

BGA TECHNICAL COMMITTEE

TECHNICAL NEWSHEET 9/10/96

PART 1

Airworthiness "AGGRO" - Please add to the 1996 Pink pages.

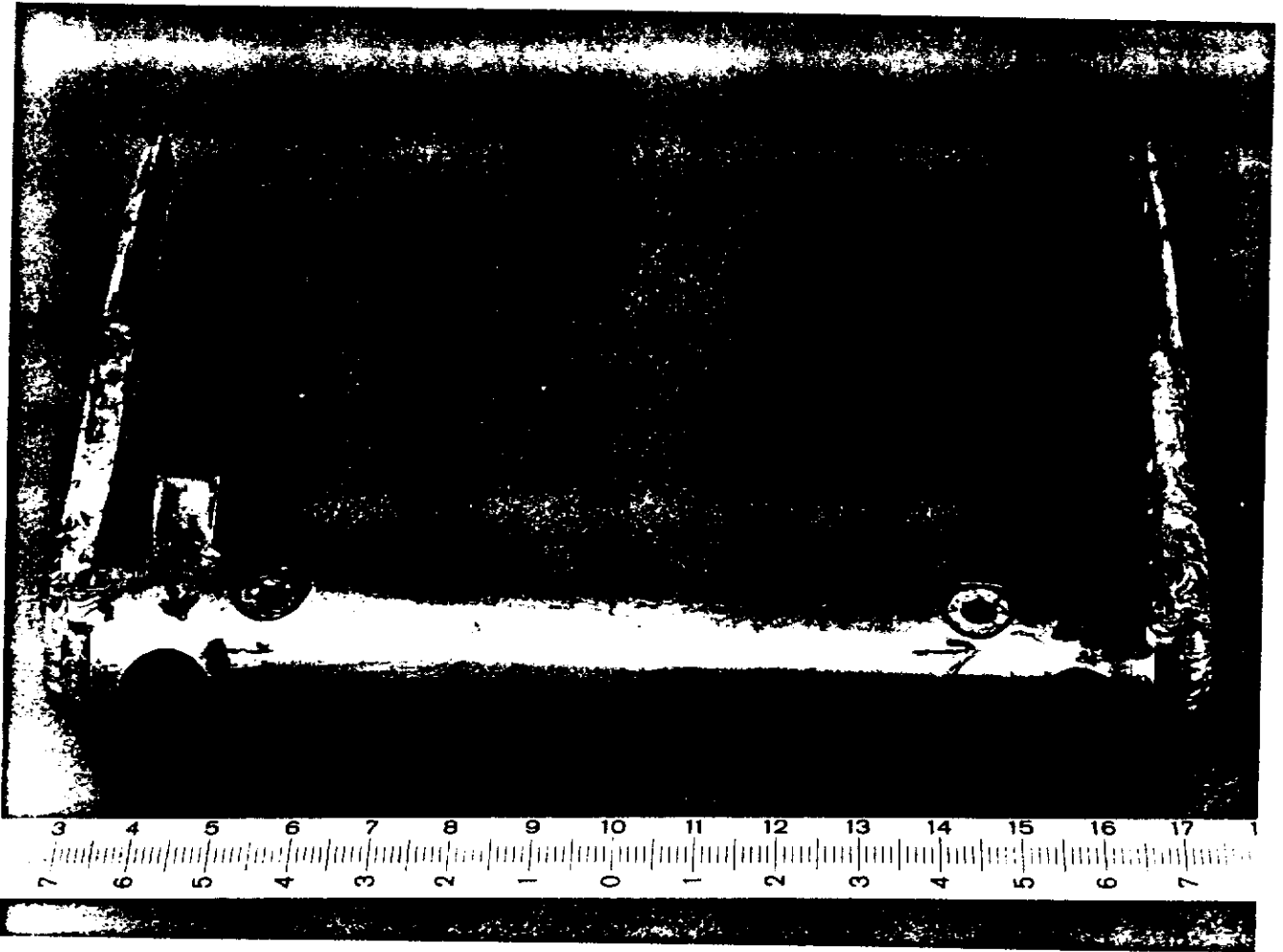
- 1.1. **Puchacz** - after a "firm" landing involving impact on the nose-wheel, undetected internal damaged to a frame forward of the front control column, caused aileron jamming on the next aerotow. (Steve Rolls - Bidford Gliding Centre).
- 1.2. **Ventus (T) - Undercarriage** could not be locked down. Unlocked bolt adjusting the over-centre lock, migrated and jammed the lowering mechanism. (Cambridge G.C.).
- 1.3. **Skylark 4 - Severe Corrosion** of Root End fitting, required replacement and anti corrosion treatment should be applied to all such fittings. (Roger Andrews - Midland G.C.).
- 1.4. **Janus Tailplane** attachment fittings on the fin found cracked. (See photo). Reported by RAFGSA.
- 1.5. **KA21 - Safety Clips in Speed-Brake** Connectors attached by too long lanyards, were extracted from the L'hotelliers when the brakes were operated! (Southdown G.C.).
- 1.6. **Discus - Aileron Jammed In Flight** by bolt-head on the aileron bellcrank below the pilots seat, fouling on the clearance hole in the pilots leg support structure. (See sketch).
- 1.7. **KA6CR - Tailplane** rear spigot mounting found cracked. (E. Sussex G.C.).
- 1.8. **T61 (F) S.L.M.G.** Forward tailplane mounting bracket found cracked. (E. Sussex G.C.).
- 1.9. **Centrair 101 Series**. L'hotellier connector inspection. SB. 101-18 (in French) - requires action.
- 1.10. **Slingsby T.51 Dart. Bonded Spar Inspection** Technical Instruction No. 58 (issued May 1973!) is repeated herewith, for those who may have doubts about their bonded spars.
- 1.11. **DG 400 - Propeller Shaft (failures)**. Tech/Note 826/32 - herewith requires replacement as indicated therein.

- 1.12. DG 400 - Electrical System - Regulator - Tech Note 826/33 places a life limitation on certain Bosch regulators.
- 1.13. "Aircraft Covering Materials"(Copied from GASIL 4/96) Fatal accident in the USA is attributed to the faulty application of covering materials.
- 1.14. Lycoming Oil -Pumps FAA A/D 96-09-10 (herewith) requires action to eliminate certain types of oil pumps (failures have occurred in the UK). Consult your Aircraft Maintenance Organisation as soon as possible).
- 1.15. OLYMPIA Series with Bonded Spars Further to BGA notification, CAA under their I.C.A.O. obligations have issued the enclosed "DIRECTION". Progress Report herewith.
- 1.16. PA-25 Pawnee Main undercarriage pivot bolt head sheared. (reported by Cornish G.C.).
- 1.17. SF.34 Tech. N. 336-8 (herewith). Places restrictions on C.G. limits.
- 1.18. ASW 20F and ASW 20FL. S.B. 20-18(2) herewith (in French) requires action as indicated.
- 1.19. Centrair 101 Series S.B. 101-16(2) herewith (in French) requires action as indicated.
- 2.0. GENERAL INFORMATION
- 2.1. WEAK-LINK RATING LIST (herewith) is updated to issue 10/96. Issue 8. (kindly produced by Nigel Holmes).

Inspector Renewals - Have you actioned!

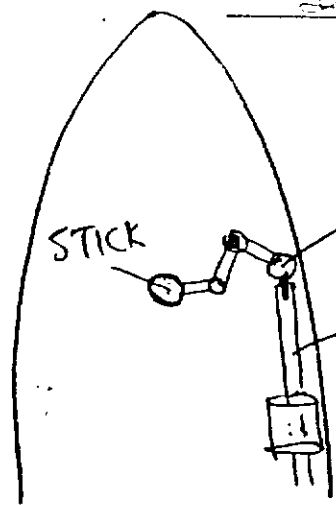
Dick Stratton
Chief Technical Officer

JANUS TAIL PLANE FITTING.



