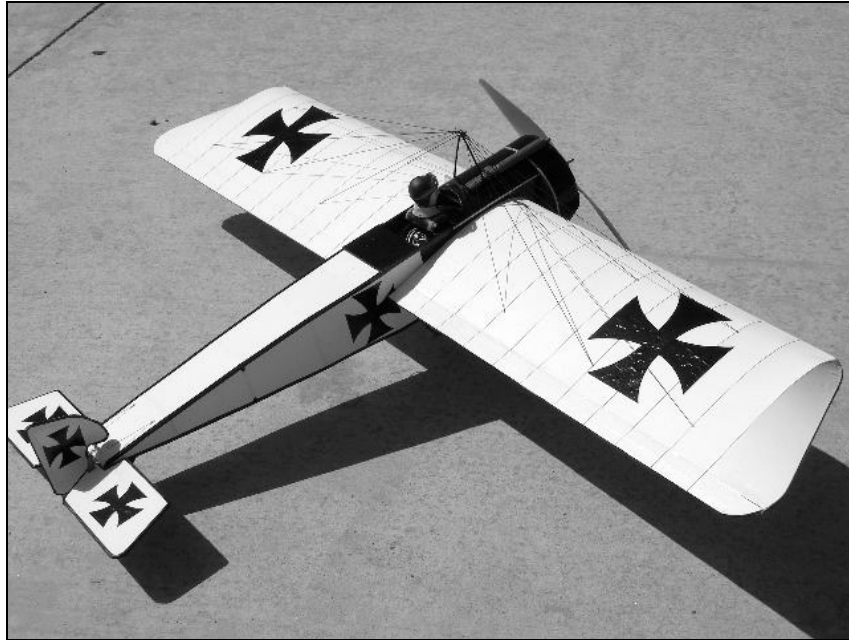


Pfalz E1 36"

R/C Scale Model Instructions



CONTACT INFORMATION

The Pfalz E1 was designed by M.K. Bengtson
Prototype by Ian Easton

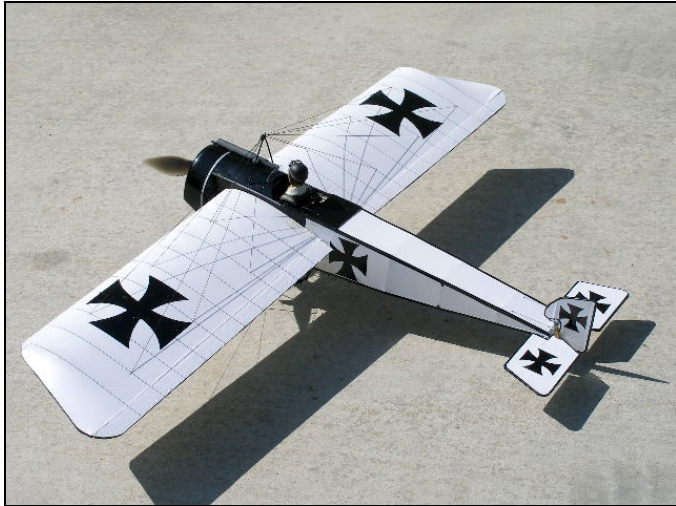
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PFALZ EI

Thank you for purchasing the Pfalz EI model for electric flight.

THE MODEL

A semi scale adaptation of the Pfalz EI, this model is designed to be easy to build and exciting to fly.



PFALZ EI

Model Specifications

SPECIFICATIONS

More than 90 laser cut parts

Scale:	1/10
Channels:	R/E/A/T
Wingspan:	36"
Wing Area:	230 sq in
Weight:	17 oz ready to fly
Power System:	GWS 300C D gearbox
Prop:	11x8
Wheels:	Balsa & plywood, Neoprene foam tires
Airfoil Type:	Flat bottomed
Cowl:	Built up balsa and plywood
Decals:	Available on website
Covering:	Litespan or Polyspan covering

BUILDING THE MODEL

Before Starting

A note about the photos: The photos were taken of a prototype and the parts supplied may look slightly different from them. However, the concepts illustrated are the same.

