

B.G.A. TECHNICAL COMMITTEE

TECHNICAL NEWSHEET

TNS 9/10/87

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PART 1. AIRWORTHINESS AGGRO (Please add to the 1987 Green Pages)

- 1.1. Bocian IE - Assymetric Speed-brake Operating cable frayed. (reported by Coventry G.C.).
- 1.2. YS.53/T.53 Cracks in Centre Section Structure Frame 6 and excess movement at the Wing Tips. TI 100 Refers & TNS/8/85. (Reported by Borders G.C.)
- 1.3. Grob 103 Twin II/Accro Inspect/Replace Rudder Lever to which the rear pedal rod is attached. TM 315-33 refers, copy attached.
- 1.4. Astir's (all variants) Loss of Balls from the Root End Spigot sockets & locking device. Six should be retained and visible through the fuselage fitting. (Reported by Peterborough Sailplanes).
- 1.5. Bocians - cable systems too tight Aileron cable tensions were found to be excessive, and likely to cause damage. (Reported by Highland G.C.).
- 1.6. Ka6GR Airbrake push-rod bent and excessive load applied to bellcrank at root end. (Reported by Highland G.C. & sketch attached).
- 1.7. ASW 20 - Aileron flutter induced by Sealing Tape Tech Note 31 reproduced herewith, may also give guidance, generally, on the correct application of tapes to gap sealing. Refer also to each gliders maintenance manuals.
- 1.8. Astir's - Fin support structure damaged internally. The internal frame at the base of the fin found damaged after ground loop incident without apparent external damage. Stiffness of the fin and tailplane structure reduced. Reported by Southdown Aero Services (2 recent cases).
- 1.9. Pirat - outer wing fittings found loose. With bending loads applied at the tips "CLONKING" was heard. Reported by Southdown Aero Services.
- 1.10. SF 25E Super Falke Ailerons jammed by disintegrated bearing in the control system below the floor. First reported in TNS/1/85. T/Note 653-47 refers. Applicable T.61 series. Inspect daily.
- 1.11. Stromberg-Zenith type C.D. carburettors. Fitted to Limbach a Grob engines etc. Malfunction leading to loss of power and forced landing. Two cases have been reported caused by flooding and subsequent rich cut or failure to accelerate on overshoot. Float valve assembly found to be worn. Kit replacement available. Recommend recondition at 500 hour intervals and confirmed by Peter Limbach to the C.T.O.
- 1.13. Ka-13 Heavy landing spinal injury reported from South Africa, Recommend they acquire the special energy absorbing cushions developed by Dr. Tony Segal, from Lasham.
- 1.14. Valentin Taifun 17E AD/87-135 & T/Note 12/818, require correction to C.G. and pilot's lever arm. (from U.K. Agents).
- 1.15. Standard Cirrus ( B & G ) T/Note 278-30 amends flight manual operating weights & limitations. (from U.K. agents)
- 1.16. Extracts from C.A.A. G.A.S.I.L's & A.I.B. Bulletins
  - (a) Marking & Placards - Applies to all aircraft & gliders.

- (b) LE- BOZEC PLUNGER TYPE FUEL COCKS
- (c) PA-18 CUBS - Fatal Ditching - No Fuel
- (d) Filters Blocked in Marvel-Schebler Carbs
- (e) A Druine Condor recently ran out of fuel during glider towing operations, with fatal results!!
- (f) Start-up Fires Three glider tugs have been damaged (in one case reduced to ashes) by uncontrollable start-up fires - How well are you prepared for such an event? Ref G.A.S.I.L. 9/87 herewith.

N.B. A winch fire occurred at the Highland G.C., which could have put them out of business, for a while, but was save by the Fire Brigade!

- 1.17 AM-SAFE occupant restraint assemblies F.A.A. AD/87-17-06 herewith-refers. It is not known if these harnesses are fitted in the U.K. but many foreign built gliders do have equipment of American origin. Ref TNS 7/8/87 Item 1.28.
- 1.18 Kinematic Aileron Drive Systems (Ka8 etc) Ref TNS 7/8/87 - the correct procedure is that the Ailerons should be neutral with the Elevator Neutral.
- 1.19. T.65 "Vega" Speed-Brakes deployed (undemanded) at 106 knots damaging the hinges. Wear and adjustment of the over-centre lock may have been the cause. Check with the wing under load. (Reported by Southdown Aero Services).
- 1.20 Schempp-Hirth Gliders (Janus B, Nimbus 2B, Mini-Nimbus HS.7. and Mini-Nimbus B). - REINFORCED ELEVATOR BRACKETS (see attached sketch). As a matter of URGENCY (and before November 30th 1987). Manufacturer recomends reinforcement or replacement. T/Notes 328-8 Mini-Nimbus, T/Note 295-19 Janus B, 286-24 Nimbus 2B, Refer - (Sample sketches attached). Details from U.K. Agents.
- 1.21 Astirs - Aileron connectors in the Centre Section. Disconnection of the Hotelier connection on any one aileron may result in jammed aileron at full deflection, caused by the disconnected rod fouling on the wing root. Double check these and all other connectors after rigging. Provison is made for the insertion of safety pins.
- 1.22. Bellanca (Champion) Model & G.C.B.C. with wooden spars, are prohibited aerobatics by the issue of AD/87/18/09.

CLUB TECHNICAL OFFICERS & B.G.A. INSPECTORS ARE ASKED TO DISSEMINATE THIS AIRWORTHINESS INFORMATION TO BOTH CLUB MEMBERS & PRIVATE OWNERS

## PART 2. GENERAL MATTERS

- 2.1. Hoffman H.36 Dimona the U.K. Agent is now John Adams, Soaring Oxford Ltd., (0491-37184)
- 2.2. Discus T/Note 360-3 introduces optional tailwheel.
- 2.3. Nimbus 3T T/Note 831-1 introduces optional aluminium fuel tank  
           "          831-2          "          "          tailwheel  
           "          831-3          "          "          swing-up instrument panel
- 2.4. Crankcase repairs Motor glider engines. "Metallock" cold repair by stitching has been successfully proven on Stamo engines at Portmoak, over seven years. (Reported by Ian Dandie).

- 2.5. Pa-18 Cub Rear Seat Restraint harness Amendments to the A.N.O. require at least a diagonal upper body restraint in addition to a lap strap. A full body harness may be preferred? Possible options are illustrated in AC43-13TA & 2. (F.A.A. Aircraft Inspection & Repair). Mod kit also available from Piper.
- 2.6. Crankcase Repairs (Tug aircraft) Norvic Racing engines (Colmworth 700) have C.A.A. approval to repair crankcases, where feasible.
- 2.7. Solid Drawn Steel Winching Wire S.G.U. have kindly supplied the specification of the wire used at Portmoak. BS 1408. BE3 Bright. 2.95mm. Tensile 1700/1850. From BR Ropes Ltd., Bridon Wire Sales, Carr Hill, Doncaster EN4 8DG.
- 2.8. G.R.P. Repair Manual The Slingsby (Kestrel) Repair manual is available from the B.G.A. office (£20).
- 2.9. Inspector Renewals (including indemnity insurance) become due 1/10/87 and the yellow page renewal proforma is enclosed herewith.
- 2.10. B.G.A. Inspection Form 267 (Gliders) Those who sign for the listed items by "blocking" them altogether, under one signature per page, should consider whether this is the proper method of doing so having in mind the airworthiness responsibilities you are undertaking?
- 2.11. Duplicate Inspections of Controls and of areas in which foreign objects may cause jamming. After dismantling controls, or opening up "closed" area (below seats etc) it is a strongly recommended practice to have a duplicate inspection made, on completion.
- 2.12. STAMO ENGINE SPARES are available from Herr Liebing, Pieper Motorenbau, Victoria Strasse 50, 495 Minden, West Germany.
- 2.13. Hoffman Propeller Repair and Overhaul facilities are now available in the U.K. at Soaring Equipment Ltd., 193 Russell Road, Moseley, Birmingham B13 8PR (021-449-1121).
- 2.14. ASW 19/19B, ASW 20/20L Automatic Elevator Connection Optional kits are available from U.K. agents. T/Note 22 and T/Note 29 refer.
- 2.15. ASW 20/ASW20L Tech Note 30 "Preventive Measure against unintentional PIO (Pilot Induced Oscillation)" is available from U.K. Agents (J.J. Associates, P.O. Box 61, Dunstable, LU6 2LB (0525 222111)).

