

See:

GFA/AD 19

SLINGSBY 2

COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF CIVIL AVIATION

AIRWORTHINESS DIRECTIVE -- GLIDERS

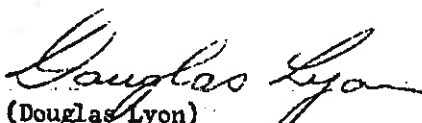
GFA/SLINGSBY/ 6/73/1

SUBJECT : Technical Instruction No. 58 relating to special inspection of main spars of Slingsby T-51 gliders has been received, drawing attention to a corrosion possibility.

REQUIRED ACTION : For Slingsby T-51 "Dart" Gliders fitted with metal reinforced spars, the inspection detailed in Technical Instruction No. 58 is to be carried out.

COMPLIANCE : Slingsby Technical Instruction No. 58 is part of this Airworthiness Directive, the requirements of which are mandatory for gliders of the type in Australia. Results of the inspection are to be forwarded to the Chief Technical Officer Airworthiness,  
143 Blackburn Rd.,  
Syndal, Vic. 3149.  
as well as to Slingsby Sailplanes.

This Airworthiness Directive is issued pursuant to Air Navigation Regulations under the delegated authority of the Director General of Civil Aviation.

  
(Douglas Lyon)

CHIEF TECHNICAL OFFICER -- AIRWORTHINESS

GLIDING FEDERATION OF AUSTRALIA

Date of Issue : 25/6/73

May 1973  
Issue 1

TECHNICAL INSTRUCTION NO. 58

Inspection of T51 Dart Main Spars

This instruction applies to all Dart aircraft fitted with metal reinforced spars. It is not applicable to aircraft with all wood spars; a list of those aircraft originally supplied with all wood spars is given at the end of this instruction.

This inspection has been made mandatory by the Civil Airworthiness Authority and must be carried out as soon as possible, but in any case aircraft may not be flown after 13th July 1973 unless this inspection has been carried out.

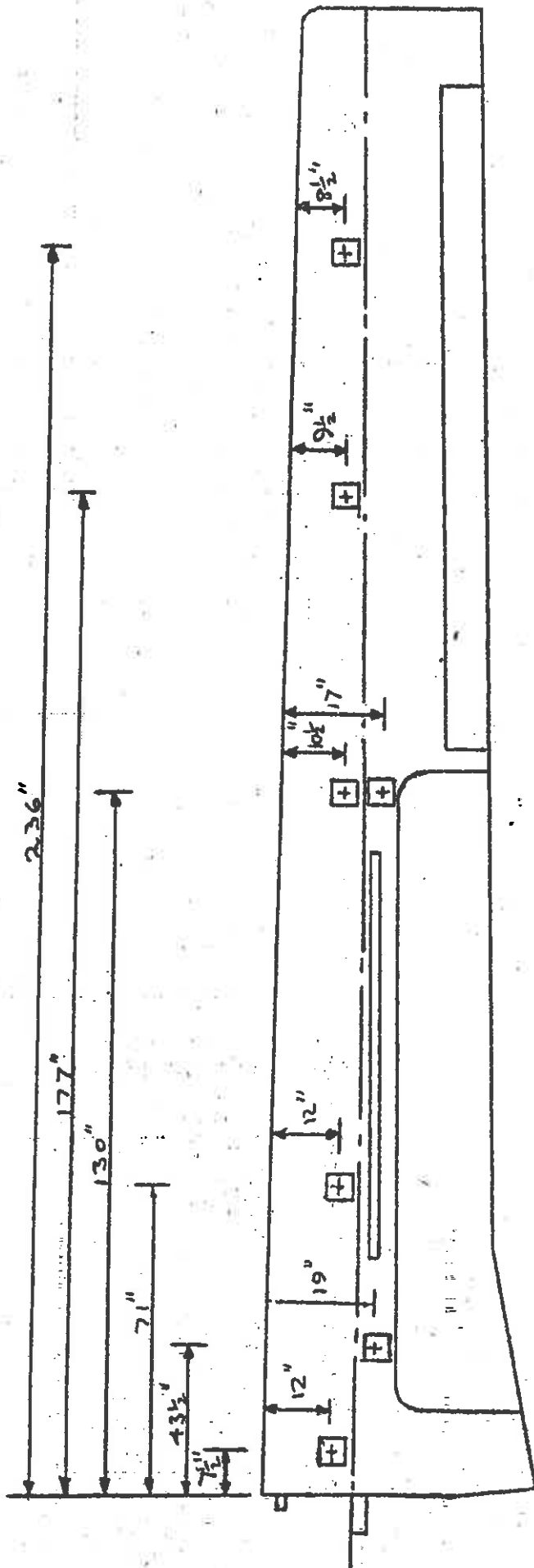
This inspection follows the discovery of severe metal corrosion in the spar of a Dart. Although the aircraft was clearly not in a good overall condition, there is no documented evidence of any severe environment being encountered.

