



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-2024-10

Effective Date:

15 March 2024

ATA:

27

Type Certificate:

A-142

Subject:

Flight Controls – Elevator Power Control Unit Bracket Cracks

Replacement:

Supersedes AD CF-2018-34, issued 17 December 2018.

Applicability:

De Havilland Aircraft of Canada Limited (formerly Bombardier Inc.) model DHC-8-401 and DHC-8-402 aeroplanes, serial numbers 4001 and 4003 through 4580.

Compliance:

As indicated below, unless already accomplished.

Background:

There have been multiple in-service reports of cracked elevator power control unit (PCU) brackets on the horizontal stabilizer rear spar, and four reports of cracking on the elevator front spar. In one case, the PCU bracket cracking led to detachment of the bracket during pushback. An investigation found that the force-flight loads induced by elevator PCUs, due to PCU mis-rigging, is the common factor in cracking of both the elevator PCU bracket and of the elevator front spar. Other contributing factors may include the clamp up of the PCU brackets without adequate shimming when the bracket was installed during production, and horizontal stabilizer and elevator hinge misalignment following assembly during aeroplane manufacture. Failure of an elevator PCU bracket or progression of the elevator front spar cracking into two segments may cause the affected elevator to jam. Failure of an elevator bracket on both elevators, or progression of elevator front spar cracking into two segments on both elevators, could cause a loss of aeroplane pitch control.

To mitigate the potential failure, AD CF-2018-34 required a one-time inspection of the elevator PCU brackets, the horizontal stabilizer rear spar and elevator front spar with reporting of inspection findings.

Since AD CF-2018-34 was issued, new findings have been reported as result of maintenance activities and/or inspections performed in accordance with De Havilland Aircraft of Canada Service Bulletin (SB) 84-55-09.

This AD requires a repeat of the inspection of the elevator PCU brackets, the horizontal stabilizer rear spar and elevator front spar, to further mitigate the risk, while maintaining the requirements of AD-CF-2018-34.

This AD is considered interim action and further AD action may follow.

Corrective Actions:

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

The applicable SB: De Havilland Aircraft of Canada SB 84-55-09 Revision B, dated 17 February 2023, or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada.

Group 1 aeroplanes are model DHC-8-401 and DHC-8-402 aeroplanes, having serial numbers 4001, 4003 through 4580 that have not been modified in accordance with Part A and or Part B of the Accomplishment Instructions of the applicable SB or De Havilland Aircraft of Canada SB 84-55-09, Basic Issue, dated 7 June 2018, or SB 84-55-09, Revision A, dated 25 October 2019.

Group 2 aeroplanes are model DHC-8-401 and DHC-8-402 aeroplanes, having serial numbers 4001, 4003 through 4580 that have been modified in accordance with Part A and/or Part B of the Accomplishment Instructions of the applicable SB or De Havilland Aircraft of Canada SB 84-55-09, Basic Issue, dated 7 June 2018, or SB 84-55-09, Revision A, dated 25 October 2019.

Part I – Applicable to Group 1 aeroplanes

- A. Within 8000 hours air time from the effective date of AD CF-2018-34 (31 December 2018), perform the inspection in accordance with Section 3.B. Part A of the Accomplishment Instructions of the applicable SB.
- B. Within 5000 hours air time after inspecting as required by Part I Paragraph A of this AD, repeat the inspection in accordance with Section 3.B. Part A of the Accomplishment Instructions of the applicable SB.
- C. If cracks or damage on PCU fittings are found during the inspection required by Part I Paragraph A or Paragraph B of this AD but no cracks or damage are found on the horizontal stabilizer rear spar assembly, part number (P/N) 85517044, or the elevator structure assembly P/N 85527021, before further flight, rectify in accordance with Section 3.B. Part B of the Accomplishment Instructions of the applicable SB.
- D. If cracks or damage are found during the inspection required by Part I Paragraph A or Paragraph B of this AD on the horizontal stabilizer rear spar assembly P/N 85517044 and/or elevator assembly P/N 85527021, contact De Havilland Aircraft of Canada for an approved disposition/action and incorporate that disposition before further flight.

Part II – Applicable to Group 2 aeroplanes

- A. Within 5000 hours air time after inspecting as required by AD CF-2018-34, repeat the inspection in accordance with Section 3.B. Part A of the Accomplishment Instructions of the applicable SB.
- B. If cracks or damage on PCU fittings are found during the inspection required by Part II Paragraph A of this AD but no cracks or damage are found on the horizontal stabilizer rear spar assembly P/N 85517044 or elevator structure assembly P/N 85527021, before further flight, rectify in accordance with Section 3.B. Part B of the Accomplishment Instructions of the applicable SB.
- C. If cracks or damage are found during the inspection required by Part II Paragraph A of this AD on the horizontal stabilizer rear spar assembly P/N 85517044 and/or elevator assembly P/N 85527021, contact De Havilland Aircraft of Canada for an approved disposition/action and incorporate that disposition before further flight.

Authorization:

For the Minister of Transport,

ORIGINAL SIGNED BY

Jenny Young
Chief, Continuing Airworthiness
Issued on 1 March 2024

Contact:

Mihaela Kramer, Continuing Airworthiness, Ottawa, telephone 888-663-3639, facsimile 613-996-9178 or e-mail TC.AirworthinessDirectives-Consignesdenavigabilite.TC@tc.gc.ca or any Transport Canada Centre.