R.B. STRATTON  
CHIEF TECHNICAL OFFICER.  
30th September, 1987.

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TNS 9/18/87

ASW 20

Subject: Preventive measure against aileron flutter.

Serial number applicability:

All ASW 20 variants and serial nos.  
20001 thru 20860; 20950 and 20951.

LBA AD/87-141

Compliance:

Immediately, prior to the next take-off.

Reason:

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.

Action:

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
  - 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).

If 1.1 or 1.2 are positive, the ASW 20 can be continued in operation without any restrictions.
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".

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This temporary action is permissible only till Oct. 15, 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 1.
ASW 20 L:	Pages 44 & 44 1.
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).

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Ailerons:

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.

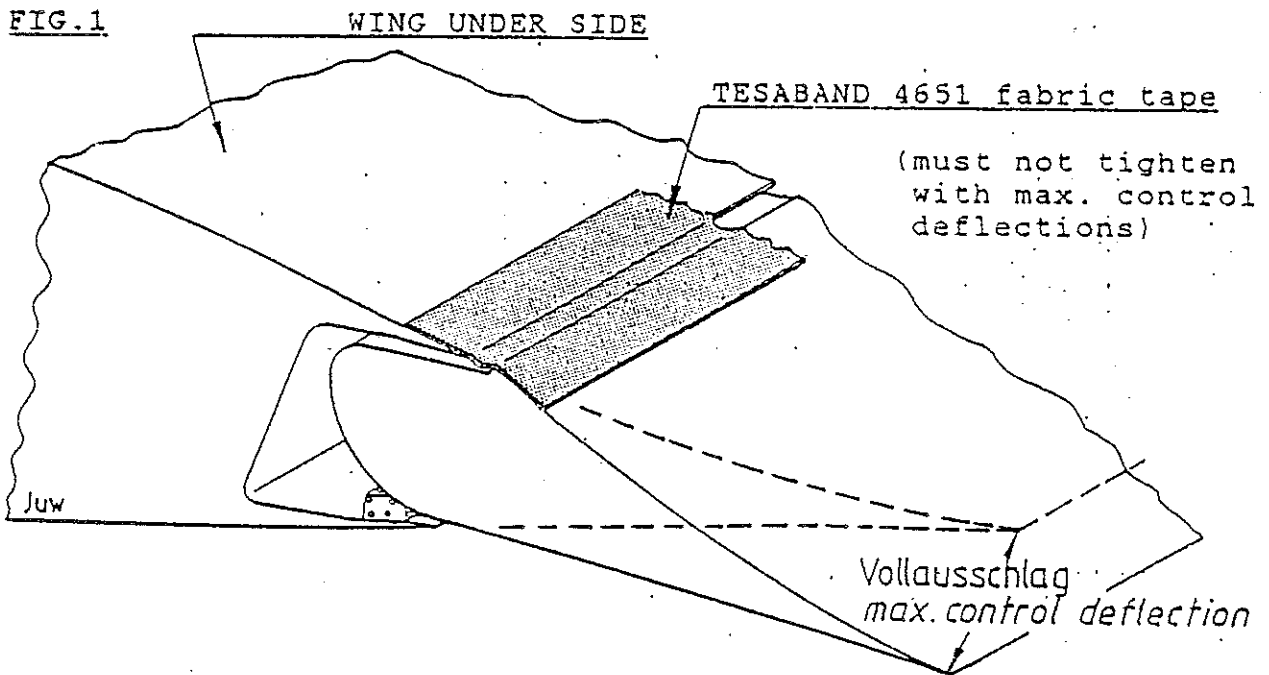
Mass and C.G.:

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



Zusammenfassungen, Verflechten zu Schulnoten.  
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Fig. 2

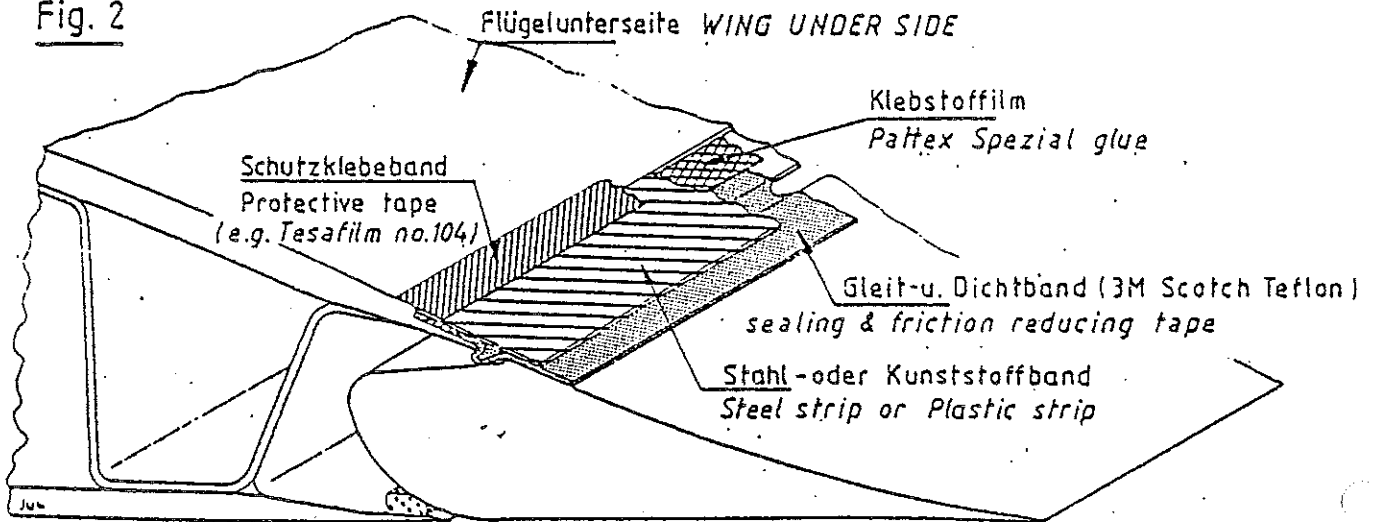


Fig. 3

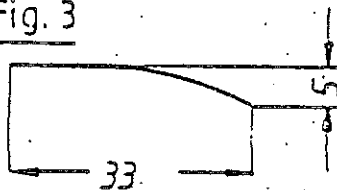


Fig. 4

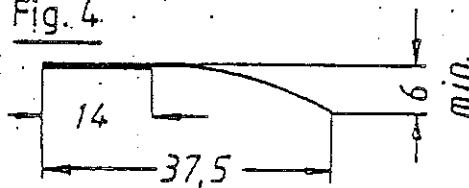


Fig. 5

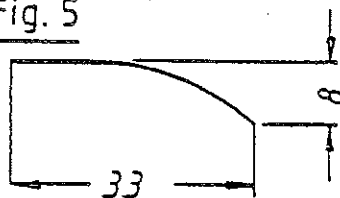
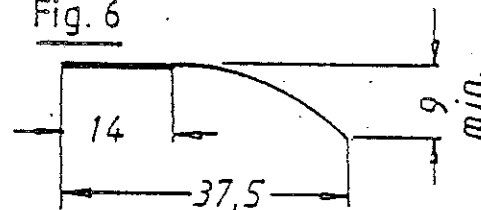


Fig. 6



Poppenhausen, June 24, 1987

ALEXANDER SCHLEICHER  
GmbH & Co.

*Gerhard Waibel*  
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.

