

ACCIDENT

Aircraft Type and Registration:	Jabiru UL-450, G-CBGR	
No & Type of Engines:	1 Jabiru 2200A piston engine	
Year of Manufacture:	2001 (Serial no: PFA 274A-13682)	
Date & Time (UTC):	1 February 2022 at 1605 hrs	
Location:	Clench Common Airfield, Marlborough, Wiltshire	
Type of Flight:	Private	
Persons on Board:	Crew - 2	Passengers - None
Injuries:	Crew - 1 (Serious) 1 (Minor)	Passengers - N/A
Nature of Damage:	Landing gear and propeller damaged, and right wing detached at trailing edge. Windscreen shattered and fuselage damaged	
Commander's Licence:	Private Pilot's Licence	
Commander's Age:	68 years	
Commander's Flying Experience:	14,200 hours (of which 286 were on type) Last 90 days - 32 hours Last 28 days - 14 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

Synopsis

In the final stages of the approach to landing, the flaps retracted uncommanded by the pilot, who was subsequently unable to prevent the aircraft striking the ground heavily. Both the pilot and passenger were injured, and the aircraft was severely damaged.

The flap handle pivot bolt had become detached from its gate during the approach, allowing the flap handle to move and the flaps to retract.

History of the flight

The aircraft had recently undergone an engine service and a new instrument panel had been fitted. Having completed engine ground runs, a test flight was conducted by the pilot several weeks before the accident flight. The aircraft then flew for a Permit to Fly check flight but the radio was found to be operating intermittently. A further flight was then required to complete the requirements for issue of the Permit. During this flight the aircraft and radios were tested with no faults and the aircraft returned to Clench Common Airfield having completed the requirements for the Permit renewal. During the final stages of the approach to landing the flaps retracted uncommanded at approximately 40 ft. The pilot immediately recognised what had happened and tried to raise the nose but was unable to stop the aircraft striking the ground heavily. Both the pilot and passenger were injured.

Accident site

The aircraft was severely damaged. The first impact was on the nose undercarriage leg, which sheared off, followed by the main undercarriage legs, which failed at some point. The aircraft came to rest on its fuselage the right way up, and the starboard wing was dislodged and only held on by the trailing edge bolt.



Figure 1

G-CBGR after recovery from the accident site (used with permission)

Aircraft information

The Jabiru UL-450 kit is supplied with manual flaps which are operated via a lever mounted on the side wall to the left of the pilot's head. The lever has a button which latches it in three positions to give flaps up, a mid-flap position or full flap. The flap lever is pulled laterally to release the peg from the hole which then enables the flaps to be moved to a new position. The Light Aircraft Associations type acceptance data sheet¹ comments:

'It is common for the attach/pivot bolt of the Flap Actuating Handle to not be tightened sufficiently, this can lead to the flap disengaging on approach with potentially serious consequences if not caught quickly by the pilot.'

The document then goes on to say:

'...it is important to set and maintain the tightness of the flap lever pivot bolt in order to provide a suitable pre-load tending to hold the peg in place, otherwise there is a risk of the flap control jumping the gate.'

Footnote

¹ <http://www.lightaircraftassociation.co.uk/engineering/TADs/274A%20JABIRU%20UL%20450.pdf?msclkid=facc58ebc16711ecaef410fa01748d66> [Accessed 21 April 2022].

Uncommanded flap retractions on the aircraft type are usually caused either by the flap lever not being engaged with the detent sufficiently, or if the flap limiting speed has been exceeded.

The pilot commented that he had experienced uncommanded flap retraction on this type of aircraft before and that he was mindful of this in ensuring the flap lever was located firmly into the required position. He noted that they did encounter some turbulence on the approach a few seconds before the flaps retracted and that this may have dislodged the flap lever. The aircraft was flying below the flap limiting speed.

The flaps are large, at about 70% of the span of the wing, so any uncommanded retraction will cause a significant loss of lift and a change in aircraft attitude.

Analysis

The design of the flap system relies on the pivot bolt to be correctly adjusted so that the flap lever does not come out of the selected gate. In the case of G-CBGR, turbulence on the approach may have dislodged the flap lever, which caused the uncommanded flap retraction. This occurred at a height at which the pilot could not recover the aircraft before it struck the ground.

Conclusion

The flap handle in G-CBGR became dislodged from its selected gate leading to the flaps retracting uncommanded by the pilot. Despite the pilot immediately recognising what had happened, it was not possible to recover the aircraft before it struck the ground.

The issue of the pivot bolt on the flap handle in this aircraft type not being tightened sufficiently to prevent the flap handle coming out of the selected gate is well-known and is publicised by the LAA in their type acceptance data sheet.