



Color Transparency By Lou Arboleda

## **REARWIN SPEEDSTER M6000M**

**This Half-A Stand-Off Sport Scale model is the epitome of a classic light airplane of the late 1930's. Designed for .049 to .051 engines and two or three channels.**

**By Larry Maynard**

**T**he Rearwin Speedster model M6000 has to be just about the epitome of a classic light airplane of the late 1930's era. This, coupled with its nearly ideal proportions for modeling, makes it a super subject for Half-A Scale. I looked through my old magazines and found several examples in Model Airplane News and Sport Modeler and drew my plans from these minimal sources. It turns out that the scale is pretty good and one glimpse of that beautifully cowled, in-line, inverted engine; and the very proud vertical tail, immediately brands it as the M6000 Rearwin Speedster. Subsequent research, some of which is reflected in the drawings, was accomplished through Northrop Institute's American Hall of Aviation History; discussions and priceless photographs from John Underwood, of the American Aviation Historical Society; a long discussion with Mr. Gene Salvay, who worked for Rearwin when he was a college student; and last, but certainly not least, my good friend Dan Lutz, who loaned me the scale presentation from his beautiful, but sadly departed, Speedster... somebody turned on on him.

The research done so far proves to me that there is a lot of contradiction in the historical data, largely due to inaccurate press releases given out by the Rearwin Company. Aviation and Aero Digest articles published at the time the Approved Type Certificate (AR661) was issued, distinctly show the NC15865 prototype with the American Cirrus Hi-drive engine and, yet, infer that the power plant is the Menasco C4 or C4S. Coupled with the fact that only 11 of these little beauties were produced, leads to even more confusion. The magazines, of course, cannot be held responsible for any misinformation since they merely published the Rearwin press releases.

All of the production versions did use the Menasco engine (hence the M6000M designation) which is the version I have chosen to model.

The best and most reliable information that I have been able to obtain on colors and color scheme came from Mr. Salvay, who stated that all of the Speedsters were either Stearman vermillion and light (Curtiss) blue trim or vice-versa. All had the same silver stripe on the fuselage and wheel pants outlined with a black pin-stripe. Analysis of the photographs that I have indicates that NC19410 and NC20741 were vermillion with light blue trim; NC19412 was light blue with vermillion trim. N20741, in its current configuration, is Cub Yellow with a black design on the fuselage side. The shape of the design and the N number can be found in a photograph appearing in the September 1963 issue of Air Progress.

### CONSTRUCTION

Construction of the model is in the



## REARWIN SPEEDSTER M6000M

Designed By: Larry Maynard

### TYPE AIRCRAFT

1/2A Stand-Off Scale Sport

### WINGSPAN

38 1/4 Inches

### WING CHORD

6-3/16"

### TOTAL WING AREA

221 Square Inches

### WING LOCATION

High Wing

### AIRFOIL

Mod. Clark Y

### WING PLANFORM

Constant Chord — Ell. Tips

### DIHEDRAL, EACH TIP

0 — 3/8"

### O.A. FUSELAGE LENGTH

26-13/16"

### RADIO COMPARTMENT AREA

(L) 6" X (W) 2" X (H) 2 3/4"

### STABILIZER SPAN

13-3/16"

### STABILIZER CHORD (incl. elev.)

4 7/8" (Avg.)

### STABILIZER AREA

40 Square Inches

### STAB AIRFOIL SECTION

Flat

### STABILIZER LOCATION

Mid-Fuselage

### VERTICAL FIN HEIGHT

5 3/8 Inches

### VERTICAL FIN WIDTH (incl. rudder)

6 3/8 Inches

### REC. ENGINE SIZE

.049-.051

### FUEL TANK SIZE

SS-2

### LANDING GEAR

Conventional

### REC. NO. OF CHANNELS

2 — 3

### CONTROL FUNCTIONS

Elevator, Aileron (Opt. Rudder)

