

Technical Information Notice

TIN No.:	TIN-01-2018	Revision No.:	1	Issue Date:	01/03/2018
Title:	Owners Service Bulletin – OSB 29 Issue 2				
Applicability:	Ikarus C42 A & B models				
Information Type(s):	MANDATORY				
Modification:		Airworthiness / MPD	✓	Maintenance / Operation	
Parts:		Inspection		Other	
Importance:	ESSENTIAL	✓	HIGH	ROUTINE	✓
<p>Subject Summary / Description of Problem:</p> <p>This notice is up-issued to require both Internal and external inspection:</p> <ul style="list-style-type: none"> The internal inspection of the fuselage tube is by using a borescope, The external visual inspection is also required as experience has shown that cracks cannot be reliably spotted by an internal inspection alone. <p>Instructions on gaining access to the inside of the fuselage tube, and guidance on obtaining and using a borescope, have also been added.</p> <p>Inspection of main fuselage tube for cracking around cut-outs</p> <p>High hours examples of C42 aircraft have exhibited cracks emanating from the corners of the cut-outs in the main fuselage tube where the nose-leg and A-strut are fitted.</p> <p>See example photographs on following pages.</p> <p>Airworthiness Implications</p> <p>If such cracks are allowed to propagate the structural integrity of the nose-leg, A-strut and engine mountings may be compromised.</p> <p>Aircraft Affected</p> <p>All C42 aircraft</p> <p>The problem appears primarily to affect high hours (1000hr+) of the C42 Types on which the affected cut-outs were made manually. However the problem has been reported on newer models with approx 2000hr with machine cut cut-outs, therefore ALL C42 aircraft are subject to this service bulletin until further notice.</p>					

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Hours of Operation

In excess of 1000 hours

Location and Examples

Nose-leg and A-strut cut-outs at front of main fuselage tube in vicinity of engine mount.

Notes:

1. The stainless steel brackets securing the A-strut to the top side of the fuselage tube (the rear most brackets) were lengthened in around 2007, see Figure 9.
2. The holes for the A-strut attachment, (the rearmost set of holes, one in the top of the main fuselage tube, one in the bottom), were eliminated entirely around 2015.

