

EASA TYPE-CERTIFICATE DATA SHEET

Number : E.003
Issue : 02
Date : 15 September 2006
Types : CFM International
CFM56-5B and CFM56-5C series engines

Variants

CFM56-5C2, -5C3
CFM56-5C2/F, -5C3/F
CFM56-5B1, -5B2
CFM56-5B4
CFM56-5B1/2, -5B2/2, -5B4/2
CFM56-5C2/G, -5C3/G, -5C4
CFM56-5B6/2, -5B5, -5B6
CFM56-5B1/P, -5B2/P, -5B3/P, -5B4/P, -5B5/P,
-5B6/P, -5B1/2P, -5B2/2P, -5B3/2P, -5B4/2P, -5B6/2P
CFM56-5C2/4, -5C2/F4, -5C2/G4, -5C3/F4, -5C3/G4
CFM56-5C4/1
CFM56-5B7, -5B7/P
CFM56-5B8/P, -5B9/P, -5B9/2P
CFM56-5C2/P, -5C3/P, -5C4/P, -5C4/1P
CFM56-5B3/P1, -5B3/2P1, -5B4/P1, -5B4/2P1
CFM56-5B1/3, -5B2/3, -5B3/3, -5B3/3B1, -5B4/3, -5B4/3B1, -5B5/3, -5B6/3, -5B7/3, -5B8/3, -5B9/3

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I. General

1. Type / Variants*:

CFM56-5B1, -5B1/P, -5B1/2P, -5B1/3, -5B2, -5B2/P, -5B2/2P, -5B2/3, -5B3/P, -5B3/P1, -5B3/2P, -5B3/2P1, -5B3/3, -5B3/3B1, -5B4, -5B4/P, -5B4/P1, -5B4/2P, -5B4/2P1, -5B4/3, -5B4/3B1, -5B5, -5B5/P, -5B5/3, -5B6, -5B6/P, -5B6/2P, -5B6/3, -5B7, -5B7/P, -5B7/3, -5B8/P, -5B8/3, -5B9/P, -5B9/2P, -5B9/3, CFM56-5C2, -5C2/F, -5C2/F4, -5C2/G, -5C2/G4, -5C2/4, -5C2/P, -5C3/F, -5C3/F4, -5C3/G, -5C3/G4, -5C3/P, -5C4, -5C4/P, -5C4/1, -5C4/1P.

2. Type Certificate Holder:

CFM International, S.A.
2, Boulevard du Général Martial Valin
75015 Paris – France

Design Organisation Approval Reference: EASA.21J.086

3. Manufacturers:

Snecma
10, Allée du Brévent CE 1420
Courcouronnes
91019 Evry Cedex – France

General Electric
1, Neumann Way
Cincinnati
OHIO 45215-6310 USA

4. Application Date:

CFM56-5C2, -5C3	15 December 1988
CFM56-5C2/F, -5C3/F	03 April 1992
CFM56-5B1, -5B2	30 August 1990
CFM56-5B4	08 June 1992
CFM56-5B1/2, -5B2/2, -5B4/2	01 December 1992
CFM56-5C2/G, -5C3/G, -5C4	26 February 1993
CFM56-5B6/2, -5B5, -5B6	19 April 1994
CFM56-5B1/P, -5B2/P, -5B3/P, -5B4/P, -5B5/P, -5B6/P, -5B1/2P, -5B2/2P, -5B3/2P, -5B4/2P, -5B6/2P	21 February 1995
CFM56-5C2/4, -5C2/F4, -5C2/G4, -5C3/F4, -5C3/G4	14 June 1995
CFM56-5C4/1	19 April 1994
CFM56-5B7, -5B7/P	03 December 1997
CFM56-5B8/P, -5B9/P, -5B9/2P	23 April 2001
CFM56-5C2/P, -5C3/P, -5C4/P, -5C4/1P	14 December 2000
CFM56-5B3/P1, -5B3/2P1, -5B4/P1, -5B4/2P1	25 January 2002
CFM56-5B1/3, -5B2/3, -5B3/3, -5B3/3B1, -5B4/3, -5B4/3B1, -5B5/3, -5B6/3, -5B7/3, -5B8/3, -5B9/3	23 April 2004

