

Service Bulletin

Subject:

Horizontal Stabiliser Repair

Applicability:

All GA8 serial numbers up to S/N GA8-07-114

Amendments:

Nil – Initial issue

Background:

Cracking of the internal structure has been noted in some horizontal stabilisers in the lower flange of the inboard ribs and or the lower flange of the rear spar splice channel. The cracks have developed adjacent to the stabiliser mounting channel attachment bolts. Gippsland Aeronautics has developed a new load distribution fitting for installation into the horizontal stabiliser for improved load distribution. Compliance with this document does not remove the requirement for internal inspections in accordance with Service Bulletin SB-GA8-2002-02.

Compliance:

Mandatory on stabilisers found to have cracks in accordance with SB-GA8-2002-02.

Optional on stabilisers found to have no cracks in accordance with SB-GA8-2002-02 but highly recommended.

Weight and Balance:

Negligible effect on weight and balance.

Approval:

The technical aspects of this Service Bulletin have been approved under a CASA Authorisation.

Parts: Available from Gippsland Aeronautics as Kit SB-GA8-2009-59-1

Item	Part Number	Description	Qty
1	GA8-551021-201	Stiffener Bracket LH	1
2	GA8-551021-202	Stiffener Bracket RH	1
3	GA8-950075-23	Rib 1 Section	2
4	GA8-950075-25	Rear Spar Doubler	1
5	AN3-5A	Bolt	2
6	NAS1303-8	Bolt	2
7	AN3-6A	Bolt	4
8	MS21042-3	Nut	8
9	AN960-10L	Washer	8
10	CR3213-4-1	CherryMAX Rivet	30
11	CR3213-4-2	CherryMAX Rivet	130
12	CR3213-4-3	CherryMAX Rivet	20
13	MS35206-218	Screw	10
14	MS20365-440	Nut	10

Note

The MS20470AD3 and 4 Rivets of various lengths to be supplied by the repair facility.

Parts Availability:

Parts can be obtained directly from Gippsland Aeronautics.

Tel.: +61 03 5172 1208

Fax.: +61 03 5172 1237

Email: spares@gippsaero.com

Labour:

32 hours should be allocated for completing the work detailed in this service bulletin.

Warranty:

Gippsland Aeronautics factory participation is limited to new aircraft in warranty at the time of compliance. For details relating to claims contact Gippsland Aeronautics.

1. Inspection:

- 1.1. Inspect the horizontal stabiliser to the latest revision of SB-GA8-2002-02 available from the Gippsland Aeronautics website www.gippsaero.com.

- 1.2. Carry out full internal and external inspection of the stabiliser structure in the area of the Mount Channels.
- 1.3. Any cracked components must be replaced.

2. Preparation

- 2.1. Remove and safely store the elevators, rudder and fin assemblies.
- 2.2. Remove the horizontal stabilizer from the aircraft.
- 2.3. Remove the horizontal stabilizer access panel.
- 2.4. Remove both rear stabilizer mounting channels.

3. Removal of Rear Spar Assembly

- 3.1. Remove the rivets along the rear spar line and skin doubler from the upper and lower skins full span as outlined in Figure 1.

