

Kind: Aerodynamic improvement.

Subject: Covering the control surfaces gap on the wing under and upper sides by an elastic lip seal.

Types affected: All ASW 20 model variants, as of serial no. 20001.

Compliance: None; optional.

Reason: Performance test measurements with an ASW 20 C have shown that a continuous transition from wing to camber-changing flap /aileron can save some considerable drag in high speed flight. It is important in this connexion that the sealing underneath this transition lip must be 100 % airtight.

The problem of producing a continuous transition is solved by fixing an elastic lip seal to the wing, the curvature of which bridges over the gap between wing and control surfaces and which rests with its pre-tightened fit against the control surfaces.

Also the control surfaces gap on the wing under side must first be sealed by applying Teflon tape which at the same time serves to reduce the friction of the elastic lip on the flaps or ailerons.

The additional friction involved in the aileron control circuit is low and tolerable. Also the additional force involved for the flap actuation is low.

Action: 1. Covering the control surfaces gap on the wing under side:

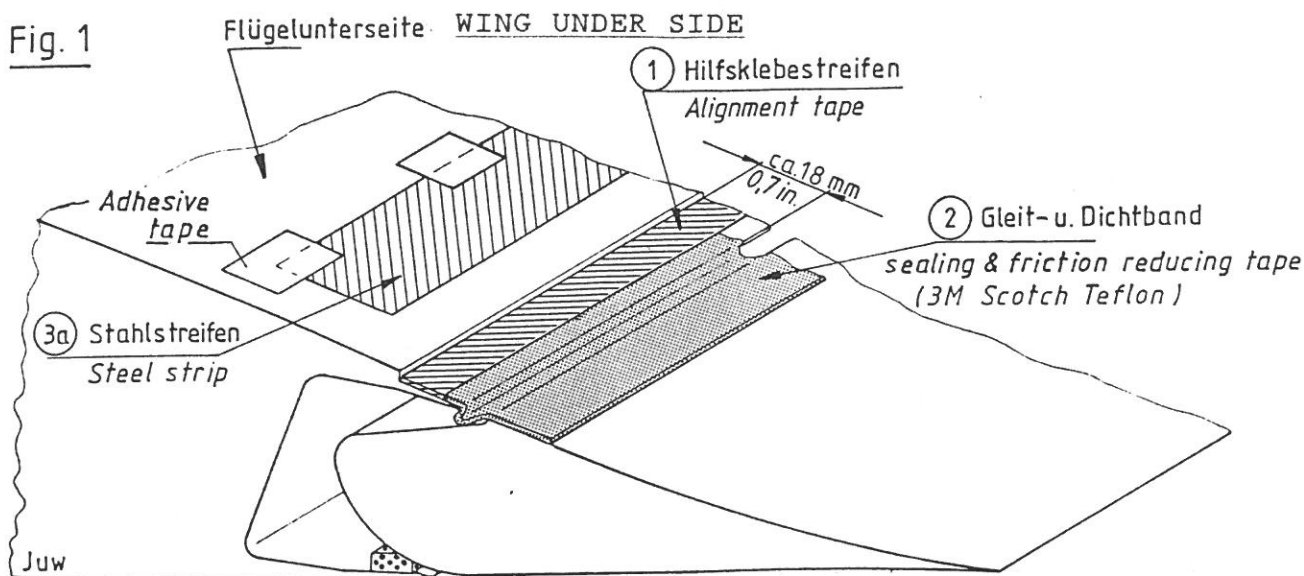
1.1 The adhesive fabric tape (TESABAND) is removed from the wing under side control surfaces. Glue residues - also in the recess - must be completely removed by using synthetic resin thinner. To begin with and as an auxiliary measure, a 12 mm wide alignment tape ① (e.g. Tesafilm 104, 12 mm) is applied flush with the front edge of the recess (see Fig.1).

Note:

All glue areas must be completely clean, dry, and free from dust and grease !

The complete cleanness is best checked by applying a Tesafilm strip to the cleaned area, removing it again, and checking that no dust particles are sticking to the Tesafilm.

Fig. 1



1.2 Now the sealing & friction reducing tape ② (3M SCOTCH Teflon tape, 30 mm wide) is applied - again flush - along the rear edge of the alignment tape ① . Please keep the drawn-off backing film of this sealing tape for later use with the steel strips.

