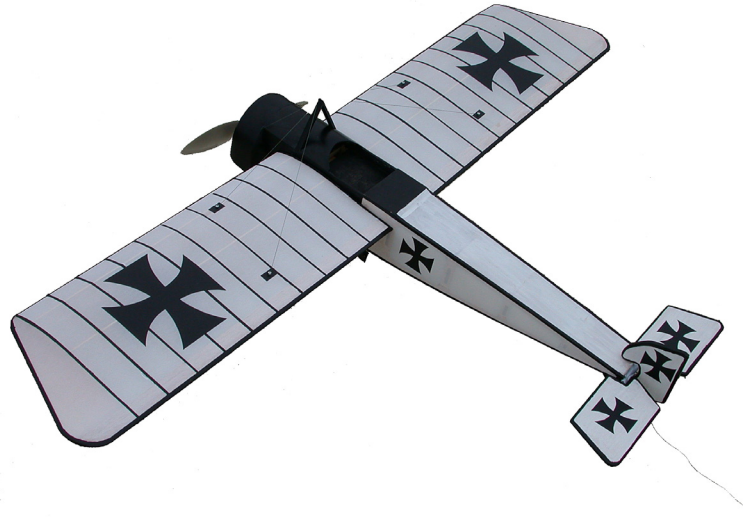


Pfalz E1 36" EZ BUILD

R/C Scale Model Instructions



CONTACT INFORMATION

The Pfalz E1 36" was designed
By M.K. Bengtson

Manufactured and Distributed by:
Bengtson Company
e-mail: sales@aerodromerc.com
Web Site: www.aerodromerc.com

PFALZ E1 MONOPLANE 36" EZ BUILD

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

THE MODEL

A semi scale adaptation of the Pfalz E1, this model is designed to be easy to build and exciting to fly. As with the original, the control surfaces are extremely responsive and throws must be set very conservatively.

POWER SET UP

The model can be set up to be powered by the Acro Speed 300 with the 5:1 gearbox and a 9x4.7 APC prop or a Speed 280 with Horst 4:1 and a 9x7 prop. Battery power packs can be 7x 350maH Nicads or 8 x720 or 350 Mah NIMHs

R/C GEAR

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

SPECIFICATIONS

More than 65 laser cut parts

Scale:	1/10 th
Channel:	R/E/T
Wingspan:	36"
Wing Area:	230 sq in
Weight: 1	5 oz ready to fly (8 oz. minus battery, motor, ESC)
Power System:	Speed 280-300 with Acro or Horst 4:1 gearbox (A larger ESC will supply more current but then model may not be able to take the full power of the S300 and it will be harder to control.)
Prop:	9x6
Wheels:	Balsa & plywood, Neoprene foam tires
Airfoil Type:	Flat bottomed
Cowl:	Built up balsa and plywood
Spinner:	N/A
Decals:	Available on website
Covering:	Balsa and Litespan or Polyspan
Prototype By:	M.K. Bengtson

BUILDING THE MODEL

BEFORE STARTING

A note about the photos: The photos were taken of a prototype and the parts in the plan 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.



Built up cowl construction

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.

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 with 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. 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" balsa 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.

FUSELAGE CONSTRUCTION

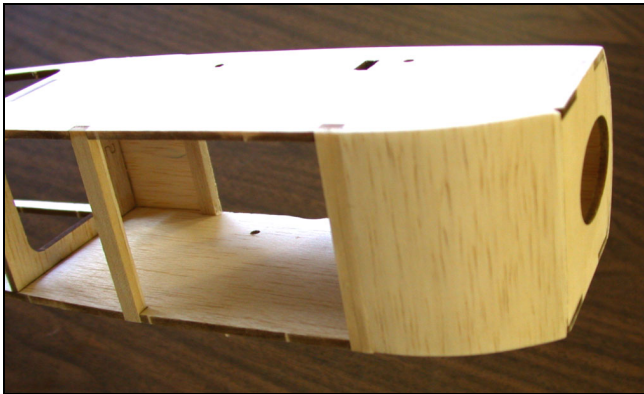
The fuselage is built as a unitized box structure, using pre-cut side frames with pre-cut notches for the formers.