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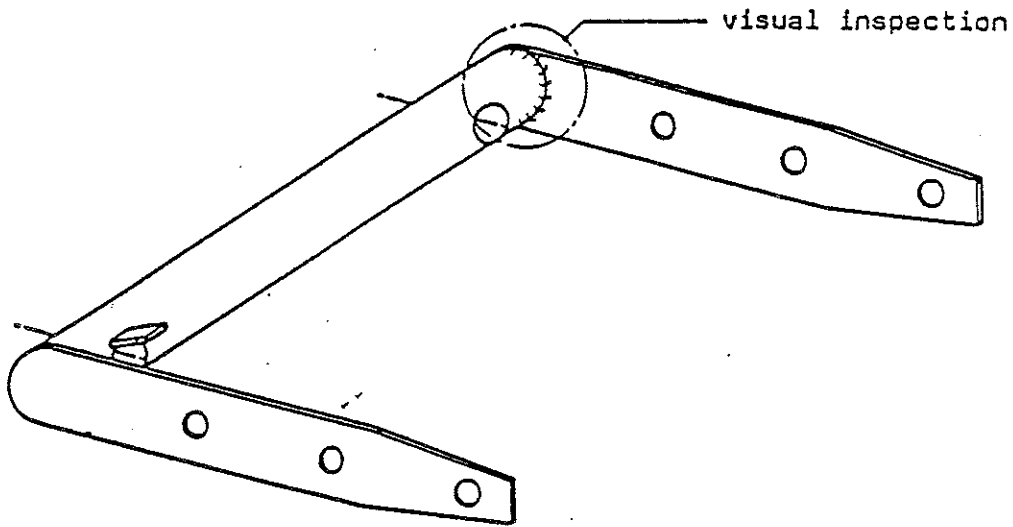
ARA TNS. 9/10/87

SAMPLE SKETCH ONLY

NIMBUS 2B - MINI-NIMBUS -  
JANUS B.

SKETCH 1

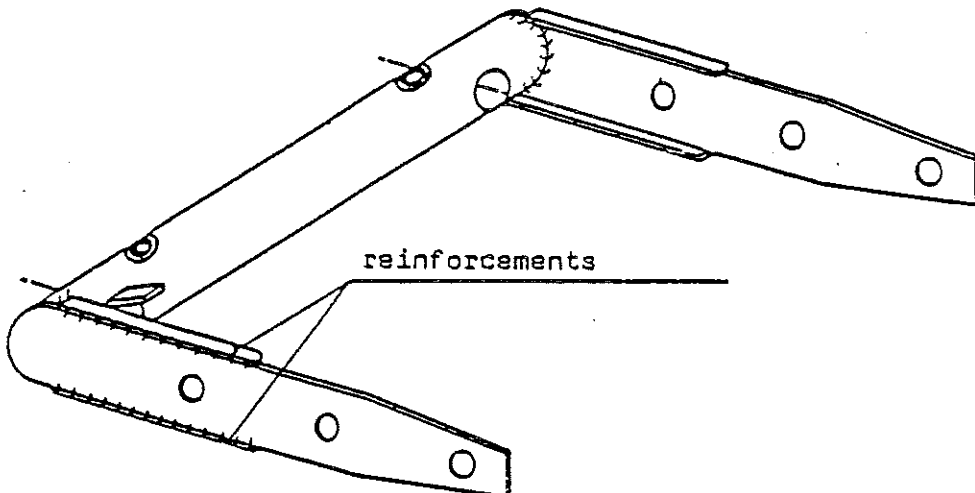
earlier type elevator drive bracket

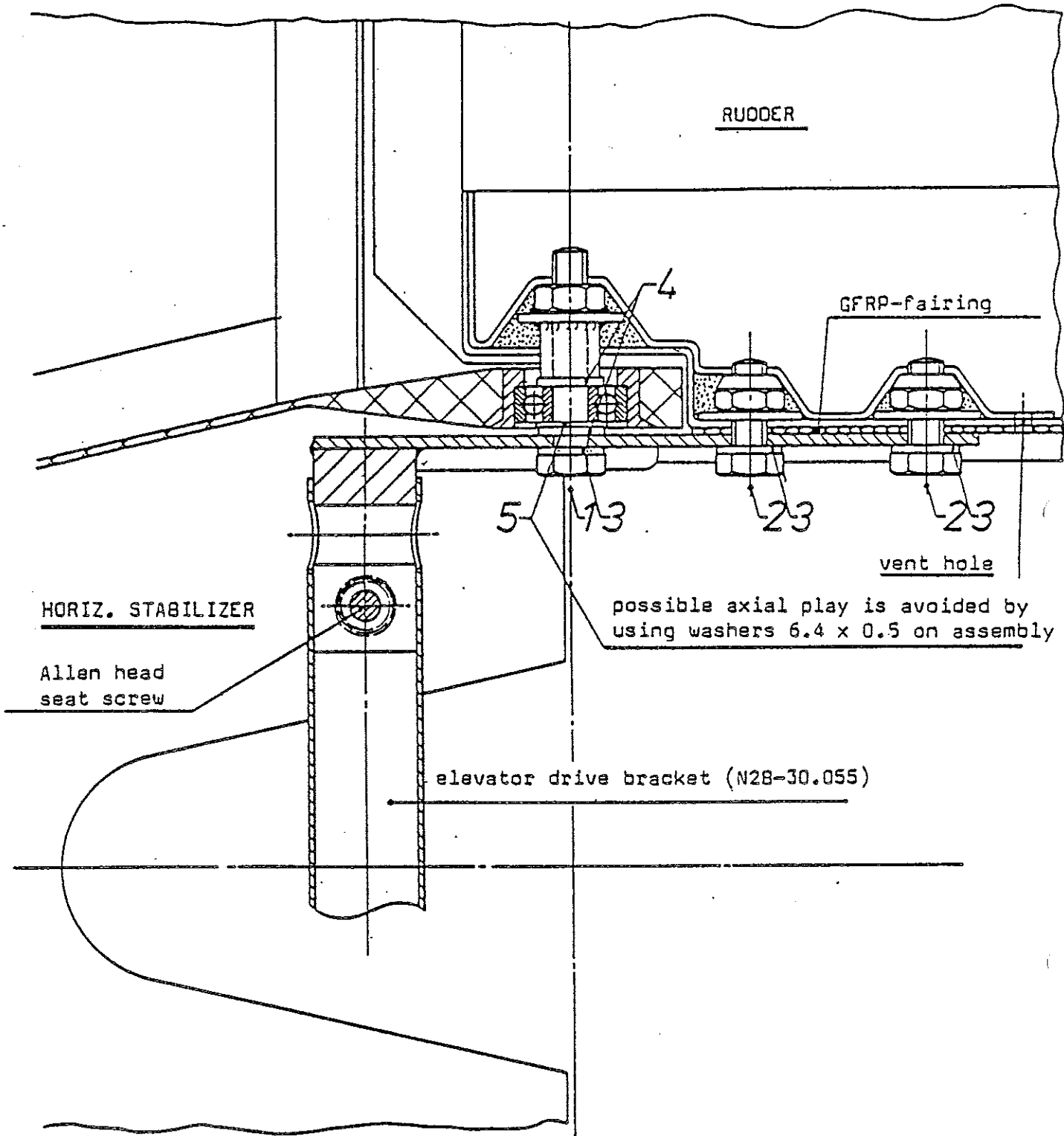


Schempp-HIRTH. T/NOTES. 295-19 (JANUS B), } Ref  
328-8 (MINI-NIMBUS)  
206-24 (NIMBUS B). }

SKETCH 2

reinforced elevator drive bracket





SCHENPP-HIRTH T/NOTES 328-8, 295-19, 286-24 R.Dr.

