

ACCIDENT

Aircraft Type and Registration:	Silence Twister, G-MRJP	
No & Type of Engines:	1 Jabiru 2200A piston engine	
Year of Manufacture:	2011 (Serial no: LAA 329-14972)	
Date & Time (UTC):	14 January 2014 at 1455 hrs	
Location:	Launton, Oxfordshire	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - None
Injuries:	Crew - None	Passengers - N/A
Nature of Damage:	Damage to propeller, landing gear, wings and fuselage	
Commander's Licence:	Airline Transport Pilot's Licence	
Commander's Age:	57 years	
Commander's Flying Experience:	20,000 hours (of which 4 were on type) Last 90 days - 160 hours Last 28 days - 48 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot and additional inquiries by the AAIB	

Synopsis

The aircraft was flying at about 1,500 ft, following minor maintenance, when the pilot heard a loud bang accompanied by vibration and a yaw and roll to the right. The aircraft was damaged in the subsequent forced landing but it was clear that the deriggleable right tailplane had rotated through 90° in-flight. Wear in the guide tube of the tailplane locking pin was found to have led to improper routing of the pin which had not engaged with the locking spigot.

History of the flight

Following minor maintenance, the aircraft was being flown near Bicester at 1,500 ft and at an airspeed of 100 kt when the pilot heard an "enormous bang" accompanied by severe vibration, and felt it yaw and roll to the right. Realising that the aircraft had experienced some sort of structural failure, he turned towards Bicester Airfield and carried out a handling check. He found that he had to maintain full left rudder and some left bank in order to maintain control but could not maintain altitude, so he selected a field for a forced landing.

The pilot was able to retain control by maintaining 80 kt airspeed and, as he judged that he would be able to make his chosen field, he selected full flap and rounded out. However, he was unable to maintain directional control as the aircraft landed and ground looped to

the left, coming to rest in soft mud with the landing gear collapsed, incurring damage to the propeller and airframe underside.

As he evacuated the aircraft, the pilot saw that the right tailplane had rotated through 90° about its mainspar (Figure 1).



Figure 1

G-MRJP after landing showing right tailplane rotated through 90°

Examination of the aircraft

The Twister has fully demountable tailplanes. Each is slid onto the tubular mainspar and, when pushed fully home, the elevator torque tube engages in its hexagonal drive and a rigging spigot enters a hole in the fuselage (Figure 2). To lock the tailplane laterally, a wire locking pin is inserted into a plastic guide tube in the rear fuselage and pushed home. The final part of its travel inserts the pin through a hole in the rigging spigot, preventing lateral movement of the tailplane.

In the case of G-MRJP, the locking pin had missed the hole in the rigging spigot because it had exited the guide tube through a hole before reaching the end. The hole had been worn in the tube because it had been rubbing on the elevator torque tube. The unlocked tailplane had then migrated spanwise, disengaging the hexagonal elevator drive and allowing the tailplane to rotate about the main spar. The aircraft had previously been derigged to conduct minor maintenance and, when subsequently reassembled, had been independently inspected by two people without spotting that it not been properly locked.

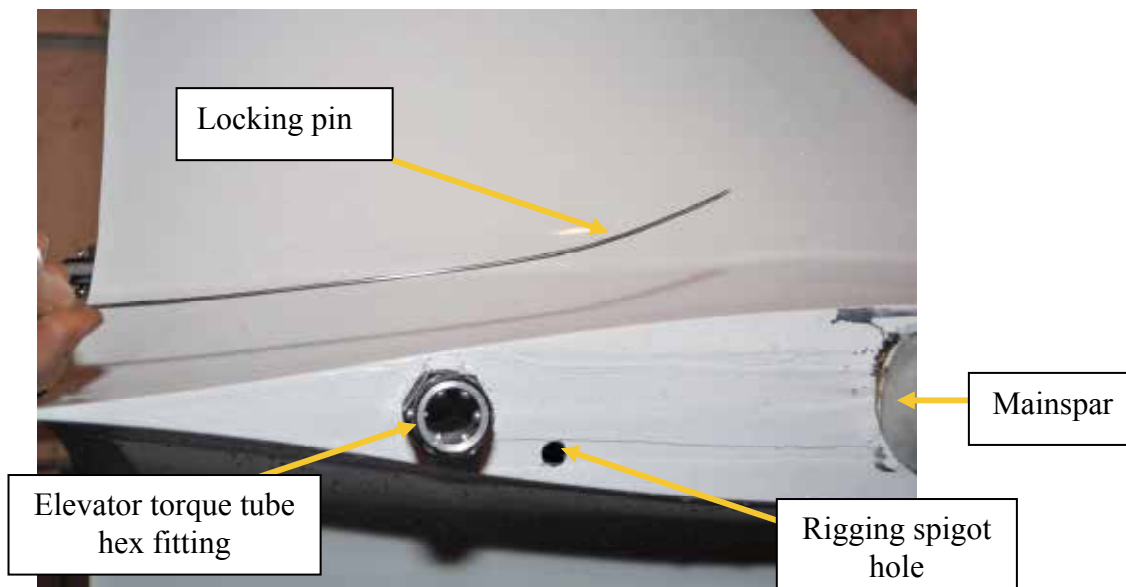


Figure 2

View of rear fuselage showing tailplane/elevator attachment features. The locking pin has been withdrawn completely. Note that the pin is angled upwards as it and the guide tube have to pass under the elevator torque tube. (Photo courtesy LAA)

Safety action

The Light Aircraft Association (LAA) acted quickly on learning of this accident and wrote to all Twister owners explaining the known circumstances and advocating a physical pull check on the tailplanes to ensure the locking pin has engaged in the spigot. They also published an item in their magazine *Light Aviation* (February 2014), repeating the letter and giving additional photographs and details as well as advising that their design team would be looking to see whether improvements needed to be made.