

Inspector statement

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Description: N321BJ Accident

On 04-06-2017 a detailed examination of the landing gear box, motor and associated switches was performed. Prior to the inspection, the aircraft was removed from a flatbed trailer with a crane and was positioned on aircraft jacks in order to extend the landing gear. Preliminary inspection shows the landing gear circuit breaker (CB) was popped and the landing gear emergency extension handle rotated freely without extending the landing gear.

The ailerons had no continuity due to the aileron cables were ground through behind the nose gear tunnel from the gear up landing.

An attempt was made to extend the landing gear using normal landing gear extension procedures show in the B55 maintenance manual. Due to the aircraft batteries being dead, a secondary set of batteries were borrowed and connected to the auxiliary power port. After applying power, the gear warning horn sounded, the 30 amp landing gear CB was reset and the gear handle was put in the down position. The landing gear motor did not respond and got hot. Power was removed from the aircraft.

The emergency extension handle and housing assembly was removed in order to extend the landing gear, during removal it was discovered the bearing retaining ring was not secured and fell on the cabin floor. A large straight slot screw driver was inserted into the pinion shaft slot in attempt to extend the gear. The first attempt did not work, the gear motor was removed which allowed the gear extension to the down and locked position (gear down light on, warning horn off). The main gear and nose gear were secured using metal bars, hose clamps and a 2x4 in order to keep the gear from collapsing during landing gear box removal.

The landing gear motor was function tested by applying 28 volts to both the clockwise and counter clockwise wires. It was determined the motor was shorted out internally.

Removed landing gear up lock switch for function test, function test was normal.

Removed landing gear box from the airframe and installed the emergency gear housing and handle that was removed during initial gear extension. The handle was rotated towards the up position till the sector gear hit the internal stop. The handle was rotated in the extend direction, the handle rotated freely without gear box movement.

The gear box was disassembled for further evaluation. It was determined that when the gear box sector gear was in the up position against the internal stop, the emergency gear handle lost contact with the pinion, causing it to rotate freely.

An evaluation of the crank assembly shows excessive wear and excessive pinion shaft end play causing the gear handle to disconnect from the pinion gear when the sector gear was against the internal up stop.

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