5. Reference date for determination of the applicable requirements: 15 December 1988

6. Certification Date:

CFM56-5C2	31 December 1991
CFM56-5C3	31 December 1991 withdrawn 24 May 1993
CFM56-5C2/F, -5C3/F	01 March 1993
CFM56-5B1	02 February 1994
CFM56-5B2	28 May 1993
CFM56-5B4	02 February 1994
CFM56-5B1/2, -5B2/2, -5B4/2	27 July 1994 withdrawn 25 July 2002
CFM56-5C2/G, -5C3/G, -5C4	27 October 1994
CFM56-5B6/2	30 October 1995 withdrawn 25 July 2002
CFM56-5B5, -5B6	11 March 1996
CFM56-5B1/P, -5B2/P, -5B4/P, -5B5/P, -5B6/P, -5B1/2P, -5B2/2P, -5B3/2P, -5B4/2P, -5B6/2P	20 June 1996
CFM56-5B3/P	10 September 1996
CFM56-5C2/4, -5C2/F4, -5C2/G4, -5C3/F4, -5C3/G4, -5C4/1	17 April 1996
CFM56-5B7	07 June 1999
CFM56-5B7/P	29 October 1999
CFM56-5B8/P, -5B9/P, -5B9/2P	25 July 2002
CFM56-5C2/P, -5C3/P, -5C4/P, -5C4/1P	06 August 2003
CFM56-5B3/P1, -5B3/2P1, -5B4/P1, -5B4/2P1	25 October 2004
CFM56-5B1/3, -5B2/3, -5B3/3, -5B3/3B1, -5B4/3, -5B4/3B1, -5B5/3, -5B6/3, -5B7/3, -5B8/3, -5B9/3	15th September 2006

II. Certification Basis

1. EASA Certification Basis

1.1. Airworthiness Standards

CFM56-5C2, -5C2/F, -5C3/F	JAR-E Change 7, NPA-E-10
CFM56-5B1, -5B1/P, -5B1/2P, -5B2, -5B2/P, - 5B2/2P, -5B3/P, -5B3/2P, -5B4, -5B4/P, -5B4/2P, -5B5, - 5B5/P, -5B6, -5B6/P, -5B6/2P, -5B7, -5B7/P, -5C2/F4, - 5C2/G, -5C2/G4, -5C2/4, -5C3/F4, -5C3/G, -5C3/G4, -5C4, -5C4/1 -5B8/P, -5B9/P, -5B9/2P	JAR-E Change 7, NPA-E-5, NPA-E-7, NPA-E-10, Blue Paper C830
CFM56-5C2/P, -5C3/P, -5C4/P, -5C4/1P	JAR-E Change 7, NPA-E-5, NPA-E-7, NPA-E-10, Blue Paper C830 JAR-E Change 10, paragraphs : JAR-E 515 Critical Parts Integrity JAR-E 650 Vibrations Survey JAR-E 790 Water and Hail Ingestion JAR-E 850 Comp/Fan & Turbine shafts JAA NPA-E-20, 03 December 1999 (Medium birds only)
CFM56-5B3/P1, -5B3/2P1, -5B4/P1, -5B4/2P1	JAR-E Change 7, NPA-E-5, NPA-E-7, NPA-E-10 JAR-E Amendment 11 paragraphs : JAR-E 515 Critical Parts Integrity

	JAR-E 650 Vibrations Survey JAR-E 790 Water and Hail Ingestion JAR-E 800 Bird Strike and Ingestion (Medium birds only) JAR-E 840 Rotors Integrity JAR-E 850 Comp/Fan & Turbine shafts
CFM56-5B1/3, -5B2/3, -5B3/3, -5B3/3B1, -5B4/3, -5B4/3B1, -5B5/3, -5B6/3, -5B7/3, -5B8/3, -5B9/3	JAR-E Change 7, NPA-E-5, NPA-E-7, NPA-E-10 JAR-E Amendment 11 paragraphs : JAR-E 515 Critical Parts Integrity CS-E paragraphs (published 24 October 2003): CS-E 650 Vibrations Surveys CS-E 745 Engine Acceleration CS-E 790 Ingestion of Rain and Hail CS-E 800 Bird Strike and Ingestion (Medium birds only) CS-E 840 Rotor Integrity CS-E 850 Compressor, Fan and Turbine Shafts

1.2. Special Conditions:

CFM56-5B1, -5B1/P, -5B1/2P, -5B2, -5B2/P, -5B2/2P, -5B3/P, -5B3/2P, -5B4, -5B4/P, -5B4/2P, -5B5, -5B5/P, -5B6, -5B6/P, -5B6/2P, -5B7, -5B7/P. CFM56-5C2, -5C2/F, -5C2/F4, -5C2/G, -5C2/G4, -5C2/4, -5C3/F, -5C3/F4, -5C3/G, -5C3/G4, -5C4, -5C4/1.	
- S.C. n° 1, Birds ingestion :	Medium bird 1,134 kg (2,5 Lbs)
- S.C. n° 2, Water and hail ingestion :	AIA "Advisory proposal" PC 338-1

1.3. Exemptions :

None

1.4. Equivalent Safety Findings:

For CFM56-5C/P series:

- JAR-E 800 Bird Strike and Ingestion at Change 10 (Medium birds only).

For CFM56-5B/P1 series:

- JAR-E 800 Bird Strike and Ingestion at Amendment 11 (Medium birds only).

For CFM56-5B/3 series:

- CS-E 800 Bird Strike and Ingestion (published 24 October 2003) (Medium birds only)

1.5. Environmental Standards

ICAO Annex 16, Volume II, Issue 2, July 1993.

CS-34 Aircraft Engine Emissions and Fuel Venting (published 17 October 2003)

III. Technical Characteristics

1. Type Design Definition :

The engine type is identified by Engine Part List and identification plug kit references.