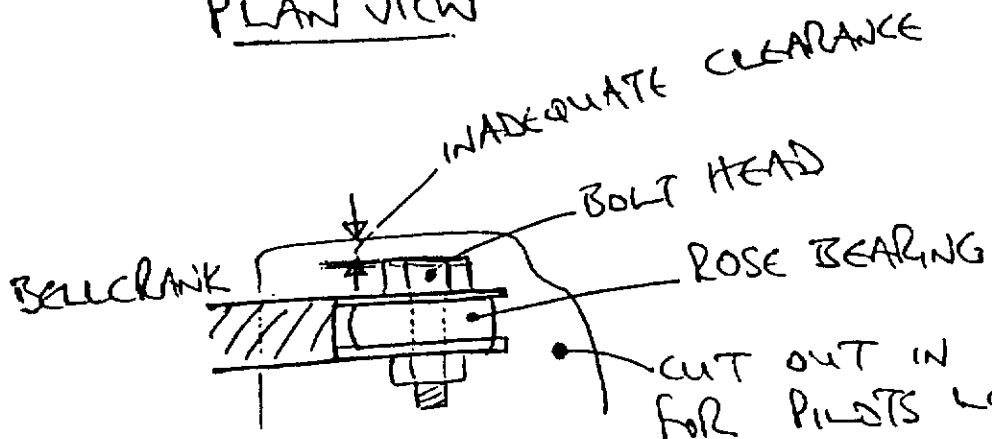
1-127

JANUS TAIL PLANE FITTING



PLAN VIEW

ROSE BEARING AT JOINT BETWEEN FORWARD END OF PUSH-ROD + BELLCRANK
AILERON PUSHROD (PASSING THROUGH GUIDE SLEEVE)



DETAIL VIEW FROM AFT

INADEQUATE CLEARANCE
BOLT HEAD
ROSE BEARING
CUT OUT IN SUPPORT STRUCTURE FOR PILOTS LEGS / INSTRUMENT PANEL

Mike Cuming
1/1A/1931E.

ALD 96-243.

SUBJECT : Powerplant - propeller shaft

EFFECTIVITY : DG-400 all serial no's

ACCOMPLISHMENT : Latest Dec. 31st. 1996

REASON : 1. In spite of the improvements introduced with TN 826/25 another propeller shaft failed. In the meantime a new shaft with larger toothed surface was designed for the DG-800.
This shaft is to be installed to all DG-400's to prevent further accidents. The larger toothed surface allows lower tensioning torque of the shaft without the risk of the shaft rotating.
2. In some cases the drive belt damaged the front retaining rings at the pulleys and came off the upper pulley, also damaging the propeller.
Therefore stronger retaining rings must be installed.

INSTRUCTIONS : 1. Exchange the following manual pages against the new issues July 1996:
0.2, 1, 2, 14 a, 37, 38
2. Exchange the propeller shaft incl. the bearings against the new shaft 8 M 24 and the front drive belt retaining rings 4 M 12/2 and 4 M 14/2 according to working instruction no. 1 for TN 826/32.
3. File drawing 4 M 29 as enclosure to the maintenance manual.

MATERIAL : Manual pages see above
Drawing 4 M 29
Working instruction no. 1 for TN 826/32
Parts see working instruction

WEIGHT AND BALANCE : Influence negligible

REMARKS : Instruction No. 2 is to be executed by the manufacturer or by a licensed workshop. All instructions are to be inspected and entered in the aircraft logs by a licensed inspector

Bruchsal 4, July 19th 1996

Author:

W. O. X

LBA - approved:

The German original of this TN has been approved by the LBA under the date of July 24th 1996 and is signed by Mr. Walter. The translation into English has been done by best knowledge and judgement. In any case of doubt the German original is authoritative.

Type certification inspector:

A. A. H

DG Flugzeugbau GmbH

Postfach 4120 PLZ D-76625
Tel.: 0 72 57 / 89-0, Fax 89 22
Im Schollengarten 20

D-76646 Bruchsal-Untergrombach

WORKING INSTRUCTION No. 1 Page 1 of 1
for TN 826/32

Designation of parts see drawing 4 M 29

1. Extend the engine, switch off master switch
2. Remove Propeller, drive belt and propellershaft 4 M 24 according to maintenance manual Sect. 4.1.1. - 4.1.3.
3. Remove the upper drive belt pulley from the shaft acc. to sect. 4.2.1 - 4.2.5 old issue July 1984. The bearings may remain on the shaft.
4. Heat the pulley again. Push the preassembled shaft 8 M 24 incl. bearings etc. as far as possible into the pulley allowing assembly of the circlip 75x2.5 DIN 472.
5. Clean the toothed area of the shaft and its aluminium counterpart 4 M 1 with Acetone.
6. Install the assembly to the powerplant again according to sect. 4.1.5 up to 4.1.13 of the maintenance manual (new page 33 issued July 1996).

Install the new stronger drive belt retaining rings 4 M 12/2 and 4 M 14/2 to the front of upper and lower drive belt pulleys. Use bolts M4x10 DIN933-8.8.zn and secure with Loctite 72

7. Execute a test run.

Material:

1. Propeller shaft 4 M 24/1 assembled with washer 8 M 24/2, spacer 4 M 25, 2 ball bearings 6009 2Z, circlip DIN 471 45x1,75, bolt M12x20 DIN 933-8.8 zn and one extra nut M 4 DIN 985-8zn
2. Upper drive belt retaining ring 4M12/2
3. Lower drive belt retaining ring 4M14/2
4. 10 bolts M4x10 DIN 933-8.8zn
5. Loctite 72b

Bruchsal, July 1996

Author: *W. Dirks* W. Dirks

Type certification inspector: *A. A. A.*

Tms 11/01/96



Société Nouvelle Centrair

BULLETIN DE SERVICE

N° 101-18

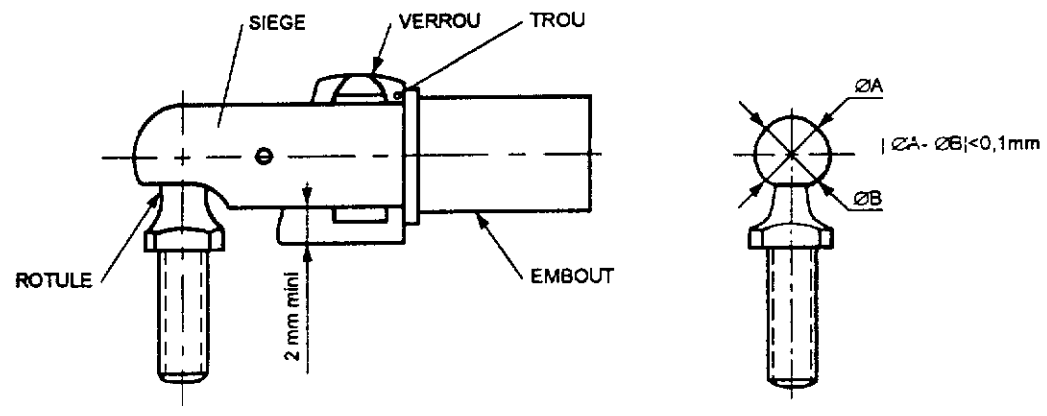
PLANEURS CENTRAIR
101 tous types

Page 1/2

- OBJET :** INSPECTION DES EMBOUTS ET ROTULES L'HOTELLIER.
- VALIDITÉ :** Planeurs Pégase à branchement manuel de(s) commande(s) :
planeur n'ayant pas subi la modification majeure 101-10 ou 101-33
(branchement automatique gouverne de profondeur)
ou n'ayant pas subi la modification majeure 101-23
(branchement automatique commandes ailerons et aérofreins).
- BUT :** Vérifier l'absence d'endommagement ou d'usure excessive.
- APPLICATION :** Lors de chaque Visite Annuelle ou Grande Visite.
- DESCRIPTION :**

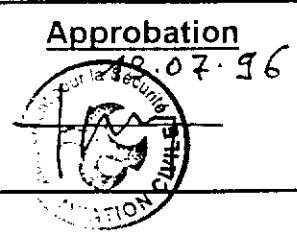
La fiche technique L'Hotellier N° IM 10.01 édition C décrit les « instructions de maintenance des embouts et rotules L'Hotellier ».

Afin de clarifier ces instructions dans le cadre de l'entretien des planeurs Pégase, les inspections de chaque ensemble rotule et embout à effectuer lors de chaque Visite Annuelle ou Grande Visite sont détaillées page suivante. Dans le cas où certaines opérations n'auraient pas été effectuées lors de la dernière visite, nous recommandons de les effectuer rapidement pour éviter tout risque de défaillance.



