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AIRWORTHINESS DIRECTIVE

THE GLIDING FEDERATION OF AUSTRALIA Inc

GFA AD 686 Issue 5

Date: 12 July 2023

Note: This Airworthiness Directive is issued by the Gliding Federation of Australia

Type Certificate Holder

Alexander Schleicher GmbH

Manufacturer(s)

Alexander Schleicher GmbH

Types/Models Affected

ASK-21Mi, ASK-21 and ASK-21B

Serial Numbers

All

Subject

Cracking of Filler at Wing Root

Implementation

MANDATORY

Background

The Australian Air Force Cadets have found signs of cracking of the filler between the lower spar cap and lower wing skin at the wing root. A repair scheme from the manufacturer was implemented on one aircraft and this repair 'failed' shortly after return to service. The Australian Air Force Cadets suspended operation of their ASK-21Mi fleet on 8 Oct 2018 due to concern that the cracking at the lower spar at the wing roots was not fully understood and may jeopardise safe operation of the aircraft.

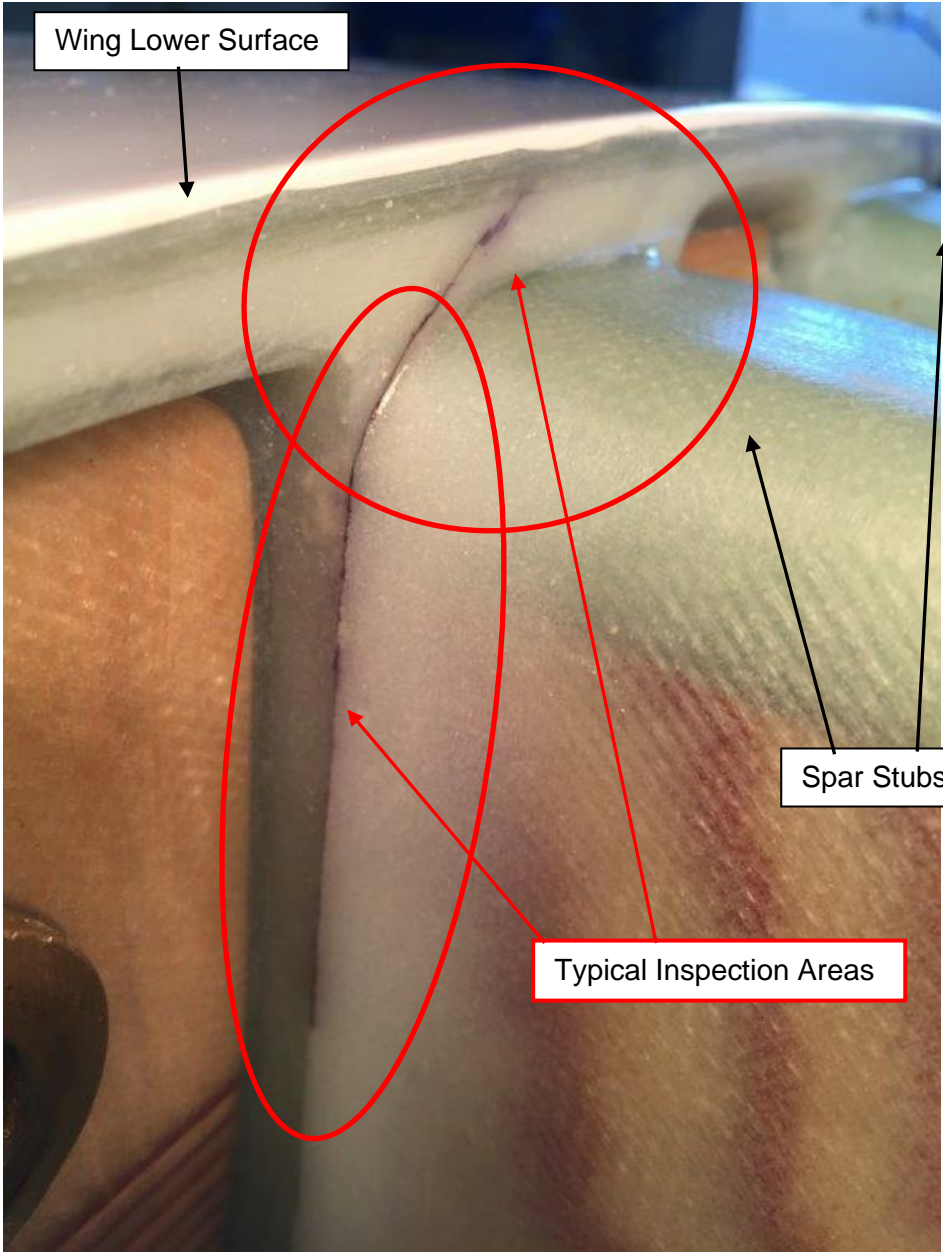
Issue 1 of AD 686 mandated a visual inspection of the lower spar caps at the wing roots. Results found two ASK-21 aircraft in addition to the original ASK-21Mi, where the cracking had carried around the spar cap and along the spar web joint with the root rib. Several aircraft were reported with noticeable crack growth in between the spar cap and skin between annual inspections.

