



Airworthiness Directive

AD No.: 2020-0033R1

Issued: 10 December 2021

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:

SAFRAN HELICOPTER ENGINES

Type/Model designation(s):

ARRIUS 2 engines

Effective Date: Revision 1: 17 December 2021
Original issue: 10 March 2020

TCDS Number(s): EASA.E.029

Foreign AD: Not applicable

Revision: This AD revises EASA AD 2020-0033 dated 25 February 2020, which superseded EASA AD 2013-0082 dated 02 April 2013.

ATA 73 – Engine Fuel & Control – Hydro-mechanical Metering Unit / Drive Link Splines – Inspection

Manufacturer(s):

SAFRAN Helicopter Engines (SAFRAN), formerly Turboméca

Applicability:

ARRIUS 2B1, ARRIUS 2B1A, ARRIUS 2B2, ARRIUS 2G1, ARRIUS 2K1 and ARRIUS 2K2 engines, all serial numbers.

These engines are known to be installed on, but not limited to, Airbus Helicopters Deutschland EC135, Leonardo A109 and KAMOV 226T twin-engine helicopters.

Definitions:

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

Groups:

Group 1 are hydro-mechanical metering Units (HMU) that were first installed on a helicopter on or before 31 January 2013, and which have never been inspected in accordance with Turboméca MSB 319 73 2825 version G or later (including HMU that have previously been inspected in accordance



with Turboméca MSB 319 73 2825 version F or earlier), and which do not have SAFRAN modification (mod) TU139 embodied.

Group 2 are HMU that were first installed on a helicopter after 31 January 2013, or HMU that have previously been inspected in accordance with Turboméca MSB 319 73 2825 version G or later, and which do not have SAFRAN mod TU139 embodied.

Group 3 are HMU which have SAFRAN mod TU139 embodied.

The MSB: SAFRAN Mandatory Service Bulletin (MSB) 319 73 2825 version K.

Serviceable part: An HMU that is new (not previously installed); or an HMU that, before installation, has passed an inspection (no discrepancies found, as identified in the MSB), or has been corrected, in accordance with the instructions of the MSB; or an HMU which has SAFRAN mod TU139 embodied.

Reason:

A number of in-flight shut-down (IFSD) occurrences have been reported for ARRIUS 2 engines. The results of the technical investigations concluded that these events were caused by deterioration of the splines on the high pressure (HP) / low pressure (LP) pump assembly drive shaft of the HMU, which eventually interrupted the fuel supply to the engine.

This condition, if not detected and corrected, could lead to further cases of engine IFSD, possibly resulting in forced landing with consequent damage to the helicopter and injury to occupants.

To address these occurrences, Turboméca published MSB 319 73 2825 (up to version G) to provide instructions for inspection of the HMU and sleeve assembly. Consequently, EASA issued AD 2013-0082 to require repetitive inspections of the drive gear shaft splines of the HP pump, and, depending on findings, accomplishment of applicable corrective action(s).

Since that AD was issued, SAFRAN published MSB 319 73 2825 version J to provide specific inspection instructions for HMU installed on a helicopter after 31 January 2013, to reduce the compliance time for the initial inspection of Group 1 engines that were not previously inspected in accordance with version G or later of the MSB, and to provide some operational margin before the first inspection in all possible scenarios.

For the reason described above, this AD retains the requirements of AD 2013-0082, which is superseded. The original issue of this AD required accomplishment of the actions in accordance with the instructions of SAFRAN MSB 319 73 2825 version J.

This AD is revised, further to the publication of the MSB, as defined in this AD, to remove the inspection and cleaning requirements for HMU with an improved design (corresponding to SAFRAN mod TU 139 introduced in 2015). This AD also introduces installation of an improved HMU as an optional terminating action.



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

Required as indicated, unless accomplished previously:

Inspection(s) / Cleaning:

- (1) For Group 1 and Group 2 HMU: Within the compliance time specified in Table 1 of this AD, as applicable, and, thereafter, at intervals not to exceed 500 HMU operating hours (see Note 1 of this AD), and before re-installation of the HMU after each removal, visually inspect the drive gear shaft splines of the HP pump and clean and inspect the sleeve assembly splines in accordance with the instructions of the MSB.

Note 1: A non-cumulative tolerance of 10% may be applied to the repetitive inspection interval defined in paragraph (1) of this AD. No tolerance may be applied to the compliance time for initial inspection defined in Table 1 of this AD.

Table 1 – Initial HMU Inspection

HMU Group / Condition	Compliance Time
Group 1 / 150 HMU operating hours or more accumulated (see Note 2)	Within 50 HMU operating hours after 10 March 2020 [the effective date of the original issue of this AD]
Group 1 / less than 150 HMU operating hours accumulated (see Note 2)	Before exceeding 200 HMU operating hours
Group 2	Within 500 HMU operating hours after the last inspection, or after first installation of the HMU on a helicopter, as applicable

Note 2: Unless indicated otherwise, the operating hours specified in Table 1 of this AD are those accumulated, on 10 March 2020 [the effective date of the original issue of this AD], by the HMU since new (first installation on a helicopter) or since last overhaul.

Corrective Action(s):

- (2) If, during any inspection as required by paragraph (1) of this AD, a discrepancy is detected, as defined in the MSB, before next flight, replace the sleeve assembly on the affected HP pump drive gear shaft, or replace the affected HMU with a serviceable part in accordance with the instructions of the MSB.

Credit:

- (3) Inspection(s) and corrective action(s) on an engine, accomplished before the effective date of this AD in accordance with the instructions of Turboméca MSB 319 73 2825 version G or later, are acceptable to comply with the initial requirements of paragraphs (1) and (2) of this AD for that engine.

Optional Terminating Action:

- (4) Installation on a helicopter of a Group 3 HMU, or of an engine with a Group 3 HMU installed, constitutes terminating action for the repetitive inspection and cleaning requirements of this AD for that helicopter.



Parts / Engine Installation:

- (5) From the effective date of this AD, it is allowed to install an HMU on an engine, or an engine on a helicopter, provided that the HMU is a serviceable part, as defined in this AD, and that, following installation, each pre-mod TU 139 HMU is inspected as required by this AD.

Ref. Publications:

Turboméca MSB 319 73 2825 version G dated 24 January 2013, or version H dated 01 September 2014, or version I dated 26 April 2016; and SAFRAN MSB 319 73 2825 version J dated 15 March 2019 or version K dated 16 November 2021.

The use of later approved revisions of the above-mentioned document 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. The original issue of this AD was posted on 22 January 2020 as PAD 20-104 for consultation until 19 February 2020. 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. 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](#). This may include reporting on the same or similar components, other than those covered by the design to which this AD applies, if the same unsafe condition can exist or may develop on an aircraft with those components installed. Such components may be installed under an FAA Parts Manufacturer Approval (PMA), Supplemental Type Certificate (STC) or other modification.
5. For any question concerning the technical content of the requirements in this AD, please contact please contact your nearest SAFRAN Helicopter Engines technical representative, or connect to www.tools.safran-helicopter-engines.com.

