Notification of a proposal to issue an Airworthiness Directive

PAD No.: 15-137

Issued: 04 November 2015

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:
TURBOMECA

Type/Model designation(s):
ARRIEL 2D engines

Effective Date:	[TBD - standard: 14 days after AD issue date]
TCDS Number(s):	EASA E.001
Foreign AD:	Not applicable
Supersedure:	This AD supersedes EASA AD 2013-0079R1, dated 27 January 2014.

ATA 73 – Engine Fuel & Control – Hydro-Mechanical Metering Unit – Inspection

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Manufacturer(s):
Turbomeca

Applicability:
ARRIEL 2D engines, all serial numbers. These engines are known to be installed on, but not limited to, Airbus Helicopters (formerly Eurocopter) AS 350 B3 and EC 130 T2 helicopters.

Reason:
During an ARRIEL 2D endurance test, the illumination of the Low Fuel Pressure warning light was observed. The investigation of the High Pressure / Low Pressure (HP/LP) pump assembly within the Hydro-Mechanical Metering Unit (HMU), removed following this occurrence, revealed a deterioration and a loss of the LP pump drive function.

This condition, if not corrected, could lead to the illumination of the Low Fuel Pressure warning light in flight, possibly resulting in an uncommanded in-flight shut-down (if the booster pumps are not switched on or under high load factor manoeuvres). For a single-engine helicopter, it may result in an emergency autorotation landing.

To address this potential unsafe condition, EASA issued AD 2012-0141 to reduce the service life of the HMU, requiring replacement before exceeding a defined limit of operating hours.

Since that AD was issued, further cases of deterioration of HMU rotating components have been reported, which occurred before the replacement interval required by that AD.

Prompted by these findings, Turbomeca revised Mandatory Service Bulletin (MSB) A292 73 2847, providing additional instructions for an inspection of the HMU, to be accomplished prior to rotating part replacement. Consequently, EASA issued AD 2013-0079, retaining the requirements of EASA AD 2012-0141, which was superseded, and required inspection of the HMU and, depending on findings, replacement with serviceable parts and replacement of the HMU rotating components before exceeding newly defined limits of operating hours.

Since EASA AD 2013-0079 was issued, Turbomeca developed a new HP/LP pump and metering valve assembly available through modification (mod) TU177, which demonstrated an improved robustness of the HP/LP inter-pump drive link splines. Turbomeca issued MSB A292 73 2851 to provide instructions for part replacement for engines incorporating TU177. Consequently, EASA AD 2013-0079 was revised accordingly, to exclude post-mod TU177 engines from the required intermediate inspections of the HMU inter-pump sleeve and splines, while retaining the requirements for repetitive component replacement.

Since EASA AD 2013-0079R1 was issued, it was determined that, for post-mod TU177 engines, the repetitive replacement of the HMU is no longer necessary, but repetitive inspections of the HMU remain necessary and Turbomeca published MSB A292 73 2851 version B accordingly.

For the reasons described above, this AD partially retains the requirements of EASA AD 2013-0079R1, which is superseded, and requires, depending on engine configuration, repetitive inspections of the HMU and, depending on findings, replacement.

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

For engines not incorporating TU177 engines (re-stated requirements of EASA AD 2013-0079R1):

(1) Before exceeding 400 HMU operating hours since new, or since replacement of LP and HP fuel pumps rotating components in accordance with the instructions of Turbomeca MSB A292 73 2847, whichever occurs later, and, thereafter, at intervals not to exceed 400 HMU operating hours, accomplish the following actions in accordance with the instructions of paragraph 2.B.(1) of Turbomeca MSB A292 73 2847 version C:
- Inspect and replace the HMU inter-pump complete sleeve (female splines); and
- Inspect the HMU HP Pump and LP Pump male splines.

Note 1: A non-cumulative tolerance of 25 hours may be applied to the compliance times specified in paragraph (1) of this AD to allow synchronisation of the required inspections with other maintenance tasks.

