

BRITISH GLIDING ASSOCIATION

TECHNICAL NEWS SHEET 5/6/7/76.

1. AIRWORTHINESS 'AGGRO'.

Please add Section 1 items to 1976 Summary Defects.

1.1 Jantar 1.

B.G.A. AD/3/76 is attached herewith and has been mailed directly to owners - No defect reports received. Over exuberant aerobatics could be a contributory factor.

1.2 ASK 18 Canopy Lock.

The enclosed sketch from RAF Germany G.C. highlights an obvious malfunction that has already produced one in-flight incident.

1.3 Caproni A. 21 S.

R.A.I. AD/76-83/A21-S and Caproni Service Bulletin 76-06 affecting Serial Nos 217, 219, and 223 thru' 229 inclusive, requires drain holes to be installed. (Copy available from B.G.A.).

1.4 Caproni A 21 & A 21 S.

AD 76 - 117 / A21-6 calls for Aileron modifications to restore Vne to 252 km/h. Compliance with this AD cancels AD 76-83 /A21-5, and should be embodied on serial No's as stated by January 1st 1977. (Copy available from B.G.A.).

1.5 Pilatus B.4.

- (a) Cracking of the undercarriage Down Lock has been reported. The undercarriage selector locking bracket should be re-enforced as required. (RAFGSA Tech. Note S.33).
- (b) Stbd Rudder Cable found to be incorrectly routed under the seat, fouling a bracket.

1.6 T.61 Falke. - Rudder Pedal Guard fouls.

Vickers-Slingsby have issued a mandatory TT. Such heavy footed re-action was not required by the B.G.A. Technical Committee, to resolve an occasional hazard!

1.7 Pirats.

Aileron control joints in the centre-section may be damaged by attempts to de-rig before disconnecting. Inspect from underside of wing for signs of bending of the spade fitting. Air brakes rods have also been found bent. (Mr. L. A. Groves Cranfield).

1.8 Summer Shrinkage.

The drought is having its effect on glider airworthiness.

- (a) Oly 463. Aileron shroud gaps have closed up and aileron seizure has been reported with the wing under in-flight bending loads.
- (b) Loose Bolts in metal to wood installations generally may be seen to require tightening. Caution should be exercised, because the drought will end!

1.9 Kestrel 19 Flap / Aileron.

Interconnection Reversed. A case has been reported of incorrect assembly of the bell cranks aft of the seat, such that flap/aileron interconnection was reversed. (Les Welburn - Cleveland).

1.10 Cobra Rudder Cables.

In-flight failure at 300 hrs. Club Technical Officers are asked to arrange for the immediate inspection of all Cobra Rudder Cables for signs of failure at pulleys/fairleads under the cockpit floor area. Inspection to be recorded in Log Books.

1.11 K. 8 Shifting of Air Brake Stop.

KA7 Mod has been applied to rectify this problem. (Jack Ramsden).

1.12 Kestrel Rudder Cables.

TI No 77 issue 3 up-dates Daily Inspection.

2. GENERAL MATTERS.

2.1 Pik 20 Weight Increase.

Service Bulletin M.10 dated 26.2.76 authorises increased water-ballast to 140 kg capacity, and gross weight increase to 450 kgs. (Landing wt. not exceeding 400 kg).

2.2 Nimbus 2. Weight Increase.

TM-NR 286-8, authorises an increased maximum weight with water ballast from 530 to 580 kg.

2.3 Weight Increases (Wooden Aircraft).

Blotting paper effect may result in seasonal changes in empty weight, and B.G.A. Technical Committee will give sympathetic consideration to modest increases where weight watching technology has failed!

2.4 SF 25 / T61 Wide Chord Propeller.

B.G.A. have approved Doncaster Sailplane Services propeller drawing No. 6334-B-140-70.

2.5 Kaurit Glue.

We are indebted to the Vintage Gliding Club for the enclosed note on how to re-glue failed Kaurit glued structures.

2.6 Conspicuity of Gliders.

(See and be seen technology). A note by Frank Irving advises on the painting of gliders to achieve greater conspicuity. (G.R.P. gliders may be painted). Please encourage all concerned to comply with this scheme.

