British Gliding Association
Aircraft Inspection

Mandatory

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Subject: Structural inspections

Applicability: All wooden structure gliders, with the exception of Schleicher types that are covered by separate inspection, constructed using Kaurit glue including but not limited to: Scheiber L-Spatz, Bergfalke II, II-55, III & IV, wooden Scheibe gliders
(This inspection is strongly recommended for all similarly constructed motor glider types)

Effective date 31st March 2006

For Schleicher gliders please refer to BGA inspection 042/07/2004 issue 3

Accomplishment: At the next annual inspection after the effective date, these instructions must be carried out unless they have been carried within the past 5 years or the glider has had a complete recover and structural inspection during that period, in that case the inspection becomes due 5 years from the previous inspection or recover.

Repeat at 5 year intervals

Reason Following an in flight wing failure, inspections were carried out on all BGA registered Schleicher wooden gliders. Kaurit adhesive had been used on all these gliders and had sometimes suffered from failure, apparently due to a combination of age and damp conditions. Glued joint deterioration has been found in sufficient numbers of these gliders to warrant an on going inspection programme extended to other types constructed using Kaurit glue.

Instructions: Identification of Kaurite glue.
Kaurite glue may be pink or grey in colour, however sometimes it is almost black depending on the filler material used. Aged Kaurite glue has a crystalline structure when a joint is separated (sugar like). It was mainly used on post war German gliders. Slingsby, Schempp-Hirth and PZL have indicated they did not use it, however care must be taken to ensure these types were not repaired using Kaurite glue in the past. If in doubt, carry out the inspection.

(a) General inspection

Carry out a thorough general external inspection of the entire aircraft. Pay particular attention to creases in the fabric or paint cracks, which may indicate an underlying or internal structural problem. Pay particular attention to the wing lower surfaces if a heavy landing or other ground incident may have occurred. Carefully examine the fuselage and the wing and elevator trailing edges. If there is any doubt as to their integrity remove sufficient fabric to carry out a detailed internal inspection. Wing TE glue failure is a particularly common problem.

(b) Wing Structural Inspection

Identify areas of high stress loading concentration such as wing spars, drag spars, air brake box, aileron or flap cut outs structural attachment points and load transfer points.
Inspect the above for any signs of glue deterioration or dis-bonding cracks or other defects.
It will be necessary to gain access by opening up fabric panels if insufficient inspection openings are available. Due to the different designs of gliders, it is not possible to give specific locations for these access points.
Pay particular attention to load transfer points such as where drag spars or air brake cut out boxes attach to main spars.
The use of feeler gauges will assist in determining dis-bonding or grain cracks. Generally if a feeler can be inserted 3 to 4 mm then it should be investigated. The application of appropriate pressure in the direction of normal load may assist in identifying defects.

If the feeler gauge can be entered more than 3/16" (4mm) or any evidence of glue failure is observed the aircraft must not be flown. All the fabric must be removed and a complete aircraft structural survey carried out. An Inspection report must be submitted to the CTO for further instructions.

Wing trailing edge aft of the spar, Inspect secondary structure as visible. This will include wing ribs, trailing edge structure, reinforcing segments, bracing struts, gussets, and intercostals etc. for signs of glue failure or deterioration. Apply slight pressure to confirm integrity remembering that many of these items are very light structure. Make use of all existing and new access points.

Isolated minor failures should be repaired using approved techniques. Extensive failure or deterioration should give cause for concern and further investigation should be carried out, as this may be indicative of general poor condition.

In all cases of defects being found a report must be submitted to the CTO.

(c) D box Leading Edge inspection - If no faults are found during the inspections listed above (parts a & b) the following inspection need not be carried out. If faults have been found then carry out the following inspections.

The internal structure of the leading edge “D” box should be inspected for any signs of deterioration or glue failure. Access may be by using boroscope inspection equipment. If this is unavailable then access holes should be made.
Access through enlarged drain holes less than 10mm diameter may be repaired with suitable tape. Larger access holes must be repaired using approved techniques.
Stiff wire or hand flexing should be used to verify the integrity of internal structure during visual inspection.

If any evidence of glue failure or deterioration is observed, additional access into the D box must be made and a complete aircraft structural survey carried out. An inspection report must be submitted to the CTO for further instructions.

Record compliance and findings in the glider log book.

Feedback: In addition to those aircraft reported as failing the inspection for whatever reason, the general condition and any minor defects noted during this inspection should be reported either separately or on the General Comments section of the BGA267 Airworthiness Report form.

Sources of Information: To assist in determining the type of structure and assessment of any deterioration found the following publications may be of assistance:
BGA Standard Repairs to Gliders.
CAA CAP 562 Civil Aircraft Airworthiness Information and Procedures, Leaflet 6-1 Inspection of Wooden Structures.
FAA Advisory Circular AC43-13, Chapter 1, Wooden Structures.
Guidance issued by the glider manufacturer.

Approved By
Jim Hammerton, Chief Technical Officer