Ian Easton built the Pfalz EI prototype.

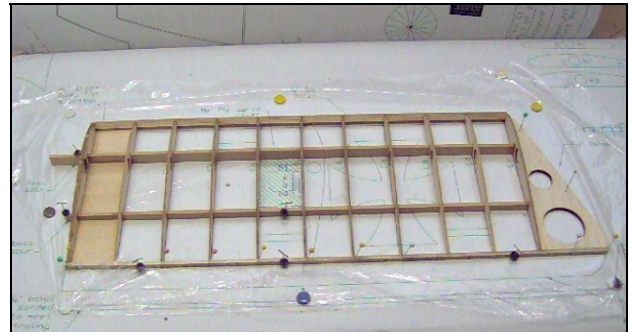
WING

Wing Construction

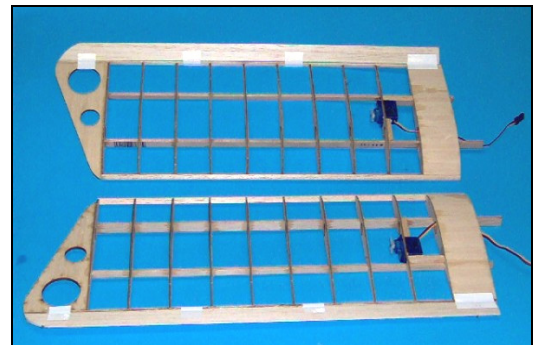
Pin down, over the plan, the t/e, spars and wing tip, gluing as required. Add the leading edge stock after the basic frame is done as the stock is inserted in a rotated fashion.

Add the wing tips and align the front tip along the center of the leading edge. Sand the leading edge stock to be rounded and meet the ribs.

Don't forget to add the 1/4" crosspieces to used later in the rigging wires. The ones nearest the leading edges are on both the top and bottom of the wing.



Wing panel, aileron not attached yet

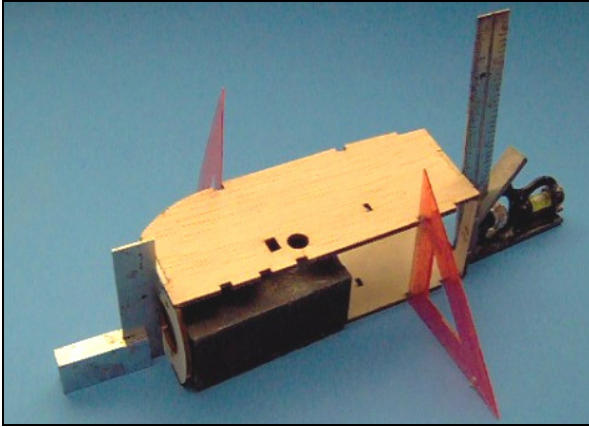


Both wings complete...

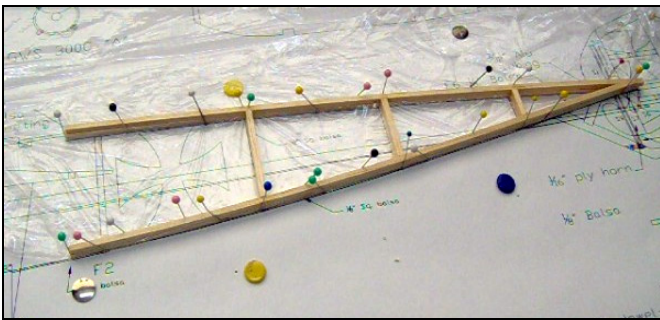
FUSELAGE CONSTRUCTION

First thing, glue the plywood doublers to the balsa sides. If you use wood glue the balsa sides will curl so weight them down to keep flat until dry.