Engine Part List reference :

CFM56-5B1	9324M20G01	CFM56-5C2	9324M70G01 to G05
CFM56-5B1/P	1887M10G01		9324M70G07
CFM56-5B1/2P	1887M20G01	CFM56-5C2/F	9324M70G02 to G05
CFM56-5B1/3	1887M10G06		9324M70G07
CFM56-5B2	9324M20G01	CFM56-5C2/F4	9324M70G06
CFM56-5B2/P	1887M10G01	CFM56-5C2/G	9324M70G05
CFM56-5B2/2P	1887M20G01	CFM56-5C2/G4	9324M70G06
CFM56-5B2/3	1887M10G06	CFM56-5C2/4	9324M70G06
CFM56-5B3/P	1887M10G01	CFM56-5C2/P	9325M70G01 to G05
CFM56-5B3/P1	1887M10G04 and G05	CFM56-5C3/F	9324M70G02 to G05
CFM56-5B3/2P	1887M20G01		9324M70G07
CFM56-5B3/2P1	1887M20G07	CFM56-5C3/F4	9324M70G06
CFM56-5B3/3	1887M10G06	CFM56-5C3/G	9324M70G05
CFM56-5B3/3B1	1887M10G06	CFM56-5C3/G4	9324M70G06
CFM56-5B4	9324M20G01	CFM56-5C3/P	9325M70G01 to G05
CFM56-5B4/P	1887M10G01	CFM56-5C4	9324M70G06
CFM56-5B4/P1	1887M10G04 and G05	CFM56-5C4/P	9325M70G01 to G05
CFM56-5B4/2P	1887M20G01	CFM56-5C4/1	9324M70G06
CFM56-5B4/2P1	1887M20G07	CFM56-5C4/1P	9325M70G01 to G05
CFM56-5B4/3	1887M10G06		
CFM56-5B4/3B1	1887M10G06		
CFM56-5B5	9324M20G01		
CFM56-5B5/P	1887M10G01		
CFM56-5B5/3	1887M10G06		
CFM56-5B6	9324M20G01		
CFM56-5B6/P	1887M10G01		
CFM56-5B6/2P	1887M20G01		
CFM56-5B6/3	1887M10G06		
CFM56-5B7	9324M20G01		
CFM56-5B7/P	1887M10G01		
CFM56-5B7/3	1887M10G06		
CFM56-5B8/P	1887M10G04		
CFM56-5B8/3	1887M10G06		
CFM56-5B9/P	1887M10G04		
CFM56-5B9/2P	1887M10G04		
CFM56-5B9/3	1887M10G06		

ECU Identification Plug reference (SIN KCU00)

CFM56-5C	BASE [STANDARD]	
	With PMUX	Without PMUX
CFM56-5C2	337-151-901-0	337-151-905-0
CFM56-5C2/F	337-180-401-0	337-180-411-0
CFM56-5C2/F4	337-180-441-0	337-180-451-0
CFM56-5C2/G	337-180-601-0	337-180-611-0
CFM56-5C2/G4	337-183-641-0	337-183-651-0
CFM56-5C2/I4	337-151-941-0	337-151-951-0
CFM56-5C2/P	337-183-641-0	337-183-651-0
CFM56-5C3/F	337-180-421-0	337-180-431-0
CFM56-5C3/F4	337-180-461-0	337-180-471-0
CFM56-5C3/G	337-183-621-0	337-183-631-0
CFM56-5C3/G4	337-183-661-0	337-183-671-0
CFM56-5C3/P	337-183-661-0	337-183-671-0
CFM56-5C4	337-183-801-0	337-183-811-0
CFM56-5C4/P	337-183-801-0	337-183-811-0
CFM56-5C4/1	337-183-821-0	337-183-831-0
CFM56-5C4/1P	337-183-821-0	337-183-831-0