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Société Nouvelle CENTRAIR
Aérodrome - 36300 LE BLANC
FRANCE
Tél : 54.37.07.96 - Fax : 54.37.48.64



- Classification**
- Impératif
 - Recommandé
 - Pour information



Inspections périodiques (Visites Annuelles et Grandes Visites) :

- a. Vérifier que la rotule pivote dans l'embout sans point dur.
- b. Vérifier le débattement de la rotule dans l'embout.
- c. Vérifier l'absence de criques à la base de la sphère.
- d. Vérifier la sphéricité de la rotule : l'écart entre plusieurs mesures du diamètre de la sphère ne doit pas excéder 0,1 mm (usure anormale). Un écart de plus de 0,05 mm est cependant déconseillé car il peut induire une dureté dans le circuit de commande.
- e. Vérifier l'état du filetage de la rotule : aucun filet ne doit être endommagé. **A** remontage, la collerette doit venir parfaitement en appui sur son support. La rotule doit être immobilisée par un contre-écrou au niveau des guignols d'ailerons et d'aérofreins et par du freinfillet normal (type Loctite 243) au niveau de la gouverne de profondeur.
- f. Inspecter visuellement l'embout : il ne doit y avoir aucune déformation ou matage au niveau de la cavité qui sert de réceptacle à la rotule, ainsi qu'au niveau du siège et du système de verrouillage.
- g. Vérifier le dépassement de la partie inférieure du verrou après montage de l'embout sur la rotule : Ce dépassement doit être supérieur à 2 mm (efficacité du rattrapage automatique de jeu).
- h. Vérifier la liaison entre la commande et l'embout : dans le cas des embouts réglables, vérifier que la liaison embout-commande est bloquée par un contre-écrou.
- i. Vérifier le fonctionnement de l'embout assemblé : il ne doit exister aucun blocage, dû à l'oxydation ou autre, du siège et du verrou.

Dans le cas où l'une des vérifications ci-dessus (sauf **h**) n'est pas satisfaisante, il est impératif de remplacer le couple rotule+embout concerné.

Dans le cas où la vérification **h** n'est pas satisfaisante, effectuer le blocage correct avec le contre-écrou.

SUBJECT : Electrical system / regulator A/D 96-242

EFFECTIVITY : DG-400 all ser. no's

ACCOMPLISHMENT : Latest Dec. 31st. 1996

REASON : A Bosch regulator 0212920001 was installed in the DG-400. These regulators have a limited life time. In recent times more and more regulators have become defective. When failing they may generate smoke in the cockpit which can impair flight safety. Therefore the regulator must be exchanged against type 4 E 26 which is already mentioned in the DG-400 maintenance manual as interchangeable type.

INSTRUCTIONS : 1. Check which regulator type is installed, compare with drawing 4 E 26.
2. If a Bosch regulator is installed, replace it by the new type 4 E 26 according to installation instruction Z 33.

MATERIAL : Installation instruction Z 33
drawing 4 E 26
Conversion kit Z 33

WEIGHT AND BALANCE : ./.

REMARKS : Instructions No. 2 is to be executed by the manufacturer or by a licensed workshop and to be inspected and entered in the aircraft logs by a licensed inspector.

Bruchsal 4, July 19th 1996

Author: *W. Oa*

LBA - approved:

The German original of this TN has been approved by the LBA under the date of July 24th 1996 and is signed by Mr. Walter. The translation into English has been done by best knowledge and judgement. In any case of doubt the German original is authoritative.

Type certification inspector:

A. A. H

May 1973
Issue 1TECHNICAL INSTRUCTION NO. 58Inspection 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.

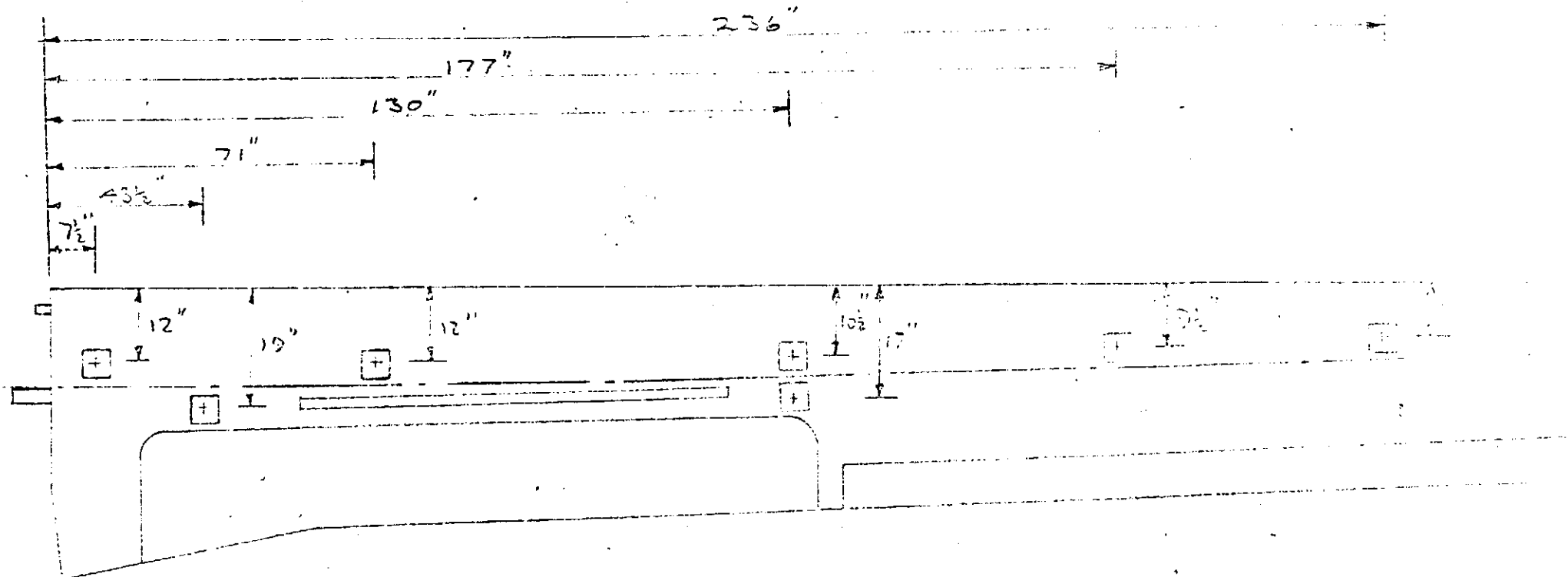
This inspection follows the discovery of severe metal corrosion in the spar of a Dart. Although the aircraft was clearly not in a good overall condition, there is no documented evidence of any severe environment being encountered.

Inspection Procedure

1. Mark the hole centres as shown on the diagram, drill $\frac{1}{2}$ " 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

Aviation House
Gatwick Airport South
West Sussex
RH6 0YR

Direct Dial +44(0)1293 573157
Direct Fax +44(0)1293 573972

Switchboard +44(0)1293 567171
Fax +44(0)1293 573999
Telex 878753



FOR THE ATTENTION OF MR R B STRATTON - Chief Technical Officer

British Gliding Association Ltd
Kimberley House
Vaughan Way
Leicester, LE1 4SE

Our ref 9/97/7/2

22 August 1996

Dear Sirs

OLYMPIA SERIES SAILPLANES

An Olympia 460 sailplane was involved in a fatal accident following structural failure on a winch launch. The Air Accident Investigation Branch (AAIB) of the UK Ministry of Transport are currently investigating the cause of the accident.

Initial investigations have found that the aluminium bonded laminates on the main spar near the wing root had corroded at the wood / metal interface, possibly adversely affecting the strength of the bond, although this has not yet been determined to be the cause of the accident.

The attached direction should be sent to all owners and operators of Olympia series sailplanes of metal/wood bonded spar construction.

Would you please confirm when the above action has been taken.

Yours faithfully

A handwritten signature in black ink, appearing to read "D W Fautley".

P.P. D W FAUTLEY
Head of A&C/AMAS



DIRECTION

The Civil Aviation Authority in exercise of its powers of Article 107(1) of the Air Navigation (No. 2) Order 1995, as amended, directs with immediate effect, that any Olympia Series Sailplane having metal to wood bonded spar construction must not be flown.

