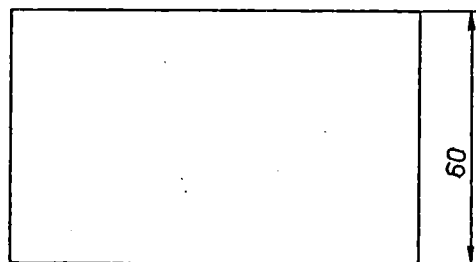
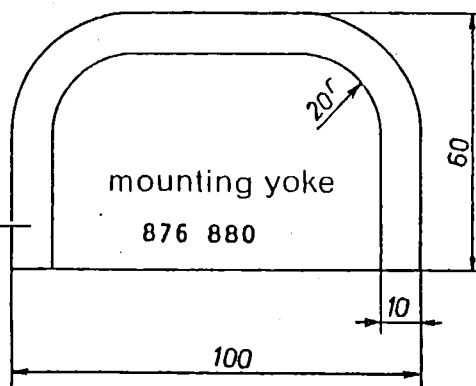
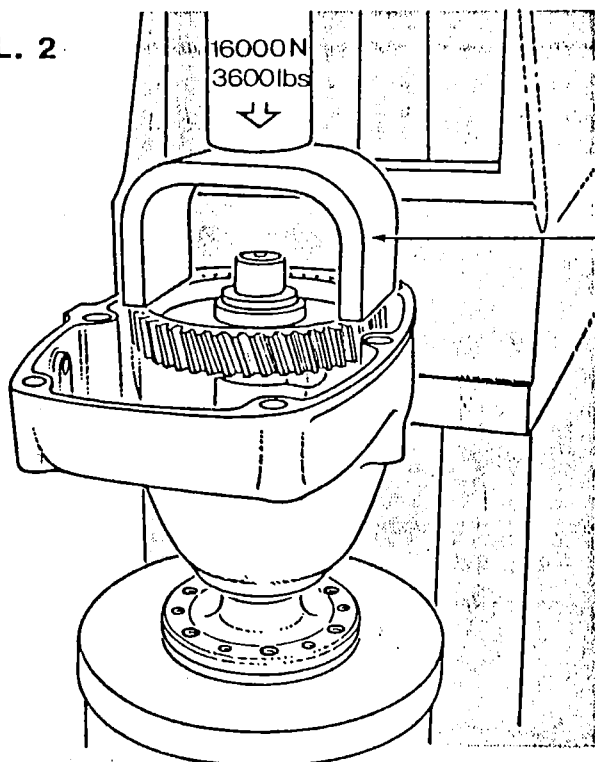
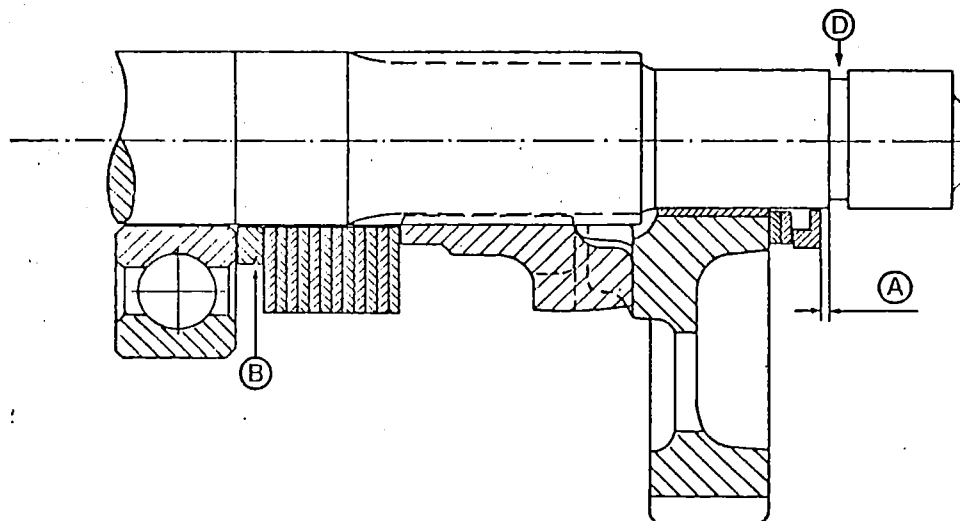


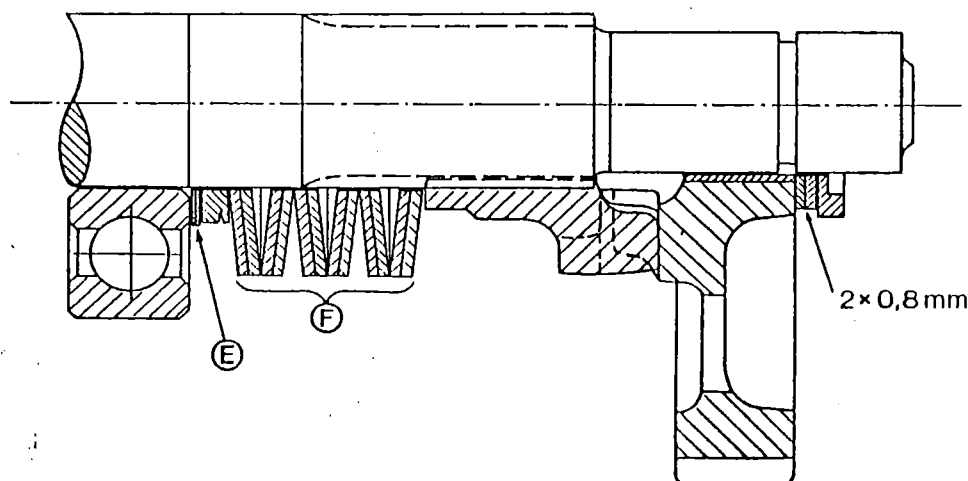
ILL. 2



ILL. 3



ILL. 4



SERVICE BULLETINNO. 5DATE 3.12.87CFM METAL-FAX LTD CONSIDERSCOMPLIANCE - ~~Mandatory~~/Recommended/~~Optional~~
(delete which is not applicable)

<u>SUBJECT</u>	AILERON CONTROL ROD ENDS
<u>MODELS AFFECTED</u>	All Models - CFM SHADOW
<u>SERIES NOS. AFFECTED</u>	B and B-D
<u>COMPLIANCE TIME</u>	As soon as possible
<u>PURPOSE</u>	To reduce wear on the threaded Rod Ends - RM 3U - (part no. CM42), which connect the aileron push/pull tube (part no. W153) to the aileron control horn on the control surface, and the threaden inserts (part no. W189) which are held by rivets into the aileron push/pull tube.
<u>INSTRUCTIONS</u>	Remove the rod end, RM 3U, ((1) each control surface) and apply LOCTITE 242e or equivalent to the rod end and re-install.
<u>MATERIAL REQUIRED</u>	LOCTITE 242e or equivalent.
<u>AVAILABILITY OF PARTS</u>	Not applicable.
<u>EFFECTIVITY DATE</u>	
<u>SUMMARY</u>	The wear on the Rod End is caused by the Rod End rotating in the insert with aileron movement.
<u>NOTES</u>	Make sure that the Rod End is re-installed in the aileron push/pull tube in the same position as before it was removed.

