM56-7B26/3B2	340-203-521-0
CFM56-7B26/3B2F	340-205-021-0
CFM56-7B27/3	340-203-601-0
CFM56-7B27/3B1	340-203-611-0
CFM56-7B27/3B3	340-203-631-0
CFM56-7B27/3F	340-205-101-0
CFM56-7B27/3B1F	340-205-111-0
CFM56-7B27A/3	340-203-701-0

CFM56-7B "E"	Engine identification plug reference
	hybrid connector
CFM56-7B20E	340-203-201-0
CFM56-7B22E	340-203-301-0
CFM56-7B22E/B1	340-203-311-0
CFM56-7B24E	340-203-401-0
CFM56-7B24E/B1	340-203-411-0
CFM56-7B26E	340-203-501-0
CFM56-7B26E/F	340-205-101-0
CFM56-7B26E/B1	340-203-511-0
CFM56-7B26E/B2	340-203-521-0
CFM56-7B26E/B2F	340-205-021-0
CFM56-7B27E	340-203-601-0
CFM56-7B27E/F	340-205-101-0
CFM56-7B27E/B1	340-203-611-0
CFM56-7B27E/B1F	340-205-111-0
CFM56-7B27E/B3	340-203-631-0
CFM56-7B27AE	340-203-701-0

2. Description:

Dual rotor, axial flow, high bypass ratio turbofan engine:

- single stage fan, 3-stage low pressure compressor (LPC), 9-stage high pressure compressor (HPC)
- annular combustion chamber
- single stage high pressure turbine (HPT), 4-stage low pressure turbine (LPT)
- dual channel full authority digital engine control (FADEC)

The "SAC" engines have a Single Annular Combustor.

The "DAC" engines have a Dual Annular Combustor.

The "TI" Tech Insertion engines have a modified HPC, a modified Single Annular Combustor, and a modified HPT.

The "E" Enhanced engines have a modified HPT and LPT.

The Exhaust Gas Temperature (EGT) limitation of the "/F" models is increased by 20°C.

3. Equipment:

The engine starter is part of the engine type design. Refer to the engine part list for details.

4. Dimensions:

Overall Length	Width	Height
2508 mm	2118 mm	1829 mm

5. Weight:

CFM56-7B "SAC"	
CFM56-7B18, CFM56-7B20, CFM56-7B22, CFM56-7B22/B1, CFM56-7B22/B2, CFM56-7B24, CFM56-7B24/B1, CFM56-7B26, CFM56-7B26/B1, CFM56-7B26/B2, CFM56-7B27, CFM56-7B27/B1, CFM56-7B27/B3	2386 kg
CFM56-7B27A	2396 kg
CFM56-7B "DAC"	
CFM56-7B20/2, CFM56-7B22/2, CFM56-7B24/2, CFM56-7B26/2, CFM56-7B27/2	2431 kg

CFM56-7B "TI"	
CFM56-7B18/3, CFM56-7B20/3, CFM56-7B22/3, CFM56-7B22/3B1, CFM56-7B22/3B2, CFM56-7B24/3, CFM56-7B24/3B1, CFM56-7B26/3, CFM56-7B26/3F, CFM56-7B26/3B1, CFM56-7B26/3B2, CFM56-7B26/3B2F, CFM56-7B27/3, CFM56-7B27/3F, CFM56-7B27/3B1, CFM56-7B27/3B1F, CFM56-7B27/3B3	2386 kg
CFM56-7B27A/3	2396 kg

CFM56-7B "E"	
CFM56-7B20E, CFM56-7B22E, CFM56-7B22E/B1, CFM56-7B24E, CFM56-7B24E/B1, CFM56-7B26E, CFM56-7B26E/F, CFM56-7B26E/B1, CFM56-7B26E/B2, CFM56-7B26E/B2F, CFM56-7B27E, CFM56-7B27E/F, CFM56-7B27E/B1, CFM56-7B27E/B1F, CFM56-7B27E/B3	2395 kg
CFM56-7B27AE	2405 kg