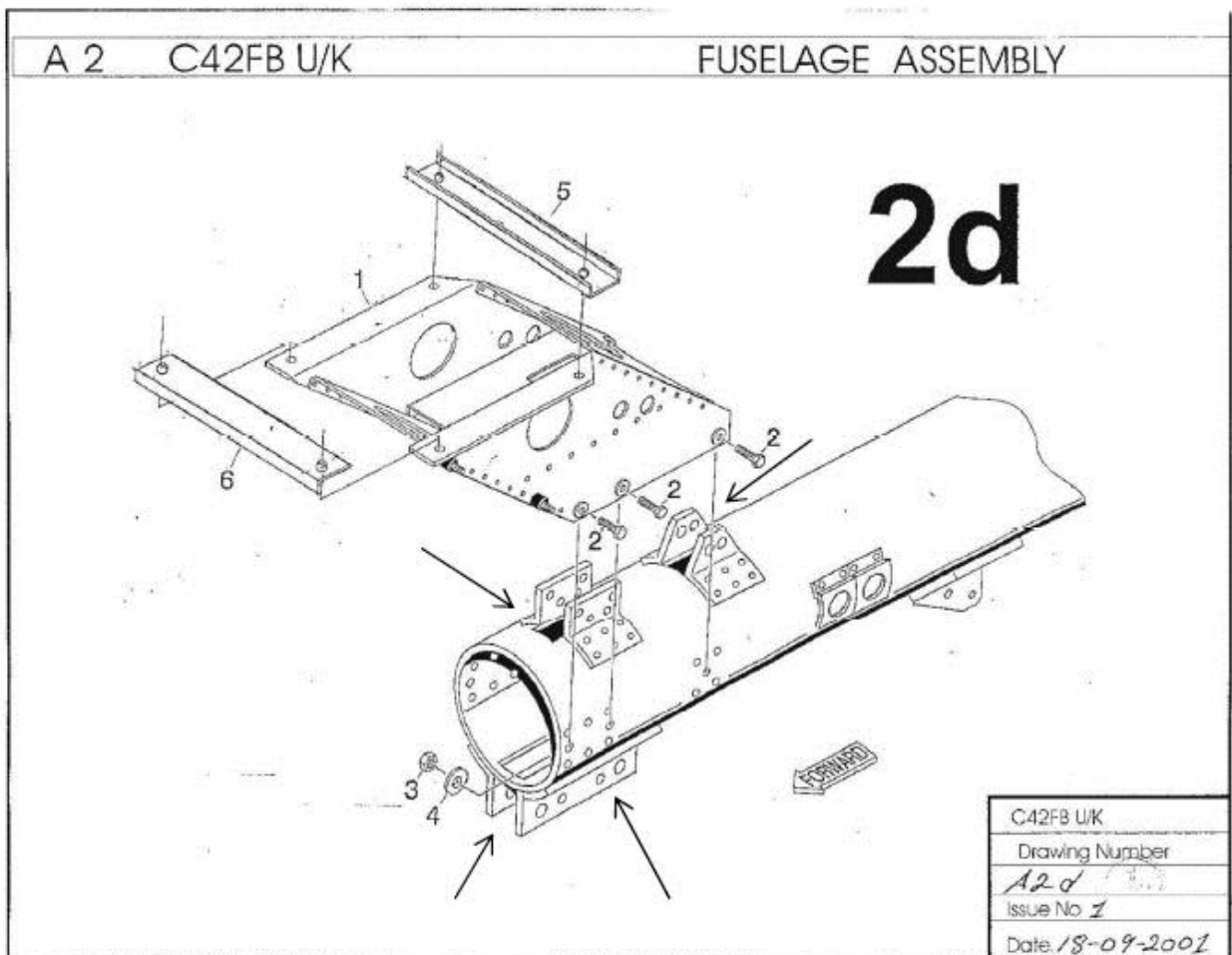


Figure 1

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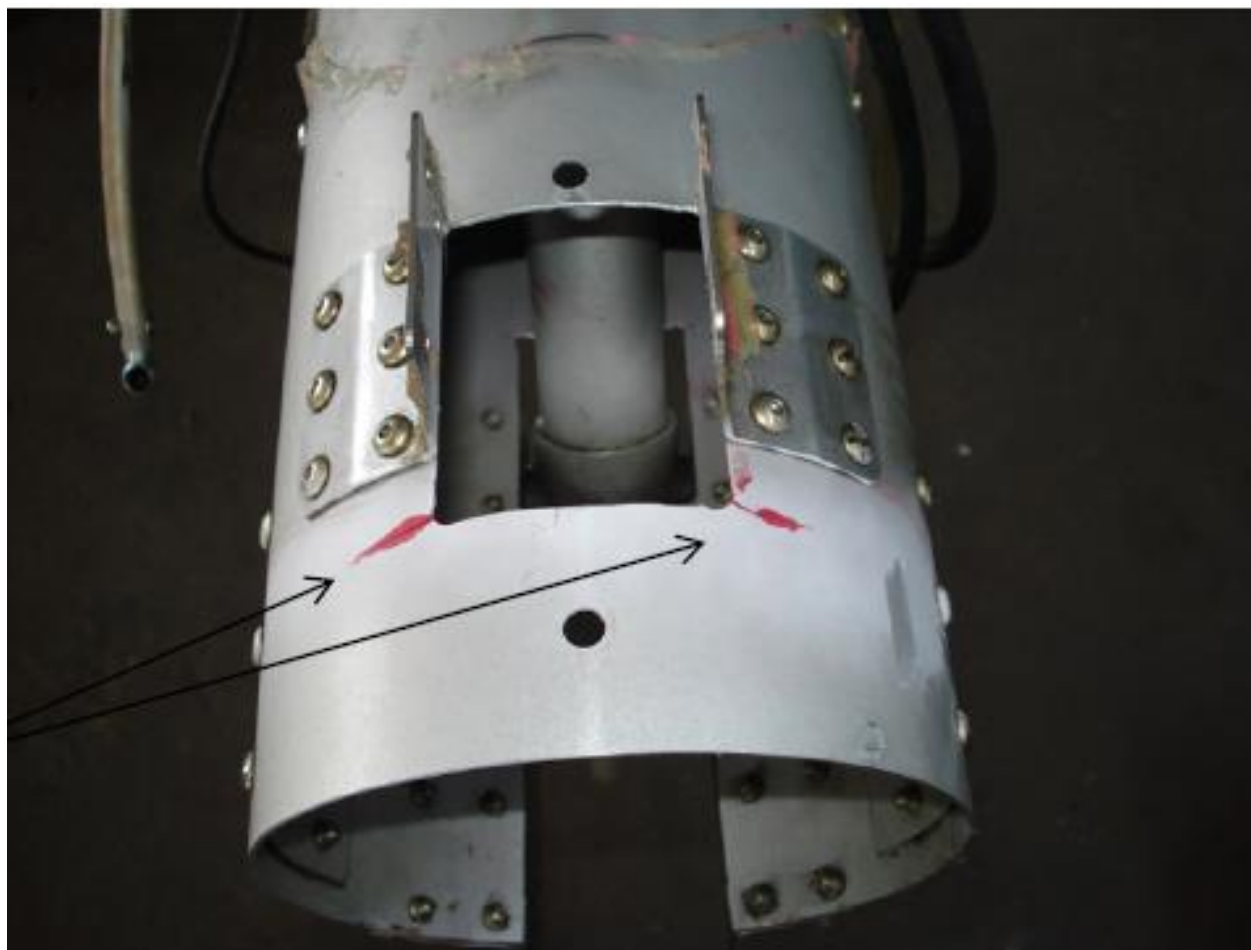


Figure 2