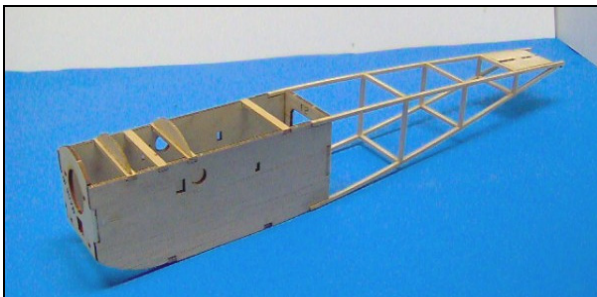
Ian made sure that he made a LEFT side and a RIGHT side.



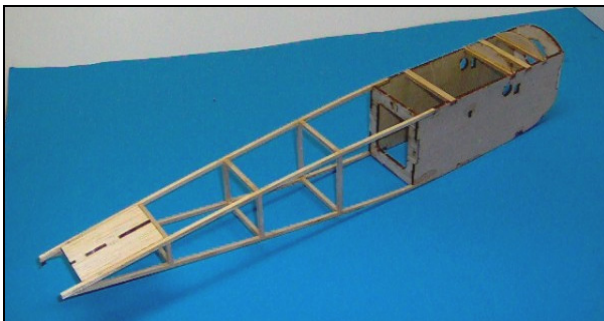
Front "box" being assembled and squared up



The two rear frames one atop the other
I can glue the back of the cowl to the front of the fuselage. Alternately, the cowl can be assembled separately and attached later. The cowling is of built up construction using C1, C2 and 1/32" plywood.



Fuselage Detail



Fuselage Detail

Assemble The Cowling

Construct front cowl ring by gluing 2 C1's making sure that they are overlapping completely. To reduce weight, the inner C1 may be shaved or sanded down after lamination. Maintain the outline of the part for proper construction.

Wrap the strip of 1/32" ply around former C2, gluing with cyano as you proceed. Put both C1's into the cowl. Glue it inside the cowl. Once all the glue is dry, trim and sand the front cowl to shape and sand the cowl overall.



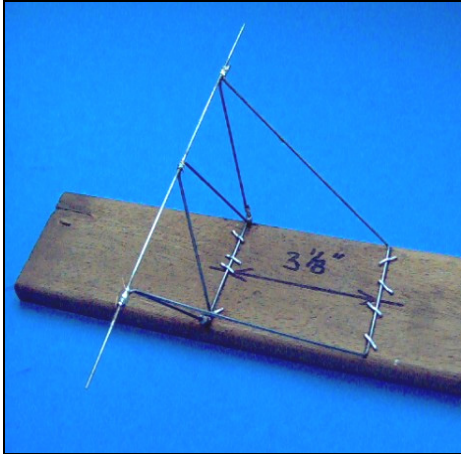
Separately built cowl

The cowl should now be sealed, sanded and primed until no wood grain is left showing. Baby (Talcum) powder in clear dope makes an excellent balsa sealer. Talcum powder mixed in white glue makes excellent filler for gaps or gouges. Sand down after it dries.

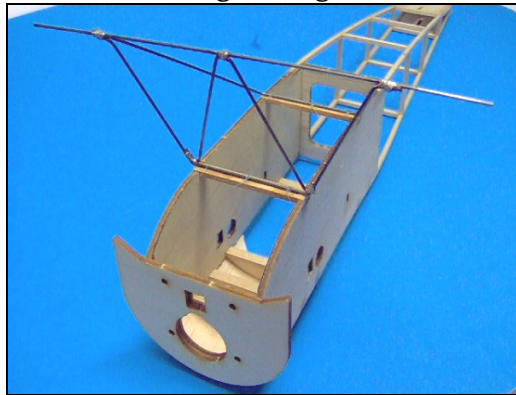
Adding The Undercarriage mounts

Rear frame was joined to the front box. Cross braces added to rear. Hardwood cross braces are added to the front and the two top formers added.

