

ASK 21 -Wartungshandbuch

Maintenance Manual

Bremsschlüssigkeit

Brake fluid

Brems-System

Brake system

Auffüllschlauch

Fill up tube

Vorratsbehälter

Supply tank

Hauptzylinder

Master cylinder

Hochdruckschlauch

High pressure tube

Brems- zylinder

Brake
cylinder

Nippel zum Auffüllen

Fill up nipple

Screws for
brake pads

ASK 21 Maintenance Manual

Inspection and Replacement of Brake Linings

Minimum thickness of brake linings and brake disc:

The linings must be renewed at the minimum residual thickness of 2.54 mm = 0.10 in !

The brake disc must be renewed at the minimum residual thickness of 4.242 mm = 0.167 in !

Reference: WHEEL and BRAKE ASSEMBLIES CATALOG, Component Maintenance Manual, Appendix A, Fits and Clearances, A-1. Brake Lining Wear Limits, A-2. Brake Disc Minimum Thickness, from Messrs. Parker Hannifin Corporation, Avon, OH. USA.

1. Remove wheel fairing.
2. Loosen the two 1/4" screws which are safetied by wire. Do not unscrew the brake line hose!
3. Take out the brake shoes with linings. The linings must be renewed before they have been worn down as far as the rivets as otherwise the brake disc will be damaged and the braking effectiveness unacceptably reduced. To rivet the new linings in place it is best to use a riveting tool designed for the purpose. Alternatively, however, a hammer, centerpunch, and round punch of not less than ϕ 6 mm at the tip may be used.
4. Now replace brake shoes and tighten the two 1/4" screws and secure them with locking wire.
5. Remount wheel fairing.
Brake linings and rivets to suit can be obtained from Messrs. Schleicher. Orders must specify brake linings suitable for the Cleveland 30-9 brake assy.

Tail Skid

Watch the wear of the tail skid metal plate and either reinforce it in time by welding on sheet metal, or replace it by a new one. Remove the tail skid plate for the welding job.

The rubber tail skid is designed so that it will shear away from the fuselage with strong lateral forces. It may be glued on again or be repaired using contact glue (Pattex). You must apply plasticised fabric adhesive tape over the gap (glue joint) between skid and fuselage in order to prevent long grass from being caught.

Rev.No./Date. Sig.

TN24 /04.05.92 Juw

Author Date

Kaiser Apr. 80

Page No.

21

ASK 21 Maintenance Manual

II.4 Oxygen Equipment

Suitable bottle fixing brackets for two 4 liter oxygen bottles of dia. 100 mm are available as an optional accessory from Messrs.SCHLEICHER.

When fitting the oxygen bottle(s), ensure that it is properly installed and securely anchored.

NOTE: Fitting of oxygen equipment causes only a minimal change in the empty-mass C.G. position ! However, it is necessary to re-weigh the glider and redetermine the empty mass C.G.

When flying at greater heights while using the oxygen system, it should be borne in mind that any particular system may only be suitable for a limited altitude range. The makers' instructions should be complied with.

Rev.No./Date. Sig.

TN24 /04.05.92 Juw

Author Date

Kaiser Apr. 80

Page No.

25

II.5 PRESSURE PORTS AND CONNECTIONS FOR THE INSTRUMENTS

(see drawing on page 27)

- 1 Airspeed indicator : total pressure.
- 2 Altimeter : static pressure or without any connection.
- 3 Variometer
- 4 Total energy probe
- 5 Dynamic pressure (pitot tube)
- 6 Static pressure

ASK 21 Maintenance Manual

IV. Equipment With Limited Operation Hours

Tow Release Couplings

The Tost tow release couplings, factory fitted, i.e. the C.G. Safety Tow Release "Europa G 72", or "G 73", or "G 88" respectively, and the front Nose Tow Release "E 72", or "E 75", or "E 85" respectively, have a limited service life (TBO) and must be returned to TOST for re-inspection in regular intervals. The service life is stated in the appertaining Manufacturer's Authorized Release Certificate. The instructions given in the TOST "Operating Manual" or in the "Operating and Maintenance Instructions" for the tow release couplings must be observed!

Instruments

The flight monitoring instruments are not normally subject to service life limitations. As a general rule, the makers' instructions should be complied with.

Oxygen Equipment

For oxygen systems fitted, the relevant section of the appertaining Manufacturer's Inspection Release Certificate states the overhaul time limit. Over and beyond this, the oxygen bottles must be re-inspected by a technical inspection institute every five years in accordance with pressure vessel regulations.

Special Servicing Procedures

At regular intervals of 6 years the brake line hose of the hydraulic wheel brake must be replaced. Should this hose be found to be in good condition, it need not be replaced, on condition that its condition is checked at least every 100 flying hours.

Rev.No./Date. Sig.

TN24 /04.05.92 Juw

Author Date

Kaiser Apr. 80

Page No.

31

V WEIGHTS AND C.G. POSITIONS

V.1 On the WEIGHT AND BALANCE SHEET (see page 33) the min and max c.g. limits with regard to the glider empty weight are noted.

