

BGA TECHNICAL COMMITTEE

TNS 7/8/85

PART 1 Airworthiness "Aggro" (Please add to the 1985 Green Pages)

- 1.1 MU 13 E "Bergfalke" Series Tech Note 104-18 (herewith) requires inspection of ELEVATOR and AIRBRAKE connection "bolts".
- 1.2 T53B/YS53. TI 100/T53 dated October 1981, and made MANDATORY by CAA, is re-issued herewith and requires annual inspection for fatigue cracks in the CENTRE SECTION.
- 1.3 DG 300 Auto Connect ELEVATOR drive. It is possible to displace the vertical drive-rod sideways, and mismatch the final drive connection. RAFGSA have introduced GRP alignment guides to eliminate this problem.
- 1.4 T65 "VEGA" Inoperable Canopy Jettison. The attached BGA Notice was mailed to all owners 27/6/85.
- 1.5 TOST Hooks - Excessive Pilot Pull-off Loads. HQ Air Cadets have identified the failure to release on demand of Grob TWIN "ACCRO's" as unsatisfactory finish of the hook profile. The rings (OTFUR or TOST) "dig in", and escalate the operating release load, beyond the 20 daN permitted by JAR 22.143 (b). Could apply to all Tost installations.
- 1.6 ASW 20/22 TRIM SPRING (BGA TNS 5/685 item 1.6). LBA AD/85/90 (T/Note 2) applies only to ASW 22, and not to ASW 20 - Apologies for error, but no-one has complained!
- 1.7 ASW 20 and ASW 20L (Serial No's 20001 until 20611). LBA AD-84-43 extends the approved SERVICE LIFE from 3,000 to 6,000 hours, subject to inspection in accordance with Tech Note 17. (Copies from Agents.)
- 1.8 ASW 19/20 ELEVATOR LOCK PIN. The attached sketch by Chris Batty introduces additional safety device. ASW Tech Note 17 also illustrates this modification, which will only be effective if you remember to couple-up in the first place!
- 1.9 ASW 19/20 Rudder Cable END BEND at Rudder. Attached sketch by Chris batty illustrates potential fatigue failure.
- 1.10 LIBELLE (Standard) - Elevator Vibration. Backlash in the elevator drive must be minimal if "flutter" (which might cause damage) is to be prevented. (Reported by Kent GC)
- 1.11 GRP Fuel Tank Contamination (DIMONA). Shedding of the gelcoat has blocked the fuel system. Tank replaced by aluminium unit. All GRP fuel tanks should be inspected periodically.
- 1.12 Blank Elevator Drive Cables. Page 38 of the Manual illustrates incorrect routing of the cables (in parallel), whereas to achieve the correct operating sense the cables must cross over (sketch attached). Reported by Jeremy Bryson, Ulster GC.

/ Contd ....

- 1.13 L!Hotellier Quick-Close Connectors. Periodic Inspection. The attached extracts from ASW 20L ( T Note 17) applies to the above connectors, regardless of application.
- 1.14 Propeller Blade Failures. Extracts from GASIL 6/85 illustrates typical failures on Fuji, Rallye and Cessna metal propellers. Gliding Clubs operating from loose stone surfaces are very vulnerable. CAA Notice No 55 refers. DAILY inspections for blade damage should be made.
- 1.15 ASTIR CS Speed Brake Lever Replacement. TM 306-26 should be implemented asap and not later than next C of A renewal. Details from Chiltern Sailplanes (0494 445854).
- 1.16 T51 Series "DARTS" Damage has been discovered in Centre Fuselage Frames and Diagonal Structures, presumably resulting from previous (but unreported) heavy landings or operation from very rough ground. In addition to the Special Inspection for damage to longerons at Frame 6 (TNS 3/85), all T.51 series gliders should be checked for damage that may not be apparent from external inspection. (Reported by D Almey.)
- 1.17. T.65 VEGA Delamination of elevator drive support at base of fin - (sketch attached - reported by J. Clarke, M.G.C.)

PART 2 GENERAL MATTERS

- 2.1 Disabled Person Airbrake Lock (Ka 2). The attached sketch from Tim MacFadyen, Cotswold GC, could apply to other types.
- 2.2 TUGS - Full Flow Oil Filters will prevent debris contaminating bearings and causing catastrophic damage. Lycoming Service Instruction 1319B refers. Where space is limited, full-flow oil filters may be installed in pipelines to oil cooler installations. Consult your maintenance organisation.
- 2.3 Avgas 80/87 from Carless Petroleum, 169-171 North Station Road, Colchester, Essex (Colchester 68441 Mr C M Farries), may be a cheaper alternative to Mogas, and less likely to cause vapour lock. Compatible with lower compression ratios. Check your Engine/ Flight Manual. (BGA are investigating compatibility with engines of 8.5:1 C/R, previously cleared on 91/96 octane.)
- 2.4 Weak Link Ratings (Aero Tow). These should not exceed 500 kgs.
- 2.5 Weak Link Ratings (Winch/Aero Tow. The following should be added to the list in TNS 5/6/85:-

SF 27A	1654 lbs
SF 26A	1433 lbs
KA 6CR	1400 lbs
Cirrus (Std)	1100 lbs
Discus	1499 lbs
Cirrus (Open)	1896 lbs
T.21 Sedbergh	1000 lbs

- 2.6 BGA Airworthiness Quality Assurance. The attached memorandum, prepared at the request of the BGA Executive, reminds all concerned of what "airworthiness" is all about, in simple terms.

*R. B. Stratton E.T.O.*  
*1/8/85*

## British Gliding Association

Telephone 0533 531051

27th June, 1985.

### B.G.A. SPECIAL NOTICE TO OWNERS OF SLINGSBY T.65 "VEGAs"

1.3.

Ref. BGA/TNS/7/8/85

#### INOPERABLE CANOPY JETTISON

Several installations have been inspected and found to be inoperable for one or more of the following reasons:-

- (1) JAMMING of the front operation lever, possibly because the lever is too short, allowing the stub to rotate from the upright position and foul under the fibre-glass cowling. (Should line up with white mark)
- (2) SEIZING of the two Uniball bearings set into the front of the instrument panel, which retain the two locating pins for the rear end of the Canopy Ejection Mechanism. (Requires lubrication)

All Vega owner/operators should check for the correct functioning of canopy jettison systems, and record this inspection in the log book. (Loose screws holding the canopy lock to the frame were reported in TNS/12/80).

R.B. STRATTON  
CHIEF TECHNICAL OFFICER





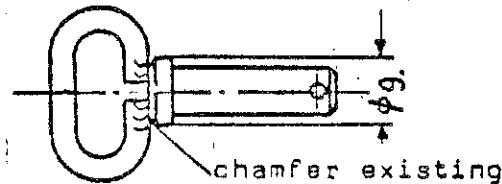
TNS. 7/8/85.