Building Of The Fuselage

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

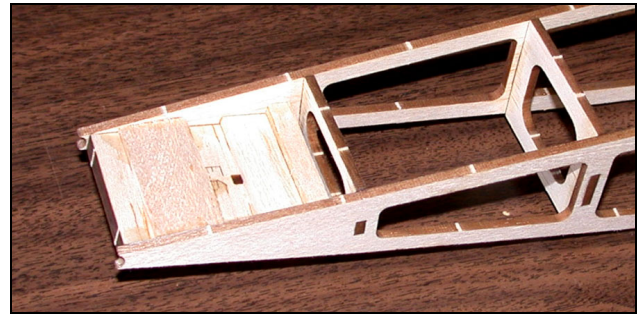
Adding The Undercarriage Plates

Once dry, remove from the board and add the 1/8" x 1/4" bass wood crosspieces that serve as u/c plates.



Fuselage Detail

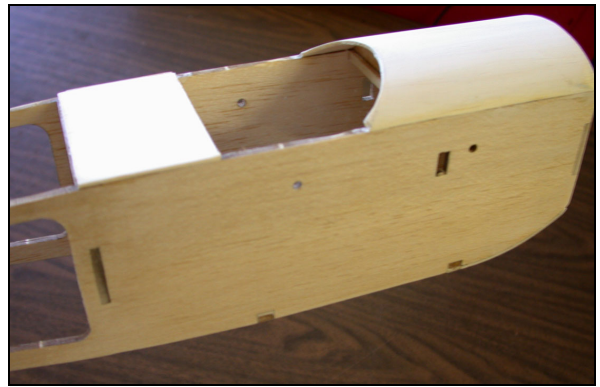
Add scrap balsa to cover the slots in F6 so that the tailskid assembly rests properly in the fuselage. Keep the scrap balsa to a minimum. Extra weight in the tail can make the model hard to balance.



Fuselage Tailskid Detail

Adding the Decking

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

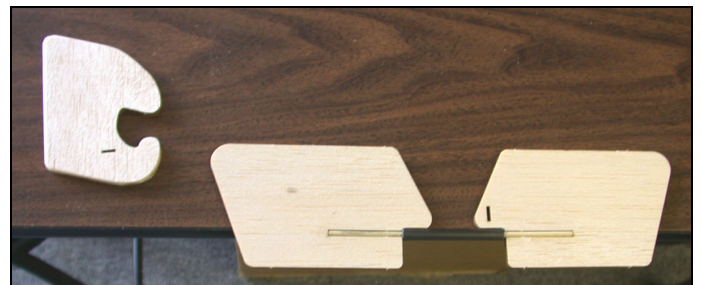


Fuselage Decking Detail

TAIL SURFACES

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

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



Elevator Detail

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.

Decals are available to download on AerodromeRC website:

<http://www.aerodromerc.com/decals.htm>

WHEELS

Gluing the ply sides on the ¼ "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 ½" 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 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 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.

INSTALLING THE RADIO CONTROL GEAR

Servo Bay

It is as well to get the bulk of your R/C gear fitted at this stage, and also the motor, but NOT the battery pack.

Mounting Motor, Radio Location And Electronic Speed Control

The motor mounts should be placed as shown in the plan for proper right and down thrust. Use small pieces of bass or spruce to cap them and serve as screw mounts.

Battery Tray

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

ASSEMBLY

Wing

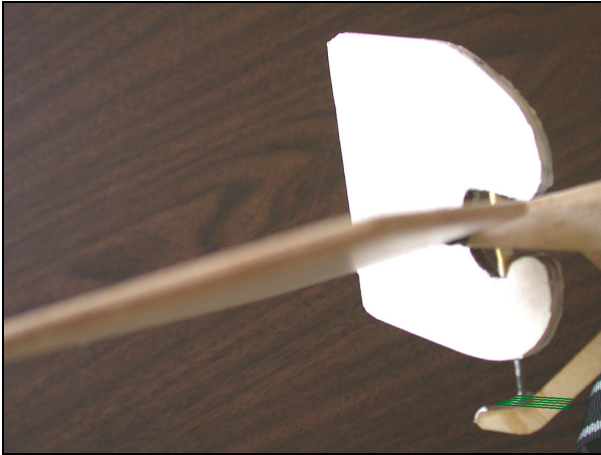
The first task is to epoxy the wings accurately onto the fuselage. Use 5-minute epoxy for this task.

