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## TYPE-CERTIFICATE DATA SHEET

No. E.003

**for**  
CFM56-5B and CFM56-5C series engines

**Type Certificate Holder**  
CFM International SA

2, boulevard du Général Martial Valin  
F-75724 Paris Cedex 15  
France

**For Models:**

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



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## **I. General**

### **1. Type/ Model**

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

### **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**

Safran Aircraft Engines, formerly SNECMA  
10 allée du Brévent  
CE 1420 - Courcouronnes  
91019 Evry Cedex  
France

GE Aviation  
One Neumann Way  
Cincinnati - Ohio 45215  
United States of America



#### 4. Date of Application

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. EASA Type 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	15 September 2006



## II. Certification Basis

### 1. Reference Date for determining the applicable airworthiness requirements

15 December 1988

### 2. EASA Certification Basis

#### 2.1. 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	JAR-E Change 7, NPA-E-5, NPA-E-7, NPA-E-10, Blue Paper C830
-5B8/P, -5B9/P, -5B9/2P	JAR-E Change 7, NPA-E-5, NPA-E-7, NPA-E-10, Blue Paper C830 JAR-E Change 10, paragraphs: <ul style="list-style-type: none"> <li>JAR-E 515 Critical Parts Integrity</li> <li>JAR-E 650 Vibrations Survey</li> <li>JAR-E 790 Water and Hail Ingestion</li> <li>JAR-E 850 Comp/Fan &amp; Turbine shafts</li> </ul> JAA NPA-E-20, 03 December 1999 (Medium birds only)
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: <ul style="list-style-type: none"> <li>JAR-E 515 Critical Parts Integrity</li> <li>JAR-E 650 Vibrations Survey</li> <li>JAR-E 790 Water and Hail Ingestion</li> <li>JAR-E 800 Bird Strike/Ingestion (Medium birds only)</li> <li>JAR-E 850 Comp/Fan &amp; Turbine shafts</li> </ul>
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: <ul style="list-style-type: none"> <li>JAR-E 515 Critical Parts Integrity</li> <li>JAR-E 650 Vibrations Survey</li> <li>JAR-E 790 Water and Hail Ingestion</li> <li>JAR-E 800 Bird Strike and Ingestion (Medium birds only)</li> <li>JAR-E 840 Rotors Integrity</li> <li>JAR-E 850 Comp/Fan &amp; Turbine shafts</li> </ul>



<p>CFM56-5B1/3, -5B2/3, -5B3/3, -5B3/3B1, -5B4/3, -5B4/3B1, -5B5/3, -5B6/3, -5B7/3, -5B8/3, -5B9/3</p>	<p>JAR-E Change 7, NPA-E-5, NPA-E-7, NPA-E-10 JAR-E Amendment 11 paragraphs:</p> <ul style="list-style-type: none"> <li>• JAR-E 515 Critical Parts Integrity</li> </ul> <p>CS-E paragraphs (published 24 October 2003):</p> <ul style="list-style-type: none"> <li>• CS-E 650 Vibrations Surveys</li> <li>• CS-E 745 Engine Acceleration</li> <li>• CS-E 790 Ingestion of Rain and Hail</li> <li>• CS-E 800 Bird Strike and Ingestion (Medium birds only)</li> <li>• CS-E 840 Rotor Integrity</li> <li>• CS-E 850 Compressor, Fan and Turbine Shafts</li> </ul>
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## 2.2. Special Conditions

<p>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</p>	<p>SC n° 1, Birds ingestion: Medium bird 1,134 kg (2,5 Lbs)  SC n° 2, Water and hail ingestion: AIA "Advisory proposal" PC 338-1</p>
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## 2.3. 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)

## 2.4. Deviations

None

## 2.5 Environmental Protection Requirements

<p>All models</p>	<p>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)</p>
<p>CFM56-5B1/3, -5B2/3, -5B3/3, -5B3/3B1, -5B4/3, -5B4/3B1, -5B5/3, -5B6/3, -5B7/3, -5B8/3, -5B9/3</p>	<p>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)</p>

(See note 10)



### III. Technical Characteristics

#### 1. Type Design Definition

The engine model is identified by an engine part list reference and an engine identification plug reference:

Engine Part List reference – CFM56-5B			
CFM56-5B1	9324M20G01 to G03	CFM56-5B1/P	1887M10G01 to G05
CFM56-5B1/2P	1887M20G01 to G07	CFM56-5B1/3	1887M10G06 and G07
CFM56-5B2	9324M20G01 to G03	CFM56-5B2/P	1887M10G01 to G05
CFM56-5B2/2P	1887M20G01 to G07	CFM56-5B2/3	1887M10G06 and G07
CFM56-5B3/P	1887M10G01 to G05	CFM56-5B3/P1	1887M10G04 and G05
CFM56-5B3/2P	1887M20G01 to G07	CFM56-5B3/2P1	1887M20G07
CFM56-5B3/3	1887M10G06 and G07	CFM56-5B3/3B1	1887M10G06 and G07
CFM56-5B4	9324M20G01 to G03	CFM56-5B4/P	1887M10G01 to G05
CFM56-5B4/P1	1887M10G04 and G05	CFM56-5B4/2P	1887M20G01 to G07
CFM56-5B4/2P1	1887M20G07	CFM56-5B4/3	1887M10G06 and G07
CFM56-5B4/3B1	1887M10G06 and G07	CFM56-5B5	9324M20G01 to G03
CFM56-5B5/P	1887M10G01 to G05	CFM56-5B5/3	1887M10G06 and G07
CFM56-5B6	9324M20G01 to G03	CFM56-5B6/P	1887M10G01 to G05
CFM56-5B6/2P	1887M20G01 to G07	CFM56-5B6/3	1887M10G06 and G07
CFM56-5B7	9324M20G01 to G03	CFM56-5B7/P	1887M10G01 to G05
CFM56-5B7/3	1887M10G06 and G07	CFM56-5B8/P	1887M10G04 and G05
CFM56-5B8/3	1887M10G06 and G07	CFM56-5B9/P	1887M10G04 and G05
CFM56-5B9/2P	1887M20G07	CFM56-5B9/3	1887M10G06 and G07

Engine Part List reference – CFM56-5C			
CFM56-5C2	9324M70G01 to G05 9324M70G07	CFM56-5C2/F	9324M70G02 to G05 9324M70G07
CFM56-5C2/F4	9324M70G06	CFM56-5C2/G	9324M70G05
CFM56-5C2/G4	9324M70G06	CFM56-5C2/4	9324M70G06
CFM56-5C2/P	9325M70G01 to G05	CFM56-5C3/F	9324M70G02 to G05 9324M70G07
CFM56-5C3/F4	9324M70G06	CFM56-5C3/G	9324M70G05
CFM56-5C3/G4	9324M70G06	CFM56-5C3/P	9325M70G01 to G05
CFM56-5C4	9324M70G06	CFM56-5C4/P	9325M70G01 to G05
CFM56-5C4/1	9324M70G06	CFM56-5C4/1P	9325M70G01 to G05

Engine Identification Plug reference (SIN KCU00) – CFM56-5C		
	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
CFM56-5C2/4	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





Engine Identification Plug reference (SIN KCU00) – CFM56-5C		
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

Engine Identification Plug reference (push-pull) - CFM56-5B SAC		
	No EGT Monitoring	EGT Monitoring
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

Engine Identification Plug reference (push-pull) - CFM56-5B DAC			
	DAC 2 FN	DAC 2 COMB	DAC 2 COMB - NAC
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



Engine Identification Plug reference (push-pull) - CFM56-5B DAC			
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

Engine Identification Plug reference (fusible) CFM56-5B SAC				
	No EGT Monitoring		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

Engine Identification Plug reference (fusible) CFM56-5B DAC						
	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. 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 engine starter is part of the engine type design. Refer to the engine part list for details.

### 4. Dimensions

CFM56-5B all models	Length : 2 599,7 mm* Width : 1 908 mm Height : 2 105 mm Center of gravity (engine only) 5 202± 25 mm
CFM56-5C all models	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. Dry Weight

CFM56-5B "SAC" models	2 454,8 kg
CFM56-5B "DAC" models	2 500,6 kg
CFM56-5C all models	2 644,4 kg

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

### 6. Ratings

#### 6.1 Take-off thrust:

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, VI.4, and VI.5

## 7. Control System

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



## 8. Fluids (Fuels, Additives, Oils)

Fuels: Refer to the applicable "Installation Manual".

