



AIRWORTHINESS DIRECTIVE

TYPES AFFECTED: ASW 17 - all models, all serial numbers.

SUBJECT: Inspection and preservation of mainspar structures

BACKGROUND: Following penetration of water into the spar interior it is possible that under certain conditions a wood destroying mould fungus develops in the spar inside. This may lead eventually to the premature failure of the wing. The manufacturer has issued Technical Note 12 and the German LBA has issued Airworthiness Directive 89-115.

It must be noted that this problem must apply to all glider and powered sailplane types which utilise wood as part of their GRP structure and carry water ballast.

GFA ADs 159 and 165 also address this problem.

ACTION REQUIRED: AT OR BEFORE THE NEXT FORM 2 INSPECTION

(1) (a) Carry out an inspection of the spar structure in accordance with TN 12 Action 1.1, 1.2 and 2.3.

(b) If discoloration of the balsa wood webs and/or plywood blocks is found, or any evidence of fungi attack/moisture damage the GFA CTOA must be advised before any repair action is started.

(2) MANUAL AMENDMENTS

Exchange operation manual page 32 with page 32 dated 08/05/89.

WEIGHT/BALANCE: No change

ENCLOSURES: ASW 17 Technical Note 12, including Figure's 1 to 6.
Operations manual page 32.

MATERIALS: All materials required are available from the manufacturer:-

NOTE: An Australian equivalent to "AIDOL" can be provided by the GFA CTOA.

Issued by: *M. Burns*

Chief Technical Officer,
Airworthiness.

14.9.1989

For and behalf of:

GLIDING FEDERATION OF AUSTRALIA

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GFA AD 366	ISSUE 1	14.9.1989	Sheet 2 of 2
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IMPLEMENTATION: ACTION (1)

To be carried out by the holder of a DOA 1109 Inspectors Certificate authorized "FRP C. of A. inspection".

ACTION (2)

To be carried out by the owner/operator.

COMPLIANCE: The requirements of this Airworthiness Directive are mandatory. This Directive is issued pursuant to the Civil Aviation Regulations under the delegated authority of the Civil Aviation Authority (CEO5/88).

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ASW 17
Technical Note
No.12

Alexander Schleicher
GmbH & Co.
Segelflugzeugbau
D-6416 Poppenhausen

Subject: Inspection and interior preservation of the wing spar.

Serial number applicability: All gliders ASW 17.

Compliance: Action as per point 1.1 through 1.3 prior to July 31, 1989.
All further action before December 31, 1989, at the latest.

Reason: Following penetration of water into the spar interior it is possible that under certain conditions a wood destroying mould fungus develops in the spar inside. This mould fungus may affect and destroy the balsawood spar webs and the plywood blocks of the spar to such an extent that the supporting function of the spar webs is no longer sufficient. This may lead eventually to the premature failure of the wing.

Action:

- 1.1 The wing spar must be visually inspected for penetrated moisture, mould fungi and/or swelling up !
Mould fungi attack shows as discoloration of the wood into blue, brown or grey hues or as white mold fungi in lumpy shape or in cobweb-shaped, but irregular threads.
- 1.2 For this purpose drill holes of $\varnothing$ 28 mm (see Fig.1) must be made, using a key hole saw (Fig.2). Through these inspection holes the spar inside must be inspected, using an endoscope or a suitable mirror with suitable lighting mechanism (e.g. pocket-lamp bulbs soldered on two stiff, approx. 1 m long wires), and checked for moisture, discoloration and wood-destroying mould fungi; (move the source of light along the spar inside).
The drill cores which you get with the use of the key-hole saw and which must be correspondingly marked for the purpose of assigning them to the drill holes, must be sent in for a microscopical examination in view of possible fungal damage to one of the institutes listed under "Notes, point 2.". At the front ends of the spar fork and spar tongue the paint must be removed (see Fig.3) and the wood must be checked with the so-called "fingernail" test.
- 1.3 If it is found that the wood parts of the spar inside are not damaged by moisture and/or fungal infection, the drilled inspection holes must be reinforced by a GRP-circular disk and then closed by means of a rubber stopper (see Fig. 4).
Prior to this, the spar inside must be sprayed out with a solvent-containing preservative in accordance with DIN 68 800, e.g. Aidol Fertigbau 100 made by REMMERS, D-4573 Lönningen, Tel.: 05432-83-0 (see Fig. 5). When using this product "Aidol" you will need about 100 g. It

