

Pfalz E1 Monoplane 48" EZ Build Version

R/C Scale Model Instructions



CONTACT INFORMATION

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Pfalz E1 Monoplane 48"

Thank you for purchasing the Pfalz E1 model plans for electric flight.

THE MODEL



Finished Model

A semi scale adaptation of the Pfalz E1, this model is designed to be easy to build and exciting to fly.

POWER SET UP

The model is powered by the 6 v Speed 400 or Long Can Speed 400 (sometimes called a 480) with the 2.33:1 Mini-Olympus gearbox and a 10x4.7 APC prop. Battery power pack can be 7 or 8 600maH Nicads or an equivalent weight Nimh

R/C GEAR

A three or four function mini receiver and two micro servos are all that are required.

SPECIFICATIONS

More than 85 laser cut parts

Scale:	~1/8
Channels:	R/E/T
Wingspan:	48"
Wing Area:	307 sq in
Weight:	23 oz ready to fly
Power System:	Speed 400/480 with Mini-Olympus 2.33:1 gearbox
Prop:	10x7
Wheels:	Balsa & plywood, Neoprene foam tires
Airfoil Type:	Flat-bottomed
Cowl:	Built up balsa and plywood
Decals:	Available on website

BUILDING THE MODEL

BEFORE STARTING

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

COWLING

The cowling is of built up construction using C1, C2 and 1/32" Plywood.



Cowling Construction 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 CA glue 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.

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.

WINGS

Wing Construction

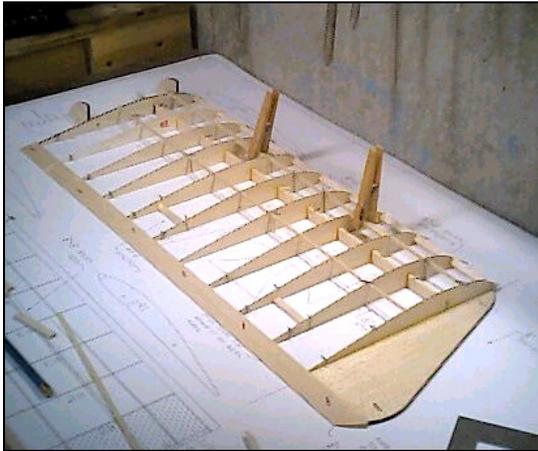
Pin down, over the plan, the t/e, l/e, spar and wing tip, gluing as required. Making sure that you are using the correct ribs for the wing you are building, glue all the ribs in place. Use the angle template (RAG) to lean in the root ribs of both wing panels to allow for dihedral. Don't forget to add 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. Add the wing tips and align the front tip along the centre of the leading edge. Sand the leading edge stock to be rounded and meet the ribs.



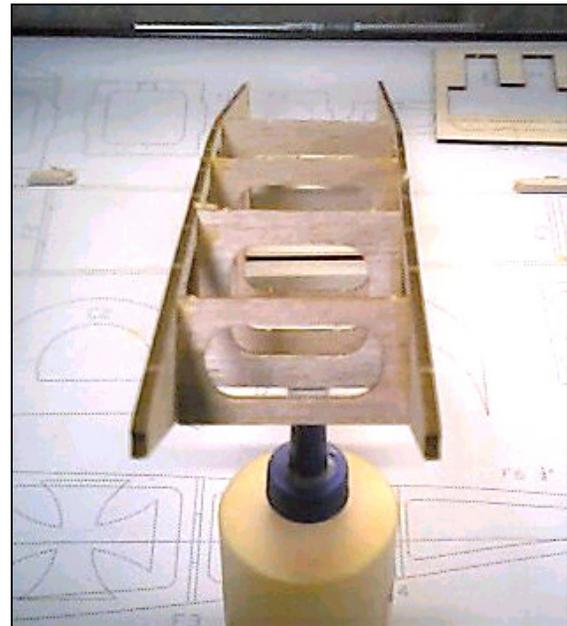
Using the RAG



Build Over the Plan



Adding the Rigging Points



End View

FUSELAGE CONSTRUCTION

The fuselage is built as a unitized box structure, using pre-cut side frames with pre-cut notches for the formers.

Building Of The Fuselage

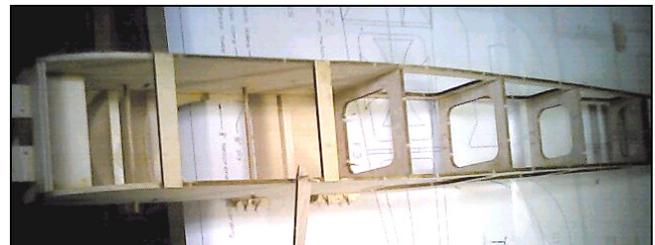
Begin by connecting the fuselage frames and formers over the top view of the fuse on the plan.