### BASIC MATERIALS USED IN CONSTRUCTION

Fuselage .....	Balsa & Ply
Wing .....	Balsa
Empennage .....	Balsa
Weight Ready-To-Fly .....	23-24 w/250 mah
Wing Loading .....	14-16 Oz./Sq. Ft.



tradition of the old timers using a Warren truss, box fuselage with stringers. The wing is a simple flat bottom built-up structure and can be built in one piece with no dihedral, if desired; the full size aircraft only had 1/4° of dihedral. The wing struts are semi-functional in that the model can be, and has been, flown without them, but I feel more secure when they are used. In the instructions which follow, I have tried to be explicit only in those areas demanding the proper sequencing since I believe that anyone building this model will be somewhat of a craftsman and will innovate anyway, so let's get on with it.

**Fuselage:** Both of the fuselage sides are built at the same time, then, after the glue has set, they are separated and assembled into a box frame. The longerons are 3/16" square medium balsa with 1/8" square vertical and diagonal members in the forward section to allow 1/16" sheet to be inlaid for greater strength.

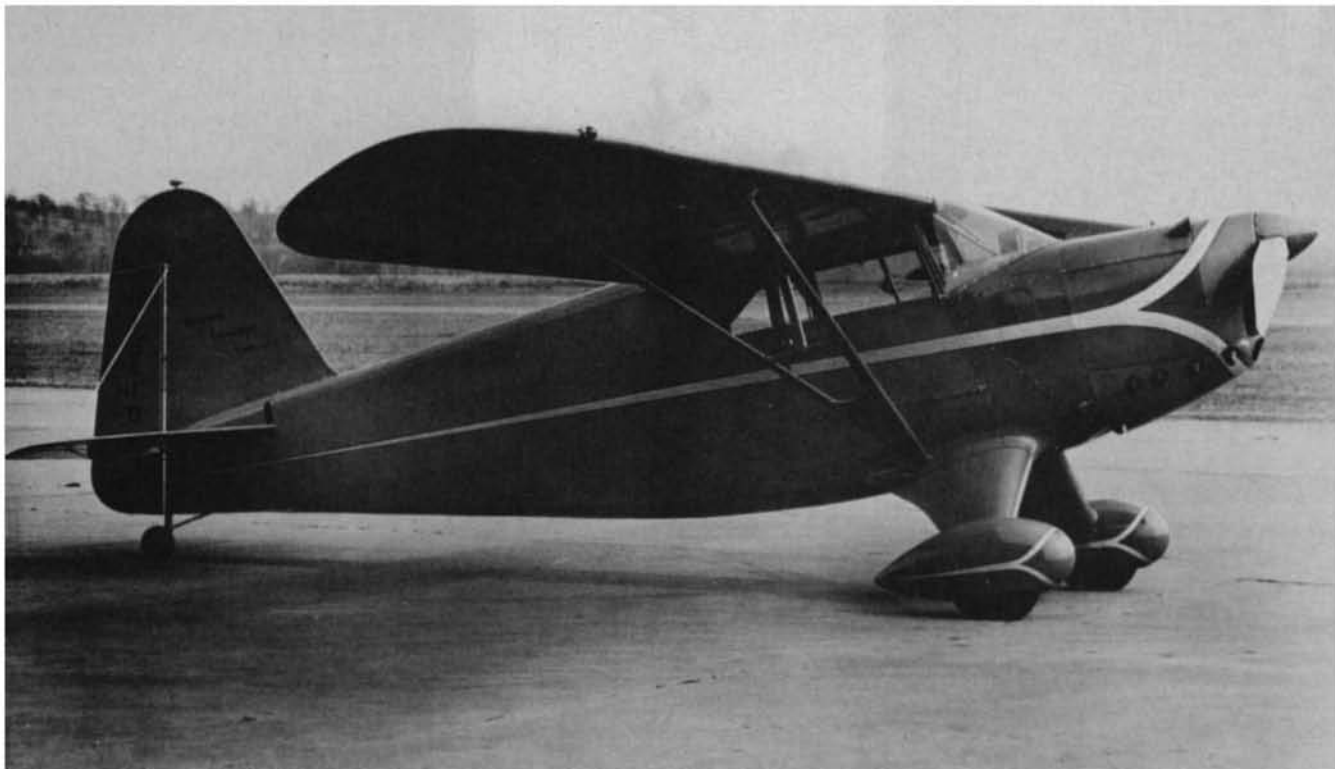
Start the fuselage by cutting the 1/16" sheet to shape. Mark the location of the 1/8" square uprights and diagonals. Pin one side of the 1/16" sheet in place on the plan, then pin all of the longerons in place. Add the 1/8" square pieces on the 1/16" sheet then add the other 1/16" sheeting on top sandwiching the 1/8" square pieces. Now add the aft fuselage members and allow the whole set-up to dry. Leave out the tailpost so you can slide in the completed stabilizer and elevator later.