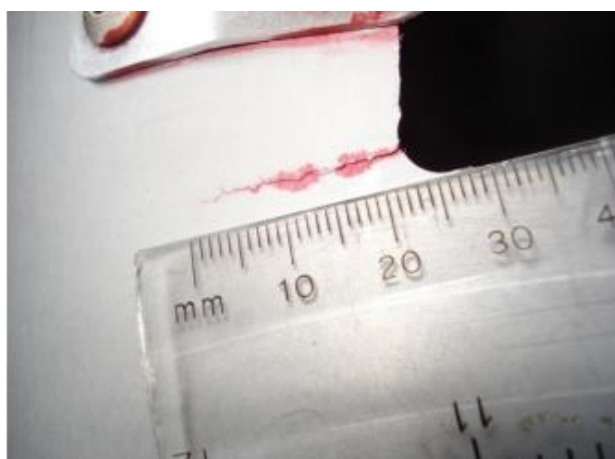


Figure 3

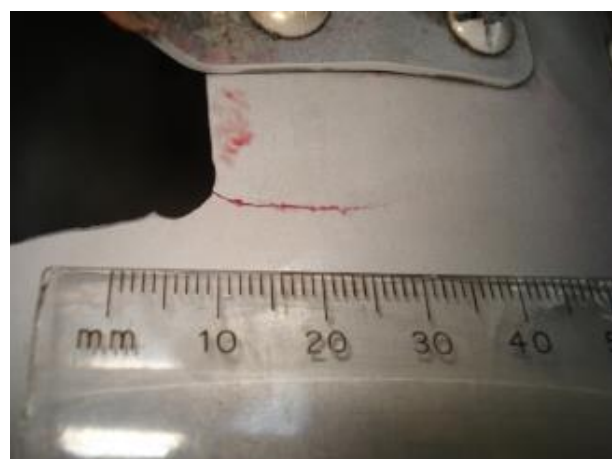


Figure 4

Example cracks on upper surface of main fuselage tube at corners around nose-leg cut-out.

