

THE GLIDING FEDERATION OF AUSTRALIA

**GFA AD 541**  
(ISSUE 1)

**GFA AIRWORTHINESS DIRECTIVE**

**TYPE AFFECTED:** All Slingsby T51 Darts with aluminium alloy (dural) spar booms.

**SUBJECT:** Inspection for delamination.

**BACKGROUND:** Glue joint failure has been discovered in a wing due to ingress of water in the area of the airbrake box.

**DOCUMENTATION:** Slingsby Aviation Technical Instruction No 109/T51 Issue 3 forms part of this AD.

**ACTION REQUIRED:** Carry out inspection and annotate aircraft's logbook in accordance with the above TI 109/T51 Issue 3.

**WEIGHT AND BALANCE:** Not affected.

**IMPLEMENTATION:** Before further flight.

**COMPLIANCE:** The requirements of this GFA Airworthiness Directive are mandatory. This Directive is issued pursuant to the Rules and Regulations of the Gliding Federation of Australia.

SIGNED:

*Mike Masters*



*for* CHIEF TECHNICAL OFFICER AIRWORTHINESS

For and on behalf of:

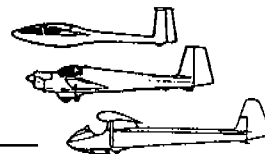
THE GLIDING FEDERATION  
OF AUSTRALIA

GFA AD 541

ISSUE: 1

8 September 2000

Page 1 of 6



# TECHNICAL INSTRUCTION

T.I. No: 109/T51

**Title:** : INSPECTION OF DART 15/17M ALUMINIUM ALLOY (DURAL) SPAR BOOMS

**CLASSIFICATION:** This Service Bulletin has been Classified by SAL as Mandatory

**COMPLIANCE:** Before next flight if TI 109/T51 Issue 2 has not been accomplished and Paragraph 11 at each annual.

**THIS T.I. SUPERSEDES T.I. 58 IN ITS ENTIRETY**

**THIS ISSUE 3 SUPERSEDES ISSUE 2 - CHANGES AS BELOW:**

Compliance now deletes 5 year interval requirement  
Applicability paragraph reading "The following works numbers ....." deleted  
Paragraph 4 has iii) added, was part of ii)  
Paragraph 4 ref b) "and 6. ...." added  
Paragraph 8 "Ref paragraphs ...." added  
Paragraph 9 ii deleted "At each 5 year ....."  
Paragraph 11 and 12 added

## APPLICABILITY:

T51 Darts with aluminium alloy spar booms.

## INTRODUCTION:

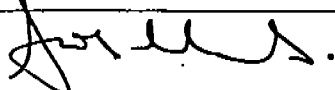
This T.I. introduces an inspection to Dart 15/17 metre sailplanes with aluminium alloy spar booms. For identification purposes, the aluminium alloy spar measures 56mm (2.2") approx across at the root rib, top surface - less at the lower surface. The wooden sparred Dart measures 155mm (6.1") at the root rib.

This inspection has been prompted following the findings of an investigation into glue joint failure on a stbd wing due to water ingress in the area of the airbrake box.

The skin over the spar area was removed locally along the length of the airbrake box to investigate the extent of the failures. A feeler gauge, .002" (.05mm) thick, was then run along the aluminium alloy spar boom lamination joints. This action highlighted a clean delamination over the depth of the alloy aluminium boom over a length of 150mm (6"). Further delamination was then found.

This particular wing had been subject to water leaking onto it whilst stored in its trailer.

The port wing was then investigated for completeness and this too revealed delamination and corrosion at the interface of the aluminium alloy spar booms and ply veneer. Outwardly this wing showed no signs of glue failure, corrosion or water contamination.

Approved by: 	Date: 21.08.00.	Issue 3
For and on behalf of SLINGSBY AVIATION LIMITED		
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Page 1 of 5		

**ACTION:**

1.
  - i) Carefully remove the ply skin from both wings, over the upper and lower spar for the length of the airbrake box. Refer to Fig. 1.
  - ii) Carefully remove paint to expose root fitting joints.
2. Ensuring aluminium alloy booms are not damaged, carefully clean away any "Redux" that may have spilt from the joints during manufacture.
3. With the aid of a feeler gauge, .002" (.05mm) check for the integrity of all exposed joints for delamination and/or exfoliation corrosion (white powdering on the metal). Ref Fig. 1 Detail B and C.
4.
  - i) If delamination or corrosion is found, the damage must be repaired before further flight. Inform SAL of the extent of the damage before proceeding with boom repairs.

