



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-2009-29R4

Effective Date:

15 October 2021

ATA:

32

Type Certificate:

A-142

Subject:

Nose Landing Gear – Loss of Pivot Pin Retention Bolt

Revision:

Supersedes AD CF-2009-29R3, issued 15 September 2021.

Applicability:

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

Compliance:

As indicated below, unless already accomplished.

Background:

Two in-service incidents have been reported on DHC-8 Series 400 aeroplanes in which the nose landing gear (NLG) trailing arm pivot pin retention bolt part number (P/N) NAS6204-13D was damaged. One incident involved the left-hand NLG tire, which ruptured on take-off. Investigation determined that the retention bolt failure was due to repeated contact of the castellated nut with the towing device including both the towbar and the towbarless rigs. The loss of the retention bolt allowed the pivot pin to migrate from its normal position and resulted in contact with and rupture of the tire. The loss of the pivot pin could compromise retention of the trailing arm and could result in a loss of directional control due to loss of nose wheel steering. The loss of a NLG tire or the loss of directional control could adversely affect the aeroplane during take-off or landing.

To prevent the potential failure of the pivot pin retention bolt, Bombardier Aerospace (BA) developed a modification, which included a new retention bolt, a reverse orientation of the retention bolt and a rework of the weight on wheel (WOW) proximity sensor cover to provide clearance for the re-oriented retention bolt.

Since the issuance of AD CF-2009-29, there have been several reports of pivot pin retention bolts found missing or damaged. Additional investigation determined that the failures were caused by high contact stresses on the retention bolt due to excessive frictional torque on the pivot pin and an adverse tolerance condition at the retention bolt.

Revision 1, AD CF-2009-29R1, mandated the installation of a new pivot pin retention mechanism.

Since the issuance of AD CF-2009-29R1, there have been reports of chrome peeling on special bolt P/N 47205-1 at the pivot pin link, resulting in corrosion of the bolt substrate layer.

Revision 2, AD CF-2009-29R2, mandated the installation of new special bolt P/N 47205-3 with additional processing for increased chrome plating adhesion on aeroplanes equipped with NLG shock strut assembly P/N 47100-19, or any assembly with BA Service Bulletin (SB) 84-32-110 incorporated. In addition, AD CF-2009-29R2 mandated the installation of a new pivot pin retention mechanism that includes new special bolt P/N 47205-3 on aeroplanes equipped with NLG shock strut assembly P/N

47100-9, 47100-11, 47100-13, 47100-15, or 47100-17 without BA SB 84-32-110 incorporated. The corrective actions of AD CF-2009-29R2 superseded and replaced the corrective actions of AD CF-2009-29R1.

Since the issuance of AD CF-2009-29R2, there have been reports of special bolt P/N 47205-3 being found missing or having stress corrosion cracking.

Revision 3, AD CF-2009-29R3, mandated the following:

- replacement of special bolt P/N 47205-1 or 47205-3 with new bolt P/N NAS6204-14D;
- implementation of a life limit for bolt P/N NAS6204-14D;
- repetitive lubrication of the trailing arm and bolt P/N NAS6204-14D.

This AD Revision, CF-2009-29R4, provides the initial compliance time for the lubrication of the trailing arm, changes the lubrication interval from hours air time to flight cycles (FC) and removes the requirement to lubricate bolt P/N NAS6204-14D as previously mandated in Part III of AD CF-2009-29R3.

All Transport Canada (TC) –issued AMOC approvals with previous revisions of this AD are cancelled as of the effective date of this AD. TC could approve new AMOCs if justification is presented to show compliance with the requirements of this AD.

Corrective Actions:

Part I – Applicable to Aeroplane Serial Numbers 4001 and 4003 through 4622 with Special Bolt P/N 47205-1 or 47205-3 Installed on NLG P/N 47100 – Removal of Special Bolt P/N 47205-1 or 47205-3 and Replacement with New Retention Bolt P/N NAS6204-14D

- A. Within 1600 FC or 9 months, whichever occurs first, from the effective date of AD CF-2009-29R3 (29 September 2021), perform the modifications to the NLG shock strut assembly as required by Section 3.B. of the Accomplishment Instructions of De Havilland Aircraft of Canada SB 84-32-161, Revision A, dated 27 January 2021, or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada.
- B. Within 30 days from the completion of Part I.A. of this AD, amend the TC approved maintenance schedule by revising Structures Safe Life Task 32-21-01-701 and adding Task 32-21-01-702 as indicated in Temporary Revision (TR) ALI-0223, dated 15 October 2020, of the DHC-8-400 Maintenance Requirements Manual (MRM), PSM 1-84-7.

Incorporation of superseding TRs or later revisions of the above-mentioned tasks approved by TC, also meets the requirements of Part I.A. of this AD.

- C. Following completion of Part I.A. and Part I.B. of this AD, remove and replace bolt P/N NAS6204-14D in accordance with MRM PSM 1-84-7 Structures Safe Life Task 32-21-01-702.

Part II – Applicable to all Aeroplane Serial Numbers with Pivot Pin Retention Bolt P/N NAS6204-14D Installed on NLG Assembly – Introduction of Safe Life Limit

- A. Within 30 days from the effective date of AD CF-2009-29R3 (29 September 2021), amend the TC approved maintenance schedule by revising Structures Safe Life Task 32-21-01-701 and adding Task 32-21-01-702 as indicated in TR ALI-0223, dated 15 October 2020, of the DHC-8-400 MRM, PSM 1-84-7.

Incorporation of superseding TRs or later revisions of the above-mentioned tasks approved by TC, also meets the requirements of Part II.A. of this AD.

- B. Following completion of Part II.A. of this AD, remove and replace bolt P/N NAS6204-14D in accordance with MRM PSM 1-84-7 Structures Safe Life Task 32-21-01-702.
- C. If replacement of bolt P/N NAS6204-14D was already performed in accordance with De Havilland Aircraft of Canada SB 84-32-161, Revision A, dated 27 January 2021, or Initial Issue, dated 7 April 2020, remove and replace bolt P/N NAS6204-14D within 3 months from the effective date of AD CF-2009-29R3 (29 September 2021), or 800 FC from the replacement performed in accordance with SB 84-32-161, whichever occurs later.

Part III – Applicable to all Aeroplane Serial Numbers – Repetitive Lubrication of the Trailing Arm

Within 30 days or 400 FC, whichever occurs first, from the effective date of AD CF-2009-29R3 (29 September 2021), and thereafter at intervals not exceeding 400 FC, lubricate the trailing arm in accordance with Section 3.B. of the Accomplishment Instructions of De Havilland Aircraft of Canada SB 84-32-167, Initial Issue, dated 26 July 2021, or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada.

Authorization:

For the Minister of Transport,

ORIGINAL SIGNED BY

Rémy Knoerr
Chief, Continuing Airworthiness
Issued on 1 October 2021

Contact:

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SUPERSEDED