



SUBJ: ELEVATOR TORQUE TUBE – Inspections for cracks and corrosion
in elevator torque tubes

SAIB: CE-17-25

Date: August 25, 2017

This is information only. Recommendations aren't mandatory.

Introduction

This Special Airworthiness Information Bulletin is to alert owners, operators, maintenance technicians, and inspectors of an airworthiness concern, specifically the potential for cracks and corrosion in elevator torque tubes on **Textron Aviation Inc. (Cessna) 172, 175, 180, 182, 185, 188, and 208** airplanes.

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

Background

The elevator torque tube pictured below was removed from a Cessna Model 172C airplane during an annual inspection for cracks, corrosion and improper repairs. The airplane had spent 24 years in Florida (a high corrosion area). During the annual inspection, a blind rivet installation (not approved) was found. The date of this blind rivet installation could not be determined.

The Cessna 100 Series Service Manual, 1962 and Prior, in Section 2, Airframe Inspection item 34 states “Elevators for security of attachment, smooth operation, security of balance weights, cracks, corrosion, and skin or structural damage.”



The elevator torque tube was the subject of an Australian Civil Airworthiness Safety Authority (CASA) airworthiness bulletin (AWB 53-006), which recommended inspections for corrosion damage on the elevator torque tubes in Cessna 172 airplanes (P/N 0532001-31) and Cessna 188 airplanes (P/N 0734110-7). The P/N 0734110-7 torque tubes are also used on Cessna 180, 182, and 185 airplanes. The FAA published a Maintenance Alert (Advisory Circular 43-16) in 2007

highlighting this issue. Textron Aviation later published inspection techniques and times within their Supplemental Inspection Documents (SIDs).

These elevator torque tubes have been installed on Cessna 100 airplanes since the 1950s and continue to be installed on production Cessna 172 and 182 airplanes. The tubes are made of aluminum. They are exposed to wheel spray during landings or spray from floats during water landings. The tube is oriented horizontally so it tends to retain water. Exposure to moisture over many years leads to corrosion damage. Airplanes used in coastal areas are especially prone to corrosion.

In addition, the FAA published a Maintenance Alert (Advisory Circular 43-16) in 2009 highlighting this issue on the Models 208/208B airplanes.

Textron Aviation has issued the following Cessna SIDs to address this concern.

| Model-Series Service Manual (Years) | SID Number | Manual Revision | SID Rev. Date |
|-------------------------------------|------------|-----------------|-------------------|
| 100 (1953-62) | 55-10-01 | 8 | May 18, 2015 |
| 100 (1963-68) | 55-10-01 | 10 | May 18, 2015 |
| 172 (1969-76) | 55-10-01 | 5 | December 1, 2011 |
| 172 (1977-86) | 55-10-01 | 8 | December 1, 2011 |
| R172 (1977-81) | 55-10-01 | 8 | December 1, 2011 |
| 172RG | 55-10-01 | 7 | December 1, 2011 |
| FR172 | 55-10-01 | 7 | December 1, 2011 |
| 172R/172S | 55-10-01 | 22 | September 1, 2016 |
| 180/185 (1969-1980) | 55-10-01 | 9 | May 18, 2015 |
| 180/185 (1981-1985) | 55-10-01 | 9 | May 18, 2015 |
| 182 (1969-1976) | 55-10-01 | 6 | December 1, 2011 |
| 182 (1977-1986) | 55-10-01 | 6 | December 1, 2011 |
| R182 (1978-1986) | 55-10-01 | 9 | December 1, 2011 |
| 182S/182T/T182T | 55-10-01 | 20 | September 1, 2016 |
| 188 | 55-10-01 | 7 | December 1, 2011 |

The SIDs state: “Visually inspect the torque tube for corrosion and rivet security. Pay particular attention to the flange riveted onto the torque tube near the airplane centerline for corrosion.

- (1) Clean area before inspecting if grime or debris is present.”

For the 180/185 and 100 airplanes built between 1953 and 1968: Initial inspection compliance is recommended at 5,000 hours or 20 years. Repeat inspection intervals are recommended at 2,000 hours or 5 years.

For the 172, 182, and 188 airplanes built after 1968: Initial inspection compliance is recommended at 10,000 hours or 20 years. Repeat inspection intervals are recommended at 3,000 hours or 5 years.

Similar inspection procedures are provided in the Cessna 208/208B airplane maintenance manual. The Cessna 208/208B airplane maintenance manual section for this concern is in “Elevator System – Inspection/Check” as referenced below:

| Model-Series Service Manual | Maintenance Manual | Manual Revision | Manual Rev. Date |
|-----------------------------|--------------------|-----------------|------------------|
| 208/208B | 27-30-00-720 | 33 | May 15, 2017 |

Inspection task 27-30-00-720 states: “Examine the elevator hinges, hinge bolts, hinge bearings, torque tube, horn, attach fittings, and bonding jumper for corrosion, cracks, signs of damage, wear, unserviceable fasteners, security, and correct safetying”.

For the 208/208B model series: Inspection intervals are recommend at every 1,600 hours or 24 months.

Recommendations

For Cessna 100 airplanes and Cessna 208/208B airplanes, we recommend adherence to the applicable Textron Aviation SIDs and maintenance manuals for corrosion inspections. Airplanes based or operated in high corrosion areas are recommended to be inspected more frequently. Pilots should check this area for corrosion or obvious damage during preflight inspections. If minor surface corrosion is found, remove the corrosion in accordance with Textron Aviation procedures. If cracks or severe corrosion is found, replace the affected parts.

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