When the glue is completely dry, remove the sides from the plan and carefully separate them by slipping a thin sharp blade long the longerons, progressively cutting the excess glue holding them together. Now complete the box frame by adding the 3/16" square and 1/8" square cross members. Add the firewall, cowling, former and landing gear plywood.

**Landing Gear:** Make the landing gear from .051 6061-T6 or 2024-T3 aluminum and save some scraps for shims for the next operation.

Tack glue a 2" x 2" piece of the landing gear aluminum to the plywood mount as a spacer. Add the soft sheeting in the nose area, lightly gluing the piece over the dummy landing gear. Now, glue the cowling blocks into a unit and tack glue them to the firewall. Sand the forward fuselage and cowling to finished size and shape.

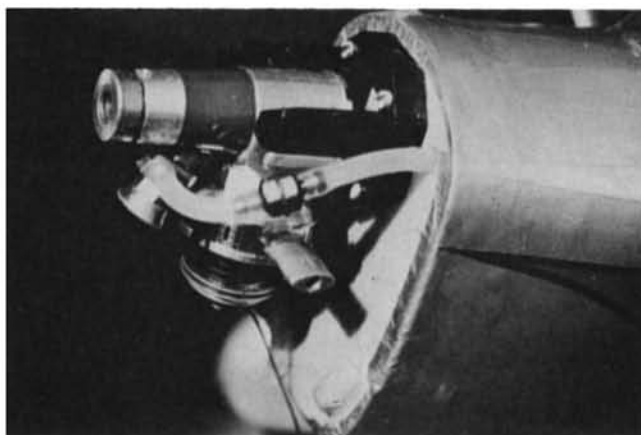
Remove the tack glued sheeting and shim from the landing gear location and remove the cowling. Add the landing gear to its plywood base then glue the fairing in place permanently. Add the fuselage side and bottom stringers and gusset them carefully. Add the 1/16" sheet cabin window frames and front cabin plywood former. The cowl can now be hollowed to about 1/16" x 3/32" thickness all around.



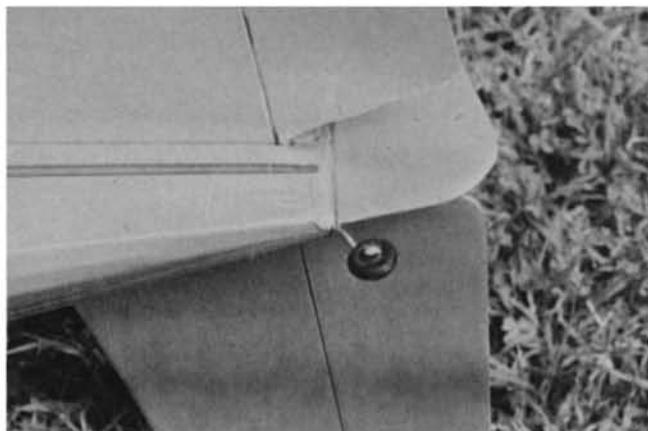
*Beautiful classic of the 1930's era. Full size M6000 Rearwin Speedster. Photo credit to John Underwood, American Aviation Society, Glendale, Ca.*



