
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/AL 250/86 Amdt 2 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.

Allison Turbine Engines - 250 Series**AD/AL 250/86
Amdt 3****Compressor Adaptor Coupling****5/2012**

Applicability: Rolls-Royce Corporation (formerly Allison Engine Company, Allison Gas Turbine Division, and Detroit Diesel Allison) 250-B17, -B17B, -B17C, -B17D, -B17E, 250-C20, -C20B, -C20F, -C20J, -C20S, and -C20W series turboprop and turboshaft engines with the compressor adaptor couplings installed listed in Table 1 of this Directive.

Table 1. - Affected Compressor Adaptor Couplings

Manufacturer	Affected part numbers
Alcor Engine Company (Alcor)	P/Ns 23039791AL. 23039791AL-1/-2/-3.
EXTEX Ltd. (EXTEX)	A23039791. E23039791. E23039791-1/-2/-3. EH23039791. EH23039791-1/-2/-3.
Rolls-Royce Corporation (RRC)	23039791-1/-2/-3.
Superior Air Parts (SAP)	A23039791.

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These engines are installed on, but not limited to, the aircraft in Table 2 of this Directive:

Table 2. - Applicable Aircraft

Helicopters
Agusta Models. A109, A109A, A109A II.
Bell Models. 206A, 206B, 206L.
Enstrom Models. TH-28, 480, 480B.
Eurocopter France Models. AS355E, AS355F, AS355F1, AS355F2.
Eurocopter Deutschland Models. BO-105C, BO-105S.
MDHI Models. 369D, 369E, 369H, 369HM, 369HS, 369HE.
Schweizer Model 269D.
Aeroplanes
B-N Group Ltd. Model. BN-2T.

Requirement: **1. Alcor Compressor Adaptor Couplings**

Remove Alcor compressor adaptor couplings, P/Ns 23039791AL, 23039791AL-1, -2, and -3 from service.

2. EXTEX and SAP Compressor Adaptor Couplings

Remove EXTEX and SAP compressor adaptor couplings, P/Ns A23039791, E23039791, E23039791-1, -2, and -3, EH23039791, and EH23039791-1, -2, and -3, from service.

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3. RRC Compressor Adaptor Couplings

Remove RRC compressor adaptor couplings, P/Ns 23039791-1, -2, and -3 from service.

4. Installation Requirements for Compressor Adaptor Couplings

Machine the compressor impeller as follows:

- (a) Select and measure the pilot outside diameter (OD) of a new larger dash size coupling.
- (b) For example, if a -1 coupling was removed, a -2 coupling must be installed.
- (c) If a -3 coupling is removed, a new impeller is required.
- (d) Machine the inside diameter (ID) of the compressor impeller to achieve a fit of 0.0000 to -0.0013 inch. No fretting is allowed on the impeller after machining.
- (e) Due to previous fretting, an impeller with a -1 coupling removed might have to be machined for a -3 coupling. Plating of the impeller ID is not allowed.
- (f) Fluorescent penetrant inspect the impeller.
- (g) Install a new compressor adaptor coupling, P/N 23076559-2 or -3; or
- (h) If a new impeller is installed, then install compressor adaptor coupling, P/N 23076559-1.
- (i) Heating of the impeller per the engine overhaul manual is required to install the coupling to achieve the target fit specified in Table 3 of this Directive:

New adaptor	Adaptor OD	Fit (interference)
(i) 23076559-1	0.9000 to 0.9008 inch	0.0000 to -0.0013 inch.
(ii) 23076559-2	0.9020 to 0.9028 inch	0.0000 to -0.0013 inch.
(iii) 23076559-3	0.9040 to 0.9048 inch	0.0000 to -0.0013 inch.

- (j) The mating surfaces of the impeller and coupling must not have any fretting. Do not install a -1 coupling into a used impeller.

Note: FAA AD 2004-26-09 Amdt 39-13921 refers.

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Compliance: **1. Alcor Compressor Adaptor Couplings**

- (a) For couplings with 600 or more operating hours-since-new as of the effective date of this Directive, or the operating hours are unknown and cannot be determined, remove couplings from service within 50 additional operating hours after the effective date of this Directive or by 15 June 2005, whichever occurs later.
- (b) For couplings with fewer than 600 operating hours-since-new on the effective date of this Directive, remove couplings from service before exceeding 650 operating hours-since-new or by 15 June 2005, whichever occurs later.

2. EXTEX and SAP Compressor Adaptor Couplings

- (a) For couplings with 600 or more operating hours-since-new as of the effective date of this Directive, or the operating hours are unknown and cannot be determined, remove couplings from service within 100 additional operating hours after the effective date of this Directive or by 15 June 2005, whichever occurs later.
- (b) For couplings with fewer than 600 operating hours-since-new on the effective date of this Directive, remove couplings from service within 150 additional operating hours after the effective date of this Directive or by 15 June 2005, whichever occurs later.

3. RRC Compressor Adaptor Couplings

At the next time the compressor rotor is disassembled for any reason, but not later than 1 March 2017, subject to the following conditions:

- (a) The engine has been operating with acceptable power assurance checks.
- (b) The engine, gearbox, or turbine has not experienced any recent chip lights or metal in oil events.
- (c) All mandatory bulletins issued by RRC have been accomplished within the designated compliance requirements.
- (d) That the maintenance records indicate proper engine maintenance has been performed per the applicable Operations and Maintenance Manual.
- (e) Compliance with Commercial Engine Bulletin (CEB)-A-1392 latest revision is still applicable next time the compressor is due for repair or overhaul.
Compliance Code 4.

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- (f) The parts related to the CEB or AD must have been manufactured by Rolls-Royce. If they are not Rolls-Royce manufactured parts, RRC Compressor Adaptor Couplings must be replaced by the compliance date of revision 2 of this AD (1 March 2012).

4. Installation Requirements for Compressor Adaptor Couplings

From the effective date of this Directive.

Definition

For the purposes of this Directive, next access is defined as when the compressor module is separated from the engine and disassembled for any reason.

This Amendment becomes effective on 8 March 2012.

Background: This AD results from nine reports of engine shutdown caused by compressor adaptor coupling failure.

Amendment 3 compliance date extended for RRC compressor adapter couplings, subject to the stated conditions.

Amendment 2 corrected a typographical error in Table 2 of the Applicability and removes the discrepancy in the compliance times for EXTEX and SAP couplings.

Amendment 1 amended the compliance period.

Amendment 1 of this Directive became effective on 22 March 2005.

The original issue of this Directive became effective on 17 March 2005.



Mike Higgins
Delegate of the Civil Aviation Safety Authority

8 March 2012