5	2	Washer	6,4 x 0,5	ähnl. DIN 125-St
4	4	Washer	6,4	DIN 125 - St
3	6	Lock washer	J 6,4	DIN 6797
2	4	Hex. bolt	M 6 x 16	DIN 933-8.8
1	2	Hex. bolt	M 6 x 35	DIN 931-8.8
Teil	Stück	Benennung	Abmessung	Werkstoff (Norm)

Schempp-Hirth  
GmbH & Co. KG  
Kirchhelm/Teck

RUDDER-TO-STABILIZER ASSEMBLY

HS5-30.055/1

GROB →

**Subject:** Checking and replacing rudder lever 103B-4430 on the aft stick bulkhead.

**Effectivity:** Glider type GROB G103 "TWIN II" and GROB G103A "TWIN II ACRO"  
Serial No. 3730 - 3878 (inclusive)  
Serial No. 33879 - 34078 (inclusive)  
(ACRO with Supplement "K")

**Accomplishment:** - Instruction 1 before next take-off  
- Instruction 2 not later than 31.01.1988

**Reason:** This Service Bulletin was prompted by breakage of the rudder lever 103B-4430 in the area of the connecting bearing for the rudder rod I (connecting the rudder lever to the rear pedal unit). Predamage is announced by widening of the bearing ring.  
As a precautionary measure the rudder lever is being replaced by a stronger lever (103B-4430/1) and the stop screws are being replaced by stops with rubber buffers.

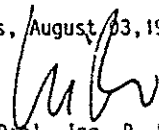
- Instructions:**
1. Instruction: Checking the rudder lever for signs of predamage.
    - 1.1 Visually inspect the complete rudder lever prior to next take-off for signs of predamage. Checking the lever requires implementation of the Repair Instruction No. 315-33/1 which is a component of the present Service Bulletin.
    - 1.2 When no damage to the lever is discernible there is no need to repeat Instruction 1 until the rudder lever is replaced according to Instruction 2.
    - 1.3 Should predamage be evident, Instruction 2 must be implemented before next take-off.
  2. Instruction: Replacing the rudder lever
    - 2.1 Changing the rudder lever and the stops shall be implemented in accordance with Repair instruction No. 315-33/2 not later than 31.01.1988.

Datum	ersetzt Ausgabe vom	Bearbeitung	Musterprüfer	Seite
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**Weight and balance:** No effect

**Remarks:** Instructions 1 and 2 can be carried out by qualified mechanics. The check has to be certified in the log-book. The proper execution of instruction 2 has to be certified by an authorized inspector class 3, immediately following completion, in the log-book.

Mattsies, August 03, 1987



signed Dipl.-Ing. R. Rischer

LBA-approved on:  
August 4, 1987

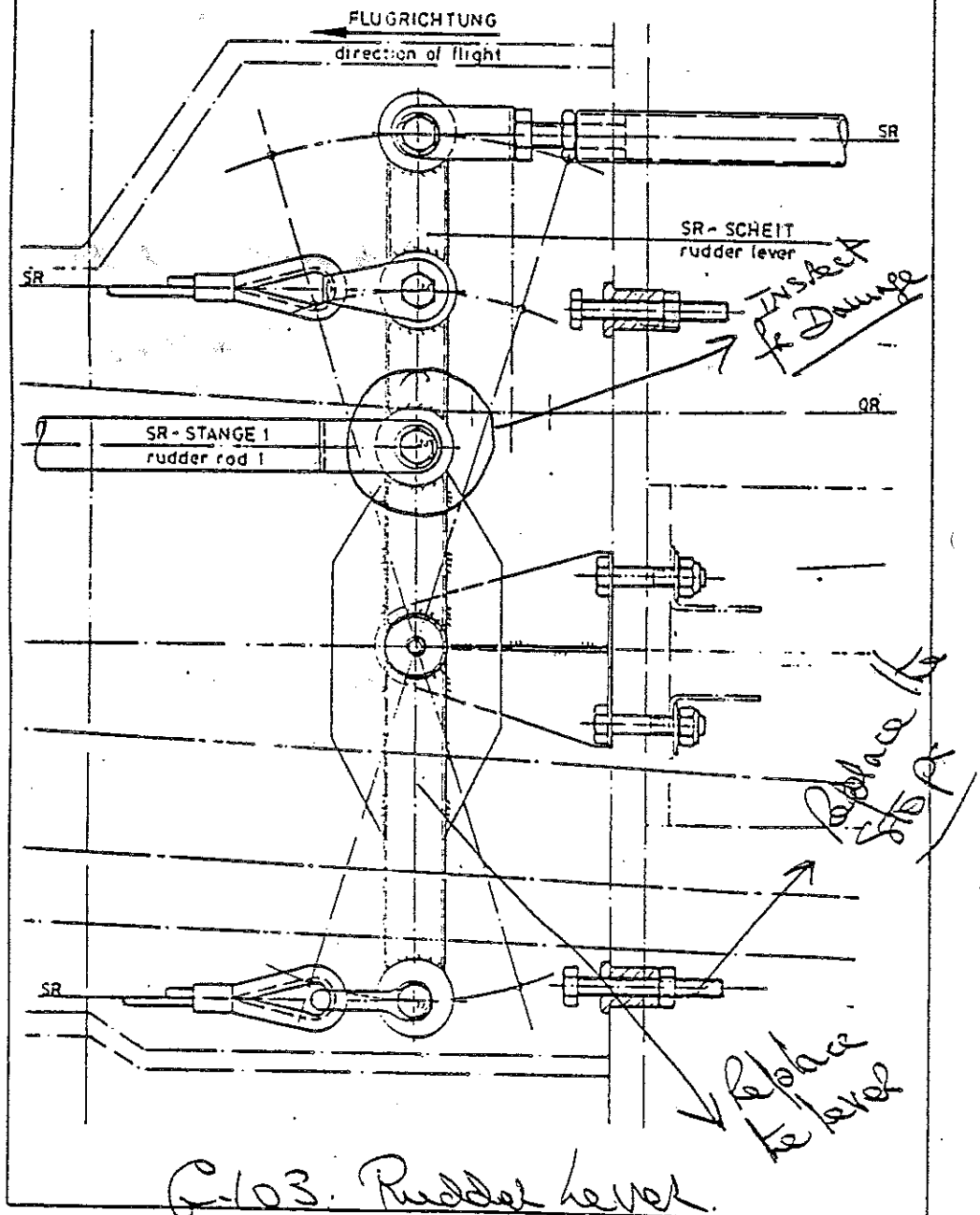
P.S. In case you have sold your glider meanwhile, we ask you kindly to give this information immediately to the new owner and to let us know his adress and serial number.



