
AIRWORTHINESS DIRECTIVE

On the effective date specified below, and for the reasons set out in the background section, the CASA delegate whose signature appears below revokes Airworthiness Directive (AD) AD/RB211/35 Amdt 1 and issues the following 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.

Rolls Royce Turbine Engines - RB211 Series

**AD/RB211/35
Amdt 2**

High Pressure Turbine

**7/2006
DM**

Applicability: Rolls Royce Model RB211-524 series engines, all marks, installed on Boeing 747 and 767 and Lockheed L1011 aeroplanes fitted with High Pressure (HP) Turbine discs only listed in Table 1 of this AD.

Table 1: Applicable HP Turbine Discs.

Part No	Serial No.	to	Serial No.
FK24651	LAQDY6061		Single Disc
FK24651	LDRCZ10453		LDRCZ10720 (INCLUSIVE)
FK24651	LQDY9903		Single Disc
FK24651	LQDY9924		Single Disc
FK24790	CRCZ6		CRCZ25 (INCLUSIVE)
FK24790	LDRCZ10717		LDRCZ14022 (INCLUSIVE)
UL23166	LQDY6516		LQDY8718 (INCLUSIVE)
UL24561	LQDY6389		LQDY6438 (INCLUSIVE)
UL24994	LQDY6405		LQDY8727 (INCLUSIVE)
UL29472	LAQDY6013		LAQDY6092 (INCLUSIVE)
UL29472	LDRCZ10029		LDRCZ10821 (INCLUSIVE)
UL29472	LDRCZ6000		LDRCZ6060 (INCLUSIVE)
UL29472	LQDY6592		LQDY9993 (INCLUSIVE)
UL29473	CRCZ24		CRCZ25 (INCLUSIVE)
UL29473	CZ12135		CZ12333 (INCLUSIVE)
UL29473	LAQDY6010		LAQDY6088 (INCLUSIVE)
UL29473	LDRCZ10003		LDRCZ15372 (INCLUSIVE)
UL29473	LDRCZ6001		LDRCZ9995 (INCLUSIVE)
UL29473	LQDY10001		Single Disc
UL29473	LQDY9606		LQDY9989 (INCLUSIVE)

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This AD does not apply to HP turbine discs, which are pre modification Service Bulletin (SB) 72-7730, post modification SB72-C109 or post modification SB72-C762.

Requirement: Carry out an eddy current inspection of the HP turbine disc in accordance with Section 3 - Accomplishment instructions of Rolls Royce NMSB 72-AE718 original issue or later EASA approved revision.

If a HP turbine disc has previously passed the inspection to Rolls-Royce NMSB 72-C816 or the focussed inspection carried out in accordance with Rolls-Royce TS594-J Overhaul Process Manual Task 70-00-00-200-223 at greater than 700 cycles since new, then either of these inspections meets the requirements of this AD.

Note: UK CAA AD G-2006-0002 EASA approval No. 2006-0034 dated 25 January 2006 refers.

- Compliance:**
- 1. For all discs listed in Table 2 that are fitted to RB211-524 engine marks except RB211-524D4 variants:**
 - (a) If the HP turbine disc cycles were greater than 6150 cycles since new on 24 November 2005, inspect the HP turbine disc within 500 cycles from 24 November.
 - (b) If the HP turbine disc cycles were less than 6150 cycles since new on 24 November 2005, inspect the disc by whichever is the soonest of the conditions below:
 - (i) Prior to reaching 6650 cycles since new. The HP turbine disc life at inspection must be greater than 700 cycles since new.
 - (ii) At next shop visit where the HP turbine rotor is removed from the Combustor Outer Case and the HP turbine disc life is greater than 700 cycles since new. If a HP turbine disc that meets these cyclic life criteria is currently at shop visit, and if, at the effective date of this Airworthiness Directive, it has not yet been reinstalled into the Combustion Outer Case, then the HP turbine disc must be inspected in accordance with the requirements of this Airworthiness Directive at the current shop visit.
 - 2. For all discs listed in Table 2 that are fitted to RB211-524D4 engine mark variants:**
 - (a) If the HP turbine disc cycles were greater than 5000 cycles since new on 24 November 2005, inspect the HP turbine disc within 500 cycles from 24 November 2005.