Subject: 1.) Elevator connection bolt  
2.) Airbrakes connection bolt (only by install. of Schemp-Hirth-Airbrakes)

Effectivity: 1.) Elevator-connection bolt  
Sailplane MÜ 13E "Bergfalke"  
" Bergfalke II  
" Bergfalke II-55  
" Bergfalke III  
" Bergfalke IV } all Serialnumbers  
2.) Airbrake-connection bolts  
Sailplane Bergfalke III with mod. 27  
(model with Schemp-Hirth-airbrakes)  
Sailplane Bergfalke IV all Serialnumbers

Accomplishment: Instruction 1 and 2 before next flight  
Instruction 3 at the latest before 31.8.85

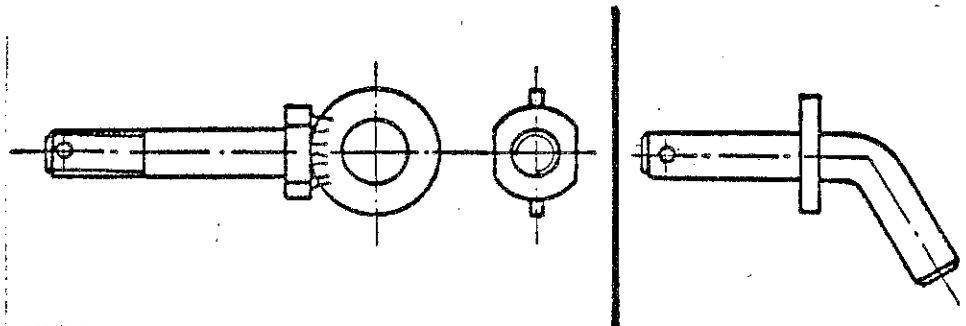
Reason: On some "Bergfalke" Sailplanes (not all), a connection bolt for elevator and airbrakes was installed, made of an eyebolt with a welded handle (made of welding rod) (see sketch)



Under bad circumstances the molecular of the eyebolt (DIN material), can change during the welding of the little handle to the bolt.

There has been a damage to a bolt for the airbrakes. For the safety, it is necessary to inspect the DIN-bolts for eventual cracks and before 31.8.1985 replace them against bolts made of "Aircraftsteel" (1.7214.4 or 1.7734.4 (see drawing Instruction 3)).

Instructions: Instruction 1  
Inspect if the connection bolts are affected. Not affected are (these bolts are already made of "Aircraft steel"):  
a) "halfautomatic" elevator connection bolts (the bolt slides in a tube which is welded to the elevator lever).  
b) elevator connection bolts in the following construction



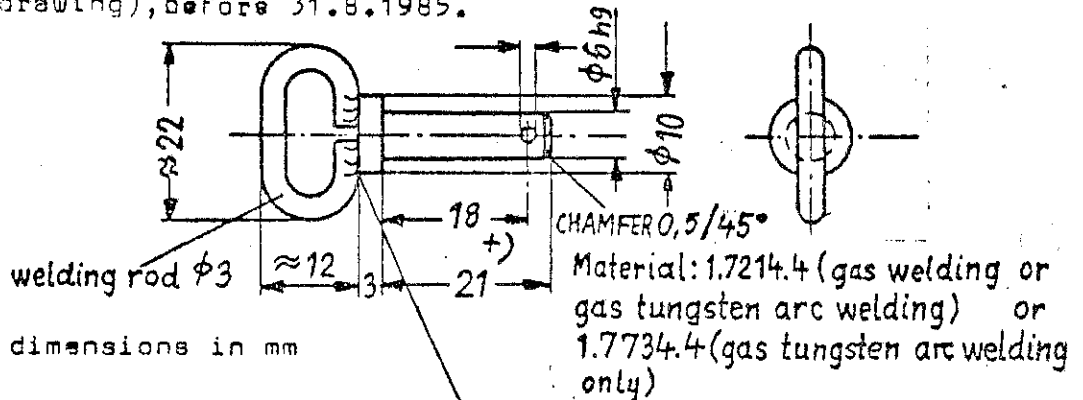


Instruction 2

Before next flight the connection bolts must be inspected by using a magnifying glass of at least 10 x power. If cracks are found, then the bolt must be replaced immediately. If no cracks are found the sailplane may be flown until 31.8.85.

Instruction 3

If the connection bolts are not made of "Aircraftsteel", they must be replaced against such of aircraftsteel ( see drawing), before 31.8.1985.



here as difference to the eyebolt (From DIN material) no

+) a certain amount of Bergfalke's are "amateur-build".<sup>chamfer</sup> Therefore there may be differences in the length of the bolts, and they must be fitted to the actual Bergfalke. In any case with the new connection bolts the controls must be checked carefully on function and clearance.

Material: see drawing under instruction 3

Weight and balance: Not affected

Remarks: Accomplishments are to be performed by an authorized workshop. Accomplishments of the actions are to be entered in the aircraft logbook by a licensed inspector.

SCHEIBE FLUGZEUGBAU GMBH  
Dachau, Aug. Pfaltz-Str. 23

13. 5. 1985

Approval of translation has been done by best knowledge and judgement - In any case the original text in German language is authoritative.



29. Mai 1985

# TECHNICAL INSTRUCTION

1.2

SEL

REPEAT TMS/7/8/85

TITLE	T.I.No. 100/T53 Issue 1
Inspection of attachment of wing centre section to Frame 6.	
COMPLIANCE	
CAA MANDATORY Inspection to be completed before next flight and annually thereafter.	
JUSTIFICATION	
This is a re-issue of the information of TI 90 which this instruction hereby cancels and replaces. A failure in fatigue of the brackets which holds the rear spar member of the centre section to Fuselage Frame 6 has been reported.	
APPLICABILITY	
All T53B gliders and to later variants of YS 53 by Yorkshire Sailplanes.	
RESTRICTIONS	
The glider must not be flown until this Technical Instruction is carried out.	
OBJECTIVE	
To inspect for fatigue cracks in the affected parts listed below :	
T53B-10-168 issue 1-4 welded fittings	
T53B-10-168 issue 5 rivetted "	
T53B-10-118 issue 1	
T53B-10-115	
PARTS REQUIRED	
In the event of cracks in any of the fittings then they must be discarded and new parts fitted.	
PROCEDURE	
Remove glass fibre fairing No.T53B-10-1093 and wings if fitted. Using a Dye penetrant crack detection system, inspect for cracks at the corner of the fittings where the attachment flanges begin (a) the welded brackets Pt No.T53B-10-168 issue 1-4 see figure 1 page 2 which holds the rear spar member of the c/s to the fuselage frame 6 and (b) the alternative riveted bracket Pt No.T53B-10-168 issue 5. Also in a similar manner inspect the metal lugs T53B-10-115 and channel section T53-10-118 on frame 6. See Figure 2. Checking for cracks in way of rivets.	
If any cracks are found the aircraft is to be grounded. All findings to be reported to SEL marked for the attention of the undersigned. New components can be obtained from SEL if required as listed above. If there are no cracks the aircraft is cleared for flight.	
Once the inspection has been complete the TI 100/T53 action should be recorded in the aircraft log book.	
ISSUED BY: <i>B. Mellers</i> B. Mellers for and on behalf of CHIEF ENGINEER/AIRCRAFT DIVISION <b>SLINGSBY ENGINEERING LIMITED</b> Kirkbymoorside, York YO6 6EZ, England. Tel.0751 31751 Telex 57911	Date 20th Oct. 1981 Page 1 of 2

