

This Service Bulletin substitutes Service Bulletin 315-45 dated October 11, 1991. Both Repair Instructions No. 315-45/1 and 315-45/2 form still part of this revised Service Bulletin.

Subject: Extension of service life

Concerned:

TWIN ASTIR	S/N: 3000 - 3291
TWIN ASTIR TRAINER	S/N: 3000 - 3291 (with "T")
G 103 TWIN II	S/N: 3501 - 3729
	3730 - 3878
	33879 - 34078
G 103A TWIN II ACRO	S/N: 3544 - 34078 (with "K")
G 103C TWIN III ACRO	S/N: as of 34101
G 103C TWIN III	S/N: 36001 - 36014

Urgency:

1. Action 1 immediately
2. Before reaching a service time of 3000 flight hours: actions 2, 3 + 4 (only TWIN ASTIR and TWIN ASTIR TRAINER)
3. Before reaching 3000, 6000, 7000, 8000, 9000, 10000, 11000 flight hours: action 5
4. Before reaching 9500, 10500, 11500 flight hours: action 6

Procedure: The results of performed fatigue tests have shown, that the service life of GRP/CRP-sailplanes can be increased to a maximum of 12000 flight hours.

Actions: The airworthiness has to be demonstrated for each sailplane according to an established Inspection Record.

1. The following revisions must be performed in the Maintenance Manuals:

TWIN ASTIR /TWIN ASTIR TRAINER:

WHB (german issue): revision 6
MM (english issue): revision 4

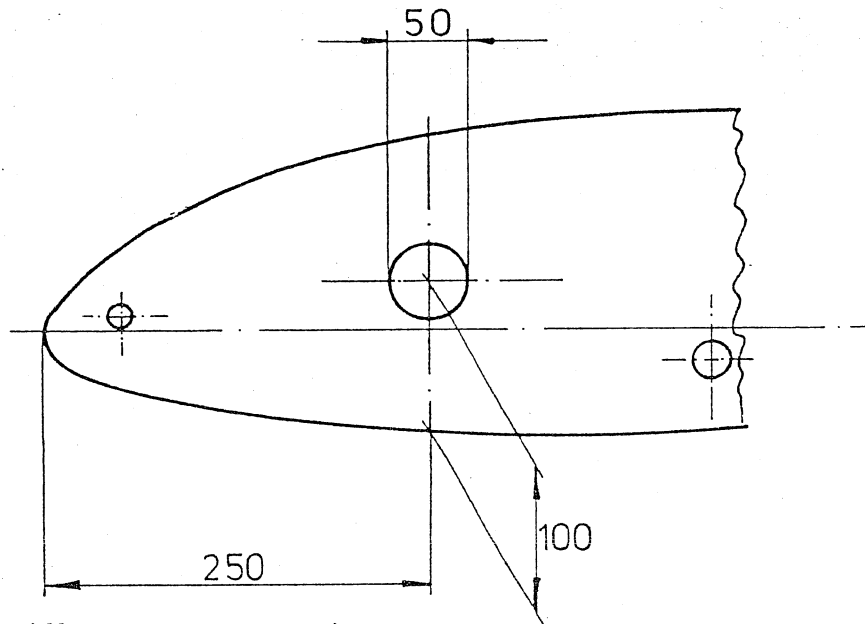
G 103 TWIN II / G 103A TWIN II ACRO:

WHB (german issue): revision 5
MM (english issue): revision 6
MM for Canada: up to S/N 3878: revision 5
 as of S/N 33897: revision 6
MM for Italy: up to S/N 3878: revision 5

G 103C TWIN III ACRO:

WHB (german issue): revision 3
MM (english issue): revision 2

2. **Installation of an inspection hole in the root rib, (if Service Bulletin TM 315-15 or TM 315-26 are not performed)**



All measurements in mm

3. **Exchange of the elevator lever No.103-3523** according to Repair Instructions No.315-45/1.
4. **Exchange of the airbrake over-centre lever** No.103-4123/4124 and installation of inspection holes according to Repair Instructions No.315-45/2.
5. **Inspection** according to the Inspection Record "Extension of Life Time".
6. The following **inspections** (visual inspection, tapping) must be performed:
 - a. wing root external:
 - wing/ fuselage attachment fittings secure in laminate
 - wing connecting bolts: wear, corrosion, deformation
 - b. spar stub:
 - main spar spigot
 - spar pin fitting tight in laminate

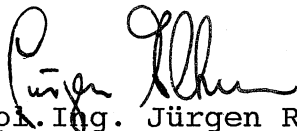
- Material:** The material (only for actions 3 and 4) incl. Repair Instructions and Inspection Record (action 5) can be obtained from the manufacturer with the attached Purchase Order (please note the number of flight hours).
- Weight and balance:** Empty weight and the center of gravity have to be checked after execution of the actions.
- Remarks:**
1. The execution of the actions must be carried out by an authorized aviation workshop and has to be certified in the log book by an authorized inspector.
 2. After inspection the completed Inspection Record (action 5) must be filed in the airplane logbook, and a copy sent to GROB for evaluation.
 3. If in the meantime you have sold your motor-glider, we would ask that you kindly pass this information directly to the new owner and forward his address and aircraft s/n to us.

