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## AIRWORTHINESS DIRECTIVE

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On the effective date specified below, and for the reasons set out in the background section, the CASA delegate whose signature appears below issues the following Airworthiness Directive (**AD**) under subregulation 39.001 (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 an 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.

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### DH 83 (Fox Moth) Series Aeroplanes

**AD/DH 83/5**

### Lateral Fuselage Tie Rods - Removal and Replacement

**17/2014**

**Applicability:** This Airworthiness Directive (AD) applies to all variants of DH 83 series aircraft.

**Definitions:** In this AD acceptable tie rods in relation to lateral tie rods and nuts, means one of the following:

- (a) manufactured for DHSLS. These tie rods are identified by the Part Number H 37863 marked on the rod in ink, with DHSLS engraved on one exposed end of the rod and a serial number engraved on the other end. The Part Number for the tie rod nuts is H 37870;
- (b) original equipment manufacturer (**OEM**) tie rods and nuts manufactured by de Havilland, Morris Motors or de Havilland (Australia);
- (c) manufactured by Bruntons Aero Products Ltd of the United Kingdom (**UK**);
- (d) produced by HG Aerospace Engineering Ltd of the UK.

**DHSL** means de Havilland Support Ltd.

- Requirements:**
1. Suspend all aerobatic flight.
  2. Confirm provenance of lateral tie rods fitted to the aircraft.
    - (a) If the lateral tie rods are acceptable, no further action is required by this AD.
    - (b) If the lateral tie rods and attaching nuts were produced by J&R Aerospace or are not acceptable, remove and destroy the tie rods. Replace with tie rods and nuts that are acceptable in accordance with the accomplishment instructions in British Aerospace Technical News Sheet CT (Moth) No. 29 Issue 3 or later approved revision. Replacement lateral tie rods and nuts, especially part-life items previously removed from an aircraft, must be substantiated with relevant Authorised Release Certificates and details of previous life consumed.

## DH 83 (Fox Moth) Series Aeroplanes

AD/DH 83/5 (continued)

- Compliance:
1. The action in Requirement 1 must be taken on the effective date of this AD. Aerobatic flight can only recommence once acceptable lateral tie rods are confirmed to be fitted to the aircraft.
  2. The action in Requirement 2 must be taken within 10 flight hours of the effective date of this AD.

The effective date of this AD is 22 August 2014.

Background: A recent in-flight break-up of a Tiger Moth DH 82A aircraft off South Stradbroke Island on 16 December 2013 has highlighted the risk associated with fatigue cracking leading to failure of lateral tie rods. The lateral fuselage tie rods on a Tiger Moth are a safety-critical component. The accident report revealed that both tie rods were Australian-manufactured J&R Aerospace JRA-776-1 parts.

The JRA-776-3 parts that are authorised for the DH 83 series aircraft had been subject to the same manufacturing process as the JRA-776-1 parts.

All Moth variant aircraft lateral tie rods currently have a retirement life of 2,000 flight hours or 18 years, whichever occurs first, as detailed in British Aerospace Technical News Sheet CT (Moth) No. 29 and mandated by CASA AD/DH83/3.

The lateral tie rods fitted to the accident aircraft were fitted as newly-manufactured items in 2006 and had accumulated 1,300 hours in service at the time of the accident.

In addition to the design and manufacturing aspects, the initiation and propagation of lateral tie rod fatigue cracking can be strongly influenced by aircraft utilisation and operational events that generate elevated rod loads. Aerobatic flight, flight in turbulent or adverse weather, heavy or rough landings and other undercarriage trauma could all prove contributory. The accident aircraft had been frequently used for aerobatic activities since the JRA-776-1 lateral tie rods were fitted.

This AD is published to mandate the removal from service of lateral tie rods and nuts that are not defined as acceptable.



Mike Broom  
Delegate of the Civil Aviation Safety Authority

18 August 2014