Min pilot weight for front seat = 70kg.

Max pilot weight for both seats = 110kg each.

Pilot weight means pilot + parachute. If the empty weight c.g. positions are within the permissible range, it is assured that also the in-flight c.g. is within the permissible range provided that the load limitations (pilot weights) have been observed.

The max all up weight of 600kg must not be exceeded. In the case that the empty weight comes to more than 380kg, the max permissible pilot weights have to be reduced accordingly.

V.2 WEIGHTS OF NON-LIFT PRODUCING MEMBERS

The weight of the non-lift producing members is composed of pilots' weights, fuselage, tail units, and equipment, - without the weight of the wings. The weight of 410kg for the non-lift producing members must not be exceeded.

After repairs, repaintings or the installation of additional equipment, at the latest however every 4 years the empty weight and the c.g. positions must be reestablished.

Checking and securing the L'HOTELLIER quick-release connectors in the control linkages

1. **Securing**

Past experience showed that the quick-release connectors in the airbrake, aileron and particularly in the elevator control linkages were incorrectly assembled or that their assembly was even completely forgotten (as of serial no. 21206 the aircraft was then supplied with an automatic elevator connection). A sticker (Fig.1) fixed to the fin and the access hole cover, serve to remind the pilot of the correct assembly. All quick-release connectors must be secured in addition by means of a spring clip (Fig.2). With the older type of connectors the check hole must be drilled to approx. 1,2 mm ϕ for this purpose.

Fig. 1

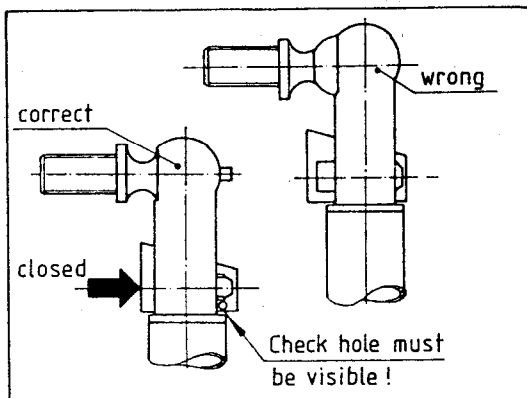
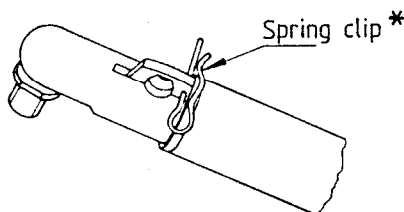


Fig. 2

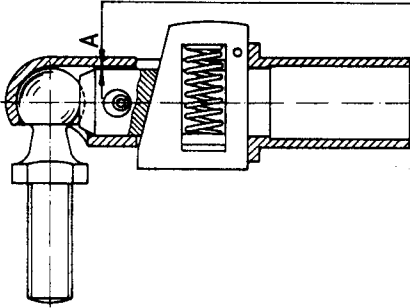


* Spring clip no.50030771 can be ordered from Alexander Schleicher or from the company A.Würth, P.O.Box 1261, D-7118 Künzelsau. (This part is also identical with the FORD brake securing spring clip).

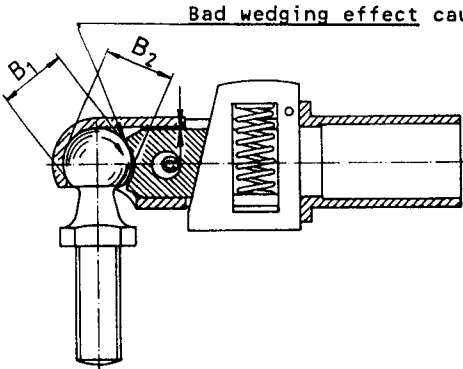
ASK 21 Maintenance Manual

2. Inspection

As experience accumulated in Australia has shown, the condition of the L'HOTELLIER quick-release connectors must be checked on every annual inspection of the aircraft, especially when it has been operated frequently and from sandy airfields.



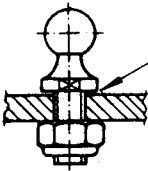
Clearance A must not exceed 0,15 mm (0,006 in); check this by using a wire of the above diameter!



Bad wedging effect causing wear of the ball.

The greatest and smallest diameters B to be found must not differ by more than 0,1 mm (0,004 in).

The tight seat of the ball ends inside the fittings must be checked as loose ball ends are likely to break under bending loads in the thread area.



Gap generated by an unscrewed and incorrectly refitted ball end or owing to overloading /wear out of the lever part.

NOTE: The Technical Note "Technical Data No. IM.10.01A, Issue B 01/89", by the manufacturer HOTELLIER must be observed!

Rev.No./Date. Sig.

Author Date

Page No.

TN24 /04.05.92 Juw

Kaiser Apr. 80

43c

ASK 21 Maintenance Manual

Inspecting the taping of the control surface gaps

For aerodynamic reasons the control surface gaps between wing and aileron and between stabilizer and elevator respectively are taped where the control surface hinges are located.