6. Ratings:

CFM56-7B "SAC" - Take-Off Thrust				
CFM56-7B20	CFM56-7B22 CFM56-7B22/B1	CFM56-7B24 CFM56-7B24/B1	CFM56-7B26 CFM56-7B26/B1 CFM56-7B26/B2	CFM56-7B27 CFM56-7B27/B1 CFM56-7B27/B3 CFM56-7B27A
9163 daN	10097 daN	10765 daN	11699 daN	12143 daN

CFM56-7B "SAC" - Maximum Continuous Thrust				
CFM56-7B20	CFM56-7B22 CFM56-7B22/B1	CFM56-7B24 CFM56-7B24/B1 CFM56-7B26/B2	CFM56-7B26 CFM56-7B26/B1	CFM56-7B27 CFM56-7B27/B1 CFM56-7B27/B3 CFM56-7B27A
8630 daN	9920 daN	10142 daN	11521 daN	11521 daN

CFM56-7B "DAC" - Take-Off Thrust				
CFM56-7B20/2	CFM56-7B22/2	CFM56-7B24/2	CFM56-7B26/2	CFM56-7B27/2
9163 daN	10097 daN	10765 daN	11699 daN	12143 daN

CFM56-7B "DAC" - Maximum Continuous Thrust				
CFM56-7B20/2	CFM56-7B22/2	CFM56-7B24/2	CFM56-7B26/2	CFM56-7B27/2
8630 daN	9920 daN	10142 daN	11521 daN	11521 daN

CFM56-7B "TI" - Take-Off Thrust				
CFM56-7B20/3	CFM56-7B22/3 CFM56-7B22/3B1	CFM56-7B24/3 CFM56-7B24/3B1	CFM56-7B26/3 CFM56-7B26/3F CFM56-7B26/3B1 CFM56-7B26/3B2 CFM56-7B26/3B2F	CFM56-7B27/3 CFM56-7B27/3F CFM56-7B27/3B1 CFM56-7B27/3B1F CFM56-7B27/3B3 CFM56-7B27A/3
9163 daN	10097 daN	10765 daN	11699 daN	12143 daN

CFM56-7B "TI" - Maximum Continuous Thrust				
CFM56-7B20/3	CFM56-7B22/3 CFM56-7B22/3B1	CFM56-7B24/3 CFM56-7B24/3B1 CFM56-7B26/3B2 CFM56-7B26/3B2F	CFM56-7B26/3 CFM56-7B26/3F CFM56-7B26/3B1	CFM56-7B27/3 CFM56-7B27/3F CFM56-7B27/3B1 CFM56-7B27/3B1F CFM56-7B27/3B3 CFM56-7B27A/3
8630 daN	9920 daN	10142 daN	11521 daN	11521 daN

CFM56-7B "E" - Take-Off Thrust				
CFM56-7B20E	CFM56-7B22E CFM56-7B22E/B1	CFM56-7B24E CFM56-7B24E/B1	CFM56-7B26E CFM56-7B26E/F CFM56-7B26E/B1 CFM56-7B26E/B2 CFM56-7B26E/B2F	CFM56-7B27E CFM56-7B27E/F CFM56-7B27E/B1 CFM56-7B27E/B1F CFM56-7B27E/B3 CFM56-7B27AE
9163 daN	10097 daN	10765 daN	11699 daN	12143 daN

CFM56-7B "E" - Maximum Continuous Thrust				
CFM56-7B20E	CFM56-7B22E CFM56-7B22E/B1	CFM56-7B24E CFM56-7B24E/B1 CFM56-7B26E/B2 CFM56-7B26E/B2F	CFM56-7B26E CFM56-7B26E/F CFM56-7B26E/B1	CFM56-7B27E CFM56-7B27E/F CFM56-7B27E/B1 CFM56-7B27E/B1F CFM56-7B27E/B3 CFM56-7B27AE
8630 daN	9920 daN	10142 daN	11521 daN	11521 daN