1st April, 1987

SERVICE BULLETINNO. 6DATE MARCH 88CFM METAL-FAX LTD CONSIDERSCOMPLIANCE - ~~Mandatory~~/Recommended/~~Optional~~
(delete which is not applicable)

<u>SUBJECT</u>	AIRATION OF WING 'D' OUTER PANELS
<u>MODELS AFFECTED</u>	B & B-D
<u>SERIES NOS. AFFECTED</u>	052 onwards
<u>COMPLIANCE TIME</u>	-
<u>PURPOSE</u>	TO ENSURE POSITIVE PROVISION OF EXPANSION/ CONTRACTION OF AIR MASS INSIDE WING FWD. 'D' SECTIONS OF OUTER WING PANELS.
<u>INSTRUCTIONS</u>	ON OUTER WING PANELS. i.e. PORT & STBD. ADD HERE 1/4" DIA. SHOWN ON DRGS. PROVIDED.
<u>MATERIAL REQUIRED</u>	NONE
<u>AVAILABILITY OF PARTS</u>	NOT REQ'D.
<u>EFFECTIVITY DATE</u>	MARCH 1988
<u>SUMMARY</u>	THE OUTER PANELS MAY HAVE GAPS FOR EXPANSION/CONTRACTION INSIDE THEM BUT TO ENSURE AIRATION ADD HOLE RECOMMENDED TO EACH 'D' SECTION.
<u>NOTES</u>	THIS DOES NOT AFFECT AIRCRAFT WITH UNSEALED WING PANELS.

CFM Metal-Fax Ltd.,
Unit 2D, Eastlands Ind. Est.,
Leiston,
Suffolk. IP16 4LL
Tel. (0728) 832353/833076

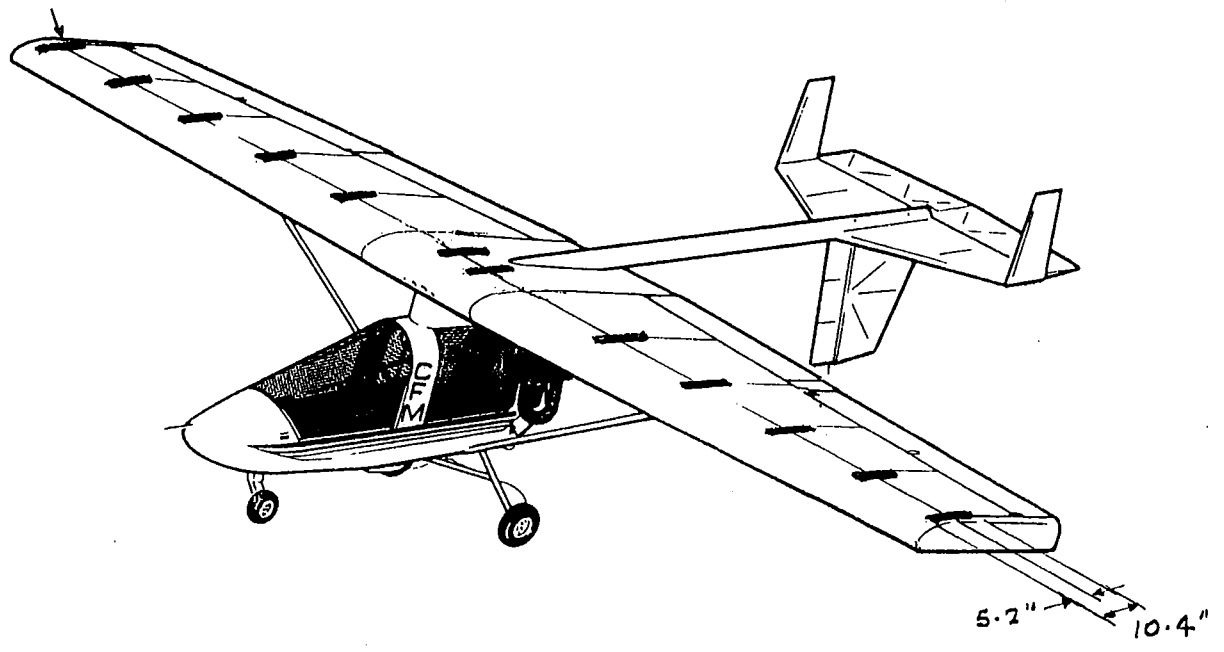
SERVICE BULLETINNO. 7DATE 10.6.90CFM METAL-FAX LTD CONSIDERSCOMPLIANCE - Recommended.

(delete which is not applicable)

<u>SUBJECT</u>	SOLAR HEATING OF UPPER WING SURFACES COLOURED OTHER THAN WHITE
<u>MODELS AFFECTED</u>	SHADOW SERIES B, B-D, C, C-D, STREAK SHADOW SERIES S-A1, S-A
<u>SERIAL NOS. AFFECTED</u>	ALL SERIAL NUMBERS
<u>COMPLIANCE TIME</u>	IMMEDIATE
<u>PURPOSE</u>	TO ELIMINATE POSSIBLE STRENGTH DEGRADATION DUE TO HEAT BUILD-UP WHILST AIRCRAFT IS EXPOSED TO SOLAR RADIATION.
<u>INSTRUCTIONS</u>	ON UPPER WING SURFACES ONLY, AT 'D' BOX TO TRAILING RIB JUNCTURE, APPLY WHITE PAINT /REFLECTIVE STRIPS (10.4" LONG) EQUALLY SPACED, FORE AND AFT TO 'D' BOX SKIN AND THE TOP OF THE TRAILING RIB. ENSURE SURFACE IS FREE FROM DUST, DIRT OR GREASE BEFORE APPLYING STRIPS.
<u>MATERIAL REQUIRED</u>	ALUMINIUM FOIL REFLECTIVE TAPE, REF. 6930, 50mm x 3.2m (MANUFACTURED BY 3M) OR WHITE PAINT
<u>AVAILABILITY OF PARTS</u>	CFM OR LOCALLY OBTAINED.
<u>EFFECTIVITY DATE</u>	11.6.90
<u>SUMMARY</u>	
<u>NOTES</u>	THIS IS A PRECAUTIONARY MEASURE AGREED WITH THE C.A.A. WHILST CFM CONDUCT TESTS UNDER SPECIFIC CONDITIONS. NO SERVICE HISTORY OF FAILURE OR SOFTENING OF THE COMPOSITES HAS BEEN EXPERIENCED TO DATE. COMPLIANCE WITH THIS SERVICE BULLETIN SHOULD BE RECORDED AND CERTIFIED IN THE AIRCRAFT LOG BOOK.