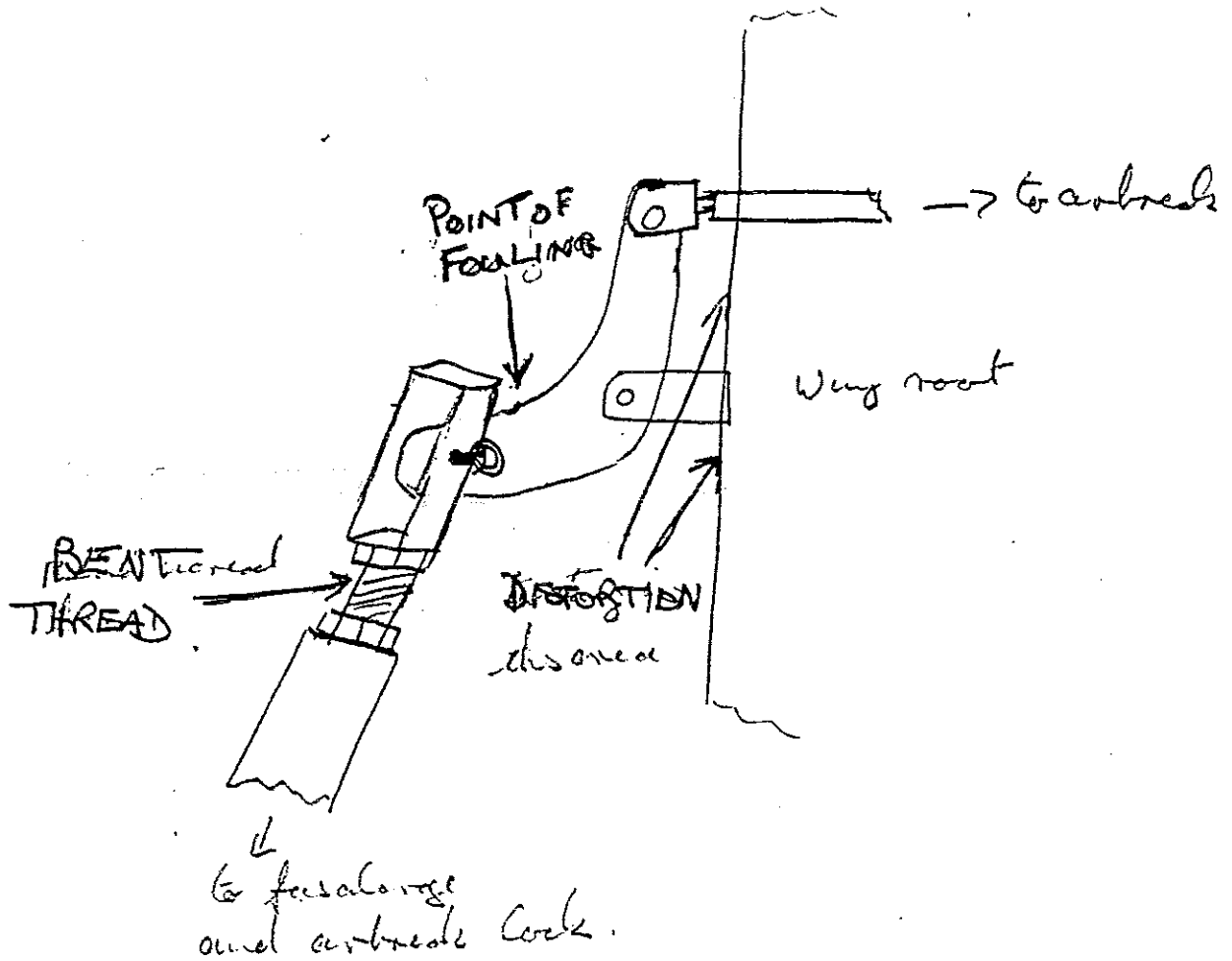
Arbeitsanleitung Nr. 315-33/1  
zur TM 315-33  
Repair instruction No. 315-33/1

GROB  
G103 "TWIN II"  
G103A "TWIN II"  
ACRO"

Abb. 1  
fig. 1



K6CR PUSH ROD FOLLOWING BELL CRANK.



HIGHLAND PC.

BEATNS/9/10/87

AM-SAFE  
Airworthiness Directive  
VOLUME I

87-17-06 AM-SAFE, INCORPORATED: Amendment 39-5710. Applies to Am-Safe, Inc., occupant restraint system assemblies, Part Numbers 501825-403, 501907-401, 501907-403, 501907-405, 502061-401, 502147-401, and 502147-403, which may be installed in large or small aircraft. (Seat belt portion approved under Technical Standard Order C22f.) Compliance required within 90 days after the effective date of this AD, unless previously accomplished.

To eliminate restraint system connectors with the incorrect dimensions, which could allow inadvertent opening of occupant restraint system assemblies, accomplish the following:

A. Inspect the affected restraint system assemblies in accordance with Am-Safe, Inc., Service Bulletin No. AS001, dated November 5, 1986, or later FAA-approved revisions, to determine the Lot Number of the connector. If the connector is not of Lot 04, no further action is required. If the connector is found to be of Lot 04, the connector must be removed and replaced with a connector of a different lot number before further flight.

B. Alternate means of compliance which provide an acceptable level of safety may be used when approved by the Manager, Western Aircraft Certification Office, FAA, Northwest Mountain Region.

C. Special flight permits may be issued in accordance with FAR 21.197 and 21.199 to operate airplanes to a base in order to comply with the requirements of this AD.

All persons affected by this directive who have not already received the appropriate service information from the manufacturer may obtain copies upon request to Am-Safe, Incorporated, 240 North 48th Avenue, Phoenix, Arizona 85043. These documents may be examined at the FAA, Northwest Mountain Region, 17900 Pacific Highway South, Seattle, Washington, or at 15000 Aviation Boulevard, Hawthorne, California.

This amendment becomes effective September 22, 1987.

FOR FURTHER INFORMATION CONTACT:

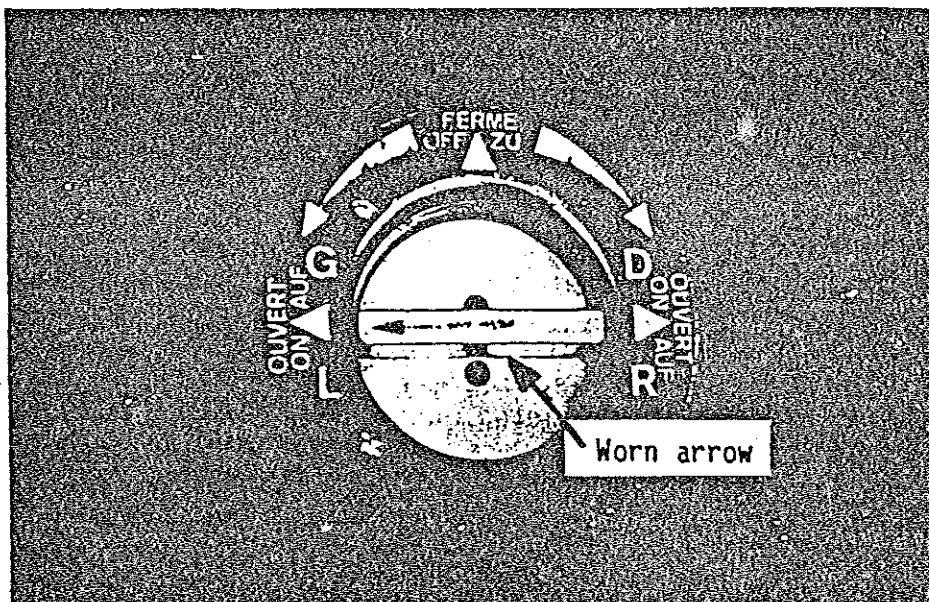
Mr. Walter Eierman, Aerospace Engineer, Western Aircraft Certification Office, ANM-173W, FAA, Northwest Mountain Region, 15000 Aviation Boulevard, Hawthorne, California; telephone (213) 297-1388.

9. MARKING AND PLACARDS - APPLIES TO GLIDERS.

GAS12/7/87

P/E

Accidents and incidents have been caused because of improper, imprecise or ambiguous markings on controls etc. in aircraft. Something that was satisfactory and clear when the aircraft was new, can easily become worn as the aircraft is used. The photograph below shows the worn markings of a typical Rallye fuel selector, which is on the floor where it gets worn by pilots entering and leaving the aircraft. This selector at first glance could be in either the left or the right tank position. Fuel selectors are often hidden in dark or out of the way places and not easily checked.



We have heard of a case in America where a faulty elevator trim indicator on a Cessna 150 resulted in the pilot taking off with full nose-up trim. The pilot was small and had to use both hands to push the wheel forward to stop the nose rising to a stall attitude. The force was such that the pilot was unable to let go with one hand to alter the trim setting, so the climb continued to a safe altitude before correcting the trim setting.

Note: This is why you should check visually that the trim tab has returned to the mid-position after you have checked the full range of movement. Many light aircraft have very powerful trimmers.

Operators and maintenance engineers should periodically check all the markings, placards, labels, etc. in aircraft cockpits, so as to ensure that these are clear and unambiguous, even to student pilots. Engineers should verify when carrying out the Annual Check.

10. EXCESSIVE WEAR ON THE CAMSHAFT LOBES

E

Aircraft : Slingsby T67A & B  
Date : Various  
Engine : Lycoming O-235 L2A & N2A

During annual inspections on seven aircraft, it was found that new cam shafts and cam followers were required because of excessive wear. Wear varied between 3 mm and 8 mm. All of the aircraft had the oil separator system fitted, these have now been removed by Mod No. 260. Hardness testing showed that the worn cam shafts were much softer than those that had not worn.

CAA Comment:

This problem has also occurred on Cessna 152 aircraft.

