



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-2022-55

Effective Date:

5 October 2022

ATA:

27

Type Certificate:

A-234

Subject:

Flight Controls – Incorrectly Installed Horizontal Stabilizer Trim Actuator No-Back Pawl

Applicability:

Bombardier Inc. model BD-100-1A10 aeroplanes, serial numbers 20003 and subsequent.

Compliance:

As indicated below, unless already accomplished.

Background:

During an unscheduled inspection, a design deficiency was discovered which can allow a no-back pawl to be incorrectly installed in a horizontal stabilizer trim actuator (HSTA). The no-back mechanism is a primary means to prevent back driving of the HSTA, and the motor brake assemblies (MBA) are the secondary means. If not corrected, a non-functioning no-back mechanism in combination with loss of, or degraded HSTA MBA braking capability, could lead to a loss of the aeroplane.

As a mitigating action, AD CF-2019-23 was issued on 18 June 2019 to mandate a software upgrade for the horizontal stabilizer trim electronic control unit to verify the MBA for braking capability during the power up test.

This AD mandates the inspection and rectification of the no-back pawl installation.

Corrective Actions:

A. Records Check

Within 60 months from the effective date of this AD, check the aeroplane maintenance records to determine the part number (P/N) and serial number of the HSTA installed on the aeroplane.

- i. If the P/N of the HSTA is C47100-005, no further action is required.
- ii. If the P/N of the HSTA is C47100-004 and the serial number of the HSTA ends with the suffix -K, no further action is required.
- iii. If the serial number of the HSTA is listed in the table referred to in Paragraph 2.B(4) (Part A) of the Accomplishment Instructions of the applicable Bombardier Service Bulletin (SB) listed in Table 1 below, proceed to Paragraph C. of this AD.
- iv. If the serial number of the HSTA is listed in the table referred to in Paragraph 2.B(5) (Part A) of the Accomplishment Instructions of the applicable Bombardier SB listed in Table 1 below, proceed to Paragraph D. of this AD.
- v. If the records check is inconclusive or if a visual check of the HSTA is preferred to a records check, proceed to Paragraph B. of this AD.

Table 1

| Aeroplane Model | Applicable Bombardier SB |
|-------------------|--|
| BD-100-1A10 CH300 | SB 100-27-20, Revision 1, dated 1 December 2020 or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada. |
| BD-100-1A10 CH350 | SB 350-27-009, Revision 1, dated 1 December 2020 or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada. |

B. Visual Check

- i. Within 60 months from the effective date of this AD, verify the P/N and serial number of the HSTA and also verify the modification plate in accordance with the procedure in Paragraph 2.B. (Part A) of the Accomplishment Instructions of the applicable Bombardier SB listed in Table 1 above. If the P/N of the HSTA is C47100-005, no further action is required. If the P/N of the HSTA is C47100-004 and the serial number of the HSTA ends with the suffix -K, or if the modification plate contains "SB C47100-27-02" or "SB C47100-27-03", no further action is required.
- ii. If the serial number of the HSTA is listed in the table referred to in Paragraph 2.B(4) (Part A) of the Accomplishment Instructions of the applicable Bombardier SB listed in Table 1 above, proceed to Paragraph C. of this AD.
- iii. If the serial number of the HSTA is listed in the table referred to in Paragraph 2.B(5) (Part A) of the Accomplishment Instructions of the applicable Bombardier SB listed in Table 1 above, proceed to Paragraph D. of this AD.

C. HSTA No-Back Pawl Inspection and HSTA Re-identification

If the serial number of the HSTA part installed is listed in Paragraph 2.B(4) (Part A) of the Accomplishment Instructions of the applicable Bombardier SB listed in Table 1 above, within 60 months from the effective date of this AD, inspect the HSTA no-back mechanism pawls in accordance with Paragraph 2.C. (Part B) of the Accomplishment Instructions of the applicable Bombardier SB listed in Table 1 above.

- i. If one or more pawls are not correctly installed, proceed to Paragraph E. of this AD before further flight.
- ii. If all the pawls are correctly installed, re-identify and test the HSTA in accordance with Paragraph 2.C.(4) (Part B) and Paragraph 2.F. of the Accomplishment Instructions of the applicable Bombardier SB listed in Table 1 above, after which no further action is required.

D. Modification Plate Addition

If the serial number of the HSTA part installed is listed in Paragraph 2.B(5) (Part A) of the Accomplishment Instructions of the applicable Bombardier SB listed in Table 1 above, within 60 months from the effective date of this AD, add a modification plate to the HSTA in accordance with Paragraph 2.D. (Part C) of the Accomplishment Instructions of the applicable Bombardier SB listed in Table 1 above, after which no further action is required.

E. Replacement of HSTA

If one or more pawls are not correctly installed, before further flight, remove and replace the HSTA in accordance with Paragraph 2.E. (Part D) of the Accomplishment Instructions of the applicable Bombardier SB listed in Table 1 above.

Incorporation of Bombardier SB 100-27-20 and SB 350-27-009, Revision Basic, dated 9 November 2020, also meets the requirements of Paragraphs A., B., C., D., and E. of this AD.

F. Parts Installation Prohibition

As of the effective date of this AD, the installation of an HSTA with P/N C47100-003 or P/N C47100-004 that does not have the suffix -K following the serial number, or a modification plate showing "SB C47100-27-02" or "SB C47100-27-03", on BD-100-1A10 aeroplanes as a replacement part is prohibited.

Authorization:

For the Minister of Transport,

ORIGINAL SIGNED BY

Philippe Ngassam
Director, National Aircraft Certification
Issued on 21 September 2022

Contact:

Craig McAllister, 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.