ASW 20
Maintenance Instruction i
Issue 1

Alexander Schleicher
GmbH & Co.
Segelflugzeugbau
D - 36163 Poppenhausen

Subject: Maintenance instruction for aileron adjustments

Serial number applicability: All ASW 20 and ASW 20 L

Compliance: None, only if the glider displays a tendency to turn in a particular direction from straight and level flight.

Reason: During straight and level flight with the controls free, the pilot observes that the glider turns to a direction, or constant control pressure is necessary to keep it in straight flight.

Action: It is recommended to conduct the following measures in the sequence as described below:

1.) Select flap setting 1 (-11º) and check whether the control deflections as per flight and operation manual are achieved in full.

At the wing root the flaps must deflect upwards by 49mm. The ailerons of the ASW 20L (15 m version) must allow an upward deflection of 32 mm when measured at the wing tip. Both deflections must be achieved without any gap sealing tape being stretched or becoming tight.

Please note that the sealing tape is cotton based and tends to shrink when exposed to high humidity or water.

When sealing tape is replaced it is very important to ensure that the tape is not getting tight at full control deflections and at the measurements mentioned above.

Aging sealing tape has a tendency to creep out of the gap between wing and control surface. If this happens it results in much increased drag and can explain the aircraft's tendency to turn in a particular direction after straight and level flight. This is particularly noticeable if the tape has "popped out" on one wing only.

Please refer to maintenance instruction D (point 2), where (in a different context) further details on proper gap sealing and its effect on the ASW 20's aerodynamics are explained.

2.) Conduct a test flight in smooth air while trying to avoid any sideslipping.

a) Check whether the airbrakes are sealing properly and remain flush with the upper surface of the wing. If not, please adjust airbrakes as per maintenance instruction C.

b) Check whether the ailerons have identical deflections on both wings at a speed of approximately 160 kph (85 kt) and at flap settings 2 and 1.

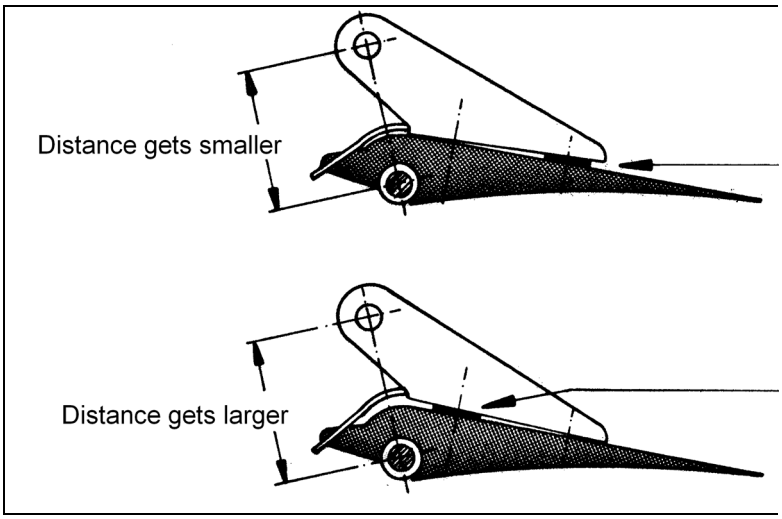
3.) Uneven control deflections are indicative of twisted control surfaces or an incorrect alignment of the two wings.

The manufacturer can possibly correct twisted ailerons or flaps with a careful heat treatment. A misalignment of the wings can be corrected by fitting special drag pins. On request the manufacturer can supply drag pins which are either 0.5 or 1.0 mm out of centre. For further details please refer to sketches 1 and 2 below.

The drag pin replacement is described on page 39 of the ASW 20 flight and operation manual (or page 43 of the ASW 20 L flight and operation manual).