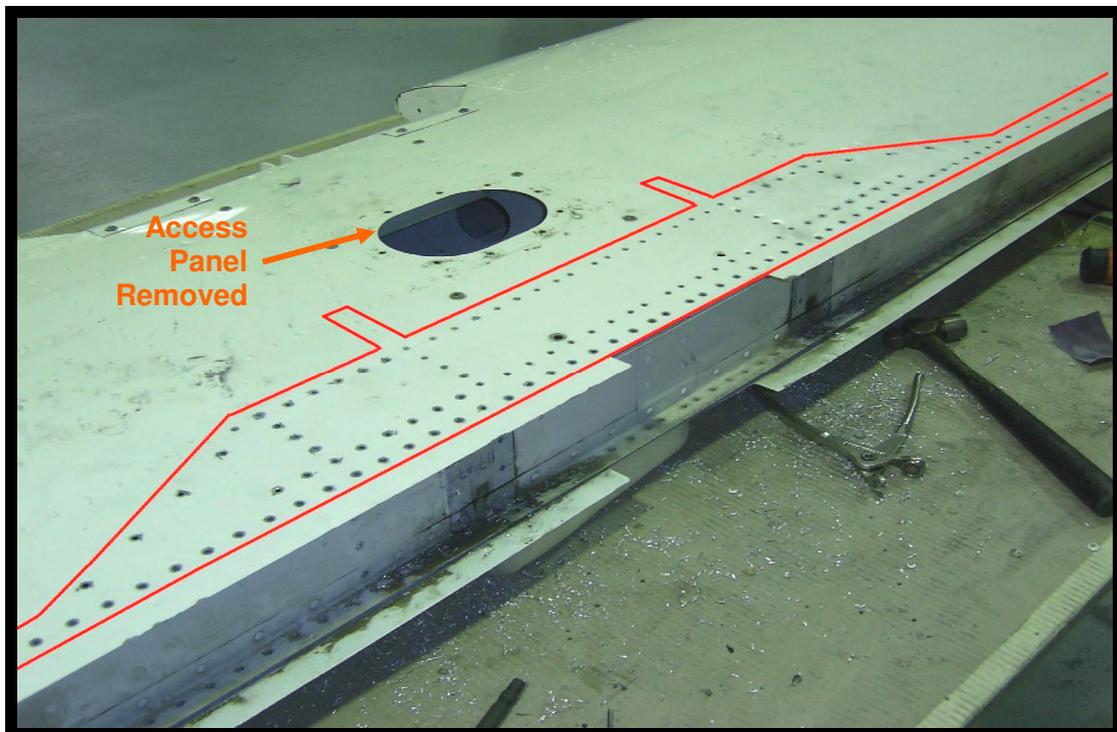


Figure 1

- 3.2. Remove the 3 rivets (4 rivets for tailplanes with laminated hinge fittings) from the inboard flange of the inboard elevator hinge, LH and RH at Rib 1. See Figure 2.
- 3.3. Remove the rivets through the rear spar at ribs 2, 3, 4, and 5, LH and RH. See Figure 2.
- 3.4. Remove the 12 rivets from each outboard elevator attach hinge at rib 6 and remove hinge (for laminated elevator hinges).
Remove the 14 rivets from each outboard elevator hinge at rib 6 and remove hinge (for CNC machined elevator hinges).
- 3.5. Remove the 4 rivets through the spar to rib 6, LH and RH (for laminated elevator hinges).

Remove the 2 countersunk rivets through the spar to rib 6, LH and RH (for machined elevator hinges).

3.6. Remove the spar assembly.

3.7. Replace components in accordance with instructions 4 through 6 as required.

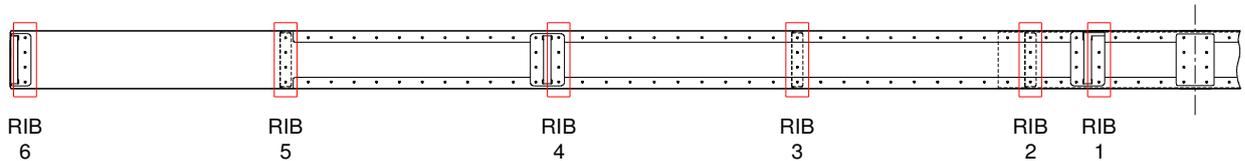


Figure 2 - Left side of stabilizer shown only

4. Replacement of the Aft Section of the Inboard Ribs

4.1. Remove the remaining upper and lower rivets in the aft section of the inboard ribs (if not already removed). See Figure 1.

4.2. Cut and remove aft section of both inboard ribs at the point indicated by the dotted line in Figure 3.

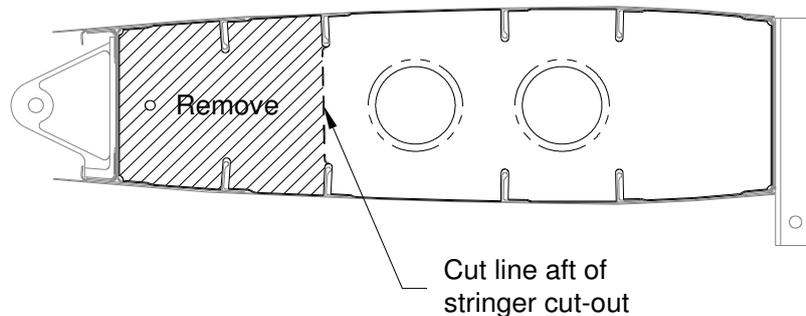


Figure 3

4.3. Mark the lower and rear flanges of the new Rib 1 Section (GA8-950075-23) using a dark coloured fine line marker. Draw a line along the lower and rear flange 0.470 inch (12.0mm) from the outer face of each rib section. See Figure 4. (Note: The accuracy of this line is important as it sets the position of the Channel Mount bolts in relation to the Stiffener Bracket web Ref step 7.2)