T53 WING CENTRE SECTION JOINTS  
TO FRAME 6

Figure 1

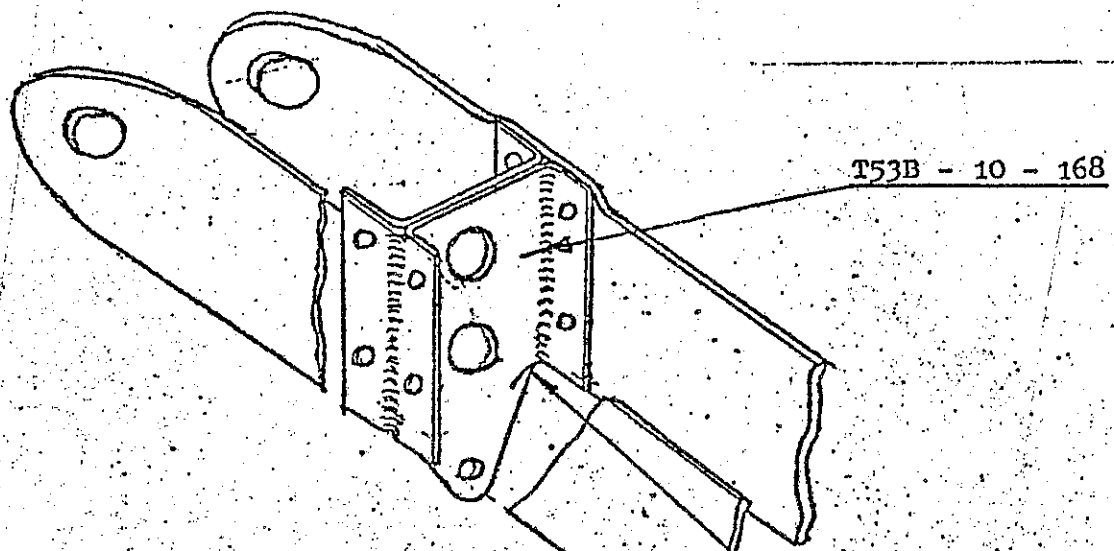