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Zurücksendung an den Verleger ist erforderlich.
oder Gebrauchsmuster-Eintragung vorbehalten

has to be regarded that the edges of the drill holes are preserved again (see Fig. 4).
The bore hole remaining within the GRP-circular disk is intended as gate for later inspections and the holes in the rubber stoppers are required for ventilation.
With the accomplishment of the above action the glider is airworthy again for the time being and flight operations can be continued pending the results of the microscopical examination (refer to Points 3.1 and 3.2).

2.1 If a swelling up is clearly visible or if there is suspicion that water has penetrated into the spar fork or into the spar stub, the main pin bushing must be removed and the interior between the bushings must be inspected (see Fig. 6).

Normally the main pin bushings are level with the main spar winding or lie slightly back respectively.

2.2 If discoloration or wood-destroying mould fungi attack is found on the balsawood webs and/or plywood blocks, the manufacturer or a licensed aviation repair station must be contacted for repair instructions and repair or replacement of the whole component to re-obtain airworthiness.

3.1 If the microscopical examination of the bore cores (as mentioned in Point 1.2) finds that there is heavy wood-destroying fungal infection of considerable extent, which calls into question the airworthiness of the glider / motorglider, on recommendation of the mycologist and by request of the LBA another systematically controlled visual inspection of the spar must be done by a mycology specialist using an endoscope. Then proceed to Point 2.2.

3.2 If this further endoscopical inspection then shows no damage to the wood parts inside the spar (caused by moisture and/or mould fungi attack), the aircraft is again airworthy without any restrictions.

4. In the Operation Manual the page 32 must be exchanged for page 32 with the reference entry "TN No.12 dated 08.05.1989". The exchange of this page in the Manual must be documented on the page 3 "Amendments to the Manual".

Material & drawings:

The GRP-circular disks, the rubber stopper, the Manual page and the wood preservative are available from the manufacturer and his agencies.

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Notes:

1. The "Action, points 1.1 thru 3.2" must only be carried out by the manufacturer or by a technical aviation service station holding an appropriate license.
"Action, point 4." can be carried out by the owner himself.
The accomplishment of this mod must be certified by a licensed aviation inspector in the glider's inspection documents and in the log-book.

2. Addresses of the institutes:

Bundesamt für Materialforschung und Prüfung
Biologische Materialprüfung
Unter den Eichen 87
D-1000 Berlin 45
Tel: 030-8104-5100

Bundforschungsanstalt für Forst- und Holzwirtschaft
Institut für Holzbiologie und Holzschutz
Leuschnerstr. 91
D-2050 Hamburg 80
Tel.: 040-73962-280

Fraunhofer-Institut für Holzforschung
Bienroder Weg 54 E
3300 Braunschweig
Tel.: 0531-3909-336

3. The inspection according to above para "Action, point 3.1" must be done by the mycology specialists at the Fraunhofer Institute at Braunschweig. It is recommended that a competent person with knowledge of the subject (e.g. aviation inspector or repair station manager) is present during the inspection in order to assist the mycology specialist.
4. Aircraft owners in foreign countries are not bound to call in the above mycology specialist stated under "Notes: point 3." The Aviation Authority of the respective country may name a suitable specialist in their country.
5. Because of the difficulties to import AIDOL 100 into several overseas countries (e.g. USA): to help our customers in those countries the use of the US-Product DAP Woodlife Clear Wood Preservative is herewith accepted as equivalent to AIDOL 100. When using this DAP product, you will however need two treatments of

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No.12

Alexander Schleicher
GmbH & Co.
Segelflugzeugbau
D-6416 Poppenhausen

each 50 g. One application of 50 g has to be made as a first step and then the wing must well dry off. Afterwards the wing must be rotated by 180° and another 50 g have to be applied. Make sure that DAP Woodlife Clear Wood Preservative has really completely dried out before the glider is taken back into operation.

