

EASA	AIRWORTHINESS DIRECTIVE
	<p>AD No.: 2010-0215</p> <p>Date: 14 October 2010</p> <p>Note: This Airworthiness Directive (AD) is issued by EASA, acting in accordance with Regulation (EC) No 216/2008 on behalf of the European Community, its Member States and of the European third countries that participate in the activities of EASA under Article 66 of that Regulation.</p>
<p>This AD is issued in accordance with EC 1702/2003, Part 21A.3B. In accordance with EC 2042/2003 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 [EC 2042/2003 Annex I, Part M.A.303] or agreed with the Authority of the State of Registry [EC 216/2008, Article 14(4) exemption].</p>	
<p>Type Approval Holder's Name :</p> <p>Turboméca</p>	<p>Type/Model designation(s) :</p> <p>ARRIEL 2 series turboshaft engines</p>
<p>TCDS Number : EASA.E.001</p>	
<p>Foreign AD : Not applicable</p>	
<p>Supersedure : This AD supersedes EASA AD 2009-0184 dated 14 August 2009</p>	
ATA 73	Engine Fuel & Control – High Pressure (HP)/Low Pressure (LP) Pump Metering Unit – Low Pressure Fuel Pump Impeller Drive – Inspection/Replacement
Manufacturer(s):	Turboméca S.A.
Applicability:	<p>Arriel 2B, 2B1, 2B1A turboshaft engines with applicability defined in Turboméca Mandatory Service Bulletin (MSB) A292 73 2836 version A and Turboméca Mandatory Service Bulletin (MSB) A292 73 2830 version B.</p> <p>These engines are known to be installed on, but not limited to:</p> <p>Eurocopter AS 350 B3, EC 130 B4 helicopters and Changhe Z11 helicopters.</p>
Reason:	<p>Several events of uncoupling of the LP (Low Pressure) fuel pump impeller and the HP (High Pressure) fuel pump shaft have been reported on ARRIEL 2 engines which do not incorporate modification TU147 ⁽¹⁾. In most cases the “low fuel pressure switch” enlightened, the pilot activated the aircraft booster pump in accordance with the Flight Manual Instructions and landed safely with no other incident. One case, on a single-engine helicopter, led to a sudden engine power loss.</p> <p>The uncoupling of the LP fuel pump impeller and the HP fuel pump shaft may lead to a limitation of engine power or, at worst, an uncommanded In-Flight Shut-Down (IFSD). On a single-engine helicopter, the result may be an emergency autorotation landing.</p> <p>For the reasons stated above, AD 2009-0184 was issued to require ensuring that the LP fuel pump impeller was correctly driven by the HP fuel</p>

	<p>pump shaft, to prevent any detachment of the LP fuel pump impeller from the HP fuel pump shaft. AD 2009-0184 did not apply to HP/LP Pump Metering Units which incorporate TU147 because this modification was specifically designed to prevent uncoupling.</p> <p>Since issuance of AD 2009-0184, three additional cases of uncoupling of the LP fuel pump impeller and the HP fuel pump shaft have been encountered in service with post-TU147 configuration. The results of the investigation show a significant scattering in the bonding process of the LP fuel pump impeller on the HP fuel pump shaft. However the capability of the modification TU147, if properly performed, to improve the coupling between LP fuel pump impeller and HP fuel pump shaft, is still believed to be adequate.</p> <p>In response to these findings an improvement (with new qualification) and a reinforced control of the bonding manufacturing scheme have been implemented in all Turboméca production sites with a completion date of 31 March 2010.</p> <p>This AD, which supersedes EASA AD 2009-0184, partially retaining its requirements, requires an inspection of certain HP/LP Pump Metering Units post-TU147 to ensure that the LP fuel pump impeller is correctly driven by the HP fuel pump shaft to prevent any uncoupling. It also requires replacement of HP/LP Pump Metering Units, in case of discrepancies.</p> <p>(1) TU147 modification consists of bonding the LP fuel pump impeller with the impeller screw.</p>
Effective Date:	28 October 2010
Required Action(s) and Compliance Time(s):	<p>Required as indicated, unless accomplished previously:</p> <ol style="list-style-type: none"> (1) Within the compliance time indicated in Table 1 of this AD, accomplish the inspection and, in case of discrepancies, replace the HP/LP pump metering unit, in accordance with the applicable Turboméca Mandatory Service Bulletins (MSBs). (2) Replacement of the HP/LP Pump Metering Units with a serviceable one constitutes a terminating action for the requirements of this AD. (3) After the effective date of this AD, do not install HP/LP Pump Metering Units unless in compliance with the requirements of this AD.
Ref. Publications:	<p>Turboméca MSB A292 73 2830 version B dated 10 July 2009.</p> <p>Turboméca MSB A292 73 2836 version A dated 17 August 2010.</p> <p>The use of later approved revisions of these documents is acceptable for compliance with the requirements of this AD.</p>
Remarks :	<ol style="list-style-type: none"> 1. If requested and appropriately substantiated, EASA can approve Alternative Methods of Compliance for this AD. 2. This AD was posted on 13 September 2010 as PAD 10-099 for consultation until 11 October 2010. No comments were received during the consultation period. 3. Enquiries regarding this AD should be referred to the Airworthiness Directives, Safety Management & Research Section, Certification Directorate, EASA. E-mail: ADs@easa.europa.eu. 4. For any question concerning the technical content of the requirements in this AD, please contact: Turboméca, S.A. ARRIEL 2 Customer Support 40220 Tarnos, France Fax: +33 5 59 74 45 15 or your usual or nearest Turboméca technical representative at www.turbomeca-support.com

Appendix to AD 2010-0215

Table 1: HP/LP Pump Metering Unit Inspection and Replacement Requirements			
Condition	Inspection	Compliance Time for the inspection	Action to be accomplished
HP/LP Pump Metering Units which <u>do not incorporate</u> modification TU147	Check the transmissible torque between the LP pump impeller and the HP pump shaft in accordance with paragraph 2 of Turboméca MSB A292 73 2830 version B	Within 500 Engine Flight Hours (EFH) after 28 August 2009 [effective date of EASA AD 2009-0184] but no later than 30 June 2010 [original compliance date of EASA AD 2009-0184]	<u>If no discrepancies are found</u> , apply the nominal tightening torque to the screw of the LP pump impeller
			<u>If discrepancies are found</u> , before next flight, replace the HP/LP Pump Metering Unit with a serviceable pre-TU147 unit or a serviceable post-TU147 unit
HP/LP Pump Metering Units which <u>incorporate</u> modification TU147 <u>and</u> on which modification TU 147 was applied <u>before or on 31 March 2010, and are not listed in Figures 2 and 3 of Turboméca MSB A292 73 2836 version A</u>	Check the transmissible torque between the LP pump impeller and the HP pump shaft in accordance with paragraph 2 of Turboméca MSB A292 73 2836 version A	Within 750 EFH after the effective date of this AD, but no later than 14 months after the effective date of this AD	<u>If no discrepancies are found</u> , no further actions are required for compliance with the requirements of this AD
			<u>If discrepancies are found</u> , before next flight, replace the HP/LP Pump Metering Unit with a serviceable post-TU147 unit