Airworthiness Directive

AD No.: 2017-0039

Issued: 24 February 2017

Note: This Airworthiness Directive (AD) 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.

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 (EC) 216/2008, Article 14(4) exemption].

Design Approval Holder's Name:
HELICOPTERES GUIMBAL

Type/Model designation(s):
CABRI G2 helicopters

Effective Date: 10 March 2017

TCDS Number(s): EASA.R.145

Foreign AD: Not applicable

Supersedure: This AD supersedes EASA AD 2016-0033 dated 24 February 2016.

ATA 71 – Powerplant – Engine Cooling Fan – Modification / Inspection / Replacement

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Manufacturer(s):
Hélicoptères Guimbal

Applicability:
Cabri G2 helicopters, all manufacturer serial numbers (MSN).

Reason:
In July 2013, an engine in-flight shutdown (IFSD) was reported on a Cabri G2 helicopter, leading the pilot to a forced landing. Subsequent investigation revealed that the engine cooling fan had failed, which led to power shutdown as the fan damaged the scroll and pulled the mixture control cable. The cause of the cooling fan failure was a crack which had developed in the fan external ring, but the origin of the crack was not determined with certainty due to the bad state of the retrieved failed parts.

This condition, if not detected and corrected, could lead to other events of cooling fan failure and subsequent engine IFSD or damage to the engine installation, possibly resulting in reduced control of the helicopter.

To address this potential unsafe condition, Hélicoptères Guimbal (HG) issued Service Bulletin (SB) 13-021, providing instructions for inspection of the fan external ring to detect damage or cracking.

HG also designed a new external ring with improved mechanical characteristics and a fail-safe feature (glass fibre winding). HG SB 13-022 was issued to provide instructions for installation of this new external ring, Part Number (P/N) G52-00-101, on in-service helicopters. Helicopters MSN 1053 and from MSN 1055 onwards are equipped with the new external ring design in production (MOD 13-050).

Consequently, EASA issued AD 2014-0038 to require repetitive inspections of the engine cooling fan external ring P/N G52-01-200 or P/N G52-01-201 and replacement of the ring with the new design ring P/N G52-00-101 as terminating modification.

After that AD was issued, a second in-flight failure was reported on an engine cooling fan modified as required by AD 2014-0038. The glass fibre winding of the new external ring maintained the integrity of the failed fan and no damage occurred to the helicopter. Analysis of the failed part identified that the crack had initiated on the cooling fan front flange, on areas of fretting near the screws fitting the flange on the engine starter ring gear.

Prompted by these findings, HG issued SB 14-018, providing instructions for inspection of the fan front flange to detect cracking. Consequently, EASA issued AD 2014-0196, retaining only the modification requirements of EASA AD 2014-0038, which was superseded, to require new repetitive inspections of the engine cooling fan front flange and, depending on findings, replacement of the cooling fan.

Since EASA AD 2014-0196 was issued, results of deeper analysis of the failed parts led to the conclusion that crack propagation depends mainly on engine start/stop (ESS) cycles. Therefore, an inspection interval expressed in such cycles has been defined by HG to take into account helicopters operated with a number of ESS cycles beyond the assumed figure established during type certification.

Consequently, EASA issued AD 2016-0033, retaining the modification and inspection requirements of EASA AD 2014-0196, which was superseded, and requiring repetitive inspections of the engine cooling fan front flange and, depending on findings, replacement of the cooling fan.

Since EASA AD 2016-0033 was issued, HG developed a new engine cooling fan P/N G52-04-101, which includes a front flange made of composite materials having improved structural strength. HG has issued SB 16-021 to provide instructions to install this new part, replacing the cooling fan P/N G52-00-001 equipped with an aluminium front flange. HG SB 16-021 also provides instructions to replace cooling fan P/N G52-04-100 (also equipped with an aluminium front flange) when mounted on certain type of engine pulleys. This part was not subject to inspections required by EASA AD 2016-0033, but subject to similar inspection requirements through Cabri G2 Maintenance Manual n° J70-002 issue 05.1 dated 30 October 2015, Section C, Airworthiness Limitations, compliance with which is required by EASA AD 2016-0032.

For the reason described above, this AD retains the requirements of EASA AD 2016-0033, which is superseded, and requires replacement of the affected cooling fans with new cooling fans, equipped with a composite front flange, which is terminating action for the repetitive inspections.