1st April, 1987

2" STRIP REFLECTIVE ALUMINIUM TAPE
(12) PLACES



SERVICE BULLETIN N° 7



DATE 11-6-90

CFM Metal-Fax Ltd.,
 Unit 2D, Eastlands Ind. Est.,
 Leiston,
 Suffolk. IP16 4LL
 Tel. (0728) 832353/833076

SERVICE BULLETIN

NO. 9

DATE 11.6.90

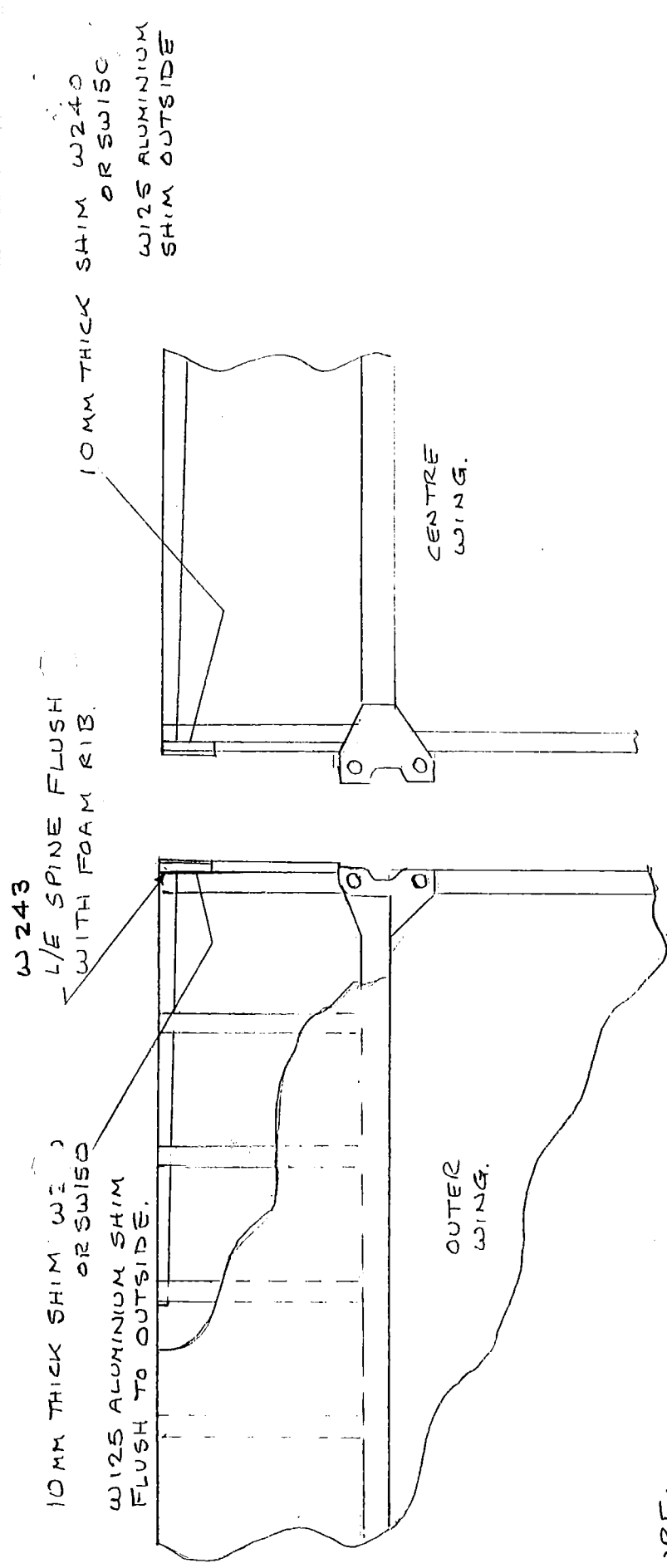
CFM METAL-FAX LTD CONSIDERS

COMPLIANCE - Recommended
 (delete which is not applicable)

<u>SUBJECT</u> SUPPORT FOR FRONT HANGER BRACKET.	
<u>MODELS AFFECTED</u>	SHADOW SERIES B, B-D, C, C-D, STREAK SHADOW SERIES S-A1, S-A
<u>SERIAL NOS. AFFECTED</u>	ALL SERIAL NUMBERS
<u>COMPLIANCE TIME</u>	NEXT 10 HOUR SERVICE
<u>PURPOSE</u> TO GIVE SUPPORT TO PLY 'D' SKIN PANELLING BETWEEN HANGER TUBE BRACKETS (FRONT).	
<u>INSTRUCTIONS</u> FIT PLYWOOD PART No. W239 AS A PUSH-FIT BETWEEN HANGER TUBE BRACKETS (PART No. F153). REMOVE AND BOND BACK IN PLACE WITH ARALDITE QUICK-SET EPOXY. (IT IS NOT NECESSARY TO REMOVE PAINT FROM 'D' SKIN BEFORE BONDING, IF THE FIT IS TIGHT).	
<u>MATERIAL REQUIRED</u> W239 - PAD, ARALDITE - QUICK-SET 5 MIN EPOXY.	
<u>AVAILABILITY OF PARTS</u> CFM METAL-FAX.	
<u>EFFECTIVITY DATE</u> 11.6.90	
<u>SUMMARY</u> SLIGHT OVER-STRESSING OF THE 'D' BOX PLY SKIN AROUND BRACKETS (F153) IS POSSIBLE IF THE AIRCRAFT IS ABUSED IN THE AIR, e.g. SIDE SLIPPING.	
<p><u>NOTES</u></p> <p>The diagram illustrates the installation of a plywood pad (W239) between hanger tube brackets (F153) on the front of the aircraft fuselage. A 'FRONT VIEW' shows the pad (W239) being inserted between two brackets (F153). A 'SIDE VIEW' shows the pad (W239) supporting the fuselage between the brackets (F153). A handwritten note 'BOND TO PLY SKIN' points to the area where the pad meets the fuselage skin.</p>	
COMPLIANCE WITH THIS SERVICE BULLETIN SHOULD BE RECORDED AND CERTIFIED IN THE AIRCRAFT LOG BOOK.	

