

# Continuing Airworthiness Notice – 27-005 Rev 2

## Control Cable End Fittings – Inspection and Replacement

19 August 2013



---

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 non-regulatory information and guidance 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.

**The contents of this notice are ADVISORY ONLY and are NOT MANDATORY.**

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

---

### Applicability:

All operators and maintainers of aircraft fitted with control cable end fittings manufactured from SAE AISI 303 Se stainless steel that have been in service for 15 years or longer. Affected cable end fittings include, but are not limited to P/N AN669, MS21260 and MS20668 eye end fittings. Affected cables include those with stainless steel end fittings fitted with a rubber sleeves or tape wrapped around the fitting.

### Purpose:

This Continuing Airworthiness Notice (CAN) advises operators and maintainers to replace all control cables with end fittings manufactured from SAE AISI 303 Se stainless steel before accumulating 15 years total time in service. The CAN has been revised to recommend inspections of control cable end fittings manufactured from SAE AISI 303 Se stainless steel irrespective of total time in service. These inspections are recommended to detect corrosion under rubber sleeves found fitted on certain stainless steel end fittings. The rubber sleeves are used for aircraft manufacturer's P/N identification.

### Background:

This CAN is prompted by an aileron cable end fitting failure on a Cessna 172 in New Zealand, revised CASA Airworthiness Bulletin (AWB) 27-001 issue 4, dated 14 June 2013, and FAA Revised Special Airworthiness Information Bulletin (SAIB) CE-02-05R1, dated 16 January 2004 which advises of cracks and corrosion found in flight control cable end fittings manufactured from SAE AISI 303 Se stainless steel.

Investigation has revealed that end fittings failures are occurring in cables that have been in service for 15 years or more, manufactured from SAE AISI 303 Se stainless steel and identified by standard end fitting P/N AN669, MS21260 and MS20668. Operators and maintainers should note that flight control cable assemblies fitted with affected end fittings are normally identified by an aircraft manufacturer P/N. Control cable assembly P/Ns are specified in the aircraft IPC.

Cable end fitting failures described in this CAN are attributed to chloride stress-corrosion cracking, a form of intergranular corrosion which can originate from within the end fittings. Very small corrosion pits on the surface of the end fitting are indicators that the end fitting may be very close to failure. An inspection for pitting in the end fitting surface is not considered adequate to determine the extent of the intergranular corrosion that may exist beneath the surface. With this form of corrosion in this kind of material, the end fittings may be close to failure and may even fail with no visible pitting on the surface. By the time the surface pitting is observed (no matter how minute), extensive internal corrosion is already present, and the cable end fitting should be considered unserviceable and replaced.

### Additional Causes for Corrosion:

Since the issue of this CAN corrosion has been found under rubber sleeves fitted on stainless steel end fittings. These sleeved are used for aircraft manufacture's P/N identification. Corrosion protection in stainless steel is primarily provided by the formation of a thin chromic oxide protective layer due to the existence of oxygen in the atmosphere. Due to the lack of oxygen under the sleeve, corrosion develops in the end fitting under the sleeve. For more information about corrosion found under rubber sleeves in stainless steel end fittings refer to section 4 of CASA AWB 27-001.

Factors such as water, exhaust gasses, dissimilar metals, battery gasses, etc. may contribute to cable end fitting corrosion. Control cables are prone to corrosion if they are in close proximity to the aircraft battery. Some aircraft have the battery installed in the tail cone near flight control system cables. Corroded control cables have been found in Piper and Cessna aircraft, but the same problems may occur or exist in other aircraft types.

## Recommendation:

The CAA strongly recommends the following:

- Inspect control cable end fittings for rubber sleeves, tape or any other covering. Remove sleeves, tape and any covering found (except lockwire). Clean the end fittings and inspect for corrosion. Replace cables found with any corrosion in the end fittings even if the manufacturer's maintenance instructions do not recommend replacement of cables with corroded fittings.
- Review the aircraft records and determine if the flight control cables have been replaced in the last 15 years. Replace all flight control cables fitted with end fittings manufactured from stainless steel SAE AISI 303 Se including, but not limited to, standard flight control cable end fittings P/N AN669, MS21260 and MS20668 before accumulating 15 years TIS since installation.
- As required by aircraft maintenance documentation, flight control cables should be periodically inspected per the manufacturer's data and FAA AC 43-13-1B chapter 7, section 8, paragraph 7.149d.

For further information on the subject of this CAN:

- CASA Airworthiness Bulletin (AWB) 27-001 issue 4, dated 14 June 2013 *Control Cable Terminal - Retirement*. The CASA AWB can be obtained from [http://www.casa.gov.au/scripts/nc.dll?WCMS:STANDARD::pc=PC\\_90516](http://www.casa.gov.au/scripts/nc.dll?WCMS:STANDARD::pc=PC_90516)
- FAA Revised Special Airworthiness Information Bulletin (SAIB) No. CE-02-05R1, dated 16 January 2004. This SAIB provides information about cracking and corrosion problems currently being experienced with terminals made from SAE AISI 303 Se stainless steel. The FAA SAIB can be obtained from <http://www.faa.gov/aircraft/safety/alerts/SAIB/>
- FAA SAIB No. CE-11-01 dated 4 October 2010 *Stabilizers - Horizontal Stabiliser - Turnbuckle* (for Piper Aircraft). The FAA SAIB can be obtained from <http://www.faa.gov/aircraft/safety/alerts/SAIB/>
- FAA AC 43-13-1B chapter 7, section 8, paragraph 7.149d.

## Enquiries:

Enquiries with regard to the content of this Continued Airworthiness Notice should be sent to: [airworthinessdirectives@caa.govt.nz](mailto:airworthinessdirectives@caa.govt.nz)