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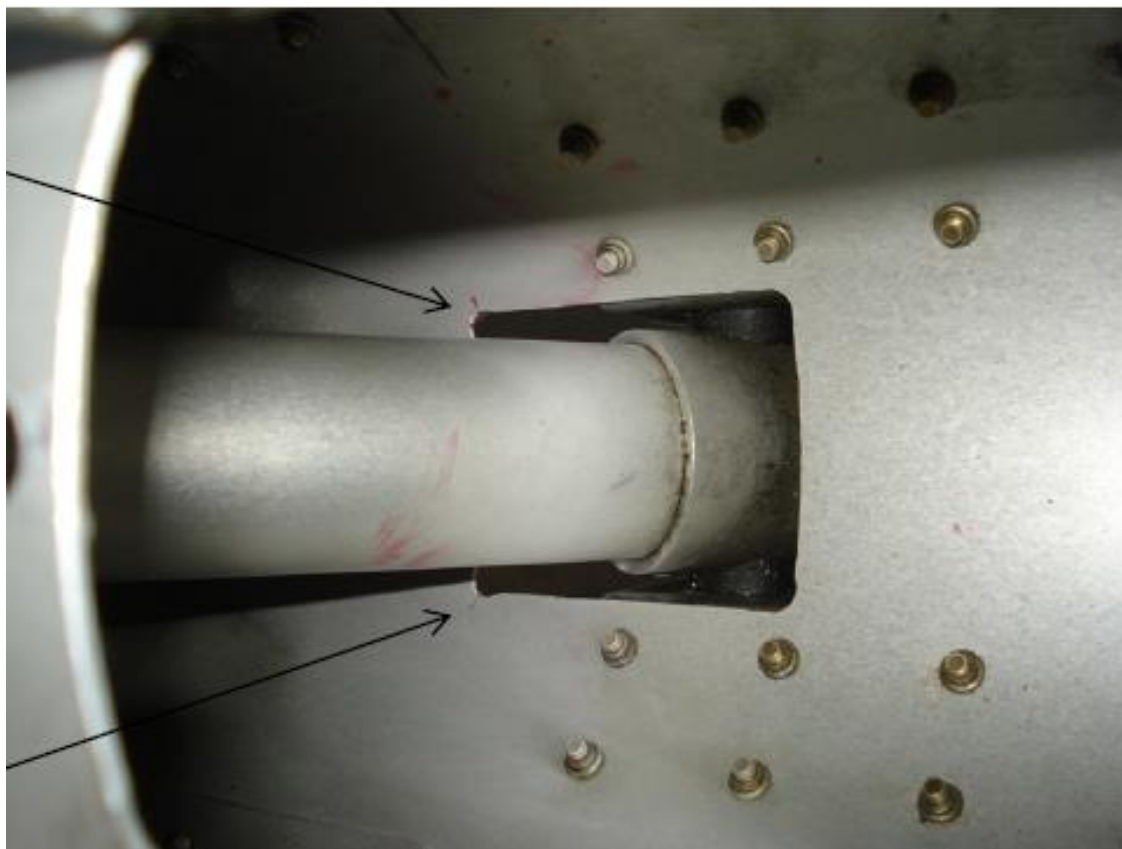


Figure 5



Figure 6



Figure 7

Example cracks on lower surface of main fuselage tube at corners around A-strut cut-out.

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Figure 8

Example of significant crack allowed to propagate on 4500hr aircraft. This crack was hidden by the firewall sound-deadening foam. Ensure that it is removed for inspection.