SERVICE BULLETINNO. 10DATE 16.9.96CFM METAL-FAX LTD CONSIDERSCOMPLIANCE - ~~Mandatory~~/Recommended/~~Optional~~
(delete which is not applicable)

<u>SUBJECT</u>	FORE/AFT WING MOVEMENT
<u>MODELS AFFECTED</u>	B/B-D, C/C-D, S-A/S-AI, SA-M, SS.
<u>SERIES NOS. AFFECTED</u>	ALL SERIAL Nos. EXCEPT D/D-D
<u>COMPLIANCE TIME</u>	NEXT RENEWAL OF PERMIT
<u>PURPOSE</u>	TO PROVIDE FOR ANTI DRAG FORCES AT INNER/OUTER WING JUNCTURE - D BOX NOSE SECTION.
<u>INSTRUCTIONS</u>	ADD WING NOSE SPAR TO OUTER WINGS. ADD PLY PRESSURE PAD TO CENTRE WING AND OUTER WINGS. SEE SEPARATE INSTRUCTIONS.
<u>MATERIAL REQUIRED</u>	(2) L/E SPINE W243 (4) PAD W240 SHADOW } DEPENDANT ON MODEL (4) PAD W150 STREAK } QUICK SET ARALDITE #2012 300g PACK
<u>AVAILABILITY OF PARTS</u>	CFM METAL-FAX LTD.
<u>EFFECTIVITY DATE</u>	SEPTEMBER 1996
<u>SUMMARY</u>	THIS BULLETIN CAN BE PERFORMED BY:- 1) CFM METAL-FAX LTD. 2) THE SHADOW FLIGHT CENTRE LTD.
<u>NOTES</u>	THE CORRECT GAP BETWEEN CENTRE/OUTER WINGS AT NOSE OF 'D' BOX IS 1 TO 1.5 mm WHEN AIRCRAFT IS RIGGED AND WINGS IN FORWARD PRESSURE (NOSE WHEEL ON TOUCHING GROUND).



PROCEDURE:

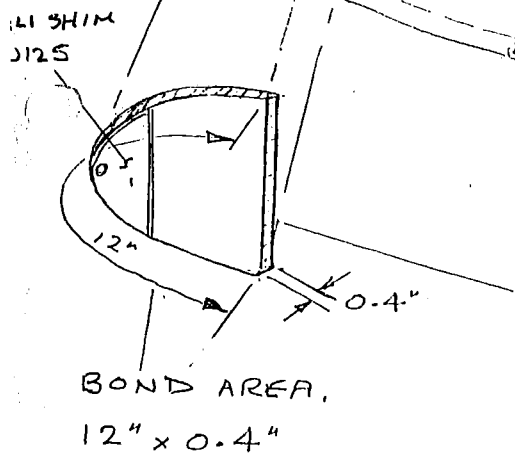
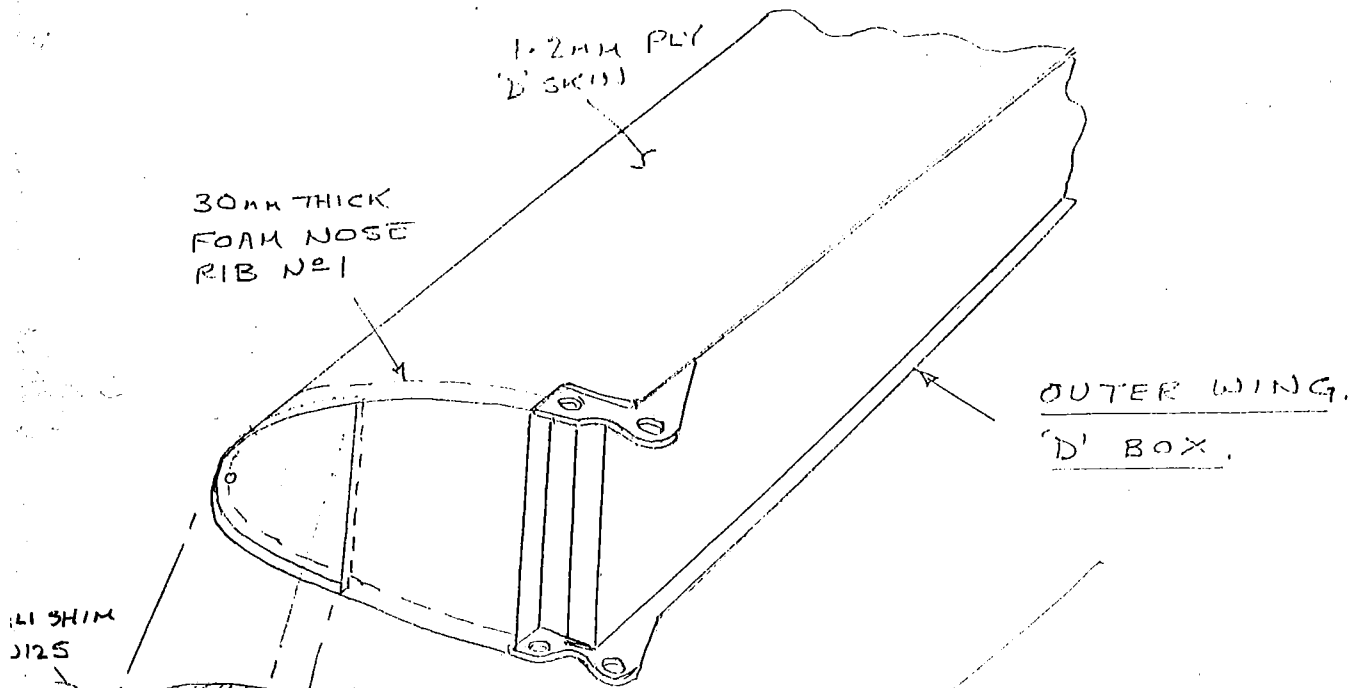
REMOVE W125 OFF NOSE FOAM RIB - OUTER AND CENTRE WINGS.
 ON OUTER WINGS CUT A SQUARE HOLE JUST SMALLER THAN CROSS SECTION OF W243 AT NOSE L/E.
 PUSH W243 INTO CUTOUT BETWEEN L/E PLY SKIN AND FOAM RIB WITH W243 ABRASIVE SIDE TO FOAM.
 WORK INWARDS UNTIL 10-12MM PROTRUDES. WITHDRAW, REMOVE ABRASIVE.
 APPLY ABRASIVE TO PLY L/E SIDE AND PUSH UNTIL END IS FLUSH WITH FOAM RIB.

