

AWB 27-3 Issue 1, Cessna 336/337 Flap Cable Wear

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Applicability

All Cessna 336/337 series aircraft.

Purpose

The purpose of this bulletin is to advise operators and maintenance organisations that excessive wear of the flap cable may exist in an area that is difficult to inspect during the periodic check of the cable in accordance with the maintenance manual. Excessive wear, corrosion or broken wires may result in failure of the flap cable, which can result in asymmetric flap deployment.

Background

This model aircraft has suffered a number of asymmetric flap extensions as the result of failed flap cables. The failure of the flap cable is caused by excessive wear at the inboard bellcrank, P/N 1462020-27. The wear location is at the tight radius bend on the bellcrank prior to the termination point of the cable. The cable wear is on the inside radius of the bend and is not noticeable without removal of the cable.

During one incident in the USA, the pilot lost control of the Cessna Model 336 on landing, but was able to recover control and successfully land the aircraft without sustaining damage or injuries. In a separate accident, again in the USA, the pilot of a Cessna Model 337 lost control of the aircraft on landing, after suspected asymmetric flap deployment caused by a failed flap cable.

In addition to the above two incidents, an incident occurred in Australia on 1 February 2003 where, on approach to land, the left flap completely retracted. Upon investigation it was found that the left flap operating cable P/N 1460100-7 had failed approx 1" from the left flap inboard bellcrank P/N 1462020-27. Further investigation revealed the right hand flap cable had broken internal strands. These were not visible until the cable was removed from the aircraft and carefully inspected. The cable has a severe bend by design at the inboard bellcrank location, which seems to exacerbate the wear and fatigue of the cable in this location.

The Model 336/337 Maintenance Manual requires a 100 hour inspection of the flap cable system. It is recommended that maintenance personnel treat the left and right hand inboard bellcranks (P/N 1462020-27) and all others in the flap system as "critical fatigue areas". A critical fatigue area is defined by FAA AC 43-13-1B as the working length of a cable where the cable runs over, under, or around a pulley, sleeve, or through a fair lead; or any section where the cable is flexed, rubbed, or worked in any manner. It also includes cable within 1 foot of a swaged fitting. As such, these areas require close visual inspection, which, in this case, can only be accomplished by complete removal of the flap cable so that hidden areas of the cable can be inspected for excessive wear.

In addition to the requirements of the Cessna 336/337 Maintenance Manual and the requirements of FAA AC 43-13-1B, operators maintaining the aircraft in accordance with CASA Schedule 5, must, according to *Section 1 - The Airframe Part (2) (f)*;

"inspect the flight control system bellcranks, push pull rods, torque tubes, cables, fairleads, turnbarrels and pulleys".

A thorough inspection of the flap cable at the inboard bellcrank location will require complete removal of the cable in order to detect hidden damage.

Recommendations

1. Because of the criticality of the flap cables, and the difficulty of inspecting them in situ, the left and right flap cables should be removed and inspected for wear, broken wires and corrosion in accordance with FAA AC 43-13-1B, chapter 7, Section 8, paragraph 7-149(d) and the Maintenance Manual at the 100 hourly or annual inspection, whichever first.
2. Reporting Action: If any excessive wear, corrosion or broken wires are detected, report it to CASA via a Major Defect Report (MDR) form (as required by CAR 52). In the MDR form, specify the exact location of the cable damage and include a sketch if possible showing the location of damage in relation to pulleys, bellcranks and other hardware. This additional information will allow CASA to assess the fleet-wide condition of the flap cable system and develop possible future action.

Enquiries

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