Identification Plug (Push-pull) CFM56-5B					
	SAC - NO EGT MONITORING		SAC - EGT MONITORING		
	With PMUX	Without PMUX	With PMUX	Without PMUX	
CFM56-5B1	338-046-004-0				
CFM56-5B2	338-046-023-0				
CFM56-5B4	338-046-043-0				
CFM56-5B5	338-046-052-0				
CFM56-5B6	338-046-062-0				
CFM56-5B7	338-126-941-0				
CFM56-5B1/P	338-046-004-0		338-046-004-0		
CFM56-5B1/3	338-046-004-0		338-046-004-0		
CFM56-5B2/P	338-046-023-0		338-046-023-0		
CFM56-5B2/3	338-046-023-0		338-046-023-0		
CFM56-5B3/P	338-122-732-0		338-122-732-0		
CFM56-5B3/P1	338-122-733-0		338-122-733-0		
CFM56-5B3/3	338-122-732-0		338-122-732-0		
CFM56-5B3/3B1	338-122-733-0		338-122-733-0		
CFM56-5B4/P	338-046-043-0		338-046-043-0		
CFM56-5B4/P1	338-046-044-0		338-046-044-0		
CFM56-5B4/3	338-046-043-0		338-046-043-0		
CFM56-5B4/3B1	338-046-044-0		338-046-044-0		
CFM56-5B5/P	338-046-052-0		338-046-052-0		
CFM56-5B5/3	338-046-052-0		338-046-052-0		
CFM56-5B6/P	338-046-062-0		338-046-062-0		
CFM56-5B6/3	338-046-062-0		338-046-062-0		
CFM56-5B7/P	338-126-941-0		338-126-941-0		
CFM56-5B7/3	338-126-941-0		338-126-941-0		
CFM56-5B8/P	338-130-001-0		338-130-001-0		
CFM56-5B8/3	338-130-001-0		338-130-001-0		
CFM56-5B9/P	338-130-010-0		338-130-010-0		
CFM56-5B9/3	338-130-010-0		338-130-010-0		
	DAC 2 FN		DAC 2 COMB		DAC 2 COMB - NAC
	With PMUX	Without PMUX	With PMUX	Without PMUX	With PMUX Without PMUX
CFM56-5B1/2P	338-046-004-0		338-046-004-0		338-046-004-0
CFM56-5B2/2P	338-046-023-0		338-046-023-0		338-046-023-0
CFM56-5B3/2P	338-122-732-0		338-122-732-0		338-122-732-0
CFM56-5B3/2P1	338-122-733-0		338-122-733-0		338-122-733-0
CFM56-5B4/2P	338-046-043-0		338-046-043-0		338-046-043-0
CFM56-5B4/2P1	338-046-044-0		338-046-044-0		338-046-044-0
CFM56-5B6/2P	338-046-062-0		338-046-062-0		338-046-062-0
CFM56-5B9/2P			338-130-010-0		338-130-010-0

Identification Plug (fusible) CFM56-5B						
	SAC - NO EGT MONITORING		SAC - EGT MONITORING			
	With PMUX	Without PMUX	With PMUX	Without PMUX		
CFM56-5B1	338-046-002-0	338-046-006-0				
CFM56-5B2	338-046-021-0	338-046-026-0				
CFM56-5B4	338-046-041-0	338-046-046-0				
CFM56-5B5	338-046-050-0	338-046-055-0				
CFM56-5B6	338-046-060-0	338-046-065-0				
CFM56-5B7	338-128-440-0	338-128-445-0				
CFM56-5B1/P	338-125-301-0	338-125-305-0				
CFM56-5B2/P	338-122-720-0	338-122-725-0	338-128-660-0	338-128-665-0		
CFM56-5B3/P	338-122-730-0	338-122-735-0	338-128-670-0	338-128-675-0		
CFM56-5B4/P	338-122-740-0	338-122-745-0	338-128-680-0	338-128-685-0		
CFM56-5B5/P	338-122-750-0	338-122-755-0	338-128-690-0	338-128-695-0		
CFM56-5B6/P	338-122-760-0	338-122-765-0	338-129-700-0	338-129-705-0		
CFM56-5B7/P	338-128-450-0	338-128-455-0	338-128-470-0	338-128-475-0		
	DAC 2 FN		DAC 2 COMB		DAC 2 COMB - NAC	
	With PMUX	Without PMUX	With PMUX	Without PMUX	With PMUX	Without PMUX
CFM56-5B1/2P	338-122-801-0	338-122-805-0	338-125-301-0	338-125-305-0	338-046-090-0	338-046-095-0
CFM56-5B2/2P	338-122-820-0	338-122-825-0	338-125-320-0	338-125-325-0	338-127-400-0	338-127-405-0
CFM56-5B3/2P	338-122-830-0	338-122-835-0	338-128-320-0	338-128-325-0	338-128-310-0	338-128-315-0
CFM56-5B4/2P	338-122-840-0	338-122-845-0	338-125-340-0	338-125-345-0	338-128-410-0	338-128-415-0
CFM56-5B6/2P	338-122-860-0	338-122-865-0	338-125-360-0	338-125-365-0	338-128-430-0	338-128-435-0

2. Engine description:

High by-pass ratio and axial flow twin spool engine, including a one-stage fan, a four-stage low pressure compressor, a nine-stage high pressure compressor, a single annular combustor (SAC) for CFM56-5B and -5C engines or a double annular combustor (DAC) for CFM56-5B/2 engines, a one-stage high pressure turbine, a four-stage low pressure turbine for CFM56-5B engines or a five-stage low pressure turbine for the CFM56-5C engines, a dual channel full authority digital engine control unit.

The CFM56-5C engine models contain an adapter kit including mixer, exhaust plug, thrust reverser, measurement system for vibration level, fuel flow rate and oil temperature, and IDG cooling.

