

# Continuing Airworthiness Notice 27-022



## Cessna 208 Elevator and Rudder Torque Tubes

15 June 2022

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Issued by the Civil Aviation Authority of New Zealand in the interests of aviation safety. A Continuing Airworthiness Notice (CAN) is intended to alert, educate, and make recommendations to the aviation community. A CAN contains information and guidance about an airworthiness concern that does not meet the criteria for an Airworthiness Directive (AD). The inspections and practices described in this CAN must still be carried out in accordance with the applicable NZCAR Parts 21, 43 and 91.

CAN numbering is by ATA Chapter followed by a sequential number for the next CAN in that ATA Chapter.

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### Applicability:

Cessna 208 and 208B Elevator and Rudder Torque Tubes – Corrosion and Cracks.

### Purpose:

This Continuing Airworthiness Notice (CAN) is issued to bring attention to two defect reports submitted to the CAA for Cessna 208B aircraft. The first report is finding severely corroded and cracked elevator torque tubes on a Cessna 208B, and the second report is finding a corroded rudder torque tube assembly on another Cessna 208B aircraft.

For further details refer to the photos 1 through to 6 in this CAN.

### Background:

#### Corroded and cracked elevator torque tubes:

With the aircraft on 200-hour inspection a detailed inspection was required of the horizontal and vertical stabiliser area. With the tail cone removed the RH and LH elevator torque tube support flanges were found cracked. The aircraft was grounded until replacement parts arrived.

The aircraft had just been imported into NZ with current and valid maintenance, and no detailed inspections were required of the horizontal and vertical stabiliser area before entering service. It was noted that the had operated in a hot and humid environment which could have accelerated corrosion.

The flange fitting that fits inside the torque tube was significantly corroded with exfoliation corrosion causing the tube to burst. Replacement parts were ordered and fitted. A detailed inspection including removal of the rudder was undertaken to confirm structural integrity. All pivot bearings also renewed. Some hardware replacements were changed due to visual corrosion.

For further details refer to the photos 1 through to 3 in this CAN.

#### Corroded rudder torque tube assembly:

The rudder torque tube assembly was being replaced due to finding the rudder cable attachment holes worn beyond repair. The rudder was removed and de-riveted to enable torque tube replacement. On removal, severe corrosion was found in the welded corners of torque tube assembly.

A review of the aircraft records determined that the original rudder torque tube assembly was installed since aircraft manufacture (2003). Corrosion possibly initiated due to deterioration of the paint and/or the corrosion protection. Of significance is the fact that the area where the corrosion was found is internal structure in the rudder, the only way to examine this area would be to remove the rudder and access with borescope through the leading-edge skin of the rudder. The maintenance provider noted that the corrosion was found before corrosion set in surrounding aluminium structure. No further defects were found. The rudder torque tube assembly was replaced.

For further details refer to the photos 4 through to 6 in this CAN.

### Recommendation:

The CAA strongly recommends that operators and maintainers adhere to the applicable Textron Aviation SIDs and maintenance manuals for corrosion inspections.

Note: Aircraft based or operating in high corrosion areas are recommended to be inspected more frequently.

Pilots should check for corrosion or obvious damage during pre-flight 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.

For further information refer to FAA SAIB CE-17-25 dated 25 August 2017:

[http://rgl.faa.gov/Regulatory\\_and\\_Guidance\\_Library/rgSAIB.nsf/0/f6cc24131277b84286258187006eba06/\\$FILE/CE-17-25.pdf](http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgSAIB.nsf/0/f6cc24131277b84286258187006eba06/$FILE/CE-17-25.pdf)

The FAA SAIB is also available from the CAA website at: [Other authorities' airworthiness advisories | aviation.govt.nz](http://www.aviation.govt.nz)

**Note:**

If any defects are found in the elevator and rudder torque tube assemblies, complete a CA005 Defect Report form and submit the completed form to the CAA at [CA005@caa.govt.nz](mailto:CA005@caa.govt.nz) or report findings via the online reporting system available at <https://occurrences.caa.govt.nz/ProdUI/>

Please include all findings and any other relevant technical information. A CA005D Defect Report form can be obtained from <https://www.aviation.govt.nz/about-us/forms/Filter/?SearchTerm=&Rule=8>

These finding have been reported to the FAA and the aircraft manufacturer. This CAN is considered to be an interim action and further action may follow.



Photo 1 – LH Elevator Torque Tube:

Location of cracks found in the LH elevator torque tube at a 200-hour inspection on an aircraft at 5864 hours TTSN.



Photo 2 – RH Elevator Torque Tube:

Location of cracks found in the RH elevator torque tube at a 200-hour inspection on aircraft at 5864 hours TTSN.



Photo 3 - Elevator Torque Tube:

The flange fitting that fits inside the torque tube found significantly corroded on aircraft at 5864 hours TTSN.





Photo 4 - Rudder Torque Tube:

Location of corrosion found in the rudder torque tube on a second aircraft at 6607 hours TTSN.





Photo 5 - Rudder Torque Tube:

Location of corrosion found in the rudder torque tube on a second aircraft at 6607 hours TTSN.



Photo 6 - Rudder Torque Tube:

Location of corrosion found in the rudder torque tube on a second aircraft at 6607 hours TTSN.