Mattsies, December 21, 1995

LBA approved

The German original of this Service Bulletin has been approved by the LBA on the ~~December 1995~~ *03 January 1996* and is signed by Mr. *SKOV...*

The translation has been accomplished to our best knowledge and judgement. ~~In case of doubt, the German original is authoritative.~~



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Manager
Airworthiness/Certification

The Repair Instruction No. 315-45/1 is part of the Service Bulletin TM 315-45 and contains the mandatory replacement of the elevator lever No. 103-3523 for TWIN ASTIR and TWIN ASTIR TRAINER during the 3000 hours inspection.

Material:

- elevator lever 103-3523 (Alu sheet)
- 1 Hotellier ball 282M,
- 1 Hotellier quick-lock R 1241
- glass fabric WL 8.4548.60 (Interglas 92110)
- glass fabric WL 8.4551.60 (Interglas 92125)
- resin, SHELL GE 162
- hardener BAKELITE SL or SHELL Epikure 113 or BASF Laromin C260
- filler, cotton flocks (Type FL 1 f)
- gel-coat, white, No. 03-69 066
- hardener, No. 07-20510

Tools: standard set of tools

Procedure:

1. Remove horizontal stabilizer, refer to the Flight Manual.
 2. Dismantle elevator from stabilizer by removing the roll-pins from hinges (mark the head of each hinge pin with a small groove using a file, towards the upper surface).
 3. Tape each hinge pin onto the stabilizer near its corresponding hinge to avoid interchange during assembly.
- Note: If the pins are corroded or damaged, replace pins.
4. Weigh the elevator and note the weight.
 5. Jig up elevator with the upper surface facing upwards, support tips and centre accordingly, so that the hinge line is straight and the elevator is fixed in this position, to prevent moving or twisting while being repaired.
 6. Make up a pattern to locate the position of the elevator lever. The centre of the new Hotellier ball hole must be in the same position to the elevator and hinge, as the removed lever.
 7. Cut open top surface and vertical false spar web, just outside the dimension of the elevator lever.
 8. Carefully remove elevator lever from the lower surface without damaging the fabric. Ensure the leading edge of the elevator is not damaged during lever removal.
 9. If required, repair any damaged fabric, according to the Repair Instructions in the MM.



10. Splice elevator top surface and elevator spar web 30mm wide after ensuring that the new elevator lever will pass through the opening.
 11. Install new elevator lever using the pattern manufactured in step 6. If necessary grind the wood of the rib level with the inner shell.
 12. Attach elevator lever in position with a mixture of resin/hardener and cotton flocks.
 13. Close up the web and the upper shell, using the following layer sequence:
 - 2 layers WL 8.4548.60 (Interglas 92110) diagonal
 - 2 layers WL 8.4551.60 (Interglas 92125) diagonal
 - 2 layers WL 8.4551.60 (Interglas 92125) normal
 - 1 layer WL 8.4551.60 (Interglas 92125) normal (additional)
- Note: All lamination and paint work must be performed according to the Repair Instruction in the MM.
14. Allow repaired area to harden.
 15. Carefully grind edges of the fabric without damaging the fabric.
 16. Paint the repaired area.
 17. Secure Hotellier ball and counter with self-locking nut.
 18. Weigh elevator to ensure the aircraft's C.G. is not effected. Check the elevator static moment. It should be 25,8 kpcm \pm 12%, refer to MM page 17.
 19. Install elevator with new roll-pins. Eliminate any side play with washers.
 20. Rig horizontal stabilizer and check free movement of the elevator. Check and adjust elevator deflection if required, refer to MM page 13.
 21. Perform a flight test.

The replacement of the elevator lever must be certified in the logbook by an authorized inspector.

The Repair Instruction No. 315-45/2 is part of the Service Bulletin TM 315-45 and contains the mandatory replacement of the airbrake-over-centre levers P/N 103-4123/4124 and the installation of inspection holes for TWIN ASTIR and TWIN ASTIR TRAINER during the 3000 hours inspection.