Should this adhesive tape come off or be damaged, this may lead to flutter! Therefore the sealing adhesive tape must be inspected in regular intervals and where necessary replaced.

If the adhesive tape needs to be removed for maintenance, or repair purposes, or because of aging please observe the following: as a replacement you must use only the Tesa tape no.46451, white, 25 or 38 mm wide, made by Beiersdorf AG, Hamburg.

Where other types of adhesive tape have been used, flutter cases have been repeatedly reported!

Where a plastic fairing tape (elastic lipseal) has been fixed at the control surface gaps, you have to observe MAINTENANCE INSTRUCTION C.

Rev.No./Date. Sig.

TN24 /04.05.92 Juw

Author Date

Kaiser Apr. 80

Page No.

43d

ASK 21 Maintenance Manual

VIII.1 Inspection Program to extend Service Life

Introduction

Fatigue tests on GRP/CFRP wings and GRP/CFRP wing spars have shown that a service life expectancy of at least 12000 hours may be achieved for these components. However, as this test program did not examine an entire aircraft made of CRP and GRP, this service life of 12000 hours can be achieved only if the long-term airworthiness of each glider is demonstrated in a special multi-stage inspection program (over and above the mandatory annual C of A inspection).

Time Limits

1st Stage:

When the sailplane has reached a service life of 3000 and 6000 hours respectively, tests must be carried out in accordance with the Inspection Program for the ASK 21, Issue 2 dated 28.04.92, laid down by Messrs.Schleicher.

If the results of these tests are positive, or if any defects discovered have been correctly repaired, the service life of the sailplane will be increased after the 6000 hrs-inspection by 1000 hrs, i.e. to a total of 7000 hours.

2nd Stage:

When a service life of 7000 flying hours has been reached the above Inspection Program must be repeated. If the results are again positive, or any defects found have been correctly repaired, the service life may be increased to a total of 8000 flying hours. This is repeated for the next 1000 hours respectively until the sailplane has reached a total of 12000 hours, -

Rev.No./Date. Sig.

TN24 /04.05.92 Juw

Author Date

Kaiser Apr. 80

Page No.

43e

3rd Stage:

Before reaching a service life of 12000 flight hours an inspection in accordance with TN no.29 must be accomplished. Depending on the results of this inspection, as well as on the history of the aircraft and the evidence of the percentage of aerobatics being below 12.5 % as compared to the total flight time, Messrs. Schleicher will decide on a release to service for up to 15000 hours.

The Inspection Program must then again be repeated and on the condition that the results are again positive, or any defects found have been correctly repaired, the aircraft may be approved for increase of service life up to 18000 hours.

It will be decided at a later date whether an extension of service life beyond 18000 hours may become possible. A research program which is intended to clear the preconditions of this aim, has already been started with the BMVBW (Federal Ministry of Transport).

Inspection Program

Please contact SCHLEICHER in order to obtain the Inspection Program for the ASK 21, Issue 2 dated 28.04.92, or any later issue effective.

The inspections must be carried out only by the manufacturer, or by an appropriately licensed aircraft repairer.

The results of the inspections must be entered into the Inspection Program which is at the same time the report of findings, where each item must be annotated with a comprehensive comment, as laid down.

If the inspections were carried out by a licensed aircraft repairer, a copy of the filled in Inspection Program (report of findings) which must be signed by the inspector, must be returned to SCHLEICHER for the purpose of evaluation.

On receipt and examination of such Inspection Program Report SCHLEICHER will issue an "Acknowledgement of Receipt" and send this back to the operator of the sailplane. Only on receipt of this "Acknowledgement" the inspector may certify the extension of the service life as laid down in the Inspection Program, into the logbook and the relevant sailplane's inspections papers.

The need for annual Certificate of Airworthiness inspections and overhauls (for German registered gliders § 27 (1) LuftGerPO applies*) is not affected by this rule.

*) LuftGerPO = Aeronautical Products Examination Order

ASK 21 Maintenance Manual

XIV.2 Maintenance Instructions

The following Maintenance Instructions are established from time to time as required, in accordance with experience accumulated in operating the ASK 21. The Maintenance Manual is to be supplemented in case of new issues of Maintenance Instructions.

The general "Maintenance Instruction ALL FRP GLIDER MODELS dated June 19, 1986" describes the removing of play between the sockets (= bushings) and bolts (= pins) of the wing-to-fuselage transition.

The general Maintenance Instruction "PAINT CRACKS" dated June 26, 1989, describes how to inspect, preserve, and repair the paint surface.

The Maintenance Instruction A for the ASK 21 (dated March 23, 1987) describes how to readjust the airbrakes.

The Maintenance Instruction B for the ASK 21 (dated July 4, 1990) describes how to install oversize drag pins (rear).

The Maintenance Instruction C for the ASK 21 (dated May 7, 1992) describes how to fix for the first time or how to replace the plastic fairing tape (elastic lipseal) at the control surface gaps.

Rev.No./Date. Sig.

TN24 /04.05.92 Juw

Author Date

Kaiser Apr. 80

Page No.

58