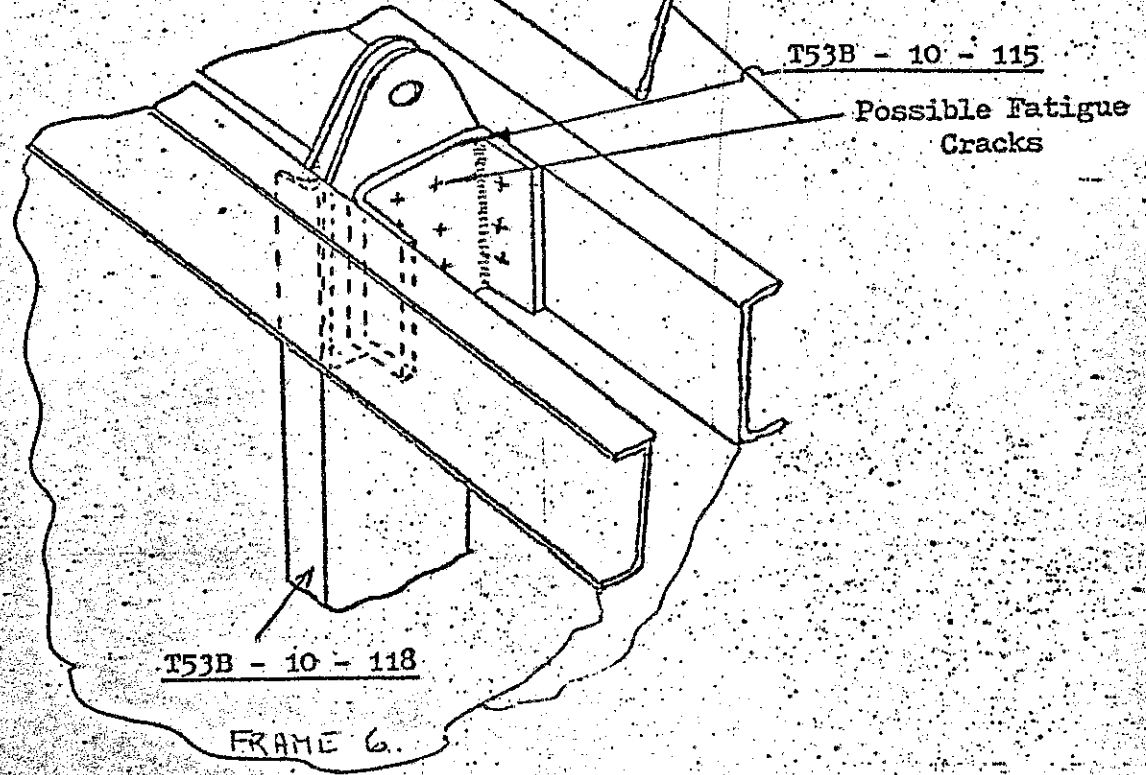
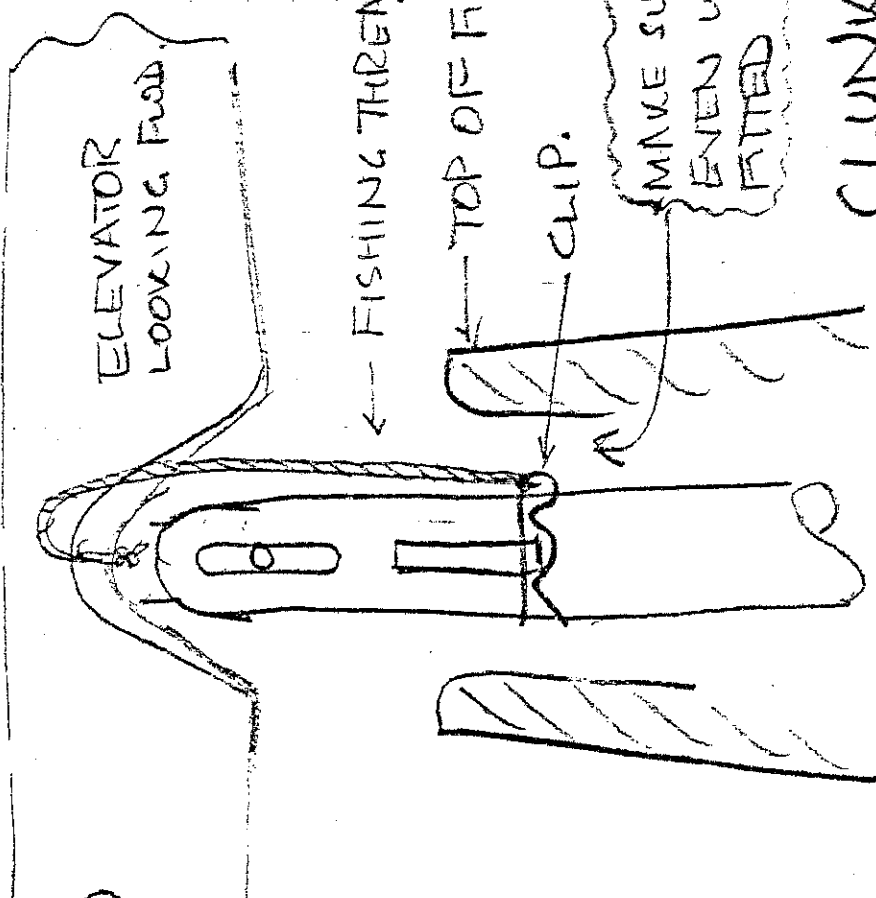
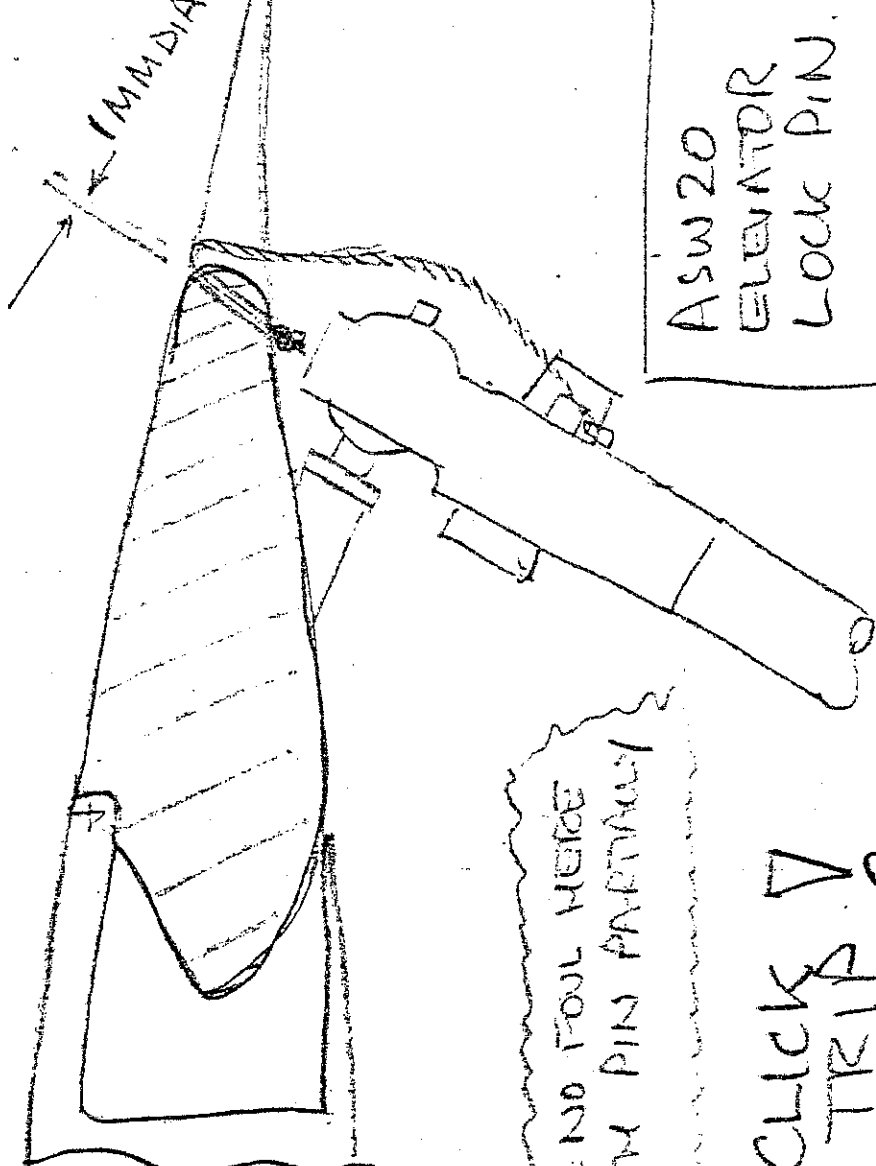