OUTER WINGS:

SHIM 10MM THICK IS REDUCED IN THICKNESS WHICH WHEN W125 IS ADDED THE TOTAL THICKNESS IS FLUSH WITH L/E PLY EDGE.

CENTRE WING:

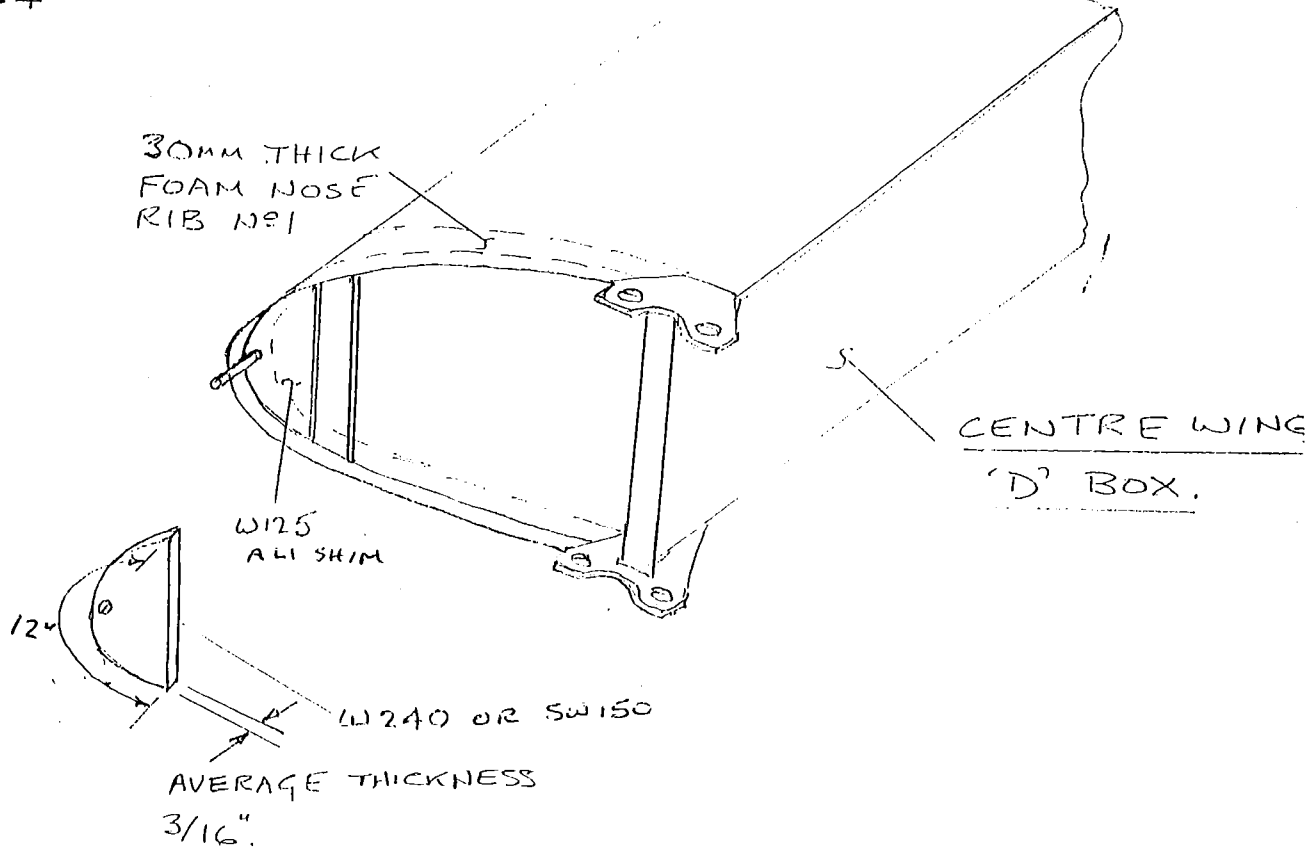
SHIM 10MM THICK IS REDUCED - IF NECESSARY TO BE FLUSH WITH L/E PLY EDGE.
 W125 IS ADDED BY ITS THICKNESS PROUD OF EDGE. (THIS SETS WING GAP)



W 240 SHADOWS
SW 150 STREAKS

1.2mm PLY
'D' SKIN

30mm THICK
FOAM NOSE
RIB N°1



BOND AREA $8\frac{1}{2}'' \times \frac{3}{16}''$

SERVICE BULLETINNO. 11DATE SEPT 95CFM METAL-FAX LTD CONSIDERSCOMPLIANCE - ~~Mandatory~~/Recommended/~~Optional~~
(delete which is not applicable)

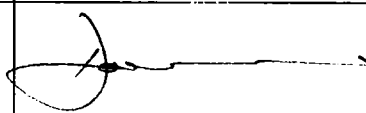
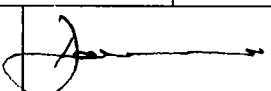
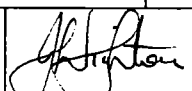
<u>SUBJECT</u>	PUSH/PULL CABLE - ELEVATOR
<u>MODELS AFFECTED</u>	SERIES B/B-D, C/C-D, S-A, S-AI, SA-M, S-S
<u>SERIES NOS. AFFECTED</u>	ALL SERIAL NUMBERS
<u>COMPLIANCE TIME</u>	NEXT 10 HOUR SERVICE - MINOR MOD.
<u>PURPOSE</u>	REPLACE SOLID CORE MORSE PUSH/PULL CABLE WITH MULTI-STRAND TYPE. INCREASE CABLE SIZE FROM EXISTING 3/16" DIA. CORE TO 1/4" CORE.
<u>INSTRUCTIONS</u>	(1) 1½ - 2" DIA. HOLE PLACED IN NOSE CONE OPPOSITE FRONT STICK PIVOT. (1) 3/4" WIDE x 2" LG. CUTOUT OPPOSITE PUSH/PULL CABLE. ANCHOR POINT-IN NOSE CONE.
<u>MATERIAL REQUIRED</u>	(1) PUSH/PULL CABLE EMMA F.A.S.T. SERIES 4 x 5.5 METRES LG. (5.25 METRES S-S ONLY). (1) ROD END - FEMALE REF. F347-14
<u>AVAILABILITY OF PARTS</u>	CFM METAL-FAX LTD.
<u>EFFECTIVITY DATE</u>	SEPTEMBER 1995
<u>SUMMARY</u>	THIS BULLETIN CAN BE PERFORMED BY THE FACTORY. CFM METAL-FAX LTD. OR THE SHADOW FLIGHT CENTRE AT OLD SARUM.
<u>NOTES</u>	SOLID CORE IS SUBJECT TO DAMAGE DURING RIG/DE-RIG BY OPERATOR AND MAY SUBSEQUENTLY FAIL WITHOUT WARNING. INCREASING THE SIZE AND USING MULTI-STRAND INNER PUSH/PULL CABLE, ELIMINATES SUDDEN FAILURE. ANY INDIVIDUAL STRAND BREAKAGE WOULD CAUSE RESISTANCE TO OPERATION AND CAUSE INVESTIGATION BY OPERATOR.

