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-1972-06R5

Effective Date:

6 July 2018

ATA:

27

Type Certificate:

A-82

Subject:

Flight Controls - Damage from Ground Gusts

Revision:

Supersedes AD CF-72-06R4, issued 7 June 1993.

Applicability:

Viking Air Ltd. (formerly Bombardier Inc.) de Havilland aeroplanes:

Model DHC-6-100, -200, -300, serial numbers (S/N) 1 and subsequent

Model DHC-6-400, serial numbers 845 and subsequent.

Compliance:

As indicated below, unless already accomplished.

Background:

Damage to the flight control system of DHC-6 aeroplanes was found during inspection. The damage has been attributed to ground gusts. The damage included cracks in the base of the lower control column, cracks and buckles in the elevator/rudder pulley bracket, and distortion of the elevator quadrant. Damage to the elevator quadrant may produce abnormal loads on the quadrant support bracket that damage the bracket.

Damaged flight control components may fail when subjected to service loads, resulting in loss of control of the aeroplane.

This revision of the AD clarifies the applicability of the corrective actions and endorses Service Bulletin (SB) 6/511 as a means of accomplishing some of the required inspections. In corrective action Part III, dye penetrant inspection has been replaced by fluorescent penetrant inspection.

Corrective Actions:

Part I. Control Column

A. Before further flight, unless already accomplished less than 100 hours air time before September 29, 1972, and subsequently at intervals not exceeding 100 hours air time, and before further flight if the aircraft has been left standing in winds with mean velocity estimated at 56 km/h (35 mph) or greater, inspect the control column, sub-assembly part number (P/N) C3CF39-17, for cracks or other damage. Using a mirror and strong light, visually inspect the lower horizontal torque tube forming the base of the control column, paying particular attention to the welds and the region adjacent to the aileron chain exit holes. If cracks are discovered, the control column assembly must be either replaced by a serviceable unit or repaired within the time limits specified in paragraphs 1, 2 or 3 below, whichever is applicable according to the length of crack found:

1. If the crack length is less than 1 inch, 150 hours of further flight is permissible before replacement or repair, provided that subsequent inspections are conducted at intervals not to exceed 25 hours air time and such inspections indicate that the crack length has not exceeded 1 inch;
2. For cracks greater than 1 inch but less than 2 inches in length, only a single flight to repair base is permissible before replacement or repair;
3. For cracks greater than 2 inches in length, replace or repair before further flight.

   A serviceable unit is one of the following:

   a. A complete new control column (P/N C6CF1225-51);
   b. The existing column with a new lower sub-assembly (P/N C3CF39-17) installed;
   c. The existing cracked component repaired by an acceptable procedure. An acceptable repair procedure is specified in DHC-6 SB 6/180, Revision B, dated 17 August 1972.

B. Prior to 1 June 1993, replace the lower sub-assembly with P/N C3CF39-19 in accordance with DHC-6 modification 6/1433.

C. The inspection required by Part I A may be discontinued after the modification of Part I.B has been incorporated. The inspection is not required for DHC-6 S/N 379 and subsequent. Those aeroplanes had the modification incorporated during manufacture.

Part II. Elevator/Rudder Pulley Brackets

A. Before further flight and daily thereafter, and before further flight if the aircraft has been left standing in winds with a mean velocity estimated at 56 km/h (35 mph) or greater, accomplish the inspection and corrective action specified in DHC-6 SB A6/181 on pulley brackets, P/N C6FS1263-27 and P/N C6FS1263-29.

B. Before 1 June 1992, incorporate DHC-6 modification 6/1262 as detailed in DHC-6 SB 6/181, or a modification approved for this purpose by Transport Canada.

C. The inspection required by Part II A may be discontinued after the modification of Part II B has been incorporated. The inspection is not required for DHC-6 S/N 223 and subsequent. Those aeroplanes had the modification incorporated during manufacture.

Part III. Elevator Quadrant and Support Bracket

A. Before further flight unless already accomplished within the preceding 400 hours air time, and subsequently at intervals not exceeding 400 hours air time, visually inspect the elevator quadrant for indications of distortion. The elevator quadrant on individual aircraft may be identified as P/N C6CFM1138-27, C6CFM1450-27 or C6CFM1450-29 and is referred to as assembly P/N C6CF1137-1, -3, -5 or -7 in DHC-6 Illustrated Parts Catalogues.

   The 400-hour inspection intervals specified in Part III A above may be adjusted up to a maximum of 20 hours (5%) to permit accomplishment at scheduled maintenance inspections.

   Distortion of the elevator quadrant can be detected visually by viewing the quadrant from the forward or aft direction to observe any warping or buckling, and/or by looking for the existence of score marks on the quadrant topside face due to its constant rubbing against the side of the cable guard.

B. For de Havilland DHC-6-100, -200, -300 model aeroplanes only, within 400 hours air time or before 9 November 1993, unless already accomplished within the preceding 12 months, remove the quadrant support bracket P/N C6CFM1142-1 from the aircraft and perform a one-time fluorescent penetrant inspection of the bracket for cracks. Critical areas are the outer and inner surfaces of the two lugs of the bracket.

C. For all models, if the quadrant is found distorted, replace it before further flight with a serviceable part and perform a one-time fluorescent penetrant inspection of the quadrant support bracket as per Part III B above.

D. If the quadrant support bracket is found cracked, replace it with a serviceable part before further flight.

Notes:

1. DHC-6 S/B 6-511 provides instructions for performing the inspections required by Part III A and III B. The instructions in the SB are an acceptable means, but not the only means, to accomplish those inspections.
2. DHC-6 S/Bs A6/180 and 6/180 refer to the control column cracking problem.
3. DHC-6 S/Bs A6/181 and 6/181 refer to the elevator/rudder pulley bracket problem.

Authorization:

For the Minister of Transport,

ORIGINAL SIGNED BY

Rémy Knoerr
Chief, Continuing Airworthiness
Issued on 22 June 2018

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