(See notes 1, 2, and 11)

7. Control System:

The software is part of the engine Type Design – At initial certification:

- Version 7.B.C P/N 1853M78P01 (FADEC 2) – for "SAC" engines
- Version 7.B.F P/N 1853M78P04 (FADEC 2) – for "DAC" engines
- Version 7.B.R2 P/N 1853M78P26 (FADEC 2) or 2044M25P06 (FADEC 3) – for "TI" engines
- Version 7.B.T P/N 2044M25P10 (FADEC 3) – for -7B27A/3 engines
- Version 7.B.V1 P/N 1853M78P32 (FADEC 2) or 2044M25P13 (FADEC 3) – for "E" engines

8. Fluids

8.1 Fuel and Additives:

Refer to the applicable engine "Installation Manual" document.

8.2 Oil:

Refer to the latest revision of CFM Service Bulletin CFM56-7B S/B 79-0001

9. Aircraft Accessory Drives:

All CFM56-7B "SAC", with the exclusion of the CFM56-7B27A All CFM56-7B "DAC" All CFM56-7B "TI", with the exclusion of the CFM56-7B27A/3 All CFM56-7B "E", with the exclusion of the CFM56-7B27AE					
Drive	Rotation	Gear ratio / HP rotor	Max. Power or Torque	Shear Torque (daNm)	Overhung Moment (daNm)
Aircraft Electrical Generation	CW	0.565	135 kW	101.7	10.7
Aircraft Hydraulic Generation	CW	0.256	17.5 daNm	49.7	1.9

CFM56-7B27A, CFM56-7B27A/3, CFM56-7B27AE					
Drive	Rotation	Gear ratio / HP rotor	Max. Power or Torque	Shear Torque (daNm)	Overhung Moment (daNm)
Aircraft Electrical Generation	CW	0.565	239.4 kW	197.7	17.4
Aircraft Hydraulic Generation	CW	0.256	17.5 daNm	49.7	1.9

CW = Clock-Wise
(See note 8)

10. Maximum Permissible Air Bleed Extraction:

Bleed location	LP rotor speed	Airflow limit
Bypass duct	All speeds above 20 % N1K	2 % of secondary airflow
HPC 5 th stage only	All speeds above 20 % N1K	10 % of primary airflow
HPC 9 th stage only	From 20% to 61 % of N1K	12 % of primary airflow
	From 61 % to 82.5 % of N1K	Linear variation between 12% and 7% of primary airflow
	Above 82.5 % of N1K	7% of primary airflow
HPC 5 th and 9 th stages combined	From 20% to 61 % of N1K	13 % of primary airflow
	From 61 % to 82.5 % of N1K	Linear variation between 13% and 10% of primary airflow
	Above 82.5 % of N1K	10% of primary airflow

(See note 8)

IV. Operational Limits:

1. Temperature Limits:

1.1 Exhaust Gas Temperature (°C):

The exhaust gas temperature is measured at station T49.5 (stage 2 LPT nozzle).

	Maximum Exhaust Gas Temperature (Displayed)
Take-Off	950
Maximum Continuous	925
Starting	725

The displayed temperature is obtained from the measured temperature, which is modified by the engine electronic control unit according to "shunt" functions and a "trim" function:

- A "shunt" function adds +30°C for "SAC", "TI" non "/F" and "E" non "/F" engines, +20°C for "DAC" engines and +10°C for "TI" "/F" and "E" "/F" engines to the measured temperature. This function is active above 8500 rpm N2 for all models and is applied linearly between 8300 and 8500 rpm for both "TI" and "E" engines.
- For "E" engines only, a "profile shunt" is applied linearly between 8300 and 8500 rpm N2 from 0 to -10°C. Between 8500 and 9500 rpm N2, the "profile shunt" remains at -10°C. The "profile shunt" is applied linearly from -10 to -20°C between 9500 and 10400 rpm N2. At all speeds above 10400 rpm N2, the "profile shunt" remains at -20°C.
- The "trim" function adds a variable value according to the engine model. This function is active for a Mach number between 0 and 0.4 and above 11200 rpm N2.

