



United Kingdom Civil Aviation Authority

AIRWORTHINESS DIRECTIVE

AD No: G-2005-0008

Issue Date: 8 March 2005

This AD is issued by the UK CAA acting for and on behalf of the European Aviation Safety Agency as the Primary Aviation Authority (ICAO Annex 8 Authority of State of Design) for the affected product(s).

Approved by the European Aviation Safety Agency under approval number 2005-2139 on 4 March 2005.

In accordance with Article 9(7)(b) of the Air Navigation Order 2000 as amended the following action required by this Airworthiness Directive (AD) is mandatory for applicable aircraft registered in the United Kingdom.

No person may operate an aircraft to which an AD applies except in accordance with the requirements of that AD unless otherwise agreed with the Authority of the State of Registry.

Type Approval Holders Name:

Type/Model Designation(s):

ROLLS-ROYCE PLC

RB211-524

Type Certificate Data Sheet No: 1043, 1046, 1048

Superseded AD: 006-04-2002

ATA 72 – ENGINE COMPRESSOR SECTION – INTERMEDIATE PRESSURE COMPRESSOR – INSPECTION

Manufacturer(s): Rolls-Royce plc

Applicability: Model RB211-524 series engines, all marks, which do not incorporate RB211-72-E182 bulletin and which are installed in Lockheed L-1011, Boeing 747 and 767 aircraft.

Reason: Cracking at the cooling air holes in the front spacer arm has been found in IP Compressor stage 5 disc at overhaul. The discs are predominantly high life, from RB211-524C2 and 524D4 engines but are common to all marks of 524 engines. It was concluded from the examination of these discs, that the cracking has the potential to affect disc integrity within the declared safe cyclic lives.

This directive supersedes an existing directive (previously referenced 006-04-2002) to limit its applicability to engines, which do not feature RB211-72-E182. It also adds a reference to the Service Bulletin RB211-72-E171 introducing an on-wing inspection technique for the RB211-524G/H engine types.

Effective Date: 18 March 2005

Compliance/Action:

(1) Remove IP Compressor Stage 5 discs from service before the cyclic life limits defined in Table 1 unless either of the following qualifying Magnetic Particle Inspection (MPI) or Eddy Current Inspection (ECI) are satisfied.

(a) Discs that have completed the workshop MPI or ECI in accordance with RB211-72-AD428 may remain in service post these workshop inspections for the cyclic lives given in Table 3 or until 1 December 2008 or until the cyclic life limit given in Table 4 is reached, whichever is sooner.

Or

(b) Discs that have completed satisfactory in-situ ECI in accordance with the appropriate instructions (given below) may remain in service post the in-situ inspection for the cyclic lives given in Table 3 or until 1 December 2008 or until the cyclic life limit given in Table 4 is reached whichever is sooner. The in-situ ECI can be used only once between workshop inspections.

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The appropriate instructions for the in-situ ECI are detailed in:

RB211-72-E148 for RB211-524B2 and C2 models
 RB211-72-E150 for RB211-524B4 and D4 models
 RB211-72-E171 for RB211-524G and H models

- (2) With effect of the 1 December 2008, remove from service any disc, which exceeds the cyclic life defined in Table 2. The provisions of paragraphs (1)(a) and (1)(b) cannot be applied post 1 December 2008.

Table 1: Cyclic life limits without qualifying NDT inspection				
Effective Date	G2, G2-T, G3, G3-T, H2, H2-T, H-36, H-T-36	D4, D4-B, D4-B-39, D4X, D4X-B, D4-39	B2, B2-B, C2, C2-B	B-02, B-B-02, B3-02, B4-02, B4-D-02
30 November 2002	13500	16150	16000	16200
01 April 2003	13500	13500	13500	14000
01 December 2003	12000	13500	13500	14000
01 December 2004	11000	13500	12000	12000
01 December 2005	11000	12000	12000	12000

Table 2: Cyclic life limits effective on 01 December 2008			
G2, G2-T, G3, G3-T, H2, H2-T, H-36, H-T-36	D4, D4-B, D4-B-39, D4X, D4X-B, D4-39	B2, B2-B, C2, C2-B	B-02, B-B-02, B3-02, B4-02, B4-D-02
7830	8700	8900	9000

Table 3: Cyclic life alleviation post qualifying NDT inspection				
	G2, G2-T, G3, G3-T, H2, H2-T, H-36, H-T-36	D4, D4-B, D4-B-39, D4X, D4X-B, D4-39	B2, B2-B, C2, C2-B	B-02, B-B-02, B3-02, B4-02, B4-D-02
After MPI (workshop)	1600	2000	2000	2000
After ECI (workshop) in accordance with RB211-72-AD428	3800	4500	4500	4500
After ECI (in-situ)	1000	1200	1200	1200

Table 4: Cyclic life limits			
G2, G2-T, G3, G3-T, H2, H2-T, H-36, H-T-36	D4, D4-B, D4-B-39, D4X, D4X-B, D4-39	B2, B2-B, C2, C2-B	B-02, B-B-02, B3-02, B4-02, B4-D-02
14140	19300	18700	22800

Reference Publications: Rolls-Royce Alert Service Bulletins RB211-72-AD428, RB211-72-E148, RB211-72-E150 and RB211-72-E171 may be obtained from Rolls-Royce plc, Technical Publications, PO Box 31, Derby, DE24 8BJ, United Kingdom.

Remarks: Enquiries regarding this Airworthiness Directive should be directed to the Civil Aviation Authority, Safety Regulation Group, Propulsion Department, Aviation House, Gatwick Airport South, West Sussex, RH6 0YR. Phone: +44(0)1293 573641 Fax: +44 (0)1293 573979 Email: christophe.denis@srg.caa.co.uk.