

EASA	AIRWORTHINESS DIRECTIVE
	AD No : 2007-0109R1 Date: 09 November 2009 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.
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].	
Type Approval Holder's Name : TURBOMECA	Type/Model designation(s) : ARRIEL 2B, 2B1, 2B1A turboshaft engines
TCDS Number: EASA.E.001	
Foreign AD: Not applicable	
Supersedure: This AD revises EASA AD 2007-0109, dated 19 April 2007 and corrected 20 April 2007	
ATA 72	Engine – Module M03 (Gas Generator) – Turbine Blade Borescope Inspection/Replacement
Manufacturer(s): Turboméca, S.A.	
Applicability:	All ARRIEL 2B, 2B1, 2B1A turboshaft engines, which do not incorporate modification TU166 (<i>i.e.: Introduction of HP blade dampers</i>). These engines are known to be installed on, but not limited to, the following helicopters: Eurocopter AS 350 B3, EC 130 B4 helicopters and Changhe Z11 helicopters.
Reason:	Several cases of Gas Generator Turbine (HP Turbine) blade rearward displacement have been detected during borescope inspection or in repair centre following engine disassembly. Two of them resulted in blade rubs between the rear face of the fir-tree roots and the rear bearing support cover. Further investigation revealed that these displacements were caused by the deformation or rupture of the blade locks. High HP blade rearward displacement can potentially result in blade release due to fatigue of the blade, which would cause an uncommanded in-flight engine shutdown. On a single-engine helicopter, the result may be an emergency autorotation landing or, at worst, an accident.

	AD 2007-0109 was issued requiring a periodic borescope inspection in order to detect HP blade rearward displacement, and, in case displacement was found above the specified limit, removal of Module 03. This precaution measure has been taken only on engine powering single engine rotorcraft. Since issuance of AD 2007-0109, Turboméca has released modification TU166 which consists in inserting HP blade dampers between the HP disc and the HP blade platform. Introduction of these dampers has demonstrated to limit axial displacement of the HP blade relative to the disk in case of blade lock rupture or opening, therefore eliminating the need for inspection and replacement. Therefore, this AD revises AD 2007-0109 by retaining the same requirements of AD 2007-0109 except that applicability is limited to ARRIEL 2B, 2B1 and 2B1A engines which do not incorporate modification TU166.
Effective Date:	2007-0109 Revision 1: 23 November 2009 2007-0109 Original Issue: 03 May 2007
Compliance:	<u>If the engine does not incorporate modification TU166:</u> 1. Perform the HP turbine inspection according to Mandatory Service Bulletin No. 292 72 2825 Version B, within 600 gas generator hours or 500 cycles (whichever comes first) of the previous HP turbine borescope inspection. For Module 03 that have logged more than 600 hours or 500 cycles since new, repair or overhaul and for which the HP turbine borescope inspection was performed more than 600 hours or 500 cycles ago, this inspection must be performed within 100 hours upon effective date of this AD. This inspection must be repeated within 600 gas generator hours or 500 cycles (whichever comes first), or sooner as defined in paragraph 2. 2. Actions required following inspection: If inspections reveal HP blade rearward displacement, follow Mandatory Service Bulletin No. 292 72 2825 Version B § 2.B to determine which action has to be taken. Depending on the blade rearward displacement result, the action will be either: - Module 03 has to be removed - or - Inspect again within the schedules defined in Mandatory Service Bulletin No. 292 72 2825 Version B § 2.B. 3. After each inspection or replacement, the compliance certificate must be sent to Turboméca within 7 days, according to § 2.D.(1)(a)3 or (c)3 of Mandatory Service Bulletin No. 292 72 2825 Version B. <u>If the engine incorporates modification TU166:</u> No action is required.
Ref. Publications:	Turboméca S.A. Mandatory Service Bulletin 292 72 2825 Version B dated 21 September 2009. 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. The required actions and the risk allowance have granted the issuance of a Final AD with Request for Comments, postponing the public consultation process after publication. 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 contact your nearest technical representative at http://www.turbomeca-support.com).
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