

Twin Commander (Gulfstream/Rockwell/ Aerocommander 500, 600 and 700) Series Aeroplanes

AD/AC/87 **Wing Main Spar Steel Strap Corrosion** **4/92 DM**

Applicability: All 500, 600 and 700 series with the original factory-fitted internal steel strap which reinforces the main spar lower cap. The steel strap was fitted in aircraft serial numbers 1731 and subsequent, but not in the 690C and 695 series which featured an internal aluminium alloy strap.

Note: This excludes aircraft that have had the steel strap replaced, on the assumption that all replacement straps were 301 stainless.

Requirement: 1. Determine whether the strap is made from 4130 or 301 (stainless) steel. The following simple method is suggested.

Run a magnet along the wing lower surface skin, under the main spar, between the fuselage and the engine nacelle. If there is a strong magnetic attraction the strap is made from 4130 steel. Since the 4130 strap is prone to corrosion, it must be inspected in accordance with paragraph 2.

If there is no magnetic attraction the strap is made from 301 stainless steel, which is not as prone to corrosion, and does not have to be inspected. (Note that this does not obviate the need for the aluminium alloy spar caps to be inspected for corrosion under AD/AC/83).

2. Gain access to the 4130 steel strap inside the wing, removing fuel cells and lifting filler blocks as necessary. Visually inspect the exposed areas of the steel strap (in between the main spar lower cap and the next stringer aft) for corrosion, between the side of the fuselage and the engine nacelle.

If corrosion is found, determine the full extent of the corroded area on the remainder of the strap.

Protect the steel strap in the area opened up for inspection by liberally applying an inhibitor conforming to MIL-C-0081309C or MIL-C-16173D.

3. Inspect the seals on all upper surface access panels through which water may reach the steel strap. They should be water tight.

4. Report defects using the normal Major Defect reporting System and in addition organisations are requested to report the steel strap material and whether or not corrosion was found in the 4130 steel straps to Mr Dick Hewitt on (06) 268 4456.

Note: This aircraft has a history of wing fatigue problems. Repair of the steel strap, or the alloy spar cap, or any other primary structure, or continued flight with the defective straps on caps, must be supported by a thorough fatigue and residual strength evaluation.

Compliance: Complete the inspections not later than 31 March 1992. If micro structure of the main spar lower cap is susceptible to stress corrosion (AD/AC/86 refers) repair or replace the defective straps before further flight.

SCHEDULE OF AIRWORTHINESS DIRECTIVES

Background: Very severe corrosion has been found in the internal steel strap of an Australian-registered aircraft. The strap was made from 4130 steel, not 301 stainless as the design records indicate. Twin Commander has advised that there may be up to 200 other aircraft with 4130 steel straps, but there are unfortunately no production records. At least one corroded 4130 has been found in the USA.

The 4130 steel straps, unprotected, are very prone to corrosion. A corroded strap could seriously degrade the durability of the main spar assembly.

This Directive has been issued to protect the Australian fleet in the short term. Twin Commander are developing a more permanent solution, to be published in a forthcoming service bulletin.