

Airworthiness Directive of The Netherlands

Bijzondere Luchtwaardigheids Aanwijzing - BLA

Correspondence address
P.O. Box 575, 2130 AN Hoofddorp, The Netherlands

Caution

In accordance with the Aviation Act 2001 (Wet Luchtvaart), Article 3.22, the following Airworthiness Directive (BLA) is issued by the Minister of Transport, Public Works and Water Management. Airworthiness Directives affect aviation safety. These are regulations which require immediate attention. You are cautioned that no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements thereof.

BLA nr. 2002-119 (A)

Date : August 30, 2002

FOKKER SERVICES B.V.
(formerly Fokker Aircraft B.V.)
Model F.28 Mk.0100

CAA-NL Type Certificate Nr.

T-100-87

AIRPLANE FLIGHT MANUAL - ENGINE OPERATING LIMITS & PROCEDURES - AMENDMENTS
&
INDICATING/RECORDING - FLIGHT WARNING COMPUTER & MULTI-FUNCTION DISPLAY UNITS -
REPLACEMENT
&
ENGINE - FAN BLADES - INSPECTION (UPON EXCEEDENCE OF NEW LIMITS)

Description :

In 1997, a Fokker 100 (F.28 Mk.0100) suffered an uncontained engine failure prior to take-off, whereby five fan blades of the Rolls-Royce Tay650-15 engine failed. The investigation showed that this was due to cracking of the fan blades, initiated under conditions of fan flutter. A more recent uncontained engine failure is still under investigation, but evidence revealed that this case, most probably, was also caused by fan flutter. Testing following the first event demonstrated that for the Tay650-15 engines as installed on the Fokker 100, the margin to fan flutter is minimal if operation during reverse thrust is stabilized in the 60%-75% N1 RPM range. In the period 1997 – 1998 the CAA (UK) and the RLD (CAA-NL) mandated changes to the AFM Limitation Section to prevent stabilized operation in the critical N1 range in reverse thrust and mandated maintenance actions to be taken following an inadvertent exceedance of the engine operating limits.

After more extensive testing and analysis, the N1 fan blade flutter speed range was redefined at 57%-75% N1 in reverse thrust. Also a restricted N1 speed range (60%-72%) in forward thrust (on a static aircraft in winds greater than 15 knots) was defined. In this range, accelerated growth of an already existing fan blade crack (due to a fan flutter occurrence) could occur. After evaluation of the possible measures, it was concluded that the introduction of a so-called N1 Alerting System, in combination with more detailed and stricter maintenance actions, following sustained operation in the critical reverse thrust N1 speed range (as signalled by this system), as well as strict maintenance actions following sustained ground running in the critical forward thrust N1 speed range, would largely prevent the potentially hazardous consequences of fan flutter.

Since an unsafe condition has been identified that is likely to exist or develop on other aircraft of this type design, the present Airworthiness Directive (BLA) requires amendments to the AFM, Master Minimum Equipment List (MMEL) and Maintenance Review Board (MRB) document, the introduction of new software to the Flight Warning Computer (FWC) and the Multi Function Display Unit (MFDU) (thereby introducing a new N1 Alerting System) and the introduction of changes in the maintenance procedures.

Applicability : Fokker Aircraft B.V. Model F.28 Mk.0100 aircraft, all serial numbers, if equipped with Rolls-Royce Tay650-15 engines

Effective date : October 1, 2002

Compliance : Required as indicated, unless accomplished previously.

(a) Before next flight after March 1, 1999 (the effective date of BLA 1997-110 issue 3), amend the AFM in accordance with the instructions contained in Fokker Services' Manual Change Notifications – Operational Documentation (MCNO) F100-006 dated November 27, 1997 and F100-016 dated February 4, 1999. **This is a restatement of the remaining requirement of BLA 1997-110/3**, which is hereby cancelled.

