


EASA	AIRWORTHINESS DIRECTIVE	
	AD No.: 2009-0088R1 Corrected: 17 August 2010	
	Date: 28 April 2009	
<p>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.</p>		
<p>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].</p>		
Type Approval Holder's Name : CFM International SA (CFM)		Type/Model designation(s) : CFM56-5B turbofan engines
TCDS Number : EASA.E.003		
Foreign AD : Not applicable		
Revision : This AD revises EASA AD 2009-0088 issued on 24 April 2009.		
ATA 72	Engine – High Pressure Compressor (HPC) – Inspection / Replacement	
Manufacturer(s):	Snecma, General Electric	
Applicability:	<p>CFM56-5B1/P, -5B2/P, -5B3/P, -5B3/P1, -5B4/P, -5B5/P, -5B6/P, -5B7/P, -5B8/P, -5B9/P, -5B4/P1, -5B1/2P, -5B2/2P, -5B3/2P, -5B3/2P1, -5B4/2P, -5B4/2P1, -5B6/2P and -5B9/2P engines, all serial numbers, if operating with software version 5.B.Q (installed in accordance with CFM International Service Bulletin (SB) CFM56-5B 73-0222) or earlier software versions.</p> <p>These engines are known to be installed on, but not limited to the following aeroplane models:</p> <p>AIRBUS A318-111, A318-112, A319-111, A319-112, A319-115, A320-214, A320-215, A320-216, A321-111, A321-112, A321-211, A321-212 and A321-213.</p> <p>This AD is not applicable if engine software version 5.B.R (installed in accordance with CFM56-5B SB 73-0229) or later approved software versions are installed.</p>	
Reason:	<p>Several in service occurrences of HPC stalls have been reported by operators of Airbus aeroplane fitted with CFM International CFM56-5B engines since January 2007. Root cause is highly deteriorated HPCs. To improve operability and maintainability, CFM International released Engine Control Unit software 5.B.Q in January 2007 which features 2 degrees additional Variable Stator Vanes closure in the low power region to increase the stall margin. This 5.B.Q software introduction has reduced the frequency of stalls; however, since April 2008, 12 different engines with this software have experienced stalls at 3 different operators.</p>	

	<p>On 15 December 2008, a CFM56-5B powered Airbus A321 aeroplane experienced stalls on both engines during the same flight. This event was caused by a high level of HPC deterioration.</p> <p>Stalls on both engines during flight can cause a dual engine loss of thrust.</p> <p>AD 2008-0227-E, applicable to CFM56-5B engines, was issued to require the EGT deterioration to be established, and for one of the engines to be replaced on aeroplanes with both engines indicating more than 80 degree Celsius (°C) of deterioration.</p> <p>It was subsequently deemed necessary to mandate repetitive inspections, to reduce the deterioration threshold to 75°C, and to apply additional aeroplane level operational requirements. These actions were introduced by EASA AD 2008-0228-E, which superseded AD 2008-0227-E.</p> <p>In February 2009, CFM introduced the 5.B.R software standard (CFM56-5B SB 73-0229) which provides additional stall margin and introduces a rating specific trim to limit the total Exhaust Gas Temperature (EGT) deterioration. This will prevent HPC deterioration progressing to the level at which this type of stall event can occur. This software version is not applicable to Double Annular Combustor engine models.</p> <p>EASA AD 2009-0088, superseding AD 2008-0228-E, introduced limitations to the applicability, deleted aeroplane actions which were no longer necessary to prevent the identified unsafe condition and deleted redundant maintenance tasks. This AD also required the installation of 5.B.R software as a terminating action.</p> <p>This Revision 1 is issued to clarify in the Required action and Compliance Time section of this AD that the installation of 5.B.R. software is required and terminates the repetitive requirements of this AD only for those engines to which CFM56-5B SB 73-0229 applies.</p> <p>This AD is republished to correct a typographical error of a reference document in the Applicability paragraph.</p>
Effective Date:	08 May 2009
Required Action(s) and Compliance Time(s):	<p>Required as indicated unless accomplished previously in accordance with AD 2008-0227-E or AD 2008-0228-E:</p> <ol style="list-style-type: none"> 1. For engines having accumulated at the effective date of this AD 11 000 total hours or more since new or since a full HPC performance restoration: <ol style="list-style-type: none"> 1.1 No later than 14 days from the effective date of this AD, determine the engine EGT margin deterioration in accordance with CFM International SB CFM56-5B 72-0722 Revision 01. Depending on the results, apply the relevant corrective actions in accordance with paragraph 1.3. of this AD. 1.2 Repeat the determination of the engine EGT margin deterioration, at intervals not exceeding 800 Flight Cycles and, depending on the results, apply the relevant corrective actions in accordance with paragraph 1.3. of this AD. 1.3 For aeroplanes where both engines indicate more than 75°C EGT margin deterioration, within 30 days either remove one engine and replace it with an engine indicating less than 75°C EGT margin deterioration or install 5.B.R engine software in accordance with CFM56-5B SB 73-0229, if the engine is listed in the effectivity of CFM56-5B SB 73-0229. 1.4 For those engines listed in the effectivity of CFM56-5B SB 73-0229, accomplish CFM56-5B SB 73-0229 within 6 months from the effective date

	<p>of this AD. The accomplishment of CFM56-5B SB 73-0229 terminates the repetitive requirements of this AD.</p> <ol style="list-style-type: none"> 2. For those engines listed in the effectivity of CFM56-5B SB 73-0229, having accumulated at the effective date of this AD less than 11 000 total hours since new or since a full HPC performance restoration, accomplish CFM56-5B SB 73-0229 within 12 months from the effective date of this AD. The accomplishment of CFM56-5B SB 73-0229 terminates the repetitive requirements of this AD. 3. For those engines not listed in the effectivity of CFM56-5B SB 73-0229, having accumulated at the effective date of this AD less than 11 000 total hours since new or since a full performance restoration, upon accumulation of 11 000 total hours since new or since a full HPC performance restoration, accomplish the requirements and the relevant corrective actions of paragraph 1.1, 1.2 and 1.3 of this AD. 4. After 12 months from the effective date of this AD, do not install any CFM56-5B engine listed in the effectivity of CFM56-5B SB 73-0229 on an aeroplane, unless in accordance with CFM56-5B SB 73-0229.
Ref. Publications:	<p>CFM56-5B S/B 72-0722 Revision 01 – CFM56-5B High Pressure Compressor 75 °C Degrees Performance Deterioration. CFM56-5B SB 73-0229 – 5.B.R Software.</p> <p>The use of later approved revisions of these documents is acceptable for compliance with the requirements of this AD.</p>
Remarks :	<ol style="list-style-type: none"> 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: CFM International, SA Customer Support Center E-mail: snecma.csc@snecma.fr. International Phone : +33 1 64 14 88 66; Fax : +33 1 64 79 85 55.