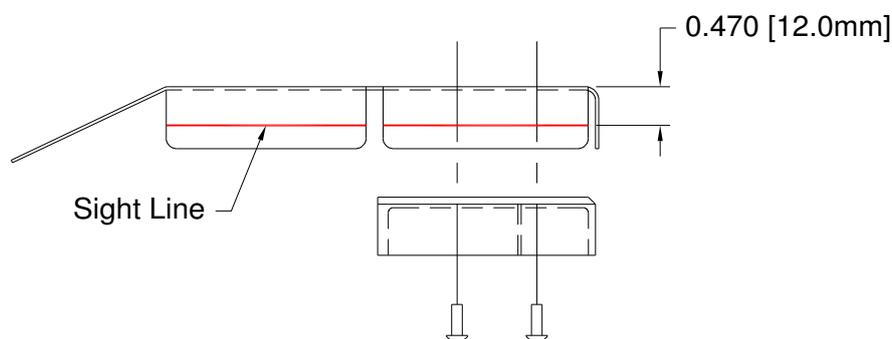


Figure 4

4.4. Use a straight edge across the rear flanges of both No 2 ribs and align both Rib 1 Section rear flanges with the straight edge. Ensure the rib rear flange is square to the straight edge and that the line from the previous step is central in the bolt holes for the Stabiliser Mounting Channel. See Figure 5

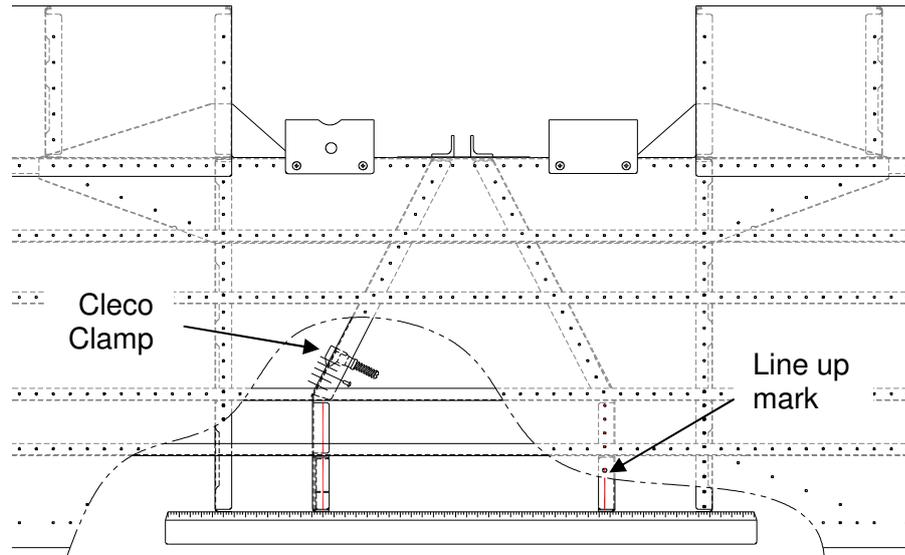


Figure 5

4.5. Clamp the attachment flange of the Rib 1 Section to the web of the No.1 Rib as shown. Drill through the holes in the flange at the forward end of the Rib 1 Section, remove rib section and deburr all holes.

5. Installation of the Stiffener Bracket

5.1. The Stiffener Brackets (GA8-551021-201 LH and 202 RH) may be nested into each rib at this time. Position each bracket into the lower rear corner of each Rib 1 Section as tightly as possible (cleco clamps are suggested) ensuring that the long edge of the bracket is on the lower side of the rib (i.e. the side where the Stabiliser Mounting Channel is) as shown below. Drill the 5 holes through the rib and debur all holes. See Figure 6.