Figure 2





ASW 19/20 ELEVATOR 1.8:  
BGA TNS 7/8/RS

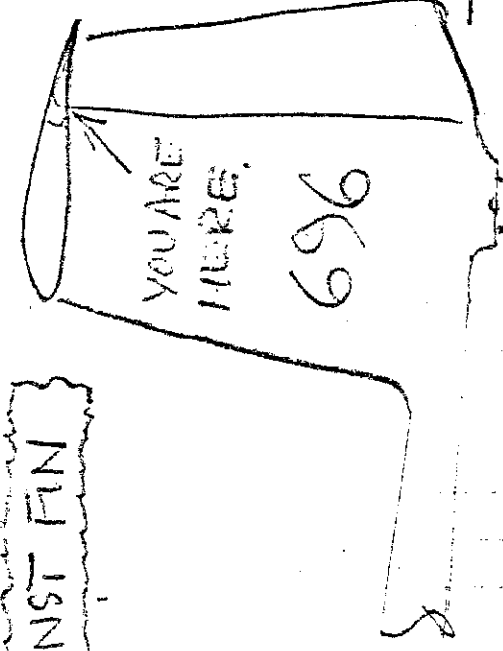


CLUNK CLICKS EVERY TRIP!

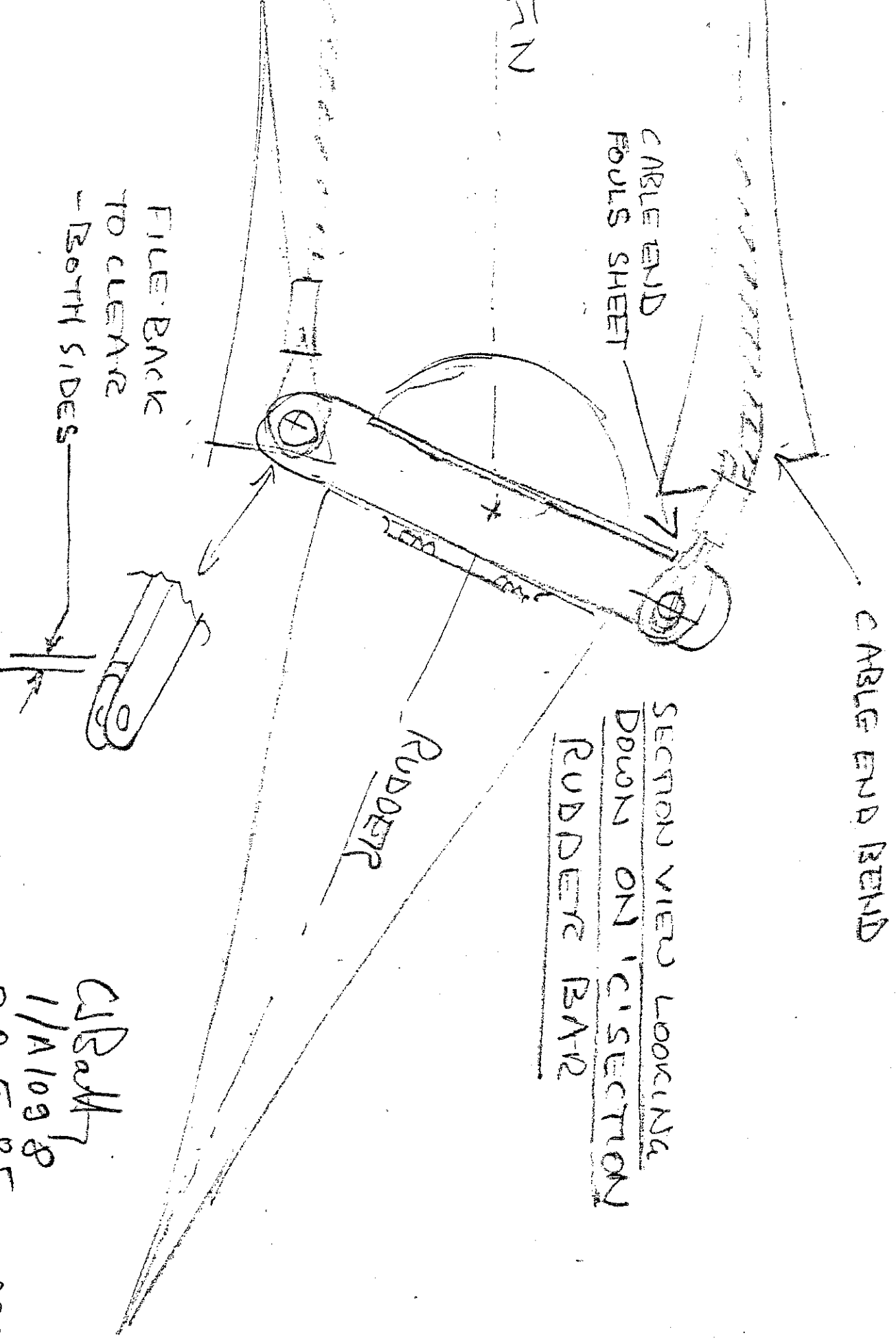
PIN MUST BE SHORT ENOUGH TO AVOID FOUL AGAINST FIN

PIN ACTUAL SIZE  
BENT FROM ZOSWOG, PIANO WIRE  
FROM LOCAL MODEL SHOP,  
KNOTTED & GLUED  
DRILL DIAGONAL HOLE IN ELEVATOR

ASW 1.8.098. ZOS RS



A5020 (219) RUDDER BAR CABLE END BEND



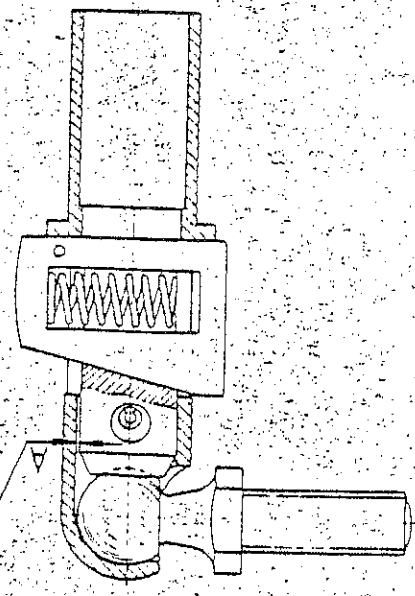
SECTION VIEW LOOKING  
DOWN ON SECTION  
RUDDER BAR

FILE BACK  
TO CLEAR  
- BOTH SIDES

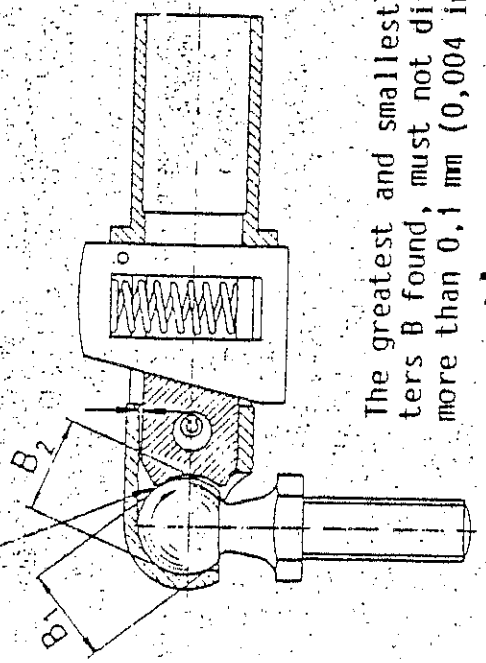
ASB  
1/A1098  
20.5-85.

REGANS/7/8/85

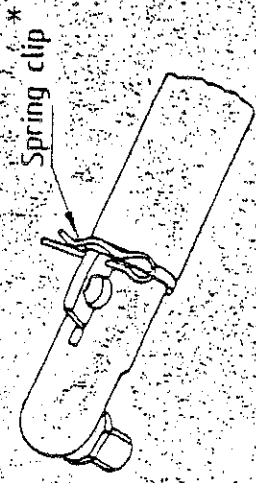
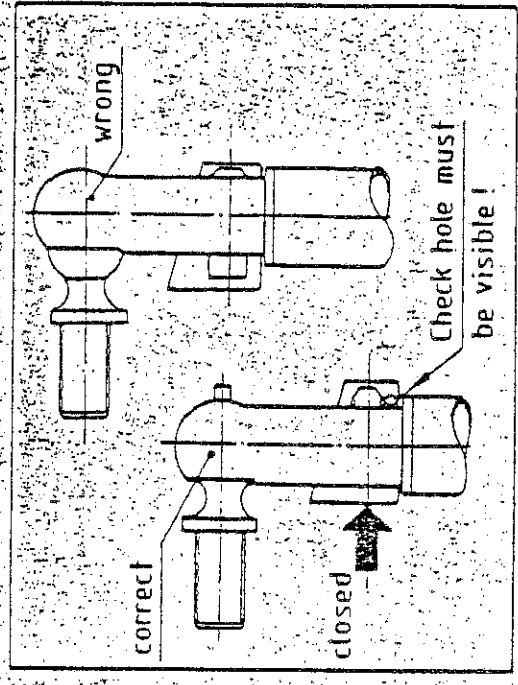
Clearance A must not exceed 0,15 mm (0,006 in); check by using a wire of 0,15 mm diameter !



Bad wedging effect causing wear of the ball end.



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



\*Spring pin no.50030771 can be ordered from Alexander Schleicher or from A.Würth, P.O.Box 1261, 7118 Künzelsau, F.R.Germany.

