REPAIR INSTRUCTION NO. RI-GROB-001/1

1 Aircraft affected

Model/s	S/Ns
G 109	All
G 109B	All

Note: For GROB Sailplanes, refer to Repair Instruction RI-G01, published by Fiberglass Technik R. Lindner GmbH & Co. KG!

2 Subject

ATA-Code: 51-00 Standard Practices and Structures – General

Repair Title: Approved Repair Instructions according to Part 21, Subpart M

3 Introduction

This Repair Instruction is issued for the purpose to prevent single approvals for commonly used standard repairs, which are not covered in the corresponding Maintenance Manuals. Standard Repairs are repairs, that restore the original design without change by application of approved slice ratios, materials und curing procedures. Following the information listed in para. 1.8 „Accomplishment/ Instructions“ repairs may be regarded as approved by the manufacturer in the sense of the EASA regulation 21 A.433.

Revision 1 of this Repair Instruction amends the concurrent documents. The original content is transferred into a new format, editorial changes are not marked as revised.

4 Concurrent Documents

- Drawings and/ or instructions of the manufacturer
- "Grundlagen der Luftfahrzeugtechnik in Theorie und Praxis", Band II published by TÜV Rheinland GmbH, ISBN Nr.: 3-88585-001-X
- "Grundlagen der Luftfahrzeugtechnik in Theorie und Praxis", Band V: Segelflugzeuge und Motorsegler, Verlag TÜV Rheinland GmbH, ISBN Nr.:3-8249-0351-2
- R.C. Stafford-Allen „Standard Repair to Gliders“, published by British Gliding Association
- "Kleine Fiberglas-Flugzeug-Flickfibel", published by Ursula Hänle
- Seminardruck "Faserverbundwerkstoffe im Segelflugzeugbau", Fortbildungsseminar des DAeC an der Fachhochschule Rosenheim
- "Aircraft Inspection and Repair" FAA AC 43.13-1A or new FAA issue FAA AC 43.13-1B
- AP 101A-0601-1 “Employment and Repair of Aircraft Composite Materials”, published by the UK Military Aviation Authority.

5 Approval Note

The technical content of this document has been approved under the authority of EASA Design Organisation Approval No. EASA.21J.030.

The associated repair design has been approved under the authority of EASA Design Organisation Approval No. EASA.21J.030.

6 Limitations

Repairs of spar caps made from GFRP or CFRP are only permitted with instructions from the TC holder and using original material (composite material supplied by the manufacturer or the TC support organization).
Metal fittings and composite parts, which can be manufactured only in special moulds or device, which are required for a repair, may be purchased only by the manufacturer or the TC support organization

7 Repair / Instructions

7.1 Required documents:

7.1.1 For repairs on sailplanes and powered sailplanes the concurrent documents, as listed in paragraph 4, latest issue, are accepted as instructions for continued airworthiness and repairs in the sense of EASA part 21, subpart M.

7.1.2 In addition to this document the national legal regulations for maintenance and airworthiness review must be obeyed.

7.2 Applicable splice ratios

7.2.1 In addition to the information given in the Repair Instructions of the Maintenance Manuals this Repair Instruction gives additional information about applicable splice ratios to guarantee that the correct ratios are used during repairs.

7.2.2 The splice ratios are as follows:

- glass cloth	50:1	(92110, 92125, 92140)
- UD glass cloth	60:1	(92145, 92146)
- glass roving	80:1	
- carbon cloth	100:1	(98141)
- carbon roving	120:1	
- UD carbon cloth	120:1	(CC756)
- aramide cloth (Kevlar)	60:1	

7.3 Applicable resin/ hardener – systems

7.3.1 The originally approved resin/ hardener systems are listed in the corresponding Repair Instructions of the Maintenance Manual. If these are no longer available the following resin/ hardener systems are approved as alternatives.
In addition to this information the latest manufacturer instructions must be obeyed!

A. Resin L 285 / hardener H 285/ 286/ 287

Mixing ratio:

	L 285 : H 285 /286 / 287
Parts by weight	100 : 38 - 40

Curing process:
- Curing: 24 h at room temperature or 2,5 h at 55°C
- Post curing: > 12 h at 55°C + 5°C

B. Resin EPR L20 / hardener EPH

Resin	Hardener	Hardener old name	Mixing ratio
L20	EPH196	VE2896	100 : 18
	EPH573	VE2723	100 : 23
	EPH960	SL	100 : 34
	EPH960/75	SL75	100 : 32
	EPH960/50	SL50	100 : 31
	EPH960/25	SL25	100 : 29
	EPH101	H91	100 : 27

Curing process:

24 hours at room temperature and 15 hours at 60°C

or

3 hours at 30°C-40°C and 10 hours at 60°C

8 Weight and CG

Influence of repair on weight and balance has to be assessed and if required a new weight report and control surface weight and balance report (Residual Moment!) must be issued

9 Material and Availability

Required material may be ordered on request.

10 Special Tools
N/A

11 Appendixes
N/A

12 Accomplishment
The instructions in paragraph 7 have to be accomplished and certified in the logbook by authorized staff:

- in EASA countries according to Article 5 VO EG 2042/03 (VO EG 1056/2008) Appendix III – Part 66
- in non-EASA countries according to national regulations with respect to maintenance.

13 Contact
For questions and assistance or in case of occurrence please contact:

Customer Support
phone: 49 (08268) 998-105
fax: 49 (08268) 998-200
e-mail: productsupport@grob-aircraft.com