Inspection Procedure

1. Mark the hole centres as shown on the diagram, drill  $\frac{1}{8}$ " dia. hole in the ply and gradually open up the holes to 3" - 4" square.
2. Thoroughly inspect the metal portion of the spar paying particular attention to bolted joints and rib attachment points.
3. If any significant corrosion exists, that is more than 0.007" in depth the aircraft will require repair action.
4. The holes in the wing should be repaired in accordance with standard practice and the results of the inspection sent to Slingsby Sailplanes.
5. After the results of the inspection have been analysed by Slingsby Sailplanes further action may be required on an annual basis.

List of Dart T51 Aircraft Originally Supplied with Wooden Spars

<u>Works Number</u>	<u>Type</u>
1405	15m. wood
1421	" "
1423	" "
1424	15m. wood - later 17m. wood
1425	15m. wood
1429	" "
1430	" "
1431	" "
1434	" "
1435	" "
1437	" "
1438	" "
1439	" "
1440	" "
1441	" "
1446	" "
1459	" "
1445	15/17m. wood - later 17m. metal



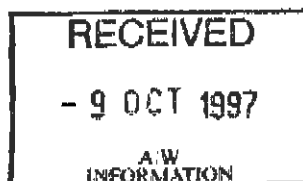
CUT INSPECTION HOLES IN LOWER SURFACE OF BOTH WINGS AS SHOWN.

**SAFETY REGULATION GROUP**

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Our ref 9/97/CtAw/196

3 October 1997

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**NOTIFICATION OF A CAA AIRWORTHINESS DIRECTIVE**

Please be advised that the Civil Aviation Authority has classified compliance with the following action as mandatory for aircraft on the United Kingdom Civil Register.

CAA AIRWORTHINESS DIRECTIVE 005-09-97

APPLICABILITY Slingsby Aviation T51 Dart gliders with aluminium alloy spar booms.

SUBJECT - DESCRIPTION Inspection of Dart 15/17m aluminium alloy (Dural) spar booms.

COMPLIANCE - REQUIREMENT (SUMMARY) Compliance is required with Slingsby Aviation Technical Instruction No 109/T51 before next flight and at intervals not exceeding five years. The Technical Instruction introduces an inspection of the aluminium alloy spar booms for delamination and corrosion. 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 action has been prompted following the findings of an investigation into glue joint failure on a starboard wing due to water ingress in the area of the airbrake box. The Technical Instruction supersedes TI No 58 (CAA AD 0155 PRE 80).

Reference must be made to the Technical Instruction for full details. A copy of the TI can be obtained from Slingsby Aviation Ltd, Kirbymoorside, York, YO6 6EZ. Facsimile Number +44(0)1751 431173.

A handwritten signature in dark ink, appearing to read 'R J TEW'.

**R J TEW**  
Applications and Certification Section

# TECHNICAL INSTRUCTION

TI No. 109/T51 Issue No. 2

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

**CLASSIFICATION**

This Service Bulletin has been classified by CAA as Mandatory

**COMPLIANCE**

Before next flight and at intervals not exceeding five years

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

**THIS ISSUE 2 SUPERSEDES ISSUE 1 - CHANGES AS BELOW:**

Classification was "by SAL" now "by CAA"  
 Para 6 skin information added.

**APPLICABILITY:**

T51 Darts with aluminium alloy spar booms.

The following Works Numbers are those Darts known to have wooden spars and are therefore not affected by this T.I.

1405, 1421, 1423, 1424, 1425, 1429, 1430, 1431, 1434, 1435, 1437, 1438, 1439, 1440, 1441, 1446, 1459.

**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.

**ISSUED BY:**

**SLINGSBY AVIATION**  
 Kirkbymoorside, York YO6 6EZ England

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 E-mail: SAL1@Slingsby.co.uk

Date 7 Oct. 97

Page 1 of 5

# TECHNICAL INSTRUCTION

TI No. 109/T51 Issue No. 2

## TITLE INSPECTION OF DART 15/17M ALUMINIUM ALLOY (DURAL) SPAR BOOMS

### CONTINUED

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.

### 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. This can be done by the use of an endoscope. Drill small holes (size to suit instrument) as required in root rib and 'D' box for access.
  - 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 para 5.

Approved:



Date: 7 Oct. 97

Page 2 of 5

**TECHNICAL INSTRUCTION**

TI No.

109/T51

Issue No.

2

**TITLE****INSPECTION OF DART 15/17M ALUMINIUM ALLOY (DURAL)  
SPAR BOOMS****CONTINUED**

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.

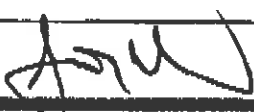
Ensure, following repair, drain holes are not blocked.

