

# ***Supermarine Sparrow II 36"***

## **R/C Scale Model**

## **Instructions**



### ***CONTACT INFORMATION***

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## Supermarine Sparrow II 36"

Thank you for buying the Supermarine Sparrow II model plans for electric flight.

The new Supermarine Sparrow II was entered into the 1926 Daily Mail Two-Seater Light Aeroplane Competition held in Lympe, Kent, UK. This event encouraged thousands of new amateur pilots and spurred the eventual private ownership of hundreds of small aircraft. The event has several notable first public appearances for several famous aircraft. Among them are the de Havilland Moth, the Avro Avian, and the Blackburn Bluebird. The contest was fraught with problems and many of the competitors suffered ill fortunes. The Sparrow II flown by Henri Biard, had to make a forced landing due to bad weather and took off again the next day. The landing was also required due to the fact that the observer traveling with Biard noticed that one of the pins holding in one of the wing struts had become loose. If it came out the whole wing would have come off, of which Biard reportedly said it "would have been very annoying". On the ground, as the crew was getting out of the aircraft, the wind blew over the plane. They righted the craft and reinserted the pin. As it was late, they had to spend an uncomfortable night out there with their plane. This eliminated the Sparrow II from the competition, which was won by the Hawker Cygnet flown by Flt. Lt. P.W.S. Bulman and only three other aircraft finished the race.

The Sparrow II went on in 1927 to be useful in testing out various airfoils (including the Clark Y) for Supermarine under contract with the British Air Ministry. ]

### THE MODEL

A semi scale adaptation of SparrowII, 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.

#### Model Specifications:

#### More than 105 laser cut parts

Scale:	~10th
Channel	R/E/T
Wingspan:	36"
Wing Area:	220 Sq in
Weight:	11.4 oz.
Power system:	Speed 280 power: geared 4:1
Prop:	9x7
Air Foil:	Flat Bottomed
Wheels:	Balsa, plywood, Neoprene foam cord tires,
Cowl/Spinner:	N/A

### BUILDING THE MODEL

#### 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.

#### FUSELAGE CONSTRUCTION

The fuselage is built as a unitised 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. CA the cracks. 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 Front Cabane Brass Tubing Mount

Glue the brass tubing as shown on the plan to later insert the front cabane struts.

#### Adding The Undercarriage Plates

Once dry, remove from the board and add the 1/8" x1/4" 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.

### COVERING

Any lightweight covering material can be used. Polyspan makes a good choice Litespan is also popular. Clear film was used on the prototype.

Downloadable decal outlines are being developed. Check on-line at <http://www.aerodromerc.com/decals.htm> to see if one is available for this model.

### 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 shown on the plan 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.

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 wing is attached using music wire cabane struts and Balsa V wing struts.

### **Using Incidence Template to Mount Wing**

The wing is mounted using a foam board cut to form the incidence of the wing with the top of the fuselage. Trace wing incidence template from the drawing and glue it to the foam board and cut it out. Place the fuse on the table and mount the template on the fuse with tape. (I use the white painters tape with adhesive similar to 3M Post-it). Insert the cabane struts in position. The front strut should be cut in half and mounted in the brass tub built into the fuse during assembly. Place the wing over the template and prop it in position. Use Kevlar thread to bind the two halves of the cabane struts together and CA for strength. Epoxy the wing on the stubs of the cabane struts. Then trial mount the V struts. Note the actual length may be different from that shown on the plan for your model as small changes in wing height can make large changes in length with this geometry. It is better to not glue the struts together until the correct length is determined. The build the V struts and epoxy to the fuse. Small #0 screws can be used to secure the end of the strut into the fuse side. Remove the wing mounting template.

### **Fitting Tail Surfaces**

Take care to mount horizontal stab and vertical stab correctly.

## **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. Kevlar thread and CA may be substituted for solder.

### **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. It will climb well on the wing. It is a very easy plane to fly. 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. Ease off the power and let her settle in for a controlled landing. The most important details for proper flight operations are:

- CG location. Tail-heavy models never fly well or at all.
- Down and right thrust
- 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.

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