*Cox TD .051 with muffler & Bridi Hobby .05 mount.*



*The ever important fuel filter in line, also cowl mounting block.*



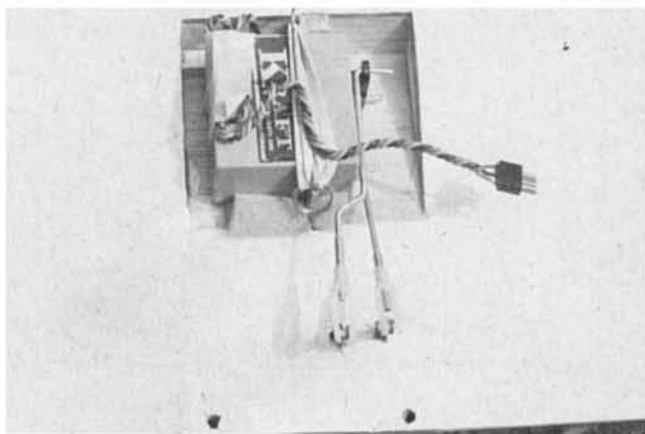
*Clean lines of tail assembly. Pushrod inside of fuselage.*



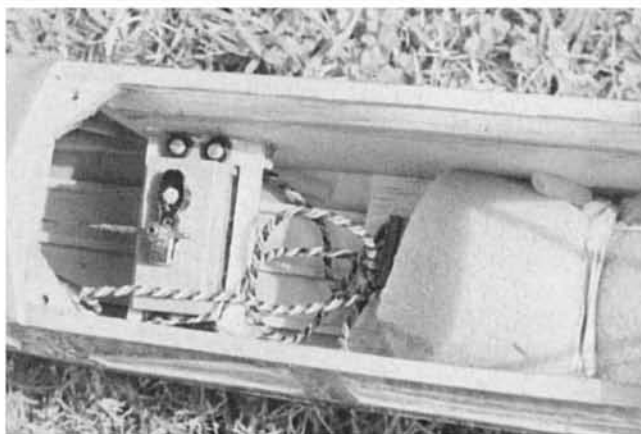
*Easy removal of wheel pants for rough field flying.*



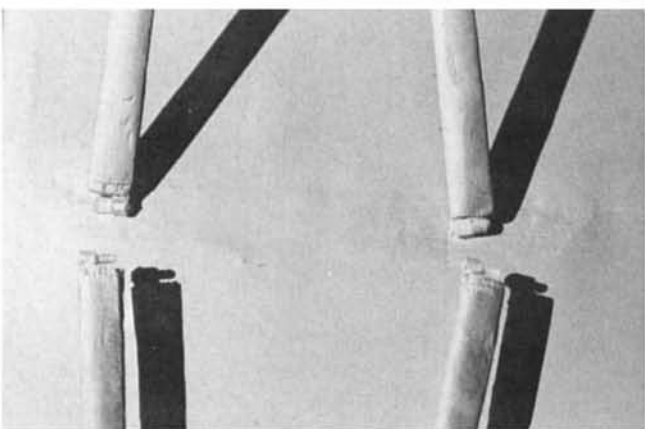
*Little beauty ready to go.*



*Closeup of aileron servo. Easy removal by unhooking rubber band.*



*Elevator adjustment made at servo using either Du-Bro or Goldberg pushrod connectors.*



*Wing attachments for struts using Robart hinge flats cut in half.*



*Note small wire protruding from cowl bottom for glow plug clip.*

**Stabilizer and Elevators:** Cut the stabilizer and elevators from 3/32" "C" grain balsa. The control horn is made from 1/16" I.D. brass tubing soldered to a 1/16" music wire elevator yoke. Slit a 1 1/2" length of 1/16" I.D. tubing about 1/2" and open it into a "T", then, flatten the other end and drill 1/16" for a clevis. Make the elevator yoke from 1/16" music wire and silver solder (or wrap and soft solder) the horn to the yoke. Epoxy the yoke to the inside elevator edge as indicated on the plan. 1/4" x 1/2" strips of drafting mylar are suggested for all hinges. They can be Hot-Stuffed and pinned very easily.