Fuel Additives: Refer to the applicable « Specific Operating Instructions » document.

Oils: Refer to the applicable Service Bulletin 79-0001.

## 9. Aircraft Accessory Drives:

CFM56-5B all models					
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	1,8

CFM56-5C all models					
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 engine speed (N2)

## 10. Maximum Permissible Air Bleed Extraction:

CFM56-5B and CFM56-5C all models		
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	14 % of core airflow
	From 61 % to 82,5 % N1K	From 14 % to 7 % of core airflow (linear variation)
	Above 82,5 % N1K	7 % of core airflow
HPC stage 5 / stage 9 combined bleed	From minimum idle to 61 % N1K	14 % of core airflow
	From 61 % to 82,5 % N1K	From 14 % to 7 % of core airflow (linear variation)
	Above 82,5 % N1K	10 % of core airflow



## IV. Operating Limitations

### 1. Temperature Limits

#### 1.1 Exhaust Gas Temperature (°C):

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 Inlet Temperature (°C):

	CFM56-5B all models
Maximum temperature	+ 54°C at pump inlet
Minimum temperature	- 54°C at pump inlet
Minimum pressure	≥ 34.4 kPa above kerosene vapor pressure

	CFM56-5C all models
Maximum temperature	+ 60°C at pump inlet
Minimum temperature	- 54°C at pump inlet
Minimum pressure	≥ 34.4 kPa above kerosene vapor pressure

#### 1.3 Oil Temperature (°C):

- 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:

Refer to the applicable "Installation Manual"

### 2. Rotational Speed Limits:

#### 2.1 Maximum speed (all flight phases):

	N1- LP rotor (rpm)	N2 – HP rotor (rpm)
CFM56-5B all models	5 200 (104 %)	15 183 (105 %)
<b>CFM56-5C2, -5C2/F, -5C2/G, -5C3/F, -5C3/G</b>	4 800 (100,3 %)	15 183 (105 %)
<b>CFM56-5C2/F4, -5C2/G4, -5C2/4, -5C2/P, -5C3/F4, -5C3/G4, -5C3/P, -5C4, -5C4/P, -5C4/1, -5C4/1P</b>	4 985 (104,2 %)	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. Time Limited Dispatch

The engine has been approved for Time Limited Dispatch. The maximum rectification period for each dispatchable state is specified in the documents GEK 103085 for the CFM56-5B models and GEK 100741 for the CFM56-5C models.



## **V. Operating and Service Instructions**

	CFM56-5C all models	CFM56-5B all models
Specific Operations Instructions	CFM TP OI-12	CFM TP OI-13
Installation Manual	CFM 6-7536	CFM 2129
Maintenance Manual	Refer to the Appropriate Aircraft Maintenance Manual	Refer to the 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. 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. 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-France Type certificates and Type Certificate Data Sheets M17 and M-IM28.
7. The type certificate holder, CFM International S.A., is a company jointly owned by Safran Aircraft Engines, formerly Snecma (France) and GE Aviation (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, Safran Aircraft Engines and General Electric function as licensees of CFM International S.A.





- 8.** 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 Safran Aircraft Engines. Refer to the latest revisions of CFM56-5B Service Bulletin 72-0781 "CFM56-5B Engine Serialization Manufacturing Sequence" or CFM56-5C Service Bulletin 72-0697 "CFM56-5C Engine Serialization Manufacturing Sequence" for a list of the applicable serial numbers.
  
- 9.** 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).
  
- 10.** Per EASA Certificate 10042687 Revision 1 dated 17 December 2012, the engine models CFM56-5B/3 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)



**SECTION: ADMINISTRATIVE**

**I. Acronyms and Abbreviations**

N/A

**II. Type Certificate Holder Record**

N/A

**III. Change Record**

<b>Issue</b>	<b>Date</b>	<b>Changes</b>	<b>TC issue</b>
Issue 01	25 October 2004	Initial Issue	Initial Issue, 25 October 2004
Issue 02	15 September 2006	Type investigation programmes for the applied CFM56-5Bx/3 models	15 September 2006
Issue 03	17 December 2012	Major Change showing compliance with NOx regulation of the NOx Standards defined in ICAO Annex 16, Volume II, Part III, Chapter 2	
Issue 04	28 September 2017	New parts list reference suffixes for the CFM56-5B series engines	

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