2. Inspection

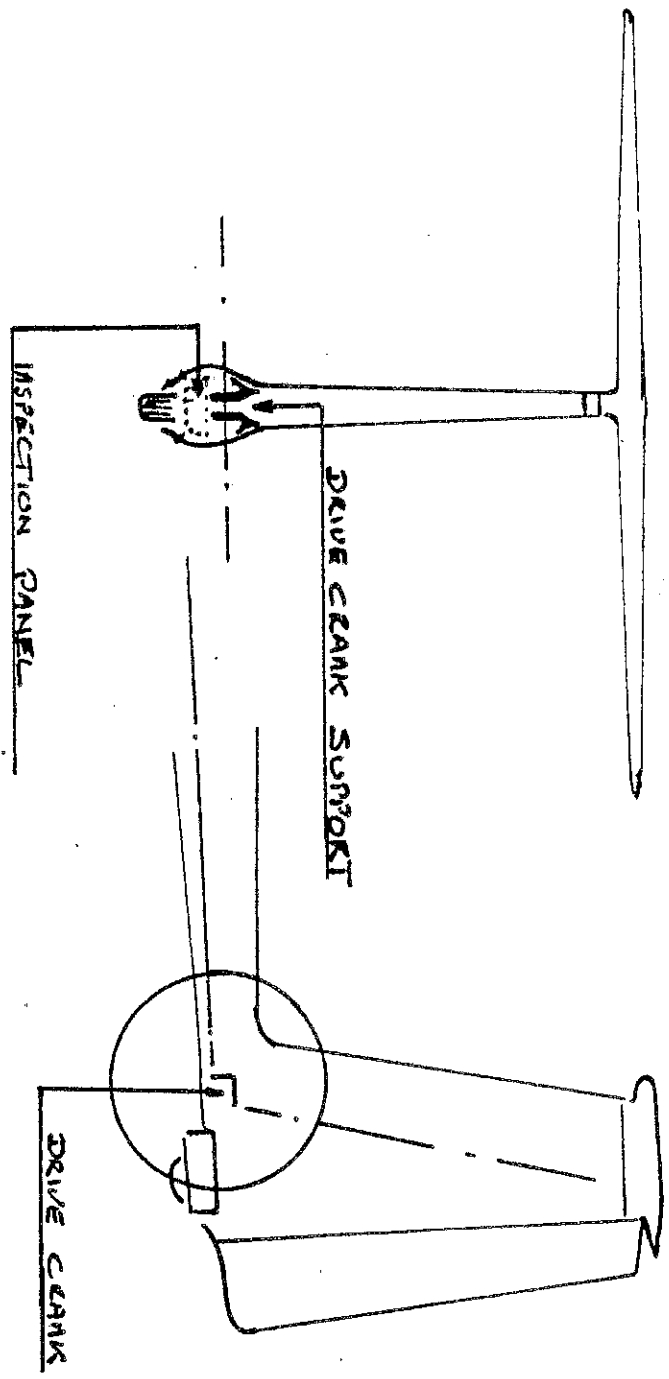
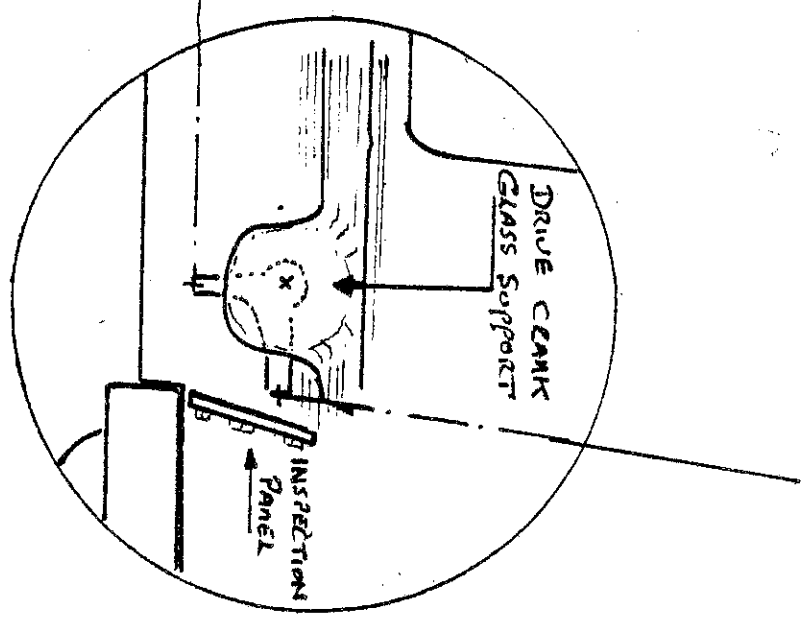
According to experience accumulated in Australia the following inspection of the L'Hotellier connections must be carried out at every annual inspection, especially when the glider is operated frequently from sandy and dusty airfields.

T.6: VEEA

1.17  
TR 7/8/85

VEGA 165D

De-lamination & general malformed elevator drive crank support yoke  
Angle mirror must be used & inserted along side support, to inspect.

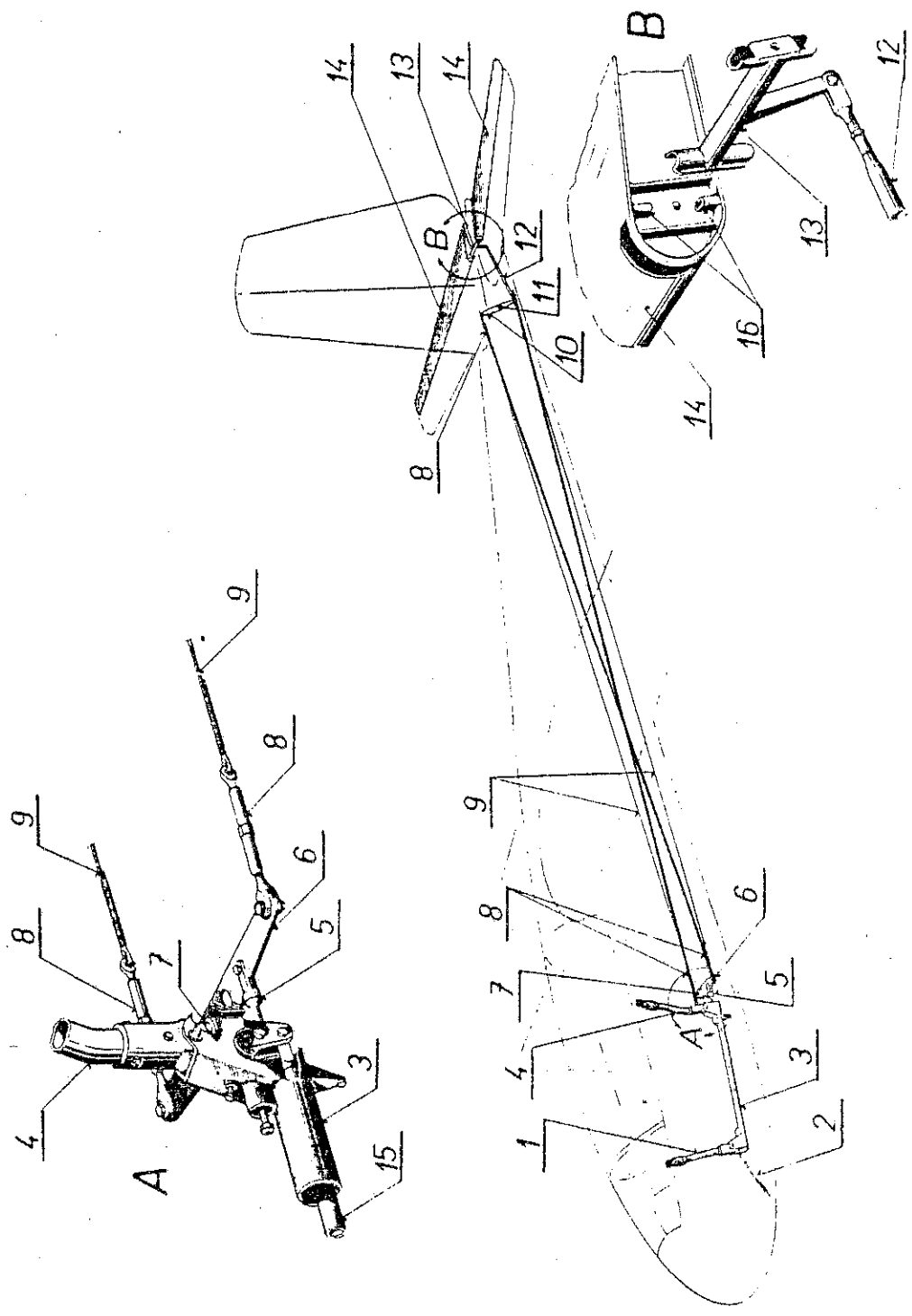


DE-LAMINATION INSPECTION.  
ELEVATOR DRIVE SUPPORT.