Using Locating Dowels And Aligning Wing Panels

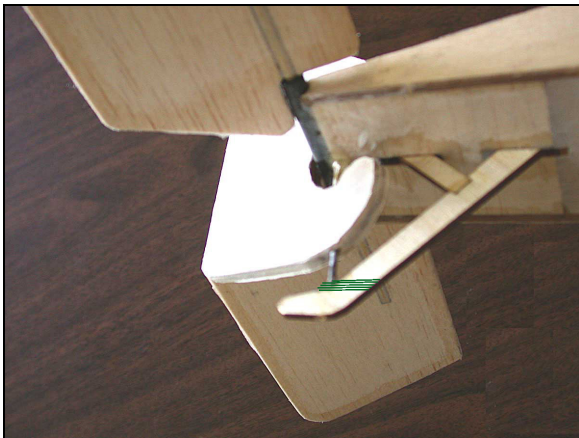
Apply epoxy to the wing rib that meets the fuselage. Attach the wings to the fuselage. Use the locating dowels and both RAG's to assist with aligning the wing panels. Prop up the wing tips by the amount over level indicated on the plan. CA glue the spars to a section of 1/8"x3/8" bass that spans the inside of the fuse. This procedure joins the two wing halves together. Allow epoxy to set.

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. 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.



Tail Surfaces Detail



Tailskid should be wrapped with Kevlar or Nylon thread and epoxied in place.

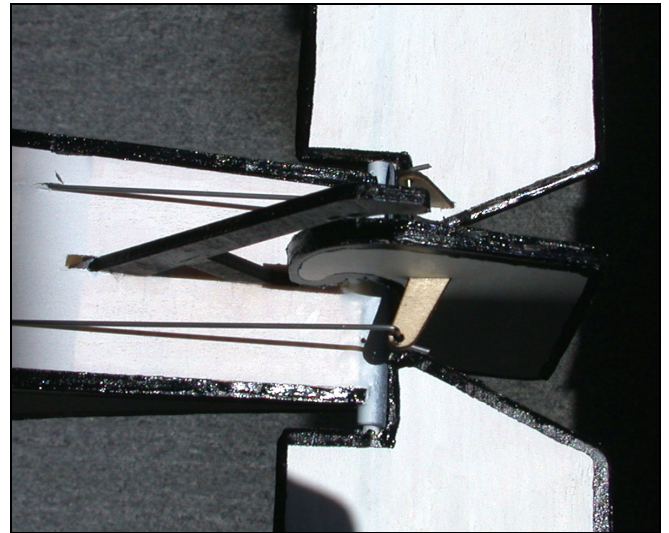
Add Cowl and side cheeks

Glue the cowl and make side cheeks from soft balsa



Make Side Cheeks

Adding Detail Of Control Horns On The Pushrod Ends

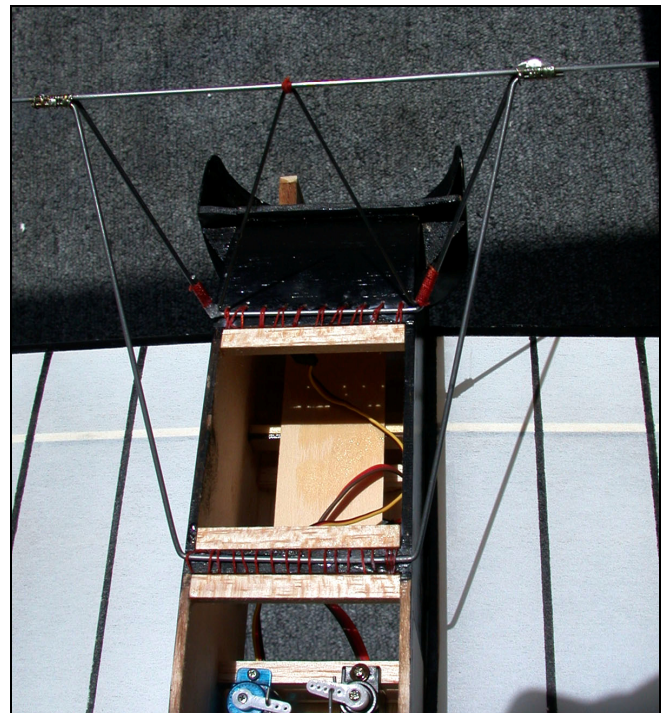


Control Horn Detail

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.

Undercarriage

Bind and cyano the u/c legs in place and bind and solder them to the axle.



Undercarriage Detail

Fitting the Rigging posts and guy 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

Fit The Access Hatch

Fit the access hatch, add the battery pack and your model is finished.

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)

Be sure you assemble and lube the gearbox so that it is not binding. A binding gearbox will rob most of your batteries power.

CONTACT INFORMATION

Distributed by:

Bengtson Company

e-mail: sales@aerodromerc.com

Web Site: www.aerodromerc.com