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°

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 this inspection.

Approved:



Date:

7 Oct. 97.

Page

3

of

5

**TECHNICAL INSTRUCTION**

TI No.

109/T51 Issue No.

2

**TITLE****INSPECTION OF DART 15/17M ALUMINIUM ALLOY (DURAL)  
SPAR BOOMS****CONTINUED****9. Recording:**

- i) After satisfactory inspection and/or repair annotate in Logbook "T.I.109/T51 carried out".
- ii) At each 5 year interval invoke this T.I. and upon satisfactory inspection annotate 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.

For further information please contact SAL Product Support Department.

Approved:



Date:

7 OCT. 97.

Page

4

of

5



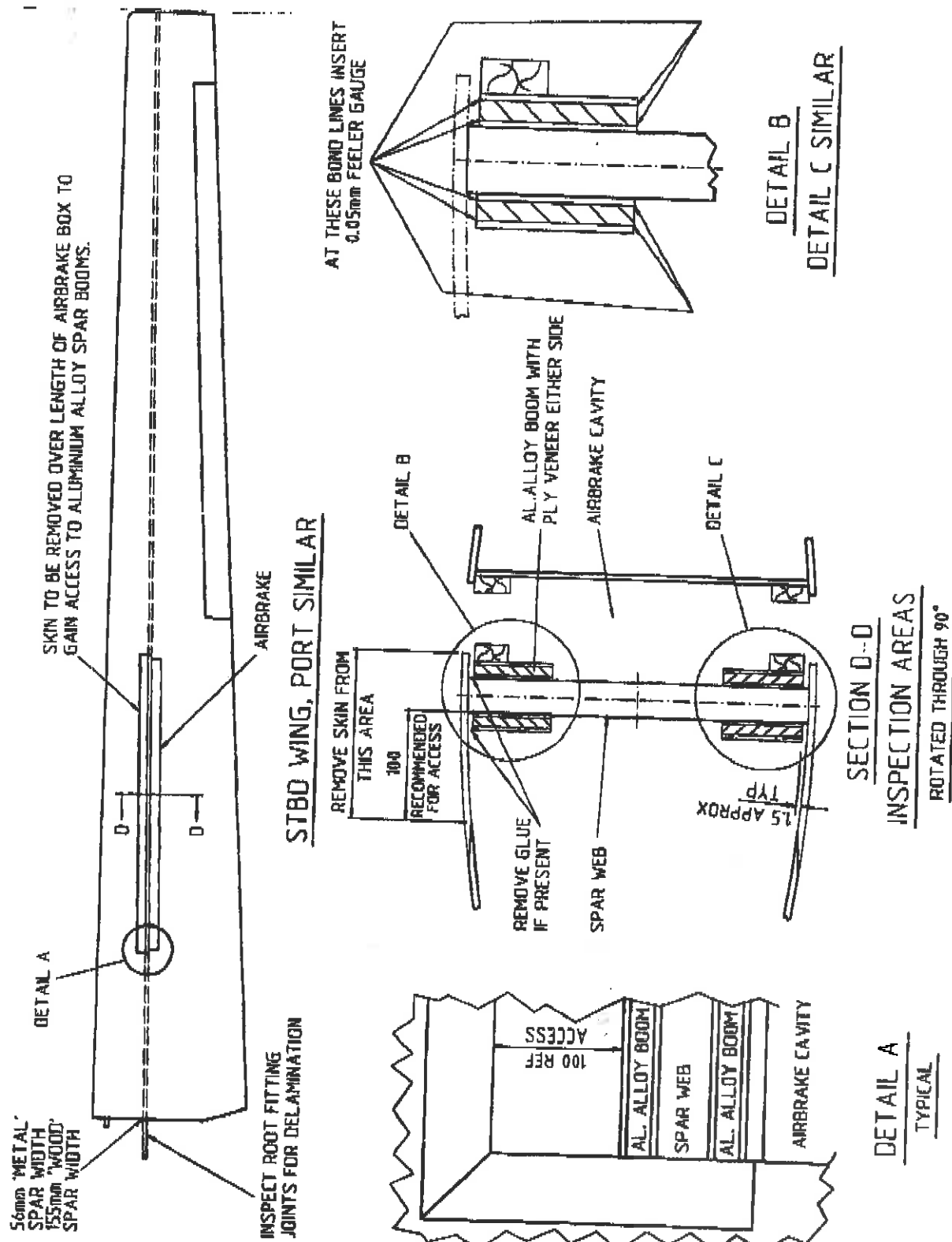
# TECHNICAL INSTRUCTION

TI No. 109/T51 Issue No. 2

TITLE

## INSPECTION OF DART 15/17M ALUMINIUM ALLOY (DURAL) SPAR BOOMS

CONTINUED



Approved:

*[Signature]*

Date: 7 OCT. 97.

Page 5 of 5