15. WORN FUEL SELECTOR IN FATAL ACCIDENT

P/E

Aircraft : Jodel D112 Registration : G-BHIM  
 (Applicable to other aircraft)  
 Date : May 1987  
 Reportable accident near Trefgraig, Gwynedd, North Wales.  
 Engine : Continental A65-8

The aircraft had made several cross country flights during the day and had returned to its home strip, landed, turned and took off again. This was followed by a circuit and touch and go landing during which the aircraft was seen to climb away but shortly afterwards the engine stopped. The aircraft crashed about half a mile north west of the strip killing both occupants.

Investigation of this accident has revealed a problem with the fuel cock, which is located immediately under the fuel tank and operated by reaching forward under the instrument panel. The operation is that the plunger (a) is moved downwards, within the barrel (b) to allow fuel to flow to the carburettor; the travel of the plunger is restricted only by a grub screw (c) located within a slot (d) on the plunger. On the accident aircraft however, the plunger (e) was found separated from its barrel and it was apparent that the top of the slot (f) had been worn away, allowing the plunger to extend further, and the grub screw to wear a groove along the cork plug. It could not be demonstrated conclusively that the plunger had been displaced from the barrel in flight (or in the impact) but the physical evidence suggests that even a light disturbance would have been sufficient to provoke a leakage of fuel. These fuel cocks were originally manufactured by LE BOZEC in France. The aircraft was manufactured in 1958.

It is not known whether this type of fuel cock is fitted to other aircraft types.



CAA Comment:  
 A CAA AD is under consideration.



10. FATAL DITCHING AFTER RUNNING OUT OF FUEL

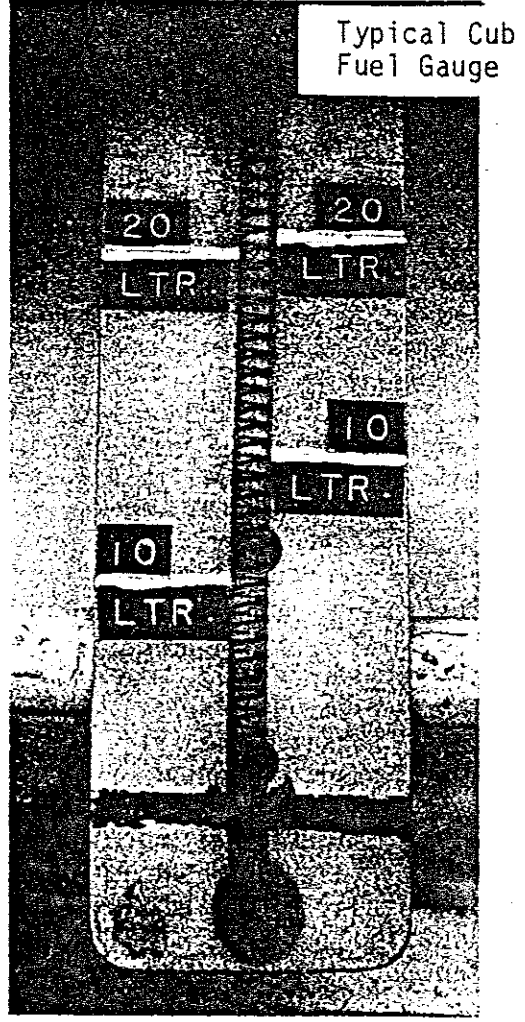
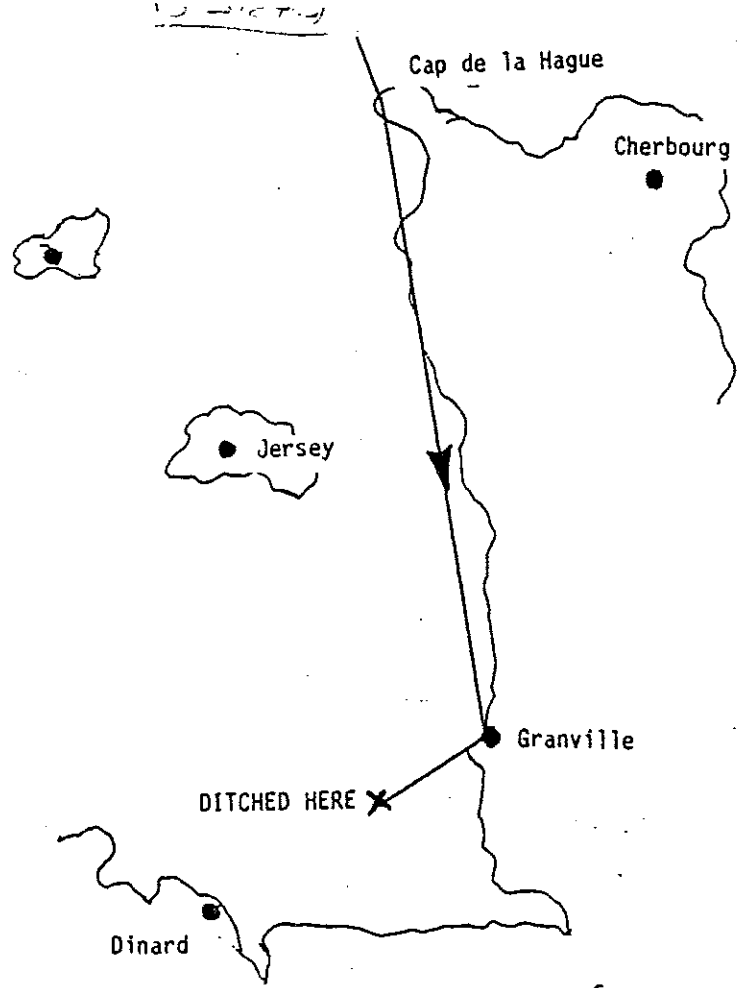
Aircraft : Piper PA18 Super Cub Registration : G-AMPF  
Date : 10th April 1987  
Reportable Accident near Dinard (French Investigation)

The aircraft left Staverton on a flight to Dinard via Swanage, Cap de la Hague and Granville. Both occupants were wearing lifejackets. When about 10 nm from Dinard, a mayday call was transmitted on the Dinard frequency and the aircraft was successfully ditched at about 16.55. The search and rescue services were alerted but the bodies of the two occupants were not found for almost 3 1/2 hours. (The sea temperature was 8 1/2 deg C at which survival time was about 1 hour). The dinghy which was stowed just behind the passengers head was not used. The bodies were located by the lights on the inflated lifejackets.

Analysis: Examination of the engine and fuel system in the little damaged aircraft did not reveal any relevant faults. All the evidence indicated that the aircraft had run out of fuel.

The owner pilot was a highly experienced retired airline captain, but on his longest ever flight in the Cub. The passenger was an airline stewardess familiar with emergency procedures.

The single fuel tank held 18 US gallons (no unusable fuel quantity being given) and the aircraft had been refuelled two days prior to the accident and made a short flight involving about 30 minutes of engine time. The quoted pilots operating handbook figure of 5 US gallons per hour would allow 3 hours 36 minutes of flying less the 30 minutes from the previous day and 5 minutes taxiing, i.e. 3 hours 01 minutes left. The flying time to the point of the mayday call was 3 hours 11 minutes, thus slightly (and unusually) bettering the book figure. The weather forecast gave a wind at 2000 feet of 240 deg 20 knots, gradu 270 deg 15 knots. The aftercast wind in the Jersey area was 2000 feet 230 deg 25 knots and at 3000 feet 240 deg 30 knots. The radar plotted ground speed was 56 knots to Swanage and 82 knots over water. The flight was made at 3000 feet.



The Cub fuel gauge is the sight gauge type with a ground scale and cruise scale. Accurate gauge readings are dependent upon the aircraft being in straight and level flight. The pilot was either in formation with or in radio contact with another aircraft throughout the flight and did not express any concern about the fuel state. It may be that he had not previously flown with such a low fuel level. Between Granville and Dinard, the pilot was flying directly into wind. Fuel was available at both Cherbourg and Granville. The Pilot's Operating Handbook was in US gallons per hour and miles per hour and the pilot may have used imperial gallons. An ASI calibrated in knots was fitted to the aircraft.