(2) If, during any inspection as required by paragraph (1) of this AD, a discrepancy is detected, before next flight, replace the affected HMU with a serviceable HMU in accordance with paragraph 2.B.(1) of Turbomeca MSB A292 73 2847 version C.

Note 2: For the purpose of this AD, a serviceable HMU is an HMU that has accumulated less than 800 operating hours since new, or since replacement of LP and HP fuel pump rotating components in accordance with the instructions of Turbomeca MSB A292 73 2847, and has accumulated less than 400 operating hours since new or since the last inspection of the rotating components in accordance with the instructions of Turbomeca MSB A292 73 2847.

(3) Before exceeding 800 HMU operating hours since new, or since replacement of LP and HP fuel pumps rotating components in accordance with the instructions of Turbomeca MSB A292 73 2847, as applicable, whichever occurs later, and, thereafter, at intervals not to exceed 800 HMU operating hours, replace the rotating components of the HP and LP Pumps including the complete sleeve, or replace the HMU with a serviceable HMU, in accordance with the instructions of paragraph 2.B.(1) of Turbomeca MSB A292 73 2847 version C as applicable.

(4) Inspections and replacement of parts, accomplished before the effective date of this AD in accordance with the instructions of Turbomeca MSB A292 73 2847 version A or version B is acceptable to comply with the initial requirements of paragraphs (1), (2) and (3) of this AD.

For engines incorporating TU177 engines (new requirements for this AD):

(5) Before exceeding 800 but not earlier than 600 HMU operating hours since new, or since replacement of LP and HP fuel pumps rotating components, or since inspection of inter-pumps splines in accordance with the instructions of Turbomeca MSB A292 73 2851, whichever occurs later, and, thereafter, at intervals not to exceed 800, but not earlier than 600 HMU operating hours, accomplish the following actions in accordance with the instructions of paragraph 2.1 of Turbomeca MSB A292 73 2851 version B:
- Inspect the HMU inter-pump complete sleeve (female splines); and
- Inspect the HMU HP Pump and LP Pump male splines.

Note 3: A non-cumulative tolerance of 80 hours may be applied to the compliance time specified in paragraph (5) of this AD to allow synchronisation of the required inspections with other maintenance tasks.

(6) If, during any inspection as required by paragraph (4) of this AD, a discrepancy is detected as defined in Table 1 of this AD, within the compliance time specified in Table 1 of this AD, replace affected HMU with a serviceable HMU in accordance with paragraph 2.1 of Turbomeca MSB A292 73 2851 version B.

Table 1

Detected Discrepancy	Compliance Time
Wear is visually detected without a magnifying glass (defined as naked eye in Turbomeca MSB A292 73 2851 version B)	Before next flight
Wear is visually detected with a magnifying glass	Within 25 HMU operating hours after the inspection during which the wear was detected, but without exceeding 880 HMU operating hours

For all engines:

(7) Accomplishment of corrective action(s) on an engine, as required by paragraph (2) or (6) of this AD, as applicable, does not constitute terminating action for the repetitive inspections as required by paragraph (1) or paragraph (5) of this AD, as applicable, for that engine.

(8) From the effective date of this AD, do not install an HMU on an engine, or an engine on a helicopter, unless in compliance with the requirements of this AD.

Ref. Publications:
Turbomeca MSB A292 73 2847 version A dated 29 May 2012, or version B dated 06 March 2013, or version C dated 03 December 2013.

Turbomeca MSB A292 73 2851 version A dated 03 December 2013, or version B dated 22 October 2015.

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

Remarks:
1. This Proposed AD will be closed for consultation on 02 December 2015.

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

3. For any question concerning the technical content of the requirements in this PAD, please contact: Turboméca S.A., ARRIEL 2 Customer Support, 40220 Tarnos, France
Fax: +33 5 59 74 45 15, or your usual or nearest TURBOMECA technical representative (refer to http://www.turbomeca-support.com).