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EASA.21J.117

SERVICE BULLETIN
No BO-20/2013 MDM-1 FOX

DESIGNATION-TYPE/MODEL:	MDM-1 FOX
SERIA / NUMBER:	S/Nos: P-11 through P-16, and 201 through 239 inclusive variants: MDM-1 FOX, MDM-1P FOX-P, MDM-1M FOX
CONCERNS:	verification of bonded joint between wing upper skin and spar by "tap-test"
COMPLIANCE TIME:	within 1 month after receiving this Bulletin

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

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Bielsko-Biała, 24.06.2013

1. *GROUNDS FOR ISSUANCE OF THIS BULLETIN*

During scheduled maintenance (500-hour inspection), defects in the bonded joint between wing upper skin and spar have been identified on both wings of one MDM-1 FOX glider. Report on similar occurrence has been recorded earlier on another MDM-1 FOX.

To the information available, the defects might be result of faults in production process– the concerned bonded joint between wing upper skin and spar is achieved in operation of closing the wing with upper shell, with no access for inspection which can potentially lead to errors.

The defects of random size and location, however in the identified cases proved no tendency to growth over long period of operation, if not detected and repaired adequately, under operation loads potentially might grow to critical size and affect fatigue strength.

To prevent next defects of such nature, the "tap-test" inspection of selected bonded joints has been introduced to the final acceptance procedure in production process of FOX glider starting with Factory No 240.

Nevertheless, to ensure the same level of reliability on produced earlier gliders, the one-time verification of bonded joint between wing upper skin and wing spar is required.

The verification is to be accomplished by "tap-test" method as per item 3. PROCEDURE in this document, on FOX glider specified in item 2 LIST OF FACTORY NOS ....

In case of detecting isolated defect with linear overall dimension exceeding 50 mm (method resolution limit), or numerous closely spaced smaller size defects, the continued operation of the affected glider is allowed only after repair of the damage.

2. *LIST OF FACTORY NOS COVERED WITH THIS BULLETIN*

This Bulletin concerns MDM-1 FOX gliders, all variants: MDM-1 FOX, MDM-1P FOX-P, MDM-1M FOX, with Factory Nos: P-11 through P-16, and 201 through 239 inclusive.

3. *PROCEDURE*

Inspection

1. Disassemble the wings from the glider and support the verified wing panel horizontally on stable, vibration suppressing foundation – upper surface on top.

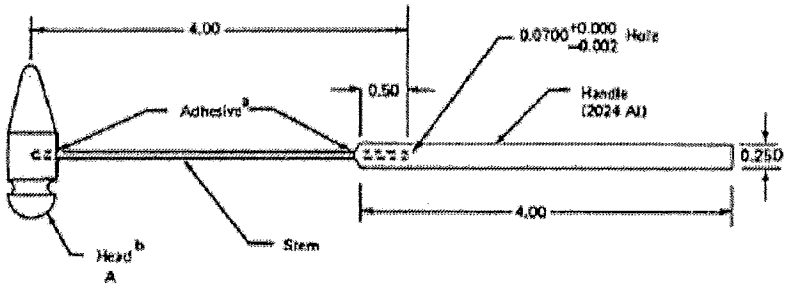
2. The verification is to be accomplished in a quiet area/ room

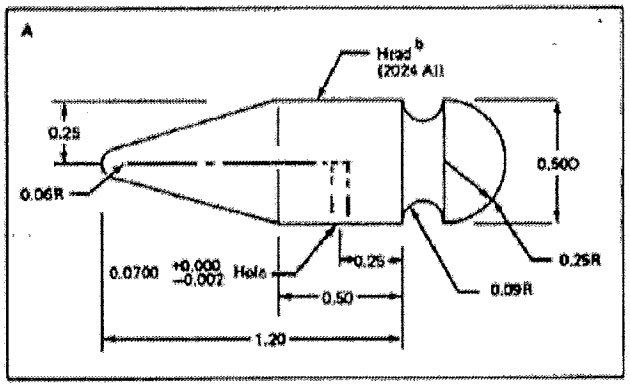
3. It is recommended to make the tap test with a "hammer" (sketch No 1 below) – however a bolt or coin (weight below 50 g) can give satisfying results.

   NOTE:

   It is emphasized that the test must be completed by adequately trained/ skilled person.

   For the result of the requested test, deciding will be the earlier personal experience of the verifier with the method, which might determine the tool to be used in the test.





