

**Subject:** Cracks in the bonding of the wing root rib

**Applicability:** ASK 21; Type-Certificate EASA.A.221  
Models **ASK 21** and **ASK 21 Mi**; all serial numbers

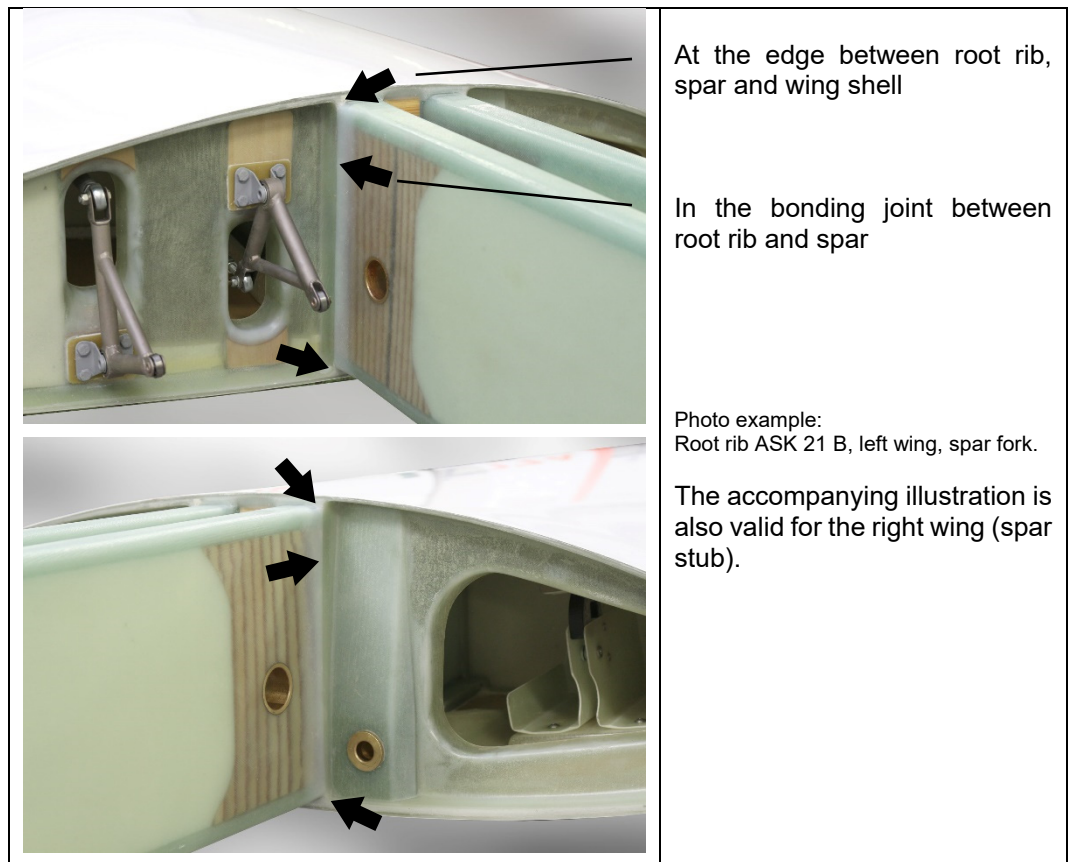
**Classification:** Major Change

**Urgency:** Action 1 "Inspection for Cracks" until 31.12.2019 at the latest, afterwards annual  
Actions 2 and 3 if necessary

**Reason:** Inspection for cracks in the bonding of spar and wing shell (in the area of the root rib), resp.  
root rib and repair of the bonding, if necessary

**Action:** **1. Inspection for Cracks**

Cracks might occur at the following locations in the bonding joints:



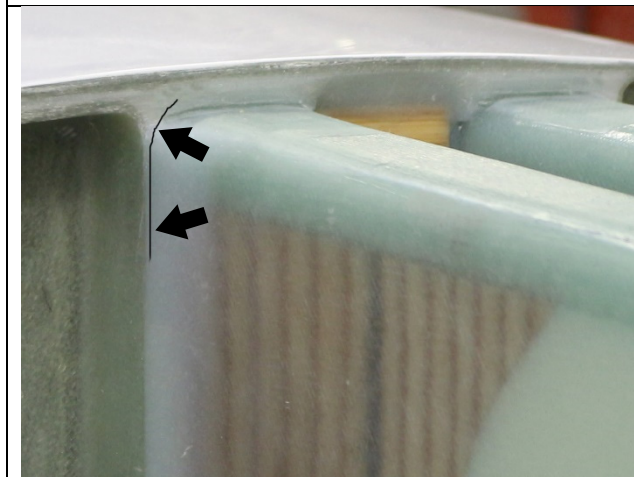
Further the bonding joints have to be checked for cracks also from the rear side (from inside the wing) - accessible via the openings resp. the throughputs of the control rods – by a mirror or a borescope.