Poppenhausen, May 8, 1989

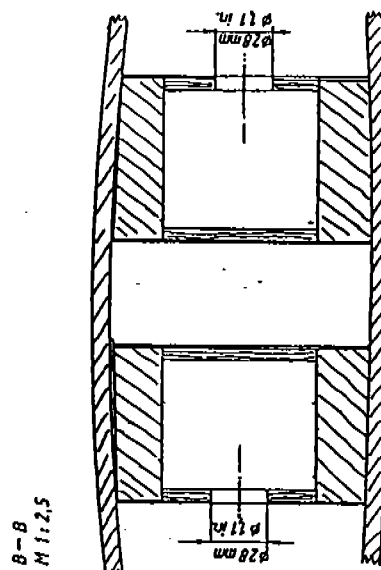
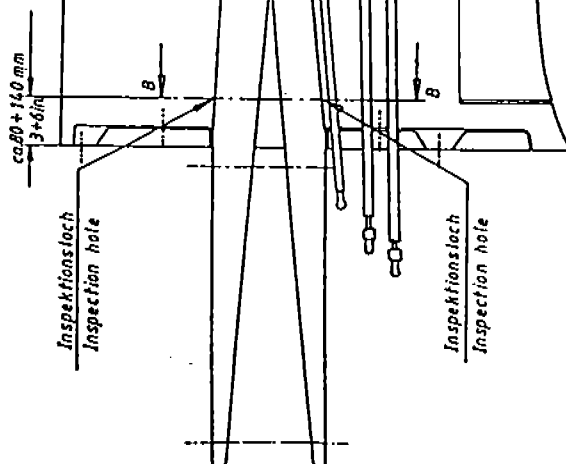
ALEXANDER SCHLEICHER
GmbH & Co.

i.A. *Rutz-LW. Juntow*
L.W. Juntow.

The German original of this Technical Note has been approved by the LBA under the date of May 11, 1989 (signature: SCHMALJOHANN). The translation into English has been done by best knowledge and judgement; in any case of doubt the German original is controlling.

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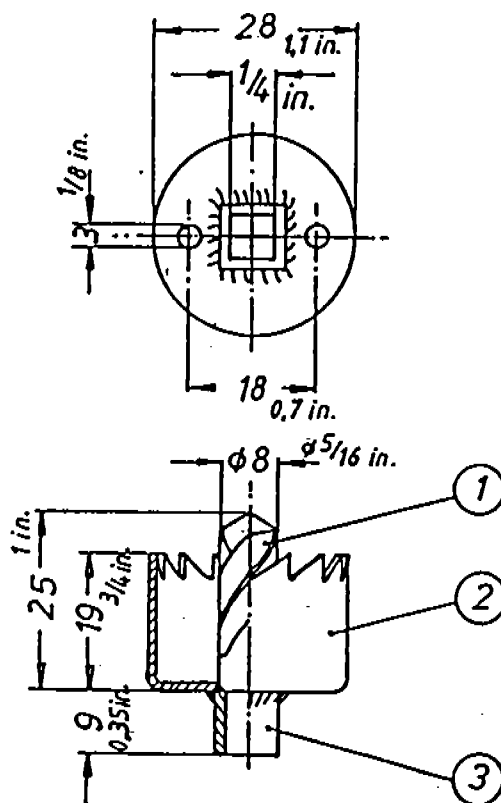
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* Location and dimensions of the inspection holes

St.	Benennung						Lfd. Nr.	Werkstoff	Rechnung Text- oder DIN-Nr.		Bemerkung
		Datum		Gewicht	Höhe	Tiefe	Nennweite	Typ	Bezeichnung	Masstab	
		01.02.89			Juw			ASW 17	Vermessung der Inspektionslöcher *	1:10	
										1:2,5	
Zustf	Änderung	Datum	No.	Urspr.							
					A. Schläpfer GmbH & Co Siegelmassengussbau 616 Pöppelhausen	Zeichnungsnummer TM-Nr. 12 Fig. 1					
					Erm.L	Err.d					Bl.