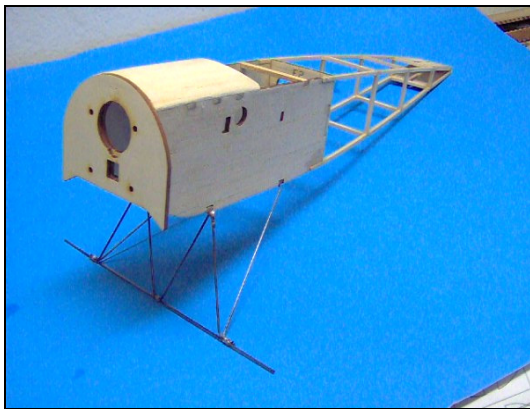
The undercarriage is mounted using brass tubing epoxied into bass wood mounts, which are glued to cutouts in the internal plywood sides.



The undercarriage being: 1. Assembled



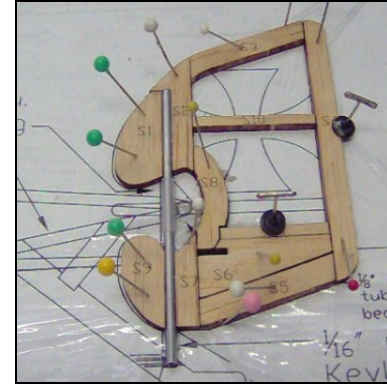
2. Mounted



3. Doing what it's supposed to do -holding the plane up !

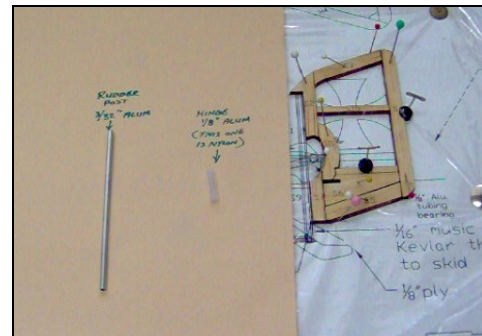
TAIL SURFACES

Lay out and glue parts of the tail surfaces on the plans. Don't add the horns or hinge the surfaces until after covering is complete.

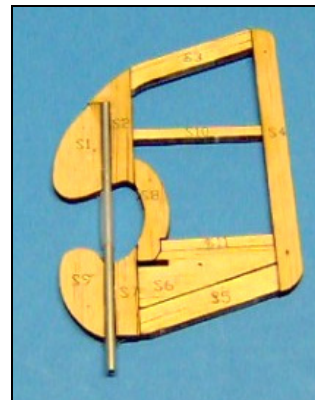


Rudder being assembled

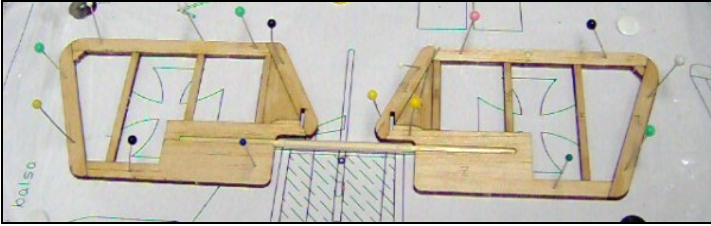
Second photo shows the rudderpost with its hinge that must be installed before gluing the front of the rudder on. The plan calls for a 3/32" aluminium tube rudderpost inside a 1/8" aluminium tube hinge. Ian didn't have any 1/8" aluminium tube handy so he used a piece of 1/8" nylon tube. Nice and smooth motion on it.