1.3 When applying the above Teflon tape push the /flaps ailerons to the maximum negative setting to ensure that the tapes will not be under tension afterwards with normal negative control surface deflections and do not hinder such negative deflections !
The sealing & friction-reducing tape ② must be strongly rubbed into contact.

1.4 If the steel tape ③a is used, it first must be thoroughly de-greased using acetone or Tri etc. Then position the strip - inverted - on the wing in front of the recess where it must be held in place by several short tape strips. Using scissors the steel tape strip is easily cut into the five pieces as shown in Fig.2a.

Fig. 2a

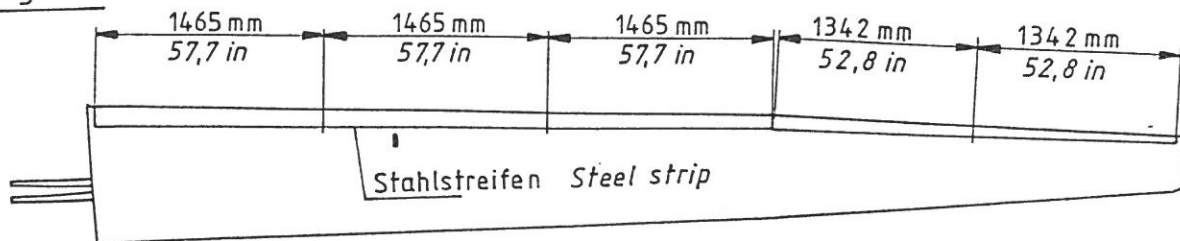
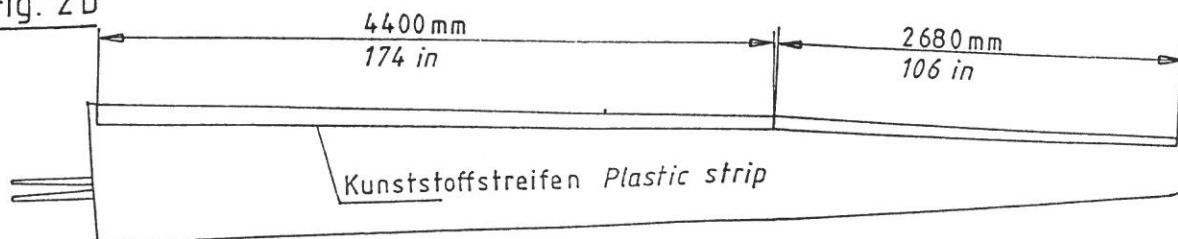


Fig. 2b



Alle Rechte vorbehalten. Nachdruck, Vervielfältigung und Verbreitung, auch auszugsweise, ist ohne schriftliche Genehmigung des Herstellers. Die in diesem Dokument enthaltenen Zeichnungen sind Eigentum der Alexander Schleicher GmbH & Co. und dürfen ohne schriftliche Genehmigung nicht an Dritte weitergegeben werden. Die in diesem Dokument enthaltenen Zeichnungen sind Eigentum der Alexander Schleicher GmbH & Co. und dürfen ohne schriftliche Genehmigung nicht an Dritte weitergegeben werden.

Now the alignment tape ① which was applied at first as an auxiliary measure, is removed again; this is done step by step for each steel strip. In its place the Pattex Spezial glue is brushed on this area and also brushed on the entire width of the respective steel strip which is positioned in front of this area. The Pattex has to dry on for about 15 minutes.

For the following application of the steel strips it is best to put first the drawn-off backing film of the sealing & friction-reducing Teflon tape, which we kept for this purpose, onto the wing-side Pattex strip, otherwise it is impossible to align each steel strip with the necessary exactitude. It is an advantage to have the use of two pairs of hand for the glueing on of the steel strips; one person starting to remove the backing film at one end while the other person holds taut the steel strip at the other end to prevent it from rolling up. Then bit by bit the backing film is removed, the steel strip aligned and pressed into contact.