Issue 2 of AD 686 changes the initial inspection to before next flight for ASK-21. Issue 2 also allows aircraft with cracks confined to the region above the spar stub and the area around the radius of the spar cap to return to service with ongoing inspections.

Issue 3 of AD 686 gives further instruction for cracks running down the spar webs.

Issue 4 of AD 686 clarifies repair options where cracks extend under the rib flange.

Issue 5 added the ASK-21 B model to this directive.

Documentation	Schleicher Technical Note TN 41 current edition
Required Action(s)	<p>1. ASK-21Mi and ASK-21: Before next flight, no later than 30 Nov 2018, an Annual Inspector FRP is to carry out the following:</p> <p>Derig the aircraft to gain access to the wing roots.</p> <p>Invert each wing on trestles or similar suitable stands.</p> <p>Using a good torch or strong sunlight, visually inspect the area around the lower spar cap and the wing skin and down the sides of the spar web and root rib as shown in Figure 1 below for signs of cracking. Particular attention should be paid at the spar web.</p>  <p>The photograph shows the wing root area of an aircraft. A black arrow points to the 'Wing Lower Surface'. Two red circles highlight 'Typical Inspection Areas' on the spar web and root rib. A black arrow points to the 'Spar Stubs'.</p> <p>Figure 1: Wing root area requiring inspection</p>

Where cracking is found, the areas are to be measured and photographed with a ruler adjacent to the area. If no cracking is found, the aircraft can be reassembled and returned to service.

2. ASK-21Mi, ASK-21 and ASK-21B: If cracks are found at Action 1, and the cracks are confined to the area between the spar cap and the skin and has not exceeded the edge of the spar cap radius as shown in Figure 2 below, then verify that there is no audible detection of delamination of the skin to the spar cap by tap testing the region 50mm to 100mm outboard of the wing root. Mark the ends of the crack tips. Enter an inspection into the Form 1 to re-inspect every 100 landings or the next Annual Inspection whichever is first.

