



AIRWORTHINESS DIRECTIVE

TYPES AFFECTED:

Schleicher - ASW 20
All variants S/Nos 20001 through 20860, 20950 & 20951

SUBJECT:

Aileron flutter - preventative measures

BACKGROUND:

In 1981 GFA AD 196 was issued following aileron flutter incidents in Australia and the USA. Within 12 months more incidents of flutter were reported, resulting in extensive research and flutter investigation by the manufacturer, ultimately resulting in an aileron circuit damper being fitted to ASW 20's late 1982/83. It seems that aileron flutter is still being experienced overseas (none reported in Australia since 1983) resulting in the Schleicher factory trying once more to pinpoint the problem.

Schleicher TN-31 has been issued with strong emphasis on the integrity of the aileron gap sealing tape system.

To have to replace seals from time to time is a normal maintenance procedure. TN-31 emphasises that if the correct seal system is not used then there is a flutter risk.

This is not restricted to the ASW 20, it applies to all modern composite sailplanes, which as wing section efficiency increases, become more sensitive to control surface gap air leakage, tape thickness etc.

ACTION REQUIRED:

1. Immediately

Check gap seal type/condition in accordance with TN-31, part 1.0. If the seals in use do not comply with the Schleicher standard, then the glider is to be VNE limited to 100 kts IAS and position 1 of the flap control made inoperable.

Both limits to be clearly cockpit placarded.

2. At or before the next Form 2 (AND SUBSEQUENT FORM 2'S)

If necessary renew the aileron gap seal in accordance with Schleicher TN-31. (Forming part of this AD), allowing any limitation placed under action (1) to be lifted.

3. Alternative gap seal

Should an alternative gap seal system to the Schleicher system be seen as desirable that seal system will need to have design approval through the GFA CTO/A.

Issued by: *M. Burns* Chief Technical Officer,
Airworthiness

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

18.1.88

Sheet 1 of 6

GFA AD 330	Issue 1
18.1.88	Sheet 2 of 6

4. Manual amendments

Schleicher have provided maintenance manual amendments. Replacement pages identified "TN 31 June 24 1987", are available from the GFA Secretariat.

ACCOMPLISHMENT:

Action (1) an owner/operator responsibility
 Action (2) becomes part of the Form 2 certification by an appropriately authorised GFA inspector.
 Action (3) owner/operator responsibility, to allow Form 2 certification by a GFA inspector.
 Action (4) an owner/operator responsibility

Actions (1) (2) (3) must be recorded by appropriate Log Book entries.

WEIGHT/BALANCE:

Nil affect

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 Communication.

NOTE: For parts and service -

Alexander Schleicher Australian distributor:-

Sailplane Services,
 P.O. Box 257,
 NARROMINE N.S.W. 2821

GFA AD 330	Issue 1	18.1.88	Sheet 3 of 6
------------	---------	---------	--------------

