SERVICE BULLETIN

No. SB-NG-2-22

COMPLIANCE RECOMMENDED

Subject:	**Canopy Frame Improvement**
Aircraft affected:	EXTRA NG: S/N NG001 through NG038, except for NG026.
Purpose:	An improvement of the bonding between the inner and outer canopy frame shall be introduced. Although there is currently no reason to assume that the canopy of the aircraft requires any technical modifications, as a mere precautionary measure the carbon fibre canopy frame shall be further improved and strengthened by reworking of the adhesive glue bonding between the inner and outer canopy frame.
Approval:	The technical content of this document is approved under the authority of the DOA ref. EASA.21J.593.

COMPLIANCE TIME

No required compliance time. The retrofit of the canopy frame improvement described in this Service Bulletin should be accomplished at customer's discretion.

INSTRUCTIONS

NOTE **Alterations or repair of the aircraft must be accomplished by licensed personnel only.**

NOTE **A series of short videos of the procedure can be viewed / downloaded at our website https://extraaircraft.com/techservice.php**

⚠ WARNING **Deviation from the below instructions, notably from the given sequence or by applying too much foam, may lead to permanent deformation of the slightly curved canopy frame surfaces and/or may block the locking mechanism or the centre relief hole "C" before the entire procedure is completed.**

1. Prepare materials and tools needed, incl. rack or similar support for the canopy (in upside-down position)
2. Protect canopy glass with fleece, bubble wrap or similar as necessary.
3. Remove canopy from airframe as per Chapter 53-20-01 of the EXTRA NG Maintenance Manual (AMM) and place it upside down on the rack prepared. Take care not to introduce stress concentrations on the canopy glass.
4. Apply tape adjacent to canopy seal at approximate planned hole positions, then peel off canopy seal at respective positions and fixate slightly away from the original position with tape. Mark exact drilling positions underneath the original canopy seal position by measuring 430mm / 17in left and right from the centre position.
5. Carefully drill 3 holes with Ø 7mm / 5/16in into the inner frame of the canopy as per Figure 1 below. Clean area around drill holes with vacuum cleaner.
6. Thoroughly protect the area around the three holes with tape (see shaded area in Figure 1).
7. Pull locking handle to open position and hold or temporarily fixate, then insert strip of packing foam into the front most latch opening towards the front in order to create a barrier between the locking mechanism and the drilled hole "A". Make sure you can pull the packing foam out again later and the locking handles can still be moved freely after the handle is released.
8. Prepare 2-component PU foam cartridge as per instructions on the cartridge. Example below is for the "beko" foam, other types might vary:
   a. Mount valve tube on top of the cartridge, make sure it is tightly fixed
   b. Turn bottom of cartridge at least 6 half turns to the right to activate PU foam
   c. Shake cartridge well at least 20 – 30 times with the valve facing downwards

NOTE **Once activated, the cartridge has to be used within 5minutes.**

9. Insert tube approximately 100mm / 4in into working hole “A” (locking side, see Figure 1) directed towards the slightly curved area (direction A1, inwards). Apply 1 short push on the trigger.

10. Immediately pull the tube until just before pulling fully out, turn left (~90°) and stick further in again by approximately 50mm / 2in alongside the frame facing towards the previously inserted packing foam barrier (direction A2), apply another ***very*** short push on the trigger.

NOTE **Take care not to block the locking mechanism by applying too much foam towards direction A2.**

11. Again, immediately pull almost out, turn ~180° and push back in approximately 100mm / 4in alongside the frame facing towards the centre relief hole “C” (direction A3). Push trigger until the foam can be seen through the centre relief hole “C”.

