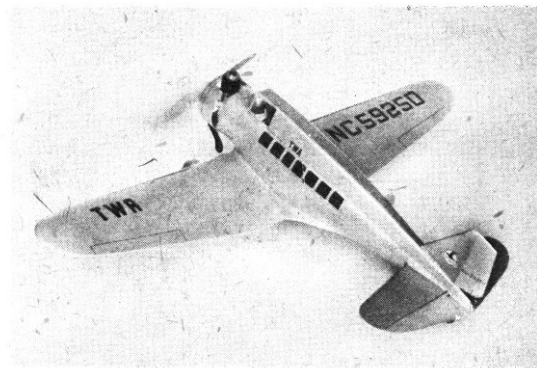
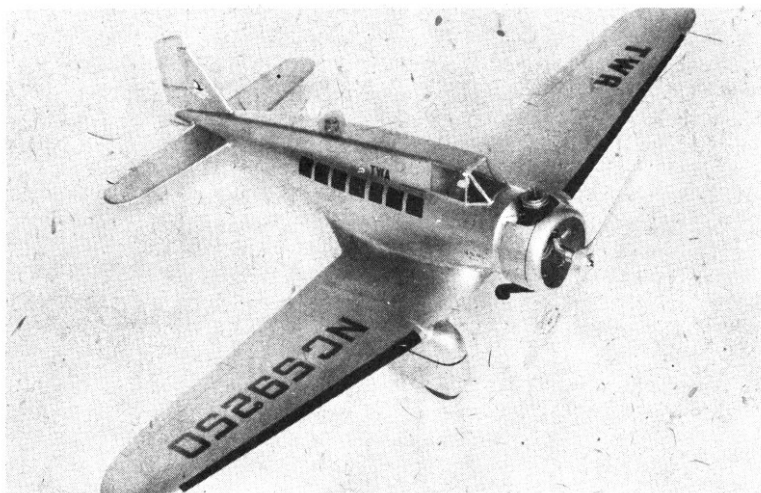


NORTHROP

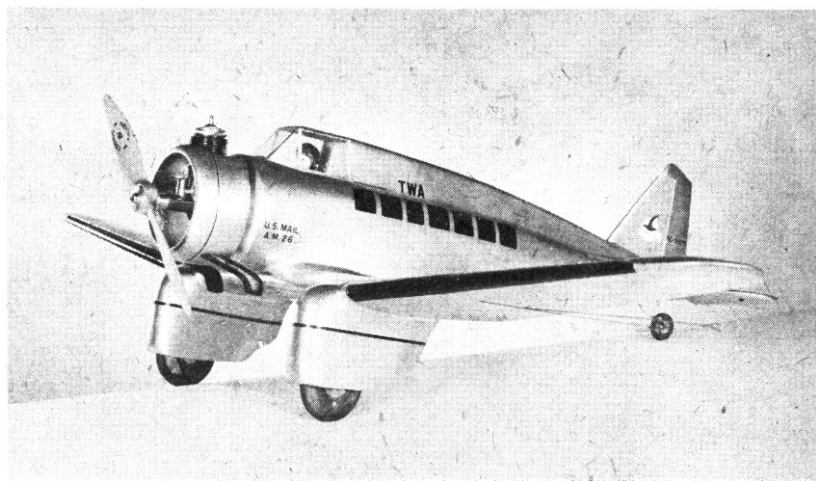
by Walter Musciano

delta



**Out of the colorful past,
a famous mail-passenger
model for scale builders**

Pleasing from any angle, this model will draw praise at any flying field. Small engine fans will like the simplicity of construction and the ease of control during flight. Color dope is used to add most of the details. Decals can be used for license numbers.



● Always a favorite with scale fans, the Northrop Delta makes a beautiful control-line model. This version can be powered by any .14-.29 engine. The entire model is sheet balsa covered for strength.

WING: The wing is constructed in three panels. No leading or trailing edge is used, only a strong spar and ribs hold the sheet covering in place.

Begin by cutting all ribs from the proper size balsa sheet as shown on the plan. The spars are shaped next. Note that the centersection spar is made from hardwood. Cement the ribs to the spar in the usual fashion being sure the root ribs on the outer panels are tilted to provide the dihedral. Cover the outer panels by cementing

the rib and spar assembly to the lower covering. Hold this in place with pins until dry. Bevel this covering, and add the upper cover, starting at the spar and working toward the leading and trailing edge. Add the wing tips and sand the entire structure.