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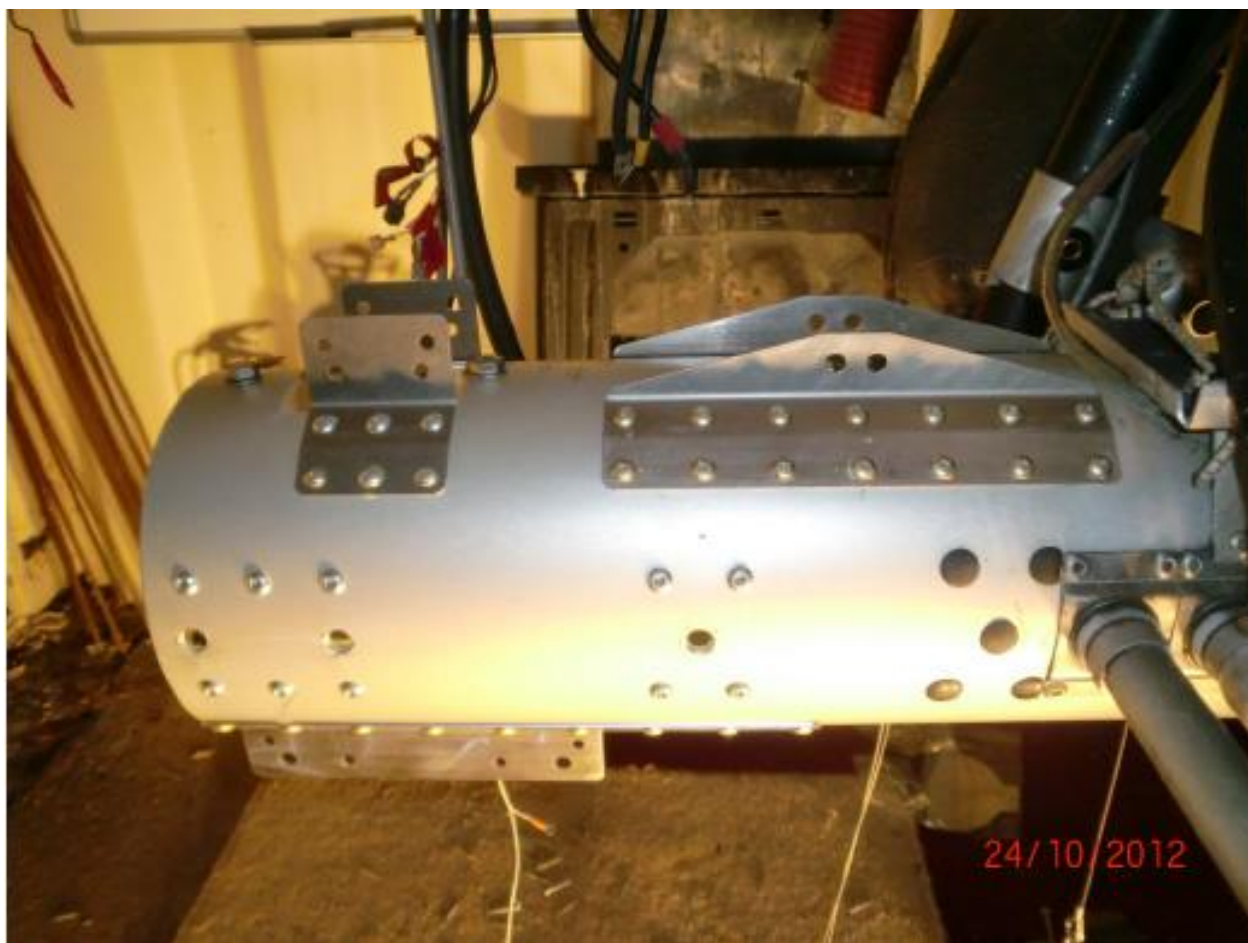


Figure 9

Lengthened A-strut top attachment brackets as found on aircraft from around 2007.

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Action Required:

(A) Inspection

The following references to aircraft hours assumes the original fuselage tube is still fitted. If this has been replaced then the operating hours may be taken to refer to those since the replacement.

The fuselage tube is impossible to inspect satisfactorily from outside without significant dismantling of the aircraft. Even then, some cracks may be hidden by the fuselage tube brackets themselves. To enable the fuselage tube to be inspected regularly and properly, a borescope must be used to inspect the fuselage tube from within. Access to the end of the fuselage tube only requires removal of the upper and lower engine cowlings, and disconnection of the radiator from the engine mount.