## 2. Crack Assessment



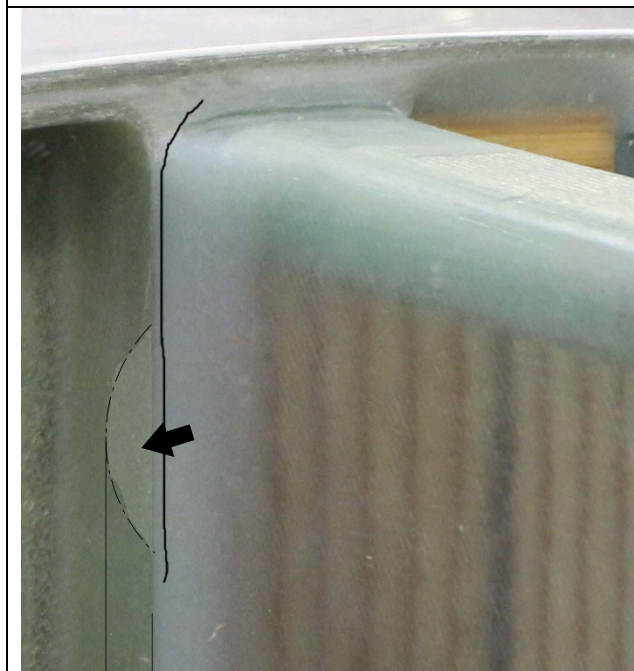
Cracks in the edges:

Cracks can be repaired according **repair scheme 1** (page 3), if they are limited to the bonding cement in the edge.



Cracks in the edges, which continue into the vertical bonding joint between root rib and spar:

Cracks can be repaired according **repair scheme 2** (page 4), if they are limited to the bonding cement.



Cracks and a separation between the vertical bonding joint of the root rib and spar:

Cracks and separation can be repaired according **repair scheme 2 and 2a** (page 5), if additionally to the cracks a separation of not more than 10 mm (0.4 in) is found.

max. 10 mm

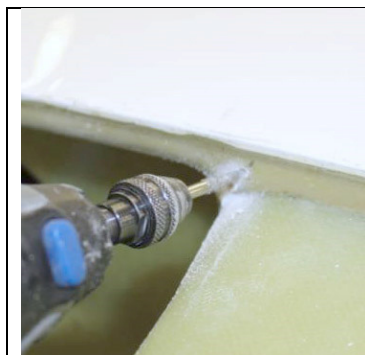
White markings (delamination) in the structural parts (root rib, shell, spar) and debondings, found by ping testing of the bonding joints, indicate a bigger damage, causing an appropriate bigger repair according TN 02-2005.

The same applies for cracks, which continue deeper than the stated above 10 mm (0.4 in) or even until the rear side of the bonding joint of the root rib. These are signs of structural overloads and are not comparable to the cracks described in this technical note.

### 3. Repair

#### Repair Scheme 1

for cracks in the edges



Remove the crack by milling (as v-shaped as possible) until the root of the crack.

**Warning!**

The fibres of root rib, spar or wing shell must not be damaged during milling!

