

Kathryn Whitaker
Aviation Accident Investigator
AS-WPR

Date: April 30, 2025

Subject: Inspection of N513JM

Contact: Randy Tetrault, FAA Helena FSDO, and Majesta Bollinger, Director of Maintenance, SkyService

After the accident, Ms. Bollinger was contacted by phone and reported the following:

- She observed the airplane's removal from the runway. The airplane's left wing was raised using airbags, the left main landing gear was fully extended and locked by hand, and the airplane lowered back onto its tires. The airplane was subsequently towed to the hangar.
- Visual inspection of the left main landing gear revealed the downlock switch had several broken wires. The wire bundle was routed inboard of the downlock hook. The broken wires were marked 2-20, 5-20, 8-20, 9-20, 11-20, and 12-20.
- The left main landing gear up limit switch and bracket were missing.
- Based on her observations during the visual inspection, she believed that the downlock switch wire bundle had snagged on the up limit switch bracket at some point while the gear was in transit. As a result, the downlock switch wire bundle was damaged, and the up limit switch was torn off.

On April 30, 2025, Inspector Tetrault and Ms. Bollinger inspected the airplane in a hangar at Helena Regional Airport (HLN), Helena, Montana. During and after the inspection, they reported the following findings:

- The landing gear hydraulic service valve was found closed and the safety wire was intact.
- The airplane was lifted using jacks and the landing gear was cycled up and down several times. When the landing gear handle was selected down, the left main landing gear did not fully extend and lock, and the corresponding green gear down light did not illuminate by the time the gear hydraulic pump stopped operating. Additionally, after the pump stopped, the red gear in transit lights extinguished, and the gear warning horn did not sound.
- The landing gear alternate extension pump was used, and after pumping the handle three times, the left main landing gear fully extended, locked, and the green gear down light illuminated.
- With the landing gear up, the gear in transit lights illuminated and the gear warning horn sounded when the engine throttles were retarded, or the flaps were extended.
- On several occasions, while the landing gear was in transit, sparks were seen and heard coming from the broken wires on the downlock switch, and the Landing Gear Control circuit breaker would trip (open.) Then the circuit breaker opened, the landing gear hydraulic pump stopped operating.
- The downlock switch wire labeled 8-20 was reconnected with a jumper and the landing gear was cycled up and down using the landing gear selector handle. With the jumper installed, the landing gear would extend and lock normally. The jumper was then removed, and the gear was cycled; the left main landing gear did not fully extend and lock.
- No other defects were found that would have precluded normal operation of the landing gear.