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G 103 C TWIN III SL

REPAIR INSTRUCTIONS

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The outer laminate is spliced in accordance with the description under a). Foam is removed from the inner laminate which is then ground carefully. If the damage is minor, a piece of thin plywood can be glued with Pattex glue on to the inner skin. Lay in the fabric patches of the inner laminate and fill the hole with resin and microballoons mixed with polystyrene balls. When hardened (approximately 8 hours at room temperature), grind the surface smooth and lay up the outer fabric. The plywood support can be inserted through the skin if the hole is shaped like a slot. If you previously knocked one or more thin nails through the plywood, you can now press the plywood on to the skin from outside.

Important: The plywood support must fit well all round. Avoid steps in the fabric.

In the case of large holes in a sandwich, use hard foam instead of microballoons to keep the weight down. Prepare a piece of foam which fits exactly into the existing hole. Fill the inside pores with resin and microballoons and lay on the inner fabric. Allow to harden. Even after hardening, the one-sided foam can still be bent (use fan heater if necessary). Now glue the foam with stiffened resin (cotton flocks, microballoons) into the hole. Grind the upper side and fill the pores with microballoons. Lay up the outer fabric.

6. Damage to Fiber Composite Parts with Tridimensional Fabric Sandwich

(Fig. 4 Page A 5.12)

This repair is performed similar to the repair of damage to a full sandwich. The damaged section is spliced and cleaned. With minor damage, it is advisable to replace the tridimensional fabric by three layers of 92 125 and microballoons.

For major damage, three methods of repair are possible:

- Lay up the tridimensional fabric and allow to harden. Re-splice the edges, lay up the usual layers and laminate over the splice with additional layers of WL 8.4551.60 (INTERGLAS 92 125).
- Make a pressure frame for the splice. Laminate tridimensional fabric and residual lay-ups. Tighten the frame and press the tridimensional fabric like a wedge in the splice.
- Make a shape with skin lay-up and insert it close-fitting after hardening. Splice the edges of the damaged area and replace the tridimensional fabric at the splice by 3 layers of WL 8.4551.60 (INTERGLAS 92 125) and microballoons.

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G 103 C TWIN III SL

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7. Damage to Pure Fiber Composite Components (Fig. 5 Page A 5.12)

This type of repair is quite simple. Splice the laminate around the hole, lay up the fabric (large patches first) and after 2 to 3 hours when the resin has started to harden, fill the damaged area with resin and microballoons. Splice length per layer approximately 20 mm, laminate thickness to splice length ratio approximately 1:50. If the splice is contaminated, clean it with carbon tetrachloride or acetone.

In the case of major damage, build a plywood support. This is required because saturated laminate should not bridge a gap of more than 20 mm without support. Apply the plywood to the inside with Pattex glue and (in the case of damage to the fuselage tube for example) pull it outwards with nails.

8. Damage to Spar Cap

The spar caps consist of carbon fiber rovings, at the outer wing (from 7500 mm of semi-span) of carbon UD tape. Broken spar caps always require a major repair (see Item 12). The laminate thickness to splice length ratio must be 1:100.

9. Paintwork

As soon as the laminate of the repaired section has hardened use sandpaper (80 grit) for coarse-grinding. Large unevenness can be filled with white Polyester filler.

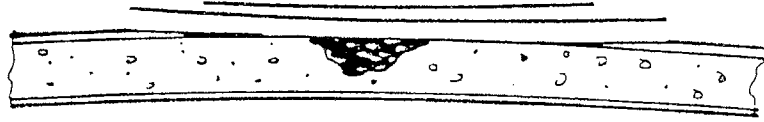
Then use a finer dry-grinding paper (150 grit) to obtain a uniformly rough surface. Before painting, clean the repaired section. The area must be completely free from grinding dust, parting compounds and other foreign bodies.

Apply the paint (Gel-Coat + Hardener) with a not too soft brush. Put on several coats until the laminate can no longer be seen. The individual coats should be allowed to harden. Then grind them with 360 grit wet-grinding paper to determine the sections that require additional Gel-Coat. Finish off with 600 or 800 grit wet-grinding paper. Finish off the job by polishing.

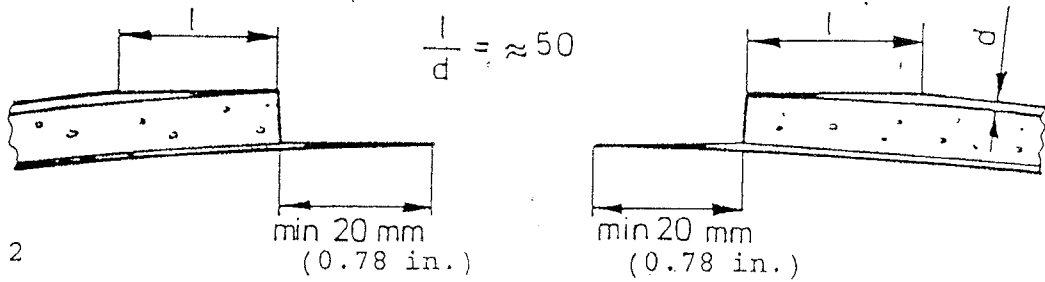
Caution: Anti-static paint is used in the area of the wing tank (as standard only for variable pitch propeller). The manufacturer must be contacted before repairs are performed in this area.