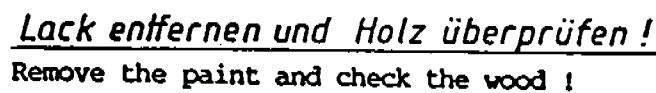
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- (1) Twist drill $\varnothing$ 8 mm
 (2) Keyhole saw $\varnothing$ 28 mm
 (3) Female square socket 1/4 in.

1	Innenvierkant 1/4 in.	3		9 - 9	
1	Lochsäge $\varnothing$ 28	2			
1	Spiralböhler $\varnothing$ 8	1	HSS		
St.	Benennung	Lfd. Nr.	Werkstoff	Rohmaße Teil- oder DIN-Nr.	Bemerkung
			Datum	Name	Typ
			Bearb. 12.04.88	Juw	...
			Geprü.		ASW 17
			Norm		Lochsäge $\varnothing$ 28 mm Keyhole saw
			A. Schleicher GmbH & Co Segelflugzeugbau 6416 Poppenhausen		
			Zeichnungsnummer TM-Nr. 12 Fig. 2		
					Maßst. 1:1
					Blatt
					Bl
Zust.	Änderung	Datum	Na.	Urspr.	Ers. d.

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St.	Benennung				Lfd. Nr.	Werkstoff		Reihe Teil- oder DIN-Nr.		Bemerkung
					Datum	Name	Typ	Benennung		Maßst.
				Bearb.	01.02.89	Juw	ASW 17	Überprüfung der Stirnseiten *		1/
				Geprü.						
				Norm						
				A. Schleicher GmbH & Co Segelflugzeugbau 6416 Poppenhausen			Zeichnungsnummer TM-Nr. 12 Fig. 3			Blatt
										Bl.
Zust.	Änderung		Datum	Na.	Urspr.		Ers I		Ers d	

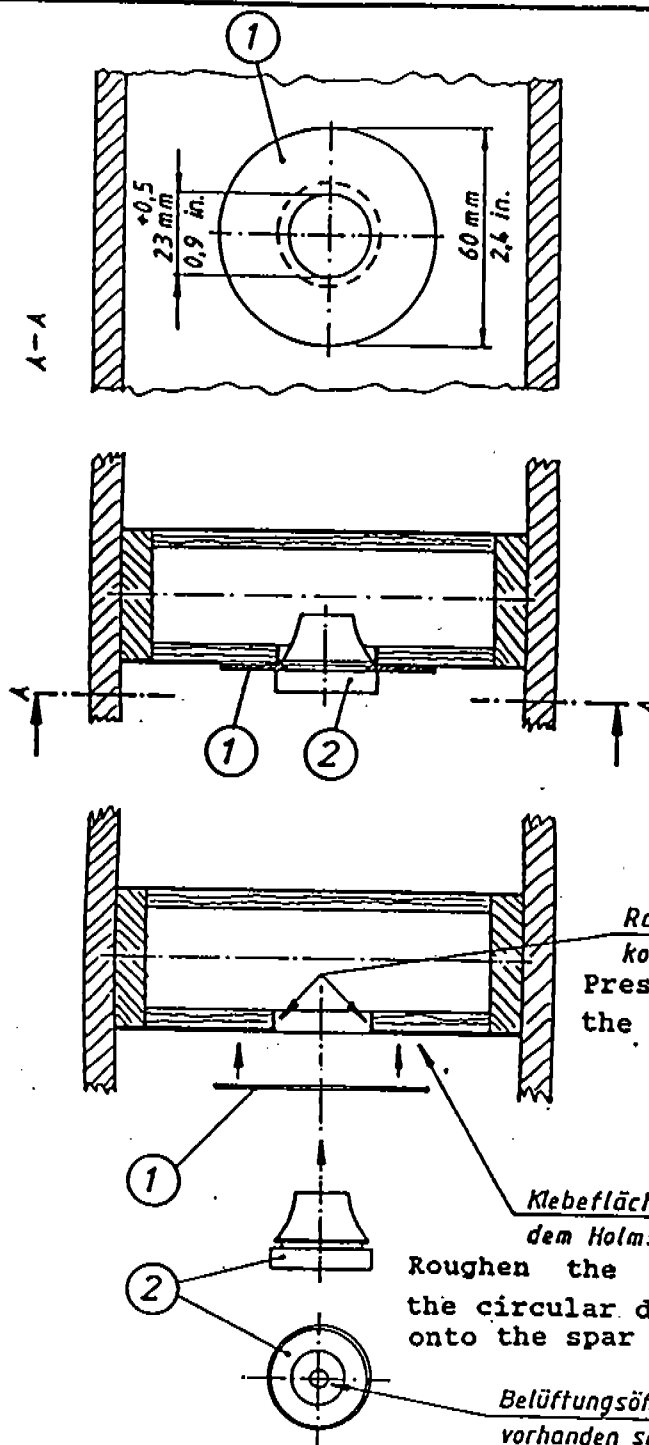
Wiederhole diese Verwendung dieser Unter:
last, Verletzung und Milderung ohne Inhalt nicht
geleistet, sonst nicht ausdrücklich festgelegt