The centersection is made in the same fashion. Butt join two $\frac{1}{8}$ " x 3" medium balsa sheets in order to form the center-section covering. When dry, cut this piece to shape following the plan outline. Cement the hardwood spar to this covering and add the ribs. Add the landing gear struts next. They are formed from $\frac{1}{8}$ " music wire. Using plenty of cement, sandwich the struts between the two pieces of plywood and add them to the wing center-section at the location shown.

Attach the wire-leadout lines to the bellcrank and then bolt the bellcrank to the hardwood spar which should be slotted for this purpose. The slot should be just large enough to accommodate the bellcrank. Add the control rod next, leaving the rear portion unfinished but long enough to connect to the control horn later on.

Finally, add the top covering to the centersection following the same method used on the outer panels.

FUSELAGE: Cut the keel and all formers from $\frac{1}{8}$ " sheet balsa. Make sure a cut-out for the stabilizer is made in the keel. Cement the formers to the keel, and the keel to the centersection of the wing. Check the alignment carefully.

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NORTHROP

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fully, and slip the control rod through the bulkheads at this time. Cut away only enough of each bulkhead to allow the rod to operate smoothly.

The tail surfaces are built next. They are shaped from $\frac{1}{4}$ " sheet in the conventional manner. Use cloth hinges and a commercial control horn for the control system. Cement the elevator-stabilizer assembly into the slot in the keel and check alignment carefully while the cement is drying. When the cement is dry, bend the control rod to shape and slip it in place on the control horn.

Add the fuel tank next making sure all the vent and feed tubes are in place. The plywood firewall is added next.

If a bulkhead mounted engine is to be used the bolts or the nuts should be firmly affixed to the rear of the firewall. This can be done by soldering the nuts to a brass plate and attaching this plate to the firewall by means of small screws. Metal triangular mounts can be bolted in place on the firewall if you are using a beam-mounted engine.

The fuselage is planked. The procedure is much simpler than it first appears. Cement the first strip along the fuselage top, being certain to attach it securely to all bulkheads. Repeat this on the bottom and each side of the fuselage. Hold the strips in place with straight pins until the cement has dried. Next, cement a strip on each side of the 4 strips already in place. Continue in this fashion until the entire fuselage is covered. Cement the strips to each other as well as to the bulkheads. It is necessary to taper the shape of the strips toward the tail of the model in order to have them fit the opening.

The bottom of the large wing fillet is made from $\frac{1}{8}$ " sheet balsa. The plan shows the exact location of this piece. Make sure the grain runs spanwise on this fillet. The entire top of the fillet is built up with successive layers of plastic balsa or "Fyll." Mold this with

your fingers using the fillet platform as a guide. Now sand the entire fuselage smooth and add the "Fyll" to any small cracks in the fuselage.

ASSEMBLY: Cement the outer wing panels in place and add the vertical fin. Solder a washer to each axle to hold the wheels in place. The cowl and wheel pants are built next. The cowl can be carved from a balsa block and hollowed to fit your particular engine. With a little patient searching you may be lucky enough to find a metal cowl to fit the model. The wheel pants are easily assembled by following the plan.

Now add the finishing touches such as the tail wheel, exhausts, and pilot's cabin windows. After this, sand the entire model and apply several coats of sanding sealer. The quality of the finish depends on the number of coats of sealer and the patience of the builder in sanding the model. When you are satisfied with the smoothness of the model brush on 3-5 coats of Testors silver dope. After rubbing the model with compound, the decals and other markings can be added. Fuel-proof the entire ship and install the engine using steel nuts and bolts. Cement the cowl in place using fuel-proof cement.

FLYING: Add weight to the nose or the tail of the model until it balances at the point shown on the plan. Control lines should be at least .010" wire. The $\frac{3}{8}$ " rudder offset will keep the lines taut. The author's Northrop was flown on fifty-foot lines.

BILL OF MATERIALS (Balsa unless otherwise indicated)

5— $\frac{1}{8}$ " x 3" x 36"	Wing ribs, bulkheads, wing covering, wheel pants
1— $\frac{1}{4}$ " x $\frac{3}{4}$ " x 24" (hardwood)	Centersection spar
2— $\frac{1}{4}$ " x 3" x 36"	Wing ribs, keel, tail, spars, wheel pants
20— $\frac{1}{8}$ " x $\frac{1}{4}$ " x 36"	Fuselage covering
1—4" x 4" x 2"	Cowl

Small Veco bellcrank; pilot head; 2" diameter wheels; control horn; $\frac{1}{32}$ ", $\frac{1}{16}$ " and $\frac{1}{8}$ " diameter music wire; $\frac{1}{8}$ " plywood; sanding sealer; silver dope; cement; fuel-proofer; .14-.29 engine; prop to suit engine; 2 ounce tank; plastic tubing; sandpaper.