A USB borescope - similar to that shown in Figure 10 - used with a smart 'phone, tablet or laptop, can be adequate for this task. USB borescopes - also known as USB endoscopes - can be bought for less than £20 online.



Figure 10 - generic USB borescope (aka endoscope)

USB borescopes:

- incorporate adjustable LED illumination in their heads. This illumination normally has to be set to its maximum to satisfactorily inspect inside the fuselage tube.
- are available with a semi-rigid or flexible lead. The flexible lead type requires the head to be attached - using insulation tape or similar - to a thin rod so that it can be guided into the fuselage tube. The borescope head may need to be attached at a slight angle to the rod so that it can focus on the side of the tube.

For aircraft in which the forward end of the fuselage tube is sealed with an aluminium blanking plate, two 20mm diameter (nominal) access holes must be made - one on each side to allow borescope access past the nose leg. See Figure 11 & 12. These access holes can be cut carefully with a hole saw and then deburred. Although the blanking plate itself is not structural, it is vital to ensure that neither the nose leg (which is immediately behind the blanking plate), nor the fuselage tube itself, is damaged in the process of cutting the holes. The holes should be closed up when not in use. This is best achieved using a thin metal sheet bolted to riv-nuts set into the blanking plate. This allows easy opening and closure when next required, as shown in Figure 11 & 12.

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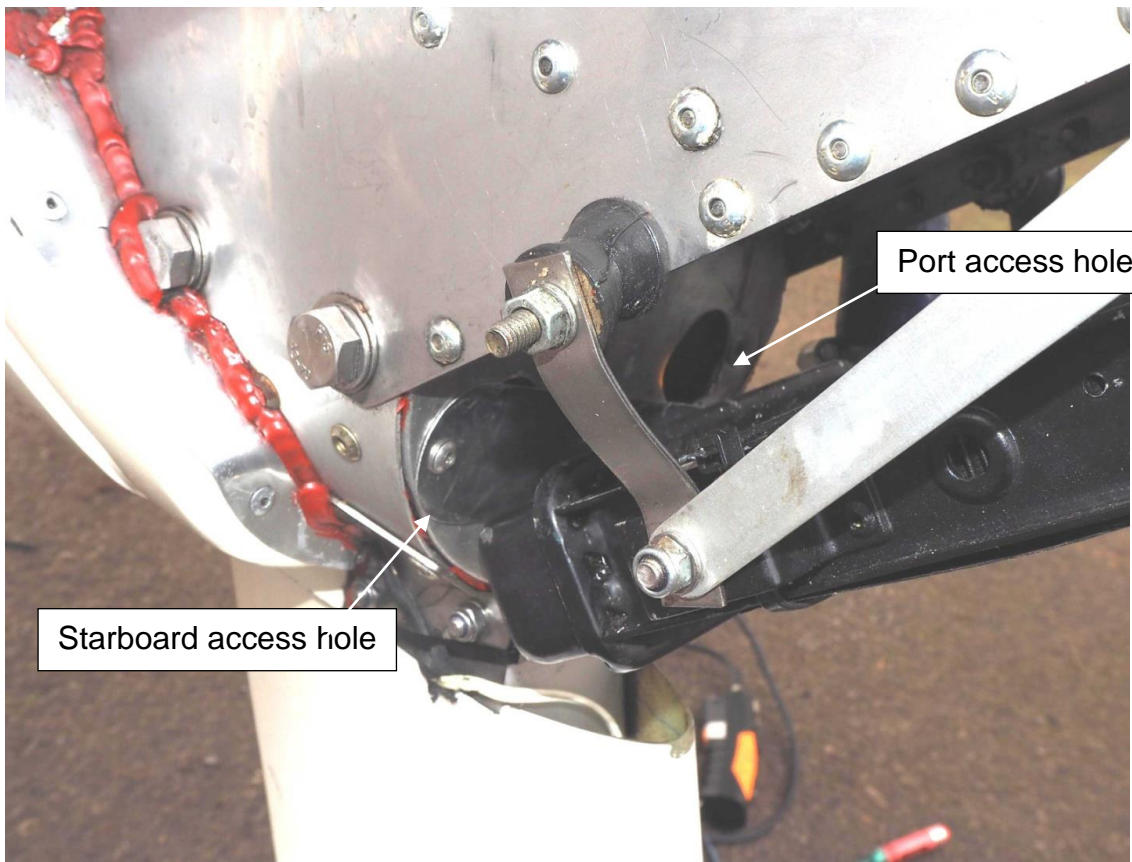


