



AIRWORTHINESS DIRECTIVE

This Airworthiness Directive (AD) is issued pursuant to Canadian Aviation Regulation (CAR) 521.427. No person shall conduct a take-off or permit a take-off to be conducted in an aircraft that is in their legal custody and control, unless the requirements of CAR 605.84 pertaining to ADs are met. Standard 625 - Aircraft Equipment and Maintenance Standards Appendix H provides information concerning alternative means of compliance (AMOC) with ADs.

Number:

CF-2020-22

Effective Date:

19 June 2020

ATA:

53

Type Certificate:

A-22

Subject:

Fuselage Structure – Inspection and replacement of fuselage struts

Replacement:

Supersedes AD CF-98-37R1, issued 20 August 1999.

Applicability:

Viking Air Ltd. (formerly Bombardier Inc.) model DHC-2 Mk. I, DHC-2 Mk. II and DHC-2 Mk. III aeroplanes, all serial numbers.

Compliance:

As indicated below, unless already accomplished.

Background:

Operators have reported incidents of corrosion of the DHC-2 front fuselage struts which are installed on each side of the flight compartment windshield. Deterioration of the airframe lugs to which the struts are attached has also been reported. The actions specified by this AD are intended to prevent structural failure of the front fuselage caused by damage to the fuselage struts and airframe lugs that develops over time, which could result in the loss of airframe structural integrity.

AD CF-98-37 issued 29 September 1998 mandated a 15-year life limit on the strut. It also prohibited installation of part numbers (P/Ns) C2FS209 and C2FS210.

Revision 1, CF-98-37R1, introduced repetitive inspection as an alternative to replacement of the strut. Detailed visual inspection was required to begin within 12 months from the effective date of the AD and be repeated every 12 months regardless of the age of the strut. Ultrasonic thickness measurements were required to begin within 24 months from the effective date of the AD and be repeated every 5 years regardless of the age of the strut.

After AD CF-98-37R1 was issued, it was determined that the repetitive inspections are not required to be started until the strut has accumulated 15 years since installation. As a result, Transport Canada (TC) approved several AMOCs to authorize starting the inspections at that time.

Since the issuance of AD CF-98-37R1, TC has received several Service Difficulty Reports (SDRs) indicating that the corrective actions of that AD have not been effective at controlling damage of the fuselage struts to an acceptable level.

Viking Air Ltd. (Viking) has determined that a modified program of recurring visual inspection, borescope inspection and non-destructive inspection (NDI) of the struts and airframe lugs would be more effective than the existing inspection program. This program modifies affected parts by introducing a hole to permit a borescope inspection if that hole does not already exist in the parts.

To implement the modified inspection program, Viking has published Service Bulletin (SB) V2/0010 and Technical Bulletin (TB) V2/00002 that provide specific instructions for performing the modification,

inspections and measurements required by this AD. The SB and TB also define the follow-on actions associated with those inspections and measurements.

Viking has also developed a version of the front fuselage strut with improved resistance to corrosion and with provisions for borescope inspection. The improved struts have been assigned P/Ns C2FS3281A-9 (left strut) and C2FS3282A-9 (right strut).

The corrective actions of this AD differ from those of AD CF-98-37R1 in the following ways:

