



**MARGAŃSKI & MYSŁOWSKI  
ZAKŁADY LOTNICZE**

**S.A.**

tel./fax (+48)32 784 15 00

office@marganski.pl

www.marganski.pl

**EASA.21J.117**

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**SERVICE BULLETIN  
No: BO-23/2016 MDM-1 FOX**

DESIGNATION-TYPE/MODEL: MDM-1 FOX

SERIA / NUMBER:

All MDM-1 FOX model gliders,  
variants: MDM-1 FOX, MDM-1P FOX-P, MDM-1M FOX  
replacement of control stick at front seat


CONCERNS:

*modification described in this Bulletin  
constitutes Alternative Method of Compliance with  
Airworthiness Directive EASA No 2015-0182-E*

COMPLIANCE TIME:

at the discretion of operator,  
suggested at the annual/ 100-hour inspection

The technical content of this document is approved  
under the authority of DOA ref. EASA.21J.117

ELABOTARED BY	APPROVED BY
[---]	[---]
Sebastian Wierciak	Tadeusz Zboś
VERIFIED BY	
[---]	
Grzegorz Sadłek	
Translated by	
 Tadeusz Zboś	

Bielsko-Biała, 16.02.2016

## **1. GROUNDS FOR ISSUANCE OF THIS BULLETIN**

In connection with occurrences of in-flight break of control stick tube at front seat (Dwg No B2-10.25.01) on MDM-1 Fox glider, reported in 2011 and in 2015, found critical to flight safety, the provisional preventive measures have been introduced with aim to prevent next occurrences of this type.

These measures are described in the EASA issued Airworthiness Directive (AD) No: 2015-0182-E, and in the related Service Bulletin No BO-17/2011 MDM-1 FOX\_rev1 elaborated by glider Producent.

They comprised the listed below action (by methods specified in the a/m Bulletin):

- Inspection of the concerned control stick tube, required immediately after receiving a.m. Bulletin and repeated at every annual/ 100-hour glider inspection
- In case of detected damage, immediate withdrawal of the damaged part from operation and replacement with new one (spare part)
- Ensuring appropriate clearance between the control stick tube and neighbouring elements of seat pan

The described above provisional preventive measures eliminate the causes of damage of concerned type and facilitate elimination from glider the damaged part before the defect reaches the size critical to safety, without changing a design of the affected part.

In this Bulletin proposed are the preventive measures deemed final and consisting in replacement of the part susceptible to damage with a new one, conforming to the changed design approved by Design Organisation of TC Holder.

The new design of control stick tube, defined with Dwg. No B2-10.25.01\_rev2, is changing the material and geometry of concerned element.

For identified damage scenario, where the crack initiated by strike of tube side surface against neighbouring fuselage components (or by unauthorized repair) under cyclic loads is growing to critical size leading to breakage of the part, the change of material to 30HGSA steel with ultimate strength of  $R_m \sim 900 \text{ MPa}$  and fracture toughness  $KIC \sim 50 \text{ MPa} \cdot \text{m}^{1/2}$ , is of special importance, as both a.m. parameters are twice higher than for aluminum alloy used in original design.

These parameters at unchanged level of element load, by rising the safety margin in relation to material ultimate strength and increasing resistance to cracking, eliminate the threat of the relevant form of damage to the component and make the requirement for repeated inspection non-justified.

On every glider covered with this Bulletin, required is a single action comprising:

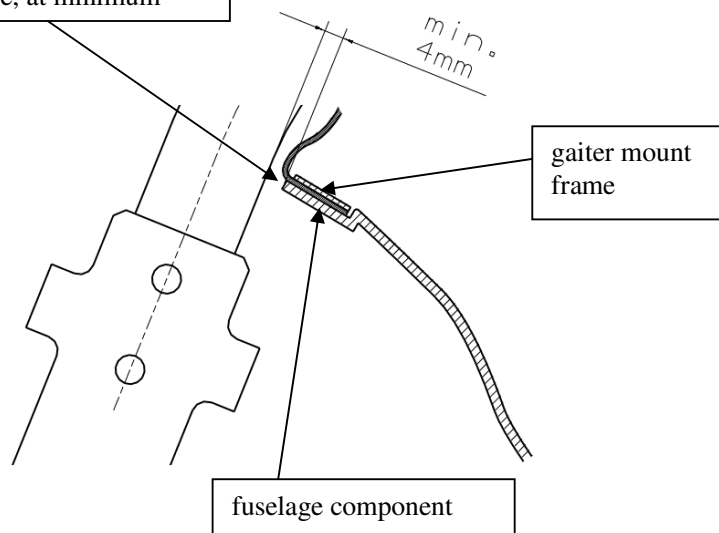
- replacement of the installed now at front seat aluminium tube of control stick with a steel one – details see item 3 PROCEDURE, pos. 1,
- verification of clearance between the control stick tube and the rim of the seat pan and gaiter mount frame, and bringing these to conformity with type design – details see item 3 PROCEDURE, pos. 2.

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<p>The action proposed in this Bulletin constitutes the Alternative Method of Compliance with Airworthiness Directive EASA AD No 2015-0182-E. Replacement of control stick tube with a steel one eliminates the requirement of repetitive verification specified in Bulletin No: BO-17/2011 MDM-1 FOX_rev1.</p> <p>The decision on introducing the described design change remains at glider operator.</p> <p>At the same time we advise that this modification is recommended by Producer as:</p> <ul style="list-style-type: none"> <li>• measure of avoiding possible problems with the affected part in a future</li> <li>• method of avoiding the repeated verification of part which, especially in a portion accomplished on a way of Dye Penetrant Inspection, might be troublesome in glider maintenance</li> </ul>		
<p><b>2. <u>LIST OF FACTORY NOS COVERED WITH THIS BULLETIN</u></b></p> <p>This Bulletin concerns all MDM-1 FOX glider,</p> <p>all variants: MDM-1 FOX, MDM-1P FOX-P, MDM-1M FOX</p> <p><i>NOTE:</i></p> <p><i>the concerned modification is introduced in every serially built FOX glider S/N 248 and above.</i></p>		
<p><b>3. <u>PROCEDURE</u></b></p> <ol style="list-style-type: none"> <li>1. Replace the installed now at front seat aluminium tube of control stick (conforming to Dwg. No: B2-10.25.01) with steel one (conforming to Dwg. No: B2-10.25.01_rev2) – by method described in WORKING INSTRUCTION, referred to under item 5 ENCLOSURES</li> <li>2. After installation, make a verification of clearance between the control stick tube and the rim of fuselage seat pan and gaiter mount frame (procedure cited in the next page). Such verification is to be repeated at every annual/ 100-hour inspection of the glider (whichever expires first).</li> <li>3. Record the introduced modification in glider logbook.</li> </ol> <p><i>NOTE:</i></p> <p><i>For the sake of introducing changes to the primary system of flight control, the modification should be accomplished at certified Aircraft Repair Station or by an aircraft mechanic, licensed by Aviation Authority in a country of glider registration.</i></p>		

Verification of control stick clearance

With control circuits assembled, check & adjust as necessary the available deflection of control surfaces – see item 2.2 CONTROL SYSTEMS ... in Technical Service Manual. Measure the clearance between tube of control stick at front seat and the rear rim of fuselage cut-out & cover at stick mount, for stick maximum rearward position (ailerons neutral and maximum Left/ Right deflection). For the clearance below 4 mm – file the rear rim of fuselage components to ensure this minimum value.

remove the gaiter, and file this edge  
to ensure 4 mm clearance, at minimum



***LABOUR DEMAND***

Time required to complete the verification required : 1 day/1 person

**4. MASS (WEIGHT) AND BALANCE**

This modification does not affect glider weight or balance.

**5. ENCLOSURES**

1. WORKING INSTRUCTION, REPLACEMENT OF CONTROL STICK TUBE  
AT FRONT SEAT, MDM-1 FOX, 16.02.2016

**6. FINAL CONCLUSIONS**

The elements necessary for compliance with this Bulletin can be ordered at glider Producer, at a cost of Operator.

For the glider with implemented modification described in this Bulletin, BO-17/2015 MDM-1 FOX\_rev1 no longer applies.

- THE END -