

National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



WPR23LA226

MATERIALS LABORATORY

Factual Report 23-096

December 21, 2023

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A. ACCIDENT INFORMATION

Location: Sunnyside, Washington
Date: May 25, 2023
Vehicle: Cessna 310I, N6PK
Investigator: Albert Nixon, AS-WPR

B. COMPONENTS EXAMINED

Right main landing gear side brace lock assembly bellcrank.

C. EXAMINATION PARTICIPANTS

Specialist Matthew R. Fox, Ph.D.
NTSB
Washington, DC

D. DETAILS OF THE EXAMINATION

The submitted bellcrank from the right main landing gear side brace lock assembly is shown in figure 1. The forward lug of the clevis at the lower end of the bellcrank was fractured, and the other lug remained intact. The mating side of the fractured lug was missing and not recovered. Additionally, the flanged bearings and the pin for attaching the side brace lock link to the lower end of the bellcrank were missing and not recovered.

Closer views of the lower end of the bellcrank are shown in figure 2. The fracture surface had a rough matte gray appearance consistent with ductile overstress fracture. A portion of the fracture surface was obliterated by smearing damage on the aft side of the fracture consistent with sliding contact with the side brace lock link where the contacting face of the link slid forward and inboard relative to the bellcrank. On the intact lug, the inboard forward corner of the hole was deformed as indicated with arrows in figure 2. Contact marks associated with the deformation were limited to the forward half of the hole bore.

A view of the right main landing gear side brace lock link as photographed by a Federal Aviation Administration (FAA) investigator after the accident and before disassembly is shown in figure 3. As noted in figure 3, the attachment bolt at the lower end of the assembly was bent downward. Additionally, the view in figure 3 shows relative rotational displacement in the alignment between the lock link and the attached end fitting, where the lock link was rotated counterclockwise (as viewed from above) relative to the lock link.

A close view of the forward side of the lock link as photographed by the pilot is shown in figure 4. A brownish black object was located at the inboard side of the

hole at a location consistent with the set screw for retaining the pin that attached the bellcrank to the lock link. The set screw, visible in figure 3, is adjusted from the inboard side of the lock link as indicated in figure 4. The attachment pin hole through the lock link was deformed on the outboard lower quadrant as indicated in figure 4. Additionally, the area below the attachment pin hole was deformed with a curved shape consistent with contact with the lower end of the missing bellcrank flange after being displaced downward relative to the lock link. The forward edge of the flat area above the attachment pin hole was also deformed on the lock link as indicated in figure 4. The damage location on the upper forward side of the lock link corresponded to the sliding contact area on the bellcrank as indicated in figure 2, areas that are not normally in contact in the intact assembly.

Submitted by:

Matthew R. Fox, Ph.D.
Chief Technical Advisor - Materials



Figure 1. Overall view of the forward side of the submitted side brace lock bellcrank as received.