CFM Aircraft Limited

2D Eastlands Industrial Estate, Leiston, Suffolk IP16 4LL, United Kingdom
 Telephone (44) 01728 832353 Fax (44) 01728 832944
 Internet www.cfm-aircraft.co.uk

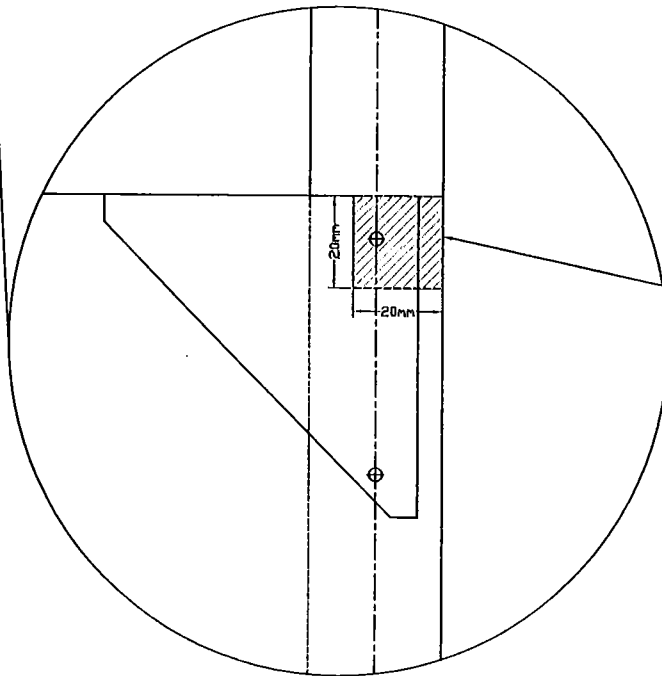
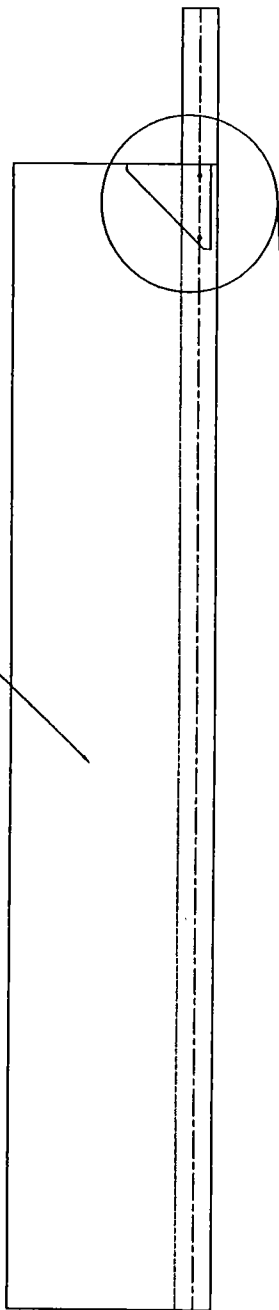
SERVICE BULLETIN No.: 12
ISSUE: 1
DATE: 14/07/98

CLASSIFICATION
 This Service Bulletin has been classified as Mandatory by CAA

SUBJECT	Rudder Fin Post			
MODELS AFFECTED	B, C & D Series Shadow, Streak Shadow & Star Streak			
SERIAL Nos AFFECTED	All			
COMPLIANCE TIME	Before further flight			
PURPOSE	To identify possible cracks in the top of the rudder fin post in the vicinity of the top of the rudder fin where the fin post enters the boom tube. Rectify where necessary.			
ACTION	<p>Remove the rudder fin post from the aircraft. Remove a small section of the covering material (20mm x 20mm) on both sides of the fin around the gusset and the fin post itself at the root (see attached drawing). Inspect for cracks. It is not necessary to replace the covering material after inspection provided that the all remaining fabric is fully glued to the surface of the gusset.</p> <p>In the event that a crack is present, the entire rudder fin post (Part T 147) must be replaced prior to further flight with a new Rudder Fin Post Assembly (Part T189)</p> <p>In the event that no crack is present, a strengthening sleeve (Part T 188) must be installed in the top of the fin post, prior to the aircraft's next annual inspection (Modification 40)</p> <p>Record the inspection and replacement/modification in the aircraft logbook</p>			
MATERIAL REQUIRED	Fin Post Insert (T 188); Rudder Fin Post Assembly (T189)			
AVAILABILITY OF PARTS	From CFM Aircraft			
EFFECTIVE DATE	16 JULY 1998			
ISSUED BY			Date: 16/7/98	
Chief Executive		Date 16/7/98	Design Engineer 	Date 16/7/98

Directors David Moore, Gabriel Moore Company No 3273702 Vat No 677041330

FIN
ASSEMBLY



COVERING TO BE
REMOVED FOR
INSPECTION

SERVICE BULLETIN No.: 13
 ISSUE: 1
 DATE: 3rd April 2001.

CLASSIFICATION
 This Service Bulletin has been classified as Advisory by CFM Aircraft Ltd.