Montage-Hinweis: Gummidurchführung (2) in GFK-Scheibe (1) eindrücken, dann GFK-Scheibe auf Holmsteg kleben.

Dadurch läßt sich die GFK-Scheibe auf der Inspektionsbohrung gut zentrieren.

* Epoxid- bzw. Scheufler-Harz verwenden!

Notes for assembly: First press the rubber stopper (2) into the GRP-circular disk (1); then glue the GRP-disk onto the spar web. This makes it easy to center the GRP-disk on the inspection hole.



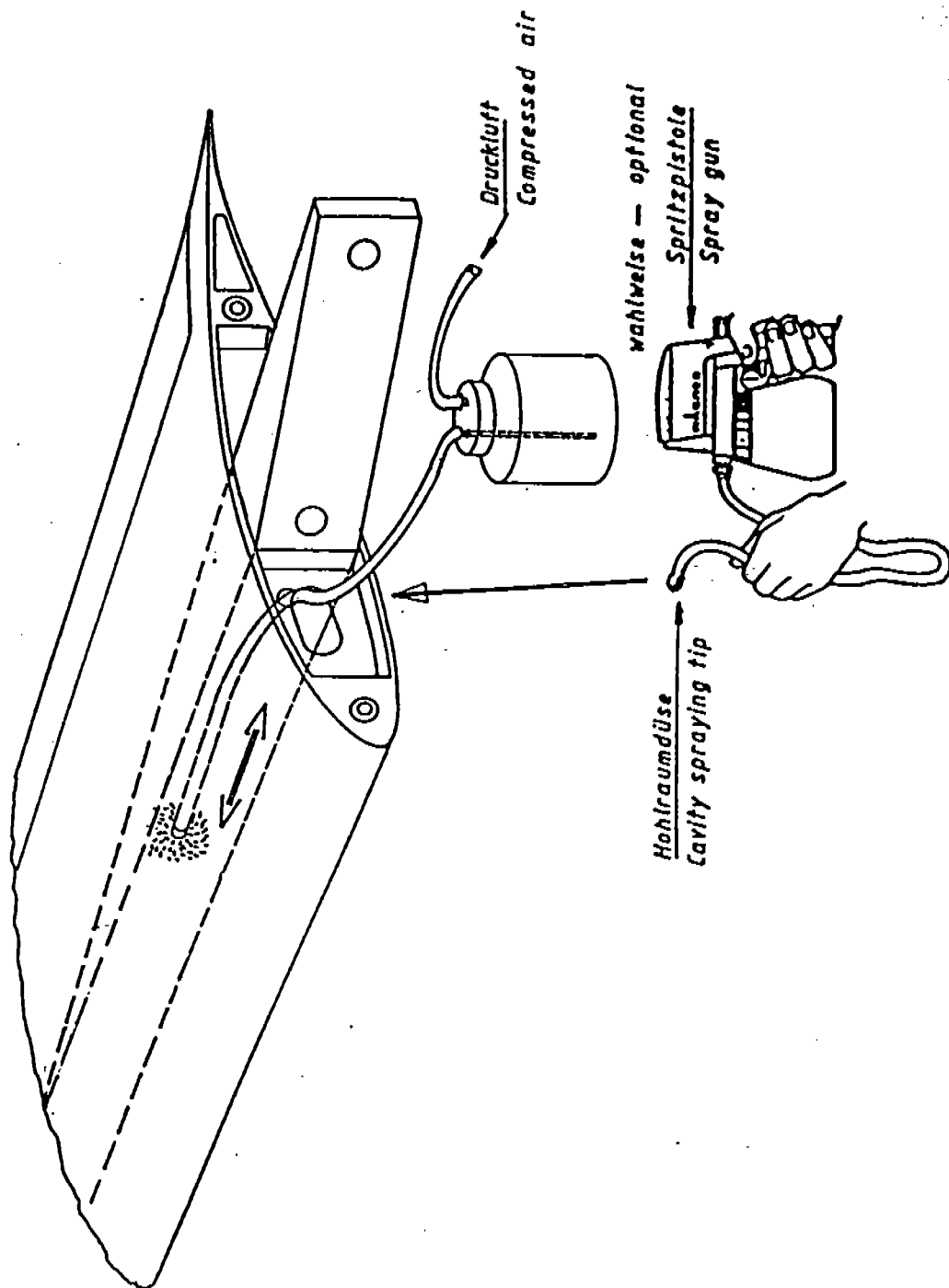
*** Reinforcing the inspections holes**

3	Gummidurchführung TET 10-14	2		Best-Nr. T3261005	Fa. Thorsmans
3	GFK-Scheibe $\varnothing 23/60$	1	3 Lagen 92140 ✕ wahlweise 92130 ✕		