CFM56-7B "SAC"	CFM56-7B "TI"	CFM56-7B "E"	CFM56-7B "DAC"	"trim" function value
CFM56-7B20	CFM56-7B20/3	CFM56-7B20E	CFM56-7B20/2	36
CFM56-7B22	CFM56-7B22/3	CFM56-7B22E	CFM56-7B22/2	34
CFM56-77B22/B1	CFM56-77B22/3B1,	CFM56-7B22E/B1	-	13
CFM56-7B24	CFM56-7B24/3	CFM56-7B24E, CFM56-7B27AE	CFM56-7B24/2	12
CFM56-7B24/B1, -7B26, -7B26/B1, -7B26/B2, -7B27, -7B27/B1, -7B27/B3, -7B27A	CFM56-7B24/3B1, -7B26/3, -7B26/3B1, -7B26/3B2, -7B27/3, -7B27/3B1, -7B27/3B3, -7B27A/3	CFM56-7B24E/B1, -7B26E, -7B26E/B1, -7B26E/B2, -7B27E, -7B27E/B1, -7B27E/B3	CFM56-7B26/2, CFM56-7B27/2	0
-	CFM56-7B26/3F, -7B26/3B2F, -7B27/3F, -7B27/3B1F	CFM56-7B26EF, -7B26E/B2F, -7B27E/F, -7B27E/B1F	-	0

(See note 4)

1.2 Oil Temperature (°C):

At the pressure pump outlet:

Minimum for starting	- 54 (type I oils, with the exception of engines equipped with starters P/N 1851M36P03 and P/N 1851M36P04) - 40 (type II oils)
Maximum Continuous	+ 150 at idle, + 140 above idle
Maximum Transitory (45 minutes)	+ 160 at idle, + 155 above idle

1.3 Fuel Inlet Temperature (°C):

At engine fuel pump inlet:

Minimum	- 43
Maximum except CFM56-7B27A, -7B27A/3, and -7B27AE	+ 49 (JET B or equivalent) + 54 (JET A or equivalent)
Maximum CFM56-7B27A	+ 54 (JET A or equivalent only)
Maximum CFM56-7B27A/3 and -7B27AE	+ 57.2 (JET A or equivalent only)

1.4 Engine Equipment Temperatures:

Refer to the applicable engine "Installation Manual" document.

2. Rotational Speed Limits:

Maximum rotational speeds:

Low pressure rotor (N1)	5382	(104 %)
High pressure rotor (N2)	15183	(105 %)

Minimum rotational speed in icing condition:

High pressure rotor (N2)	10022	(69,3 %)	Ambient temperature below -4°C
	8500	(58,8 %)	Ambient temperature above +15°C
			Linear variation between -4°C and +15°C

3. Pressure Limits:

3.1 Fuel Pressure Limits:

When the engine is running, the fuel pressure at engine pump inlet must be kept 34.4 kPa above the true vapour pressure of the fuel with a vapour/liquid ratio lower than 0.45 under normal operating conditions.

3.2 Oil Pressure Limits:

Minimum: 90 kPa (differential pressure)

When the engine is running, the oil pressure varies with the rotating speed of the HP rotor (Refer to the applicable engine "Installation Manual" document).

Engine running with an oil pressure lower than 90 kPa is limited to 10 seconds maximum.

4. Installation Assumptions:

The installation assumptions including limitations on customer bleed and power extraction are quoted in the applicable engine "Installation Manual" document.

5. Time Limited Dispatch:

The engine has been approved for Time Limited Dispatch. The maximum rectification period for each dispatchable state is specified in the chapter 5, "Airworthiness Limitations" section of the applicable "Engine Shop Manual".