This Direction will remain in place until revoked.

The revocation of the Direction will be conditional upon any remedial action, identified as a result of the AAIB investigation, having been carried out.



P W Doolan
Deputy Head
Applications and Certification Section
22 August 1996



The British Gliding Association Ltd.
Registered No. 422605 England
Registered Office as address

Secretary: Barry Rolfe

Kimberley House, Vaughan Way,
Leicester LE1 4SE
Telephone 0116 2531051
Facsimile 0116 2515939

British Gliding Association

Olympia 460 Series (Bonded Spar) Sailplanes

Progress Report as at 24 September 1996

1. The fatal accident occurred on 13 July 1996.
2. The Air Accident Investigation Branch (AAIB) received the wreckage on 15 July 1996.
3. The BGA issued Technical Note 7/8/96 on 16 July 1996.
4. A BGA Team met the AAIB at Farnborough 17 July 1996
5. The CAA issued the attached "DIRECTION" on 22 August 1996. This "Direction" will remain in force until rescinded by "Any remedial action, identified as a result of the AAIB investigation, having been carried out".
6. The draft AAIB Report (without essential illustrations) has been seen and the final report can be expected shortly.
7. Inspection Procedures. A BGA team at Lasham has been exploring possible inspection procedures, including Non-Destructive Testing Techniques (NDT). We are fortunate that ATC Lasham, (major overhaulers of large aeroplanes at Lasham), have a comprehensive NDT Department.
 - a. If feeler gauges can be inserted between the laminates (as has been demonstrated on one sample), then a "void" exists between the bonded joints.
 - b. Ultra-sonic NDT has demonstrated some potential to discover disbonding.
 - c. Radiography is being evaluated.

Patron
Vice Presidents

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Christopher R Simpson MA LL.M.
Roger Q Barrett
Tom Zealley BA PhD
Ben Watson MA FCA
Bill Walker MP
Air Vice Marshal Don Spottiswood CB
CVO AFC MA

8. Possible Repair Schemes to disbonded joints are being evaluated, including the introduction of additional bolts.
9. The bottom-line is that we need to discuss the AAIB final report, and the BGA's carefully deliberated action plan on inspection and repair (if possible ?), with the CAA, in order to have the CAA's "Direction" rescinded. This may take some time.



R B Stratton
Chief Technical Officer
for BGA Technical Committee

SF 34

Gegenstand: (Subject)	Einschränkung des Fluggewichtsschwerpunktbereichs (Restriction of flight-center of gravity.)
Betroffen: (Effectivity)	Segelflugzeug SF 34/SF 34 B, Gerätekenblatt 336 (Sailplane SF 34/SF 34 B, Type Certificate-data-sheet 336.)
Dringlichkeit: (Accomplishment)	Vor dem nächsten Flug (Before next flight)
Vorgang: (reason)	<p>Ergebnissen aus durchgeführten Trudelttest zufolge muß die hintere Fluggewichtsschwerpunktsgrenze vorübergehend von 2397 mm = 40 % L_E auf 2367 mm = 37 % L_E (SF 34 B) bzw. 2427 mm = 43 % L_E auf 2367 mm = 37 % L_E (SF 34) begrenzt werden.</p> <p>Sobald weitere Ergebnisse vorliegen, wird diese Maßnahme aufgehoben oder geändert.</p> <p><i>(After some spin-testflights it should be necessary to decrease aft-flight-c.g. temporary</i> <i>from 2397 mm = 40 % to 2367 = 37 % L_E (SF 34 B)</i> <i>respectively 2427 mm = 43 % to 2367 = 37 % L_E (SF 34)</i> <i>As soon as possible and after having more test results the stated instructions will be changed or cancelled.)</i></p>
Maßnahme: (Instructions)	<ol style="list-style-type: none">1. Änderung des Flughandbuches SF 34 B von April 1986/SF 34 von Febr. 1981 -Seite 6 Ausgabe 16.07.96 (Fluggewichtsschwerpunktslage „20 % bis 37 % L_E) SF 34 B -Seite 6 Ausgabe 16.07.96 (Fluggewichtsschwerpunktslage „20 % bis 37 % L_E) SF 342. Änderung des Wartungshandbuches SF 34 B von April 1986/SF 34 von Febr. 1981: -Seite 19 SF 34 B /SF 34 Ausgabe 16.07.96 (Wegfall der Leergewichtsschwerpunktstabelle -neue Seite 19 b Ausgabe 16.07.1996 im Wartungshandbuch SF 34 B April 86 Leergewichtsschwerpunktsdiagramm mit variablen Mindestzuladungen im vorderen Sitz entsprechend dem aktuellen Leergewichtsschwerpunkt. -neue Seite 19 a Ausgabe 19.07.1996 im Wartungshandbuch SF 34 Febr. 81 Leergewichtsschwerpunktsdiagramm mit variablen Mindestzuladungen im vorderen Sitz entsprechend dem aktuellen Leergewichtsschwerpunkt.3. Änderung des Beladeplanes.
SCHEIBE-FLUGZEUGBAU - GMBH	



- (Instructions)
- (1. Changing of Flight-handbook (SF 34 B April 1986) / (SF 34 Febr. 1981)
 - page 6 correction, dated to 16.07.96 (SF 34 B)
(aft-flight-c.g. from 20 % to 37 % Le)
 - page 6 correction dated to 16.07.96 (SF 34)
(aft-flight -c.g. from 20 % to 37 % Le)
 2. Changing of Service-Manual SF 34 B- April 1986/SF 34 Febr. 1981
 - page 19: SF 34B/SF 34 with omitted empty-weight-c.g.-schedule dated 16.07.96,
 - page 19 b SF 34B dated 19.07.96: additional page with a new empty-weight-c.g.-diagram with variable minimum-pilot-weight in the front seat in case of the actual empty-c.g.
 - page 19 a SF 34 dated 16.07.96: additional page with a new empty-weight-c.g.-diagram with variable minimum-pilot-weight in the front seat in case of the actual empty-c.g.)
 3. Correction of load-sheet.)

Hinweis: Der Leergewichtsschwerpunkt ist entspr. dem Diagramm Seite 19 b WHB SF 34 B/ Seite 19 a WHB SF 34 neu festzustellen.
(Remark) The actual-empty-c.g. is to be measured like the diagram page 19 b service-manual SF 34B/ page 19 a service-manual SF 34.

Die Maßnahmen sind von einer nach §31 der Prüfordnung für Luftfahrtgerät dafür anerkannten Stelle oder einem nach JAR 145 genehmigten Instandhaltungsbetrieb durchzuführen und zu bescheinigen.
Die Vorschriften über die Führung der Betriebsaufzeichnungen gemäß §15 der Betriebsordnung Luftfahrtgerät sind zu beachten.

(Action to be accomplished by an approved service station [redacted] and to be checked and entered in the log by a licensed inspector.)

SCHEIBE FLUGZEUGBAU GMBH

Musterprüfleitstelle

(Haferkorn)

Dachau, 23.07.1996

Anerkannt durch 30.07.96
Luftfahrt-Bundesamt



i.A. Jung



OBJET : COMMANDE D'AEROFREINS DANS FUSELAGE.

VALIDITÉ : Planeurs Pégase tous numéros de série.