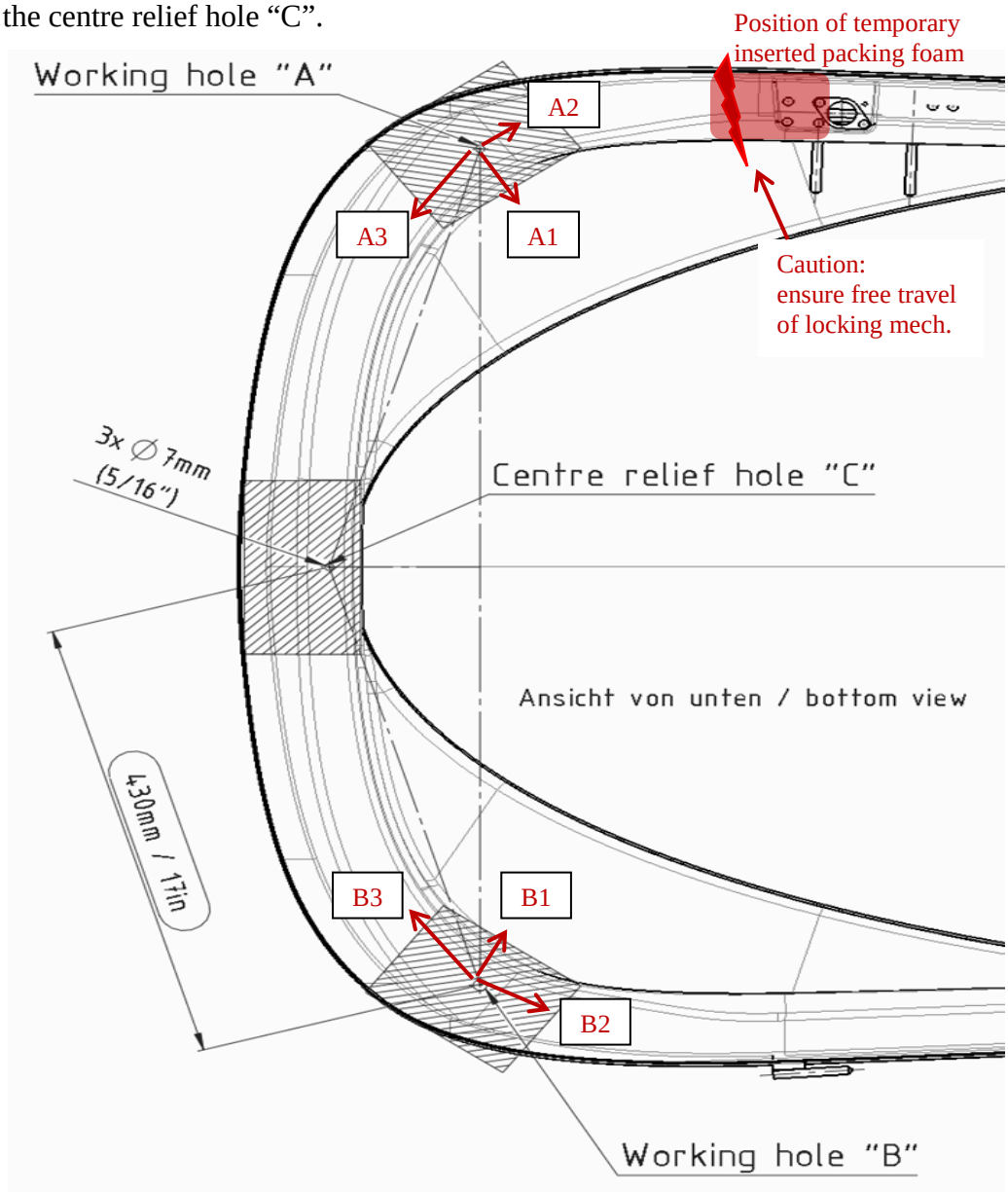

Figure 1 Canopy – bottom view

NOTE **In case the centre relief hole “C” gets already fully blocked by foam, drill a new pressure relief hole in between holes “B” and “C” (as close to “C” as possible to still get unblocked access from “B”)**

12. Repeat procedure on the opposite side with working hole “B”:
    a. Insert tube approximately 100mm / 4in into working hole “B” (hinge side, see Figure 1) directed towards the slightly curved area (direction B1, inwards). Apply 1 short push on the trigger.
    b. pull the tube until just before pulling fully out, turn right (~90°) and push back in approximately 50mm / 2in alongside the frame facing towards the hinges (direction B2), push trigger (hinge side is not that critical regarding foam volume).
    c. Again, pull almost out, turn ~180° and push back in approximately 100mm / 4in alongside the frame facing towards the centre relief hole “C” (direction B3). Push and hold trigger until the foam can be seen through the centre relief hole “C”.
13. Let cure for at least 10min until the extruded foam can be cut, then remove residue at all three holes. Also remove tape and clean any residues from the canopy frame.
14. Very carefully pull out the packing foam strip at the locking mechanism so as not to tear it apart.
15. Check canopy for any deformations and for free travel of the locking mechanism throughout its entire range.
16. Reapply the canopy seal in its original position, covering the three holes “A”, “B” and “C”.
17. Let canopy cure for 24hours without moving
18. Reinstall canopy on airframe as per Chapter 53-20-01 of the EXTRA NG Maintenance Manual (AMM).
19. Check canopy locking mechanism: Shut the canopy. A released rear canopy handle will travel to a partially locked position where the shoot bolt lead wedge section is only engaged with the lug roller. For a fully locked position the rear canopy handle has to be pulled fully rearward to get the audible / acoustic and tactile confirmation that the shoot bolts are fully engaged with the lug roller (indicates that the lug roller is located on the top flat position of the shoot bolt; see Figure 2).

