



Issues

MANDATORY BULLETIN No. EV 97 – 012 a

1. **CONCERNING TO:** All **EV-97 Eurostar** aeroplanes manufactured and delivered till 15.7.2009.
2. **REASON:** It was found a play of the rudder on one of the EV-97 Eurostars in operation.
The cause was loose upper hinge of the rudder due to improper securing of the nut against loosening, see Appendix 1.
3. **REQUIRED ACTION:** A modification of nut securing of the rudder upper hinge according to the procedure in Appendix 2.
4. **LATEST DATE OF ACTION:** Before next takeoff and at every pre-flight inspection visually check the rudder upper hinge whether not loose.
If loose, perform immediately (before next takeoff) corrective action according this bulletin.
5. **ACTION CARRIED OUT BY:** A&P mechanic or Service centre is recommended.
Possibly skilled pilot or owner/operator of the aeroplane.
6. **COSTS COVERED BY:** Aeroplane owner
7. **NECESSARY MATERIAL:** Aeroplane manufacturer can supply for reimbursement new tab washers
8. **WORK PROCEDURE:** see Appendix 2.
9. **APPENDICES:** Appendix 1 – Loose upper hinge of the rudder
Appendix 2 – Procedure to modify nut securing of the rudder upper hinge

10. **ELABORATED BY:**

Petr Javorský, LSA Project Manager

12.11.2009

11. **APPROVED BY:**

Milan Mach, Commercial Director

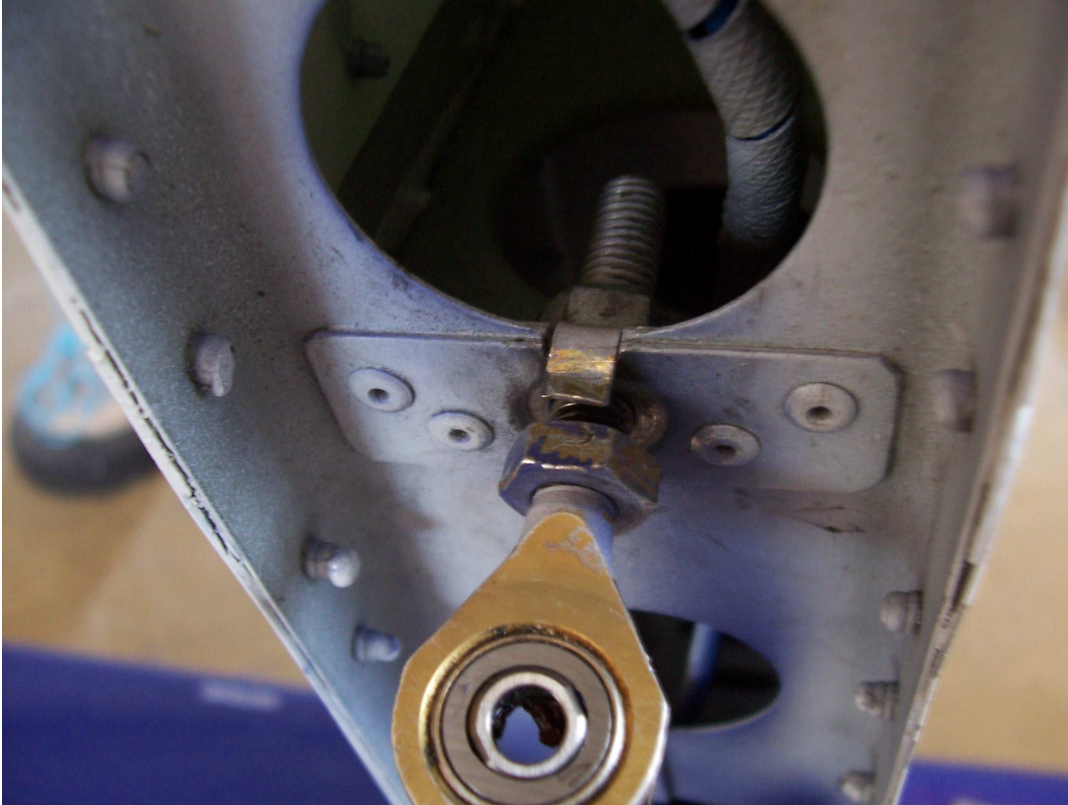
12.11.2009

Miroslav Martinek, Technical Director

12.11.09



Appendix 1 – Loose upper hinge of the rudder





Appendix 2 – Procedure to modify nut securing of the rudder upper hinge

Required material:

