



# 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) to ADs.*

**Number:**

CF-2009-39R1

**Effective Date:**

27 October 2017

**ATA:**

29

**Type Certificate:**

A-131

**Subject:**

Hydraulic Power – Hydraulic Accumulators Screw Cap/End Cap Failure

**Revision:**

Supersedes AD CF-2009-39, issued 27 October 2009.

**Applicability:**

Bombardier Inc. models:

CL-600-1A11 aeroplanes, serial numbers 1004 through 1085;  
CL-600-2A12 aeroplanes, serial numbers 3001 through 3066;  
CL-600-2B16 aeroplanes, serial numbers 5001 through 5194;  
CL-600-2B16 aeroplanes, serial numbers 5301 through 5665;  
CL-600-2B16 aeroplanes, serial numbers 5701 through 5982.

**Compliance:**

As indicated below, unless already accomplished.

**Background:**

Seven cases of on-ground hydraulic accumulator screw cap or end cap failure have been experienced on CL-600-2B19 (CRJ) aircraft, resulting in loss of the associated hydraulic system and high-energy impact damage to adjacent systems and structure. The lowest number of flight cycles accumulated at the time of failure, to date, has been 6991 flight cycles.

Although there have been no failures to date on any CL-600-1A11, CL-600-2A12 or CL-600-2B16 aircraft, the same accumulators as those installed on the CL-600-2B19, Part Numbers (P/N) 08-60163-002 and 08-60164-002 are installed on some of the aircraft listed in the Applicability section of this directive.

**Notes:**

1. Earlier accumulators, P/Ns 2770571-102, 2770571-103, 2770571-104 and 2770571-105, were installed in production on the following aircraft: CL-600-1A11 [all Serial Numbers (S/Ns)], CL-600-2A12 (all S/Ns) and CL-600-2B16 (S/Ns 5001 through 5194 and 5301 through 5524 only). These accumulators do not require inspection or replacement. However, if any of the accumulators with the above P/Ns have been replaced in-service by P/Ns 08-60163-002 and 08-60164-002, these latter accumulators require replacement.
2. Prior to issuance of AD CF-2009-39, the only accumulators ever installed in production on CL-600-2B16 aircraft, S/Ns 5525 through 5665 and 5701 through 5908, are P/Ns 08-60163-002 and 08-60164-002; these accumulators require replacement.
3. After issuance of AD CF-2009-39, accumulators with P/Ns specified in Note 2, above, began to feature various S/N suffixes. Only accumulators with S/N suffix "TNAE" do not require replacement, but they are subject to other mandatory actions detailed in this AD.

4. Stainless steel accumulators P/Ns 601R75139-3 (11094-4) and 601R75139-1 (11093-4) were installed in production on CL-600-2B16 aircraft, S/Ns 5909 and subsequent. These accumulators do not require replacement, but they are subjected to other mandatory actions detailed in this AD.

A detailed analysis of the systems and structure in the potential line of trajectory of a failed screw cap/end cap for each accumulator, P/Ns 08-60163-002 and 08-60164-002, has been conducted. On the Challengers, it has been identified that the worst case scenario would be a failure of system No. 1, 2 or 3 accumulator screw caps/end caps (depending on the model), resulting in a potential uncontrolled fire in a non-designated fire zone.

The original version of this AD gave instructions to perform identification and records checks, where applicable, and replace accumulators, P/Ns 08-60163-002 and 08-60164-002 within the time compliance specified.

Revision 1 of this AD mandates the terminating actions to this AD.

## **Corrective Actions:**

### **Part I: Identification and Records Check**

Within 50 hours air time after the effective date of the original version of this AD (10 November 2009):

#### **A. Identification Check: Applicable to CL-600-1A11 (all S/Ns), CL-600-2A12 (all S/Ns) and CL-600-2B16 (S/Ns 5001 through 5194 and 5301 through 5524).**

Determine the P/Ns of the System Accumulators Nos. 1, 2 and 3 and Brake Accumulators Nos. 2 and 3 that are installed on the aircraft.