2.7 Blanik Rudder Cables.

Locally manufactured Cables have already demonstrated an improved life over manufacturer's cables. When manufacturing such cables, please refer to C.A.I.P. Leaflets. BL/6-24. Mod BGA/Blanik/1/76 has been assigned to U.K. Cables.

2.8 D.G.100 B.G.A. Certification.

This type may now be certificated by the B.G.A. provided that the following design improvements are incorporated:-

- (a) Rudder Cable integrity at rudder pedals. (Failures similar to Kestrel are likely to occur) Ref. BGA/DG100/1.
- (b) Ballast plumbing system, to be improved to prevent water entering rear fuselage (similar to ASW 17) Ref BGA/DG100/2.

Ironically the UK Agent, Don Austin, suffered a wet backside in the comps at Lasham!

2.9 Radio Station Approvals.

T. A. McMullin type TM6 is now C.A.A. approved Ref G 27-b.

2.10 B.G.A. Type Approved Glider List.

Please add: DG 100 (with mandatory mods)  
Kestrel 2 seater (BGA 1571 at Dunstable)  
A21S - Calif. (Not the A.21 unless it complies with  
AD 76-17 /A21-6).  
Scud III K.A.18.

2.11 Motor Glider C of A Renewals.

The C.A.A. have asked for Flight Tests to be made on M.G's after extensive over-haul and repair. Brief handling tests, verification of stall speeds, and a full power climb over (say) three minutes at normal weight (two crew and full fuel) are required. M-G's may be test flown only under 'A' conditions of B.C.A.R's Section A4-4 for the purpose of C of A renewal etc. - TO AVOID DELAYS, COMPLETE YOUR C OF A RENEWALS BEFORE THEY EXPIRE.

2.12 Pik 20B - Rudder Extension and associated mass balance changes.

B.G.A. Technical Committee have approved John Ellis/Steve White modification.

2.13 Wooden Repairs - Stress Concentrations.

The basic rules that apply to minimising stress concentrations in metal structures, apply to wood repairs. In particular repairs involving doublers, should not begin and end abruptly (Peter Philpot).

2.14 Approval of B.G.A. Inspectors.

The attached letter of approval outlines the privileges extended to B.G.A. Inspectors, and their responsibilities under the A.N.O. where U.K. Registered Motor-Gliders are concerned. (For information only).

3. SHOP WINDOW.

3.1 Watts Tyre Company

of Church Road, Lydney, Glos GL15 5EN (Lydney 2203) are keen to supply both aircraft and glider tyres and tubes in U.K. and metric sizes.

3.2 'Power Line' Level and Angle Indicators (Clinometers).

A mechanical pointer type clinometer motivated by gravity, in a plastic housing, has been evaluated and found to be entirely adequate for aircraft use. A small supply has been purchased for sale from the B.G.A. shop on a trial basis. Send £2.00 for 'Powerline' Level and Angle Indicator (inc. postage and V.A.T).

3.3 KA13 Brake-Shoes.

There is evidence that 'Honda 50' bonded brake-shoes are installed in KA13 brake assemblies. (D. Masterson - Fylde G.C.).

3.4 Roumanian Sailplanes - Product Support.

It would appear that existing agency agreements are being terminated and product support may become difficult.

3.5 Insurance Cover.

B.G.A. are investigating proposals to provide liability Insurance Cover to B.G.A inspectors, (also for instructors) - Details should be available for inclusion in Inspector Renewal Fees due in OCTOBER, 1976.

3.6 Gypsy Engine Repairs and Overhauls.

If you have problems, you may be able to obtain assistance from Norvic Racing Engines, Little Staughton, Beds (Colmworth 700 Mr. Steve Sandville). (Also C.90's Lycomings etc).

3.7 Canopy Mould and Oven

Jack Ramsden, Whinny Fell, Brampton, Cumbria (069 76 326) has the above equipment for sale.