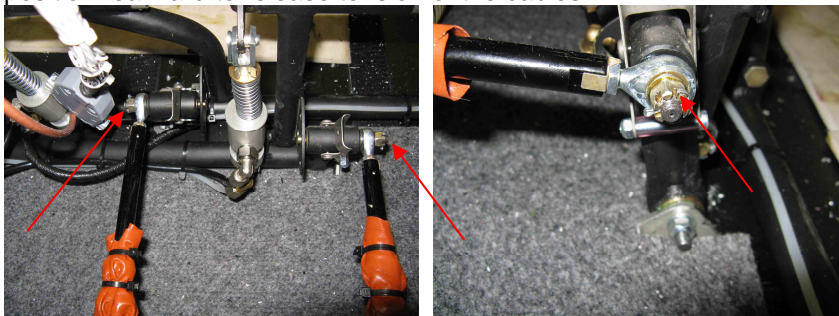
- New tab washer under the rudder upper hinge
(it is not recommended to straighten and use original tab washer due to possible cracking after re-bending)
- 2 new tab washers under the rudder cable attachment screws
- M6 bolt (sufficiently long, 80 mm), 2 M6 nuts, 2 washer of approx. 25 mm diameter to release and tighten the rudder hinge

Required tools:

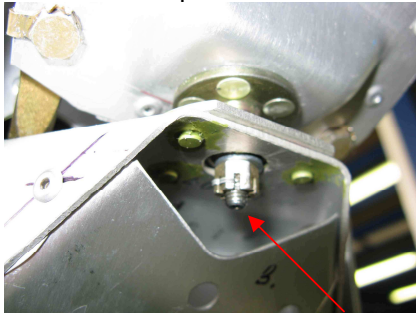
- Universal pliers
- Nut wrenches M8, M9, M13
- Flat screwdriver
- Slide calliper or another suitable ruler
- Steel bar of approx. 6 mm diam., length 150-200 mm
- Middle size hammer
- A wire to fix the rudder cables

Work procedure:

1. Release tension of the rudder cables (without doing this the cables will be dragged into the fuselage after being disconnected from the rudder). Draw a cotter pin out of the castle nut at the nose wheel control rod attachment to the rudder pedals. Then use M9 nut wrench to unscrew the castle nut. Do this on both control rods. Disconnect nose wheel control rods from the rudder pedals. Adjust pedals position rearward to release tension of the cables.



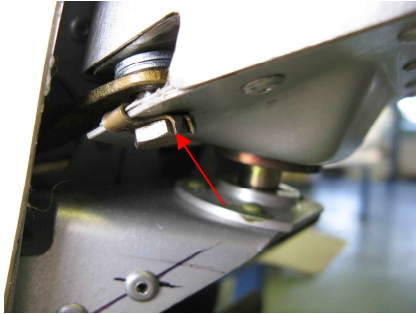
2. Use a suitable pliers to draw a cotter pin out of the castle nut securing rudder lower hinge.



3. Use M8 nut wrench to release and unscrew castle nut from the rudder lower hinge.



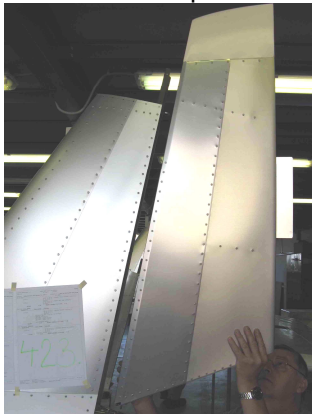
4. Use a suitable tool (flat screwdriver) to straighten up the tabs of the tab washers under the screws which attach control cables to the rudder bottom.



5. Use M9 nut wrench to unscrew both screws attaching the cables to the rudder and pull the cable ends slightly out and fix together by a wire, so that to not be drawn into the fuselage.



