

The Brewster Buffalo

Almost incomprehensively, the Brewster Buffalo has the ingnomious distinction of being both one of the worst and the best fighters of WW2. Introduced to the US Navy in 1939, Buffaloes were considered "pretty sweet little ships" by no less than Pappy Boyington. But sadly, in early battles against the Mitsubishi Zero, the Buffalo was badly mauled and then promptly retired. British and Dutch experiences weren't much better. Obsolete equipment or inexperienced pilots? You be the judge. In contrast, the same aircraft racked up a shocking 33/1 kill ratio when flown by pilots in Finland. These pilots were well-seasoned when they received their Buffaloes. They were also masters of deflection shooting. 36 of these pilots became aces in the Buffalo, and one single airframe achieved 42.5 victories by itself!

General Build Notes:

- Fuselage Stringers are 1/16" x 3/32" balsa.
- Leave stringers proud from formers to avoid wrinkles in covering.
- Only at hatch formers and stringer ends are stringers sanded flush.
- Tail Group bracing is 1/8" x 1/16" balsa.
- Wing Sheeting is 1/32" balsa.
- See Parts ID Sheets for part numbers.

PROTOTYPE SPECIFICATIONS

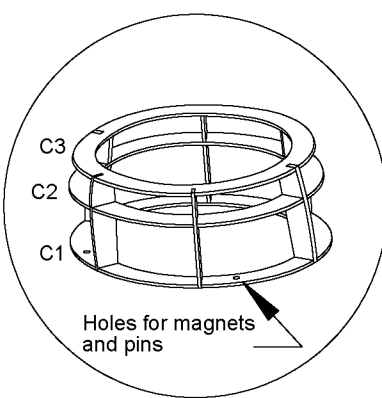
Wingspan	30"
Length	22.8"
Weight	10.9oz
Wing Area	157.6 sq in
Power	1700kv Blue Wonder
Propellor	7 x 6 APC
Battery	2S 1000mAh 3S 750mAh

CONTROL THROWS

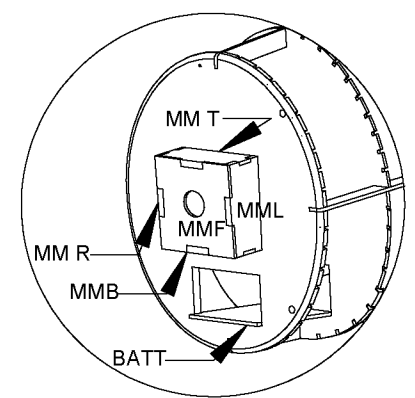
Ailerons	1/4"
Elevator	1/4"
Rudder	3/8"

COWL ASSEMBLY

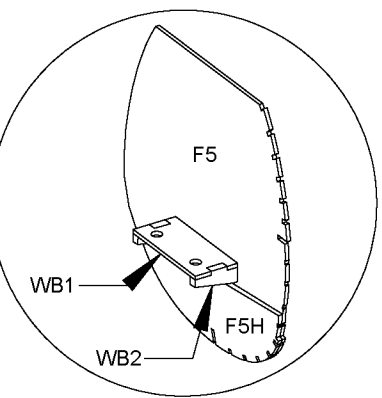
- Preassemble Cowl Former rings C2 and C3.
- Join the Cowl Formers C1 thru C3 with Cowl Keels C4 thru C7 (see inset above).
 - Small alignment holes in C1 and C2 go to top.
 - Set angles of C4 and C7 with plan side view.
- Cowl Opening Rings
 - Preassemble C8 thru C10.
 - Glue C8 thru C10 together with scoop openings aligned.
 - Glue this assembly to the front of C3.
- Plank from C1 to C3 with 1/16" balsa.
- Add 1/8" dia magnets to C1 and Firewall F1A, and alignment pins to Firewall to attach cowling.



Cowling Detail Assembly at Step 2 shown.



Motor Mount Detail 1.5deg each down and right thrust built in. Box mount fits inside of F1A, tabs fit thru ply firewall F1B.