- 1) If any of the installed accumulators has one of the following P/Ns, proceed to the Records Check in Part I, paragraph B of this directive:
  - 08-60163-002
  - 08-60164-002
- 2) If all of the installed accumulators have one of the following P/Ns, proceed to Part V of this AD:
  - 2770571-102
  - 2770571-103
  - 2770571-104
  - 2770571-105
  - 601R75139-3 (11094-4)
  - 601R75139-1 (11093-4)

#### **B. Records Check applicable to:**

- 1) **CL-600-2B16 (S/Ns 5525 through 5665, 5701 through 5908).**
- 2) **CL-600-1A11, CL-600-2A12 or CL-600-2B16 (in the S/Ns range 5001 through 5194 and 5301 through 5524) that have one or more accumulator(s), P/Ns 08-60163-002 or 08-60164-002, installed.**

Determine and record the number of flight cycles accumulated by each of the accumulators (P/Ns 08-60163-002 and 08-60164-002) installed on the aircraft [i.e. system accumulators Nos. 1, 2 and 3 and brake accumulators Nos. 2 and 3]. Proceed to Part II of this directive.

## **Part II: Initial Replacement**

### **A. Replacement Schedule**

- 1) For each accumulator (P/Ns 08-60163-002 and 08-60164-002) with more than 3650 flight cycles, replace the accumulator within 100 flight cycles after the effective date of the original version of this AD (10 November 2009), in accordance with Part II, Paragraph B of this AD.
- 2) For each accumulator (P/Ns 08-60163-002 and 08-60164-002) with 3650 flight cycles or less, replace the accumulator before it has accumulated 3750 flight cycles, in accordance with Part II, Paragraph B of this AD.
- 3) If it is not possible to determine the flight cycles accumulated for any accumulator (P/Ns 08-60163-002 and 08-60164-002), replace the accumulator within 100 flight cycles after the effective date of the original version of this AD (10 November 2009), in accordance with Part II, Paragraph B of this AD.

**B. Replacement Procedure**

Replace each accumulator (P/Ns 08-60163-002 and 08-60164-002) with a new accumulator having the same P/N, in accordance with the Accomplishment Instructions of the applicable Service Bulletin (SB) listed below, or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada.

Model	Service Bulletin	Date
CL-600-1A11 (CL-600)	SB 600-0742 Rev.1	6 July 2009
CL-600-2A12 (CL-601)	SB 601-0597 Rev.1	6 July 2009
CL-600-2B16 (CL-601-3A/3R)	SB 601-0597 Rev.1	6 July 2009
CL-600-2B16 (CL-604)	SB 604-29-008 Rev.1	6 July 2009
CL-600-2B16 (CL-605)	SB 605-29-001 Rev.1	6 July 2009

Replacement of an accumulator in accordance with the original version of the above applicable SB, dated 10 November 2008, meets the intent of Part II of this AD for that specific accumulator.

**Part III: Repeat Replacement**

Replace each accumulator (P/Ns 08-60163-002 and 08-60164-002) at or before it has accumulated 3750 flight cycles, in accordance with the Accomplishment Instructions of the applicable SB listed below, or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada.

Model	Service Bulletin	Date
CL-600-1A11 (CL-600)	SB 600-0742 Rev.1	6 July 2009
CL-600-2A12 (CL-601)	SB 601-0597 Rev.1	6 July 2009
CL-600-2B16 (CL-601-3A/3R)	SB 601-0597 Rev.1	6 July 2009
CL-600-2B16 (CL-604)	SB 604-29-008 Rev.1	6 July 2009
CL-600-2B16 (CL-605)	SB 605-29-001 Rev.1	6 July 2009

**Part IV: Termination of Repetitive Replacement**

For each accumulator with one of the following P/Ns and S/N suffix, the repeat replacement of Part III of this AD is no longer required:

- 08-60163-002 with S/N Suffix TNAE
- 08-60164-002 with S/N Suffix TNAE
- 601R75139-3 (11094-4)
- 601R75139-1 (11093-4)

Proceed to Part V of this AD.