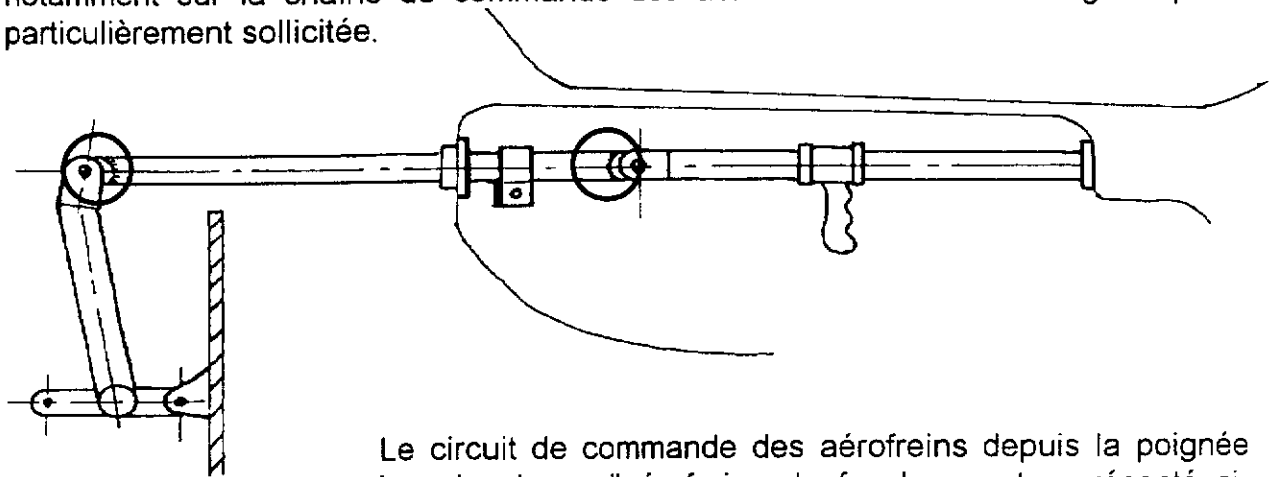
BUT : Détecter des éventuelles criques au niveau du circuit de commande d'aérofreins dans le fuselage.

APPLICATION : Lors de chaque Visite Annuelle ou Grande Visite.

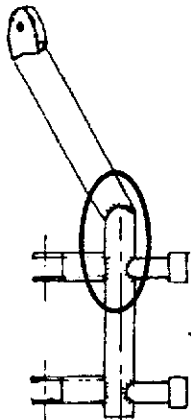
DESCRIPTION :

Le paragraphe VI de la section 5 du manuel d'entretien définit les procédures d'inspection des timoneries de commande de vol. Il précise entre autre qu'un examen de l'ensemble des commandes doit être effectué lors de chaque visite annuelle ou grande visite.

Nous tenons à attirer l'attention des utilisateurs sur l'importance de ces inspections et notamment sur la chaîne de commande des aérofreins dans le fuselage laquelle est particulièrement sollicitée.



Le circuit de commande des aérofreins depuis la poignée jusqu'au bras d'aérofreins du fuselage est représenté ci-contre. Un contrôle visuel minutieux de toutes les parties soudées et en particulier des parties encadrées doit être effectué, si besoin, à l'aide d'un miroir et d'une lampe et après nettoyage, afin d'y déceler un éventuel début de crique.



Bras d'aérofreins

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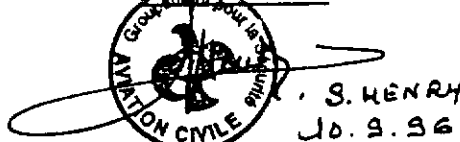
CENT63-1a

Société Nouvelle CENTRAIR

Aérodrome - 36300 LE BLANC
FRANCE

Tél : 54.37.07.96 - Fax : 54.37.48.64

Approbation



Classification

- Impératif
- Recommandé
- Pour information



Société Nouvelle Centrair

BULLETIN DE SERVICE

N° 101-16 Révision 2

PLANEURS CENTRAIR
101 tous types

Page 2/2

Une telle inspection n'ayant, semble-t-il, pas été systématiquement effectuée lors des visites périodiques, nous recommandons d'effectuer le contrôle décrit ci-dessous sur chaque planeur lors de la prochaine visite de petit entretien.

Cette inspection doit être systématiquement effectuée par la suite lors de chaque visite annuelle et de chaque grande visite.

En cas de constatation de crique, prendre contact avec S.N. CENTRAIR pour l'informer du défaut constaté. Une réparation du planeur doit alors être réalisée avant tout nouveau vol.

NOTA: Etant donné la difficulté éventuelle d'analyse des soudures du bras d'aérofreins (repéré sur le croquis ci-dessus) par des opérateurs n'ayant pas l'habitude de tels contrôles, nous conseillons vivement, par mesure préventive, de remplacer ce bras par la pièce \$Y57D pour les planeurs équipés de branchement manuel des commandes d'ailerons et d'aéro-freins et la pièce \$Y818E pour les planeurs équipés de branchement automatique de ces commandes. Ces pièces ont été renforcées par sécurité pour limiter le risque d'apparition de criques en cas de fortes surcharges en utilisation.

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CENT63-1a

Société Nouvelle CENTRAIR

Aérodrome - 36300 LE BLANC

FRANCE

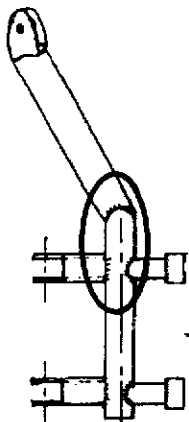
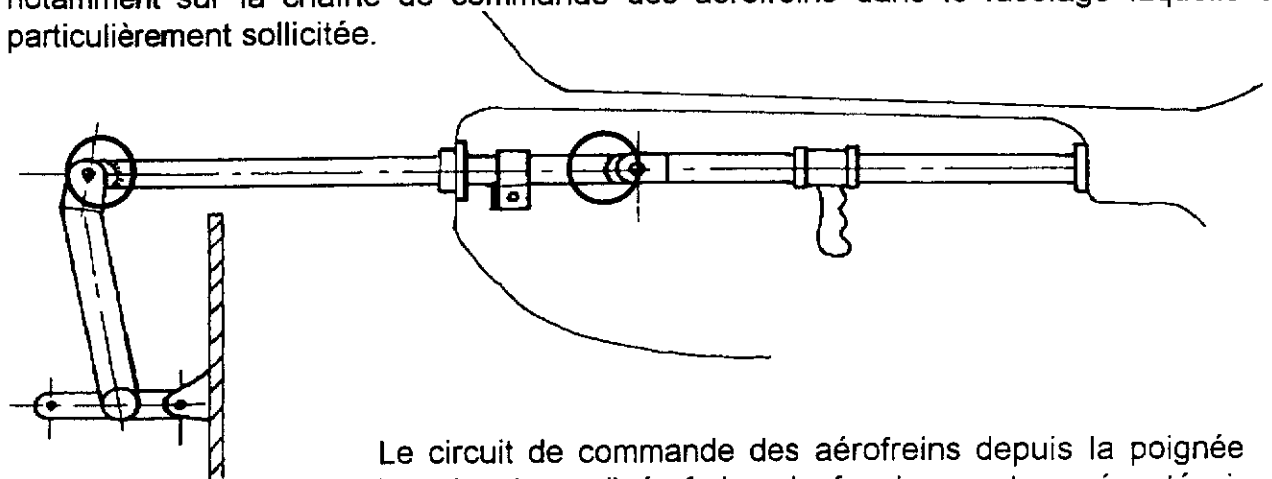
Tél : 54.37.07.96 - Fax : 54.37.48.64



- OBJET :** COMMANDE D'AEROFREINS DANS FUSELAGE.
- VALIDITÉ :** Planeurs ASW20F et ASW20FL tous numéros de série.
- BUT :** Détecter des éventuelles criques au niveau du circuit de commande d'aérofreins dans le fuselage.
- APPLICATION :** Lors de chaque Visite Annuelle ou Grande Visite.
- DESCRIPTION :**

Le paragraphe VI de la section 5 du manuel d'entretien définit les procédures d'inspection des timoneries de commande de vol. Il précise entre autre qu'un examen de l'ensemble des commandes doit être effectué lors de chaque visite annuelle ou grande visite.

Nous tenons à attirer l'attention des utilisateurs sur l'importance de ces inspections et notamment sur la chaîne de commande des aérofreins dans le fuselage laquelle est particulièrement sollicitée.



Bras d'aérofreins

Le circuit de commande des aérofreins depuis la poignée jusqu'au bras d'aérofreins du fuselage est représenté ci-contre. Un contrôle visuel minutieux de toutes les parties soudées et en particulier des parties encadrées doit être effectué, si besoin, à l'aide d'un miroir et d'une lampe et après nettoyage, afin d'y déceler un éventuel début de craque.





Société Nouvelle Centrair

BULLETIN DE SERVICE

N° 20-18 Révision 2

PLANEURS CENTRAIR
ASW20F et ASW20FL

Page 2/2

Une telle inspection n'ayant, semble-t-il, pas été systématiquement effectuée lors des visites périodiques, nous recommandons d'effectuer le contrôle décrit ci-dessous sur chaque planeur lors de la prochaine visite de petit entretien.

