

# Supermarine Sparrow I 36"

## R/C Scale Model Instructions



### ***CONTACT INFORMATION***

Designed by: M.K. Bengtson  
Prototype Builder: Mike Stanley

Manufactured and Distributed by:

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## Sparrow I 36"

Thank you for purchasing the Sparrow I model for electric flight.

The new Supermarine Sparrow I was entered into the 1924 Daily Mail Two-Seater Light Aeroplane Competition held in Lympne, Kent UK. The sparrow was flown by Henri Baird on September 11. Its color scheme included a dark blue fuselage bearing the number 9 on an aluminum doped background. The wings, struts, tail surfaces and engine cowling were also an aluminum doped color. The aircraft sported full-span ailerons on both wings. They could be drooped to modify the camber of the wings in a flaps like fashion. The Sparrow was plagued by chronic engine failures and did not win the competition. In fact, it required a second engine to finish the race and even that one seized up on the approach to the finish line. Still, the airframe is a classic and refitted as an electric flying model, she is a delight to fly.



### THE MODEL

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

#### Model Specifications: More than 120 laser cut parts

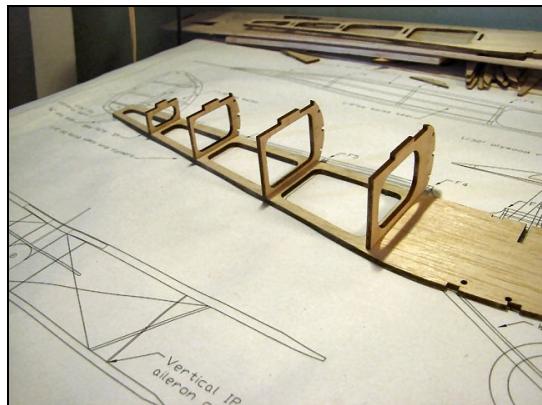
Scale:	~10th
Channel	R/E/T
Wingspan:	36"
Wing Area:	300 Sq in
Weight:	without battery is 10 oz. 16 oz with 8x1050 Kan nimh
Power system:	Designed for Speed 300 Horst 4:1 gearbox.
Prop:	9x7
Air Foil:	Flat Bottomed
Wheels:	Balsa, plywood, Neoprene foam cord tires,
Cowl/Spinner:	N/A/

### BUILDING THE MODEL

#### FUSELAGE CONSTRUCTION

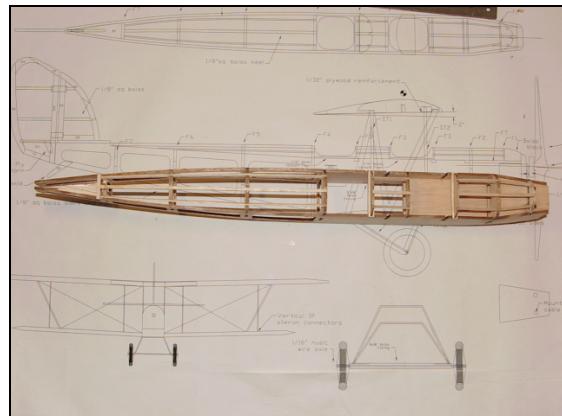
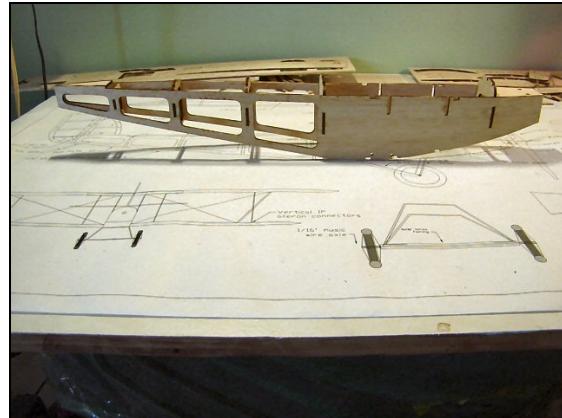
The fuselage is built as a unitized box structure, using pre-cut side frames with pre-cut notches for the formers.

#### Building Of The Fuselage



Begin by connecting the fuselage frames and formers over the top view of the fuse on the plan. Crack the fuse sides as indicated by the marking on the fuse. Lean them in and glue in the horizontal the motor mount FT.

