



No.	CF-2004-02	1/2
Issue Date	9 February 2004	

AIRWORTHINESS DIRECTIVE

The following airworthiness directive (AD) may be applicable to an aircraft which our records indicate is registered in your name. ADs are issued pursuant to **Canadian Aviation Regulation (CAR) 593**. Pursuant to **CAR 605.84** and the further details of **CAR Standard 625, Appendix H**, the continuing airworthiness of a Canadian registered aircraft is contingent upon compliance with all applicable ADs. Failure to comply with the requirements of an AD may invalidate the flight authorization of the aircraft. Alternative means of compliance shall be applied for in accordance with **CAR 605.84** and the above-referenced **Standard**.

This AD has been issued by the Continuing Airworthiness Division (AARDG), Aircraft Certification Branch, Transport Canada, Ottawa, telephone (613) 952-4357.

- Number:** CF-2004-02
- Subject:** Bombardier DHC-8 - Brake Hydraulic System Modifications
- Effective:** 12 March 2004
- Applicability:** Bombardier Inc. DHC-8, Models 102, 103, 106, 201, 202, 301, 311, 314 and 315, Serial Numbers 003 through 593.
- Compliance:** Compliance is required as indicated unless already accomplished.

Background: There have been two incidents during which the Numbers 1 and 2 hydraulic system power were lost due to a hydraulic leak downstream of one of the brake shuttle valves. Investigation determined that a minor leak in one of the brake units allowed the Number 2 hydraulic system fluid to deplete. In addition, the shuttle valve internal garter spring had also failed. This failure allowed the Number 1 hydraulic system return pressure to move the valve, causing the Number 1 hydraulic system fluid to also deplete through the same brake unit. Loss of hydraulic power from both hydraulic systems will reduce the controllability of the aircraft.

In addition, another incident has been reported of a brake seizure and subsequent wheel assembly fire while taxiing. Investigation revealed that hydraulic pressure remained applied to the brake unit even after brake release. It was determined that the dislodging of the 10-micron filter in the brake shuttle valve had blocked the valve port and prevented hydraulic fluid flow from the brake. Brake failure could result in the loss of directional control on the ground.

Corrective Action: **A. Installation of Check Valves in Numbers 1 and 2 Hydraulic Systems**

Within 12 months after the effective date of this directive, install check valves in the Number 1 and Number 2 hydraulic return systems by incorporating Modsum 8Q101320. Bombardier Service Bulletin (SB) 8-29-36, Revision B, dated 6 January 2003, or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada, provides approved instructions for incorporating Modsum 8Q101320.

Note: 1. Incorporation of Modsum 8Q101320 using instructions provided in earlier versions of SB 8-29-36 also meets the requirements of this paragraph.

B. Removal of Filters from the Brake Shuttle Valves

Within 12 months after the effective date of this directive, modify brake shuttle valves, P/N 5084-1, to remove filter assemblies by incorporating either Modsum 8Q101316 or 8Q101422. Bombardier SB 8-29-37, Revision A, dated 19 September 2003, or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada, and SB 8-29-39, Initial Issue, dated 14 July 2003, or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada, provide approved instructions for incorporating Modsums 8Q101316 and 8Q101422 respectively.



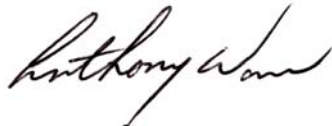
- Note : 1. Modsum 8Q101320 is required as a prerequisite prior to the installation of one or more shuttle valves that has been modified per Modsum 8Q101316.
2. It is permissible to have a mix of shuttle valves that incorporated either Modsum 8Q101316 or 8Q101422.
3. For Modsum 8Q101316, prior incorporation of this Modsum using instructions provided in the initial issue of SB 8-29-37 also meets the requirements of this paragraph.

C. Removal of Internal Garter Spring From Brake Shuttle Valves

Subsequent to the accomplishment of Paragraph B of this directive, at the next overhaul of each brake shuttle valve, P/N 5084-1A, (i.e. brake shuttle valves with filters removed but internal garter spring not removed), incorporate Modsum 8Q101316 to remove the internal garter spring from the brake shuttle valve. Bombardier SB 8-29-37, Revision A, dated 19 September 2003, or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada, provides approved instructions for incorporating Modsum 8Q101316.

- Note: 1. Modsum 8Q101320 is required as a prerequisite prior to the installation of one or more shuttle valves that has been modified per Modsum 8Q101316.

Authorization: For Minister of Transport



Anthony Wan
for B. Goyaniuk
Chief, Continuing Airworthiness

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