



Starduster Too

By STEVE GARDNER . . . A really pretty rubber scale model of a popular two-seater homebuilt biplane. Could also be flown with a CO₂ motor.

• In 1954, Lou Stolp designed the original Starduster. This design was the first of a long line of beautiful elliptical wing biplanes conceived for homebuilders who want a beautiful airplane above all else. The second Stolp design is the Starduster Too, a 25% larger version of the original Starduster. The second seat and added horsepower make this airplane the most popular in the Stolp line.

This model is a 3/4-inch to the foot version of the SA300 Starduster Too, giving it a span of 18 inches. It follows the original very closely in an attempt to capture the grace of the airplane.

While the model is relatively simple, it is still full of curves and odd shapes, so a little previous experience will help.

Start the model with the tail surface. Laminate the edges with medium balsa, in one piece if you can, or you can do it in several pieces like the plans show. Note the slot formed by the fin cutout; this is for stab adjustment so you will not have to build separate elevators for trim. The original model had 1/32x1/16 caps added to each rib on top and bottom and were sanded to streamlined shape. A flat tail is shown on the plan and is suggested for lightness and simplicity. The vertical tail is scale in size and shape, but if you are building a specific example, you might check to see if the builder has changed the shape of the fin or rudder.

The fuselage is started by cutting out all the formers and other small pieces. Make the formers out of soft balsa, as they don't carry any structural loads. Fill, sand, and paint the formers that make up the backrests and instrument panels.

Build the fuselage frames using very hard balsa for the longerons and medium balsa for the uprights and diagonals. The fuselage sides are built one on top of the other to insure identical sides. Don't omit any of the diagonals because they hold the pretty curve on the bottom, and more importantly they hold the top longeron straight. This is important,

because everything is positioned by the top longeron.

Join the sides with crossbraces made of medium balsa, starting at the tail and working forward. While the glue is still wet you can jig the frame upside-down on the building board to hold it square while it dries.

Add the formers and cut the stringer grooves in the ones that need them, keeping in mind that the stringer locations shown on the plans are to be cut on the frame to eliminate errors in alignment. Add the bondpaper wrap, then the medium soft balsa sheet. The difference in thickness will make the cowling seam stand out.

Bend the gear wire to shape and fish it through the small holes in the bottom sheeting. Then glue with epoxy at the proper forward rake angle. Carve the balsa noseblock to the shape shown on the plans. This is another place to look for differences in specific examples. Be sure to include the down thrust when drilling the hole for the 1/16 I.D. aluminum tube bearing.

Build the cabane struts out of hard balsa sanded to streamline shape and glued together with epoxy. The landing gear fairings are made of 1/8 soft balsa cut to the shape of the fairings in the photos. Sand them to a thick streamline shape and paint or cover.

Start the wings by laminating the outlines out of basswood. Make the ribs next, leaving them a little long at the aft end and omitting the spar notches until later.

Pin the leading edge down and butt the front of each rib against it to mark the locations for the spars. Cut the spar notches very accurately to avoid problems later. Next add the trailing edge to the board and lay each rib in place to mark where to trim it. Cut the spars out of medium balsa and pin in place. Glue the ribs in place and add the gussets.

When the wing panel is dry, remove it from the board and sand to shape. If you want a more accurate wing, add a

1/16x1/32 cap under each rib to give it a semi-symmetrical airfoil like the original aircraft. This will cut down on the flight time a little, but it sure looks neat. Join the upper wings to the center section with no dihedral. The lower wings have 3/8 inch dihedral per panel.

Carve the carburetor air box, interplane struts, wheel pants, and spinner from soft balsa and fill the grain of the items to be painted.

Cover the model with Japanese tissue or domestic tissue of the base color chosen. The wings were covered wet and were pinned to the board while they dried. Cover the struts and any other small details that you think you can cover without wrinkles. Cover the tail dry and take care to avoid warps. The fin fairing is covered after assembly.

The model is now given two coats of thinned nitrate dope. Add a few drops of castor oil to your dope to reduce the amount it will shrink the tissue.

Add the trim now with tissue if the base color is light. The model in the photos is deep blue, so enamel was used for trim. Masking tissue is very tricky, but the method given here will do the job without damaging the tissue. Buy some sticky-backed cabinet paper and cut the mask out of it with a very sharp knife. After the mask is cut, flip it over and cut a 1/16 border around the mask through the backing only. Peel the thin strip of backing off the mask and apply to the model, taking care to put the mask on with as little pressure as possible to avoid stretching the tissue and making dents. Apply the paint with a soft brush, or an airbrush if you have one. Remove the mask before the paint dries.

Assemble the model now, starting with the top wing and proceeding with the bottom wings using the length of the interplane struts to set the bottom wing dihedral.

Add the horizontal tail, tack gluing only at the leading edge. Glue the fin in place and cover the fin bay over the stab center section. This will have to be covered wet because it must take on a natural curve as it shrinks.

The stars and lettering were added with a pen and white ink. Glue the fairings, wheel pants, and struts onto the gear, using the photos for a guide. Add the tail wheel now, using paper strips for springs. Finish with the aileron pushrods, headrests, carburetor air box, spinner, windscreens, and rigging. Some aircraft have windscreens on the rear cockpit only, so as to be able to streamline the aircraft with a front cockpit cover. The rigging is made from gray silk thread and is glued with Pliobond.

Install a motor made up of two loops of 1/8 Sig gray rubber about 20 inches long. Balance the model as indicated on the plan with clay or lead shot. The model flies to the left with 1/16 inch left rudder offset and 3/32 wash-in in the left lower wing panel. Juggle the thrust line for fine adjustment.

Enjoy the model, and by all means write to me about it care of R/C MB if you build one.