V. Operating and Service Instructions

	CFM56-7B (all models)
Turbofan Engine Installation Manual	CFM 7B01
Specific Operating Instructions	CFM TP.0I.14
Engine Shop Manual	CFM TP.SM.10
Maintenance Manual	Boeing Manual D633A101-CFM
Fault Isolation Manual	Boeing Manual D633A103-CFM

VI. Notes

1. The take-off thrust, with the associated limits, shall not be used continuously more than 5 minutes. The duration may be extended to 10 minutes in case of engine failure in multi-engine aircraft. If the duration exceeds 5 minutes, this shall be recorded in the engine log book.

2. Engine ratings are based on calibrated test stand performance, and performance calculations are based on accepted parameter correction methods documented in the "Production Test Requirements" document. These calculations assume the following conditions:

- Sea level corner point conditions as defined in the "Production Test Requirements";
- No aircraft accessory loads or air extraction;
- No anti-icing; no inlet distortion; no inlet screen losses; and 100% ram recovery;
- Production engine inlet and production exhaust system.

3. The life limits of certain engine parts and other engine Airworthiness Limitations are specified in the chapter 5, "Airworthiness Limitations" section of the applicable "Engine Shop Manual".

4. All models are certified for a transitory exhaust gas temperature (EGT) exceedance at take-off of 10°C (960°C displayed EGT), during 20 seconds maximum. Refer to the applicable "Specific Operating Instructions" document.

5. The type certificate holder, CFM International S.A., is a company jointly owned by SNECMA (France) and GE Aviation (USA). CFM International S.A. is responsible for the certification program, the sale and the customer support activities of the CFM56 engines. With respect to the benefits of type certification for production of series engines, SNECMA and GE Aviation function as licensees of CFM International S.A.

6. The engine assembly line is identified by a 3 digit prefix in the engine serial number: even number for GE Aviation and odd number for SNECMA. Refer to the latest revision of CFM56-7B Service Bulletin 72-0747 "CFM56-7B Engine Serialization - Manufacturing Sequence" for a list of the applicable serial numbers.

7. This engine is approved for use with Boeing thrust reverser system P/N 315A2295.

8. For the CFM56-7B27A, CFM56-7B27A/3, and CFM56-7B27AE models only, mutual limitations exist between the available engine bleed air and the mechanical load generated by the aircraft electrical generation. Refer to the applicable engine "Installation Manual" document.

9. The CFM56-7B27A, CFM56-7B27A/3, and CFM56-7B27AE models are designed for military applications only. The engine serial numbers of these models include the prefix 654, 655, 362, or 363 depending on the engine final assembly location. EASA certified engines used in military service are not necessarily operated or maintained in accordance with the EASA regulations. Commercial service use of the CFM56-7B27A, CFM56-7B27A/3, and CFM56-7B27AE models, and the installation of used CFM56-7B27A, CFM56-7B27A/3, and CFM56-7B27AE parts in another CFM56-7B model, are subject to prior approval of the Agency.

10. EASA Type Certificate and Type Certificate Data Sheet N°E.004 replace DGAC-France Type Certificates and Type Certificate Data Sheets N°M21 and N°M-IM45.

11. Following CFM International's request, the following engine models are withdrawn from the EASA E.004 Type Certificate. None of these engine models were ever produced:

CFM56-7B "SAC"	Certification date	Withdrawal date
CFM56-7B18	17 December 1996	17 October 2008
CFM56-7B22/B2	25 April 2003	17 October 2008
CFM56-7B "TI"	Certification date	Withdrawal date
CFM56-7B18/3, CFM56-7B22/3B2	14 June 2006	17 October 2008

12. Per EASA Certificate 10042690 Revision 1 dated 17 December 2012, the engine models CFM56-7BE series were recertified to show compliance with the NOx Standards defined in ICAO Annex 16, Volume II, Part III, Chapter 2:

- paragraph 2.3.2 d (CAEP/6 NOx production rule)
- paragraph 2.3.2 e (CAEP/8 NOx Standard)