Wing Mounting Boss Detail Epoxy WB1 and two parts WB2 together. Epoxy this assembly to former F5. Epoxy two 10-32 nuts to the top of WB1 to capture wing screws.

Spinner and dummy wheel STL files for 3D printing can be found on Thingiverse.com

Cg shown is at 24% MAC Located 1.50"/38mm behind former F2

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TAIL GROUP ASSEMBLY

- Tail group outlines:
 - Trace and transfer the outline shapes from plan and make forms.
 - Laminate three strips of 1/16" x 1/8" balsa around forms.
 - Pin the cured outlines into place over the plan.
 - Install the tail framework parts in numerical order.
 - Add 1/16" x 1/8" bracing where shown.
 - Unpin, sand tail group parts to shape.
- Separate the Rudder and the Elevators by cutting through the outlines where shown.

WING--ASSEMBLY ORDER:

- Lower main spar and Rear Spar RS--pin to the board.
- Ribs W2 thru W8 perpendicular to board.
- Rib W1--set angle with Dihedral Gauge.
- Upper main spar, and Shear Webs S1 thru S6.
- Trailing Edge TE.
- Leading edge--3/32" balsa or basswood strip stock.
- Wing Tip parts WT1 and WT2.
 - Stack two WT1s and glue to W8.
- Aileron parts in numerical order.
 - Glue A1 to RS only! A1 is a doubler to RS.
 - Do not glue A1 and A2 together! They form the aileron parting line.
- Upper sheeting--1/32" balsa.
- Join wings with Dihedral Brace.
- Install a wing pin from 1/8" dowel where marked on ribs W1.

FUSELAGE--ASSEMBLY ORDER:

- Build the left side directly over the plan.
- Keels--pin keels K1 thru K4 to the board.
 - Formers F2L thru F10L.
 - Keel K5.
 - Cockpit Deck--join to formers F5L thru F7L.
 - Wing Saddle--dampen the outer side and glue to formers F2L thru F5L.
 - Stringers--add just a few to stiffen the assembly.

After the assembly has cured completely, unpin and build the right half free from the plan.

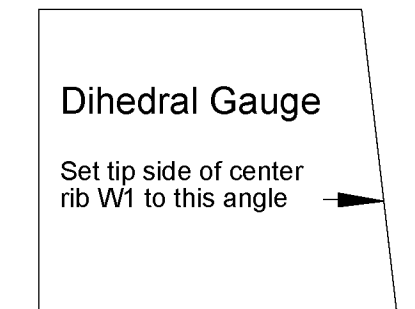
- Firewall--preassemble F1A and F1B, then join to front Keels.
 - Note: long motor mount slot goes on left side of fuselage.
- Motor Mount--see inset to left.
- Hatch Formers--glue F2H thru F5H to K4 and left Wing Saddle.
- Formers F2R thru F10R--align each to its left mate and glue into place.
- Wing Pin Boss--reinforce pin hole with part WP.
- Battery Tray--glue to Firewall and F2.
- Wing Bolt Boss--preassemble and attach per inset to left.
- Keel K5 and Cockpit Deck.
- Wing Saddle--dampen and attach the right saddle.
- Stringers--alternate from side to side to avoid warpage.

BELLY HATCH:

- Cut the belly hatch free after the fuselage is fully assembled.
- Cut out the wing airfoil marked on the Wing Saddle.
 - Cut through the stringers at Formers F2/F2H and F5/F5H.
 - Extend these cuts into the Wing Saddle as shown.
 - After wing is fitted, attach the belly hatch to the wing with magnets

Split here for functional rudder

Trim stringers to the back of F10; Fill the tail cone with scrap balsa or foam



Dihedral Gauge Set tip side of center rib W1 to this angle

Laminate outline from 3 strips of 1/16" balsa.

Vacuum formed canopy available from Park Flyer Plastics

.040" wire joiner

INFIELD ENGINEERING by Paul Kohlmann

30" Brewster F2A Buffalo

Size: D Dwg No.: F2A-1 Buffalo 30 plan Rev: A

Scale: 1:1 Weight: 10-12oz Sheet 1 of 2