Cette inspection doit être systématiquement effectuée par la suite lors de chaque visite annuelle et de chaque grande visite.

En cas de constatation de crique, prendre contact avec S.N. CENTRAIR pour l'informer du défaut constaté. Une réparation du planeur doit alors être réalisée avant tout nouveau vol.

NOTA: Etant donné la difficulté éventuelle d'analyse des soudures du bras d'aérofreins (repéré sur le croquis ci-dessus) par des opérateurs n'ayant pas l'habitude de tels contrôles, nous conseillons vivement, par mesure préventive, de remplacer ce bras par la pièce \$Y57D. Cette pièce a été renforcée par sécurité pour limiter le risque d'apparition de criques en cas de fortes surcharges en utilisation.

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Société Nouvelle CENTRAIR

Aérodrome - 36300 LE BLANC
FRANCE

Tél : 54.37.07.96 - Fax : 54.37.48.64

TEXTRON LYCOMING
AIRWORTHINESS DIRECTIVE
CORRECTION
ENGINE
SMALL AIRCRAFT & ROTORCRAFT

OIL PUMPS.

96-09-10 Textron Lycoming: Amendment 39-9586. Docket 93-ANE-48. Supersedes AD 81-18-04 R2, Amendment 39-4395.

Applicability: Textron Lycoming O-235, O-290, O-320, IO-320, AIO-320, AEIO-320, LIO-320, O-340, O-360, IO-360, AEIO-360, AIO-360, HO-360, HIO-360, LO-360, LIO-360, TIO-360, TO-360, LTO-360, VO-360, IVO-360, O-540, and IO-540 series reciprocating engines, except for the following models: O-320-H2AD, O-360-E1A6D, LO-360-E1A6D, TO-360-E1A6D, LTO-360-E1A6D, IO-540-P1A5, IO-540-R1A5, IO-540-S1A5, and O-540 and IO-540 series engines built with large capacity oil pumps and dual magnetos designated with "5D" in the model suffix; for example, IO-540-K1A5D. These engines are installed on but not limited to the following aircraft: various models of single and twin engine powered Cessna, Piper, Mooney, Beech, Gulfstream American, Maule, and Socata.

NOTE 1: This AD may not contain an exhaustive list of aircraft that utilize the affected engines because other aircraft may have an affected engine installed through, for example, approvals made by Supplemental Type Certificate, or FAA Form 337, "Major Repair and Alteration." It is the responsibility of each aircraft owner, operator, and person returning that aircraft to service to determine if that aircraft has an affected engine.

NOTE 2: This AD applies to each engine identified in the preceding applicability provision, regardless of whether it has been modified, altered, or repaired in the area subject to the requirements of this AD. For engines that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must use the authority provided in paragraph (f) to request approval from the FAA. This approval may address either no action, if the current configuration eliminates the unsafe condition, or different actions necessary to address the unsafe condition described in this AD. Such a request should include an assessment of the effect of the changed configuration on the unsafe condition addressed by this AD. In no case does the presence of any modification, alteration, or repair remove any engine from the applicability of this AD.

Compliance: Required as indicated, unless accomplished previously.

To prevent oil pump failure due to impeller failure, which could result in an engine failure, accomplish the following:

(a) For Textron Lycoming Model HIO-360-D1A, -E1AD, -E1BD, and -F1AD engines with serial numbers (S/N) of L-22579-51A or prior, except for the following: S/N L-22311-51A through L-22313-51A, L-22396-51A, L-22397-51A, L-22416-51A, L-22546-51A through L-22549-51A, L-22563-51A, L-22568-51A through L-22571-51A; for Textron Lycoming Model HIO-360-D1A, -E1AD, -E1BD, and -F1AD engines that were overhauled in the field or remanufactured prior to April 1, 1981, regardless of S/N; and for engines listed by S/N in Textron Lycoming Service Bulletin (SB) No. 455D, dated January 2, 1987; accomplish the following:

(1) Replace the sintered iron oil pump impeller and shaft with a hardened steel impeller and shaft in accordance with Avco Lycoming Textron SB No. 454B, dated January 2, 1987, or Avco Lycoming Textron SB No. 455D, dated January 2, 1987, as applicable, or Textron Lycoming SB No. 524, dated September 1, 1995, within 25 hours time in service (TIS) after the effective date of this AD.

(2) No action is required if engines have complied with AD 81-18-04, 81-18-04 R1, or 81-18-04 R2, and have incorporated oil pumps with a hardened steel impeller and shaft. Engines that incorporate oil pumps fitted with an aluminum impeller and shaft must comply with paragraph (c) of this AD.

(b) For engines listed by S/N in Textron Lycoming SB No. 456F, dated February 8, 1993, or Textron Lycoming SB No. 524, dated September 1, 1995, that incorporate a sintered iron impeller, accomplish the following:

(1) Replace any sintered iron oil pump impeller and shaft with a hardened steel impeller and shaft in accordance with Textron Lycoming SB No. 456F, dated February 8, 1993, or Textron Lycoming SB No. 524, dated September 1, 1995, within 100 hours TIS after the effective date of this AD, or one year after the effective date of this AD, whichever occurs first. Total time on the sintered iron impeller must not exceed 2,000 hours TIS since new or overhaul, whichever occurs later

(2) No action is required if engines have complied with AD 81-18-04, 81-18-04 R1, or 81-18-04 R2, and have incorporated oil pumps with a hardened steel impeller and shaft. Engines that incorporate oil pumps fitted with an aluminum impeller and shaft must comply with paragraph (c) of this AD.

(c) For all other affected engines, replace any aluminum oil pump impeller and shaft assembly with a hardened steel impeller and shaft assembly in accordance with Avco Lycoming Textron SB No. 455D, dated January 2, 1987, or Textron Lycoming SB No. 456F, dated February 8, 1993, or Textron Lycoming SB No. 524, dated September 1, 1995, as applicable, as follows:

(1) Replace at next engine overhaul (not to exceed the hours specified, for the particular engine model, in Textron Lycoming Service Instruction 1009AJ, dated July 1, 1992), at next oil pump removal, or 5 years after the effective date of this AD, whichever occurs first.

(2) No action is required if engines have complied with AD 81-18-04, 81-18-04 R1, or 81-18-04 R2, and have incorporated oil pumps with a hardened steel impeller and shaft.

NOTE: Engines originally manufactured prior to 1970 did not incorporate sintered iron impellers. For further information, refer to engine maintenance/overhaul logbook records, Lycoming build records, and the following SB's provide additional guidance: Avco Lycoming Division SB No. 381C, dated November 7, 1975, and Avco Lycoming Textron SB No. 385C, dated October 3, 1975, describe a method for determining if the early design oil pump with aluminum/steel impellers are installed. Avco Lycoming SB No. 455A, dated August 18, 1981, and Textron Lycoming SB No. 455B, dated January 2, 1987, and Avco Lycoming SB No. 456, dated August 21, 1981, introduced steel driving impeller, P/N 60746, and aluminum driven impeller, P/N LW13775. Textron Lycoming SB No. 524 includes information regarding engines which may incorporate aluminum impellers.

(d) Engines that are subject to AD 75-08-09 must have incorporated AD 75-08-09 before this AD can be accomplished.

(e) Sintered iron and aluminum impellers approved under FAA Parts Manufacturer Approval (PMA) are replacements for affected part numbers of Lycoming impellers and must also be replaced in accordance with paragraphs (a), (b), or (c), as applicable, of this AD.

(f) An alternative method of compliance or adjustment of the compliance time that provides an acceptable level of safety may be used if approved by the Manager, New York Aircraft Certification Office. The request should be forwarded through an appropriate FAA Maintenance Inspector, who may add comments and then send it to the Manager, New York Aircraft Certification Office.

NOTE: Information concerning the existence of approved alternative methods of compliance with this AD, if any, may be obtained from the New York Aircraft Certification Office.

(g) Special flight permits may be issued in accordance with sections 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate the aircraft to a location where the requirements of this AD can be accomplished.