SHEET: 1 of 4	ASW 20 Technical Note No. 31	Alexander Schleicher Segelflugzeugbau 6416 Poppenhausen
<p><u>Subject:</u> Preventive measure against aileron flutter.</p> <p><u>Serial number applicability:</u> All ASW 20 variants and serial nos. 20001 thru 20860; 20950 and 20951.</p> <p><u>Compliance:</u> Immediately, prior to the next take-off.</p> <p><u>Reason:</u> Recently two ASW 20s had aileron flutter in flap position 1 at a speed of about above 200 to 210 km/h. The said ASW 20s were improperly equipped with an elastic plastic tape to seal the gap between wing and flaps/ ailerons on the under sides; they used strips of tape which were insufficiently curved, and above all the teflon strip which has to lie underneath for sealing the gaps, was missing. Owing to this, air exchange between wing upper side and under side is possible which causes - depending on the control surfaces' deflection - periodical separation of airflow and this unusual kind of aileron flutter. These latest findings also account for earlier flutter incidents which occurred mainly in countries with warm climate (see TN no.12). In those cases the gliders used insufficiently stiff plastic tape (partly even without fabric stiffening) which softened under high temperatures and therefore could crease periodically inwards and outwards thus causing varying airflow separation on the control surfaces under side and thereby leading to aileron vibrations. But also the factory-standard TESA fabric-tape (which is adequately plastic-treated) gets worn out after some time and then it has no more sufficient stiffness and may lead to the above described flutter incidents.</p> <p><u>Action:</u></p> <ol style="list-style-type: none"> 1. Prior to the next take-off it must be checked whether the control surface gap on the wing under side is equipped with a sealing, i.e. either <ol style="list-style-type: none"> 1.1 with the factory-standard, plastic-treated fabric-tape TESABAND 4651, white, 38 mm wide (see Fig.1); in that case the plastic coat on the fabric must not be damaged, discolored or even weather-worn; the tape must not tighten with full control surfaces deflections. or 1.2 with the pre-curved steel strip (0,07 mm thick) or the pre-curved plastic tape (MYLAR 0,25 mm thick) respectively; in that case check that both require absolutely a Teflon sealing tape underneath for the purpose of sealing the gap and reducing the friction (see Fig. 2). <p>If 1.1 or 1.2 are positive, the ASW 20 can be continued in operation without any restrictions.</p> 2. If 1.1 or 1.2 are negative, the ASW 20 must be operated temporarily no longer in flap position 1 and no longer above 200 km/h. For this purpose, a red radial line must be fixed to the A.S.I. at the 200 km/h mark and in addition a placard showing "Vmax = 200 km/h. Furthermore, the foremost hole in the flap lever gate (flap position 1) must be covered by a strong adhesive tape and a placard must be fixed in front of the flap lever stating "Flap position 1 suspended". 		

SHEET: 2 of 4	ASW 20 Technical Note No. 31	Alexander Schleicher, Segelflugzeugbau 6416 Poppenhausen
------------------	------------------------------------	--

This temporary action is permissible only till Aug. 1, 1987, at the very latest. By this date the relevant sealing must be renewed.

- 2.1 In case of the factory-standard fabric-tape TESA 4651, white, 38 mm wide, you have to regard the following in addition: if your glider is an ASW 20 or ASW 20 L you do not have to try to make a recess into the wing for the application of the TESA; just tape it onto the wing surface; according to the aerodynamics experts the relatively thick and wide fabric tape serves possibly also as a turbulator preventing laminar separation bubbles on the control surface under sides. But if your ASW 20 and ASW 20 L had already the fabric tape recessed into the wing contour, then you should apply a turbulator in addition (zig-zag or nap tape) which you have to fix directly in front of the fabric tape.

With the ASW 20 B, BL, C, CL pneumatic turbulator holes in the wing under side are factory-standard, together with the recess in the wing contour for the application of the fabric tape (or of the optional elastic lip sealing respectively); so when renewing the TESA tape on an ASW 20 B, BL, C, or CL you have to take care that the turbulator holes are not put out of operation. Anyhow, these turbulator holes must be checked for proper operation from time to time and cleaned if necessary.

- 2.2 In case of the elastic lip sealing: this has to be renewed as shown in Fig.2, following the Maintenance Instruction J, Issue III; alternatively, the elastic lip sealing can be new applied instead of the above TESA tape sealing.

3. The Maintenance Manual has to be amended in order to include notes with respect to the annual glider re-inspection covering the condition of the adhesive tape or the elastic lip sealing, including the blow turbulators. The following Maintenance Manual pages must be exchanged for pages with the entry "TN No.31 June 24, 1987" and the accomplishment of this action must be documented on the page "Amendments to the Manual" or "Index of Corrections" respectively.

ASW 20:	Pages 40 & 40 l.
ASW 20 L:	Pages 44 & 44 l.
ASW 20 B / BL / C / CL:	Pages 60, 70, & Maintenance Instruction J, Issue III.

