Transport Canada Transports Canada

TP 7245E

No. CF-2010-05 1/3
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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) 521 Division X**. 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), National Aircraft Certification Branch, Transport Canada, Ottawa, telephone 613 952-4357.

Number: **CF-2010-05**

Subject: **Angle of Attack Vane - Heating Element Ageing and Resolver Oil Contamination**

Effective: 26 February 2010

Applicability: All Bombardier Inc. DHC-8 Aircraft, Models 400, 401 and 402, equipped with Thales Angle of Attack (AOA) vanes, Part Number (P/N) C16177AC.

Compliance: As indicated unless already accomplished.

Background: Although there have been no in-service reported incidents related to AOA failures on the DHC-8 Series 400 aeroplanes, two separate issues have been identified that would affect proper operation of the AOA vane, P/N C16177AC. These issues are:

1. A potential freezing of the AOA Vane Resolver, which may restrict the dynamic behavior (lag) of the vane and could lead to a potential seize-up condition at lower temperatures. This condition, if not corrected, may provide inaccurate AOA data to the Stall Protection System (SPS).

2. As a result of ageing, the AOA vane heating element could degrade to a point where there is insufficient heat to prevent ice build-up on the AOA vanes. The ice build-up may lead to a change in the aerodynamic properties of the AOA vane and, under certain conditions, send inaccurate information to the SPS. This ageing condition cannot be detected by the aircraft AOA vane heater current monitor.

This directive mandates replacement of the vanes equipped with suspect resolvers and a periodic inspection of the in-rush current to verify the AOA vane heating capability.

Corrective Actions:

1. AOA Vane Resolver Freezing:

Within 250 hours air time from the effective date of this directive, inspect the serial number (S/N) of each of the AOA vanes P/N C16177AC installed on the aeroplane in accordance with paragraph 1.A., Table 1 of Bombardier Service Bulletin (SB) A84-27-51, dated 22 December 2009, or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada.

1.1 If the S/N is not listed in the above-mentioned SB or its later revisions approved by the Chief, Continuing Airworthiness, Transport Canada, proceed to Paragraph 2 of this directive.

1.2 If the S/N is listed in the above-mentioned SB or its later revisions approved by the Chief, Continuing Airworthiness, Transport Canada, and the S/N has a suffix “B”, proceed to Paragraph 2 of this directive.

1.3 If the S/N of both installed AOA vanes are listed in the above-mentioned SB or its later revisions approved by the Chief, Continuing Airworthiness, Transport Canada,, accomplish one of the following:

1.3.1 Before further flight replace the AOA vanes in accordance with the Accomplishment Instructions, Part 3 of the above-mentioned SB or its later revisions approved by the Chief, Continuing Airworthiness, Transport Canada, or

1.3.2 Before further flight, replace one of the two vanes on the aircraft with a serviceable unit in accordance with the Accomplishment Instructions, Part 3 of the above-mentioned SB. The aircraft may be dispatched with one serviceable unit for a maximum of 1000 hours.

1.4 If the S/N of only one of the installed AOA vane is listed in the above-mentioned SB, or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada, replace this vane within 1000 hours air time.

NOTE: Part 1 of this directive may be accomplished visually by verifying vane S/N on the aeroplane or by reviewing the maintenance records.

2. AOA Vane Heating Element Degradation:

2.1. Inspection for In-rush current:

In accordance with the schedule in Table A below, measure the In-rush current of the installed AOA vane in accordance with the Accomplishment Instructions, Part 3, of Bombardier SB A84-27-46, dated 20 October 2009, or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada

Table A

Accumulated Angle of Attack Vane Hours Air Time on the Effective Date of this directive.	**Compliance Schedule for Initial In-rush Current Inspection**
Less than 5 000 hours air time	Before the AOA transducer has 5 900 hours air time
More than or equal to 5 000 but not greater than 6 000 hours air time	Within 900 hours air time from the effective date of this directive but no later than 6 500 hours air time
More than 6 000 hours air time	Within 500 hours air time from the effective date of this directive

2.2 Replacement and Repeat Inspection Requirements

2.2.1 If the installed AOA vanes, having been inspected as per schedule in Table A, have an In-rush current less than or equal to 1.6 Amps, replace them before next flight in accordance with the Accomplishment Instructions of the Bombardier SB A84-27-46, Part 3, dated 20 October 2009, or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada. Repeat the inspection of the newly installed vanes in accordance with the schedule in Table B of this directive.

2.2.2 If the AOA vanes, having been inspected as per Table A, have an In-rush current more than 1.6 Amps, repeat the inspection of the vanes in accordance with the schedule in Table B of this directive.

Table B	
Last Angle of Attack In-rush Current Measurement (Amps)	**Compliance Schedule for Repeat Inspection**
Less than or equal to 1.6 Amps	Replace the vane before next flight
More than 1.60 Amps but less than or equal to 1.70 Amps	Repeat the inspection within 1 000 hours air time
More than 1.70 Amps	Repeat inspection within 2 000 hours air time
New AOA vane	Within 2 000 hours air time after the installation date

NOTE: Replacement AOA vanes must be either outside the affected S/N identified in paragraph 1.A., Table 1 of the SB A84-27-51, dated 22 December 2009, or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada, or identified as having been tested by a suffix "B" after the S/N.

3. AOA Vane Replacement

As of the effective date of this directive, no replacement of AOA vanes P/N C16177AC, with S/N listed in paragraph 1.A., Table 1 of Bombardier SB A84-27-51, dated 22 December, 2009, or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada, are allowed to be installed on DHC-8 Series 400 aeroplanes unless such vane has been inspected by the manufacturer and labeled with a suffix “B” after the S/N.

Authorization: For Minister of Transport, Infrastructure and Communities

ORIGINAL SIGNED BY

Derek Ferguson
Chief, Continuing Airworthiness

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