R. B. Stratton.  
Chief Technical Officer.  
25.7.76.

---



The British Gliding Association  
Registered in England No. 2114322  
Registered Office in England

General Secretary: Barry Hulse

Kimberley House, Vaughan Way, Leicester  
Telephone 0533 51051/2

# British Gliding Association

Dear

B.G.A. Inspection Approval  
Ref: \_\_\_\_\_

The B.G.A. Technical Committee have extended to you the privileges of B.G.A. Inspection Approval in categories 'A' (Airframe) 'M' (Metal Repair) 'E' (Engine Maintenance). Your reference number is on the heading of this letter and should be used at all times. You are reminded that this privilege may be withdrawn by the B.G.A. at any time.

The B.G.A. Technical Committee wish to be assured that you have access to the selected list of Civil Aircraft Inspection Procedure Leaflets (C.A.I.P.'s) applicable to gliders (and motor gliders) (52 Leaflets, price £4.62. (inc. post) from the B.G.A. Shop).

For those Inspectors who will be exercising their privileges under CAA/BGA Inspection Authority Ref DAI/8378/73, in respect of British Registered Motor Gliders, your attention is drawn to the Air Navigation Orders, and Regulation 16 of the Air Navigation (General) Regulations, where such Regulations apply (available from L.M.S.O.).

On receipt of your Inspection Approval Fee (£3.30) renewable 1st October each year, and £3.00 for Forms IINSF 267 the necessary inspector paperwork will be despatched to you, together with future Technical News-Sheets and Mandatory Inspection Summary.

R. B. Stratton.  
Chief Technical Officer.

To: British Gliding Association,  
Kimberley House, Vaughan Way, Leicester.

Inspection Approval Ref: \_\_\_\_\_

Annual Fee	£3.30.	
C.A.I.P. Leaflets	£4.62.	(Please delete items not applicable)
Forms 267	£3.00.	

NAME .....

ADDRESS .....

- Patron: HRH The Duke of Edinburgh KG
- President: Philip Wain CBE
- Vice Presidents:
  - Paul Mears MBE
  - Za Orléans Marshal St. Tropez Air Base, RAF Odiham
  - Jane Clarington MBE DFC
  - Sir Peter Scott CBE CBE CVO
  - Dr A E Soper MA FRGS
  - KG Wainwright Res. FCO CVO CBE



<sup>TNS</sup>  
The British Gliding Association  
Registered No. 422408 England  
Registered Office at address:

General Secretary: Barry Rolfe

Kimberley House, Vaughan Way, Leicester  
Telephone 0533 41031-2

# British Gliding Association

JANTAR 1 - BGA AIRWORTHINESS DIRECTIVE 3/76 - 29th April, 1976

---

The following telegram (as written) has been passed to the B.G.A. by Daltrade Limited, from PZL:-

\* Inspecting one of the SZD - 38 Jantar 1 Sailplanes, it was found the damaged fixing of the wing bolt on the spar root (Part No 4 on drawing No 2 page 5 of the Technical Service Manual). Referring to the above fact we should like to ask you to perform carefully the inspection of this area on both the wings of your sailplane. In the case of any symptoms giving proof of such damage (play, local glass-fibre compression or crash etc), the flights should be stopped and the manufacturer notified. The particular instructions for the further procedure if it will be necessary in your case will be sent soon!

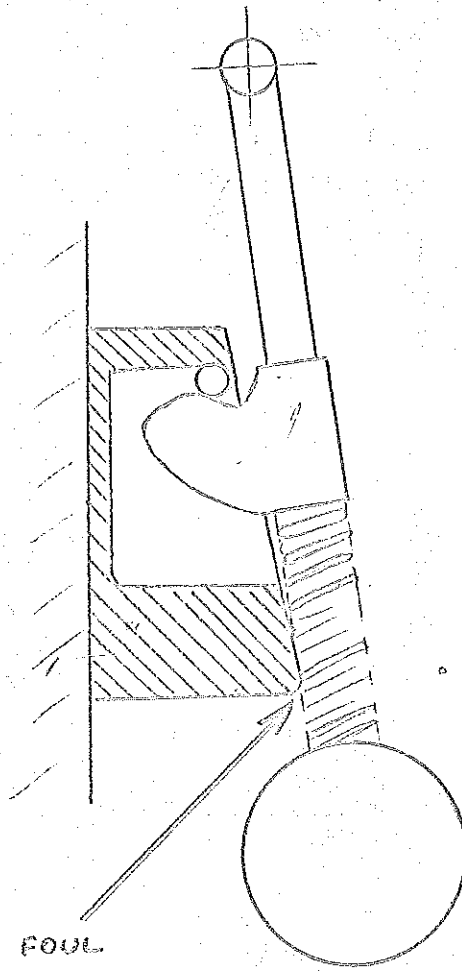
Copies C.A.A. Data Unit, Redhill.  
Wing Commander B. Kidd RAFGSA.