Figure 11

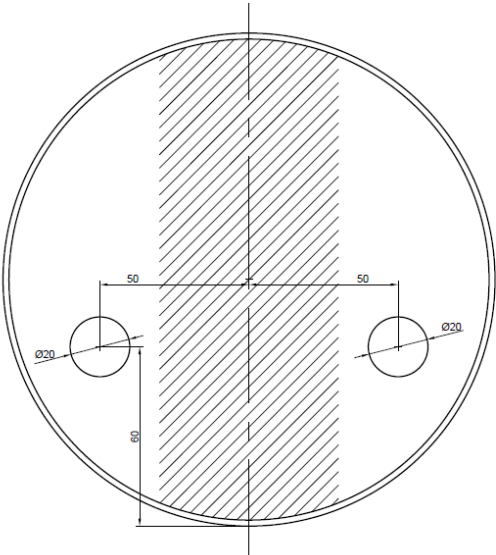


Figure 12

Note: +/- 2mm tolerance on dimensions above are acceptable

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(B) Inspection Intervals

- (i) For all C42 aircraft with **NOT** more than 1000 hours of operation, **NO** action is needed.
- (ii) For aircraft with over 1000 hours of recorded operation, assuming the original SB was complied with. Perform the following inspection at the next annual or 100 hour inspection whichever occurs first and at 500 operating hour intervals thereafter:
- Remove the upper and lower engine cowlings, and lower fuselage fairing. Consult the builders manual for detailed instructions.
 - Remove the area of sound-deadening foam on the cockpit side of the firewall which hinders inspection of the A-strut cut-out just forward of the rudder pedals on the top of the main fuselage tube. This is the area which concealed the significant crack shown in the example photographs above.
 - The perimeter of the cut-outs in the main fuselage tube where the nose-leg and A-strut pass through the main fuselage tube must be visually inspected for cracking, with particular attention paid to the corners. Both top and bottom cut-outs must be inspected, 4 cut-outs in total (except on very recent aircraft which have no cut-outs for the A-tube).
 - This must be carried out both externally by direct inspection and internally by borescope.
 - In case of doubt, a visual inspection with the aid of dye-penetrant crack detection is recommended.
 - The owner may perform this inspection, but if not experienced in such inspection and especially if using dye-penetrant, the assistance of a suitably experienced BMAA or LAA Inspector is recommended.
 - Record the inspection and the results in the aircraft airframe logbook.
- (iii) For aircraft with over 2000 hours of recorded operation, which have **NOT** yet complied with (ii) above, perform (ii) above before next flight.

(C) Repair

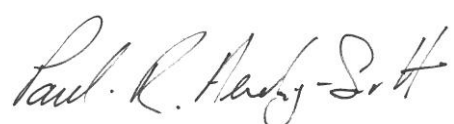
If any cracking is found please contact TLAC. An approved repair scheme involving the fitment of an inner sleeve to the forward end of the main fuselage tube is available.

(D) POH Amendment


The Pilot's Operating Handbook (POH) should be annotated on the "Inspection and Maintenance, 100hr or Annual Inspection" page to record the requirement for the above inspection. Future issues of the POH will incorporate this amendment.



Authorised on Behalf of TLAC: **Paul Hendry-Smith**

Position:	Chief Executive	Signature:	
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Authorised on Behalf of COMCO IKARUS : **Paul Welsh**

Position:	Certification Engineer (C42 Type)	Signature:	
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