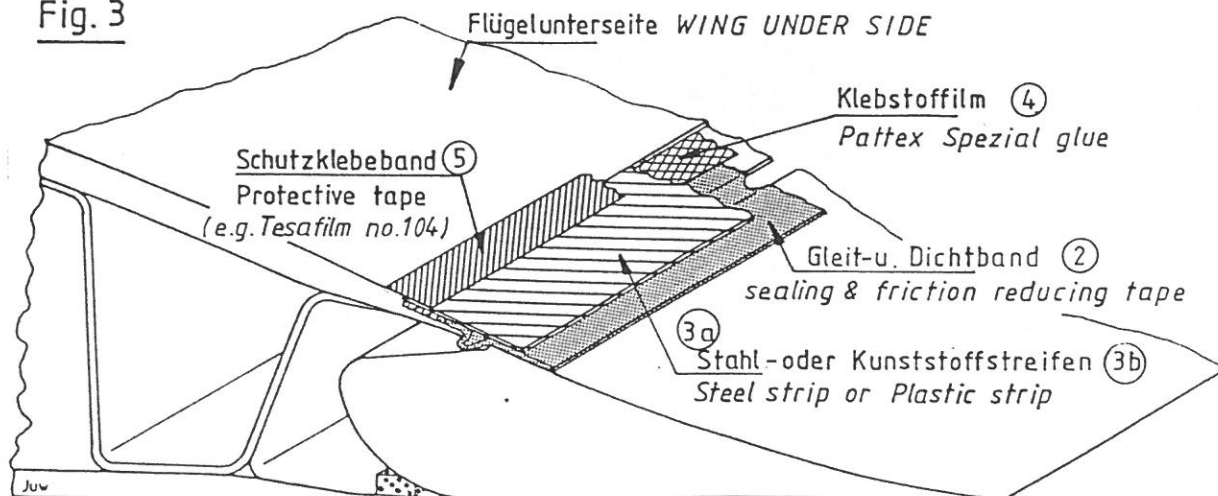
1.5 If the application of the self-adhesive plastic tape ③b (MYLAR) is chosen, the auxiliary alignment tape ① can be removed at once entirely. Then the backing film is removed off the plastic strip and the latter then fixed - flush - onto the recess in the wing, along the whole span length (see Fig.3).

The steel strip or the plastic strip respectively being applied, a soft wood block (e.g. balsa) or a hard rubber roller is used and the strip(s) - in the glue areas - pressed strongly into contact.

1.6 Then the butt joints of the five steel strips and the ends of the plastic strip respectively are also covered with the sealing and friction-reducing Scotch Teflon tape ② .

1.7 At last the wing control surfaces are moved into their maximum negative setting and are kept in this position for 24 hours; during this period the glue or self-adhesive film respectively will cure and reach its ultimate adhesion force.

Fig. 3



Zwischenhandlungen, verpflichten zu Schadenersatz Alle Rechte für den Fall der Patenterteilung, oder Gebrauchsmuster-Eintragung vorbehalten

Weitergabe, sowie Vervielfältigung dieser Unterlage, Verwertung und Mitteilung ihres Inhalts nicht gestattet, soweit nicht ausdrücklich zugestanden

1.8 At last a protective tape (5) is still applied over the butt joint of plastic/steel lip and wing; the tape to be used for this purpose should be as thin as possible and moisture-resistant; e.g. Tesafilm no.104, white, 25 mm wide is suitable (see Fig.3). This tape is applied for safety reasons and prevents a peeling-off of the lip seal from the front that could possibly lead to dangerous flight characteristics.

2. Covering the control surfaces gap on the wing upper side:

2.1 To enable the application of an elastic lip seal to the wing upper side, at first a recess (as shown in Fig.4) must be milled in by carefully excising the paint coat up to the outer FRP-layer ($\approx 0,5$ mm depth).