Note 1 : For aircraft that are already in compliance with these requirements, no action is required with regard to paragraph (a) of this directive;

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(b) Subsequent to the requirement in paragraph (a) of this directive but before next flight after the effective date of this directive, amend the applicable AFM in accordance with the instructions of Fokker Services MCNO F100-035 dated July 8, 2002;

(c) Within one calendar month after the effective date of this directive, accomplish the following :

(1) Amend the MRB document (now at revision 10, dated October 1, 2001) in accordance with the instructions in Temporary Revision GEN-001 and STR-001, both dated March 1, 2002; and

(2) Amend the maintenance procedures in accordance with the instructions contained in Fokker Services Manual Change Notification - Maintenance Documentation (MCNM) F100-069 dated July 23, 2002 and F100-067 Revision 1 dated July 29, 2002. Inserting a copy of the AMM Temporary Revisions which were issued by Fokker Services on 15 August 2002 into the operator's maintenance document constitutes compliance with this requirement.

(d) Within the next 24 calendar months after the effective date of this directive, accomplish the following :

(1) Replace the FWC and MFDU with modified units in accordance with the Accomplishment Instructions of Fokker Service Bulletin (SB) F100-31-060 dated June 1, 2002 or a later CAA-NL Approved revision;

(2) Before or concurrent with the replacement of the FWC and MFDU, modify the Thrust Reverser Indication and Control System in accordance with the Accomplishment Instructions of Fokker SB F100-78-016 dated October 1, 1999 or SB F100-78-017 dated December 1, 1999, as applicable, or later CAA-NL approved revisions;

(3) Concurrent with the replacement of the FWC and MFDU, amend the AFM and MMEL to reflect the post SBF100-31-060 configuration, in accordance with the instructions as detailed in Fokker Services' MCNO F100-034 dated June 1, 2002; and

(4) Concurrent with the replacement of the FWC and MFDU, amend the MRB document to reflect the post SBF100-31-060 configuration in accordance with the instructions in Temporary Revision 77-001 dated July 15, 2002.

(e) Whenever the 57%-75% N1 speed range limitation in reverse thrust or the 60%-72% N1 speed range limitation in forward thrust during ground operation, both introduced with paragraph (b) of this directive, is exceeded, take the necessary maintenance actions in accordance with the instructions and within the compliance times contained in Fokker Services MCNM F100-067 Revision 1, as indicated in paragraph (c)(2) of this directive.

Note 2 : For aircraft in the post -SBF100-31-060 configuration, any exceedance of the 57%-75% N1 speed range limitation in reverse thrust will be detected and signalled by the N1 alerting system.

Note 3 : Compliance with the requirement for exceedance of reverse thrust operating limitation in paragraph (e) of this directive, is also referred in the requirements of BLA 2002-063.

Note 4 : CAA (UK) AD's 008-10-97 and 001-12-97 were issued in the Netherlands under Airworthiness Directive (BLA) numbers 1997-119 and 1998-009, respectively. BLA 1997-119 is now at issue 2 dated January 30, 1998, while BLA 1998-009 has been superseded by BLA 2002-063 dated May 31, 2002 as a result of the Tay Engine TC transfer from the United Kingdom to Germany. Both BLA 1997-119/2 and 2002-063 are still effective and pertain to the subject of this directive.

Note 5 : Fokker 70/100 All Operator Message No. AOF100.092 (Ref. TS02.53433) dated May 27, 2002 also pertains to this subject.

Remarks :

- Operators of the affected aircraft may obtain copies of the referenced service information upon request directly from **Fokker Services B.V., Technical Services Dept., P.O.Box 231, 2150 AE Nieuw-Vennep, The Netherlands; telephone (31) 252-627-350; facsimile (31) 252-627-211; e-mail technicalservices.fokkerservices@stork.com.**
- Compliance with this directive must be recorded in the proper Aircraft Log Book(s).
- Where applicable, the requirements of this directive must be integrated into the aircraft's Maintenance Schedule.
- **This Airworthiness Directive (BLA) supersedes and cancels BLA 1997-110/3 dated January 29, 1999.**

Address inquiries concerning this AD to :

Aircraft Division, Section C&D; telephone +31-23-566-3155; facsimile +31-23-566-3006; e-mail Info.Register@ivw.nl.