

Piper PA-28-180,  
G-AXSG

St Mary's Airport, Isles  
of Scilly

07 April 2023

Accident

## Investigation Synopsis

On touchdown the left main landing gear collapsed. The cause of the collapse was failure of both upper torque link attachment lugs on the landing gear cylinder due to fatigue cracking. There is a known history of fatigue cracking on cast landing gear cylinders and a manufacturer's Service Bulletin exists to regularly inspect the area around the attachment lugs. There is currently no Airworthiness Directive to mandate the Service Bulletin.

One Safety Recommendation is made to the CAA to ensure that the level of safety of cast main landing gear cylinders fitted to PA-28 and PA-32 aircraft is acceptable.

## Safety Recommendation 2024-001

### Justification

While Service Bulletin SB1131A is still current, the EASA AD mandating it was cancelled in 2020 as EASA determined that an acceptable level of safety existed. Cast main landing gear cylinders are still fitted to aircraft and fatigue cracking of the lugs continues to occur. To ensure that an acceptable level of safety still exists for the cast cylinders fitted to PA-28 and PA-32 aircraft, and to provide appropriate guidance on inspecting the cylinders, the following Safety Recommendation is made to the CAA.

Therefore, the following safety recommendation was made:

### Safety Recommendation 2024-001

It is recommended that the Civil Aviation Authority undertakes an unsafe condition assessment, in accordance with the requirements of UK Regulation (EU) No 748/2012 Annex I Part 21.A.3, for the cast main landing gear cylinder cracking affecting PA-28 and PA-32 aircraft, and take appropriate action based on the outcome of the assessment.

**Date Safety Recommendation made:** 25 January 2024

### LATEST RESPONSE

**Response received:** 24 April 2024

The CAA accepts this Safety Recommendation.

The CAA has undertaken an 'unsafe condition assessment' in accordance with UK Reg (EU) No 748/2012, Annex I, Part 21.A.3B for landing gear failures involving UK registered Piper PA-28 and PA-32 aircraft for the period 2017-2023 (inclusive).

The assessment calculated an effective occurrence rate for the fleet by taking the number of PA-28/PA-32 landing gear failures over the seven-year period and dividing it by the total hours accumulated by the UK PA-28/PA-32 fleet for that period. That figure was then compared against an 'allowable' quantitative probability of one in 10,000 flying hours for a 'Major' failure condition, as defined in FAA AC23.1309-1E. The CAA considers this approach to be conservative.

The occurrence rate was found to be well within the allowable quantitative probability (by approximately three times) and indicates that mandatory action to mitigate landing gear failures affecting the UK PA-28 and PA-32 fleet is not warranted.

Nevertheless, the CAA recognises the importance of raising awareness around this issue and will therefore be publishing a Safety Notice, recommending that owners, operators, and maintainers of PA-28 and PA-32 aircraft carry out landing gear inspections at the next routine maintenance check with any findings of cracking to be reported to the CAA. The Safety Notice will also highlight Piper Service Bulletin SB1131A and recommend that it be incorporated into the aircraft maintenance programme. The CAA expects the Safety Notice to be published before the end of June 2024.

The CAA considers the above actions satisfy the intent of the safety recommendation.

**Safety Recommendation Status**                      **Closed**

**AAIB Assessment**                                      **Adequate**

**Action Status**    **Planned Action Completed**

**Feedback rationale**

The unsafe condition assessment that has been carried out to establish an effective occurrence rate for landing gear failures on the PA-28 and PA-32 aircraft, and issue of the Safety Notice on 2 May 2024 meets the intent of the Safety Recommendation. (EU Regulation 996/2010 article 18 refers).

**RESPONSE HISTORY**

N/A