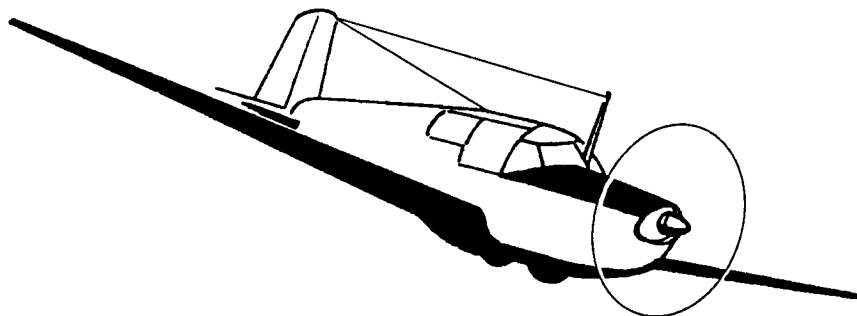


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# SAAB 91 SAFIR SERVICE BULLETIN



Number: 91.1.006

Date: 21 December 1993  
Revision 1, 29 August 1996

Subject: Inspection of U-profile in main spar of fuselage for corrosion and repair of damages that may be revealed

The actions in this document have been classified as  
**MANDATORY**

for aircraft on Swedish Register.  
Luftfartsverket

The Swedish Civil Aviation Administration

Date 29 August 1996

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## 1. PLANNING INFORMATION

### A. EFFECTIVETY

(1) Aircraft affected:

All Aircraft of type Saab Safir 91A, 91B, 91B-2, 91C and 91D.

### B. REASON

Corrosion damages have been revealed in the upper and lower U-profile of the fuselage main spar of the aircraft. The profiles are exposed to heavy stress from the wing loads transferred in the wing coupling brackets attached to the profiles. The corrosion damages may have been caused by grass and dirt being thrown up from the main landing gear wheels and intercepted by the U-profiles of the main spar. The grass and dirt also may cause that the drain holes of the lower U-profile will be plugged up and there will be a risk of corrosion due to undrained moisture. In acidiferous environment this risk will increase. See figure 1.

### C. DESCRIPTION

Possible corrosion damages shall be localized and removed by polishing but within the limits given in this bulletin. The corrosion protection shall then be restored.

### D. COMPLIANCE

Mandatory

Inspection according to this bulletin is to be performed not later than January 1, 1997 and then repeated once a year.

This Service Bulletin is mandatory for A/C on Swedish register.  
Ref Swedish Airworthiness Directive No SAD 1-100.

### E. APPROVAL

The technical content of this Service Bulletin is LFV approved.

### F. TOOLING

Drill Ø 3,0

Pin drill Ø 4,1, 4,9, 5,7, 6,4

Punch

Ardrox 970P24 fluorescent penetrant

Ardrox 9D1B aerosol developer

Ardrox 9PR12 concentrated emulsifier,  
shall be diluted with 9 parts water

Magnaflux ZB23 or ZB100Mk2, UV-light 100 W

ref figure 2

ref figure 3

ref figure 4

} Penetrant equipment for  
Non Destructive Test (NDT)  
Equivalent equipment may  
be used.

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## 2. ACCOMPLISHMENT INSTRUCTIONS

### A. INSPECTION

Inspect the upper and lower U-profile of the main spar for corrosion damages through the LH and RH main landing gear wheel wells, see figure 1.

- 1 Clean the upper and lower U-profile of the main spar by brush or cloth moistured in cleaning solvent. Wipe dry with clean cloth or dry air.
- 2 Visually inspect the affected area by using inspection mirror and bright light, see figure 1.
- 3 Remove eventually damaged protective plating with a clean cloth moistured in thinner and repeat the inspection.
- 4 If there are no corrosion damages, restore the corrosion protection by brusching with alodine 1200 S. Apply then primer and paint.

#### **WARNING**

Chemical cleaning compounds, primer, paint and Alodine 1200S are dangerous. Observe all the precautions for handling chemicals.

### B. PROCEDURE AT REVEALED CORROSION AT THE UPPER AND LOWER U-PROFILE

- 1 Remove the rivets (KN 3,2, KN 5,0) at the corroded area by drilling. Use 3,0/4,8 mm drill and 3,0/4,0 mm punch. See figure 1.  
If necessary remove the screws (M5x24). Se figure 1.  
Access to the spar is gained by removing the front seat buckets. Then fold up the insulating cover to make the row of rivets free.
- 2 If required the front part and the upper cover of the landing gear control pedistal are to be removed (fastened with screw M4).
- 3 Check the rivet/screw holes for cracks by using penetrant or equivalent NDT-method (Non Destructive Test). Mark holes where cracks are detected.
- 4 Drill the rivet holes to the next oversize diam by using 4,1 mm pin drill, se figure 3 and tabel 1.
- 5 Drill the screw holes to oversize diam by using 6,4 mm pin drill, se figure 3 and table 2.
- 6 Polish those holes where cracks were detected, use cleaning cloth Scotch-Brite.
- 7 Check the holes for cracks by using NDT-method (None Destructive Test).
- 8 If cracks are detected drill affected hole to next oversized diam, se table 1. Repeat the check for cracks according to step 6 and 7.

