



## Notification of a Proposal to issue an Airworthiness Directive

**PAD No.: 18-117**

**Issued: 17 August 2018**

Note: This Proposed Airworthiness Directive (PAD) is issued by EASA, acting in accordance with Regulation (EC) 216/2008 on behalf of the European Union, its Member States and of the European third countries that participate in the activities of EASA under Article 66 of that Regulation.

In accordance with the EASA Continuing Airworthiness Procedures, the Executive Director is proposing the issuance of an EASA Airworthiness Directive (AD), applicable to the aeronautical product(s) identified below.

All interested persons may send their comments, referencing the PAD Number above, to the e-mail address specified in the 'Remarks' section, prior to the consultation date indicated].

**Design Approval Holder's Name:**

CFM INTERNATIONAL S.A.

**Type/Model designation(s):**

CFM56-7B engines

**Effective Date:** [TBD – standard: 14 days after Final AD issue date]

**TCDS Number(s):** EASA.E.004

**Foreign AD:** Not applicable

**Supersedure:** This AD supersedes EASA AD 2018-0109 dated 17 May 2018.

### ATA 72 – Engine – Fan Blades – Inspection

#### Manufacturer(s):

SAFRAN Aircraft Engines, formerly SNECMA (France); General Electric Aircraft Engines (United States)

#### Applicability:

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, CFM56-7B20/2, CFM56-7B22/2, CFM56-7B24/2, CFM56-7B26/2, CFM56-7B27/2, 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, CFM56-7B27/3B1F, CFM56-7B27/3B3, CFM56-7B26/3F, CFM56-7B26/3B2F, CFM56-7B27/3F, CFM56-7B20E, CFM56-7B22E, CFM56-7B22E/B1, CFM56-7B24E, CFM56-7B24E/B1, CFM56-7B26E, CFM56-7B26E/B1, CFM56-7B26E/B2, CFM56-7B27E, CFM56-7B27E/B1, CFM56-7B27E/B3, CFM56-7B26E/F, CFM56-7B26E/B2F, CFM56-7B27E/F, CFM56-7B27E/B1F, CFM56-7B27A, CFM56-7B27AE and CFM56-7B27A/3 engines, all serial numbers (s/n).

These engines are known to be installed on, but not limited to, Boeing 737-600, 737-700, 737-800 and 737-900 aeroplanes.



**Definitions:**

For the purpose of this AD, the following definitions apply:

**The S/B:** CFM International CFM56-7B Service Bulletin (S/B) 72-1033 Revision 2.

**ECI:** Eddy current inspection (ECI) in accordance with task 72-21-01-200-001 of the applicable CFM International Engine Shop Manual (ESM) at Revision 54 Incremental Change, or Revision 55 (or later).

**Affected fan blade:** Fan blades, Part Number (P/N) 340-001-022-0, P/N 340-001-026-0, P/N 340-001-027-0, P/N 340-001-028-0, P/N 340-001-029-0, P/N 340-001-036-0, P/N 340-001-037-0, P/N 340-001-038-0, and P/N 340-001-039-0.

**Serviceable fan blade:** A fan blade that is not an affected fan blade; or an affected fan blade which is new; or an affected fan blade which has accumulated less than 20 000 flight cycles (FC) since new (first installation on an engine); or an affected fan blade which, within the last 1 600 FC before installation, passed an on-wing inspection (no defects found) in accordance with the instructions of the S/B, or of CFM56-7B S/B 72-1019, or of CFM56-7B S/B 72-1024, or an in-shop ECI; or an affected fan blade which failed an inspection in accordance with the instructions of the S/B, or of CFM56-7B S/B 72-1019, or of CFM56-7B S/B 72-1024, but passed (no defects found) an in-shop ECI.

**Reason:**

An occurrence was reported of fan blade failure on a CFM56-7B engine. The released fan blade was initially contained by the engine case, but there was subsequent uncontained forward release of debris and separation of the inlet cowl. Preliminary investigation determined that the event was due to a fracture in the blade, which had initiated from the fan blade dovetail.

This condition, if not detected and corrected, could lead to fan blade failure, possibly resulting in uncontained forward release of debris, with consequent damage to the engine and the aeroplane.

To address this potential unsafe condition, CFM International initially issued CFM56-7B S/B 72-1019 (later revised) and CFM56-7B S/B 72-1024, providing inspection instructions, and EASA issued AD 2018-0071 requiring a one-time inspection of certain fan blades, and, depending on findings, accomplishment of applicable corrective action(s).

After AD 2018-0071 was issued, a further CFM56-7B fan blade failure was reported. Prompted by that event, CFM International issued CFM56-7B S/B 72-1033, providing instructions for initial and repetitive inspections of all fan blades, and EASA issued AD 2018-0093-E, requiring initial and repetitive inspections of fan blades and, depending on findings, accomplishment of applicable corrective action(s).

After EASA AD 2018-0093-E was issued, it was determined that the initial inspection for certain fan blades must be accomplished within a reduced compliance time. Consequently, EASA issued AD 2018-0109, retaining the requirements of EASA AD 2018-0093-E, which was superseded, but reducing, for certain engines or fan blades, the compliance time for the initial inspection.



Since that AD was issued, it has been determined that the repetitive inspection must be accomplished at a reduced interval compared to that required by EASA AD 2018-0109. CFM International revised CFM56-7B S/B 72-1033 (now at Revision 2) accordingly.

For the reason stated above, this AD retains the requirements of EASA AD 2018-0109, which is superseded, but reduces the interval of the repetitive inspections.