Material & drawings:

For the sealing as per "Action Point 1.1":

TESABAND 4651, white, 38 mm wide.

For the sealing as per "Action Point 1.2":

Flaps:

9 m Teflon tape, self-adhesive, 30 mm wide.

2 x 4,5 m metal tape, 33 mm wide, pre-curved by 5 mm (see Fig.3) and Pattex Spezial glue; or

2 x 4,5 m MYLAR tape, 37.5 mm wide, pre-curved by min. 6 mm, coated with a glue film of 14 mm width (see Fig.4).

2 x 4,5 m Tesafilm no.104, 25 mm wide, white (to cover the front edge of the elastic lip).

SHEET:

3 of 4

ASW 20
Technical Note
No. 31Alexander Schleicher
Segelflugzeugbau
6416 PoppenhausenAilerons:

5,4 m Teflon tape, self-adhesive, 30 mm wide.

2 x 2,7 m metal tape, 33 mm wide, pre-curved by 8 mm (see Fig.3) and Pattex Spezial glue; or

2 x 2,7 m MYLAR tape, 37.5 mm wide, pre-curved by min. 9 mm, coated with a glue film of 14 mm width (see Fig.4).

2 x 2,7 m Tesafilm no.104, 25 mm wide, white (to cover the front edge of the elastic lip).

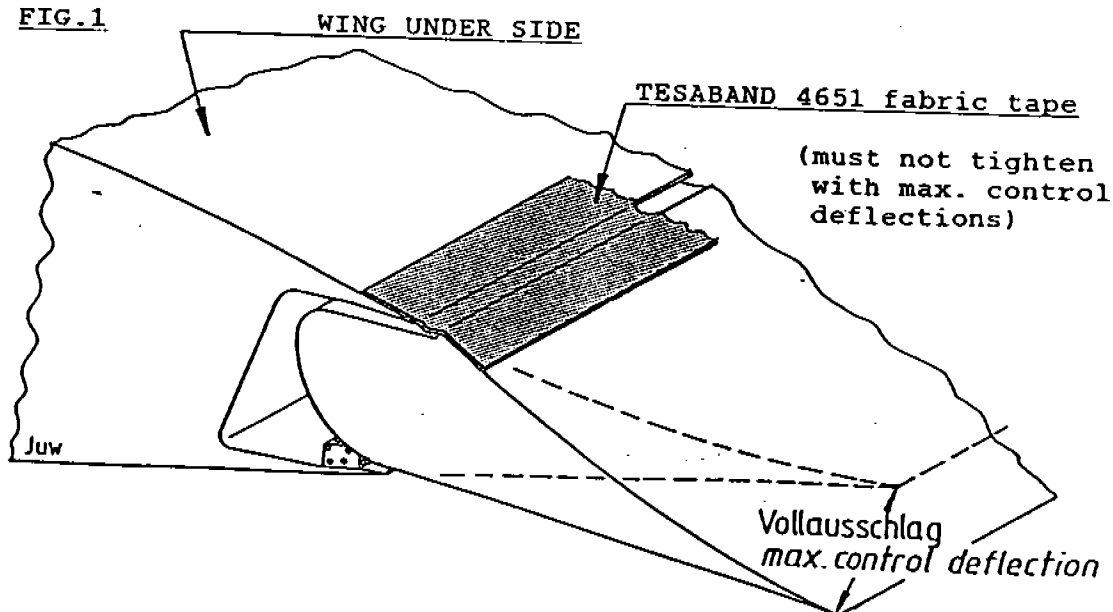
Manual pages as per "Action Point 3." and Maintenance Instruction J, Issue III dated April 24, 1987.Mass and C.G.:

A redetermination of the mass and C.G. data is not necessary.