Add slight right thrust by trimming the right side of the fuse before attaching F1 and the front balsa nose. Down thrust is built into the Horst Gearbox.



#### 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.



### **Stringers and Sanding**

Add the top stringers before giving the fuselage a good overall sanding.

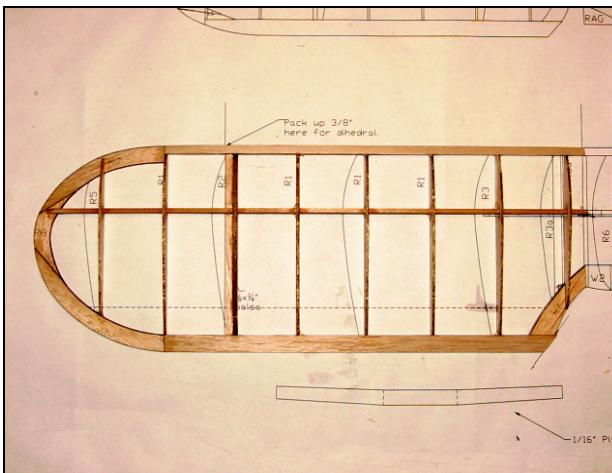
### **TAIL SURFACES**

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

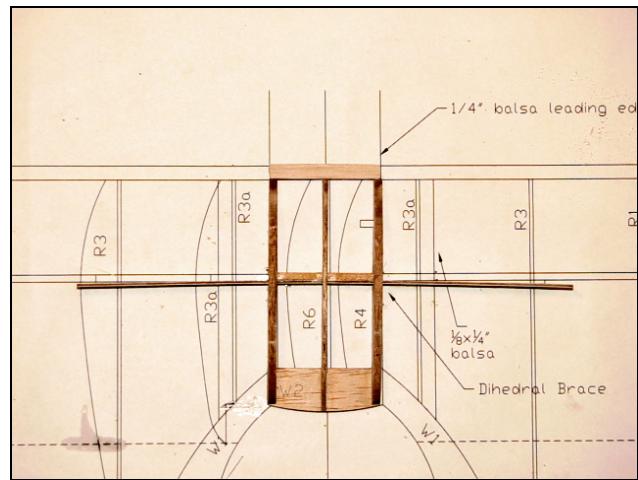
### **WINGS**

#### **Wing Construction**

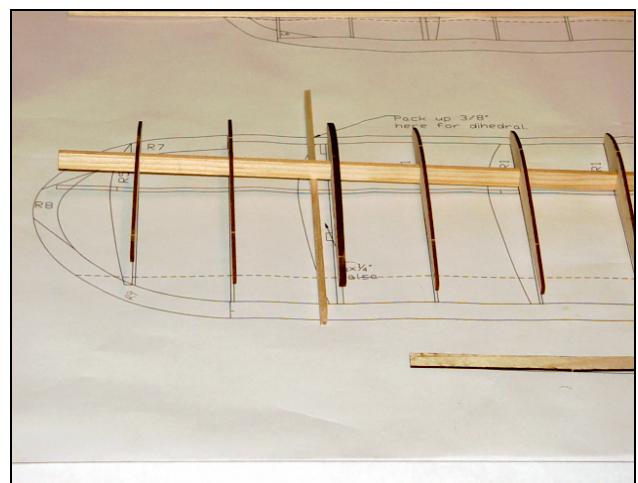
Pin down, over the plan, the t/e, l/e, spar and wing tip, gluing as required. Making sure that you are using the correct ribs for the wing you are building, glue all but the center ribs in place. With one panel on the building board, raise the other wing panel to allow for dihedral. Mount the dihedral brace in place and glue. Sand the leading edge stock to be rounded and meet the ribs.



Completed top wing half.

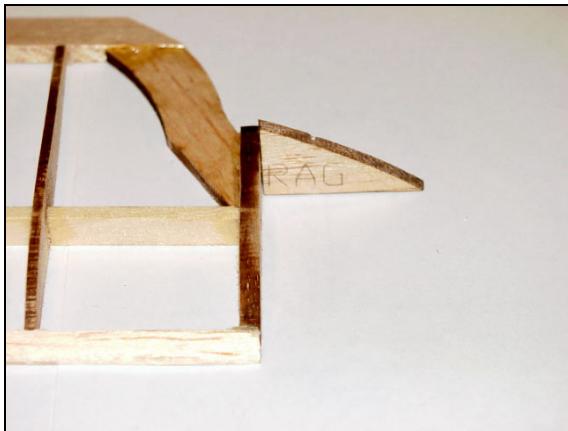


The Center section with dihedral brace.