#### **Required Action(s) and Compliance Time(s):**

Required as indicated, unless accomplished previously:

#### **Inspection:**

- (1) Within the compliance time as defined in Appendix 1 of this AD, and, thereafter, at intervals not exceeding 1 600 FC, accomplish an ultrasonic inspection of each affected fan blade in accordance with the instructions of the S/B.
- (2) For an affected fan blade that, on the effective date of this AD, has already exceeded 1 600 FC since the initial inspection as required by paragraph (1) of this AD, the next inspection can be deferred until 2 months after the effective date of this AD, but not exceeding 3 000 FC since last inspection of that blade.

#### **Corrective Action(s):**

- (3) If, during any inspection as required by paragraph (1) of this AD, any discrepancy is detected on an affected fan blade, before next flight, or before release to service of the engine, as applicable, replace that affected fan blade with a serviceable fan blade in accordance with the instructions of the S/B.

#### **Credit:**

- (4) Accomplishment of an ECI of an affected fan blade in accordance with task 72-21-01-200-001 of the applicable CFM International ESM at Revision 54 Incremental Change, or Revision 55 (or later), is an acceptable alternative method to comply with the requirements of paragraph (1) of this AD, as applicable, for that affected fan blade.
- (5) Inspections and corrective actions on an engine, accomplished before the effective date of this AD in accordance with the instructions of CFM56-7B S/B 72-1019 (any issue), or of CFM56-7B S/B 72-1024, or of CFM56-7B S/B 72-1033, original issue or Revision 1, as applicable, are acceptable to comply with the initial requirements of paragraphs (1) and (3) of this AD for that engine.

#### **Part installation:**

- (6) From the effective date of this AD, it is allowed to install a fan blade on an engine, provided it is a serviceable fan blade, as defined in this AD (see Note 1 of this AD).

Note 1: For the purpose of this AD, removal of a fan blade from an engine and subsequent re-installation of that fan blade on that same engine within the same maintenance visit is not "installation" as specified in paragraph (5) of this AD.



**Terminating Action(s):**

(7) None.

**Ref. Publications:**

CFM International S.A. CFM56-7B S/B 72-1019 original issue dated 24 March 2017, or Revision 01 dated 13 June 2017.

CFM International S.A. CFM56-7B S/B 72-1024 original issue dated 26 July 2017.

CFM International S.A. CFM56-7B S/B 72-1033 original issue dated 20 April 2018, or Revision 01 dated 09 May 2018, or Revision 02 dated 27 July 2018.

The use of later approved revisions of the above-mentioned documents is acceptable for compliance with the requirements of this AD.

**Remarks:**

1. This Proposed AD will be closed for consultation on 14 September 2018.
2. Enquiries regarding this PAD should be referred to the EASA Safety Information Section, Certification Directorate. E-mail: [ADs@easa.europa.eu](mailto:ADs@easa.europa.eu).
3. Information about any failures, malfunctions, defects or other occurrences, which may be similar to the unsafe condition addressed by this PAD, and which may occur, or have occurred on a product, part or appliance not affected by this PAD, can be reported to the [EU aviation safety reporting system](#).
4. For any question concerning the technical content of the requirements in this PAD, please contact: CFM International S.A., Customer Support Centre, Telephone: +33 1 64 14 88 66, Fax: +33 1 64 79 85 55, E-mail: [cfm.csc@safrangroup.com](mailto:cfm.csc@safrangroup.com);

or

CFM Inc. Aviation Operations Centre, Telephone: +1 513-552-3272, or +1 877-432-3272, Fax: +1 877-432-3329, E-mail: [geae.aoc@ge.com](mailto:geae.aoc@ge.com), or [aviation.fleetsupport@ge.com](mailto:aviation.fleetsupport@ge.com).



### Appendix 1 – Initial Inspection of Affected Fan Blades (see Notes 2, 3 and 4 of this AD)

Note 2: The engine FC specified in Appendix 1 of this AD are those accumulated, on 20 April 2018 [the effective date of EASA AD 2018-0093-E], by the engine since first installation on an aeroplane.

Note 3: The fan blade FC specified in Appendix 1 of this AD are those accumulated, on 20 April 2018 [the effective date of EASA AD 2018-0093-E], by the affected fan blade since new.

Note 4: Fan Blades Groups identify the date of manufacturing of fan blades; CFM56-7B S/B 72-1033 Revision 1 (and later) defines the fan blade groups based on fan blade s/n.

Fan Blade FC	Fan Blade Group	Number of Engine Shop Visit	Engine FC	Compliance Time
Not applicable (N/A)	N/A	N/A	30 000 or more	Within 20 days after 20 April 2018 [the effective date of EASA AD 2018-0093-E]
Less than 20 000	N/A	N/A	Less than 30 000	Before exceeding 20 000 fan blade cycles, or within 133 days after 20 April 2018 [the effective date of EASA AD 2018-0093-E], whichever occurs later
20 000 or more	N/A	N/A	Less than 30 000	Within 43 days after 18 May 2018 [the effective date of EASA AD 2018-0109]
Unknown	Group A and Group B	N/A	Less than 30 000	
	Other than Group A or B	N/A	N/A	Within 133 days after 20 April 2018 [the effective date of EASA AD 2018-0093-E]
	Unknown	None	N/A	
		1 or more	Less than 30 000	Within 43 days after 18 May 2018 [the effective date of EASA AD 2018-0109]