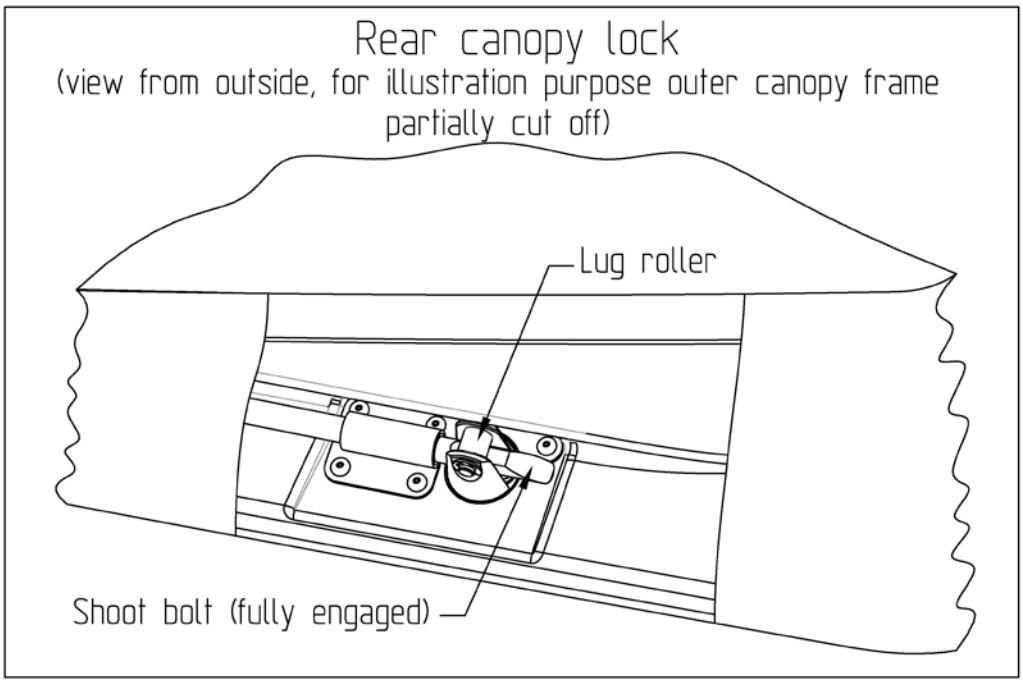

Figure 2 Canopy – locking mechanism

20. Make a permanent note of the successful completion of this Service Bulletin in the aircraft logbook.
Please also report the completion of this Service Bulletin to EXTRA by returning the completed Form in Appendix A.

NOTE **The added PU foam will not have a noticeable effect on aircraft weight and balance.**

MATERIAL

The required parts can to be ordered from:

EXTRA Flugzeugproduktions- und Vertriebs GmbH

Flugplatz Dinslaken
Schwarze Heide 21
46569 Hünxe / Germany

parts@extraaircraft.com

Table 1: Parts/Material required

EXTRA P/N	**QTY**	**Description**
	1	2-component bonding foam (beko 2-part PU framing foam, P/N 280 400 3 or 281 3 400, or comparable) Specifications (minimum times): - non-sticky after 7 to 9 minutes - can be cut after 10 minutes - Removable after 3 hours - Fully resilient after 24 hours
Tools required:		
Safety Equ.	Safety goggles and rubber gloves	
Drill	7mm / 5/16” diameter	
Tools	Tape, cutter, stripe of packing foam	

NOTE **New canopies already have improved bonding.**

Please note: For aircraft in warranty only, 1 man-hour is the maximum time to be considered necessary for the inspection and modification work per aircraft. EXTRA will only reimburse the time it actually takes an Authorized Service Center (in Europe: EXTRA Flugzeugproduktions- und Vertriebs - GmbH) to perform the task, up to but not exceeding the maximum hours listed above.

Appendix A:

Aircraft Type and model: **EXTRA NG** Serial Number: NG0_____

Owner: _____ Registration: _____

Total Time: _____ Total landings (if known): _____

The aircraft mentioned above has been strengthened according to this Service Bulletin.

Any abnormality at canopy glass or canopy frame or locking mechanism detected:

❒ Yes ❒ No

If yes, description of abnormality found (please include pictures):

Comments:

Company: _____

Aircraft inspector: _____ Date: _____

Please return a copy of this page to:

EXTRA Aerobatic Aircraft GmbH
Engineering Department / Office of Airworthiness / Quality Assurance
Schwarze Heide 21

46569 Hünxe (Germany)

Fax. N°: (+49)-2858-9137-42 or email: engineering@ExtraAircraft.com