Material:

- 1 airbrake over-centre lever left 103B-4123 (marked L) and
- 1 airbrake over-centre lever right 103B-4124 (marked R) complete
- as per the part list (refer to drawing 5, page 9)
- 3 spacers 103B-4100.15
- 2 washers LN9025-6,4
- 4 nuts LN9348-M6
- 3 screws DIN 7991-M6x40
- 1 screw DIN 7991-M6x30
- 2 foam inserts (Conticell C60) 160mm x 200mm, 8 mm thick, one side with 1 layer WL 8.4551.60 (Interglas 92125) diagonal
- glass fibre WL 8.4548.60 (Interglas 92110)
- glass fibre WL 8.4551.60 (Interglas 92125)
- resin, SHELL GE 162
- hardener, BAKELITE SL or SHELL Epikure 113 or BASF Laromin C260
- filler: cotton flocks (Type FL 1 f)
- gel-coat, white, No. 03-69 066
- hardener, No. 07-20510
- 2 stops (3 mm x 30 mm x 30 mm), composite sheet
- 2 insert roving rings 103-1001.17
- 2 plexiglass covers 103-1001.48
- 12 self-tapping screws DIN 7982-B2,9x6,5

Tools: standard set of tools

Procedure:

1. Remove wings, refer to Flight Manual. Lay wings on trestles with the bottom side up. Unlock airbrakes.
2. Mark the position of the over-centre lever according to drawing 1. Locate the position of the spar by tapping the surface.
Note: The positions of the spar in the RH and LH wing are different!
3. First cut the larger hole behind the spar to replace the lever. Cut a 180 mm dia. circle through the outer skin and the foam only. Ensure inner skin is not damaged!
4. Remove outer skin and foam from inner skin. Carefully clean a 30 mm wide ring of all foam and roughen area (refer to drawing 4, picture D).
5. Attach the insert roving ring 103-1001.17 with a mixture of resin/hardener and cotton flocks and allow area to harden.

6. Carefully cut out inner skin around the insert roving ring.

7. Mark the position of the smaller hole in front of the spar according to drawing 1.

Note: The position is off-centre to the bracket. Take care not to damage the water tank.

It is important, to ensure that the distance is not less than 60 mm to the spar centre line in accordance to drawings 1 and 2, to prevent damage to the lamination angles in the spar area.

This opening must be 120mm x 80mm, so that the supplied foam inserts will fit.

It is advisable to cut a smaller hole first at the center of the marked area, to check the location. When cutting the small hole care must be taken to avoid damage to the water ballast jettison tube, as the tube is located under the wing shell. During further work it may be necessary to move the water tube aside.

8. Remove over-centre lever.

Note: It is recommended to note the exact positions of the levers and rods to ensure a correct reinstallation.

Attention: The wings are laying upside down.

Remove the hinge bolt through the larger hole. Remove the spacer tube through the smaller edge hole (refer to drawing 2).

9. Remove the lever from the bearing; remove the bolts from the two pushrods.

Note: The pushrod ends and the counter nut on the pushrods may not be loosened.

10. Because of the smaller outside contour of the new lever, the stop must be built up 3 mm (refer to drawing 3). All areas subject to lamination should be carefully ground. Attach the composite sheet with a mixture of resin/hardener and cotton flocks. It is recommended to laminate a small strip of glass fibre over the stop onto the skin.

11. Install new aluminium sheet over-centre lever (levers are marked, L = left, R = right).

Note: It is recommended to use new bolts and nuts.

12. First attach the control rods in accordance to drawings 2 and 3:
- attach pushrod leading to the root rib to the shorter lever end

* in RH wing: with screw M6x40 and spacer 103B-4100.15

* in LH wing: with screw M6x40 and spacer 103B-4100.15

- attach pushrod leading to the airbrake to the longer lever end

* in RH wing: with screw M6x40 and spacer 103B-4100.15

* in LH wing: with screw M6x30 and 2 washers $\phi 6,4$

Note: The spacers prevent the pushrods contacting the levers during operation.

13. Install the lever into it's bracket, insert the new spacer tube 103-4123.03/4124.03 through the opening in front of the spar, and the hexagon screw M6x78 through the round hole, secure with washer and nut (refer to drawing 5).
14. Perform a functional test.
The airbrake rod is operated at the root rib. Pulling the push-rod locks the system over-centre, pushing unlocks it. The pushrod should have no contact with the lever. The over-centre action must be pronounced (refer to drawing 3). If necessary the stop may be adjusted by filing.
Note: It is recommended to repeat this functional test on the rigged aircraft.
15. Before closing the wing shell in front of the spar, the edges of the opening must be prepared as follows (refer to drawing 4): to enable the inner layer to overlap 20 mm, the outer fabric and the foam must be removed. The size of the opening should be 160 mm x 120 mm, refer to drawing 4, picture A.
16. The foam inserts are supplied oversized and should be installed with the laminated side touching the inner skin.
17. Splice the outer layer 20 mm wide around the cutout using a sanding block. Clean the inner laminate of all foam and carefully grind the area. Also grind the edges of the foam insert (refer to drawing 4, picture A).
18. Carefully clean the repaired area and the foam insert:
 - remove sanding dust (also from the foam pores) using compressed air, remove peel-ply from foam insert
 - if repaired area is dirty or oily, wash spliced area with acetone or carbon tetrachloride
 - examine the wing openings for foreign objects (for example tools).
19. Mix resin and hardener according to the mixing table and add cotton flocks until a doughy, dripping, sticky mixture is achieved.
20. Apply this mixture to the rim of the inner laminate, and all sides of the foam insert which require glueing. Press the foam insert into the opening (with the laminated side touching the inner skin). Load the foam insert with iron weights to follow the contour of the wing. Fill the gaps between the foam insert and the cut-out with the mixture (refer to drawing 4, picture B).
21. The resin cure time is approx. 8 hours at room temperature. To accelerate this process, the surrounding area can be heated slightly using a warm air fan.
Attention: A too high temperature will cause air bubbles in the repaired area.