\* or (Daltrade Limited, 181-183 Warwick Road, London SW14 8PM.  
(Southdown Aero Services Ltd., Lasham, Alton, Hants.

R. B. Stratton.  
Chief Technical Officer.

Patron: HRH The Duke of Edinburgh KG  
President: Philip Williams CBE  
Vice Presidents: Basil Woods MBE  
Air Chief Marshal Sir Theodore Motley KCB CBE  
John Purdon MBE LFC  
Sir Peter Scott CBE DEC M.D.  
Dr A E Bristow MA FRIMA'S  
K G Wilkinson 2nd Lt CGI IAC CEng FRAeS

ASK 18 Canopy Lock.



PREVENTING  
FULL ENGAGEMENT.

ASK 18 - CANOPY LOCK

KAURITE GLUE

In the article 'TO HELP WITH RESTORATION WORKS which accompanied our February 1976 News Letter, the question of how to prepare casein-glued structures, which had disintegrated, for re-glueing with aerolite, was discussed.

To that we now add THE TECHNIQUE FOR RE-GLUING FAILED KAURITE-GLUED STRUCTURES WITH AEROLITE.

All our Swedish and German gliders built between 1940 and 1945 were glued with Kaurite, whereas pre-War gliders and later French-built gliders were glued with Casein. Thus, as there are many Kaurite-glued gliders still airworthy, the following may be helpful.

After 1940 synthetic wood glues were being developed for aircraft construction to replace the previously used casein glue which deteriorated through damp. In Britain, Aerolite 300 series was produced to glue the wooden DH Mosquito. At that time also, in Germany, Kaurite glues were the replacement for casein.

Kaurite, after the addition of a hardner sets hard and is similar to bakelite. It is found in two different colours: dark brown/purple and pinkish white. The dark brown is the best and is most likely to hold. It was used for primary, ply covered structures, i.e. stressed D-box leading edges of wings and tailplanes and semimonocoque fuselages.

Whereas casein structures will fail if kept damp, Kaurite glue is not quite so vulnerable. Nevertheless, Kaurite can fail because of damp and all Kaurite structures were totally varnished internally, and thus they were sealed from moisture.

When preparing a failed Kaurite structure for re-gluing, the primary aim must be to ensure that the wood will accept the new glue into its grain. Thus, all traces of the old glue, which may have sunk into the grain, or varnish, or surface hardness (especially in the case of plywood) must first be removed before re-gluing with Aerolite or Aerodux. Painting Aerolite hardner onto the wood before rubbing the wood down with sandpaper will help to ease the Kaurite out of the grain. It will also neutralise any alkali in the wood which might prevent the hardner from setting the Aerolite. Plywood must have its to-be-glued surface sandpapered before gluing on to a structure.

Many early German Grunau Babies were covered with Beech ply which was much darker and harder than Birch ply. The hard surface of the Beech ply sometimes did not accept glue and thus the ply came off the pine structure rather too easily.

Therefore, in the case of casein, the Aerolite hardner had to be painted on primarily to totally neutralise the Casein, which is an alkali, as well as to bring the Casein out of the wood, with Kaurite the aerolite hardner has to be painted on primarily to help bring the Kaurite out of the wood. Both Kaurite, Aerolite and Aerodux all have acid hardners and so the alkali problem is not so severe.

However, as Aerodux is rather similar to Kaurite glue and has penetrative qualities superior to Aerolite, it is preferable in our opinion to re-glue failed Kaurite structures with Aerodux.

