Airworthiness Directive

AD No.: 2019-0018

Issued: 30 January 2019

Note: This Airworthiness Directive (AD) is issued by EASA, acting in accordance with Regulation (EU) 2018/1139 on behalf of the European Union, its Member States and of the European third countries that participate in the activities of EASA under Article 129 of that Regulation.

This AD is issued in accordance with Regulation (EU) 748/2012, Part 21.A.3B. In accordance with Regulation (EU) 1321/2014 Annex I, Part M.A.301, the continuing airworthiness of an aircraft shall be ensured by accomplishing any applicable ADs. Consequently, no person may operate an aircraft to which an AD applies, except in accordance with the requirements of that AD, unless otherwise specified by the Agency [Regulation (EU) 1321/2014 Annex I, Part M.A.303] or agreed with the Authority of the State of Registry [Regulation (EU) 2018/1139, Article 71 exemption].

Design Approval Holder's Name:

CFM INTERNATIONAL S.A.

Type/Model designation(s):

CFM56-7B engines

Effective Date: 13 February 2019

TCDS Number(s): EASA.E.004

Foreign AD: Not applicable

Supersedure: This AD supersedes EASA AD 2018-0211 dated 28 September 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:

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The S/B: CFM International CFM56-7B Service Bulletin (S/B) 72-1033 Revision 03.

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 17 000 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 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, after that inspection and within the last 1 600 FC before installation, passed an in-shop ECI (no defects found).

Groups: Group 1 are CFM56-7B27AE and CFM56-7B27A/3 engines. Group 2 are engines which are not Group 1.

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.

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After EASA AD 2018-0109 was issued, it was determined that the repetitive inspection must be accomplished at a reduced interval and CFM International revised CFM56-7B S/B 72-1033 (Revision 02) accordingly. Consequently, EASA issued AD 2018-0211, retaining the requirements of EASA AD 2018-0109, which was superseded, and reducing the interval of the repetitive inspections.

Since that AD was issued, based on further information and analysis, it was determined that the initial inspection must be accomplished at a reduced threshold and CFM International revised CFM56-7B S/B 72-1033 (now at Revision 03) accordingly.

For the reason stated above, this AD retains the requirements of EASA AD 2018-0211, which is superseded, but reduces the threshold for the initial inspection.

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

Required as indicated, unless accomplished previously:

Inspection:

(1) For Group 2 engines: Within the compliance time as defined in Table 1 of this AD, as applicable, 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.

Table 1 – Compliance Time (see Note 1 of this AD)

FC Accumulated	Compliance time
16 000 or less	Before exceeding 17 000 FC since new
More than 16 000, and less than 20 000	Within 1 000 FC after the effective date of this AD, but without exceeding 20 000 FC since new
20 000 or more	Before next flight after the effective date of this AD
unknown	

(2) For Group 1 engines: Within the compliance time as defined in Table 2 of this AD, as applicable, and, thereafter, at intervals not exceeding 500 FC, accomplish an ultrasonic inspection of each affected fan blade in accordance with the instructions of the S/B.

Table 2 – Compliance Time (see Note 1 of this AD)

FC Accumulated	Compliance time
5 700 or less	Before exceeding 6 000 FC since new
More than 5 700, and less than 20 000	Within 300 FC after the effective date of this AD, but without exceeding 20 000 FC since new
20 000 or more	Before next flight after the effective date of this AD
unknown	

Note 1: Unless specified otherwise, the FC indicated in Table 1 and Table 2 of this AD are those accumulated, on the effective date of this AD, by an affected fan blade since new.

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Corrective Action(s):

(3) If, during any inspection as required by paragraph (1) or (2) of this AD, as applicable, 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) or (2) 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 at original issue, or Revision 01, or Revision 02, as applicable, are acceptable to comply with the initial requirements of paragraphs (1), (2) and (3) of this AD for that engine.

(6) Inspections of an affected fan blade, accomplished before the effective date of this AD in accordance with the instructions of CFM56-7B S/B 72-1033 at original issue, or Revision 01, or Revision 02, are acceptable to determine whether that fan blade is serviceable, as defined in this AD.

Part installation:

(7) From the effective date of this AD, it is allowed to install (see Note 2 of this AD) an affected fan blade on an engine, provided it is a serviceable fan blade, as defined in this AD.

Note 2: 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 “install” as specified in paragraph (7) of this AD.

Terminating Action(s):

(8) 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, or Revision 03 dated 06 November 2018.

CFM International S.A. ESM Revision 54 Incremental Change, or Revision 55.

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

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Remarks:

1. If requested and appropriately substantiated, EASA can approve Alternative Methods of Compliance for this AD.

2. This AD was posted on 21 November 2018 as PAD 18-160 for consultation until 05 December 2018, and republished on 11 January 2019 for additional consultation until 25 January 2019. The Comment Response Document can be found in the EASA Safety Publications Tool, in the compressed (zipped) file attached to the record for this AD.

3. Enquiries regarding this AD should be referred to the EASA Safety Information Section, Certification Directorate. E-mail: ADs@easa.europa.eu.

4. Information about any failures, malfunctions, defects or other occurrences, which may be similar to the unsafe condition addressed by this AD, and which may occur, or have occurred on a product, part or appliance not affected by this AD, can be reported to the EU aviation safety reporting system.

5. For any question concerning the technical content of the requirements in this AD, 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;

   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, or aviation.fleetsupport@ge.com.

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