

Aircraft type and registration: Evans VP1 Series 2 G-BGLF

No & Type of engines: 1 Volkswagen 1834 piston engine

Year of Manufacture: 1983

Date and time (GMT): 6 July 1987 at 1820 hrs

Location: Wood End Farm, nr Cranfield, Beds

Type of flight: Private (pleasure)

Persons on board: Crew — 1 Passengers — None

Injuries: Crew — None Passengers — N/A

Nature of damage: Loss of propeller and damage to undercarriage

Commander's Licence: Private Pilot's Licence with IMC and full instructors rating

Commander's Age: 40 years

Commander's Total Flying Experience: 3472 hours

Information Source: Aircraft Accident Report Form submitted by the pilot, and examination of components by the AIB and a maintenance organisation.

The pilot, who was assessing the aircraft on behalf of its new owner, was just levelling off at 2000 feet when, without any warning, the wooden propeller detached. A glide was initiated in an attempt to return to the airfield, but as the aircraft was too low the pilot carried out a forced landing into a field. Minor damage was sustained by the undercarriage, but the pilot escaped unhurt.

The aircraft was recovered to the airfield where an examination of the propeller mounting arrangement was carried out by a local maintenance organisation.

The method of mounting this propeller on the aircraft is common in principle with many others, in that the crankshaft flange has six threaded flanged bosses set into it, with their forward ends protruding. The intention of the design is that torsional coupling to the propeller is achieved by a tight engagement of these producing boss ends in appropriately sized holes in the propeller with only thrust loads being taken by the attachment bolts.

The examination revealed evidence that the fit of the bosses in the propeller was slack. In addition, fatigue due to bending loads was present on the fracture surfaces of the bolts, the fractures occurring at a position just inside the threaded section of each boss. Examination of the bolt remnants led the maintenance organisation to suspect that they were of inferior quality.

Although the propeller and major portion of each bolt were not recovered, the evidence indicates that the six mounting bolts had been reacting propeller torsional loads. This was considered to have been the main factor in the fatigue failure of the bolts.