Airworthiness Directive

De Havilland DH82 Series Aircraft

CIVIL AVIATION AUTHORITY OF NEW ZEALAND

Issued by the Civil Aviation Authority of New Zealand in accordance with section 72I(3A) of the Civil Aviation Act. An Airworthiness Directive (AD) contains regulatory information which is mandatory. An operator of an aircraft must not operate the aircraft unless the operator complies with every applicable AD issued by the Director in accordance with section 72I(3A) of the Civil Aviation Act. An AD is issued where the Director believes on reasonable grounds that an unsafe condition exists in an aircraft or aeronautical product.

DCA/DH82/129B Croydon Manufactured Wing and Aileron Spars – Inspection

Applicability: De Havilland DH82 Tiger Moth series aircraft fitted with replacement wing or aileron spars manufactured by Croydon Aircraft Company Limited prior to 31 May 2008.

The affected DH82 Tiger Moth series wing spar part numbers are as follows:

Wing spar position:	LH P/N:	RH P/N:
Top front	H34737 /C	H34738 /C
Top rear	H34356 /C	H34357 /C
Bottom front	H35096 /C	H35097 /C
Bottom rear	H36830 /C	H36831 /C

The affected DH82 Tiger Moth series aileron (rear) spar part numbers are as follows:

Spar:	LH P/N:	RH P/N:
Aileron spar	H37581A /C	H37582A /C

Mainplane spars may have been supplied under STC 0/21E/5 issued 20 March 2003, and aileron spars may have been supplied under STC number 0/21E/4 issued 22 January 2003, and.

Note 1: DCA/DH82/129B revised to introduce a one-time inspection of the wing spars. If the spar section properties conform to the original de Havilland design shown in Figure 1, or if the wing spar section properties (minimum radius and dimensions) are no less than that shown in Figure 2, then no further action is required, and the previous flight limitations can be removed.

Requirement: Review the aircraft records and determine if wing or aileron spars manufactured by Croydon Aircraft Company Limited (CACL) prior to 31 May 2008 are fitted to the aircraft.

1. If an affected wing or aileron spar is found installed, then aerobatics or other flights involving high load factors, including flight in turbulant conditions are prohibited until requirement 2 of this AD has been accomplished.

2. If an affected wing or aileron spar is found installed, accomplish the following:

   2.1. If an affected aileron spar part number is found fitted, then conform the spar to the approved type design per the original de Havilland design, or replace the affected aileron spar, before further flight.

   2.2. If an affected mainplane/wing spar is found fitted, then inspect the forward and the aft faces of the affected spars in four places, and determine if the spar section properties (i.e. area, shape) conform to the approved type design per the original de Havilland design shown in Figure 1.

   If the wing spar section properties conforms to the original de Havilland design shown in Figure1, then no further action is required, and the previous flight limitations can be removed.

   If the wing spar section properties do not conform to the original de Havilland design shown in Figure1, then accomplish requirement 3 of this AD, before further flight.

3. Inspect the affected wing spar and compare the spar section properties with the Croydon spar profile shown in Figure 2.

   If the wing spar section properties (minimum spar web radius and dimensions) <u>are found not less than</u> that shown in Figure 2, (i.e. <u>the inside radii</u> of the spar cut-outs <u>are found not less than</u> 0.25 inches as shown in Figure 2), then no further action is required, and the previous flight limitations can be removed.

   If the wing spar section properties (minimum spar web radius and dimensions) <u>are found less than</u> that shown in Figure 2, (i.e. <u>the inside radii</u> of the spar cut-outs <u>are found less than</u> 0.25 inches as shown in Figure 2), then remove the affected spar from service, and replace with a serviceable part, before further flight.

Note 2: Report any machined spars with section properties less than that shown in Fig.2 to the CAA by completing a CA005 Defect Report form. Please provide the spar part and serial numbers, and a copy of the release documentation. The form can be obtained from CA005@caa.govt.nz. The completed form can be emailed to the CAA at http://www.caa.govt.nz/Forms/CA005D_Form.pdf

Figure 1 - De Havilland Design:

Figure 2 – Croydon Spar Profile:

Background: CAANZ has received a report from DH Support Ltd of incorrectly machined DH82 mainplane spars manufactured by Croydon Aircraft Company Limited (CACL). There is the possibility that other mainplane spars and aileron spars for de Havilland DH60, DH82 and DH83 aircraft manufactured by this company may not conform to the approved type design. These spars were sold as replacement parts for repairs and aircraft restorations.

A subsequent engineering investigation has found that the incorrectly machined spars which have been reported still have sufficient sectional properties to be able to support the original design loads. This was determined on the basis of comparison with the original de Havilland spar design using minimum dimensions, when combined with the original design analysis conservatism and safety margin. However, a one-time inspection is still required the next time the spar is accessible to confirm that the spar sectional properties (cross-sectional area, curve radius) are no less than that assumed in the engineering investigation.

The CACL Part 148 Aircraft Manufacturing Organisation Certificate expired on 31 May 2008. Since that date the company had no authority to issue any CAA Form Ones, and was not subject to CAANZ oversight of its activities. It has also been reported that CACL continued to manufacture parts and issue CAA Form Ones after that date. Any CAA Form Ones issued by CACL after 31 May 2008 are not valid, and any parts supplied after that date cannot be shown to have been conformed under Part 148. (Refer AD DCA/GEN/36.)

Compliance:

1. From 4 August 2017 (the effective date of DCA/DH83/105).

2. At the next periodic inspection when the spar is accessible, or at the next 100 hour inspection, or at the next annual inspection, whichever is the sooner.

3. If the wing spar section properties do not conform to the original de Havilland design shown in Figure1, then accomplish requirement 3 of this AD, before further flight.

Effective Date: DCA/DH82/129 – 4 August 2017
DCA/DH82/129A – 10 August 2017
DCA/DH82/129B – 28 February 2018