St.	Benennung	Lfd. Nr.	Werkstoff	Rohmaße Teil- oder DIN-Nr.	Bemerkung
		Datum	Name	Typ	Benennung
		Bearb. 31.01.89	Juw	ASW 17	Verstärkung der Inspektionslöcher *
		Geprü.			
		Norm			
		A. Schleicher GmbH & Co Segelflugzeugbau 6416 Poppenhausen			Blatt
Zust.	Änderung	Datum	No.	Urspr.	Bl.
				Ers. l.	Ers. d.

BASF
Laminierharz:
Epikote 162
Härter:
Epikure 113
bzw. Luvac C 260

MES
Laminierharz L 306
Härter 306
Härter 307
Härter 308
Martin (I. Schüller)
Kunstharzprodukte

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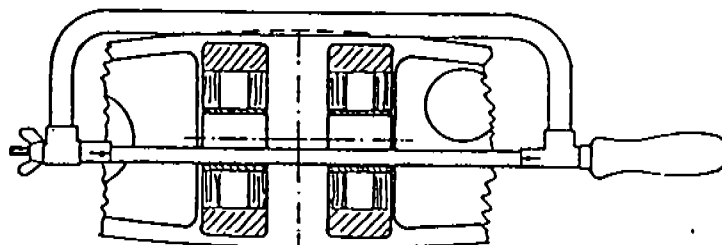
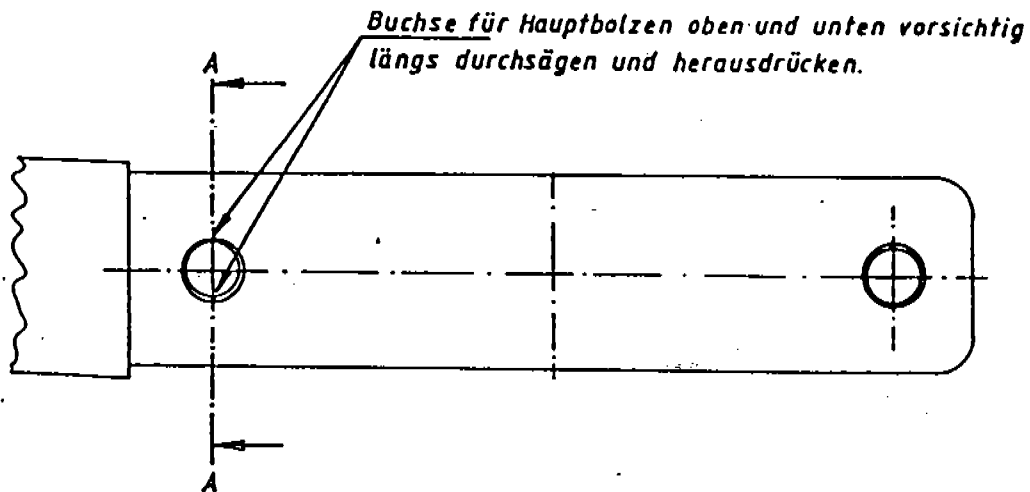
* Preservation of the spar inside space