Adding The Undercarriage Plates

Once dry, remove from the board and add the plywood formers crosspieces that serve as u/c plates.



Fuselage Sides

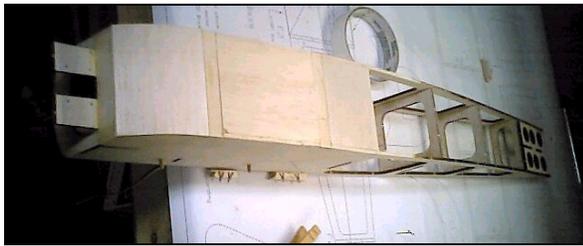


U/C Plates

Complete the underside of the fuselage with 1/16" balsa sheeting and fashion battery hatch with 1/32" ply.



Battery Hatch



Bottom Sheetting and Battery Hatch

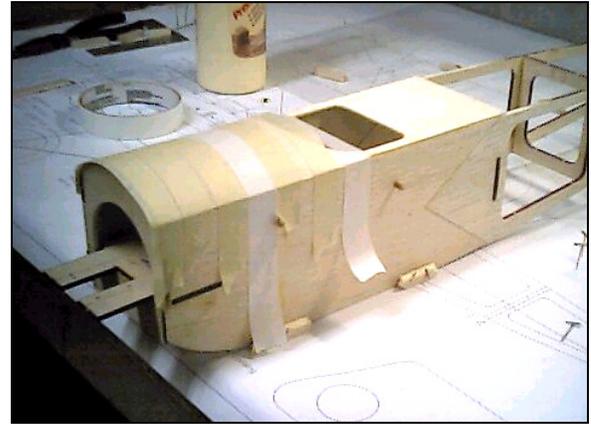
Add scrap balsa to cover the slots in F6 so that the tailskid assembly rests properly in the fuselage.



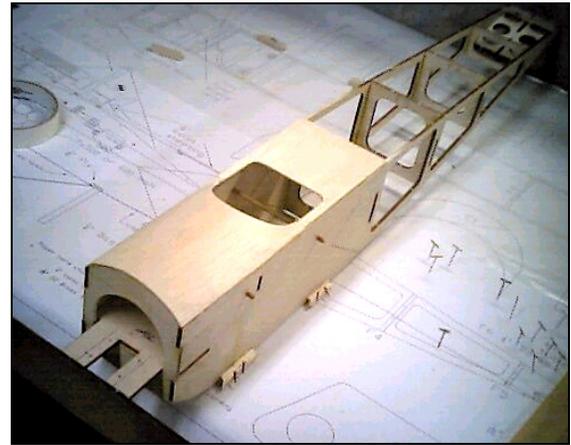
Positioning Tailskid

Adding the Decking

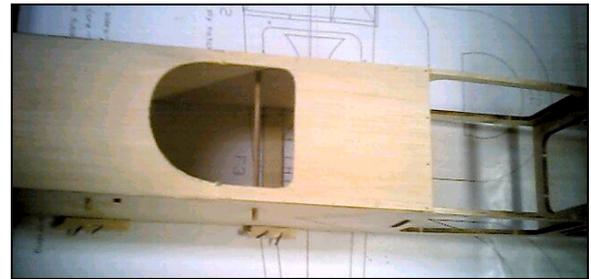
Add all the decking and formers, and carefully trim to size and fit all 1/16" sheet decks.



Adding Top Decking



Finished Top Decking

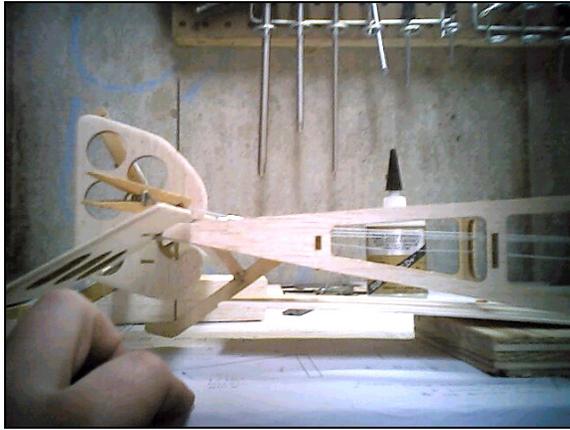


Cockpit

TAIL SURFACES

Lay out and glue parts of the tail surfaces on the plans.

Join the elevators with the 1/8" Brass tube joiner that is inserted into the carbon tube bearing. Use the edge of a table to assist in aligning the parts accurately.