6. Lift the rudder up and remove from the fin.



7. Use a slide calliper or another suitable rule to measure distance of the hinge eye rear edge from the fin rear spar and note this value.



8. Screw M6 nut on a sufficiently long M6 bolt (80 mm), then put a washer (25 mm diam.) on the bolt and insert into the hinge from above. Put another washer on the bolt from below and tighten with another M6 nut. Now set M13 nut wrench through a lightening hole on the self locking nut inside the fin (right figure below) and turn the M6 bolt to release and unscrew the hinge.



Take care at the end, so that the self locking nut and washer do not fall down into the fuselage.



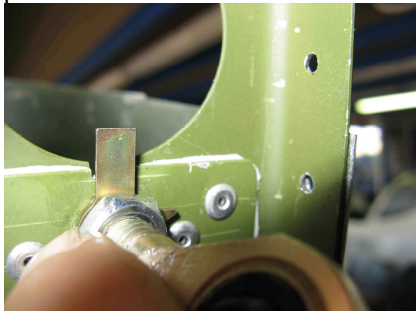
9. Pull out the hinge, self locking nut and tab washer



10. Set a new tab washer (size 8) onto the hinge thread. It is not recommended to straighten up and use original washer, due to possible cracking when being bent repeatedly.

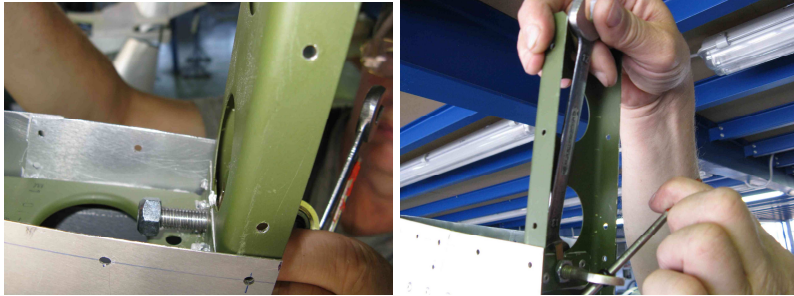


11. Set the hinge back on the fin spar, the washer must be on the outside of the spar as shown on the picture.





12. Screw the self locking nut (it has steel core so can be re-used) and turn it several times to be fixed on hinge thread. Then follow step 8 to install M6 bolt, washers, and nuts. Turn the bolt clockwise to screw down the hinge eye.



13. Measure the distance between hinge eye rear edge and fin spar and if different from the original one, then screw or release the hinge to adjust this distance.



14. When the distance is adjusted tight the nut by M13 nut wrench.

15. Use suitable tools (screwdriver and pliers) to bend tabs of the washer to secure the nut against release.



16. The washer bigger tab must be bent forward by a suitable tool (e.g. flat screwdriver and hammer) to protect the washer from rotation. The end of bigger tab should be pressed up to the self-locking nut edges.





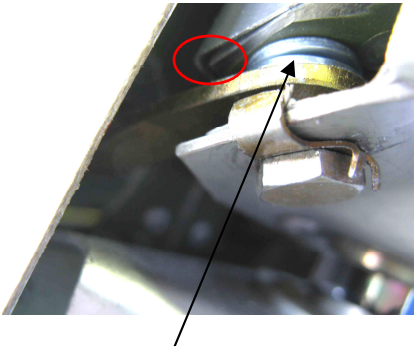
17. Set the rudder back onto the hinges.



18. Re-install the castle nut back on the rudder lower hinge, tight with M13 nut wrench and secure by the cotter pin.



19. Set new tab washers (size 6) on the cable attachment screws.
20. Re-connect the cables and screw down the screw. Secure screw heads against release by bending the washer tabs.



Note: The two „normal“ washers above the cable ends are installed to prevent cables from being chafed from the rudder front lower edge (marked red). Installation of these washers is recommended if not installed and there is an evidence of chafing in this area.

21. Set the rudder pedals back to their original position and re-connect the nose wheel control rods to the pedals. Install castle nuts and secure by the cotter pins.



22. Check visually performed modification and securing of all joints
23. Record performance of this bulletin in the Aeroplane Log Book.