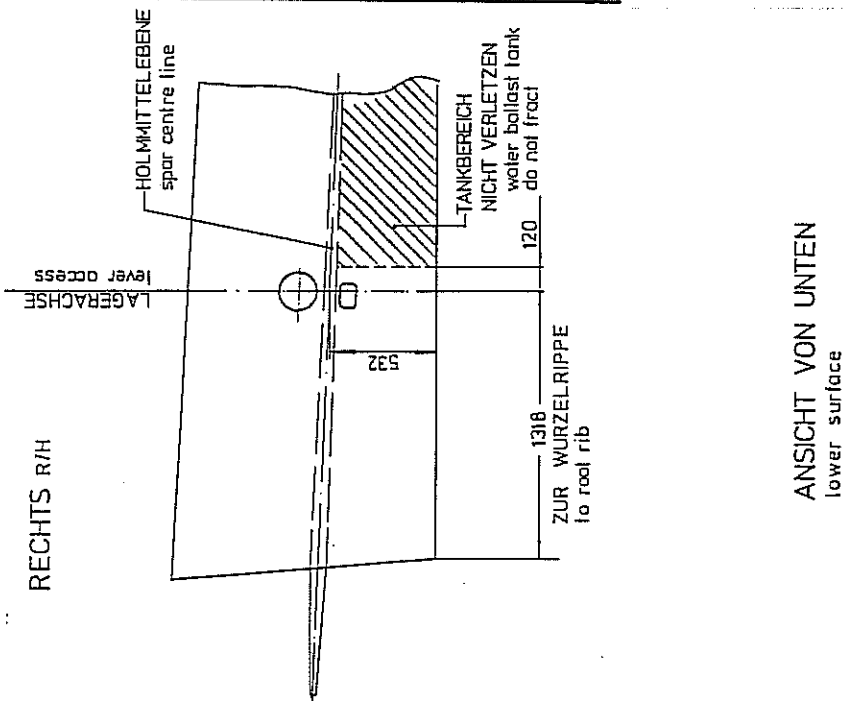
22. After curing is completed, grind the foam insert to the contour of the wing surface.
Note: The surface of the foam must be 1mm less than the exact contour, because fabric and gelcoat are applied later.
23. Clean the repaired area as described in step 18.
24. Again mix resin and hardener according to the mixing table, add cotton cotton flocks to a part of the mixture and fill the pores of the foam.
25. According to drawing 4, picture C, the larger patch of fabric WL 8.4551.60 (Interglas 92125, thicker fabric) is applied first, then the smaller thinner patch WL 8.4548.60 (Interglas 92110) is applied, both patches with the fibre direction parallel to the spar; use a small brush to penetrate the resin.
26. Allow repaired area to cure as described in step 21.
27. Splice the outer laminate 20 mm wide around the opening behind the spar. Repeat work steps 24, 25, 26.
28. Paint the repaired area.
Note: All grinding and painting work must be performed according to the Repair Instructions in the MM.
29. Install each plexiglass cover 103-1001.48 with 6 self-tapping screws at the insert roving ring (refer to drawing 4, picture D).
30. Rig airplane, in accordance with the Flight Manual.
31. Perform a functional test of the airbrakes.

The replacement of the airbrake over-centre lever and the installation of the inspection holes must be certified in the log book by an authorized inspector.