Test Fitting Tail Surfaces

Sand the tail parts, rounding off all edges. Don't add the horns or hinge the surfaces until after covering is complete.

COVERING

Any lightweight covering material can be used. Polyspan makes a good choice. Litespan is also popular.

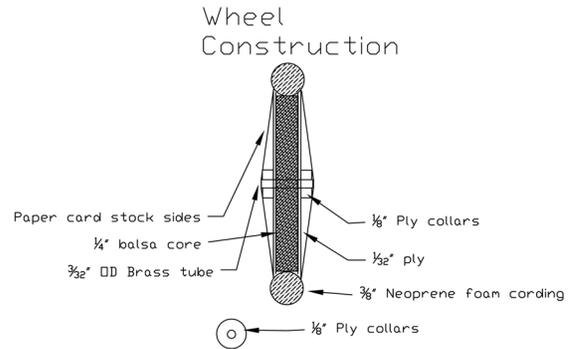
Downloadable decal outlines are available on-line at <http://www.aerodromerc.com/decals.htm>.

WHEELS

Gluing the ply sides on the 1/4" 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. Alternatively, gluing an additional 1/2" square piece of scrap 1/8" balsa with a hole drilled in the center can be substituted. 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 supplied are cut out. Use a ballpoint 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 cut-out to form a cone and tape the joint inside the cone.

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.

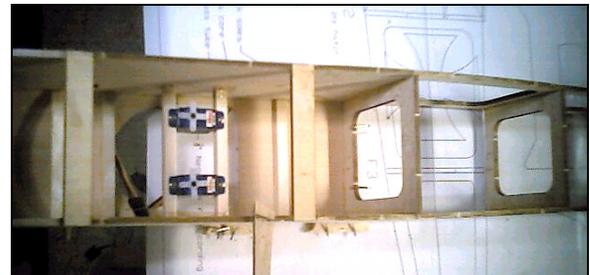


Wheel Construction

INSTALLING THE RADIO CONTROL GEAR

Servo Bay

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



Servo Installation

Battery Tray

After all the above has been placed, mount the battery tray and use the battery position to balance the model as shown.



Servos in Place

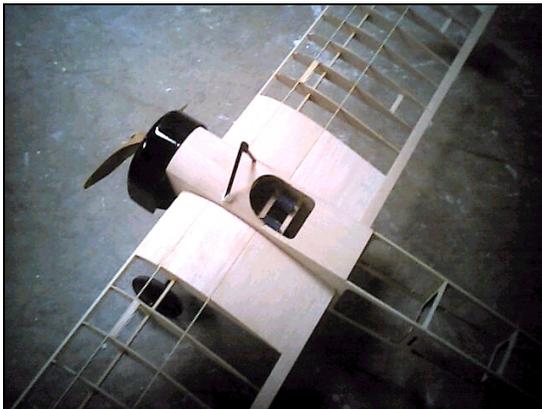
ASSEMBLY

Wing

The first task is to epoxy the wings accurately onto the fuselage. Use 5-minute epoxy for this task.

Using Locating Dowels And Aligning Wing Panels

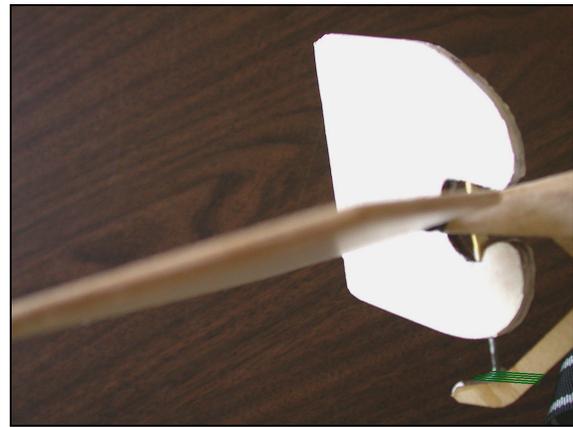
Apply epoxy to the wing rib that meets the fuselage. Attach the wings to the fuselage. Use the locating dowels and both RAG's to assist with aligning the wing panels. Prop up the wing tips by the amount over level indicated on the plan. Epoxy the spars to the plywood section that spans the inside of the fuse. This procedure joins the two wing halves together. Allow epoxy to set.



Attached Wings

Fitting Tail Surfaces

The elevator is epoxied on the fuse as indicated on the plan. The rudder is hinged on a 1/16" music wire post that is connected to the tailskid assembly. Use thin CA glue to harden the tailskid. Take care to CA the wire in place after the rudder and brass tubing are in place. The end of the music wire connected to the tailskid should be wrapped with Kevlar or Nylon thread and epoxied in place.