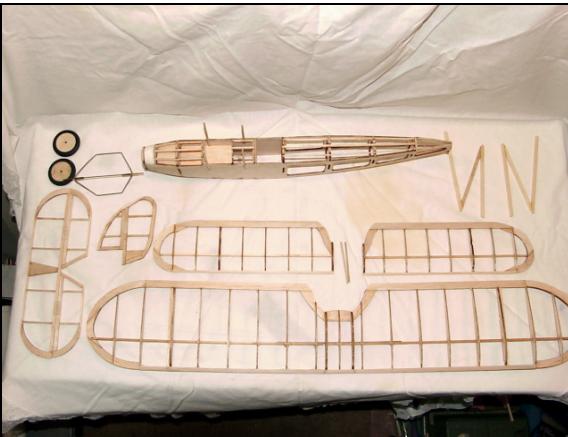


Adding dihedral.





Lower wing rib dihedral adjustment.



## COVERING

Any lightweight covering material can be used. Polyspan makes a good choice Litespan is also popular. The Prototype was covered with Solite.

## WHEELS

Gluing the ply sides on the  $\frac{1}{4}$  "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  $\frac{1}{2}$ " square piece of scrap  $\frac{1}{8}$ " balsa with a hole drilled in the center can be substituted. Next, CA glue the neoprene cordage 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 shown on the plan 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.

## 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.

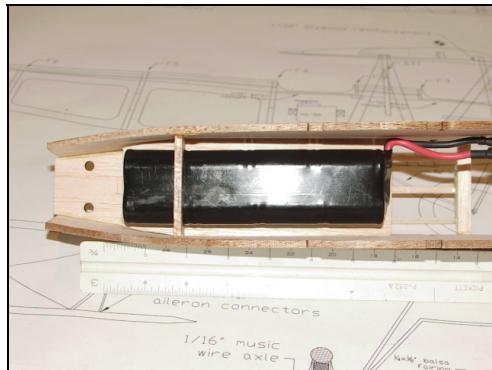


### Mounting Motor, Radio Location And Electronic Speed Control

The motor mounts should be placed as shown in the plan for proper right and down thrust.

### 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 lower wings are epoxied in place first propping their wing tips up by the appropriate amount for dihedral. The top wing is attached using 1/8" cowl cabane struts and Bass "N" wing struts.

### **Adding Detail Of 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.

### **Undercarriage**

Bind and cyano the u/c legs in place and bind and solder them to the axle. Alternately, Kevlar thread and CA glue also work well.

### **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**

Mike Stanley the prototype builder, reports: "The Sparrow is a beauty to fly, first flight was ROG from asphalt as soon as you apply power the tail comes up and it rolls perfectly straight on its wheels for about 8 to 10 feet before it lifts itself (no up elevator required) up off the runway. I needed 2 clicks of right trim and off we went. After a slow steady climb to about 60 feet gave her full throttle and pointed her straight up until stall (probably around 120 to 150 feet) she dropped over to the left and the nose pointed straight down, the plane fell about 8 feet and straightened out on its own.

Loops are very comfortable from level flight and predictable, half to a quarter throttle flying is no problem using 8 cell Kan 1050mah and a castle creations Pixie-P20. Left and right turns are very flat causing me to apply a little up elevator even when it wasn't needed.

With the speed 300 and 4:1 gearbox you can slow the plane down then turn hard left then let loose of the left stick (the motor rotation direction) while applying full throttle and she will torque roll one time then straighten out, a product of 8 cells I would say.

I'm using 50% throws on my JR Radio which works out to about 3/8" both direction for the rudder and using 40% throws for the down elevator (1/4") with 60% up elevator (1/2"). I'm a thumb flyer and always fly within 1/8" of center on the sticks (very light handed) if that makes sense. Also on 8 Kan 1050mah 12 to 15 minutes of regular flying. After climbing to a safe altitude and cutting off the motor the plane has a very slow and predictable rate of glide."



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.

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