

## ACCIDENT

<b>Aircraft Type and Registration:</b>	Piper PA-23-250 Aztec, G-BCCE	
<b>No &amp; Type of Engines:</b>	2 Lycoming IO-540-C4B5 piston engines	
<b>Year of Manufacture:</b>	1973 (Serial no: 27-7405282)	
<b>Date &amp; Time (UTC):</b>	30 June 2017 at 1542 hrs	
<b>Location:</b>	Shoreham Airport, Sussex	
<b>Type of Flight:</b>	Private	
<b>Persons on Board:</b>	Crew - 1	Passengers - 1
<b>Injuries:</b>	Crew - None	Passengers - None
<b>Nature of Damage:</b>	Nose landing gear and forward fuselage	
<b>Commander's Licence:</b>	Airline Transport Pilot's Licence	
<b>Commander's Age:</b>	47 years	
<b>Commander's Flying Experience:</b>	8,500 hours (of which 1,000 were on type) Last 90 days - 56 hours Last 28 days - 17 hours	
<b>Information Source:</b>	Aircraft Accident Report Form submitted by the pilot and additional enquiries made by the AAIB	

## Synopsis

The pilot landed the aircraft with the nose landing gear partially extended after attempts to lower it were unsuccessful. Both occupants were uninjured and examination established that the nose landing gear upper drag link bolt and two of the attachment lugs were broken. This prevented the nose landing gear from extending into the locked position.

## History of the flight

After a training flight involving multiple landings, the aircraft returned to Shoreham where a single-engine go-around was simulated.

When the landing gear was selected down in preparation for a final landing, the cockpit indications showed that the nose leg had not locked down. ATC confirmed that the nose leg was not extended and the pilot left the circuit to work through the checklist.

Unable to resolve the problem, the pilot landed the aircraft on the grass runway. Although the aircraft suffered some damage, both occupants were uninjured and exited the aircraft using the main door.

## Aircraft examination

The AAIB examined the aircraft after it had been recovered to a maintenance facility. The nose landing gear leg and drag links had already been removed.

The upper drag link attachment bolt was found to be broken and the fracture faces showed evidence of reverse bending fatigue (Figure 1). Contamination/corrosion products indicated that the fatigue had been propagating for some time.



**Figure 1**

Broken drag link bolt, indicating reverse bending fatigue

The upper drag link attachment lugs were distorted and both inboard lugs were cracked (Figure 2). The accumulation of dirt on the fracture faces indicated that the cracks had existed for some time.



**Figure 2**

Cracked and distorted drag link attachments  
(remnants of the drag link bolt are still in-situ)

**Aircraft history**

The aircraft had accrued approximately 7,100 hours and its most recent scheduled check was an annual check in February 2017. The maintenance agency advised that the joint would have been lubricated at that time. The next 50-hour check was imminent.

There had been no recent reports of landing gear anomalies or maintenance, with the exception of repairing a nosewheel puncture.

**Conclusion**

The definitive failure mechanism was not established, but it was evident that the drag link attachment bolt had been exposed to cyclic loading that exceeded its capability. Failure of the inboard attachment lugs could result in 'flexing' of the drag link attachment and, therefore, excessive loading of the bolt.

The nose landing gear could not be locked down because the upper drag link had detached from the structure.

The aircraft manufacturer was informed of this occurrence.