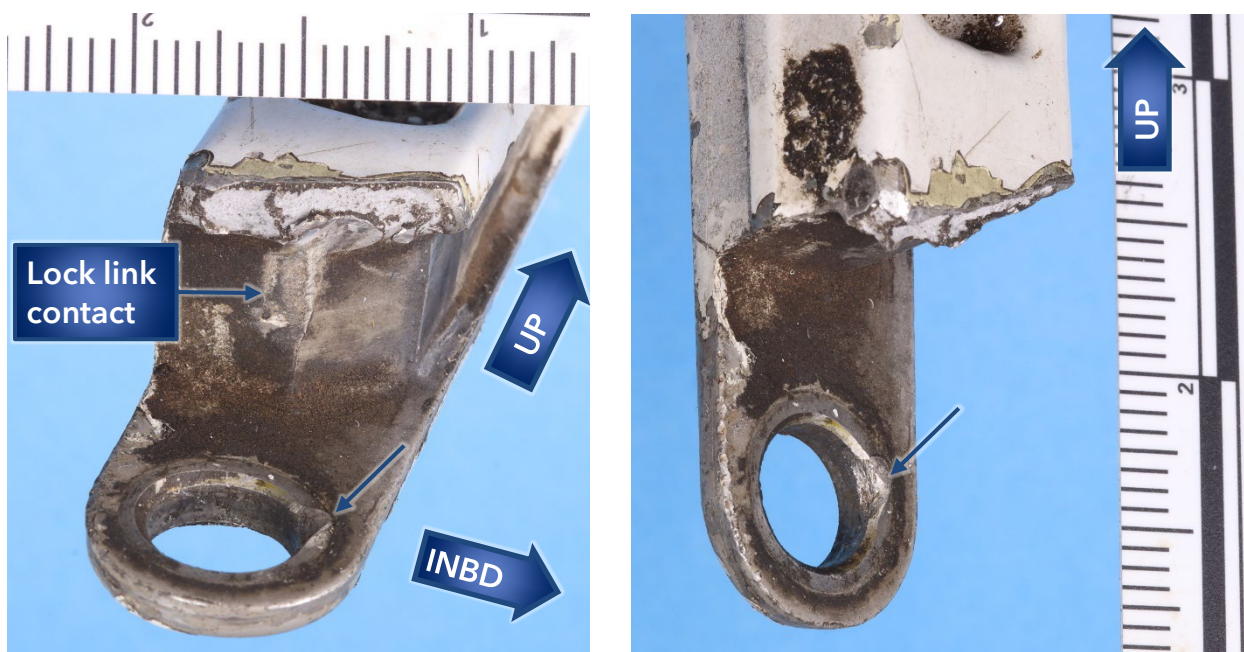


Figure 2. Views of the lower clevis lug fracture surface (left image) and heavy contact on the inside edge of the hole in the intact lower clevis lug (arrow in the right image).

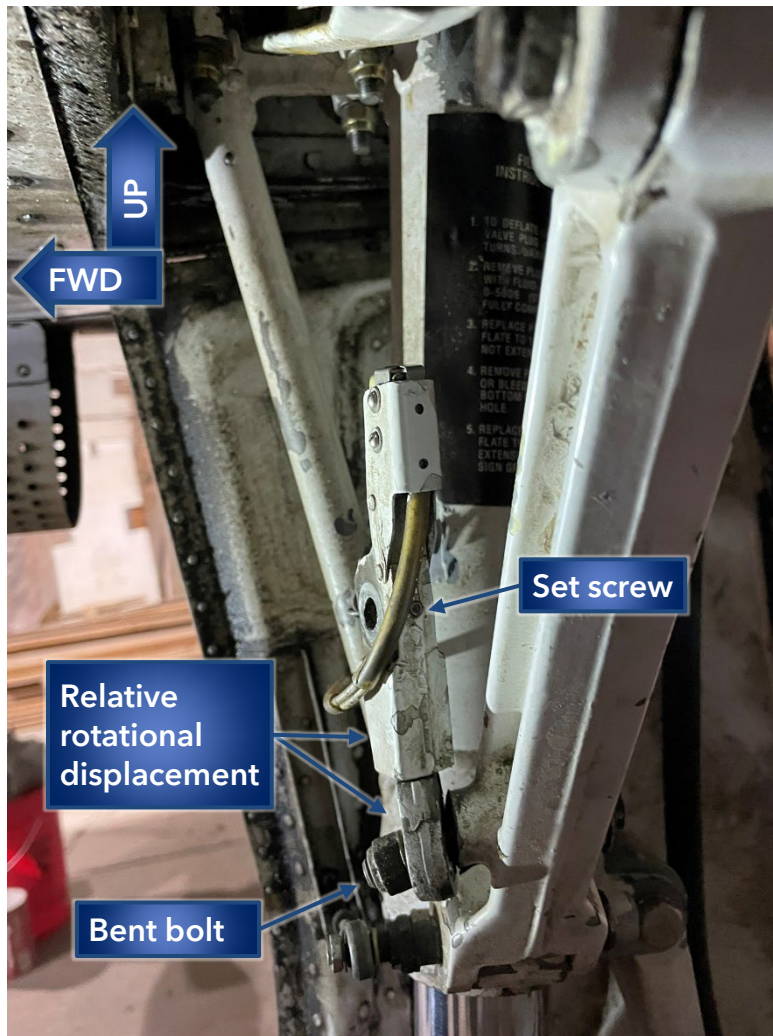


Figure 3. Inboard side of the left main landing gear side brace lock link. (Photograph provided by the FAA.)