The occupants may have been saved if

- the dinghy had been used
- flares had been available

All of the factors in the above accident are covered in the CAA video "Fuel Management" i.e.

- regular fuel state checks
- fuel gauge accuracy
- stronger than forecast winds
- units of fuel measurement
- diversion for fuel

## 11: LOW LEVEL AEROBATICS

P

In the last three months there have been three fatal accidents where the aircraft were performing low level aerobatics. Don't do it, there have been enough newspaper headlines this year. Aerobatics and spinning MUST be done at a safe height. If you can't go high enough because of airspace restrictions, go to somewhere where you can.



On the subject of aerobatics it should be noted that AIC 27/1984 (White 125) withdraw recovery from developed spins from the PPL syllabus and placed greater emphasis on recognition and recovery from specific incipient stall/spin conditions. However para 18 of the AIC states 'pilots intending to carry out aerobatic manoeuvres are reminded that they should first undertake spin training, which includes recovery from developed spins, with a qualified flying instructor in aircraft which are cleared by the Authority for such manoeuvres'.

It is all too easy to spin out of a poorly executed manoeuvre, so make sure you are fully prepared for this if it happens to you.

We do not know if this had been done in all three of these fatal accidents.

4. VACUUM PUMP DRIVE BELT FAILED

GAS 129/87 P/E

Aircraft : Grob 1098  
Date : July 1987

It was noticed that the vacuum pressure was lost in flight.

It was found that the drive belt had failed. The vacuum belt drive had insufficient clearance from the pulley attached to No 2 magneto. The pulley flange had been extensively rubbed away by the belt; finally the metal reinforcing in the belt rubbed through which then caught and tore the belt in half. The manufacturers have been informed of the lack of clearance between the vacuum drive belt and the right-hand magneto drive pulley.

As a temporary fix the vacuum pump pulley has been repositioned further forward on the shaft, and a 16 gauge spacer fitted to move the right-hand magneto rearwards. Clearance between the vacuum drive belt and the magneto drive pulley is now 1/8". The aircraft had flown 330 hours from new.

7. FIRE DUE TO FUEL SPILLAGE AND UNAUTHORISED REPAIRS

P/E

Aircraft : Rollason Condor D62B  
Date : June 1986  
Reportable Accident at Watfield, Suffolk

Registration : G-AYZT

TUR FIRE !!

The aircraft was refuelled by the pilot. Fuel was seen dripping from the overflow pipe, and there was a delay of about two minutes before the pilot then tried to start the engine. It didn't start promptly as was usual, so the pilot pumped the throttle but it still would not start. He then noticed people waving at him and at the same time flames burst up in the passenger footwell. He released his straps and as he was getting out there was an explosion which blew most of the canopy out and buckled a section of the wings which the pilot sits over. He then got out as people arrived with fire extinguishers to put out the blaze. The aircraft was extensively damaged.

CAA Comment:

The cause appears to be a fuel spillage which was ignited during start-up, possibly brought on by the effects of over priming. It is sensible where there is fuel spillage under an aircraft to push the aircraft out of the way before attempting to start the engine.

CAA enquiries into the incident brought to light that the repairs on this aircraft had been carried out by a freelance maintenance engineer, whose B category cover included the DH82 Tiger Moth but not the Condor was responsible for certifying the work on the aircraft. Furthermore the CAA had not been informed about the major nature of the structural repairs required to be carried out. British Civil Airworthiness Requirements Chapter A4-2 covers procedures for overhauls, repairs and replacements of components, engines, propellers, radio apparatus, accessories, instruments, equipment and their installation. It should be noted that;

- a) Overhauls, repairs and replacements shall be carried out in accordance with the approved Manuals, drawings and schedules and any other documents required, or recognised by the CAA.

Contd....

- b) Furthermore, in the case of structural repairs to an aircraft where the repairs are of a major nature, or not covered in the particular approved Manual, the approved Organisation or the APPROPRIATELY LICENSED AIRCRAFT MAINTENANCE ENGINEER shall advise the nearest CAA Area Office of the nature of the repairs BEFORE THE WORK COMMENCES (see CAA Airworthiness Notice No 2 for list of addresses). Repair schemes, not previously approved by the CAA, will be investigated as modifications in accordance with the procedures in A4-1.
- c) Replacement parts shall be certified by an Organisation approved by the CAA for the purpose or by an alternative procedure agreed by the CAA.
- d) Overhaul, repair and replacement work shall be supervised by an Organisation approved by the CAA for the purpose (see BCAR sub-section A8) or by an appropriately licensed aircraft maintenance engineer.
- e) Where the work is to be carried out on an aircraft registered in the UK by a foreign Organisation not approved by the CAA, suitable arrangements should be agreed with CAA Airworthiness Division.
- f) Depending on the nature of the overhaul, repair or replacement made to the aircraft, the following may be required by the CAA:
  - i) The aircraft to be weighed, and an amended Weight and Centre of gravity Schedule or its equivalent as prescribed in A5-1 to be prepared.
  - ii) The aircraft to be tested in flight to schedules approved by the CAA in accordance with A5-2.
- g) When the work has been fully inspected and tested where necessary, for conformity with the specifications, drawings and instructions relating to the overhaul, repair or replacement, the necessary certification and where appropriate, log book entries shall be completed in accordance with A4-3. Where the work has been carried out by a foreign Organisation in accordance with the above, the Organisation for whom the work has been carried out shall raise a Certificate of Release to Service where such is required. The foreign certificate can be used as evidence that an acceptable standard has been achieved.
- h) All relevant records of overhauls, repairs and replacements shall be held available to the CAA for examination and these shall not be destroyed without authorisation from the CAA.

## 18. EDITORIAL - POSTERS

We now have available a modified version of the yellow Poster on the subject of MET FORECASTS. This reflects the revised procedures for weather forecasts by phone. Copies of the other Posters are also available.

- Crosswinds
- Know your aircraft
- Have you really been cleared?
- Wear lifejackets
- Propellers and tail rotors can kill
- Weight and Balance
- Gliders don't need fuel
- Attention diverted
- Delayed, diverted or - Bookout
- Military Low Level Traffic (RAF Poster)

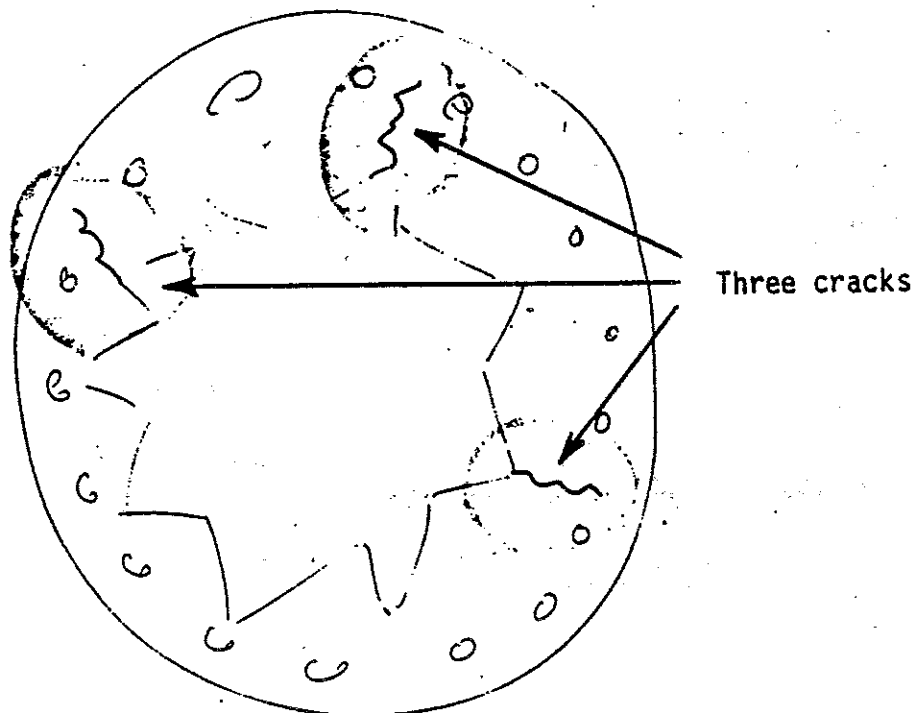
14. CRACKED CRANKSHAFT FRONT NUT LOCKPLATE

E

Aircraft : DHC1 Chipmunk  
Date : July 1987

The prop was being inspected to FRP001 (a mandatory requirement at 300 hour intervals). The crankshaft nut vernier locking plate was found to have three cracks in it.