3. Equipment: The starter is included in the engine part list.

4. Dimensions: See applicable Maintenance Manual, paragraph 72.00.00

CFM56-5B1, -5B1/P, -5B1/2P, -5B1/3, -5B2, -5B2/P, -5B2/2P, -5B2/3, -5B3/P, -5B3/P1, -5B3/2P, -5B3/2P1, -5B3/3, -5B3/3B1, -5B4, -5B4/P, -5B4/P1, -5B4/2P, -5B4/2P1, -5B4/3, -5B4/3B1, -5B5, -5B5/P, -5B5/3, -5B6, -5B6/P, -5B6/2P, -5B6/3, -5B7, -5B7/P, -5B7/3, -5B8/P, -5B8/3, -5B9/P, -5B9/2P, -5B9/3 :	Length : 2 599,7 mm* Width : 1 908 mm Height : 2 105 mm Center of gravity (engine only) : 5 202± 25 mm
CFM56-5C2, -5C2/F, -5C2/F4, -5C2/G, -5C2/G4, -5C2/4, -5C2/P, -5C3/F, -5C3/F4, -5C3/G, -5C3/G4, -5C3/P, -5C4, -5C4/P, -5C4/1, -5C4/1P :	Length : 2 622 mm* Width : 1 946 mm Height : 2 250 mm Center of gravity (engine only) : 5 232± 25 mm

* From the fan case forward flange to the LP turbine case aft flange.

5. Weight (Dry engine): **

CFM56-5B1, -5B1/P, -5B1/3, -5B2, -5B2/P, -5B2/3, -5B3/P, -5B3/P1, -5B3/3, -5B3/3B1, -5B4, -5B4/P, -5B4/P1, -5B4/3, -5B4/3B1, -5B5, -5B5/P, -5B5/3, -5B6, -5B6/P, -5B6/3, -5B7, -5B7/P, -5B7/3, -5B8/P, -5B8/3, -5B9/P, -5B9/3 :	2 454,8 kg
CFM56-5B1/2P, -5B2/2P, -5B3/2P, -5B3/2P1, -5B4/2P, -5B4/2P1, -5B6/2P, -5B9/2P :	2 500,6 kg
CFM56-5C2, -5C2/F, -5C2/F4, -5C2/G, -5C2/G4, -5C2/4, -5C2/P, -5C3/F, -5C3/F4, -5C3/G, -5C3/G4, -5C3/P, -5C4, -5C4/P, -5C4/1, -5C4/1P :	2 644,4 kg

** Including basic engine, its accessories and optional accessories, as well as engine condition monitoring equipment.

6. Ratings:

6.1. Take-off :

Constant thrust for ambient temperature below : 30 °C.					
CFM56-5B1	13 345 daN	CFM56-5C2	13 878 daN	CFM56-5C3/F	14 457 daN
CFM56-5B1/P	13 345 daN	CFM56-5C2/F	13 878 daN	CFM56-5C3/F4	14 457 daN
CFM56-5B1/2P	13 345 daN	CFM56-5C2/F4	13 878 daN	CFM56-5C3/G	14 457 daN
CFM56-5B1/3	13 345 daN	CFM56-5C2/G	13 878 daN	CFM56-5C3/G4	14 457 daN
CFM56-5B2	13 789 daN	CFM56-5C2/G4	13 878 daN	CFM56-5C3/P	14 457 daN
CFM56-5B2/P	13 789 daN	CFM56-5C2/4	13 878 daN	CFM56-5C4	15 124 daN
CFM56-5B2/2P	13 789 daN	CFM56-5C2/P	13 878 daN	CFM56-5C4/P	15 124 daN
CFM56-5B2/3	13 789 daN			CFM56-5C4/1	15 124 daN
CFM56-5B3/P	14 234 daN			CFM56-5C4/1P	15 124 daN
CFM56-5B3/P1	14 234 daN				
CFM56-5B3/2P	14 234 daN				
CFM56-5B3/2P1	14 234 daN				
CFM56-5B3/3	14 234 daN				
CFM56-5B3/3B1	14 234 daN				

Constant thrust for ambient temperature below : 45 °C.					
CFM56-5B4	12 010 daN	CFM56-5B6	10 453 daN	CFM56-5B7	12 010 daN
CFM56-5B4/P	12 010 daN	CFM56-5B6/P	10 453 daN	CFM56-5B7/P	12 010 daN
CFM56-5B4/2P	12 010 daN	CFM56-5B6/2P	10 453 daN	CFM56-5B7/3	12 010 daN
CFM56-5B4/3	12 010 daN	CFM56-5B6/3	10 453 daN	CFM56-5B8/P	9 608 daN
CFM56-5B5	9 786 daN			CFM56-5B8/3	9 608 daN
CFM56-5B5/P	9 786 daN			CFM56-5B9/P	10 364 daN
CFM56-5B5/3	9 786 daN			CFM56-5B9/2P	10 364 daN
				CFM56-5B9/3	10 364 daN

Constant thrust for ambient temperature below : 50 °C.					
CFM56-5B4/P1	12 010 daN				
CFM56-5B4/2P1	12 010 daN				
CFM56-5B4/3B1	12 010 daN				

See Notes VI.1. and VI.2.