4.) If the control deflections are even on both wings (or as good as even) a problem with the control linkage is the likely reason. If even air loads (of the right and left control surface) are transmitted to the control column via uneven linkage arm settings, a constant pressure at the control column is required to compensate for it. In cases like these, it is recommended to conduct the following ground checks:

a) Move the control column in flap setting 3 (0º) until movement is blocked by the control stops. In case ailerons or flaps deflect significantly further on one wing, different linkage arms are the likely reason. The problem can be solved by placing washers as per sketch below.



b) If the control deflections (in flap setting 3) are almost identical on both wings but flight tests (at the same speed) confirm a stronger tendency to turn in a particular direction in flap setting 1 compared to flap setting 2, the likely reason is a problem with the control linkage inside the wing. A correction as per sketch 3 is required.

It is imperative to ensure that enough thread remains in the pushrod ends. Checks using the feeler holes are always required.

Notes:

1.) The checks can be conducted by the owner (or operator) of the aircraft, but when control linkages are worked on, the work is to be checked by a suitably qualified person and entered into the aircraft's logbook.

2.) As it is mandatory to check all control deflections after adjustments as per page 42 of the ASW 20 flight and operation manual (or as per page 46 of the ASW 20 L flight and operation manual), it is recommended to conduct the work in connection with an annual inspection.

3.) To undo the counter nuts at the pushrod ends the thread is to be wrapped with masking tape and held in position by a pair of pliers. Any torsion loads on the pushrod must be avoided as it can lead to damage or even dislocation of the bearing at the opposite end of the pushrod.

Enclosures:
Sketch 1 and 2 (Page 4)
Sketch 3 (Page 5)

Poppenhausen, 09.09.1982

Alexander Schleicher
GmbH & Co.

i.A.

(Gerhard Waibel)

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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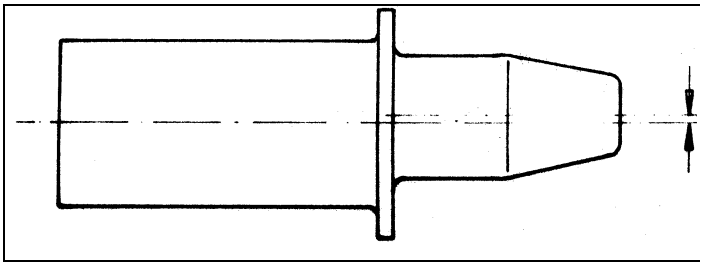
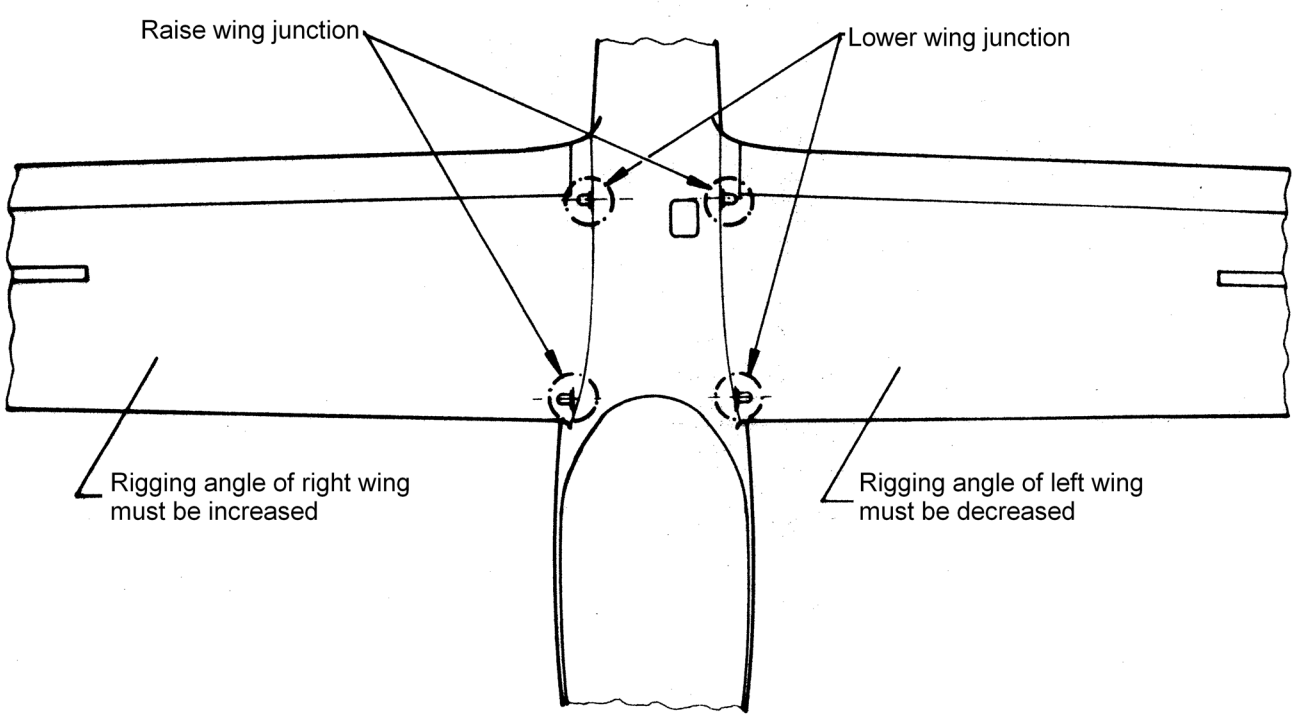
Sketch 1: eccentric drag pin