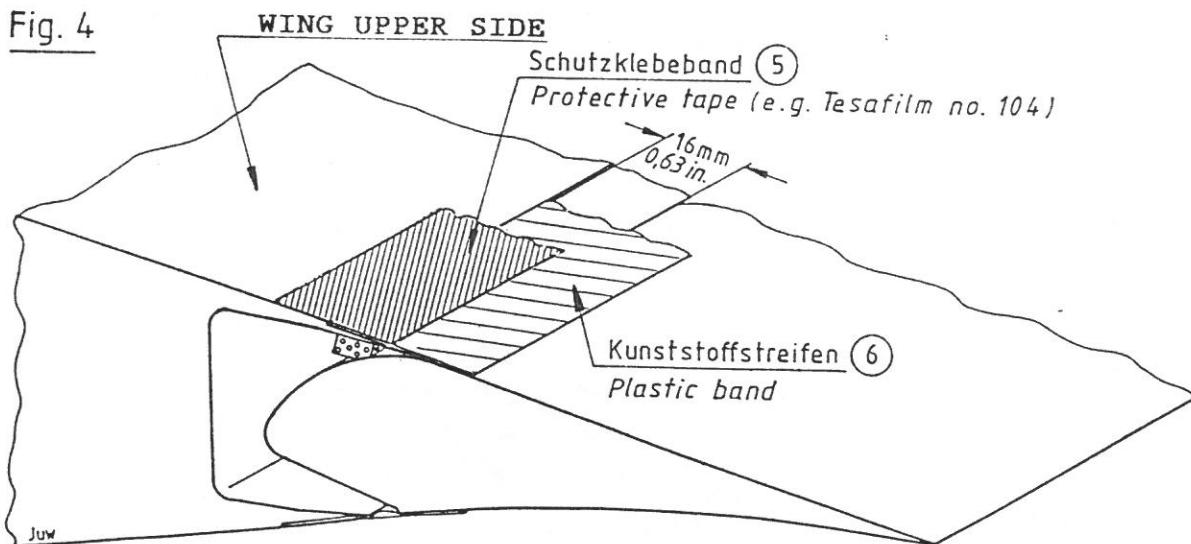
2.2 The recess area must be carefully cleaned (see note under point 1.1), then the backing film is removed off the self-adhesive MYLAR plastic strip (6) and the strip with its self-adhesive film then glued flush - onto the recess in the wing, along the whole flap / aileron span length, (see Fig.4).

Then a soft wood block (e.g. balsa) or a hard rubber roller is used to press the strip strongly into contact in the glue areas.

2.3 The butt joints and the ends of the plastic strip (6) are covered with the sealing and friction-reducing Scotch Teflon tape (2).

2.4 Finally the protective tape (5) (Tesafilm no.104, white, 25 mm wide) is applied over the butt joint of plastic lip and wing; This tape is applied for safety reasons and prevents a peeling-off of the lip seal from the front that could possibly lead to dangerous flight characteristics.

Fig. 4



Alle Rechte vorbehalten. Nachdruck, Vervielfältigung und Verbreitung, auch auszugsweise, ist ohne schriftliche Genehmigung des Verlegers. Satz: Alle Rechte vorbehalten. Nachdruck, Vervielfältigung oder Gebrauchsmuster-Entwurf vorbehalten.

Notes:

1. It is strongly recommended to check the elastic lip at the flaps and ailerons for 100 % airtight fit.
2. Also check the elastic lip at the wing for safe and tight bonding.
3. The material required for this optional mod can be ordered from SCHLEICHERS or from the SCHLEICHER-representative in your country.

Material:

For Wing		
under side	upper side	
15 m	-	Tesafilm no.104, 12 mm
15 m	15 m	Tesafilm no.104, 25 mm
15 m	-	3M Scotch Teflon tape, 30 mm
2 tubes	-	Pattex Spezial glue (for steel tape only)
9 m	-	Steel tape, 33 mm, pre-curved by 5 mm
5,4 m	-	Steel tape, 33 mm, pre-curved by 8 mm
9 m	-	Mylar tape, 37,5 mm, pre-curved by 6 mm
5,4 m	-	Mylar tape, 37,5 mm, pre-curved by 9 mm
-	15 m	Mylar tape, 21,5 mm, pre-curved by 4 mm

Mass and C.G.:

It is not necessary to redetermine the mass and C.G. data.

Poppenhausen, April 24, 1987

ALEXANDER SCHLEICHER
GmbH & Co.

L.W. Juntow.

The translation into English has been done by best knowledge and judgement; in any case of doubt the German original is controlling.

Zwischenhandlungen verpflichten zu Schadenersatz. Alle Rechte für den Fall der Patenterteilung oder Gebrauchsmuster-Eintragung vorbehalten.

Weitergabe sowie Vervielfältigung dieses Unterlage, Verwertung und Mitteilung ihres Inhalts nicht gestattet, soweit nicht ausdrücklich zugelassen.

