
AIRWORTHINESS DIRECTIVE

For the reasons set out in the background section, the CASA delegate whose signature appears below issues the following Airworthiness Directive (AD) under subregulation 39.001(1) of CASR 1998. The AD requires that the action set out in the requirement section (being action that the delegate considers necessary to correct the unsafe condition) be taken in relation to the aircraft or aeronautical product mentioned in the applicability section: (a) in the circumstances mentioned in the requirement section; and (b) in accordance with the instructions set out in the requirement section; and (c) at the time mentioned in the compliance section.

Turbomeca Turbine Engines - Arriel Series**AD/ARRIEL/31 Reduction Gear Box Intermediate Pinion 3/2009**

Applicability: Arriel 1B, 1D and 1D1 turboshaft engines, all serial numbers.

Note 1: These engines are known to be installed on, but not limited to, Eurocopter AS 350 B, AS 350 BA, AS 350 B1 and AS 350 B2 helicopters.

Requirement: Replace the Reduction Gear Box Intermediate Pinions (P/N 0 292 70 779 0) with Pinions incorporating Turboméca modification TU 232 in accordance with Turboméca Mandatory Service Bulletin 292 72 0276 Version B dated 6 November 2008 or later approved revision.

Note 2: EASA AD 2009-0002 dated 7 January 2009 refers.

Compliance: No later than 28 February 2011, unless previously accomplished.

This Airworthiness Directive becomes effective on 12 March 2009.

Background: Several events of rupture of the Arriel 1 Reduction Gear Box Intermediate Pinion have been reported in service. The ruptures have been determined to be originated at the pinion teeth root due to increased vibratory stresses. This increase in vibratory stresses is mainly caused by increased teeth wear over engine life time.

The rupture of the Reduction Gear Box Intermediate Pinion may result in an overspeed of the Power Turbine and, subsequently, an uncommanded engine in-flight shutdown. This could lead to an emergency autorotation landing on a single-engine helicopter.

To reduce the level of vibratory stresses and improve tooth resistance, Turboméca modification TU 232 incorporates the addition of a damping ring below the teeth and a shot peening of the teeth roots. These modifications reduce the risk of incipient fatigue cracks.

Turbomeca Turbine Engines - Arriel Series

AD/ARRIEL/31 (continued)

This AD requires the replacement of all Reduction Gear Box Intermediate Pinions with Pinions incorporating Turboméca modification TU 232.

A handwritten signature in black ink, appearing to read 'James Coyne', with a stylized flourish at the end.

James Coyne
Delegate of the Civil Aviation Safety Authority

27 January 2009