There are bolts available with 0,5mm and 1,0mm eccentricity

Sketch 2: Glider turns right with controls free, i.e. in straight and level flight, the stick must be pushed to the left.



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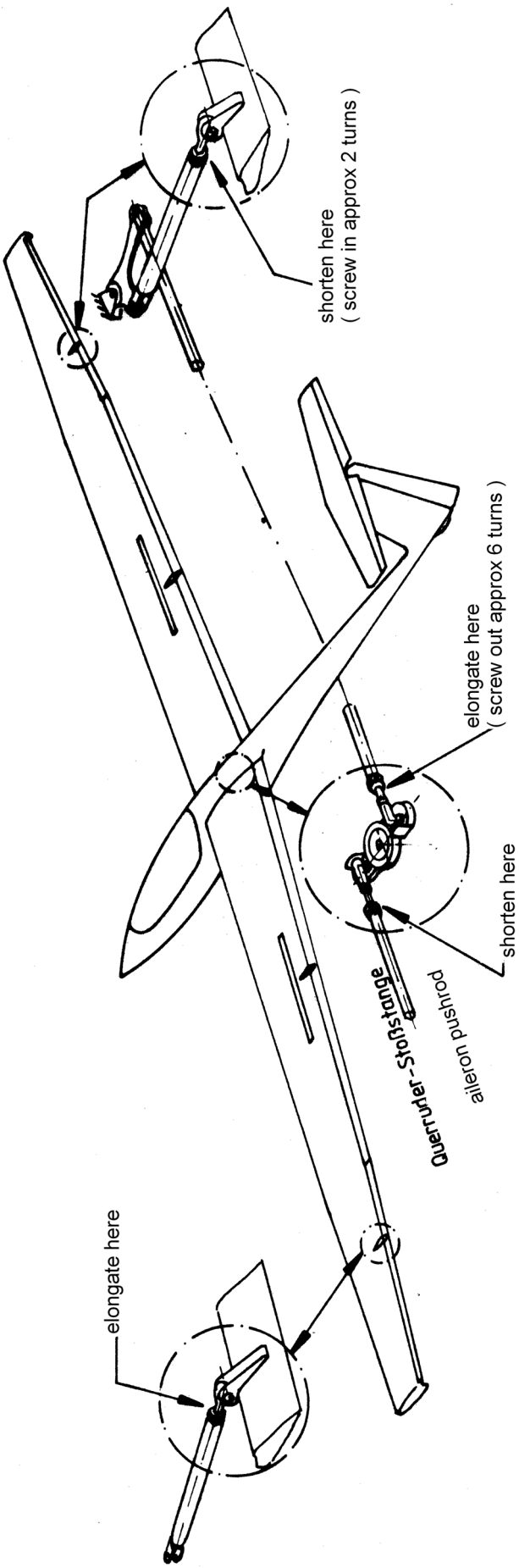
Sketch 3: Modification of the aileron differential according to action 4.b.



Glider turns rather to the right in flap setting 1, i.e. for straight and level flight the stick must be pushed to the left.
In this case the sketched work procedure is applicable.