- 9 Procedure according to step 7 and 8 may be repeated up to max permissible oversize according to tabel 1 and table 2.

**Note**

If corrosion damages still exist when the limits are entirely utilized in any section of the U-profile contact:

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 Saab Military Aircraft  
 Product Support  
 S-581 88 LINKÖPING  
 SWEDEN  
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- 10 Remove burrs from holes.
- 11 Remove corroded material by polishing so a smooth passage to undamaged material is obtained. Polish with abrasive cloth 220 mesh aluminium oxide and a finer abrasive cloth until a smooth surface is obtained.
- 12 Polish the surface.  
 Use polishing peg of porous rubber with 200 mesh aluminium oxide or chafed abrasive cloth 320 mesh aluminium oxide. The abrasive cloth is chafed by rubbing two clothes to each other.  
 Max permissible reduction of the U-profiles section area is given in figure 1, section A-A respectively section B-B.
- 13 Treat prepared surfaces with Alodine 1200S.
- 14 Wet install rivets with primer. Use any size of aluminium rivets according to tabel 1.
- 15 Wet install screws with primer. Use screw according to tabel 2.
- 16 After riveting, paint prepared surfaces with primer and paint.

**WARNING**

Chemical cleaning compounds, primer, paint and Alodine 1200S are dangerous. Observe all the precautions for handling chemicals.

**3. MATERIAL INFORMATION**

Table 1. Pindrill – Rivet

Drill Ø D mm	Rivet, solid universal head Alumin 2117 T=180 MPa <sup>x)</sup> , L=15,9 mm		Ø mm (inch)	
4,1	MS 20470	AD5-10	4	(5/32)
4,9	MS 20470	AD6-10	4,8	(6/32)
5,7	MS 20470	AD7-10	5,6	(7/32)
6,4	MS 20470	AD8-10	6,35	(8/32)

<sup>x)</sup> T=shearing strength

Table 2. Pindrill – Screw

<b>Drill Ø D mm</b>	<b>Screw, hexagon head Steel 1643–04 Grip length = 14 mm</b>	<b>Ø mm</b>
6,4	STD2762–06014	6

Consumables

<b>Description</b>	<b>Vendor partnumber</b>	<b>Comments/Disposition</b>
Abrasive cloth (220 mesh aluminiumoxide Al <sub>2</sub> O <sub>3</sub> )	–	In order to remove corroded material
Polishing peg (Spongy rubber with 200 mesh aluminium oxide Al <sub>2</sub> O <sub>3</sub> )	–	} Alternative In order to polishing clean area
Abrasive cloth (320 mesh aluminium oxide Al <sub>2</sub> O <sub>3</sub> which is chafed before using)	–	
Naphtha 01	Exxon–Exxsol D40	In order to clean area which shall be inspected
Thinner		In order to remove damaged protective plating
Alodine 1200S	Amchem–Alodine 1200S (MIL–C–5541 Class 1A)	In order to recover removed protective plating
Primer SAAB–5417–51	AKZO–coatings Aerodur primer S15/90 Hardener S66/22R	In order to paint areas which are treated with Alodine 1200S
Paint SAAB–5418–16	AKZO–coatings Aerodur HFA 130 No. 041018 Hardener S66/22R	In order to paint areas which are treated with primer
Cleaning cloth	3M Scotch–Brite Type: 7447 A v fine Aluminiumoxide Color: Red	In order to polishing over-size holes before crack test