Note: If T.I. 58 has been completed since 1st January 1997 and aircraft was found to be satisfactory, para 4 ii) need not be carried out, continue as per para 5.

- ii) If no delamination or corrosion found check for water contamination in other parts of the wing.
  - iii) This can be done by the use of an endoscope. Access via existing 6mm dia (¼") drain holes.
    - a) If water contamination and/or exfoliation corrosion is found remove skin over the appropriate area of spar and inspect as paras 3 & 4 i).
    - b) If no contamination and/or corrosion found refer paragraph 5. and 6. as appropriate.
5. Should any doubt exist as to the integrity of the spar, remove the skin locally and inspect as para 3 & 4 i).
6. Upon satisfactory inspection, repair skin\*, ensuring exposed areas of the metal spar are re-protected eg zinc chromate (Duralac). Do not repair using acid hardener based glues eg Aerolite 300 Series etc. For repairs Aerodux 500M/501 or equivalent are recommended. If in doubt contact SAL.

Ensure, following repair, drain holes are not blocked.

Note for aluminium alloy boom delamination and/or corrosion repairs refer SAL.

\*Dart 15M skin Gaboon V35 2mm ply laid at 45°  
Dart 17M skin Gaboon V35 2.5mm ply laid at 45°

Repair as per page 5 of this TI. Also refer to FAA EA-AC43.13-1A & 2A Acceptable Methods, Techniques and Practices Aircraft Inspection and Repair Para 23.

7. After care:

- i) Ensure sailplane is not subject to water ingress, ie prolonged exposure to rain or damp conditions. Minimise water traps and ensure sailplane is dry prior to hanging/trailing.
- ii) When stored in trailer ensure:
  - a) Trailer is in good repair.
  - b) Trailer is vented and dry.
- iii) When washing and/or using wet and dry abrasives, eg during paint repairs, ensure water is fully drained from wing and wing is left dry.

8. Prior to each flight following storage, ensure glider spar fittings and airbrake boxes are suitably protected and show no sign of corrosion and/or water contamination. Should corrosion and/or water contamination be present, carry out inspection to Paragraphs 4. iii) initially and then if required, inspection to Paragraphs 1. to 6. and 9. as necessary.

9. Recording:

After satisfactory inspection and/or repair annotate in Logbook "T.I.109/T51 carried out".

10. On initial application of this T.I. please inform SAL of:

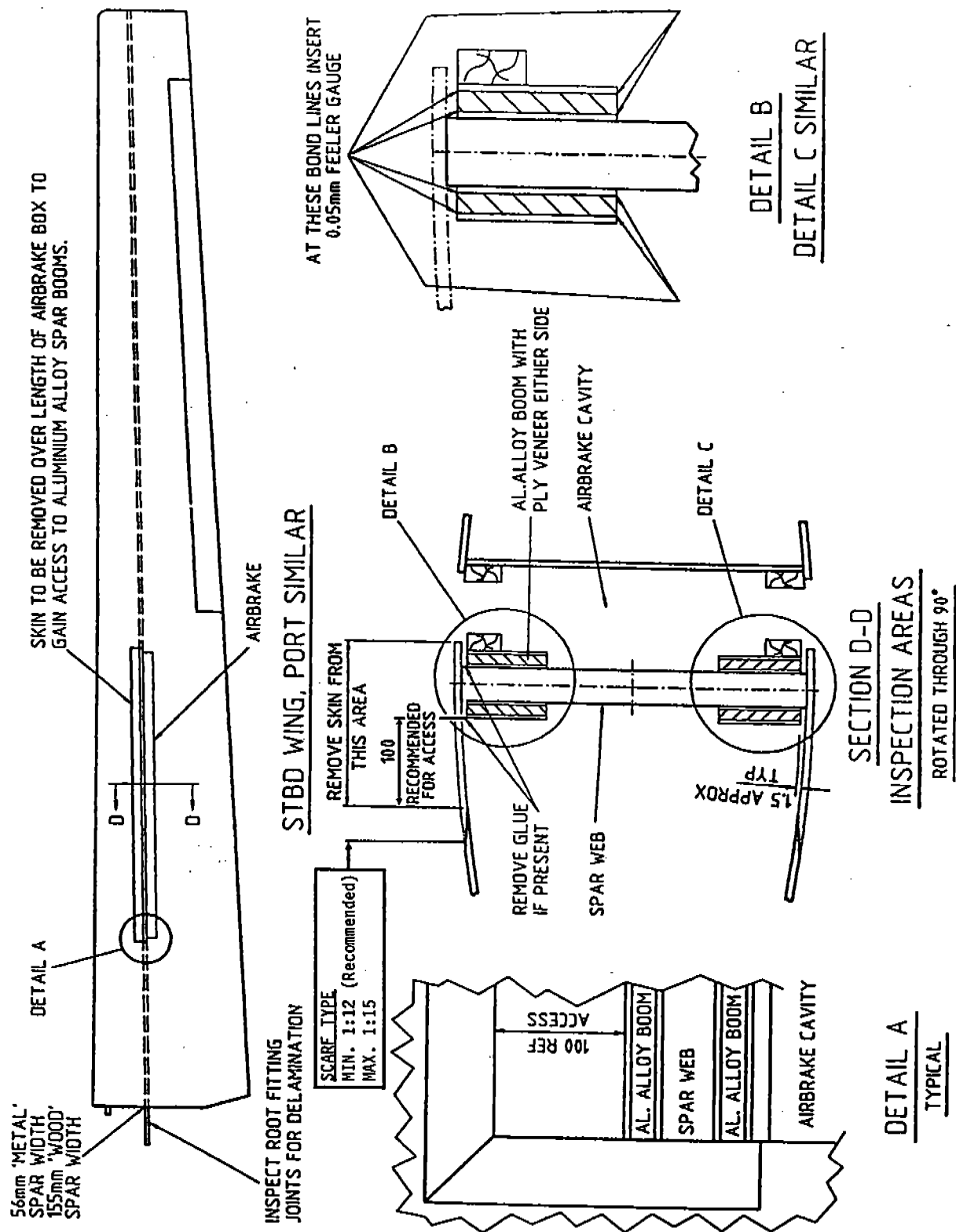
- i) Your/Owner's name and address.
- ii) Dart type, ie 15/17, metal/wood spar, retractable/fixed undercarriage, Wortmann wing, 15m to 17m conversion, wood/metal tailplane.
- iii) Works Number, eg 1454.
- iv) Certification authority registration.