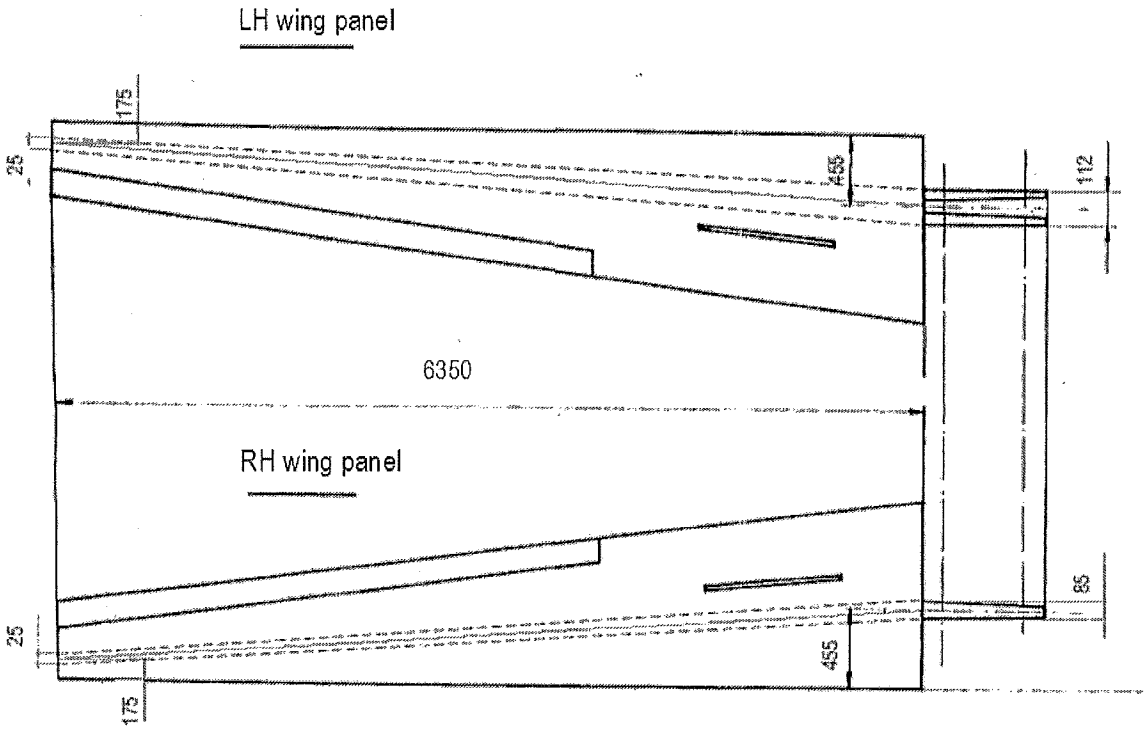
All dimensions in inches

[a] Liquid/paste adhesive may be used if desired. Hole in handle/head may be reduced to provide an interference fit and preclude the need for the adhesive.

[b] 125/ All machined surfaces, ref MIL-STD-10

Sketch No 1 Tap-test hammer

4. Prior to test, on wing upper surface contour with dashed line the area of bonded joint to be verified, as in the sketch No 2 below. Note there are different chordwise dimensions on LH and RH wing panels



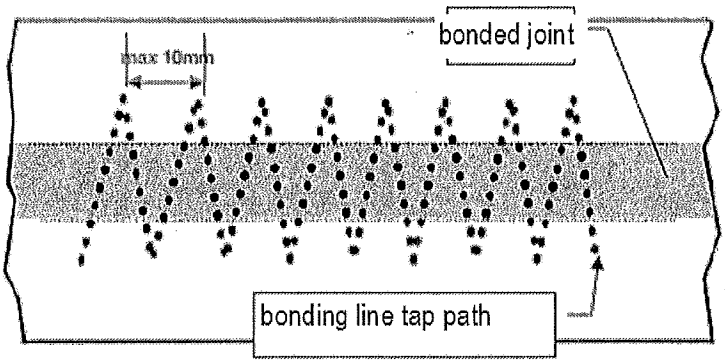
Sketch No 2 Inspected area on upper surface of LH/ RH wing

5. Ensure that wing surface for verification, as well as tool surface is clean and dry.

6. Gently tap the inspected area with selected tool. The verification consists in comparing the sound/ acoustic response of verified area with acoustic response of sound (free of defects) structure.

7. "Flat/ dead" tone indicates possible location of disband. Since the tone is affected by geometry/ internal structure - in case of doubts compare the acoustic response of opposite wing at the same location (span-, and chord-wise position).

8. The bonded joint is to be tap-tested over the whole width and span, with subsequent strokes spaced evenly (see sketch No 3).



Sketch No 3 Suggested path for tapping the bonded joint

9. When finding the evidence of disbond, carefully verify the adjacent area to identify the size of defect. Mark the border of identified defect on wing surface with a marker.

10. Wherever possible, amend the tap-test verification with visual inspection using all available access to bond line.

Repair

1. In case of detecting isolated defect with linear overall dimension exceeding 50 mm (method resolution limit), or numerous closely spaced smaller size defects, the continued operation of the affected glider is allowed only after repair of the damage.

2. The repair, if necessary must be accomplished at the aircraft repair station licensed for composite structures – following the repair design of Enclosure No 1 to this Bulletin.

4. *MASS (WEIGHT) AND BALANCE*

Depending on the scale of defects found, wings and glider re-weighing might be necessary, with following identification of limitations to load plan.

5. *ENCLOSURES*

Enclosure No 1, Repair Instruction for wing spar/ upper shell bonding

6. *FINAL CONCLUSIONS*

The compliance with this SB is requested as single action, within 50 flying hours/ 1 month after receiving the Bulletin, and the entry on compliance with this Bulletin is to be inserted in glider documents.

- THE END -