(h) The actions required by this AD shall be done in accordance with the following service bulletins:

Document No.	Pages	Date
Avco Lycoming Division SB No. 381C	1-4	November 7, 1975
Total pages: 4.		
Avco Lycoming Textron SB No. 385C Supplement No. 1	1-4 1	October 3, 1975 March 18, 1977
Total pages: 5.		
Avco Lycoming Textron SB No. 454B	1-3	January 2, 1987
Total pages: 3.		

Document No.	Pages	Date
Avco Lycoming Textron SB No. 455D	1-3	January 2, 1987
Total pages: 3.		
Textron Lycoming SB No. 456F	1-3	February 8, 1993
Total pages: 3.		
Textron Lycoming SB No. 524 Attachment	1-3 1-4	September 1, 1995
Total pages: 9.		
Textron Lycoming SI No. 1009AJ	1-3	July 1, 1992
Total pages: 3.		

This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from Textron Lycoming, Reciprocating Engine Division, 652 Oliver St., Williamsport, PA 17701; telephone (717) 327-7278, fax (717) 327-7022. Copies may be inspected at the FAA, New England Region, Office of the Assistant Chief Counsel, 12 New England Executive Park, Burlington, MA; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

(i) This amendment becomes effective on July 15, 1996.

FOR FURTHER INFORMATION CONTACT:

Richard Fiesel, Aerospace Engineer, New York Aircraft Certification Office, FAA, Engine and Propeller Directorate, 10 Fifth Street, Valley Stream, NY 11581; telephone (516) 256-7504, fax (516) 568-2716.

E2. AIRCRAFT COVERING MATERIALS

The NTSB has released its report on the April 1995 accident that took the lives of air racing and aircraft designing legend Steve Wittman and his wife, Paula. The probable cause was determined to be: "Aileron-wing flutter induced by separation at the trailing edge of an unbonded portion of wing fabric at an aileron wing station. The debonding of the wing fabric was a result of improper installation."

It was found that the aircraft's plywood covered wings were surfaced with a layer of Stits HS150X Poly-Fibre that had completely delaminated from the right wing. The fabric was recovered and was intact, although the overlying doped finish had largely been shed. By visual inspection and subsequent laboratory tests, it was determined that the fabric had been bonded to the plywood skin by means of an estimated two coats of clear nitrate dope, brushed into the weave of the fabric from the top or outer surface. The nitrate dope was followed by five or six coats of clear butyrate dope, a coat or two of Poly-Spray silver and, finally, several coats of yellow Poly-Tone. The plywood skin did not show evidence of having been treated in any manner prior to the application of the fabric and liquid finishing materials.

A microscopic examination of the surface of the plywood revealed a thin film of nitrate dope, which is believed to have been forced through the weave of the fabric when the first two coats of nitrate dope were brushed on. The imprint of the weave pattern of the fabric was clearly evident in the film of dope, indicating that the fabric had delaminated from the nitrate dope rather than the plywood, itself.

In general, the sequence of steps taken by Steve in the application of the fabric are the same as those commonly used in the application of fabric made of natural fibres such as cotton and linen. However, synthetic fibres such as polyester usually require different materials and application procedures.

Compliance with Stits (now Poly-Fibre) STC 1008WE requires that two coats of Poly-Brush be applied to the surface to be covered (in this case, the plywood skin) before the Poly-Fibre fabric is applied. These coats are to provide the necessary adhesion of the fabric to the plywood. After the fabric has been adhered to the plywood, it then receives outer coats of aluminium pigmented Poly-Spray and finish coats of Poly-Tone. Stits/Poly-Fibre finishing materials do not include nitrate or butyrate dope.

In the older procedures involving natural fibres, a bond is created when the material being used as an adhesive is absorbed or 'wicked' into the fibres. When modern synthetic fabric is used, the adhesive must flow around the non-absorbing fibres to encapsulate them in order to create an adequate bond. Without the required two initial coats of Poly-Brush there was not a sufficient amount of adhesive present on the aircraft wings to encapsulate the fibres of the fabric and create an adequate bond.

The aircraft was built in the early 1980s and was flown for the first time on 17 November 1985. Like many experienced builders, Steve tended to stick with methods and procedures that had stood the test of time, in his case extending back to the early 1920s. Using cotton and linen, wings he built in the 1930s often exceeded 300 mph and very high g loadings on the pylons at Cleveland and other race venues. Using the same dopes and application techniques on synthetic cloth on the aircraft was undoubtedly just a continuation of practices that had served him well over his long career ... and, indeed, the fabric had remained on the wings for nearly ten years before the accident occurred. Ultimately, however, the inadequate bond failed, with tragic results.

E3. OIL FILTER SEALS

Reports have been received that the rubber seals in Champion

48108/48 09 oil filters should be carefully checked before instal-

lation. Several defects have been reported.

B.G.A. WINCH/AUTO TOW WEAK LINKS.

TNS. 10/96 ISSUE 8.

BLACK No.1 WEAK LINK.

1000 daN = 2200 lbs.

ASK 21	(1000)
BERGFALKE 3	(1070)
BOCIANS	(1000)
CONDOR	(1000)
GOEVIER III	(1030)
KA 7/13	(1080)
NIMBUS 3(24n.)/3D	(1040)
NIMBUS 4/4T/4dT	(1040)
NIMBUS 4dM	(1066)
PHOEBUS (ALL)	(1000)
SPERBER	(1030)

BROWN No.2 WEAK LINK.

850 daN = 1870 lbs.

ASH 25	(900)
ASV 22	(900)
BERGFALKE 2	(970)
CIRRUS (OPEN)	(860)
DIAMANT 16.5/18	(935)
DUD DISCUS	(910)
GLASFLUGEL 604	(850)
KA 4	(900)
KRANICH II/III	(960)
MG 19A	(950)
NIMBUS 4d	(975)
RHONLERCHE 2	(900)

RED No.3 WEAK LINK.

750 daN = 1650 lbs.

TWIN ASTIR	(845)
ASK 14	(830)
BERGFALKE 4	(750)
DOPPLERAAB	(800)
GEIER II	(765)
JANUS C	(750)
MUCHA STD.	(820)
NIMBUS 3	(750)
PUCHACZ	(750)
SF 27A	(750)
T 53/YS 53	(750)
L3e	(750)

BLUE No.4 WEAK LINK.

600 daN = 1320 lbs.

ASTIR (s) SINGLE	(600)
ASK 23	(680)
ASV 17/19/20/24	(600)
AV 36	(600)
AUSTRIA STD.	(670)
BIJAVE (WA30)	(600)
BLANIK	(630)
BREGUET 905	(600)
BG 135	(600)
CAPRONI A21	(600)
CAPSTAN	(600)
CARMAN JP15	(600)
CENTRAIR 101	(600)
CIRRUS (STD.)	(600)
CDBRA	(600)
DELPHIN	(700)
DISCUS	(650)
DG 100/200/400	(600)
DG 300/600	(680)
EAGLE	(600)
EDN BABY	(600)
FAUVETTE 905	(600)
FDKA 3/4/5	(720)

IS 28B2	(600)
IS 29/30/32	(600)
JANTAR STD.	(630)
JANTAR 2/3	(600)
JANUS B	(600)
JUNIOR	(600)
KA 2	(600)
KA 6	(650)
KA 8	(668)
KESTREL 17/19	(630)
LAK 12	(600)
LIBELLE 201	(600)
LIBELLE H301	(670)
LS 3/4/6/7	(600)
LQ-100	(650)
M 100/200	(600)
MEISE	(670)
MOSQUITO	(650)
MOSWEY	(650)
NIMBUS-MINI	(600)
NIMBUS 2	(600)
OLYMPIA 419	(600)

PEAK 100	(600)
PIK 16/20/20E	(600)
PIRAT	(600)
SAGITTA	(600)
SB 5	(600)
SF 26	(650)
SF 34	(600)
SHK	(700)
SIE 3	(700)
SILENE (E.78)	(600)
SKYLARK 1/2/3/4	(600)
VEGA	(600)
VENTUS	(650)
VENTUS 2a/2b/2c	(680)
VENTUS 2cT/2cM	(680)
WEIHE	(670)
ZUGVOGEL 1/2	(720)
ZUGVOGEL 3	(742)
ZUGVOGEL 4	(690)

WHITE No.5 WEAK LINK.

