Airworthiness Directive

AD No.: 2014-0118R1

Issued: 25 September 2018

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:
BELL HELICOPTER TEXTRON Inc.

Type/Model designation(s):
212, 412 and 412EP helicopters

Effective Date: Revision 1: 25 September 2018
Original issue: 15 May 2014

TCDS Number(s): EASA.IM.R.106

Foreign AD: Not applicable

Revision: This AD revises EASA AD 2014-0118-E dated 13 May 2014.

ATA 63 – Main Rotor Drive – Engine-to-Transmission Drive Shaft Line Nuts – Inspection / Replacement

---

Manufacturer(s):
Bell Helicopter Textron Inc. (BHTI), formerly Bell Helicopters, Inc.

Applicability:
BHTI 212, 412 and 412EP helicopters, all serial numbers (s/n).

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

The applicable SB: BHTI Alert Service Bulletin (SB) 212-14-151 Revision (Rev.) A and SB 412-14-160 Rev. A, as applicable to helicopter model.

Affected part: Nut having Part Number (P/N) MS21042L4 or P/N MS21042L5.

Reason:
An occurrence was reported on one in-service AgustaWestland AB 412EP helicopter, where during scheduled inspection of the engine-to-transmission drive shaft line, two nuts P/N MS21042L4 that connect a flexible coupling with the coupling adapter were found cracked.

Subsequent technical investigation identified that the reported cracks of the nuts are the result of a production deficiency (causing hydrogen embrittlement) at the nut supplier. Nut P/N MS21042L5 may also be affected.

This condition, if not detected and corrected, could lead to the disconnection of the engine from the transmission with the consequent complete loss of power to the main rotor, resulting in reduced control of the helicopter.

To address this unsafe condition, EASA issued Emergency AD 2013-0300-E to require repetitive inspections of each affected part installed on the engine-to-transmission drive shaft line of AB 412 and AB 412EP helicopters, as well as replacement of each affected nut with a serviceable part having a different P/N.

After that AD was issued, it was determined that AgustaWestland model AB 212 and BHTI model 212, 412 and 412EP helicopters have the same engine-to-transmission drive shaft line installation as the AgustaWestland AB 412 and AB 412EP helicopters. Consequently, EASA issued Emergency AD 2014-0118-E, requiring repetitive inspections of each affected part installed on the engine-to-transmission drive shaft line of BHTI model 212, 412, and 412EP helicopters, and replacement of each affected part with a serviceable part having a different P/N. EASA also issued corresponding Emergency AD 2014-0113-E for the similar design Agusta-manufactured helicopters, superseding AD 2013-0300-E, retaining its requirements and expanding its Applicability to include model AB 212 helicopters.

Since AD 2014-0118-E was issued, BHTI issued the applicable SB, providing instructions to replace nuts P/N MS21042L5 with nuts P/N NAS9926-5L.

For the reason described above, this AD is revised to include reference to the applicable SB.

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

Required as indicated, unless accomplished previously:

Inspection:

(1) Within 10 flight hours (FH) after 15 May 2014 [the effective date of the original issue of this AD], and, thereafter, at intervals not to exceed 25 FH, inspect each nut P/N MS21042L5 or P/N MS21042L4, as applicable depending on helicopter model and/or s/n, in accordance with the instructions of Appendix 1 of this AD.

Corrective action:

(2) If, during any inspection as required by paragraph (1) of this AD, a nut is found cracked (see Note 1 of this AD), before next flight, replace the nut with a serviceable part having a different P/N in accordance with the instructions of Appendix 2 of this AD.

Note 1: For a typical crack, refer to Appendix 1 of this AD, Fig. 3 and Fig. 4.

Part replacement:

(3) Unless each affected part was replaced with a serviceable nut as required by paragraph (2) of this AD, within 3 months after 15 May 2014 [the effective date of the original issue of this AD],

replace each affected part with a serviceable nut having a different P/N in accordance with the instructions of Appendix 2 of this AD.

Terminating action:

(4) Replacement of each affected part on a helicopter as required by paragraph (2) or (3) of this AD, as applicable, constitutes terminating action for the repetitive inspections required by paragraph (1) of this AD for that helicopter.

Parts installation:

(5) From 15 May 2014 [the effective date of the original issue of this AD], do not install an affected part on the engine-to-transmission drive shaft line on any helicopter.

Credit:

(6) For a 212 helicopter having a serial number as identified in the applicable SB, and for a 412 or 412EP helicopter, having a serial number as identified in Part I of the applicable SB, replacing a nut P/N MS21042L5 with a nut P/N NAS9926-5L in accordance with the instructions of the applicable SB is an acceptable method to comply with the requirements of paragraph (2) or (3) of this AD, as applicable, for that helicopter.

Ref. Publications:

BHTI Alert SB 212-14-151 Rev. A dated 13 December 2017.

BHTI Alert SB 412-14-160 Rev. A dated 13 December 2017.

Remarks:

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

2. Based on the required actions and the compliance time, EASA have decided to issue a Final AD with Request for Comments, postponing the public consultation process until after publication.

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.

Appendix 1 – Instructions for Nut Inspection

1) Prepare helicopter for safe ground maintenance; disconnect battery and all the electric power source and/or the external power supply.