Rudderpost (with its hinge that must be installed before gluing the front of the rudder on)

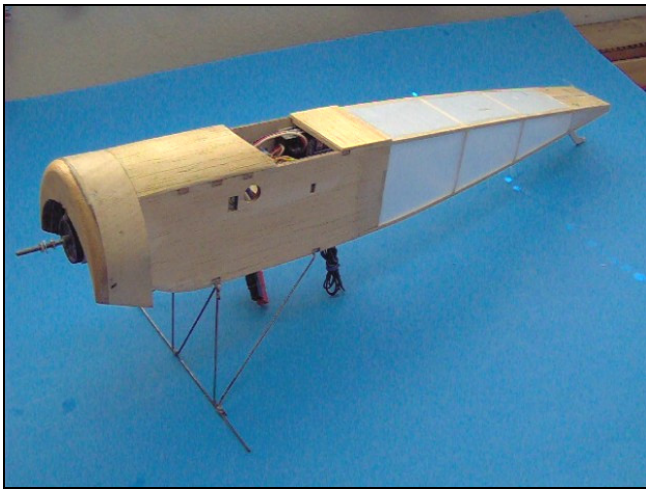


Rudder



Elevator COVERING

Any lightweight covering material can be used. Polyspan with dope or Minwax Polycrylic makes a good choice. Litespan is also popular.



Covering Detail

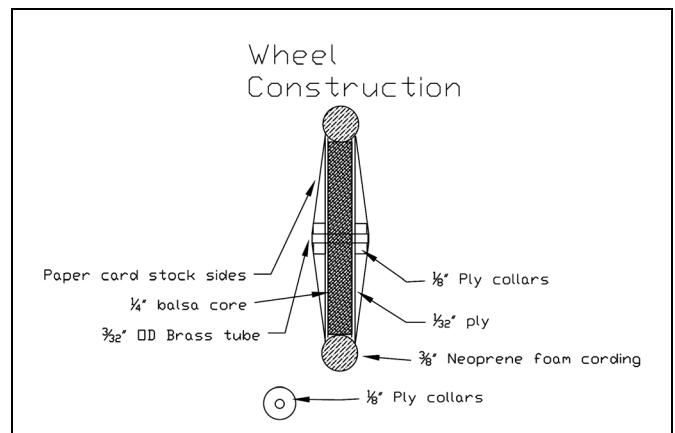
Decal outlines for this model are available on www.aerodromerc.com/decals in Adobe Acrobat pdf format for printing out on decal paper. Contact paper used for kitchen shelf lining makes excellent decals. Print out the decal on paper, glue with a glue stick to the paper backing on the shelf paper, cut the decal out with an Exacto knife or micro scissors. Peel off the paper and adhere to your model. Use black material for the crosses and white for the backgrounds.

WHEELS

Gluing the ply sides on the 3/8" balsa core makes the basis for the wheels. Use the brass hub for alignment. Epoxy the hubs in place and add a sufficient amount of epoxy around the base of the hub to reinforce the connection of the hub to the ply. Plywood reinforcing hubs are provided that are to slip over the brass

tubing as shown. Next, CA glue the neoprene cording together to form a "tire". Use thin CA sparingly as the CA bonds very aggressively to the rubber. Press the CA wetted ends together for an instant bond. The best way to align the ends is to glue them while they are in place on the wheel. Then attach the tires to the wheels and CA in place. A thin bead of CA around the rim makes for a secure tire.

Paper cones are cut out. Use a ball point pen to score each line on the back to make an impression of "spokes". It is helpful to do this operation on a paper tablet so that the pen makes a good crease. Fold the paper along the crease lines to exaggerate the raised lines. One of the sections forming a wedge is cut out. Make cuts to the center of the circle along a pair of the spokes. Close the paper cutout to form a cone and tape the joint inside the cone.



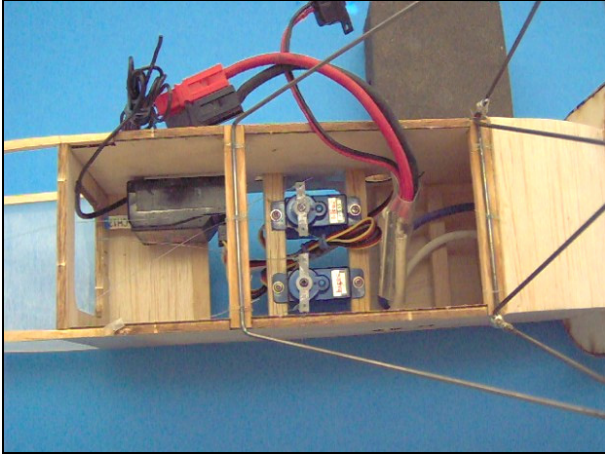
Wheel Construction Diagram

The inside cones may now be attached to the wheels. The outside cones may be attached at this point if wheel collars are to be used. Alternatively, after installing the wheels on the landing gear, a washer may be soldered to hold the wheel in place and then the cone is attached. This method makes a very nice scale appearance.