**Fin and Rudder:** Cut out and sand the vertical fin/rudder. Slide the stabilizer into place and temporarily install the vertical fin. Cut out and sand the tail fairing blocks, then glue them in place, but don't glue the fin or stabilizer. Add the wing nut blocks to the fuselage as shown on the drawing. These are made from 3/16" thick hardwood or birch plywood.

Locate the elevator servo, then install your pushrod system. Cover the tail surfaces leaving the area to be glued to the fuselage uncovered. The wing will be required for the remainder of the fuselage construction so that proper wing/fuselage mating can be done.

**Wing:** Laminate two pieces of 3/32" sheet together crossgrain for wing tip fabrication. Cut out 18 ribs and the wing tips. Pin the lower 1/16" x 1/4" spar and trailing edge in place over the plan then add the 1/16" x 3/16" vertical spar making a "T" section. Note where this spar ends. Pin the 1/16" x 3/16" trailing edge in place vertically and add the wing ribs. Add the upper 1/16" x 3/16" vertical spar and 1/16" x 1/4" cap. Add the trailing edge 1/16" x 1/4" cap. Glue the 1/4" x 1/2" leading edge and the 1/16" sheet trailing edge inboard of the ailerons in place. Add the wing tips, blocking them up to equalize the upper and lower contours when viewed from the front. Install 1/32" x 1/16" vertical webbing between the main spars from the center of the wing and past the strut locations and glue the spar caps to the wing tips. Add the wing strut location blocks and the servo well.

When completely set up, remove the wing from the plan, and install the 1/16" music wire and 1/16" I.D. tube aileron horns. Note the offset for the servo mount. Add the 1/16" upper trailing edge inboard of the ailerons and sand the wing to its final shape. Drill out for the front wing dowel, locate the wing on the fuselage with the dowel in place, and lightly epoxy the dowel to the wing. After the epoxy sets up, remove the wing and solidly epoxy the dowel to the wing structure. Locate the wing back on the fuselage, and pin the trailing edge to the upper longerons in preparation for finishing the fuselage top. Add the trailing edge bulkhead to the wing and its counterpart to the fuselage. Add the fuselage top stringer and the solid blocking for the wing bolts. Drill and tap 4-40 for the wing bolts.

Cover the top of the fuselage, and the tail fairing blocks. Insert the stabilizer and permanently glue it in place. Attach the elevator pushrod to the elevator horn, then add the fuselage tail post making sure that there is adequate elevator horn clearance.

Make the wing struts from hard 3/32" x 1/4" balsa. Cut a couple of Robart flat hinges in half. Slit the wing — attach ends of the strut and epoxy one-half of the half-hinge in each of the four slits. Glass-cloth the strut ends with 1/2-1 oz. cloth. Install the wing to the fuselage and locate the struts in place. Do this carefully, since the struts can cause wash-in or wash-out if not properly installed. Slot the strut blocks in the wing and epoxy the half-hinges in place.

A useful tool for separating the hinge-halves can be made from a dull X-Acto blade, or, use a very small screwdriver.

The wheel pants are made from laminations of soft balsa as shown on the plan. A 3/32" plywood insert takes the wheel bolt axle load and provides a suitable mount. This method of attaching the wheel pants permits them to be easily removed and yet they are adequately mounted for flying off of smooth surfaces. Hardened 4-40 screws are used for axles.

The remainder of the construction, covering and finishing, is left to the builder. MonoKote red and light blue come very close to the original colors.

My prototype model used a Cox muffled TD .051 mounted on a Bridi Hobby Enterprises 05 motor mount. A Pylon SS2 tank, Ace 1" spinner and 1 3/4" wheels complete the accessories. Guidance is maintained through two channels of a Kraft KP7 system, with KPS12 servos, and a 250 mah battery pack. Covering was aluminum MonoKote with red numbers and trim outlined with dark blue pinstripes. While it isn't scale, it sure is pretty. □