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42 Scaled Up 1/2A Fubar 375 - Wing Construction (Part 8)

1 message

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To: Trevor Boundy <jtboundy@dcsi.net.au>

Fri, Jun 28, 2019 at 6:54 AM

Scaled Up 1/2A Fubar 375

June 24, 2019

After completing the polyhedral joint on the right half of the wing this morning, the two wing halves were weighed in at 73 grams or 2.57 ounces as shown below.

The rest of the day was spent jiggling up for joining the two halves of the wing together at the dihedral joint. The dihedral angle for the 1/2A Fubar is given in the table below as 5.98°.

Parameter

Value

Root Chord (in.)

5.00

Tip Chord (in.)

3.38

Inner Panel Span (in.)

12.00

Outer Panel Span (in.)

6.00

Tip Width (in.)

3/16

Outer Panel Span+Tip (in.)

6.19

Total Span (in.)

36.38

Area (sq.in.)

171.34

Aspect Ratio

7.72

Max Thickness (in.)

0.50

Thickness Ratio (%)

10.00

Incidence (0.22" L.E.) (deg.)

2.52

Height of Inner Panel (in.)

1 1/4

Dihedral Angle of Inner Panel (deg.)

5.98

Height of Outer Panel (in.)

2 1/2

Polyhedral Angle of Outer Panel (deg.)

24.62

Tip Sweep Distance (in.)

0.55

Tip Sweep Angle (deg.)

5.24

Since the dihedral angle applies to both sides of the wing, half of the wing will be pinned down to the work table and the other half of the wing elevated up to $(2 \times 5.98^\circ) = 11.96^\circ$ as shown in the sketch below. Remembering that the span of the wing's inner panel is 17.7", the vertical rise (V_r) out at the polyhedral joint is calculated as $17.7 \times \sin(11.96^\circ)$ which is equal to 3.67" also shown in the sketch below.

A strip of 1/6" X 3/8" hard balsa was cut exactly to the 3.67" length as shown below.

This was clamped to a 2" steel block square shown below and used as a measuring guide.

The ends of the left half of the wing's LE, main spars, and TE were coated with aliphatic glue and let dry. Then the wing's left half was pinned down

over wax paper on the work table. A long aluminum straight edge was pinned up against the left wing panel's LE as shown below.

A 3" steel block square is aligned with the inside edge of the aluminum straight edge and the LE of the right wing panel is held up against it. This insures that the LE's of both left and right inner panels lie in the same vertical plane.

A dihedral jig frame was made to support the rise in the right wing panel as shown below.

The dihedral jig was adjusted so that the vertical rise in the right panel's LE was 3.67" as shown below.

The dihedral jig was also adjusted so that the vertical rise in the right

panel's TE was 3.67" as shown below.

With the jiggling all adjusted, the right half of the was carefully removed. The ends of the LE, main spars, and TE were coated with aliphatic glue and let dry for about 15 minutes. More glue was applied to the ends and the right half of the wing was pushed into place against the ends of the left wing panel. The two temporary W1 ribs were clamped together as shown below which forces the ends of the LEs, main spars, and TEs tightly together as well. At this point, the leading edge of the right wing panel was clamped to the 2" steel block square as you can see below. A final check of the rises in the LE and TE was made to insure nothing had changed in the jiggling. The jiggged up wing will be left to thoroughly dry overnight.....Tandy

10 attachments



image002.jpg
79K



image004.jpg
34K



image006.jpg
52K

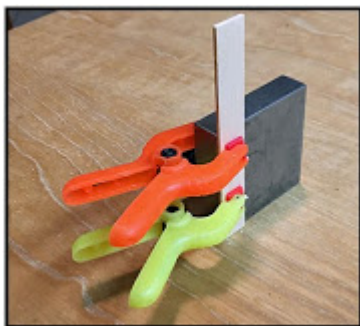


image008.jpg
43K

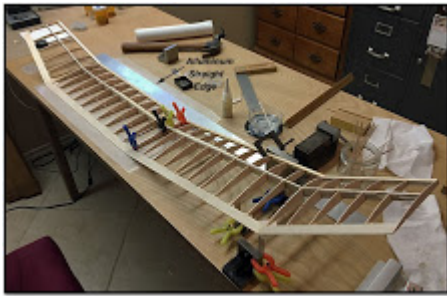


image010.jpg
120K



image012.jpg
105K



image014.jpg
70K

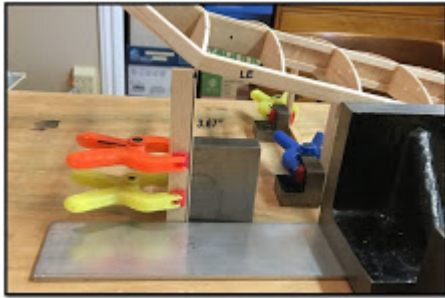


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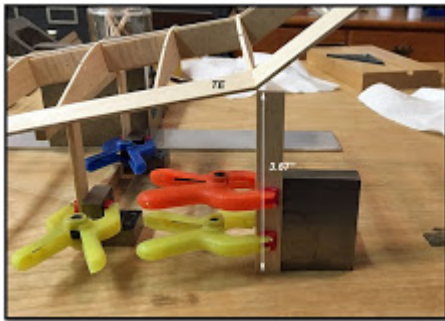


image026.jpg
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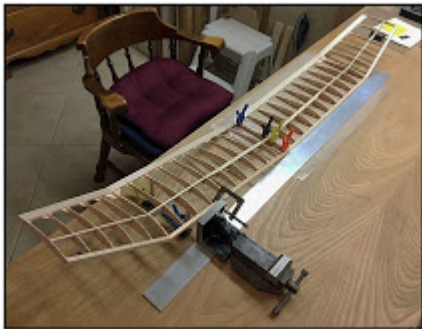


image029.jpg
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