
AIRWORTHINESS DIRECTIVE

For the reasons set out in the background section, the CASA delegate whose signature appears below issues the following Airworthiness Directive (AD) under subregulation 39.1 (1) of CASR 1998. The AD requires that the action set out in the requirement section (being action that the delegate considers necessary to correct the unsafe condition) be taken in relation to the aircraft or aeronautical product mentioned in the applicability section: (a) in the circumstances mentioned in the requirement section; and (b) in accordance with the instructions set out in the requirement section; and (c) at the time mentioned in the compliance section.

Bombardier (Boeing Canada/De Havilland) DHC-8 Series Aeroplanes

AD/DHC-8/96

Brake Hydraulic System

4/2004

Applicability: Bombardier Inc. DHC-8, Models 102, 103, 106, 201, 202, 301, 311, 314 and 315, Serial Numbers 003 through 593.

Requirement:

1. Install check valves in the Number 1 and Number 2 hydraulic return systems by incorporating Modsum 8Q101320 in accordance with Bombardier Service Bulletin (SB) 8-29-36, Revision B, dated 6 January 2003.
2. Modify the brake shuttle valves, P/N 5084-1, to remove filter assemblies by incorporating either Modsum 8Q101316 or 8Q101422 in accordance with Bombardier SB 8-29-37, Revision A, dated 19 September 2003, and SB 8-29-39, Initial Issue, dated 14 July 2003.
3. Incorporate Modsum 8Q101316 to remove the internal garter spring from the brake shuttle valve in accordance with Bombardier SB 8-29-37, Revision A.

Note 1: Canadian AD CF-2004-02 refers.

Note 2: Modsum 8Q101320 is required as a prerequisite prior to the installation of one or more shuttle valves that has been modified per Modsum 8Q101316. It is permissible to have a mix of shuttle valves that incorporated either Modsum 8Q101316 or 8Q101422.

Compliance: For Requirements 1 and 2. Unless previously accomplished within 12 months after the effective date of this Directive.

For Requirement 3. Subsequent to the accomplishment of Requirements 1 and 2 of this directive, and prior to installation on an aircraft following overhaul of each brake shuttle valve, P/N 5084-1A, (i.e. brake shuttle valves with filters removed but internal garter spring not removed).

This Airworthiness Directive becomes effective on 15 April 2004.

Bombardier (Boeing Canada/De Havilland) DHC-8 Series Aeroplanes

AD/DHC-8/96 (continued)

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.



James Coyne
Delegate of the Civil Aviation Safety Authority

4 March 2004