2) In accordance with the applicable Maintenance Manual Chapter 63, gain access to the engine-to- transmission drive shaft.

3) Using a source light and a mirror, inspect the nuts P/N MS21042L5 connecting the flexible coupling with the adapter installed on the engine-to-transmission drive shaft (refer to Fig. 1) or inspect the nuts P/N MS21042L4 connecting the flexible coupling with the adapter and nuts P/N MS21042L4 connecting the drive shaft with the flexible coupling (refer to Fig. 2). The configuration depends on the helicopter model and s/n.

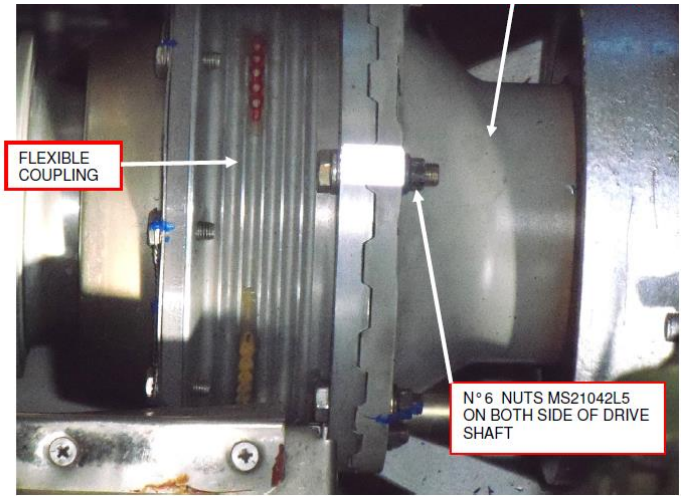

Fig. 1

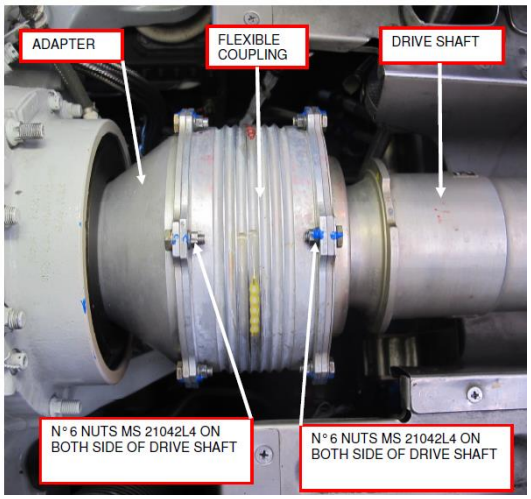

Fig. 2

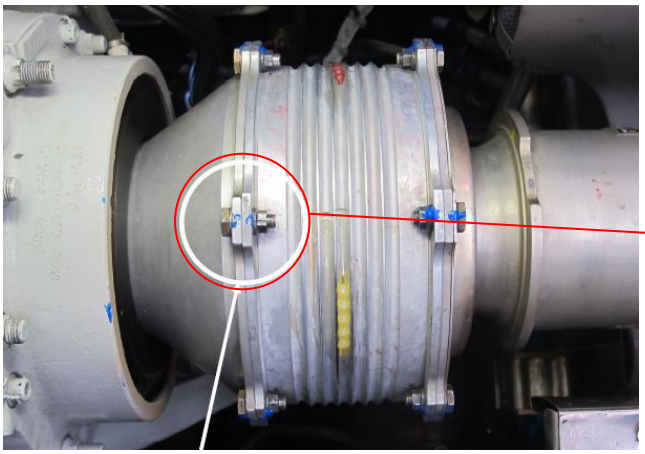

Fig. 3

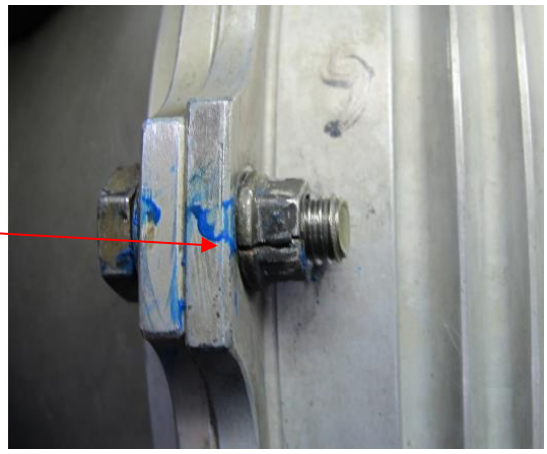

Fig. 4

4) If no cracks are found, in accordance with the applicable Maintenance Manual Chapter 63, reinstall the access panel and close the access doors previously removed/opened and return the helicopter to a “ready to flight” condition.

Appendix 2 – Instructions for Nut Replacement

1) In accordance with the applicable Maintenance Manual Chapter 63, replace the nuts P/N MS21042L5 with nuts P/N MS21043-5 or the nuts P/N MS21042L4 with nuts MS21043-4, as applicable depending on helicopter configuration (it is recommended to replace the nuts one at a time). Restore witness mark as required.

2) In accordance with the applicable Maintenance Manual Chapter 63, reinstall the access panel and close the access doors previously removed/opened and return the helicopter to a “ready to flight” condition.