INSTALLING THE RADIO CONTROL GEAR

Servo Bay

Get the bulk of your R/C gear fitted at this stage, and also the motor.

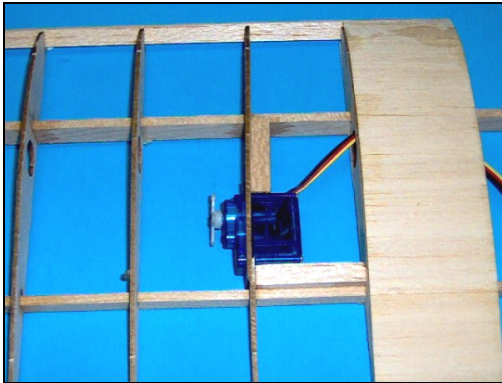


Rudder and elevator servos installed.

Rudder and elevator servos installed. An placed in a dummy rear spar so that he could fit the servo support up to it - acts as an extra brace.

Aileron Servos

Aileron servos are mounted in wing and attached with short threaded rods to the ailerons. Use a "Y" wiring harness connector to wire the servos to a single radio connection.



Aileron servos are mounted in wing and attached with short threaded rods to the ailerons

Battery Tray

After all the above has been placed, mount the battery tray made from 1/8" balsa and use the battery position to balance the model as shown on the plan.

ASSEMBLY

Wing

Aligning Wing Panels

The wing panels are epoxied on to the fuselage and joined using the spar brace mounted inside the fuselage. Take care at this stage to insure that the wings are level.



Finished Model

Fitting Tail Surfaces

Slip the control horns onto the wire pushrod ends and, with both the servos and the control surfaces centered, glue the horns into their slots.

Fitting the rigging wires.

Use strong thread or Kevlar fishing line or elastic beading cording to simulate rigging wires. Use small screws, fishing hook eyes, straight pinheads or small eyelets to attach the lines. These "wires" can add a degree of strength to your model.



Rigging Detail

Windsock Datafiles #59 "PFALZ E.I-E.VI" publication has details on placement and markings. Available at <http://www.byrdaviationbooks.com/>

Battery hatch

Fashion a battery hatch from 1/32" plywood

Balancing The Model

Balance the model at the point shown. It is best to position the battery to do this operation.

FLYING

The model should ROG on grass, pavement or hard surfaces.



Take to the Air

The tail surfaces should not need excessive throws. Let the model gain altitude slowly off the runway. Applying too much up elevator at slow speeds risks a stall. Make your turns gently as tight turns risk tip stalling in any model. Don't expect the elevator to make the model climb. Think of the elevator as a device to change the attitude of the model. The wing and airspeed ultimately make the model climb. Often down elevator applied at stalling can avoid a major crash. The most important details for proper flight operations are:

1. CG location. Tail-heavy models never fly well or at all.
2. Down and right thrust
3. Straight and non warped wings.



The Hun is aloft

Here are some excerpts of Ian's maiden.

"The aileron control is about 1/2" total and I think it needs to be reduced just a little more (for my reaction time anyway). CG is at 1-5/8" (43mm), which is 3/8" behind the plan. I think it could be brought back 1/8" to 1/4" and it would be fine. It does fly quite fast and about 2/3 throttle had it cruising around and looking really good. I'm really pleased and looking forward to the next flight which will be even better."

"I moved the CG forward 1/4" but I think I could bring it back to the design position and it would be fine."

CONTACT INFORMATION

Distributed by:

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e-mail: sales@aerodromerc.com

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