- AD CF-98-37R1 included the details for all of the corrective actions, it did not require reference to other documents. For this AD, the details of the corrective actions are now specified in a SB and a TB.
- AD CF-98-37R1 required repetitive detailed visual inspection (DVI) of the airframe lugs. This AD requires repetitive DVI and NDI of the airframe lugs.
- AD CF-98-37R1 only permitted installation of P/Ns C2FS3281A and C2FS3282A. This AD permits installation of those parts, the superseding Viking P/Ns, parts installed by TC-issued or -accepted Supplemental Type Certificate (STC) or Part Manufacturing Approval (PMA) and Part Design Approval (PDA) parts that are approved for installation in DHC-2 as replacements for P/Ns C2FS3281A and C2FS3282A. Those are all approved parts.
- AD CF-98-37R1 did not specify to remove parts from the aeroplane to perform inspections. This AD requires repetitive removal of the struts from the aeroplane followed by a NDI of the airframe lugs. This requirement applies to DHC-2 where the struts are being replaced when they reach 15 years since installation. It also applies to DHC-2 where the struts are kept in service and inspected as required by the SB and TB.
- AD CF-98-37R1 required the visual inspection to start within 12 months from the AD effective date and the NDI to start within 24 months from the AD effective date. This AD requires the repetitive inspections to start no later than when the struts have accumulated 15 years since initial installation.
- AD CF-98-37R1 required repetitive ultrasonic thickness measurement for all parts. This AD only requires that measurement if corrosion is detected during an inspection.
- AD CF-98-37R1 required visual inspection of the exterior surfaces of the strut with the strut installed in the aeroplane. For struts that have accumulated more than 15 years since first installation, this AD continues to require visual inspection of the accessible exterior surfaces of the strut with the strut installed. This AD also includes repetitive requirements for:
 - Inspection of the fillet sealant;
 - Borescope inspection of the interior of the strut; and
 - Removal of the strut from the aeroplane followed by visual inspection of the entire strut and NDI of the strut end fittings.

All TC-issued or -accepted AMOCs with AD CF-98-37R1 are cancelled on the effective date of this AD. Parts in service must be replaced or modified, inspected and maintained in accordance with the requirements of this AD unless TC approves AMOCs with the requirements of this AD.

Corrective Actions:

- A. On or before the strut has accumulated 15 years since first installation, or if the date that the installed strut was first installed is not known, remove the strut and replace it with a new or serviceable part in accordance with SB V2/0010 Revision NC dated 3 April 2020. Where the SB compliance time basis is the issuing date of the SB, that time must be the effective date of this AD. Corrective Action B of this AD, modification and inspection, is an alternative to this corrective action. A serviceable part is a strut that:
- Has been approved for installation on DHC-2, and
 - Has accumulated less than 15 years since first installation or has accumulated 15 years or more since first installation and has been modified, if applicable, and inspected in accordance with the requirements of this AD and found to be acceptable.

Note: P/Ns that are approved for installation are:

C2FS3281A, C2FS3281A-9, C2FS3282A, and C2FS3282A-9;

PMA and PDA parts that are approved for installation in DHC-2 as replacements for the P/Ns in the preceding paragraph; and

Parts that are installed by TC-issued or -accepted STC.

- B. Modify the strut and perform initial and repetitive inspections in accordance with SB V2/0010 Revision NC dated 3 April 2020. Where the SB compliance time basis is the issuing date of the SB, that time must be the effective date of this AD. Corrective Action A of this AD, replacement of the strut, is an alternative to this corrective action.
- C. Perform initial and repetitive inspections of the airframe lugs in accordance with the requirements of SB V2/0010 Revision NC dated 3 April 2020. Where the SB compliance time basis is the issuing date of the SB, that time must be the effective date of this AD.
- D. If, during any inspection required by paragraph B or C of this AD, any discrepancy is detected, as defined in SB V2/0010 Revision NC dated 3 April 2020 or TB V2/00002 Revision A dated 20 June 2019, before further flight, accomplish the applicable corrective action in accordance with those documents.

The use of later revisions of SB V2/0010 and TB V2/00002 approved by the Chief, Continuing Airworthiness, Transport Canada, is acceptable for compliance with the requirements of this AD.

Authorization:

For the Minister of Transport,

ORIGINAL SIGNED BY

Rémy Knoerr
Chief, Continuing Airworthiness
Issued on 5 June 2020

Contact:

Ross McGowan, Continuing Airworthiness, Ottawa, telephone 1-888-663-3639, facsimile 613-996-9178 or e-mail AD-CN@tc.gc.ca or any Transport Canada Centre.