The reporter then checked on another (foreign registered) Chipmunk which was nearby and found that the plate was also cracked having been inspected 200 hours previously by the reporter. A third aircraft looked as if it was satisfactory. The reporter suggests that this item should be die penetrant checked in addition to the prop and hub.



Three cracks

## CAA Comment:

The CAA is investigating. In the meantime the reporter's suggestion appears to be a sensible measure.

15. MAGNETO PROBLEM LED TO FORCED LANDING

E

Aircraft : Cessna 152  
Date : May 1987

SLICK MAGNETO.

Magneto failure led to a successful precautionary landing.

Engineering examination showed the left-hand magneto to be unserviceable, and one plug operating from the right-hand magneto was short circuiting. The unserviceable magneto was stripped for inspection, the distributor gearbox arm was found detached with severe arcing. It had run for 452 hours since the last 500 hour inspection. The magneto is a Slick 4281. Other aircraft in the operators fleet were inspected and three more magnetos of this type were found to be suffering from loose distributor rotor arms between the 500 hour inspection periods.

## CAA Comment:

A previous similar case resulted in an item in GASIL 4/86. At that time it was thought that maintenance personnel were unaware of the need for a 500 hour check. It now appears that the 500 hour check may not be frequent enough since the reporter above has found a number of cases of loose rotor arms between inspections.

The CAA is investigating.

7. ENGINE PROBLEM DUE TO FUEL FILTER BLOCKAGE

CAS 12 9/87

P/E

Aircraft : Cessna 172  
Date : June 1987

The aircraft left a Midlands aerodrome with full fuel tanks and was flown to a South East of England aerodrome to pick up another person. A further flight of 1 hour 40 minutes was made before returning to the SE aerodrome. The aircraft was then refuelled with 22 1/2 gallons of 100 LL. The aircraft took off again and climbed to 4000 feet followed by descent to 3500 feet. The mixture was leaned to peak then richened to settle at 690 deg C on the EGT gauge which corresponded with what was normally expected for this aircraft during the previous 30 hours the pilot had flown it.

About 50 minutes after take-off, it was noticed that the EGT had started to rise very slowly to about 750 deg C whilst maintaining a constant altitude, throttle setting and mixture setting. The mixture control was progressively richened during the next 15 minutes until the mixture setting at full rich showed 790 deg C on the EGT gauge. Operation of the carb heat control brought about a very rapid decrease of 50 deg C in the EGT reading whereas throttle settings had no effect other than that which would normally be expected. About 4 miles North East of another SE aerodrome a change in engine noise occurred whilst at 2400 rpm followed shortly afterwards by two surges of 300 to 400 rpm. An immediate landing was made at the nearby aerodrome. Two engineers carried out an inspection and conducted a prolonged ground run and although nothing specific was found it was thought the problem may have been fuel vapour lock. The pilot flew a solo circuit in order to check the engine operation before landing to pick up the others and return to the original SE aerodrome where the problems were discussed with the engineers and the fuel was checked for contaminants and for correct venting. It was decided to return to base and have the mandatory 50 hour inspection carried out as this was due shortly. After take off, the aircraft appeared to be operating normally and it was decided to adopt an aerodrome by aerodrome return route back to the Midlands. The aircraft took off and climbed to 2500 feet, everything being normal for the first 15 minutes. It was then noticed that the EGT had again risen to 790 deg C, operation of the carb heat now had no effect on rpm or EGT reading. A precautionary landing at Stansted was considered, but there was a change in engine note followed shortly after by a slight power surge and then a total power loss. Full throttle was applied with carb heat selected. Stansted was informed and the aircraft made an emergency landing on North Weald as it was close by. Whilst in the glide preparing for a forced landing, the engine momentarily went to full power on three occasions. These bursts of power were sufficient to enable the aircraft to reach North Weald.

Inspection by a licenced engineer revealed no contaminants in the main fuel filter, however, removal of the carburettor fuel filter revealed it to be completely blocked with a very fine fibrous material resembling paper. This material was collected and has been sent for analysis. The filter was cleaned and the aircraft given an extensive ground run before flying back to base without further incident.

CAA Comment:

The analysis of the material has not yet been made.

8. WEIGHT AND BALANCE

P

At the recent Great Blackbushe Aviators Weekend we ran a Weight and Balance competition on both days. Competitors had to guess the total weight of two suitcases (one pilot complained that he always used a spring balance) and then for a given passenger and fuel load work out if the weight and balance were within limits. A few pilots got full marks, whereas some quite clearly didn't know how to work it out even though we provided the Moment Arms and a calculator as well as the alternative weight versus moment chart. There were also mathematical errors in peoples calculations. Pilots also didn't know the meaning of Normal and Utility which is used on quite a lot of American and French aircraft. Watch out for our next Safety Sense Leaflet, 'Weight and Balance'.

No: 9/87

Ref: 1c

**Aircraft type and registration:** Pierre Robin CEA DR400/180R G-EKOE

**No & Type of engines:** 1 Lycoming O-360-A1A piston engine

**Year of Manufacture:** 1980

**Date and time (GMT):** 7 May 1987 at 1715 hrs

**Location:** Dunstable Airfield

**Type of flight:** Private

**Persons on board:** Crew — 1 Passengers — 1

**Injuries:** Crew — None Passengers — None

**Nature of damage:** Aircraft totally destroyed

**Commander's Licence:** Private Pilot's Licence

**Commander's Age:** 36 years

**Commander's Total Flying Experience:** 1083 hours (of which 80 were on type)

**Information Source:** Aircraft Accident Report Form submitted by the pilot and AIB examination of the engine.

The aircraft, which was normally employed as a glider tug, had been subject to a 'daily inspection' and taxied across the airfield for a distance of some 800 metres prior to departing in order to pick up a glider which had landed away. After reaching the take-off area of the airfield, it was shut down whilst preparations for this recovery were made. When the pilot attempted to re-start the engine some 5 minutes later, it would not start and so he elected to crank-over the engine in order to vent the cylinders of any excess fuel, but this time with the electric fuel pump switched off.

A second attempt was then made to start the engine, but with the same lack of response. The pilot later reported that it was turning over quite normally on the starter motor but without once firing.

At this stage, he and his passenger became aware of hazy smoke or vapour to the left of the canopy which, within seconds, turned into flame. Without any discussion, both occupants quickly vacated the aircraft. Flames could be seen coming over the left wing trailing edge and around the fuel filler cap. By the time they were both clear the engine cowling and underside of the fuselage were well alight, the complete aircraft burning out within several minutes.

Subsequent examination of the wreckage revealed that most of the engine fuel system had been burnt away, including the lower portion of the carburettor, all of the fuel supply hoses and part of the engine driven fuel pump. It could therefore not be determined if a defect had occurred in the fuel system or the intake system had become flooded during the attempted starts.

The aircraft had undergone an annual check by a regularly used maintenance organisation, some six weeks and 35 flying hours before the accident, during which the power plant was signed-off after checks for leaks following a ground run. In addition, as a result of an excessive 'mag drop' the engine was run with the cowlings off eleven days before the fire, by the same maintenance organisation, with no defects in the fuel system being apparent.

At the time of the fire the aircraft was operating on MOGAS fuel, and had been doing so for approximately 2 years. The maximum ambient temperature on the day of the accident was estimated at 17°C.