ZEICHNUNG 1
DRAWING 1

Position der Öffnungen
Position of the openings

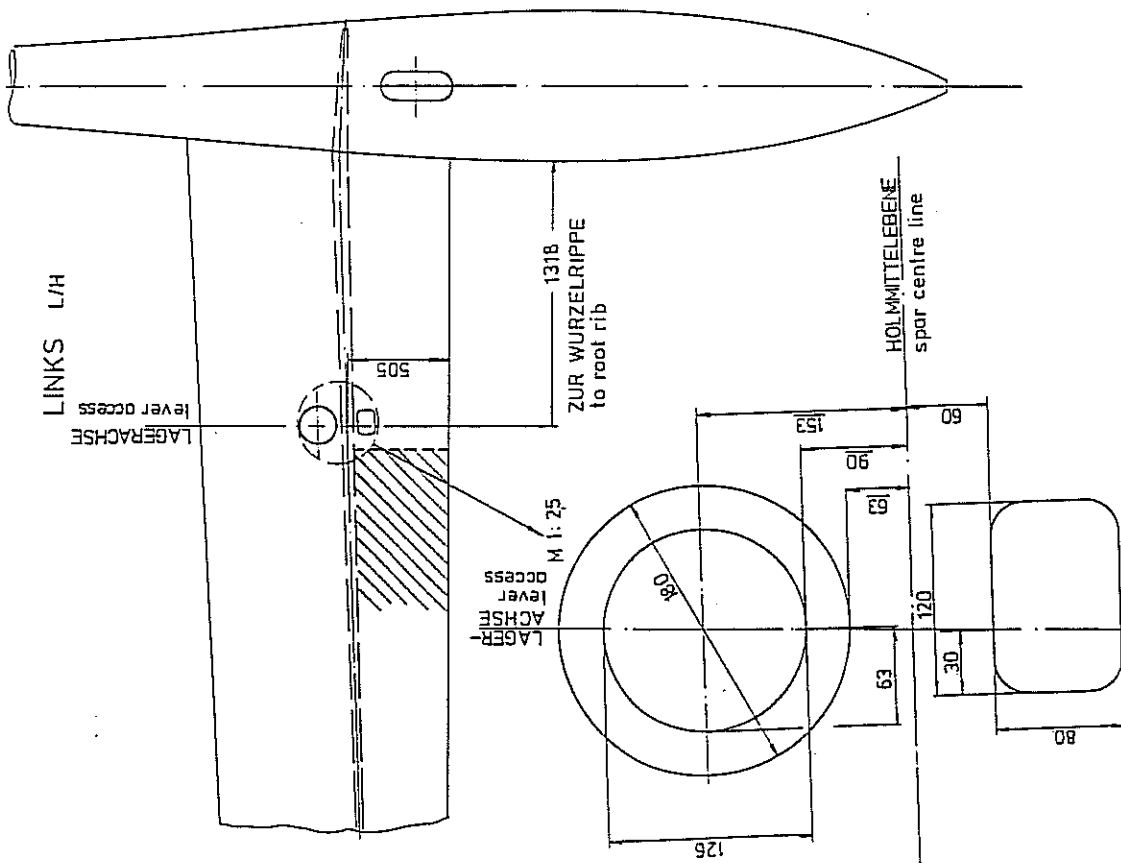
RECHTER FLÜGEL
RH WING



RECHTS R/H

ANSICHT VON UNTEN
lower surface

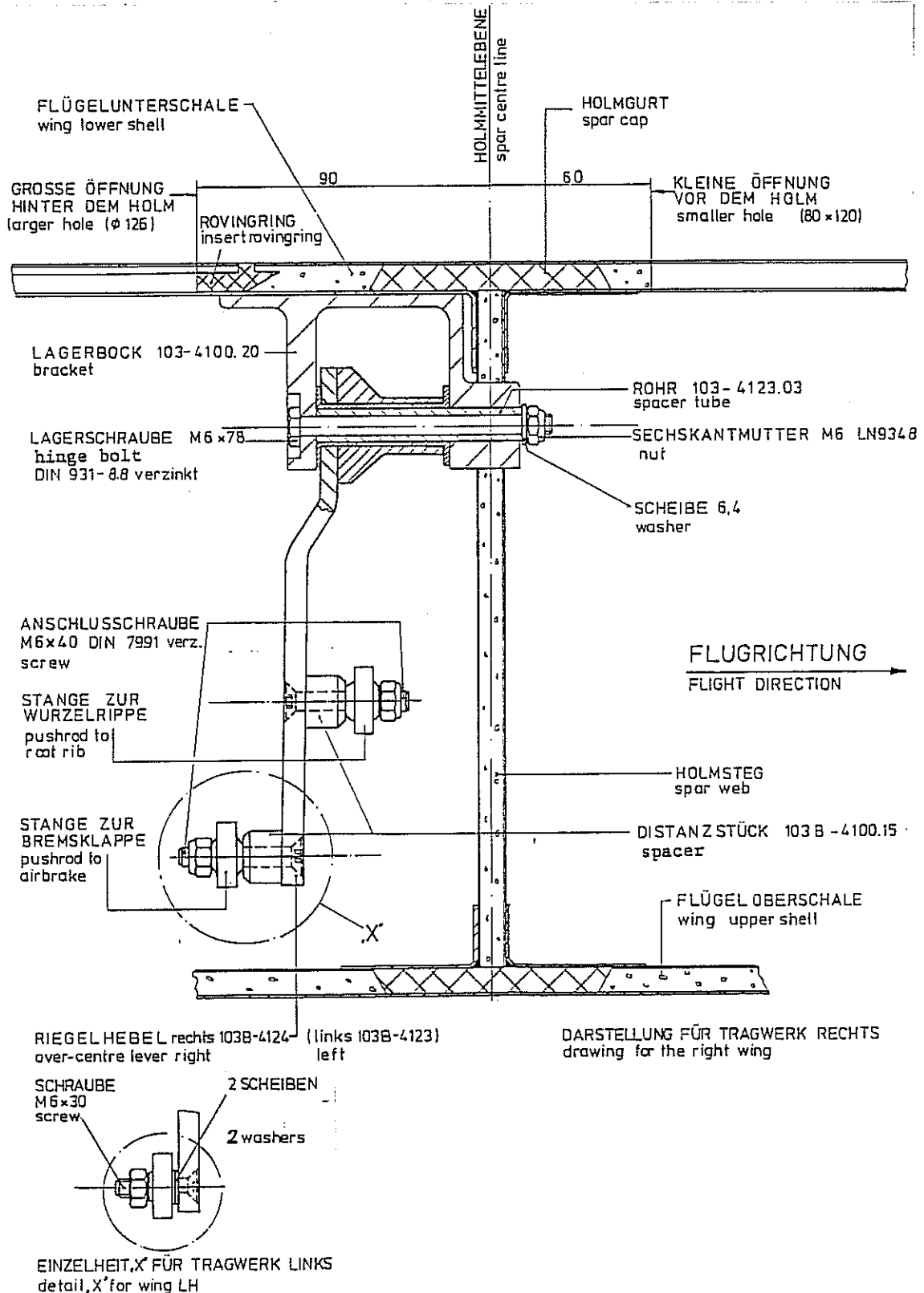
LINKER FLÜGEL
LH WING



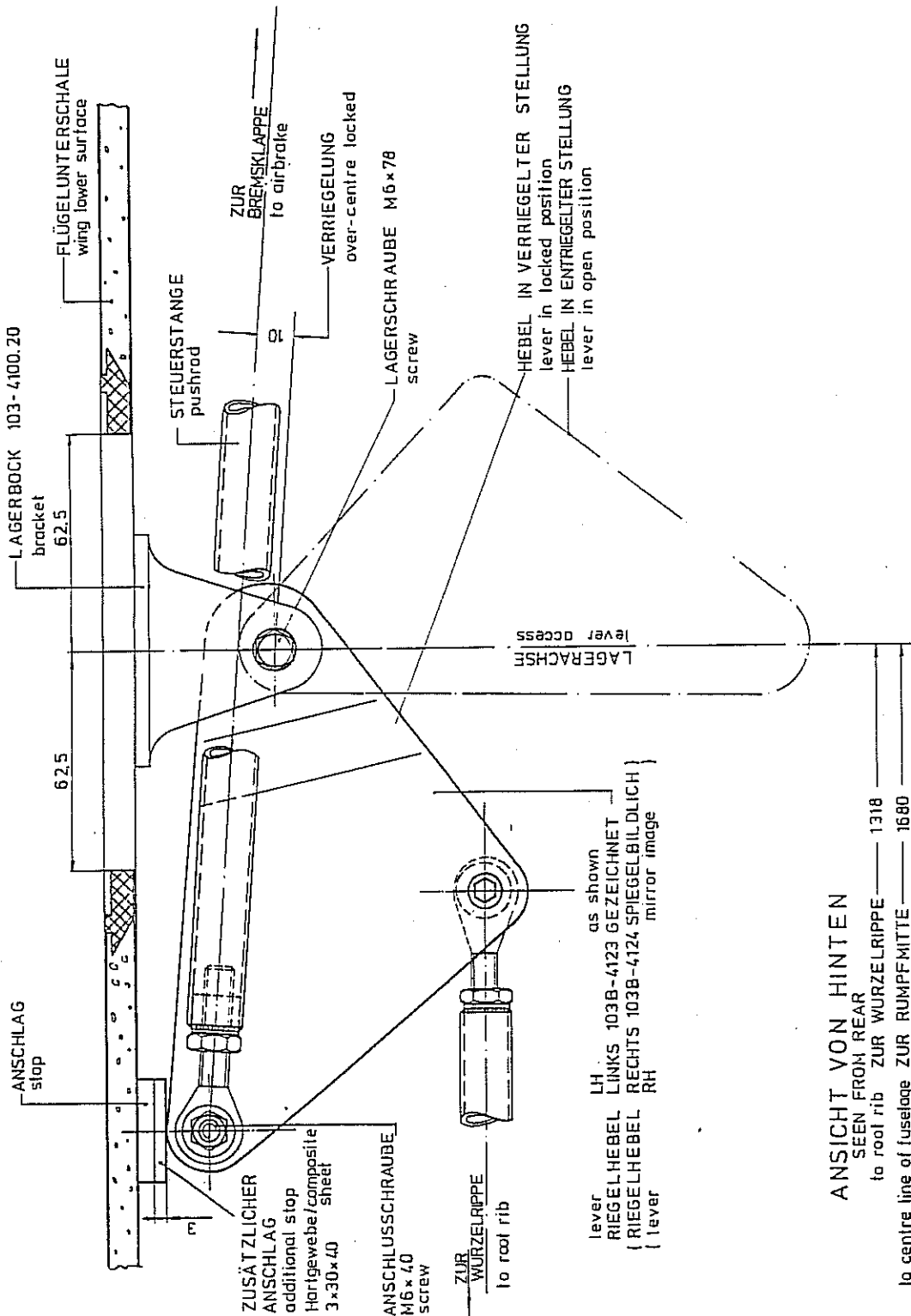
LINKS L/H

ZEICHNUNG 2
DRAWING 2

Einbau des neuen Riegelhebels
Installation of the new airbrake over-centre lever