Required Action(s) and Compliance Time(s):
Required as indicated, unless accomplished previously:

Re-statement of the requirements of EASA AD 2016-0033:
Modification:
(1) Within 3 months after 28 February 2014 [the effective date of EASA AD 2014-0038], modify the engine cooling fan P/N G52-00-000 by installing a new design external ring P/N G52-00-101 and by marking the cooling fan with new P/N G52-00-001 in accordance with the instructions of HG SB 13-022 issue B.

Repetitive Inspections:
(2) Within the compliance time specified in Table 1 of this AD, and, thereafter, at intervals not to exceed 50 flight hours (FH) or 70 ESS cycles (see Note 1 of this AD), whichever occurs first, inspect the front flange of the engine cooling fan P/N G52-00-001 in accordance with the instructions of HG SB 14-018.

Note 1: A non-cumulative tolerance of 5 FH or 10 ESS cycles may be applied to the inspection interval as required by paragraph (2) of this AD.

Table 1 – Initial Front Flange Inspection

FH and ESS cycles (see Note 2 of this AD)	**Compliance Time**
500 FH or more, for helicopters never inspected per HG SB 14-018	Within 50 FH after 24 February 2016
500 FH or more, and ESS cycles accumulated since last inspection per HG SB 14-018 exceed 70, or are unknown	
500 FH or more, and less than 70 ESS cycles accumulated since last inspection per HG SB 14-018	Within 50 FH or 70 ESS, whichever occurs first after 24 February 2016
Less than 500 FH	Before exceeding 500 FH, or within 50 FH after 24 February 2016, whichever occurs later

Note 2: Unless otherwise specified, the FC and ESS are those accumulated by the helicopter on 24 February 2016 [the effective date of EASA AD 2016-0033] since first installation on a helicopter.

Corrective Action:
(3) If, during any inspection as required by paragraph (2) of this AD, any crack is found on the engine cooling fan front flange, before next flight, replace cooling fan P/N G52-00-001 with a serviceable part in accordance with the instructions of HG SB 14-018.

New requirements of this AD:
Replacement:

(4) Within the compliance time specified in Table 2 of this AD, modify the helicopter by replacing the affected cooling fan (see Note 3 of this AD) with a cooling fan P/N G52-04-101, in accordance with the instructions of HG SB 16-021.

Note 3: For the purpose of paragraphs (4), (5) and (6) of this AD, an 'affected cooling fan' is an aluminium part which has P/N G52-00-001, or has P/N G52-04-100 if mounted, or if previously mounted, on a 12-hole engine pulley P/N G52-10-100 or P/N G52-10-101.

Table 2 – Aluminium Cooling Fan Replacement

FH (see Note 4 of this AD)	**Compliance Time** (after the effective date of this AD)
1 500 FH or more	Within 150 FH or 3 months, whichever occurs first
500 FH or more, but less than 1 500 FH	Within 500 FH or 12 months, whichever occurs first
Less than 500 FH	Within 36 months

Note 4: The FH specified in the first column of Table 2 of this AD are those accumulated by the affected cooling fan (see Note 3 of this AD), on the effective day of this AD, since first installation on a helicopter.

Terminating Action:

(5) Modification of a helicopter as required by paragraph (4) of this AD constitutes terminating action for the repetitive inspections required by paragraph (2) of this AD for that helicopter.

Note 5: For the purpose of paragraph (6) of this AD, Group 1 helicopters are those that, on the effective date of this AD, have an affected cooling fan (see Note 3 of this AD) installed. Group 2 helicopters are those that, on the effective date of this AD, do not have an affected cooling fan installed.

Parts Installation:

(6) Do not install on any helicopter a cooling fan P/N G52-00-000 (pre-SB 13-022 part), or an affected cooling fan (see Note 3 of this AD), as required by paragraph (6.1) or (6.2) of this AD, as applicable.

(6.1) Group 1 helicopters: After modification of the helicopter as required by paragraph (4) of this AD.

(6.2) Group 2 helicopters: From the effective date of this AD.

Ref. Publications:
HG SB 13-022 issue B, dated 10 September 2013.

HG SB 14-018 issue D, dated 05 November 2015.

HG SB 16-021 issue A, dated 06 September 2016, or issue B, dated 17 January 2017.

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

Remarks:

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

2. This AD was posted on 12 January 2017 as PAD 17-006 for consultation until 09 February 2017 2016. No comments were received during the consultation period.

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

4. For any question concerning the technical content of the requirements in this AD, please contact: Hélicoptères Guimbal – Support, Aérodrome d'Aix-en-Provence, 1070 rue Lieutenant Parayre, 13290 Les Milles, France, Telephone: +33 (0) 4 42 39 10 88, Fax: +33 (0) 4 42 39 10 82 E-mail: support@guimbal.com.