6.2. Maximum continuous thrust:

Constant thrust for ambient temperature below : 25 °C.					
CFM56-5B1	12 940 daN	CFM56-5B5	9 008 daN	CFM56-5C2	12 588 daN
CFM56-5B1/P	12 940 daN	CFM56-5B5/P	9 008 daN	CFM56-5C2/F	12 588 daN
CFM56-5B1/2P	12 940 daN	CFM56-5B5/3	9 008 daN	CFM56-5C2/F4	12 588 daN
CFM56-5B1/3	12 940 daN	CFM56-5B6	9 008 daN	CFM56-5C2/G	12 588 daN
CFM56-5B2	12 940 daN	CFM56-5B6/P	9 008 daN	CFM56-5C2/G4	12 588 daN
CFM56-5B2/P	12 940 daN	CFM56-5B6/2P	9 008 daN	CFM56-5C2/4	12 588 daN
CFM56-5B2/2P	12 940 daN	CFM56-5B6/3	9 008 daN	CFM56-5C2/P	12 588 daN
CFM56-5B2/3	12 940 daN	CFM56-5B7	10 840 daN	CFM56-5C3/F	13 078 daN
CFM56-5B3/P	12 940 daN	CFM56-5B7/P	10 840 daN	CFM56-5C3/F4	13 078 daN
CFM56-5B3/P1	12 940 daN	CFM56-5B7/3	10 840 daN	CFM56-5C3/G	13 078 daN
CFM56-5B3/2P	12 940 daN	CFM56-5B8/P	8 478 daN	CFM56-5C3/G4	13 078 daN
CFM56-5B3/2P1	12 940 daN	CFM56-5B8/3	8 478 daN	CFM56-5C3/P	13 078 daN
CFM56-5B3/3	12 940 daN	CFM56-5B9/P	9 008 daN	CFM56-5C4	13 371 daN
CFM56-5B3/3B1	12 940 daN	CFM56-5B9/2P	9 008 daN	CFM56-5C4/P	13 371 daN
CFM56-5B4	10 840 daN	CFM56-5B9/3	9 008 daN	CFM56-5C4/1	13 371 daN
CFM56-5B4/P	10 840 daN			CFM56-5C4/1P	13 371 daN
CFM56-5B4/P1	10 840 daN				
CFM56-5B4/2P	10 840 daN				
CFM56-5B4/2P1	10 840 daN				
CFM56-5B4/3	10 840 daN				
CFM56-5B4/3B1	10 840 daN				

See Note VI.2 and VI.4

7. Engine control:

The engine control software is included in the certified engine minimum configuration.

8. Fluids:

- 8.1. **Fuels:** See applicable "Installation Manual".
- 8.2. **Fuel Additives:** See applicable « Specific Operating Instructions » document.
- 8.3. **Oils:** See applicable Service Bulletin 79-001.

9. Accessory power output characteristics:

CFM56-5B1, -5B1/P, -5B1/2P, -5B1/3, -5B2, -5B2/P, -5B2/2P, -5B2/3, -5B3/P, -5B3/P1, -5B3/2P, -5B3/2P1, -5B3/3, -5B3/3B1, -5B4, -5B4/P, -5B4/P1, -5B4/2P, -5B4/2P1, -5B4/3, -5B4/3B1, -5B5, -5B5/P, -5B5/3, -5B6, -5B6/P, -5B6/2P, -5B6/3, -5B7, -5B7/P, -5B7/3, -5B8/P, -5B8/3, -5B9/P, -5B9/2P, -5B9/3 :					
Component	Rotation direction	Speed ratio	Max power or max torque	Max shear torque	Max overhung moment
	(1)	(2)		(m.daN)	(m.daN)
IDG	CCW	0,5947	135 kW	107	11,3
Hydraulic pump	CCW	0,256	16,9 m.daN	49,7	1,8

CFM56-5C2, -5C2/F, -5C2/F4, -5C2/G, -5C2/G4, -5C2/4, -5C2/P, -5C3/F, -5C3/F4, -5C3/G, -5C3/G4, -5C3/P, -5C4, -5C4/P, -5C4/1, -5C4/1P :					
Component	Rotation direction (1)	Speed ratio (2)	Max power or max torque	Max shear torque (m.daN)	Max overhung moment (m.daN)
IDG	CCW	0,5947	135 kW	107	11,3
Hydraulic pump	CCW	0,256	16,9 m.daN	49,7	2,1

(1) CW = clockwise ; CCW = counterclockwise

(2) Reference rotation speed: core

10. Bleed air:

Location	LP rotor speed	Flow limit
Fan bleed	All speeds above minimum idle	2 % of fan airflow
HPC stage 5 only	Idem	10 % of core airflow
HPC stage 9 only	From minimum idle to 61 % N1K From 61 % to 82,5 % N1K Above 82,5 % N1K	14 % of core airflow From 14 % to 7 % of core airflow (linear variation) 7 % of core airflow
HPC stage 5 / stage 9 combined bleed	From minimum idle to 61 % N1K From 61 % to 82,5 % N1K Above 82,5 % N1K	14 % of core airflow From 14 % to 7 % of core airflow (linear variation) 10 % of core airflow