Kevlar Thread Holding the Tail Post

Add Cowl and side cheeks

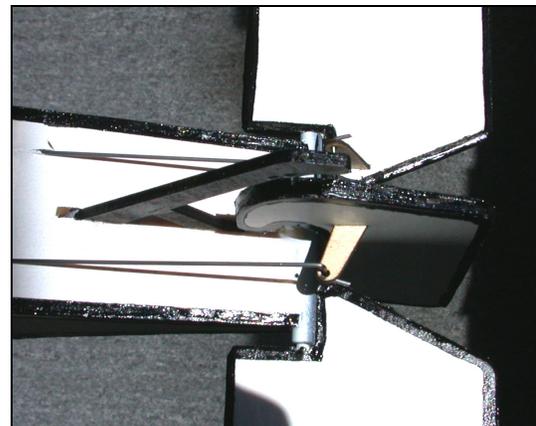
Glue the cowl and make side cheeks from soft balsa.



Cowl with Side Cheek

Adding Control Horns On The Pushrod Ends

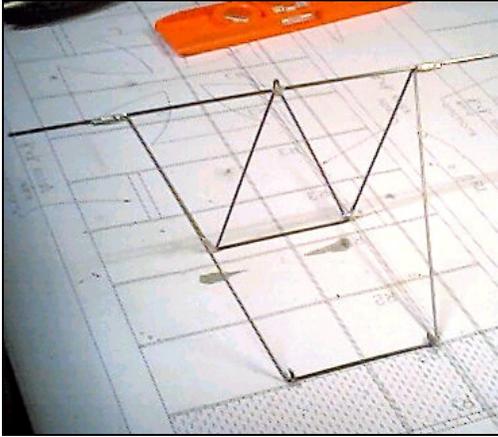
Slip the control horns onto the wire pushrod ends and, with both the servos and the control surfaces centered, glue the horns into their slots.



Pushrod Installation

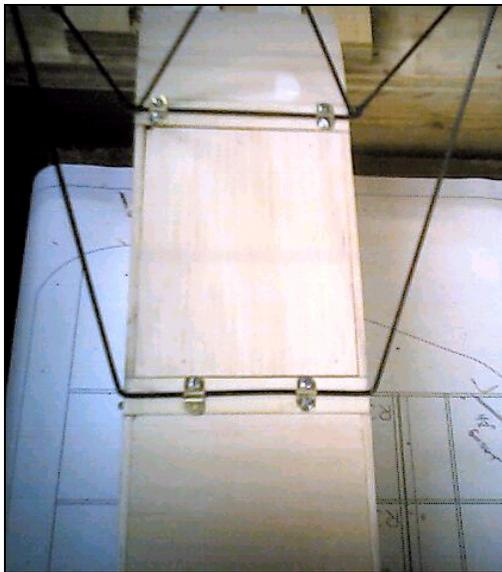
Undercarriage

Bend the music wire U/C legs, bind and solder them to the axle.



Undercarriage

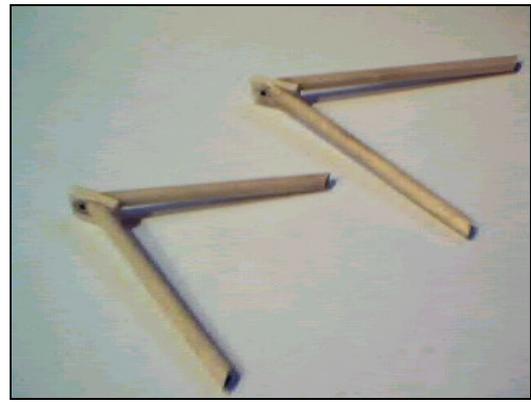
Use homemade metal saddle clamps to mount the u/c legs in place.



Attach Undercarriage

Fitting the Rigging posts and wires.

The rigging posts should now be attached as shown on the plan. Use strong thread or Kevlar fishing line to simulate rigging wires. Use small screws, fishing hook eyes, straight pinheads or small eyelets to attach the lines to the mounting crosspieces placed in the wing during assembly. While not technically required these wires can add a degree of strength to your model.



Rigging Posts



Front with Prop



Finished Detail



Finished Detail

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 pavement or hard surfaces. On grass, the model may require hand launching. Be careful that your hand or fingers do not catch on the lower rigging. Launch firmly and level. While the tail surfaces are small, they should not need excessive throws. Let the model gain altitude slowly off the runway. Applying too much up elevator at slow speeds asks for 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. (3/8" of washout is OK to put into the wing tips).
- 4) Be sure you assemble and lube the gearbox so that it is not binding. A binding gearbox will rob most of your batteries power.



In Flight

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