1040MB James Clark MGC

1.12.

2



BLANK

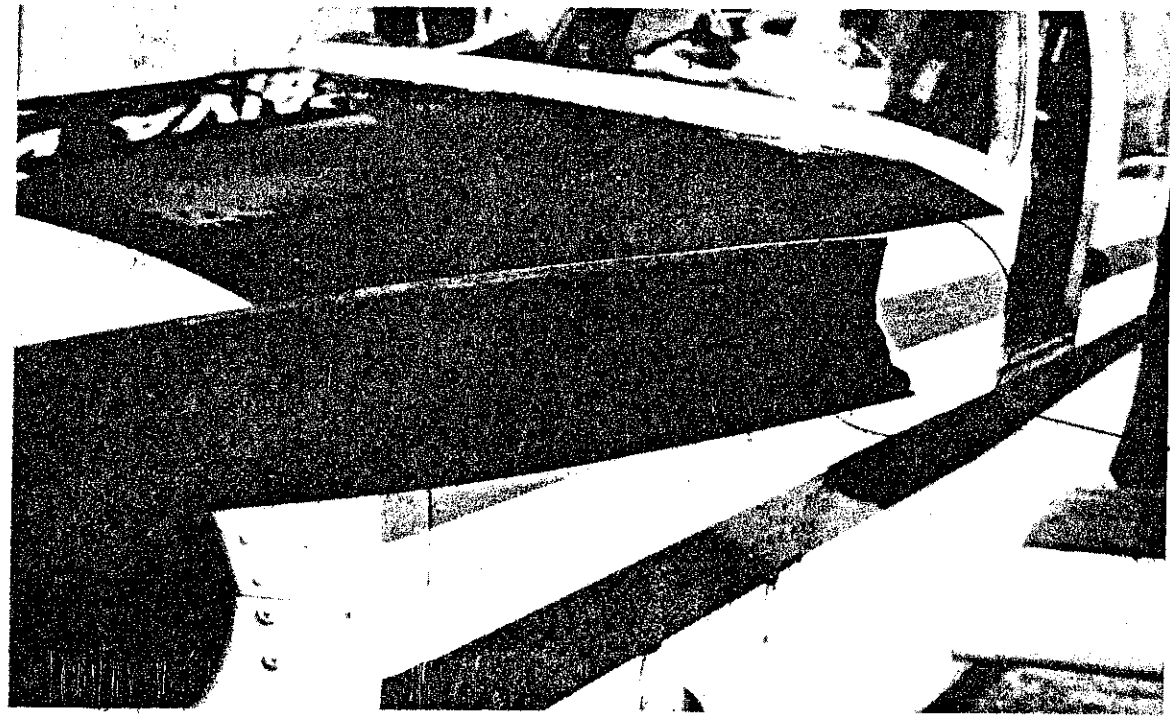
Fig. 20. Elevator control

- 1) Front control stick; 2) Spring; 3) Tubular bridge with mounted control sticks; 4) Rear control stick; 5) Push-pull rods; 6) Double-arm lever; 7) Bolt; 8) Turnbuckle; 9) Control cables; 10) Double-arm lever; 11) Bolt; 12) Push-pull rods; 13) Elevator actuation; 14) Elevator; 15) Push rod connecting front and rear control stick; 16) Carriers.

Blank Elevator Drive.

BCA TNS/7/8/85

# PROPELLER BLADE FAILURES. BOATNS/8/85



Fuji Prop Blade

17. Complete Blade Lost

P/E

Aircraft: Cessna C206 (possibly applicable to other aircraft)

The following was published in Australian Airworthiness Advisory Circular February 1985.

One propeller blade separated from the hub during flight because of hub cracking. Fatigue cracks had propagated from several sites in the 6th thread. One of the other blades was also cracked at this thread. Poor shot peening of the roots was noted. It was thought to be a strong possibility that the crack was visible at the outer surface of the hub at the 100 hour inspection done 30 hours previously. However, the presence of a self-adhesive decal fixed to the hub may have hindered detection. The propeller had flown 4987 hours with 1363 since overhaul. The propeller was a McCauley D3A32C-90-CM.

18. Part of Blade lost, Very Severe Vibration

P/E

Aircraft: Rallye MS 893A Registration G-AVAK  
 Date: March 1985  
 Reportable Accident near Perth, Scotland

When levelling off at 2,300 ft after take-off there was a sudden violent vibration from the front of the aircraft. The pilot set the power to idle but the vibration level was still severe until speed was reduced to the stall to stop the propeller. After making a MAYDAY call, completing checks, etc, a forced landing was made in a ploughed field. When flying at the correct gliding speed vibration returned and it was necessary to reduce speed further. The aircraft was badly damaged but the three occupants were uninjured.

About 5" of one blade of the propeller tip was missing. The propeller was a Sensenich 76 EMS/0/60. The aircraft had flown 1076 hours. The propeller history is unknown.