IV. Operational Limits

1. Temperature limits:

1.1. Maximum permitted gas temperature (EGT measured at T49.5 station):

Models	Take-off	Max Continuous	Start-up	In-flight start-up
CFM56-5B1, -5B2, -5B4, -5B5, -5B6, -5B7, -5C2, -5C2/4 :	950 °C	915 °C	725 °C	
CFM56-5C2/F, -5C2/F4, -5C3/F, -5C3/F4 :	965 °C	930 °C	725 °C	
CFM56-5C2/G, -5C2/G4, -5C2/P, -5C3/G, -5C3/G4, -5C3/P, -5C4, -5C4/P, -5C4/1, -5C4/1P :	975 °C	940 °C	725 °C	
CFM56-5B1/P, -5B1/2P, -5B1/3, -5B2/P, -5B2/2P, -5B2/3, -5B3/P, -5B3/P1, -5B3/2P, -5B3/2P1, -5B3/3, -5B3/3B1, -5B4/P, -5B4/P1, -5B4/2P, -5B4/2P1, -5B4/3, -5B4/3B1, -5B5/P, -5B5/3, -5B6/P, -5B6/2P, -5B6/3, -5B7/P, -5B7/3, -5B8/P, -5B8/3, -5B9/P, -5B9/2P, -5B9/3 :	940 °C	905 °C	725 °C	850 °C

The duration envelope permitted at these temperatures is specified in the applicable "Specific Operating Instructions" document.

All engine models are certified with a transient overshoot of the maximum temperature allowed during take-off. The duration envelope permitted at these temperatures is specified in the applicable "Specific Operating Instructions" document.

1.2. Fuel temperature :

	CFM56-5C2, -5C2/F, -5C2/F4, -5C2/G, -5C2/G4, -5C2/I4, -5C2/P, -5C3/F, -5C3/F4, -5C3/G, -5C3/G4, -5C3/P, -5C4, -5C4/P, -5C4/I1, -5C4/I1P :
Maximum temperature	+ 60°C at pump inlet
Minimum temperature	- 54°C at pump inlet
Minimum pressure	≥ 34.4 kPa above kerosene vapor pressure
	CFM56-5B1, -5B1/P, -5B1/2P, -5B1/3, -5B2, -5B2/P, -5B2/2P, -5B2/3, -5B3/P, -5B3/P1, -5B3/2P, -5B3/2P1, -5B3/3, -5B3/3B1, -5B4, -5B4/P, -5B4/P1, -5B4/2P, -5B4/2P1, -5B4/3, -5B4/3B1, -5B5, -5B5/P, -5B5/3, -5B6, -5B6/P, -5B6/2P, -5B6/3, -5B7, -5B7/P, -5B7/3, -5B8/P, -5B8/3, -5B9/P, -5B9/2P, -5B9/3 :
Maximum temperature	+ 54°C at pump inlet
Minimum temperature	- 54°C at pump inlet
Minimum pressure	≥ 34.4 kPa above kerosene vapor pressure

1.3. Oil temperature :

- a) Maximum operating temperature (at supply pump outlet)
 - + 140°C at steady state take-off condition
 - + 155°C at transient state condition (15 minutes maximum)
- b) Minimum temperature at start-up
 - 40 °C with type II oils
- c) Minimum supply pressure
 - At idle: 89.6 kPa differential
 - Function of N2 rotation speed : See "Specific Operating Instructions", Section 6.

1.4. Accessories temperature limits :

See applicable "Installation Manual"

2. Rotation speed limits :

2.1. Maximum speed (all flight phases)	N1- LP rotor (rpm)	N2 – HP rotor (rpm)
CFM56-5C2, -5C2/F, -5C2/G, -5C3/F, -5C3/G :	4 800 (100,3 %)	15 183 (105 %)
CFM56-5C2/F4, -5C2/G4, -5C2/I4, -5C2/P, -5C3/F4, -5C3/G4, -5C3/P, -5C4, -5C4/P, -5C4/I1, -5C4/I1P :	4 985 (104,2 %)	15 183 (105 %)
CFM56-5B1, -5B1/P, -5B1/2P, -5B1/3, -5B2, -5B2/P, -5B2/2P, -5B2/3, -5B3/P, -5B3/P1, -5B3/2P, -5B3/2P1, -5B3/3, -5B3/3B1, -5B4, -5B4/P, -5B4/P1, -5B4/2P, -5B4/2P1, -5B4/3, -5B4/3B1, -5B5, -5B5/P, -5B5/3, -5B6, -5B6/P, -5B6/2P, -5B6/3, -5B7, -5B7/P, -5B7/3, -5B8/P, -5B8/3, -5B9/P, -5B9/2P, -5B9/3 :	5 200 (104 %)	15 183 (105 %)

* At max continuous, N1 speed permitted by control system shall not exceed 5 130 rpm (102,6%).

