

AIRWORTHINESS DIRECTIVE

TYPES AFFECTED:

GROB G109B powered sailplanes

SUBJECT:

Inspection/replacement of centre elevator hinges

BACKGROUND:

GFA AD 213 (1981) requested inspection of elevator and aileron hinges for delamination away from the fixed surface, on all models of Grob sailplanes.

Grob have identified a similar problem on the G109B and issued TM 817-25 detailing inspection and replacement of the 2 centre elevator hinge segments located on the elevator surface. (TM 817-25 forms part of this AD).

ACTION REQUIRED:

(1) Before next flight

Inspect the elevator centre hinges to establish which type are fitted, TM 817-25 Instruction 1.

(2) Daily Inspection

If the hinges are not the new style the Maintenance Release is to be endorsed for the Daily Inspection of the two centre elevator hinges in accordance with TM 817.25 Items 2.1 and 2.2.

(Note! In the light of AD 213 this inspection is recommended to include all control surface hinges).

If hinge movement or delamination is found the powered sailplane is to be removed from service until the hinge is replaced in accordance with Action 3.

(3) Form 2 Inspection

Action 1 is to be included in each Form 2 inspection

(4) Hinge replacement

If a loose/delaminated hinge is found, both centre hinges are to be replaced in accordance with Service Bulletin TM 817.25 repair instructions.

This modification/repair is classified as "major" to be incorporated by the holder of a DoTC Inspector's Certificate endorsed "major repair FRP". On completion the work is to be recorded by logbook endorsement.

WEIGHT & BALANCE:

No change

COMPLIANCE:

The requirements of this Airworthiness Directive are mandatory. This Directive is issued pursuant to Air Navigation Regulations under the delegated authority of the Secretary of the Department of Transport and Communications.

Issued by: *A. J. Burns* Chief Technical Officer,
Airworthiness

For and on behalf of: **GLIDING FEDERATION OF AUSTRALIA**

28.4.1988

Sheet 1 of 1

	Service Bulletin TM 817-25	GROB G109B	
	<u>3rd Instruction:</u> Exchange of the elevator hinges 3.1 The two inner elevator hinges are exchanged according to repair instruction to Service Bulletin TM 817-25. 3.2 If the exchange is carried out before the next take-off, the check according to instruction 2 is not applicable. 3.3 The exchange of the elevator hinges has to be performed by May 31, 1988. In any case, both hinges have to be exchanged. Weight and balance: No effect Remarks: Instructions 1 and 2 can be carried out by qualified mechanics. The preflight check according to instruction 2 has to be entered in the log-book. Instruction 3 must be carried out by an authorized aviation workshop. The proper execution of instruction 3 has to be certified in the log-book by an authorized inspector, class 3. Mattsies, 09.11.1987 LBA anerkannt am: gez. I.A. Dipl.-Ing. R. Rischer P.S.: In case you have sold your motorglider meanwhile, we ask you kindly to give this information immediately to the new owner and to let us know his address together with the serial number. The translation has been done by best knowledge and judgement. In any case or doubt, the German original is authoritative. The German original of this Service Bulletin has been approved by the LBA under the date of 15.01.1988 and is signed by 		
Datum 09.11.1987	ersetzt Ausgabe vom	Bearbeitung R. Rischer	Musterprüf Seite 2

	Service Bulletin TM 817-25	GROB G109B	
	Subject: Inspection and exchange of the two inner elevator hinges. Effectivity: Motorglider GROB G 109 B s/n 6200 - 6445 (inclusive) Accomplishment: - Instruction 1 before next take-off - Instruction 2 before next take-off - Instruction 3 by May 31, 1988 Reason: During operation of the motorglider G 109 B parting of the inner elevator hinges occurred now and then. As a precaution, the elevator hinges will be exchanged. Instructions: <u>1st Instruction:</u> Inspection of the installed hinges 1.1 The new elevator hinges have already been installed in a few motorgliders during previous repairs. The new hinges mainly consist of the hinge bushing and two hinge legs which are 90 degrees staggered. One leg is attached conventional to the elevator shell, whereas the additional leg is laminated to the elevator web. The already performed installation of new hinges can thereby be easily determined by means of the thicker web. If new hinges have already been installed, further instructions are not applicable. <u>2nd Instruction:</u> Inspection of the hinge fit 2.1 The inspection of the hinge fit can be performed in rigged condition. 2.2 A bad hinge fit can be determined through cracks or bumps on the elevator shell around the hinges. If a bad hinge fit is detected, instruction 3 has to be performed before the next take-off. 2.3 If no defects are found, instruction 2 has to be carried out during each preflight inspection until the hinges have been replaced according to instruction 3.		
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8. Carefully remove cotton flocks around the hinges.
9. Remove both hinges.
10. Grind elevator web in the area of the hinges approx. 70 mm high, each approximately 50 mm RH and LH of the hinge.
11. Fit in new hinges. It might be necessary to remove part of the web on the hinge seat in depth, so that the position of the opposite hinge is identical. The top of the hinge bracket must be approx. 1,5 - 2 mm underneath the outside contour of the elevator top (gel-coat).
12. Remove again both hinges.
13. Put two layers of glass-cloth 92.125 (80 x 60 mm²) on each of the ground areas of the elevator web.
14. Put two layers of glass-cloth 92.125 (size as required) on each of the ground areas of the elevator top.
15. Fit both hinges in and provisionally mount elevator on the fin.
16. Put immediately at least three layers of glass-cloth 92.125 (size and number of layers as required) on each hinge top side.
17. Allow to cure.
18. Remove elevator from fin.
19. Mill out trim feed-through.
20. Grind the glass-cloth on the elevator web (see 13.).
21. Put three layers of glass-cloth 92.125 (80 x 60 mm²) each on the hinge brackets on the elevator web.
Note: On the side with the trim feed-through, put the three layers in the feed-through and glue them on the front side.
22. Allow to cure.
23. Neatly grind repaired spots. So as to ensure easy movement of the elevator, the laminate on the elevator hinges on the side of the fin might have to be slightly ground.
24. Make test installation and attention should be given to easy movement of the trim rods.