G 103 C TWIN III SL

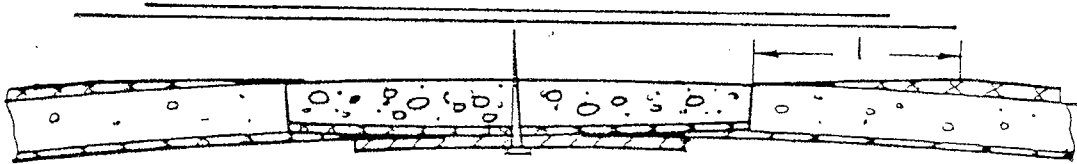
REPAIR INSTRUCTIONS



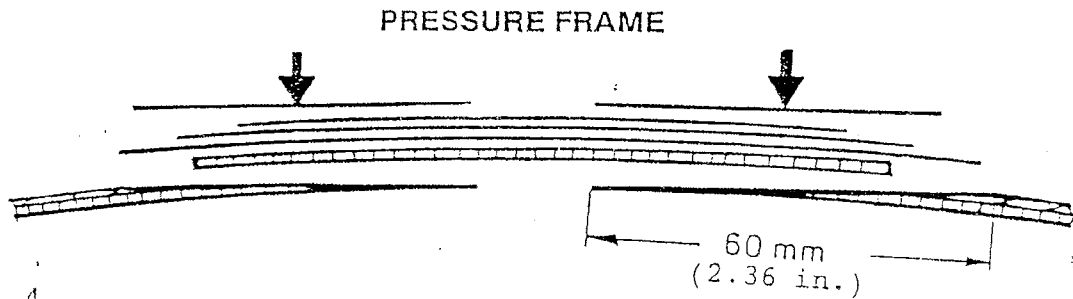
Pic. 1



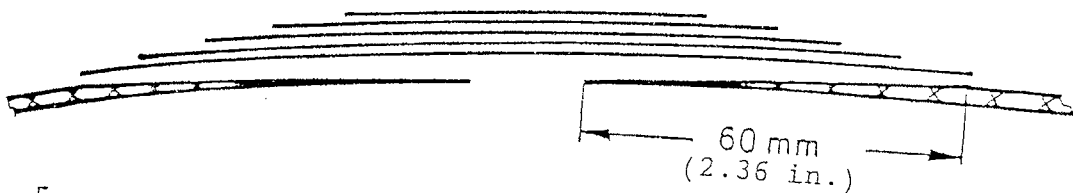
Pic. 2



Pic. 3



Pic. 4



Pic. 5

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10. Repair of Fittings

a) Steel Fittings

Steel fittings should only be repaired after consultation with the manufacturer.

Welded fittings (pushrods) consist of 1.7734.4 or St 35 BK. Only the TIG (Tungsten Inert Gas) method of welding may be applied using additional welding materials 1.7734.2 (for 1.7734.4) and 1.7324.0 (for St 35 BK or combinations of 1.7734.4 and St 35 BK).

b) Plug-In Wing/Fuselage Connection

The plug-in connection (qty. 4 in the fuselage) between wing and fuselage consists of 6 steel balls (diameter 7 mm). These are held in the groove of the movable transverse force bolts in the wing by the connecting bush.

If one or more balls are missing, the connecting tube must be replaced.

c) Pushrods

The pushrods consist of:

Tube 16 x 1	Material 1.7734.4
Tube 16 x 0.75	Material 1.0309 according to DIN 2391
Tube 20 x 1	Material 3.3206.71 according to DIN 1795

Buckled or severely bent aluminum tubes may not be straightened.

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G 103 C TWIN III SL

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11. Replacement of Control Cables

Control cable connections must be made in accordance with:

Aircraft Inspection and Repair FAA AC 43.13-1A.

All control cable connections must be inspected after they have been made.

12. Major Repairs

The classification of damage and the competence for conducting repairs and inspections of sailplanes and powered sailplanes made from composite materials are laid down in the LBA Circular No. 01-10/84-1 dated December 31 1985.

This circular names 4 damage categories. Damage Category 1 covers major repairs.

Major repairs may only be conducted by the manufacturer or an authorized repair shop (according to the manufacturer's instructions).

The following are classed as major repairs:

- Broken wings, fuselages, stabilizers, control surfaces, spar stubs
- Torn-out main fittings (in the fuselage: 55 x 3 diameter tubes; horizontal stabilizer connection in the vertical stabilizer; in the wing: movable transverse force bolts diameter 24 mm, swivel bearing GE 25, stub bolt diameter 25 mm)
- Damaged laminate (white spots, cracks) in close proximity to main fittings.

Burkhart Grob Luft- und Raumfahrt
GmbH & Co. KG, D-8939 Mattsies

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SB AND AD APPENDIX

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SERVICE BULLETINS

AIRWORTHINESS DIRECTIVES

Model : G 103 C TWIN III SL
Serial No. :
Registration No.:
Date of Issue : December 1991

Owner :
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