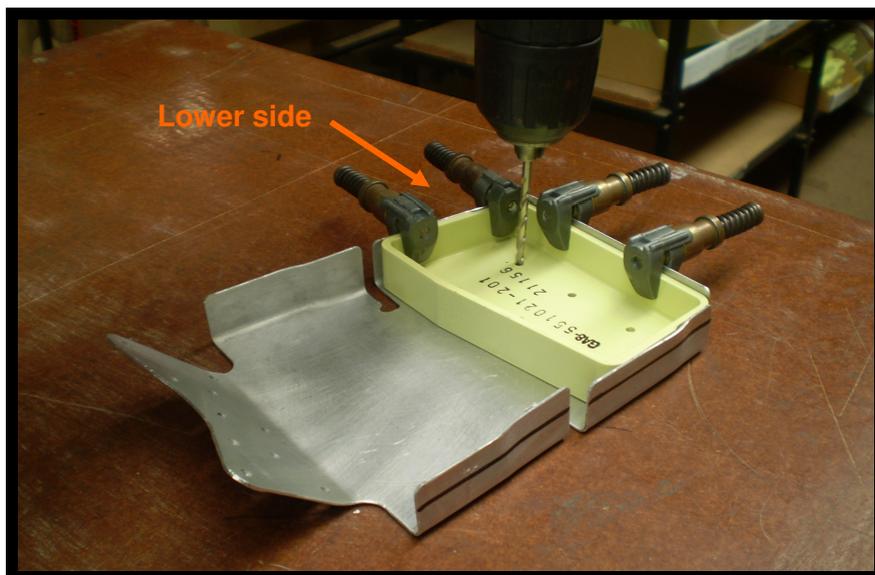


Figure 6

5.2. Rivet Stiffener Bracket to each rib using MS20470AD4 rivets.

- 5.3. Rivet each Rib 1 Section complete with Stiffener Bracket to inboard rib forward section using 10 x MS20470AD4 rivets in each rib. See Figure 7. (Left hand side Pictured)

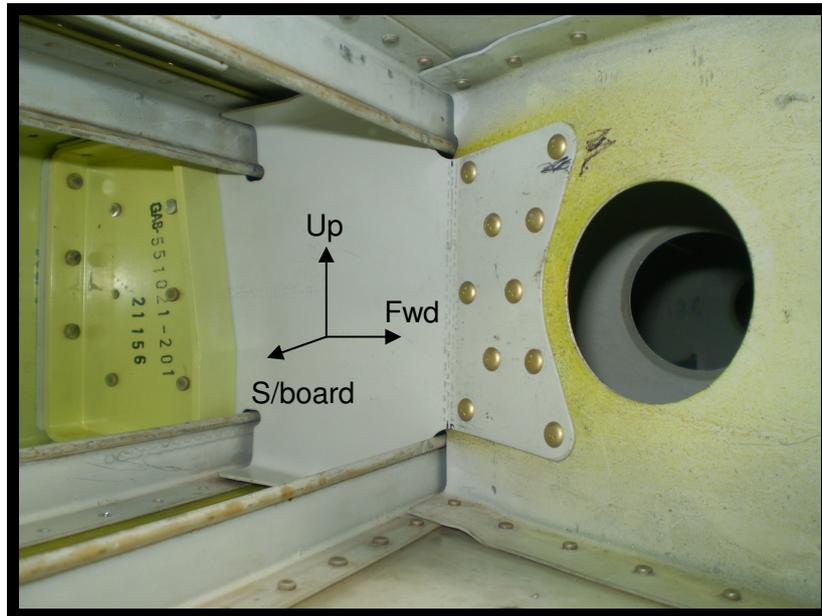


Figure 7

6. Replacement of the Rear Spar Doubler (if required)

- 6.1. Position the rear spar assembly to maintain alignment of the 2 spar halves. This can be done using a table with a flat surface and edge clamps.
- 6.2. While being careful not to enlarge any rivet holes, remove all rivets from the cracked Rear Spar Doubler Channel (GA8-551021-17).
- 6.3. Ensure the lower flanges of both rear spars (GA8-551021-15) and the lower flange of the new rear spar doubler (GA8-950075-25) are flush as shown in Figure 8.