Repair Instructions no. 817-25 pertain to Service Bulletin 817-25 and relate to exchanging the two inner elevator hinges.

Material:

- 1 Repair instructions no. 817-25 with drawing elevator hinge repair
- 2 hinges 109B-3550
- glass-cloth LN 8.4551.6 (Interglas Co. 92.125)
- resin, hardener

Tools:

- 1 set of screw drivers (different sizes)
- 1 hammer
- 1 punch, size 2
- 1 electric drilling machine
- 1 drill, dia. 6
- 1 brush

Operating Sequence:

In the sequence of the repair instructions.

Note:

It is good practice, before dismantling anything, to make a mental note or small sketch of how the things fit together, so that later reassembly is easier. Make a precise note also of such minor items such as screws, for instance.

The exchange of the two inner elevator hinges is effected with the horizontal tail dismantled.

1. Put horizontal tail on trestles and secure with wedges.
2. Remove tape from elevator gap.
3. Remove retaining spring from the trim rod ball end and disconnect.
4. Remove pins (dia. 2 x 10 mm) from all elevator hinges.
5. Remove all elevator hinge bolts.

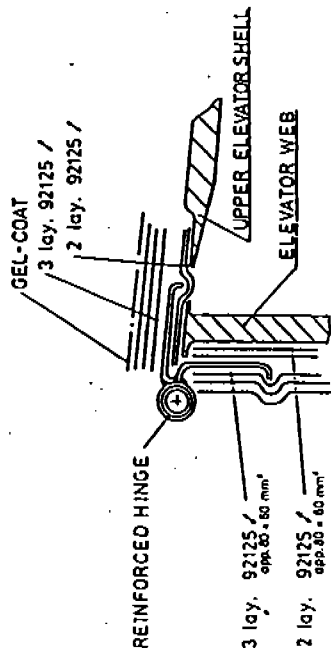
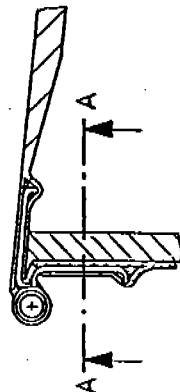
Note: Bolts and elevator hinges belonging together are to be marked. The mounting direction (bolt mounted from RH or LH) of each bolt should be noted, too.

6. Remove the elevator towards the rear and put it on trestles (elevator hinges on top).
7. Grind elevator shell in the area of the hinges to be exchanged up to the metal brackets: min. approx. 50 x 80 mm semi-circular, whereby it must be ground approx. 20 mm larger than the de-lamination.

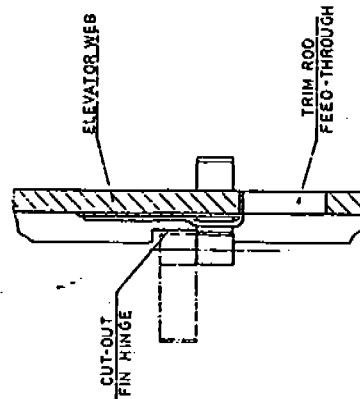


ELEVATOR HINGE REPAIR

SECTION OF COMPLETED REPAIR



EDGES ROUNDED WITH COTTON FLOCKS



SECTION A - A

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25. Remove elevator.

26. Paint repaired spots.

27. Install elevator and put tape on elevator gap.

The execution of the instructions has to be certified in the log-book by an authorized inspector class 3.

Mattsies, 9 November 1987

signed: Dipl. Ing. R. Rischer

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R. Rischer

Musterprüfer

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