



Airworthiness Directive

AD No.: 2019-0224

Issued: 06 September 2019

Note: This Airworthiness Directive (AD) is issued by EASA, acting in accordance with Regulation (EU) 2018/1139 on behalf of the European Union, its Member States and of the European third countries that participate in the activities of EASA under Article 129 of that Regulation.

This AD is issued in accordance with Regulation (EU) 748/2012, Part 21.A.3B. In accordance with Regulation (EU) 1321/2014 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 [Regulation (EU) 1321/2014 Annex I, Part M.A.303] or agreed with the Authority of the State of Registry [Regulation (EU) 2018/1139, Article 71 exemption].

Design Approval Holder's Name:

FOKKER SERVICES B.V.

Type/Model designation(s):

F28 aeroplanes

Effective Date: 20 September 2019

TCDS Number(s): EASA.A.037

Foreign AD: Not applicable

Supersedure: This AD supersedes EASA AD 2011-0159 dated 26 August 2011 and EASA AD 2017-0163 dated 04 September 2017.

ATA 32 – Landing Gear – Main Landing Gear / Piston – Inspection / Replacement / Modification

Manufacturer(s):

Fokker Aircraft B.V.

Applicability:

F28 Mark 0070 and Mark 0100 aeroplanes, all serial numbers (s/n).

Definitions:

For the purpose of this AD, the following definitions apply:

The SB: Fokker Services Service Bulletin (SB) SBF100-32-172, which includes reference to Goodrich SB 41000-32-036.

Affected part: Main landing gear (MLG) pistons, having Part Number (P/N) 41141-3, all s/n; and MLG pistons having P/N 41141-5 and s/n SS0251, SS0255, SS0260, SS0314, or SS0339.

Affected MLG unit: UTC Aerospace (Goodrich, formerly Menasco, Colt Industries) MLG units, having a P/N as identified in the SB and having an affected part installed.



Serviceable part: MLG pistons, having P/N 41141-7; or P/N 41141-5, if overhauled before 01 September 2019, except those having s/n SS0251, SS0255, SS0260, SS0314, or SS0339.

Serviceable MLG unit: Any MLG unit, having a P/N as identified in the SB and having a serviceable part installed, which includes those MLG modified in accordance with the instructions of Goodrich SB 41000-32-036.

Reason:

In 2009, during a normal walk-around check on an F28 Mk0100 aeroplane, a large crack was discovered in the lower portion of the right-hand (RH) MLG piston. The investigation results revealed that the crack had existed and propagated for a substantial period, originally initiated by corrosion pits. Prompted by these findings, Fokker Services introduced repetitive inspections into the Airworthiness Limitations Section (report SE-623 issue 8) in Appendix 1 of the Maintenance Review Board (MRB) document to safeguard the integrity of the MLG assembly, pending the accomplishment of a terminating action. Consequently, EASA issued AD 2011-0157 to require compliance with those instructions.

At the same time, Goodrich issued SB 41000-32-29 (which was the subject of Fokker Services SBF100-32-161) to introduce an improved surface protection (nickel plate) rework of the affected area of the MLG piston P/N 41141-3, with re-identification as P/N 41141-5. Subsequently, EASA issued AD 2011-0159 to require the repetitive inspections of Fokker Services report SE-623 and a modification, installing MLG piston P/N 41141-5, which was terminating action for the inspections.

More recently, during a normal walk-around check, a large crack was found in the lower portion of the left-hand (LH) MLG piston, P/N 41141-5, installed on an F28 Mk0100. Because this case was initially assumed to be similar to the 2009 event, Fokker Services issued SBF100-32-169 to provide instructions for a detailed inspection of the MLG pistons P/N 41141-5. EASA issued AD 2017-0163 to require that action. Goodrich and Fokker Services investigated that occurrence and, although no firm conclusion could be established as to the root cause of the event, one possible factor considered was hydrogen-assisted cracking. The investigation in fact has identified the failed piston as one of a batch of six MLG pistons P/N 41141-5 for which it could not be shown that the required heat treatments had been accomplished correctly during overhaul. Another possible factor considered was that the wire harness port of the MLG piston is a highly stressed area, prone to high-rate crack growth if small surface imperfections would be present.

This condition, if not detected and corrected, could lead to MLG failure during rollout after landing, possibly resulting in damage to the aeroplane and injury to occupants.

To address this unsafe condition, Goodrich amended the Component Maintenance Manual (CMM) overhaul instructions to introduce an additional detailed inspection step and subsequent diameter increase of the wire harness port, prior to the application of the nickel plating. This modification will (re)identify MLG pistons as P/N 41141-7. Goodrich issued SB 41000-32-036 (which is the subject of the SB, as defined in this AD) for modification of non-nickel-plated P/N 41141-3 pistons and P/N 41141-5 pistons. The SB also provides instructions to remove five MLG pistons P/N 41141-5, identified by s/n, from service, since these belong to the same batch of pistons as the failed one, for which it could not be shown that the required heat treatments had been accomplished correctly during overhaul.



