



**SUBJ:** Fuselage – Cracking at Aft Tail Post Weld Joint on Piper Model PA-18 (L-21) Airplanes      **SAIB:** CE-13-14  
**Date:** February 6, 2013

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*This is information only. Recommendations aren't mandatory.*

## **Introduction**

This Special Airworthiness Information Bulletin (SAIB) alerts you, owners and operators of certain **Piper Aircraft, Inc. Model PA-18 (L-21)** airplanes, of cracking discovered in the weld joint of the aft fuselage tail post. This SAIB also provides guidance on recommended inspections for various Piper airplane models with similar tail post configurations.

At this time, this airworthiness concern has not been determined to be an unsafe condition that would warrant AD action under Title 14 of the Code of Federal Aviation Regulations (14 CFR) part 39.

## **Background**

We received notice of this issue from a foreign operator. A Piper Model L-21B (PA18-135) airplane fuselage was completely disassembled to replace the worn fabric fuselage covering. After removing the fabric covering, paint was removed from the fuselage frame in areas considered susceptible to high stress and at major weld joints. A fluorescent penetrant inspection (FPI) was done on all these areas. The FPI inspection revealed two cracks in the fuselage tail section protruding into the lower rudder attachment hinge area (see Figure 1). To determine the extent of cracks into the adjacent welds and tubing, additional x-ray inspection of the area was done. The x-ray inspection revealed that the cracks did protrude into the adjacent weld areas (see Figure 2).

Additional airplanes from the operator were inspected and a total of three out of five airplanes showed cracking at the same location. The lowest time airplane with cracking had accumulated approximately 4,000 hours total time-in-service (TIS). The highest time airplane without cracking had accumulated over 6,500 hours TIS. The x-ray inspections were also used to check for corrosion of the tubes and welds that could contribute to the problem. Only minor internal corrosion was visible on any of the inspected airplanes.

We have investigated the issue and find no reports of such damage within the Service Difficulty Report (SDR) or Malfunction/Defect Report (MDR) systems. Some operators have informally provided experience suggesting similar damage may have occurred on other Piper Cub series airplanes, especially when operated on rough terrain. To this point, all damage has been discovered during maintenance.

If undetected, these conditions could eventually lead to significant cracking and / or corrosion of the fuselage tube structure and result in a potential safety of flight hazard such as loss of control of the lower rudder hinge or tail wheel.

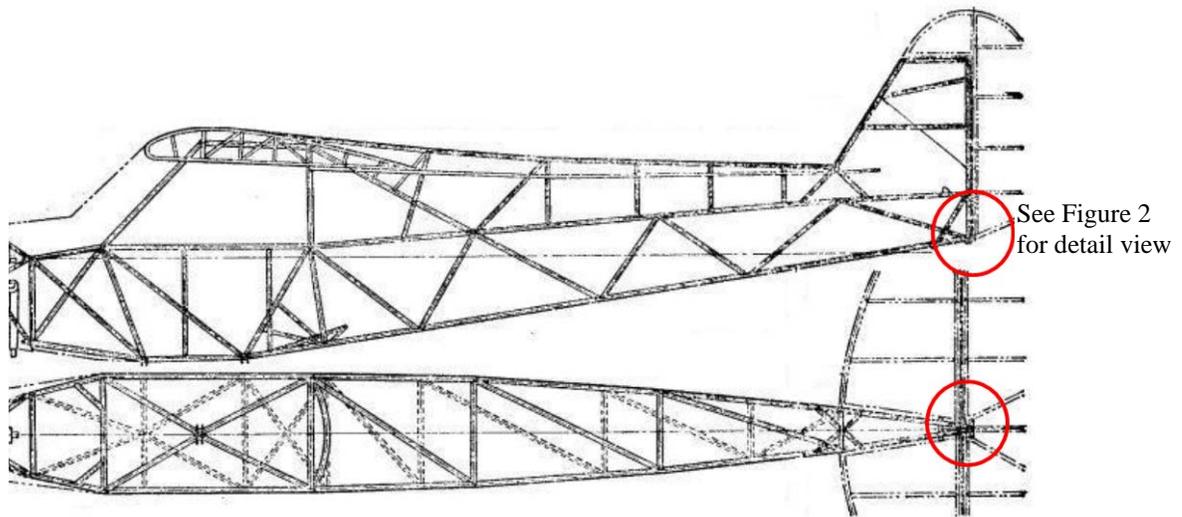


Figure 1 – Aircraft-level view of damage area

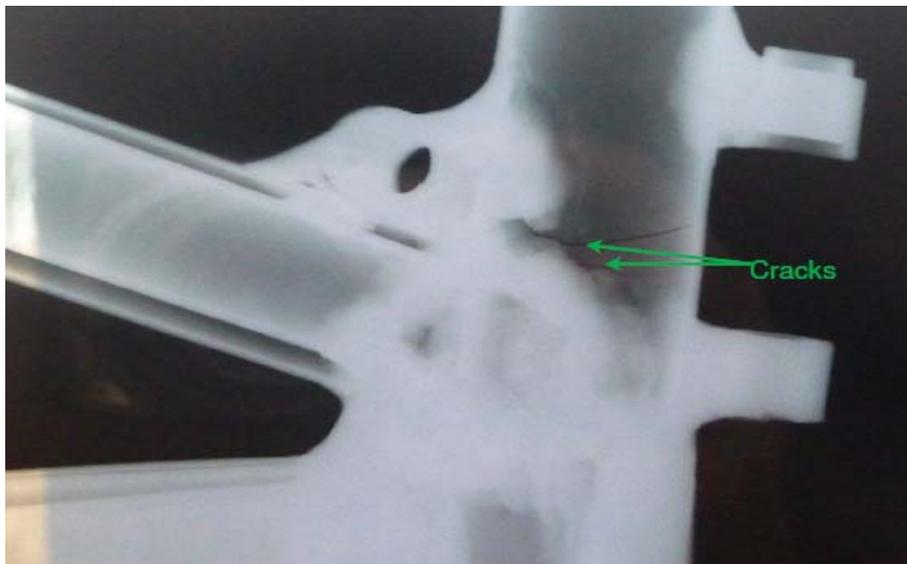


Figure 2 – Detail view of tail joint damage area

## Recommendations

The FAA recommends the Piper airplane models listed below that have accumulated 1,000 hours total TIS be inspected within the next 100 hours TIS in the fuselage tail post area. We recommend use of an inspection method such as fluorescent penetrant and / or x-ray. Additionally, we recommend repeating the inspection every 1,000 hours TIS. These inspections are particularly important if the aircraft is subject to operation in severe turbulence, towing, or on rough terrain.

*Models:* AE-1, E-2, F-2, HE-1, J2 series, J3C series, J3F series, J3L series, J4 series, J5 series, L-4 series (Army), L-14, L-18C (Army), L-21 series (Army), NE-1 and NE-2 (Navy), PA-11 series, PA-12 series, PA-14, PA-15, PA-16 series, PA-17, PA-18 series, PA-19 series, PA-20 series, PA-22 series, PA-25 series, TG-8, and XLNP-1.

Note: The focus is on airplane model variants with tube and fabric construction with tailwheel and rudder hinge support structures converging at the tail post joint construction.

Note: Depending on the aircraft configuration, the area may be difficult to inspect due to limited accessibility with the fabric installed. We recommend that you inspect with the fabric removed. There may also be alterations available that provide increased accessibility to the area.

Repair or replace damaged components if you find cracks or corrosion

**For Further Information Contact**

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