St.	Benennung				Lfd. Nr.	Werkstoff		Rohmaße Teil- oder DIN-Nr.		Bemerkung
					Datum	Name	Typ	Benennung		Maßst.
				Bearb.	31.01.89	Juw	ASW 17	Konservieren des Innenholmes *		/.
				Geprü.						
				Norm						
				A. Schleicher GmbH & Co Segelflugzeugbau 6416 Poppenhausen			Zeichnungsnummer TM-Nr. 12 Fig. 5			Blatt
Zust.	Änderung	Datum	Na.	Urspr.			Ers I.	Ers d		Bl

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Carefully saw through the bushings (at the top and at the bottom) in the longitudinal sense and then press them out!



* Removal of the bushings

St.	Benennung				Lfd. Nr.	Werkstoff		Rohmaße Teil- oder DIN-Nr.		Bemerkung	
					Datum	Name	Typ	Benennung		Maßst.	
				Bearb.	31.01.89	Juw	ASW 17	Demontage der Buchsen *		1:5	
			Geprü.								
			Norm								
				A. Schleicher GmbH & Co Segelflugzeugbau 6416 Poppenhausen			Zeichnungsnummer TM-Nr. 12 Fig. 6				Blatt
											Bl
Zust.	Änderung		Datum	Na.	Urspr.		Ers. I		Ers. d		

ASW 17 Flight Manual

Amendments to the Manual

No.	Title	Page	Date Signature
1	Remark for T.N. W-2	38	8th Nov. 1974 <i>Robert Davies</i>
2	Increased max. all-up-weight to 610 kg	1, 6, 7, 8, 10, 11, 14, 15, 16, 29	9th June 1976
3	Inspection of wing mainspar TN12 (GFA AD 366)	32	14.9.89 

ASW 17 Flight Manual

Amendments to the Manual

No.	Title	Page	Date Signature
1	Remark for T.N. W-2 u.g. for serial NO 17048	38	8th Nov. 1974 
2	Corrected for 19m two-piece-wing		27.11.77 
3	Inspection of wing mainspar TN 12 (GFA AD 366)	32	14.9.89 

The pins are slid out of the fuselage tubes by fitting a steel rod through the hole in the opposite pin, and driving the pin out from the inside with a hammer. After fitting the metal washer, it should be possible to drive the pin back into place, using only a 500 g (1 lb) hammer and a few blows. If it returns too easily, then either secure the pin by means of a 4 mm ϕ (1/6 inch) bolt and nut which you have to drill through the fuselage tube and the pin, or knurl the seating area of the pin slightly until a tight fit is obtained again.

With major repairs on the control surfaces there is the risk that they become heavier and that by this the C.G. of the control surface moves back. This can lead to flutter. It is therefore recommended to make a light weight repair and to contact the manufacturer for the max. permissible tolerances.

During each annual re-inspection the spar inside must be inspected thoroughly for penetrated water, discoloration or wood-destroying mould fungi attack in accordance with TN no.12 "Action point 1.1".

2.9 Appendix

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Control surface deflections and tolerances	Page 34
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Flight tested performance polar	Page 37
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