

AAIB Bulletin No: 10/93

Ref: EW/G93/05/25

Category: 1.3

Aircraft Type and Registration: Casa 1-131E Series 2000 Jungmann, G-BEDA

No & Type of Engines: 1 Enma Tigre G-IV-A5 piston engine

Year of Manufacture: 1957

Date & Time (UTC): 24 May 1993 at 1905 hrs

Location: Uckfield, Sussex

Type of Flight: Private

Persons on Board: Crew - 1 Passengers - 1

Injuries: Crew - None Passengers - None

Nature of Damage: Both lower and one upper wing destroyed, landing gear torn away, cowl and lower fuselage damaged

Commander's Licence: Airline Transport Pilot's Licence

Commander's Age: 45 years

Commander's Flying Experience: 6,047 hours (of which 148 were on type)
Last 90 days - 4 hours
Last 28 days - 4 hours

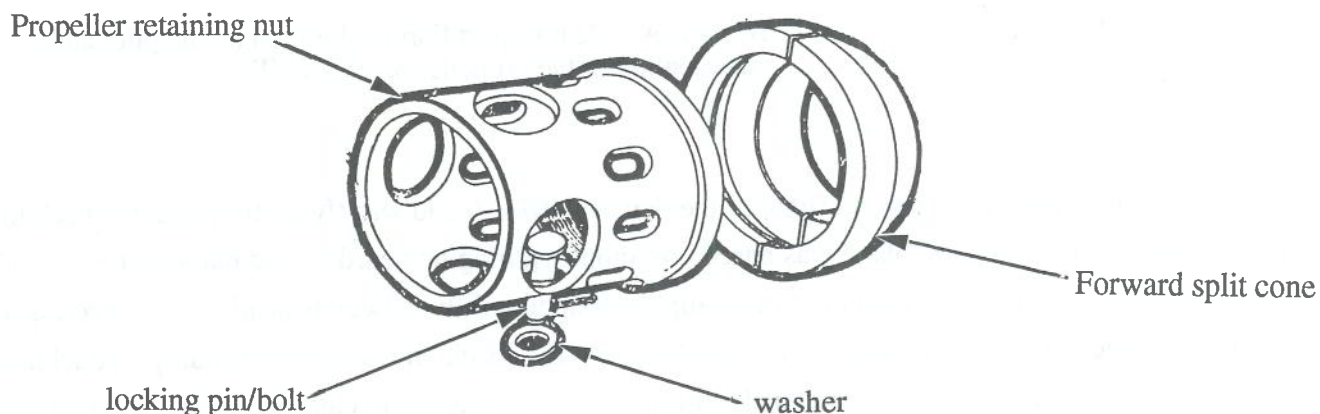
Information Source: Aircraft Accident Report Form submitted by the pilot and examination of the propeller by the AAIB

The pilot was engaged on his second flight of the day in G-BEDA and was flying from Buxted back to Sheffield park, where the aeroplane was based. Without warning he heard a loud bang, felt a loss of power and vibration. He caught sight of the complete propeller falling away beneath him. Selecting a field for a forced landing, he executed a 270° right turn to approach on a southerly heading. Touching down about 150 yards into one field, he had to lift the aircraft off again to clear the far hedge and land again in another. This field had electricity cables running across it and, whilst able to go under the cables, the pilot had to turn the aircraft to avoid a pylon. Another hedge was encountered with insufficient flying speed to pull the aircraft over it and impact with this hedge detached the landing gear and precipitated the aircraft into a third field where it came to rest. The pilot was uninjured and was able to vacate the aircraft without difficulty. He observed that there appeared to have been no material failure but that the propeller retaining nut seemed to have come undone.

The propeller was recovered and was remarkably little damaged. A strip examination was conducted by AAIB and the UK agent for the manufacturer which commenced with removal of the spinner. This

exposed the nut used to secure the propeller onto the crankshaft (see diagram). The propeller is retained by two sets of split cones which grip the propeller hub as the nut is tightened (only the front cones are shown). The end of the crankshaft is hollow and has holes drilled which are designed to allow 'Vernier' alignment with the holes in the nut so that a locking pin can be inserted after the correct torque is achieved. The original pin was a form of clevis and used a split pin and washer to retain it. It has become common practice to replace this with a bolt and stiffnut and the inspector with responsibility for the aircraft reported that G-BEDA had the latter method installed.

There were no signs of any distress to the thread of the main propeller hub nut which appeared merely to have come undone. Equally, no sign was found of the locking bolt or pin or any of its attaching parts. It is possible for the parts to have fallen out after propeller detachment if they had been present but loose but it would appear more likely that at least the stiffnut would have remained in the spinner. The pilot reported that he had done a general check of the propeller as part of his pre-flight checks and that the nut itself would have been checked in July 1992 when the aircraft had had its last Permit-to-Fly renewal.



G-BEDA: Diagram showing method of locking Hoffmann propeller nut