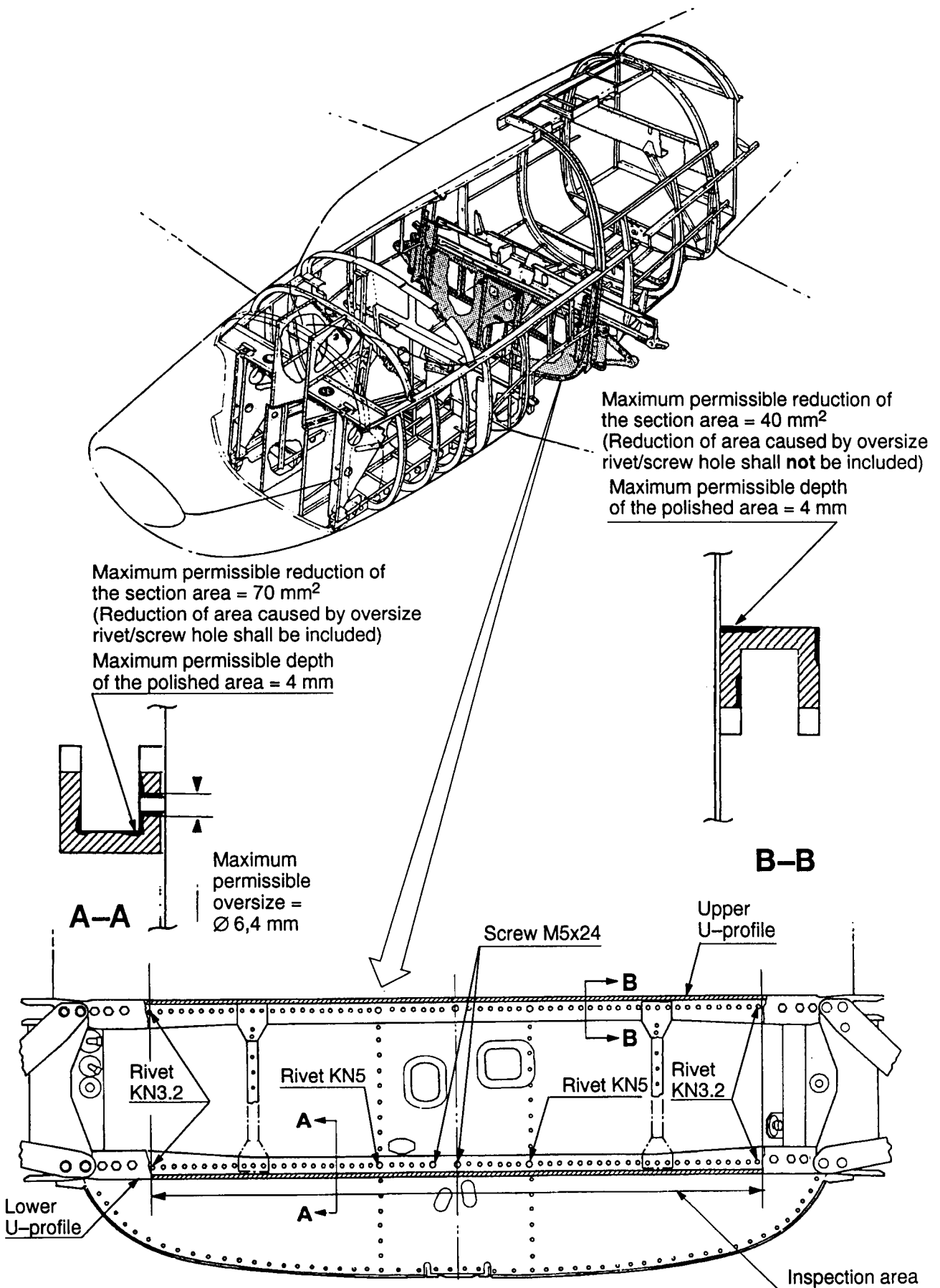


Figure 1. Frame with main spar  
 (Veiv from behind)

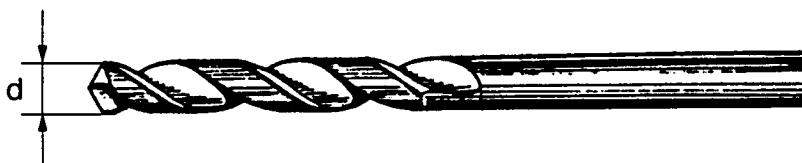


Figure 2

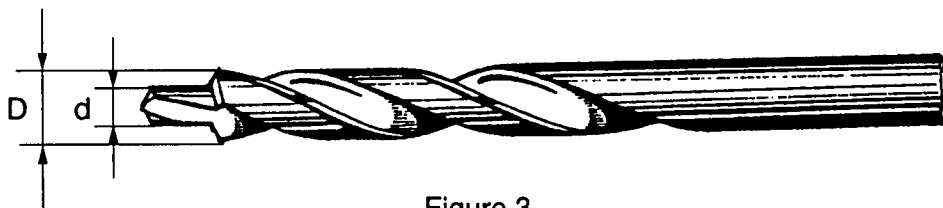


Figure 3



Figure 4

## Inspection sequece for U-profile in main spar of fuselage