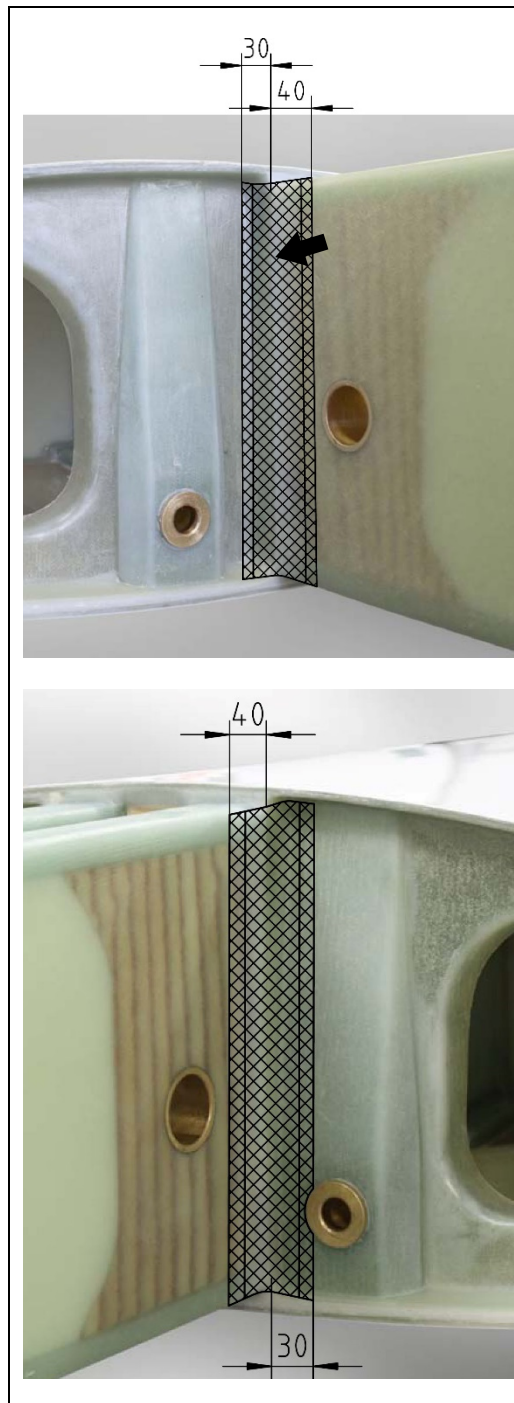


Fill the crack with bonding cement (refer to section "Material and Drawings") and smooth down.

Anneal the repair after finishing according to repair manual min. 12h at 55°C (131°F).

## Repair Scheme 2

Cracks also in the vertical bonding joint



The cracked bonding cement has to be removed resp. v-shaped milled to the crack root.

### Warning!

The fibres of root rib, spar (especially the winding outside of the spar) or the wing shell must not be damaged.

Clean the area thoroughly (especially from oil or grease) and roughen the surface. Smooth the step from the root rib flange to the spar with a  $\sim 30^\circ$  ramp of bonding cement and apply the following laminate scheme:

**2 Plies 92140 diagonal**

alternatively 2 Plies 92130 diagonal

The first ply is applied 40 mm (1.6 in) from the edge of the root rib onto the spar and 30mm (1.2 in) from the edge of the root rib onto the root rib.

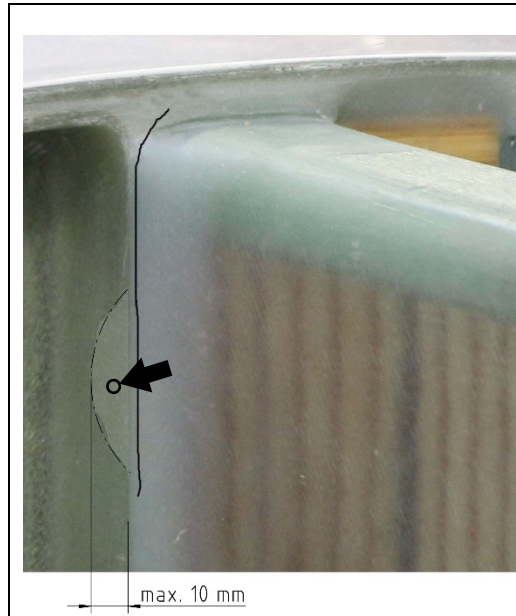
The second ply is applied the same way, but 10 mm (0.4 in) shorter on each side (stepped). It is also possible to apply the shorter ply at first.

Finally apply peel ply.

Anneal the repair after finishing according to repair manual min. 12h at  $55^\circ\text{C}$  ( $131^\circ\text{F}$ ).

## Repair Scheme 2a

Separation in the vertical bonding joint



Separations, **not** deeper than 10 mm (0.4 in), can be repaired as follows:

Inject resin with a syringe via a small drilling (< 1.5 mm / 0.06 in) near the end of the root rib into the separated area.

### Warning!

The fibres of root rib, spar (especially the winding outside of the spar) or the wing shell must not be damaged.

Further repair as per **repair scheme 2**.

Anneal the repair after finishing according to repair manual min. 12h at 55°C (131°F).

### Material and Drawings:

In case of a repair:

Glass fabric Interglas 92140 or 92130

Resin system L335 (H335 / H338 / H340) or L285 (H285 / H286 / H287)

For the preparation of the bonding cement:

- 100 parts by weight resin
- required parts by weight hardener
- 20 parts by weight cotton flocks
- 10 parts by weight Aerosil

### Mass and

#### Balance:

The change in mass and C. of G. position is negligible.

#### Notes:


The structural measures must only be accomplished by the manufacturer Alexander Schleicher or by qualified staff according to applicable law (European Union Commission Regulation (EC) 1321/2014 Part M).

All actions have to be inspected as complex maintenance by certifying staff according to M.A.801 (EC 1321/2014) and have to be certified in the sailplane inspection documents and in the sailplane logbook.

In countries outside the scope of EC 1321/2014 the corresponding national rules shall apply.

Poppenhausen, 04.02.2019

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GmbH & Co.

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This Technical Note bases on a change, which was approved by EASA under the major change approval EASA 10068550.