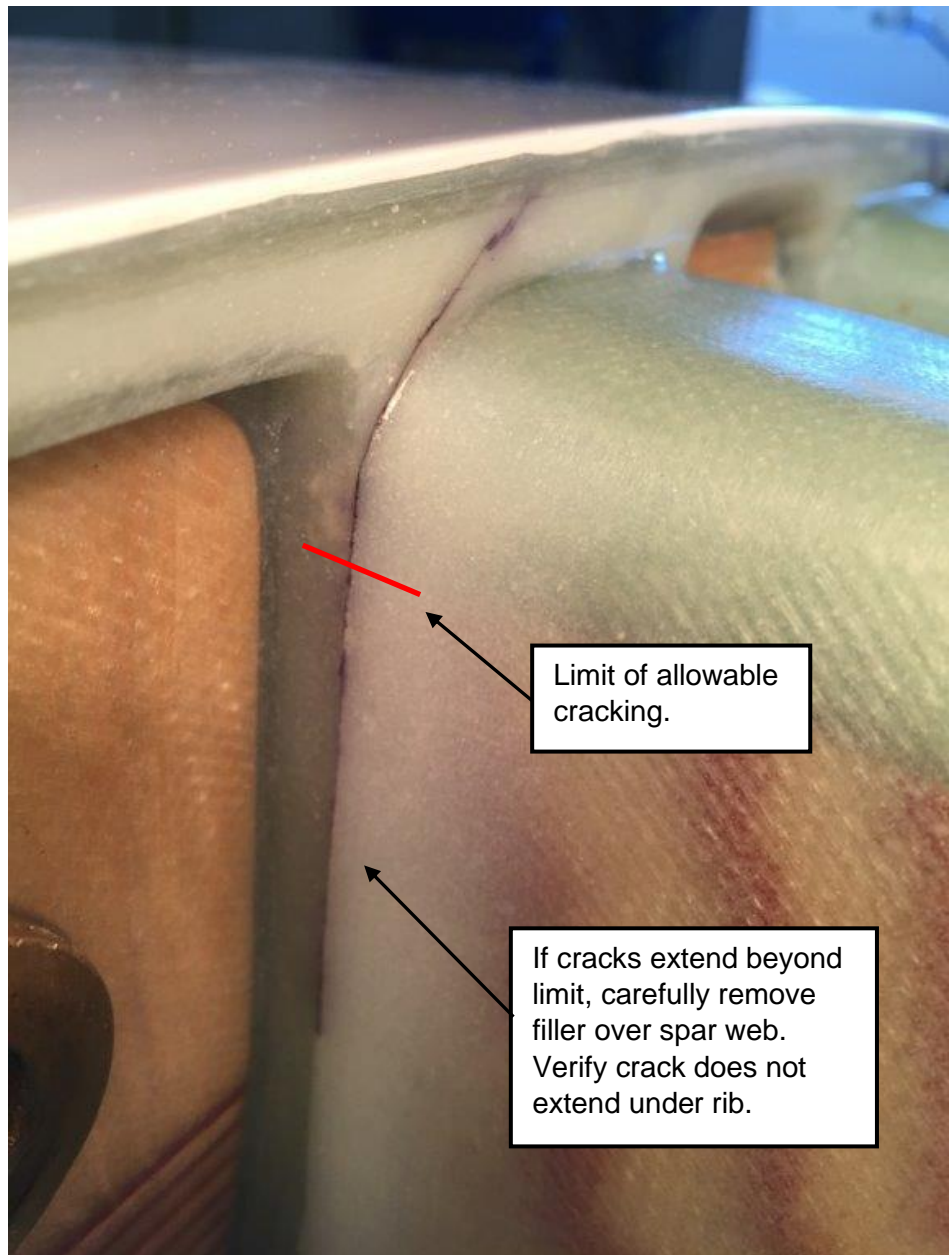
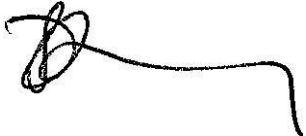


Figure 2: Allowable cracking limits

	<p>Where cracks extend beyond the spar cap onto the spar web, carefully remove the thin wedge of filler between the spar web and the root rib. Verify that the crack has not extended under the root rib. If crack is not under the rib, do not replace the filler on the root web. The aircraft can be returned to service with the above ongoing inspections.</p> <p>Cracks extending under the rib will require repair either by Schleicher Technical Note TN41 (current edition) or by another approved repair scheme. Once repaired Actions 3 and 4 are applicable.</p> <p>3. ASK-21Mi, ASK-21 and ASK-21B: If no cracks are found in the initial inspection at Action 1, carry out Action 1 at each Annual Inspection.</p> <p>4. ASK-21Mi, ASK-21 and ASK-21B: Carry out Action 1 after every abnormally hard landing.</p> <p>5. All inspection results from the initial inspection at Action 1, including when no defects are found, are to be reported to GFA Airworthiness Chief Technical Officer CTO@glidingaustralia.org, and the Deputy Chair Airworthiness 2 dcad2@glidingaustralia.org. Crack results must include length and orientation information.</p> <p>6. All ongoing inspection results from Actions 2, 3 and 4 if crack growth is found, cracks are to be reported to GFA Airworthiness Chief Technical Officer CTO@glidingaustralia.org, and the Deputy Chair Airworthiness 2 dcad2@glidingaustralia.org. Crack results must include length, orientation information and aircraft hours and landings.</p>
Compliance, Compliance Time(s) and Frequency	<p>Compliance with this Airworthiness Directive is mandatory and compliance, including action taken pursuant to this Airworthiness Directive must be recorded in the aircraft log book.</p> <p>All inspection results, including when no defects are found, are to be reported to the GFA Airworthiness Chief Technical Officer CTO@glidingaustralia.org, and the Deputy Chair Airworthiness 2 dcad2@glidingaustralia.org.</p> <p>Compliance must be before next flight for ASK-21Mi and ASK-21 and no later than 30 Nov 2018.</p>
Effect on Weight and Balance	No effect on W&B.
Issuing Authority	<p>Issued for and on behalf of The Gliding Federation of Australia Inc. Signed:</p>  <p>.....Chief Technical Officer</p>
Effective Date	12 July 2023