SKETCH OF FRONT AIRBRAKE LEVER LOOKING "THROUGH" FUSELAGE LEFT SIDE

OPERATING BUTTON

1/8" Ø ROD IN GUIDE TUBE

ROD TO REAR COCKPIT

RETURN SPRING

PAW

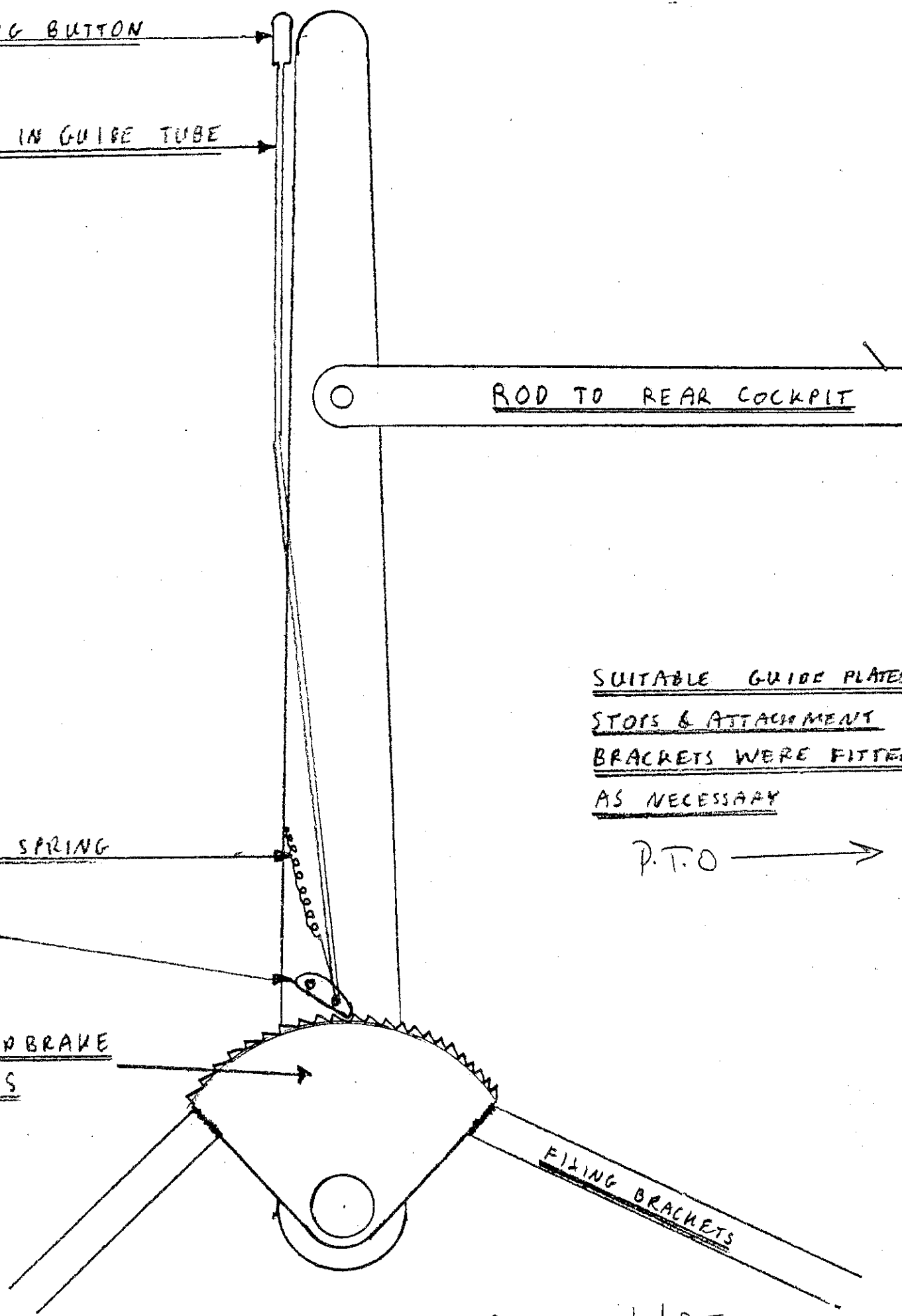
V.W. HAND BRAKE RATCHETS

SUITABLE GUIDE PLATES  
STOPS & ATTACHMENT  
BRACKETS WERE FITTED  
AS NECESSARY

P.T.O. →

FIXING BRACKETS

BRM TNS/7/85.



Ka26 B.G.A. 2274

DISABLED PILOT AIRBRAKE LOCK

TNS. 7/2/85

To enable one to lock the airbrakes in any position, so as to be able to use the hand rudder while landing, a motor car type "fly off handbrake" mechanism was fitted to the front cockpit airbrake lever.

When the button is pushed on the top of the front airbrake lever a paw engages in a ratchet and prevents the brakes opening further. The "such open" force on the airbrakes holds the paw engaged until the lever is pushed forward, by either pilot, when a spring raises the paw and the brakes revert to normal operation.

The airbrake lever was lengthened and the cable release lever raised to make the use of these levers easier.

The system was test flown and found satisfactory.

*T.E. MacFadyen*  
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T.E. MACFADYEN 1/C/322 July 1984



BRITISH GLIDING ASSOCIATION

M E M O R A N D U M

AIRWORTHINESS QUALITY ASSURANCE

1. The Chairman of the Technical Committee and the CTO have reviewed the queries raised by the BGA Executive who may not be aware of the guidelines published in BGA Technical Procedure Manual, a document compiled by the CTO, and accepted by the CAA (Airworthiness Division) as the basis for their delegation to the BGA of Design and Inspection Approval (Ref DAI/8378/73), in respect of motor gliders.
2. These guidelines apply equally to the quality assurance of gliders.
3. The only other recreational organisation to whom the CAA have delegated Design and Inspection Approval is the PFA (Popular Flying Association). The BGA are unique in providing Insurance Indemnity.

INSPECTION RATINGS

4. a) "Ordinary" Inspectors may recommend the renewal of Certificates of Airworthiness of all types of glider and motor-glider airframes, which will have been inspected and recorded on BGA Form 267.
- b) An "E" (Engine) Rating is required for the inspection of motor-glider engines, and includes "top overhaul" capability.
- c) An "M" (Metal) Rating is required for repair of metal gliders, for which specialist equipment and workshop capability is also required.
- d) "Senior" Ratings are issued to those who have not only acquired the skills, but also have the workshop capability for the "major" repair of gliders, and meets the confidence requirements of the Insurance Assessors.

Some people who qualify for "Senior" ratings will have attended manufacturer's courses in Germany (Grob etc.). Others will have acquired their skills "on the job" with other experienced repairers. There are no suitable courses in the UK for major GRP repair.

BGA SYLLABUS

5. The BGA Application Form includes a detailed syllabus, with references to appropriate technical manuals. There is no longer therefore any excuse for "non-standard" repair procedures. In particular, in respect of GRP repairs, whether major or cosmetic, the Flight and Maintenance Manuals required by ICAO are now supplied with each glider, and contain comprehensive instructions on repair procedures.

/ Contd ....

RENEWALS

6. Neither the CAA, nor the PFA, nor the BGA have found it either necessary or practical to re-examine applicants on renewal. Each organisation quality assures its airworthiness operations by monitoring cases, and investigating criticisms. (The BGA have some 300 Inspectors.)

CHECKS

7. The CTO visits each Club every 2 years (some more frequently) and motors of the order of 16,000 miles per year. Repair organisations are likewise "monitored" and are also checked by the Insurance Assessors, who place major repair work with them. The quality assurance of such work (whether it be inspection for C of A renewal, or repair), is often the subject of further scrutiny, when the glider is taken to another BGA Inspector for work to be done, and reports are fed back to the BGA.

COMPLAINTS

8. The BGA Technical Committee decline to investigate non-specific and undocumented complaints. (Likewise the CAA and PFA.) Almost all documented complaints have some element of "commercial" disagreement as a background. It is exceptional to receive more than one documented complaint in a year!

CONCLUSION

9. The objective is unique in that we are tasked to maintain standards of airworthiness throughout some 100 or more clubs, locations or repair stations, in respect of some 1,500 gliders and 50 odd motor gliders, with minimal bureaucracy, minimal (staff) man-power, and in the context of interpreting airworthiness requirements and regulations in the most liberal fashion.

10. The interpretation of the term "airworthiness" in itself generates many different points of view! We are lucky to have so few cases of significant conflict.

11. In more than twenty years as a member of the BGA Technical Committee, only two BGA Inspector privileges have been withdrawn.

12. Whereas there is never a case for complacency, the Technical Committee are not dissatisfied with the track record that has been demonstrated in the unique environment of mostly amateurs (in the aeronautical engineering sense), self regulating their own airworthiness affairs.



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R. B. STRATTON  
Chief Technical Officer

29 July 1985