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- (b) If the HP turbine disc cycles were less than 5000 cycles since new on 24 November 2005, inspect the HP turbine disc by whichever is the soonest of the conditions below:
- (i) Prior to reaching 5500 cycles since new. The HP turbine disc life at inspection must be greater than 700 cycles since new.
 - (ii) At the next shop visit where the HP turbine rotor is removed from the Combustor Outer Case and the HP turbine disc life is greater than 700 cycles since new. If a HP turbine disc that meets these cyclic life criteria is currently at shop visit, and if, at the effective date of this Airworthiness Directive, it has not yet been reinstalled into the Combustion Outer Case, then the HP turbine disc must be inspected in accordance with the requirements of this Airworthiness Directive at the current shop visit.

3. For all other HP turbine discs specified in the Applicability of this Directive but not listed in Table 2 of this AD.

Inspect the HP turbine disc at next shop visit where the HP turbine rotor is removed from the Combustor Outer Case and the HP turbine disc life is greater than 700 cycles since new. If a HP turbine disc that meets these cyclic life criteria is currently at shop visit; and if, at the effective date of this Airworthiness Directive, it has not yet been reinstalled into the Combustion Outer Case, then the HP turbine disc must be inspected in accordance with the requirements of this Airworthiness Directive at the current shop visit.

Table 2

Part No	Serial No	Part No	Serial No
UL29473	LAQDY6043	UL29472	LQDY9125
UL29473	LAQDY6048	UL29472	LQDY9554
UL29473	LAQDY6079	UL29472	LQDY9582
UL29473	LDR CZ10057	UL29472	LQDY9895
UL29473	LDR CZ10264	UL29472	LQDY9910
UL29473	LDR CZ10415	UL29472	LQDY9947
UL29473	LDR CZ11402	UL29472	LQDY9960
UL29473	LDR CZ11425	UL24994	LQDY6777

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UL29473	LDRCZ11497	UL24994	LQDY6792
UL29473	LDRCZ11663	UL24994	LQDY6859
UL29473	LDRCZ11679	UL24994	LQDY6860
UL29473	LDRCZ12301	UL24994	LQDY6866
UL29473	LDRCZ12308	UL24994	LQDY6869
UL29473	LDRCZ12316	UL24994	LQDY6934
UL29473	LDRCZ12319	UL24994	LQDY6946
UL29473	LQDY6957	UL24994	LQDY6963
UL29473	LQDY9075	UL23166	LQDY6745
UL29473	LQDY9084	UL23166	LQDY6846
UL29473	LQDY9557	UL23166	LQDY6848
UL29473	LQDY9906	UL23166	LQDY6954
UL29473	LQDY9956	FK24790	LDRCZ12492
UL29473	LQDY9970	FK24790	LDRCZ12694
UL29473	LQDY9985		

This Amendment becomes effective on 11 May 2006.

Background: A population of HP turbine discs that were manufactured between 1989-1999 and which were subject to possible machining anomalies, were believed to have an increased chance of suffering from cooling air hole cracking, compared to the general fleet population of HP turbine discs. As a result of this risk, Rolls-Royce issued Non-Modification Service Bulletin (NMSB) 72-C816, recommending in-service inspections of the subject discs.

Recently an RB211 HP turbine disc has been found with a crack which had propagated further than expected from the risk model that was used to establish the original inspection defined in the above NMSB. This has led to the need for a revision of the original inspection requirements.

An HP turbine disc fracture would be uncontained and create a potential unsafe condition. Accordingly, this AD introduces revised inspection requirements to reflect the increased risk of HP turbine disc cracking and potential disc fracture.

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This amendment corrects serial numbers and part numbers detailed in Table 1 and clarifies the compliance statements.

The original issue of this AD was to become effective on 11 May 2006.

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

8 May 2006