SUBJECT	Rudder Pedal Hinges.
MODELS AFFECTED	All models with 1000 plus logged hrs.
SERIAL Nos AFFECTED	All.
COMPLIANCE TIME	Next scheduled annual inspection.
PURPOSE	<p>To identify any lateral movement in rudder pedal hinge pins.</p> <p><u>First case.</u> Annual inspection of aircraft xxx (DoM 1985), brought to our attention the possibility for the press-fit, shouldered steel hinge pins to work loose in their aluminium housing, rendering pin retention method (interference) ineffective.</p>
ACTION	<p>i) Close inspection will allow accurate assessment of hinge pin condition. In the event that wear is apparent, the rudder hinge (Part F163) must be replaced prior to further flight.</p> <p>ii) Record the inspection/replacement in the aircraft logbook.</p>
AVAILABILITY OF PARTS	From CFM Aircraft Ltd.
ISSUED BY	J. FitzGerald.



CFM Aircraft Ltd.

2D, Eastlands Ind. Est. Leiston,
Suffolk IP16 4LL, England.
Tel: +44 (0) 1728 832353
Fax: +44 (0) 1728 832944
E-Mail: HQ@cfm-aircraft.co.uk
www.cfm-aircraft.co.uk

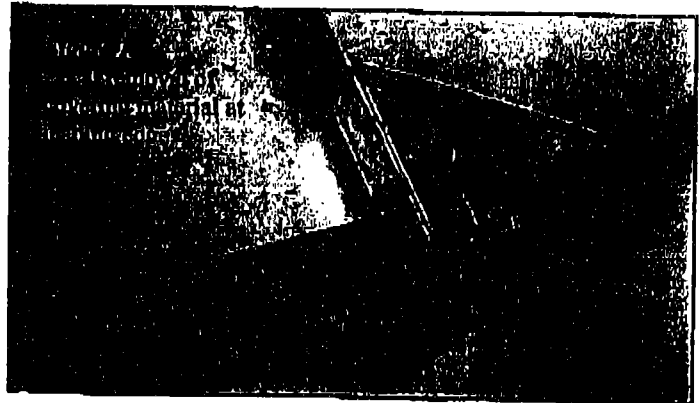
Service Bulletin #14

Wednesday, May 15, 2001

- 1 **Title:**
Cracking of Tailplane Spar Leading Edge Spigot Tubes
- 2 **Aircraft Types Affected:**
All variants of CFM Shadow, Streak Shadow & Star Streak aeroplanes.
- 3 **Classification:**
The CAA has classified this SB 'Mandatory'
- 4 **Reason for SB:**
A case has been reported of cracks developing in the male front spar spigot tube of the leading edge of the tailplane of a Shadow microlight aeroplane. This can result in disconnection of the front spar and loss of control of the aeroplane.
- 5 **Compliance:**
 - Aircraft that have exceeded 100 hours total flying time:

Carry out inspection / rectification action detailed in paragraph A of Accomplishment Instructions within 20 flying hours of the date of this SB.
 - Aircraft that have exceeded 200 hours total flying time:

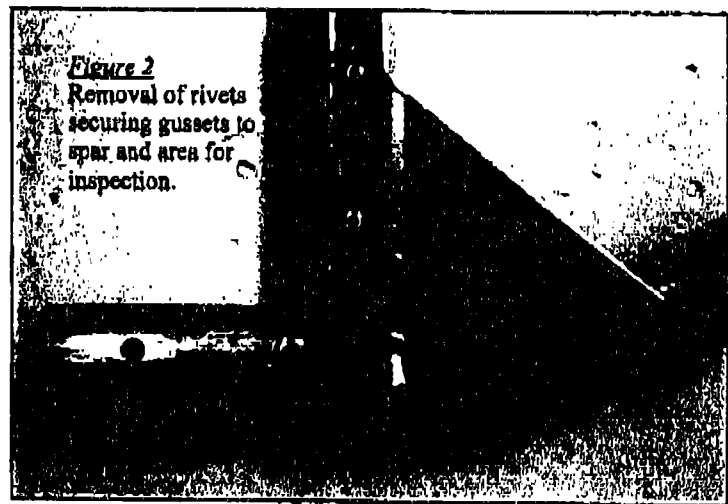
Accomplish inspection / rectification action detailed in paragraph A before further flight and accomplish inspection / rectification action detailed in paragraph B of Accomplishment Instructions within 50 hours or before the next permit renewal, whichever the sooner.
- 6 **Accomplishment Instructions:**
 - A. Remove the tailplanes from the aircraft. Using a Stanley knife, carefully remove a triangle of fabric covering the upper & lower gussets at the corner of each tailplane, where the leading edge joins the root rib. See figure 1. Care should be taken to avoid scratching the surface of the aluminium spars.



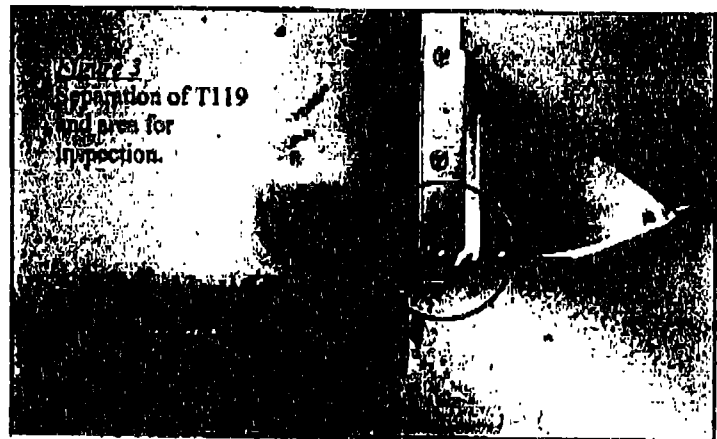
Using a new 1/8" drill, remove the heads of the rivets, which attach the gussets to the leading edge of the tailplanes. Take care not to oversize the holes in the tubes. See Figure 2.

On the right hand tailplane, the gussets & channel shaped root rib can now be moved sufficiently out board, to facilitate inspection of the tube area beneath T121.

Do not move the end of the root rib by more than is necessary for inspection (10-15mm) as excessive movement could damage the trailing edge fixings.



On the left hand tailplane, remove the female extension piece (T119) to enable full inspection of the spar. See Figure 3. Do not move the end of the root rib by more than is necessary for inspection (10-15mm) as excessive movement could cause damage to the trailing edge fixings.



Thoroughly clean, then inspect for cracks around the complete circumference of both leading edge tubes at the point where it was attached to the root rib by rivets top and bottom.

The area for inspection is indicated by the circle in figures 2 & 3.

A recognised dye penetrant crack detection method must be used.