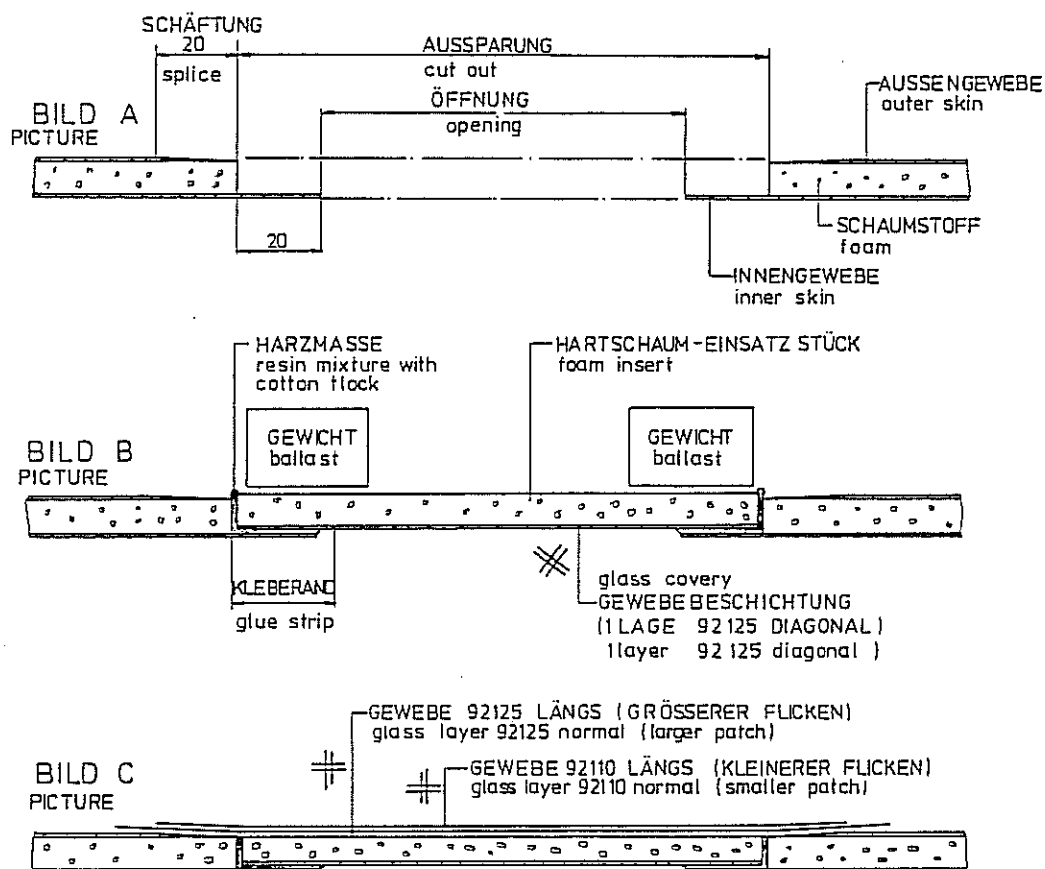


ZEICHNUNG 3
DRAWING 3

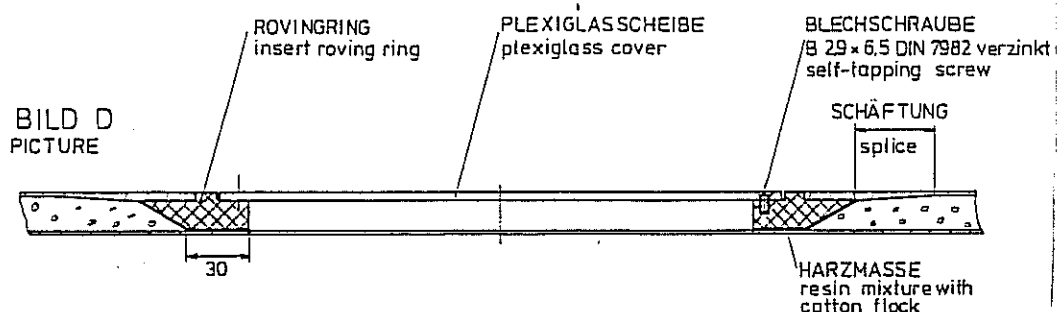


ZEICHNUNG 4 DRAWING 4

Schließen der Flügelschale Closing of the wing shell

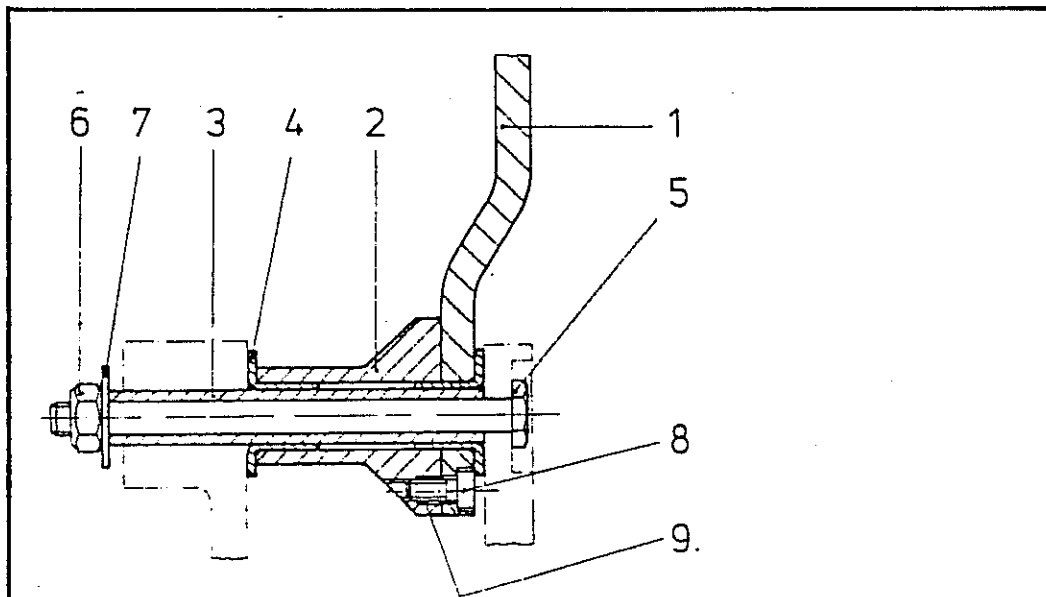


Vor dem Holm
in front of the spar



Hinter dem Holm
behind the spar

ZEICHNUNG 5 DRAWING 5



9.	4	Gewindeinsatz Typ Mid Grip	Nr 0132 004 006		Fa. Böllhoff	