2.2. Minimum speed during in-flight icing conditions:

For flight operation under icing conditions, the minimum N2 rating allowed is 58.8% (8500 rpm) for all engine models.

3. Pressure limits:

3.1. Fuel pressure:

In operating conditions, fuel pressure at the fuel pump inlet has to be maintained at least 34.4 kPa above kerosene vapor pressure.
(See applicable "Installation Manual", Part A, Section 5).

3.2. Oil pressure:

Minimum: 89.6 kPa at idle (differential pressure).

In normal operating conditions, oil pressure is function of HP rotor rotation speed (N2). See applicable "Specific Operating Instructions", Section 6.

The running time with oil pressure below 90,0 kPa, due to negative acceleration (negative G), is limited to 10 seconds maximum.

4. Installation Assumptions:

See Installation manual.

5. Dispatch Limitations:

Conditions of engine operation with defective equipment are given in the "Master Minimum Equipment List" document of the concerned aircraft.

V. Operating and Service Instructions

	CFM56-5C2, -5C2/F, -5C2/F4, -5C2/G, -5C2/G4, -5C2/I4, -5C2/P, -5C3/F, -5C3/F4, -5C3/G, -5C3/G4, -5C3/P, -5C4, -5C4/P, -5C4/1, -5C4/1P :	CFM56-5B1, -5B1/P, -5B1/2P, -5B1/3, -5B2, -5B2/P, -5B2/2P, -5B2/3, -5B3/P, -5B3/P1, -5B3/2P, -5B3/2P1, -5B3/3, -5B3/3B1, -5B4, -5B4/P, -5B4/P1, -5B4/2P, -5B4/2P1, -5B4/3, -5B4/3B1, -5B5, -5B5/P, -5B5/3, -5B6, -5B6/P, -5B6/2P, -5B6/3, -5B7, -5B7/P, -5B7/3, -5B8/P, -5B8/3, -5B9/P, -5B9/2P, -5B9/3 :
Specific Operations Instructions	CFM TP OI-12	CFM TP OI-13
Installation Manual	CFM 6-7536	CFM 2129
Maintenance Manual	Refer to Appropriate Aircraft Maintenance Manual	Refer to Appropriate Aircraft Maintenance Manual
Shop Manual	CFM TP SM-8	CFM TP SM-9

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. If the duration exceeds 5 minutes, this shall be written in the engine log book.
2. Thrust values are defined for the following operating conditions :
 - Reference conditions : 101,32 kPa / +15 °C.
 - Without air bleed or power extraction other than those required for engine operation.
 - With an exhaust system:
 - Divided flow for CFM56-5B engines,
 - Mixed flow for CFM56-5C engines.
 - With 100% recovery ratio and without base drag (corrective method defined in the "Acceptance Test Data Folder" document).
3. Life limits of some engine components are specified in the applicable "Engine Shop Manual" document, in Chapter 5 "Airworthiness Limitations".
4. CFM56-5B7 and CFM56-5B7/P :
 - Maximum continuous thrust of CFM56-5B7 and CFM56-5B7/P is identical to CFM56-5B4 and CFM56-5B4/P (24370 lbs / 10840 daN SLS) up to 25000 feet altitude (7620 m).
 - Above 25000 feet (7620 m), maximum continuous thrust becomes the maximum climb rate identical to CFM56-5B2 and CFM56-5B2/P.
5. CFM56-5B8/P :
 - Maximum continuous thrust of CFM56-5B8/P is proportional to CFM56-5B9/P up to 18000 feet altitude (5486 m), and identical to CFM56-5B5 and CFM56-5B5/P above.
6. The EASA Type Certificate EASA E 003 replaces DGAC Type certificates M 17 and M-IM 28.
7. The type certificate holder, CFM International S.A., is a company jointly owned by Snecma (France) and General Electric (USA). CFM International is responsible for the certification program, sales and customer support for CFM56 engines. With respect to the benefits of type certification for production of series engines, Snecma and General Electric function as licensees of CFM International S.A.

The engine assembly line is identified by a 3 digit prefix in the serial number, even number for GE and odd number for Snecma.

CFM56-5B engine models: These engines are identified by a serial number prefix "778", "574" or "576" if produced by General Electric, or "779", "575" or "577" if produced by Snecma.

CFM56-5C engine models: These engines are identified by a serial number prefix "740" or "566" if produced by General Electric or "741" or "567" if produced by Snecma.
8. CFM56-5B engines are approved for use with thrust reverser systems as specified in the following aircraft Type Certificates:
 - Airbus A318-111, 112 basic definition
Identification number 00P710PC002/C00
 - Airbus A319-111, 112, 113, 114, 115 basic definition
Identification number 00J710P1B01/C00
 - Airbus A320-111, 211, 212, 214, 215, 216 basic definition
Identification number 00D710P1202/C00
 - Airbus A321-111, 112, 211, 212, 213, basic definition
Identification number 00D710P1202/C00.

For CFM56-5C engines, approved thrust reverser systems are included in the engine parts list (volume II, EBU).