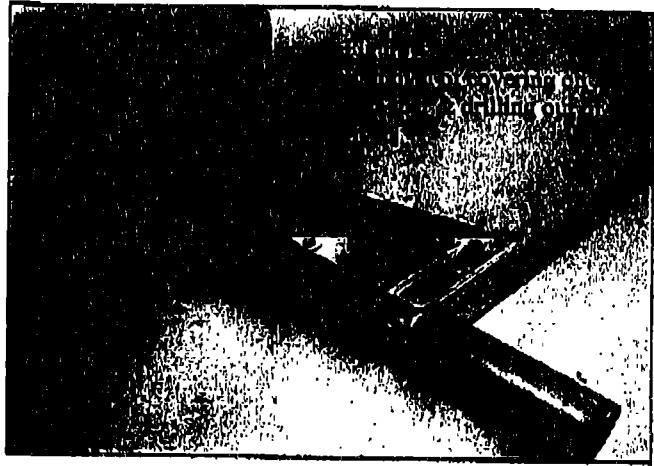
If any cracks are found, the aeroplane must not be flown. Return the tailplanes to CFM Aircraft for rectification action stating the exact nature and extent of the defects found.

If no cracks are present, re-assemble the components using CM9 or CM11 rivets, taking care to remove any swarf or burrs created during the dis-assembly process. Where just two surfaces are to be riveted use the short CM9 rivets. In all other cases use the longer CM11 rivets. An anti-fret compound such as JC5A should be used in the re-assembly process.

Repair the fabric covering using standard fabric repair methods. Finally apply a minimum of 2 coats of doping finish.

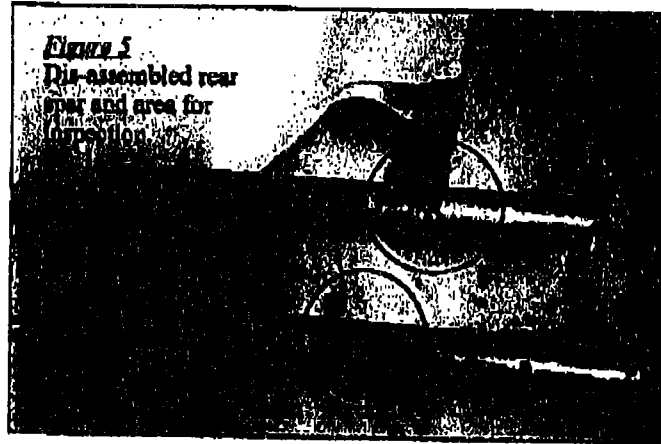
Repeat the inspection detailed in paragraph A at no more than 100 hour intervals.

- B. Remove tailplanes from the aircraft, and remove gussets/root rib at the leading edge as detailed in paragraph A above. In addition remove a further triangle of covering at the trailing edge as shown in *Figure 4*. Remove all rivets attaching the gussets to the rear spar tube. Remove all additional rivets holding the reinforcing tube to the rear spar. Do not remove the rivets attaching the gussets to the root rib.



Separate the assembly and fully inspect for cracks at or near the rivet holes that attach the root rib to the rear spar. See *Figure 5*. A recognised dye penetrant crack detection method must be used.

If cracks are found the aeroplane must not be flown. Return the tailplanes to CFM Aircraft for rectification action, or repair the tailplanes in accordance with a repair scheme available from CFM Aircraft, stating the exact nature and extent of the defects found.



If no cracks are present re-assemble the tailplanes using CM9 or CM 11 rivets and an anti-fretting compound as detailed in paragraph A above, taking care to remove any swarf or burrs created during the dis-assembly process.

Repeat the inspection detailed in this paragraph at intervals not exceeding 300 hours.

- C. When rigging the tailplanes to the aeroplane use grease or preferably an anti fret compound on the mating surfaces of the tubular structure.

D. Moore, Design Co-ordinator (designate).



CFM Aircraft Limited

2D Eastlands Industrial Estate
Leiston, Suffolk IP16 4LL, UK
E-mail: HQ@cfm-aircraft.co.uk
Internet: www.cfm-aircraft.co.uk
Tel: (44) 01728 832353/832100
Fax: (44) 01728 832944

Service Bulletin #14 Issue 2

15th November 2001


Page 1 of 1

- 1 Title: Cracking of Tailplane Spar Leading Edge Spigot Tubes
- 2 Aircraft Types Affected: All variants of CFM Shadow, Streak Shadow & Star Streak.
- 3 Classification: The CAA has classified this SB 'Mandatory'
- 4 Reason for SB: A case has been reported of cracks developing in the male spar spigot tube of the leading edge of the tailplane of a Shadow microlight aeroplane. This can result in disconnection of the front spar and loss of control of the aeroplane.

Six months of feedback to the 15th May Service Bulletin have revealed that the damage was likely to have been sustained as an isolated incident. As a result the SB has been amended to Issue 2, dated 15th November 2001. Revisions are marked by margin lines.

- 5 Compliance: (i) At each routine inspection including pre-flight checks, (ii) At intervals not exceeding 20 flying hours, carry out the accomplishment instructions in the relevant sub paragraph of Para 6 below.
- 6 Accomplishment Instructions:
 - (i) Carefully inspect the tailplane-to boom fixings. Without subjecting the components to undue strain, apply light, up and down hand loads (in the order of 0.5 kg) at the tailplane tips, at the same time checking for any excessive movement around the leading and trailing edge joints. There should be little or no discernible free up and down movement felt at the tailplane tips. Excessive movement indicates the need to perform the inspection in sub paragraph (ii) below and may result in the need to renew the tailplane backing plates and/or leading and trailing edge tailplane spigot tubes.
 - (ii) De-rig the tailplanes and carry out a close visual inspection of the tailplane-to-boom fixing area. Excessive wear of the four tailplane backing plates can lead to a significant increase in the loading of the leading and trailing edge tailplane spigot tubes - pay particular attention to their condition and replace where necessary. (B & C Series: front 2 off F219a and rear 2 off F218a, all other models: front 2 off SF102a and rear 2 off F218a).
When re-rigging the tailplanes to the boom, use grease or preferably an anti-fret compound on mating surfaces. Record compliance with this sub paragraph (ii) in the aircraft log book.

Note: On annual inspection, particular attention is to be paid to all fixing points, including fin post, front and rear tailplane and dorsal fin attachments. Operators are reminded to pay strict attention to all ground handling instructions contained within Pilot's Handling Notes. An amendment to all Pilot's Handling Notes is being issued to incorporate the instructions for routine inspection and checking as detailed above.


D. Moore, Design Co-ordinator (designate).