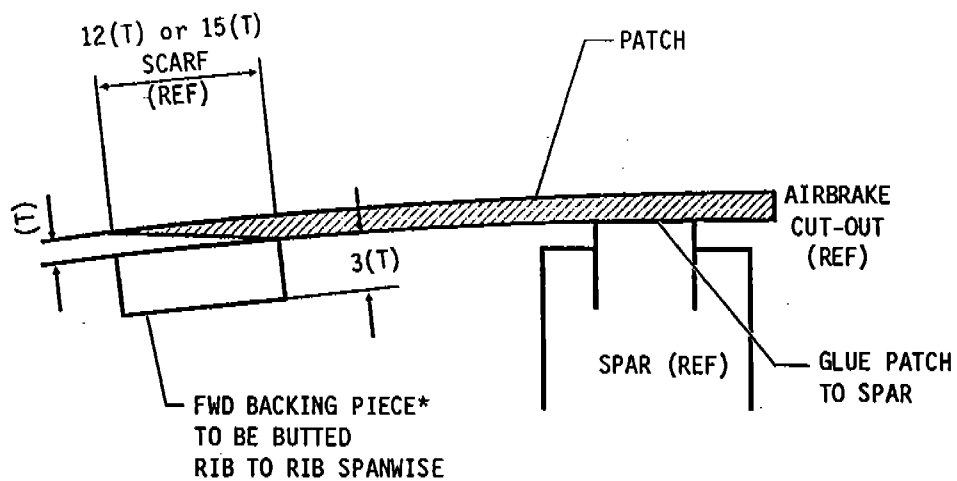
11. At each annual, inspection of spar by endoscope is to be undertaken, ref Paragraph 4. iii). Should corrosion and/or water contamination be present, carry out inspection to Paragraphs 1. to 6. and 9. as necessary.

12. Owner/Maintenance/Inspector Note.

Following initial satisfactory inspection/repair as required by this T.I. at Issue 2, it is in the owners interests to observe paragraphs 7 and 8 and if any doubt exists reference to the spar's integrity, to carry out inspection at Paragraphs 4. iii) initially and then if required inspection to Paragraphs 1. to 6. and 9. as necessary.

For further information or repair schemes please contact SAL Customer Support Department.


**FIGURE 1**



\*FORE AND AFT BACKING PIECE  
TO BE BUTTED BETWEEN  
FWD BACKING PIECE TO SPAR

**FIGURE 2**