Notes:

1. We recommend the fixing of an elastic lip sealing on the control surfaces gap, as both flight performance and flight characteristics are slightly improved by this.
2. The optional additional elastic lip sealing on the upper control surfaces gap does not require the sealing Teflon tape and so far no problems with this have been reported.
3. All actions under this TN can be accomplished by a competent person. The accomplishment of the "Action Point 3." must be certified by a licensed aviation inspector in the glider's inspection documents and in its logbook at the latest during the next annual re-inspection.
4. Maintenance Instruction J, Issue III, has been new revised for this TN and herewith becomes part of this TN.

FIG.1



SHEET:
4 of 4ASW 20
Technical Note
No. 31Alexander Schleicher -
Segelflugzeugbau
6416 Poppenhausen

Fig. 2

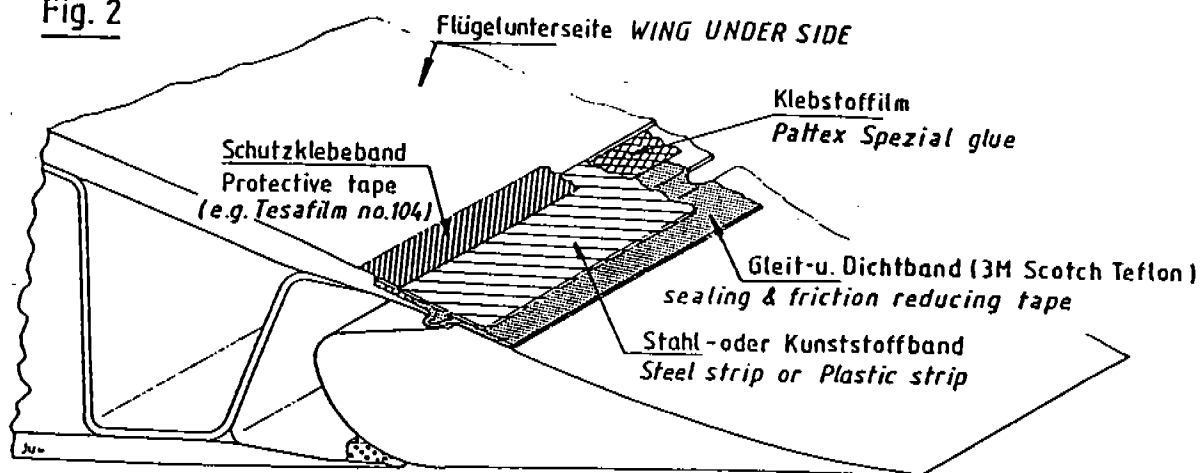


Fig. 3

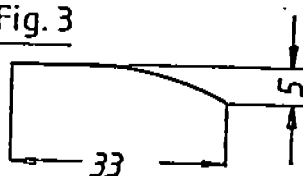


Fig. 4

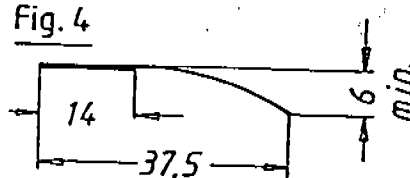


Fig. 5

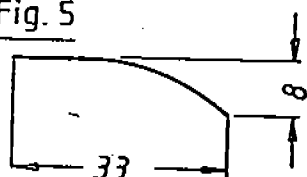
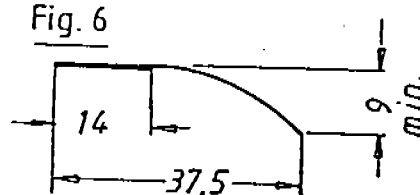


Fig. 6



Poppenhausen, June 24, 1987

ALEXANDER SCHLEICHER
GmbH & Co.

Gerhard Waibel

The German original of this Technical Note has been approved by the LBA under the date of July 13, 1987 (signature: Volosciuc). The translation into English has been done by best knowledge and judgement; in any case of doubt the German original is controlling.