8	4	Zyl - Schraube	M4 x 10 DIN 6912-1.1 verf.			
7	1	Scheibe	6,4 DIN 9021 verf.			
6	1	Sechskantmutter	M6 LN 9348			
5	1	Sechskantschraube	M6 x 78 DIN 934 -9.9 verf.			
4	2	DU - Bundbuchse	BB 67		Fa. HS	
3	1	Rohr 10 x 2 ; 62 Lg 1.0308.1	103 - 4123.03	4	DIN 2391	
2	1	Drehstück	103B- 4123.02	4		
1	1	Riegelhebel links	103B- 4123.01	4		
LN. Nr	Stück- zahl	Bezeichnung	S. Nr.	Fur- auf A	Bemerkungen	Gewicht (in Gramm)

STÜCKLISTE FÜR RIEGELHEBEL LINKS

Photo ohne Toleranzpunkte		Material	Oberflächenzustand	Oberflächenbesch.
		—	—	—
1979	Tag	Name	Bezeichnung	Maßstab
Bearb.	20.12	M.cheley	RIEGELHEBEL	1:1
Bepr.			LI. RE.	
Norm.				
1 103B-78975 Pa...		GROB FLUGZEUGBAU		Zustimmung-Nr. 103B- 4123 4124
Erst- Zust.	Änderung- Mitteilung	Tag	Name	Erstellt durch
				Erstellt durch