**Part V: Relocation of Accumulators**

Within 60 months or 2400 flight cycles whichever occurs first, from the effective date of this AD:

A. For model CL-600-1A11 (CL-600) aeroplanes, S/N 1004 to 1085:

- 1) Relocate hydraulic system Nos. 1 and 2 accumulators in accordance with the Accomplishment Instructions contained in SB 600-0764, Basic Issue, dated 8 October 2015, or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada.
- 2) Relocate hydraulic system No. 3 accumulator in accordance with the Accomplishment Instructions contained in SB 600-0767, Basic Issue, dated 25 August 2016, or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada.

B. For model CL-600-2A12 (CL-601) aeroplanes, S/N 3001 to 3066 and model CL-600-2B16 (CL-601 3A/3R) aeroplanes, S/N 5001 to 5194:

- 1) Relocate hydraulic system Nos. 1 and 2 accumulators in accordance with the Accomplishment Instructions contained in SB 601-0633, Basic Issue, dated 8 October 2015, or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada.
- 2) Relocate hydraulic system No. 3 accumulator in accordance with the Accomplishment Instructions contained in SB 601-0637, Basic Issue, dated 25 August 2016, or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada.

C. For model CL-600-2B16 (CL-604) aeroplanes, S/N 5301 to 5665:

Relocate hydraulic system No. 3 accumulator in accordance with the Accomplishment Instructions contained in SB 604-29-013, Revision 2, dated 18 April 2016, or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada.

Relocation of hydraulic system No. 3 accumulator in accordance with previous revisions of the above mentioned SB also meets the requirements of Part V, Paragraph C of this AD.

D. For model CL-600-2B16 (CL-605) aeroplanes, S/N 5701 to 5982 :

Relocate hydraulic system No. 3 accumulator in accordance with the Accomplishment Instructions contained in SB 605-29-006, Revision 2, dated 19 April 2016, or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada.

Relocation of hydraulic system No. 3 accumulator in accordance with previous revisions of the above mentioned SB also meets the requirements of Part V, Paragraph D of this AD.

Accomplishment of Part V of this AD **does not terminate** the repeat replacement of Part III of this AD. Refer to Part IV of this AD for termination of the repeat replacement.

#### **Part VI: Amendment to Time Limits / Maintenance Checks (TLMC)**

This section introduces new airworthiness limitations (AWL) for the listed aeroplane models. As of the effective date of this AD, the following AWL's are applicable to the aeroplane type design:

<b>Aeroplane Model</b>	<b>TLMC Manual Number</b>	<b>Section</b>	<b>Part Number / Task Number</b>
CL-600-1A11 (CL-600)	PSP 605	5-10-20	601R75138-1 (08-60163-002) with "TNAE" after the S/N 601R75138-3 (08-60164-002) with "TNAE" after the S/N
CL-600-2A12 (CL-601)	PSP 601-5	5-10-20	601R75138-1 (08-60163-002) with "TNAE" after the S/N 601R75138-3 (08-60164-002) with "TNAE" after the S/N
CL-600-2B16 (CL-601-3A/3R)	PSP 601A-5	5-10-20	601R75138-1 (08-60163-002) with "TNAE" after the S/N 601R75138-3 (08-60164-002) with "TNAE" after the S/N
CL-600-2B16 (CL-604)	CH 604 TLMC	5-10-11	29-10-00-101 29-10-00-102
CL-600-2B16 (CL-605)	CH 605 TLMC	5-10-11	29-10-00-101 29-10-00-102

Compliance with superseding Temporary Revisions (TR) or later revisions of the applicable above-mentioned TLMC Manuals approved by Transport Canada also meets the requirements of Part VI of this AD.

**Authorization:**

For the Minister of Transport,

*ORIGINAL SIGNED BY*

Rémy Knoerr  
Chief, Continuing Airworthiness  
Issued on 13 October 2017

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