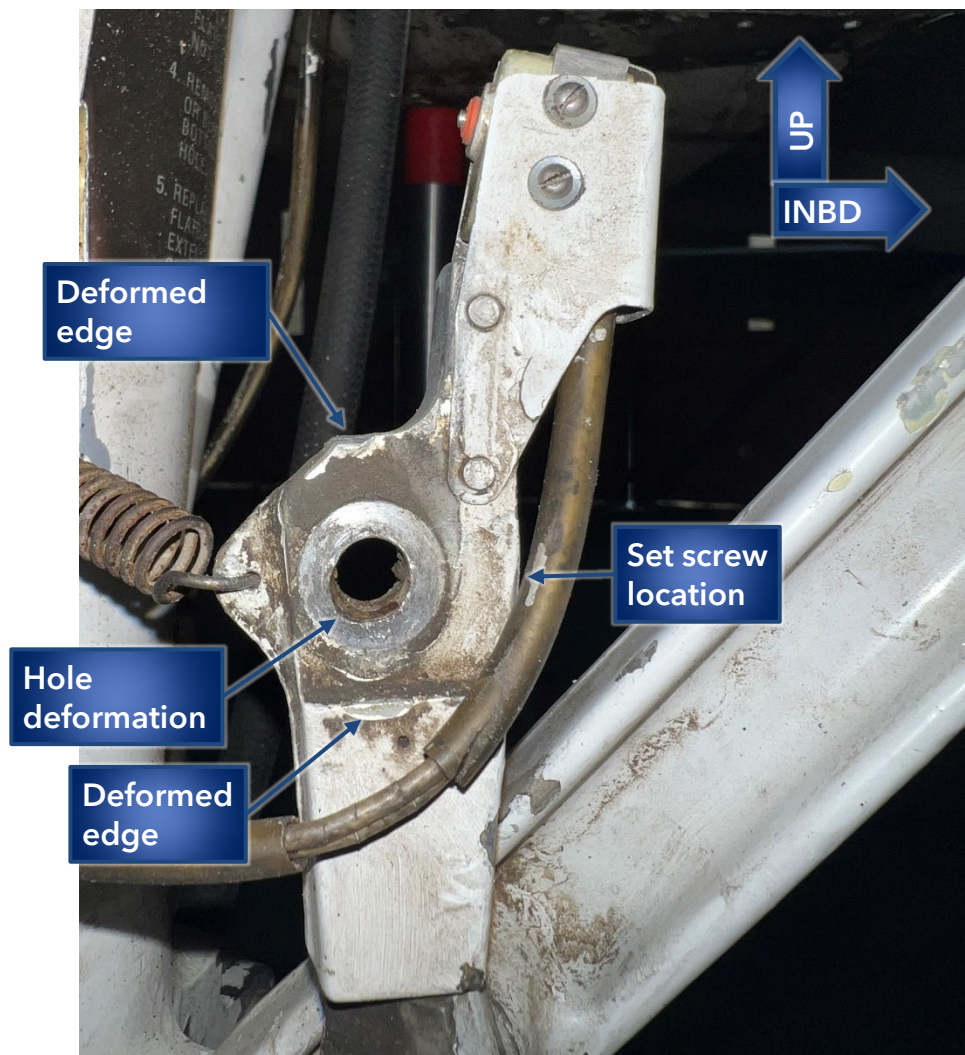


Figure 4. Forward side of the left main landing gear side brace lock link. (Photograph provided by the pilot.)