If Aerolite is to be used, the technique is:

1. Paint with hardner
2. Clean off all the old glue
3. Re-paint with hardner and then re-glue surfaces

Another reason for Kaurite glue failing is shock. For synthetic resin glues are very brittle.



## BRITISH GLIDING ASSOCIATION

### Conspicuity of Gliders

The Executive Committee of the British Gliding Association strongly recommends that all glider owners, both club and private, should take steps to render their gliders visually conspicuous, in pursuit of the "see and be seen" principle.

Detailed considerations are as follows:

1. General. Gliders are probably least conspicuous in bright but hazy conditions, when presented endways-on to the observer, and when the colour is white, cream, grey, aluminium, light green, light blue, or something similar. They are rendered more conspicuous by applying bright colours such as orange or flame, if possible in the form of fluorescent ("Dayglo") paints or plastic film. The regions available for such treatment are often limited by structural or aerodynamic considerations but, fortunately, those listed in paragraph 3 below are very effective visually. The colours mentioned above seem to be more effective than red, particularly when the red is of a darkish shade. Blue or green are least effective and are not recommended.
2. Wooden Gliders. There is no significant structural (i.e. temperature) limitation on the use of coloured finishes. Many wooden gliders are already very conspicuous and require no further treatment. However, there are also an appreciable number whose finish is almost entirely white, cream or some other neutral colour: it is recommended that, as a minimum, bright colours should be applied as for glass-fibre gliders (paragraph 3 below). The coloured regions on wooden gliders can, of course, be much more extensive, subject only to aesthetics and the need to avoid, so far as possible, paint edges which could upset the boundary layer.
3. Glass-fibre Gliders. Glass-fibre gliders are normally supplied with a white-pigmented gel coat and identification marks in a pale colour. The reason for the white pigmentation is that the resin used for the main structure becomes appreciably weakened at temperatures easily attained by coloured surfaces directly exposed to the sun's rays. Colour should only be applied to lightly-stressed parts of the glider, or in regions unlikely to be exposed to the direct rays of the sun for appreciable periods. For example, it would be quite unacceptable to apply a band of colour to the upper surface half-way along a wing.

It is obviously difficult to describe a scheme which is applicable to all types of gliders and, in any case, owners will doubtless wish some freedom to personalize their machines. A general guide to the location of the coloured regions is as follows:

- (a) Wing and ailerons. Within 500 mm of the tips, upper and lower surfaces. Nowhere else.
- (b) Fuselage. Around the front 250 mm of the nose and under the nose and cockpit area. Nowhere aft of the wing leading-edge.
- (c) Fin (T-tail). Nowhere.
- (d) Fin (conventional tail). Top 250 mm.
- (e) Rudder. Top 250 mm. Bottom end below operating mechanism only.
- (f) Tailplane and elevator. Nowhere.

The above dimensions are not intended to be exact but the advice of the Technical Committee should be sought if an owner wishes to colour significantly greater areas or different locations.

Aircraft cellulose finish seems to be quite satisfactory provided that the gel-coat is thoroughly cleaned before application. If other finishes are used, care should be taken to ensure that they are compatible with the gel-coat.

- 4. Metal Gliders. Any metal aircraft with a "natural" finish can often be remarkably inconspicuous and a few 'cheat lines' in a dark colour offer little improvement. The considerations are similar to those of paragraph 2 above: extensive areas of brilliant colour are recommended.
- 5. Stroboscopic Lights. An obvious aid to conspicuity is the strobe light. Examples of the small portable type have been examined on behalf of the Technical Committee and were found to be quite useless in bright daylight. It is hoped to carry out further investigations but it seems likely that the weight of the batteries for a really effective installation may be excessive.

F.G. Irving

3.6.76

3. SHOP WINDOW.

3.1 Glider Conspicuity.

Pressure adhesive fluorescent tapes made by 3M, are available from Duramark, Durable Markings Ltd., Rading Road, Henley on Thames, Oxon. RG9 1EJ.

Chief Technical Officer.  
OCTOBER, 1976.