For the reasons described above, this AD retains the requirements of EASA AD 2011-0159, which is superseded, and requires replacement of each affected part, or replacing the affected MLG unit (having an affected part installed) with a serviceable MLG unit. This AD also prohibits (re)installation of an affected part. This AD also supersedes EASA AD 2017-0163 without retaining any requirements.

Required Action(s) and Compliance Time(s):

Required as indicated, unless accomplished previously:

Inspection(s):

- (1) Within 2 months after 09 September 2011 [the effective date of EASA AD 2011-0159], or within 12 months after an inspection in accordance with the accomplishment instructions of Fokker SBF100-32-158, whichever occurs later, and, thereafter, at intervals not to exceed 12 months, visually inspect each affected part in accordance with the instructions of Fokker Services report SE-623 Issue 8, task 321100-01-16, or the instructions of Fokker SBF100-32-158.

Corrective Action(s):

- (2) If, during any inspection as required by paragraph (1) of this AD, cracks are detected, before next flight, replace the affected part with a serviceable part in accordance with the instructions of the applicable Goodrich Landing Gear CMM.

Modification / Replacement:

- (3) For affected parts P/N 41141-5, s/n SS0251, SS0255, SS0260, SS0314 and SS0339: Within 6 months after the effective date of this AD, replace each affected part with a serviceable part, as defined in this AD, or replace the MLG unit with a serviceable MLG unit, as defined in this AD, in accordance with the instructions of the SB.
- (4) Within 120 months, or during a scheduled overhaul of the MLG, whichever occurs first after 09 September 2011 [the effective date of EASA AD 2011-0159], modify each affected MLG unit by installing a serviceable part, as defined in this AD, or replace the affected MLG unit with a serviceable MLG unit, as defined in this AD, in accordance with the instructions of the SB.
- (5) Re-installation of an MLG piston, which has been modified and re-identified in accordance with the instructions of Goodrich SB 41000-32-036, is an acceptable method to comply with the requirements of paragraph (4) of this AD.

Credit:

- (6) Modification or replacement of both MLG units on an aeroplane, before the effective date of this AD in accordance with the instructions Fokker Services SBF100-32-161, is an acceptable method to comply with the requirements of paragraph (4) of this AD, provided it is determined that both MLG are serviceable MLG units, as defined in this AD.

Terminating Action:

- (7) Replacement of a single affected part on an aeroplane as required by paragraph (2) of this AD does not constitute terminating action for the repetitive inspection requirements of paragraph (1) of this AD for that aeroplane.



- (8) Modification or replacement of both MLG units on an aeroplane, as required by paragraph (3) or (4) of this AD, as applicable, constitutes terminating action for the repetitive inspections as required by paragraph (1) of this AD for that aeroplane.

Parts Installation:

- (9) From the effective date of this AD, except as required by paragraph (10) of this AD, it is allowed to install on any aeroplane an MLG piston, or an MLG, provided the MLG piston is a serviceable part, and the MLG is a serviceable MLG unit, as defined in this AD.
- (10) From the effective date of this AD, do not install on any aeroplane an affected part having P/N 41141-5, s/n SS0251, SS0255, SS0260, SS0314, or SS0339.

Ref. Publications:

Fokker Services SBF100-32-158 original issue dated 02 October 2009.

Fokker Services SBF100-32-161 original issue dated 07 April 2011.

Fokker Services SBF100-32-172 original issue dated 25 June 2019.

Goodrich SB 41000-32-036 original issue dated 24 June 2019.

Fokker Services report SE-623 issue 8 dated 20 December 2010.

The use of later approved revisions of the above-mentioned documents is acceptable for compliance with the requirements of this AD.

Remarks:

1. If requested and appropriately substantiated, EASA can approve Alternative Methods of Compliance for this AD.
2. This AD was posted on 30 July 2019 as PAD 19-150 and re-published on 01 August 2019 as PAD 19-150R1 for consultation until 27 August 2019. The Comment Response Document can be found in the [EASA Safety Publications Tool](#), in the compressed (zipped) file attached to the record for this AD.
3. Enquiries regarding this AD should be referred to the EASA Programming and Continued Airworthiness Information Section, Certification Directorate. E-mail: ADs@easa.europa.eu.
4. Information about any failures, malfunctions, defects or other occurrences, which may be similar to the unsafe condition addressed by this AD, and which may occur, or have occurred on a product, part or appliance not affected by this AD, can be reported to the [EU aviation safety reporting system](#).
5. For any question concerning the technical content of the requirements in this AD, please contact: Fokker Services B.V., Technical Services Dept., P.O. Box 1357, 2130 EL, Hoofddorp, The Netherlands, Telephone +31-88-6280-350, Fax +31-88-6280-111,



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The referenced publication can be downloaded from www.myfokkerfleet.com.