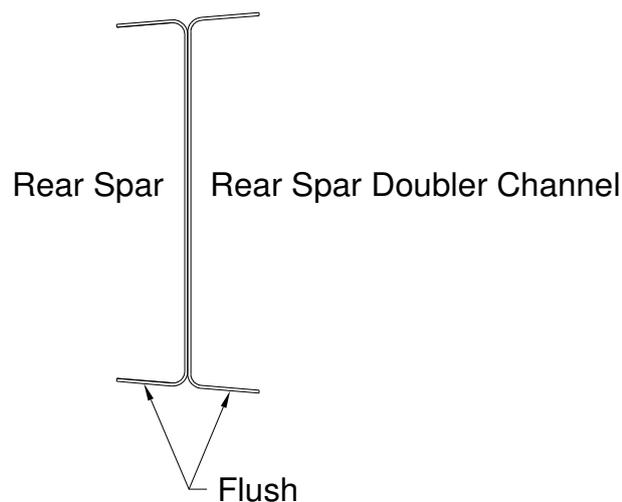


Figure 8

- 6.4. Once the rear spars and doubler are held in position with correct alignment the new doubler may be drilled using the existing holes in the spars.

- 6.5. Remove new doubler channel, deburr all holes and rivet in place being careful to maintain spar alignment.

7. Refitting the Rear Spar.

- 7.1. Refit the rear spar and the upper and lower doublers into the horizontal stabiliser, align all ribs with spar and pin in place, align spar and doublers to skins using existing holes and pin into position.
- 7.2. Carefully align the mark from step 4.3 on both inboard rib lower flanges with the centre of the existing 3/16 inch stabiliser mounting channel holes. This ensures that the holes are drilled through the Stiffener Brackets centred in its flange.
- 7.3. Drill the holes through the Stiffener Brackets undersize using a 1/8 inch drill, install a MS35206-218 screw and MS20365-440 nut or similar at each hole in the Stiffener Bracket, lightly tighten these screws enough to draw the skin, doubler, rib flange and fitting together.
- 7.4. Drill through the vertical face of the load Stiffener Brackets using the 3 (4 on laminated hinge) existing holes in the inboard elevator hinges as a guide. Drill these holes undersize using 1/8 inch drill and install an MS35206-218 screw and MS20365-440 nut at each hole. Lightly tighten these screws enough to draw the elevator hinge, spar, rib flange and fitting together.
- 7.5. Progressively increase the tension on these screws to pull the Stiffener Brackets back and down into final position. Ensure that there are no gaps at the rear or bottom of the Stiffener Brackets.
- 7.6. Remove undersize screws one at a time and carefully enlarge each hole in the fitting to final size, then reinstall each screw to maintain the fittings position.
- 7.7. When all holes are drilled to their correct size remove the rear spar, debur and remove all swarf from all holes.

Note - As the stabiliser is being riveted make periodic checks of its alignment, any misalignment or twist should be corrected prior to completion.

- 7.8. Reinstall the rear spar aligning all ribs, doublers and the Stiffener Brackets then pin in place.
- 7.9. Remove additional rivets at the top skin from the trailing edge forward along each rib as required to allow the skin to be opened up far enough for access when riveting.
- 7.10. Rivet the spar to each rib.
- 7.11. Refit both outboard elevator attach hinges, check alignment of the elevator attach hinges by running a string line through the centres of the hinges, correct any misalignment prior to riveting the hinges in place.
- 7.12. Rivet lower skin and doublers using MS20470AD3 or MS20470AD4 solid rivets as required, use supplied CR3213-4-1, -2 or -3 CherryMAX rivets only if required.
- 7.13. Rivet upper skin and doublers using MS20470AD3 or MS20470AD4 solid rivets and supplied CR3213-4-1, -2 or -3 CherryMAX rivets as required.
- 7.14. Touch up or repaint stabiliser as required, apply internal corrosion treatment as required.

7.15. Refit stabiliser attach brackets.

8. Completion

- 8.1. Refit horizontal stabiliser to fuselage and inspect rigging as per GA8 Service Manual chapter 27-30-10.
- 8.2. Refit stabiliser access panel.
- 8.3. Inspect and refit fin.
- 8.4. Inspect and refit rudder and rudder control cable and verify deflections.
- 8.5. Inspect and refit elevator and elevator control cable and verify deflections.
- 8.6. Carry out rigging checks of elevator and rudder systems as per GA8 Service Manual 27-20-00 and 27-30-00.
- 8.7. Carry out duplicate inspection of flight control systems as required.

Documentation:

Update aircraft log book to reflect incorporation of this Service Bulletin.

Compliance Notice:

Complete the Document Compliance Notice and return to Gippsland Aeronautics by fax or mail.