500 daN = 1100 lbs.

ASV 15	(500)
CADET Mk. 1/2	(500)
CADET Mk. 3 (T31)	(500)
CUMULUS	(540)
DART 15/17	(500)
EDN PRIMARY	(500)
ELFE S2	(540)
FALCON	(500)
FAUVEL	(500)
GRUNAU /5	(540)
GULL 1/2/3	(500)
HARBINGER	(500)
HORNET	(500)
HUTTER 17	(500)
IRIS (D77)	(500)

JASKOLKA	(500)
JAVELOT	(500)
JP 36A	(500)
KA 1/3	(500)
KITE 1/2B	(500)
KRANJANEK	(500)
LS 1	(500)
ME 7	(500)
MINIMOA	(535)
MU 13	(500)
OLYMPIA 1/2	(500)
OLYMPIA 460/463	(500)
PETREL	(500)
PILATUS B4	(500)
PREFECT	(500)

RHEINLAND	(500)
RHONLANDER 2	(500)
RHONSPERBER	(500)
SG 38	(500)
SKY	(500)
SPATZ	(520)
SUID III	(500)
SWALLOW	(500)
SWIFT	(500)
T 21/31	(500)
TORVA	(500)
TUTOR	(500)
VIKING (V.G.C.)	(500)
WASSAMER WA26	(500)

N.B. IF IN DOUBT:-

TEST APPLY A FACTOR OF 1.3 = MAX ALL
UP WEIGHT OF GLIDER TO DETERMINE WEAK
LINK STRENGTH FOR WINCH/AUTOTOW.
DO NOT EXCEED kp. UNITS IN BRACKETS.

1kp. = 1daN = 10 newton = 1 kg. = 2.2lbs (NOM'L.).

BLACK No.1 1000 daN. = 2200 lbs.
BROWN No.2 0850 daN. = 1870 lbs.
RED No.3 0750 daN. = 1650 lbs.
BLUE No.4 0600 daN. = 1320 lbs.
WHITE No.5 0500 daN. = 1100 lbs.

B.G.A. WINCH/AUTO TOW WEAK LINKS.

TNS. 10/96 ISSUE 8.

ASTIR (s) SINGLE	(600)	No. 4	LAK 12	(600)	No. 4
TWIN ASTIR	(845)	No. 3	LIBELLE (201)	(600)	No. 4
ASH 25	(900)	No. 2	LIBELLE (H301)	(670)	No. 4
ASK 14	(830)	No. 3	LS1	(500)	No. 5
ASW 15	(500)	No. 5	LS3/4/6/7	(600)	No. 4
ASW 17/19/20/24	(600)	No. 4	LD-100	(650)	No. 4
ASK 21	(1000)	No. 1	M 100/200	(600)	No. 4
ASW 22	(900)	No. 2	ME 7	(500)	No. 5
ASK 23	(680)	No. 4	MEISE	(670)	No. 4
AV 36	(600)	No. 4	MG 19A	(950)	No. 2
AUSTRIA STD.	(670)	No. 4	MOSQUITO	(650)	No. 4
BERGFALKE 2	(970)	No. 2	MOSWEY	(650)	No. 4
BERGFALKE 3	(1070)	No. 1	MINIMOA	(500)	No. 5
BERGFALKE 4	(750)	No. 3	MUCHA STD.	(820)	No. 3
BIJAVE (WA30)	(600)	No. 4	MU 13	(535)	No. 5
BLANIK	(630)	No. 4	NIMBUS 2	(600)	No. 4
BODCIANS	(1000)	No. 1	NIMBUS 3	(750)	No. 3
BREGUET 905	(600)	No. 4	NIMBUS 3(24m.)/3D	(1040)	No. 1
BG 135	(600)	No. 4	NIMBUS 4/4T/4dT	(1040)	No. 1
CADET Mk. 1/2	(500)	No. 5	NIMBUS 4d	(975)	No. 2
CADET Mk. 3 (T31)	(500)	No. 5	NIMBUS 4dM	(1066)	No. 1
CAPRONI A21	(600)	No. 4	NIMBUS-MINI	(600)	No. 4
CAPSTAN	(600)	No. 4	OLYMPIA 1/2	(500)	No. 5
CARMAN JP15	(600)	No. 4	OLYMPIA 460/463	(500)	No. 5
CENTRAIR 101	(600)	No. 4	OLYMPIA 419	(600)	No. 4
CIRRUS (OPEN)	(860)	No. 2	PEAK 100	(600)	No. 4
CIRRUS (STD.)	(600)	No. 4	PETREL	(500)	No. 5
CUMULUS	(540)	No. 5	PHOEBUS (ALL)	(1000)	No. 1
COBRA	(600)	No. 4	PIK 16/20/20E	(600)	No. 4
CONDOR	(1000)	No. 1	PILATUS B4	(500)	No. 5
DART 15/17	(500)	No. 5	PIRAT	(600)	No. 4
DELPHIN	(700)	No. 4	PREFECT	(500)	No. 5
DIAMANT 16.5/18	(935)	No. 2	PUCHACZ	(750)	No. 3
DISCUS	(650)	No. 4	RHEINLAND	(500)	No. 5
DUO DISCUS	(910)	No. 2	RHONLANDER 2	(500)	No. 5
DG 100/200/300/400/600	(600)	No. 4	RHONLERCHE 2	(900)	No. 2
DOPPLERAAB	(800)	No. 3	RHONSPERBER	(500)	No. 5
EAGLE	(600)	No. 4	SAGITTA	(600)	No. 4
EDN PRIMARY	(500)	No. 5	SB 5	(600)	No. 4
EDN BABY	(600)	No. 4	SF 26	(650)	No. 4
ELFE S2	(540)	No. 5	SF 27A	(750)	No. 3
FALCON	(500)	No. 5	SF 34	(600)	No. 4
FAUVEL	(500)	No. 5	SG 38	(500)	No. 5
FAUETTE 905	(600)	No. 4	SHK	(700)	No. 4
FOKA 3/4/5	(720)	No. 4	SIE 3	(700)	No. 4
GEIER II	(765)	No. 3	SILENE (E.78)	(600)	No. 4
GLASFLUGEL 604	(850)	No. 2	SKY	(500)	No. 5
GOEVIER III	(1030)	No. 1	SKYLARK 1/2/3/4	(600)	No. 4
GRUNAU /5	(540)	No. 5	SPATZ	(520)	No. 5
GULL 1/3/4	(500)	No. 5	SPERBER	(1030)	No. 1
HARBINGER	(500)	No. 5	SUID III	(500)	No. 5
HORNET	(500)	No. 5	SWALLOW	(500)	No. 5
HUTTER 17	(500)	No. 5	SWIFT	(500)	No. 5
IRIS (D77)	(500)	No. 5	T 53/YS 53	(750)	No. 3
IS 28B2	(600)	No. 4	T 21/31	(500)	No. 5
IS 29/30/32	(600)	No. 4	TORVA	(500)	No. 5
JANTAR (STD.)	(600)	No. 4	TUTOR	(500)	No. 5
JANTAR 2/3	(600)	No. 4	VEGA	(600)	No. 4
JANUS B	(600)	No. 4	VENTUS	(650)	No. 4
JANUS C	(750)	No. 3	VENTUS 2a/2b/2c	(680)	No. 4
JASKOLKA	(500)	No. 5	VENTUS 2cT/2cM	(680)	No. 4
JAVELOT	(500)	No. 5	VIKING (V.G.C.)	(500)	No. 5
JUNIOR	(600)	No. 4	WASSAMER WA26	(500)	No. 5
JP 36A	(500)	No. 5	WEIHE	(670)	No. 4
KA 1/3	(500)	No. 5	ZUGVOGEL 1/2	(720)	No. 4
KA 2	(600)	No. 4	ZUGVOGEL 3	(742)	No. 4
KA 4	(900)	No. 2	ZUGVOGEL 4	(690)	No. 4
KA 6	(600)	No. 4			
KA 7	(1080)	No. 1			
KA 8	(668)	No. 4			
KA 13	(1080)	No. 1			
KESTRAL 17/19	(600)	No. 4			
KITE 1/2B	(500)	No. 5			
KRANICH II/III	(960)	No. 2			
KRANJANEK	(500)	No. 5			