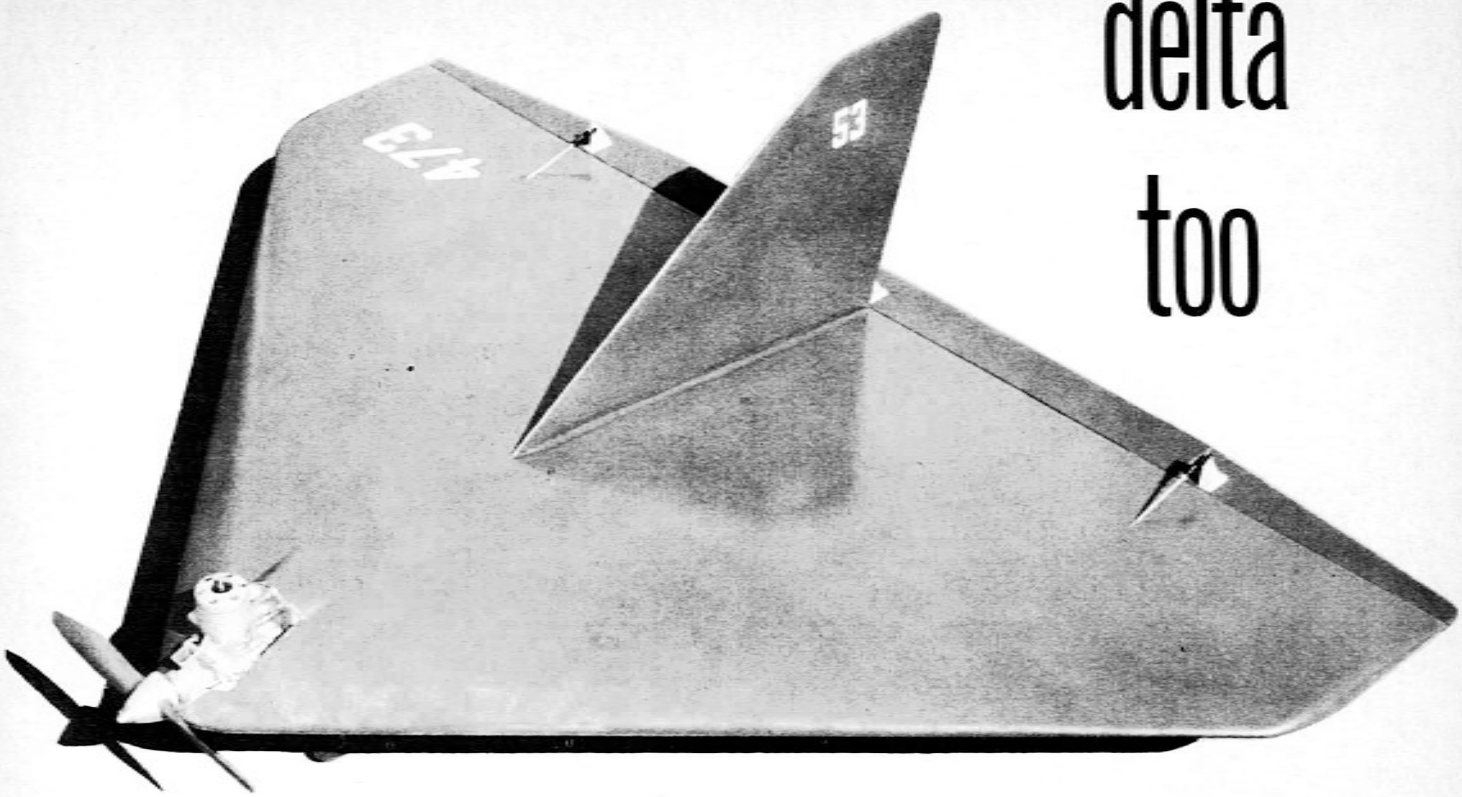
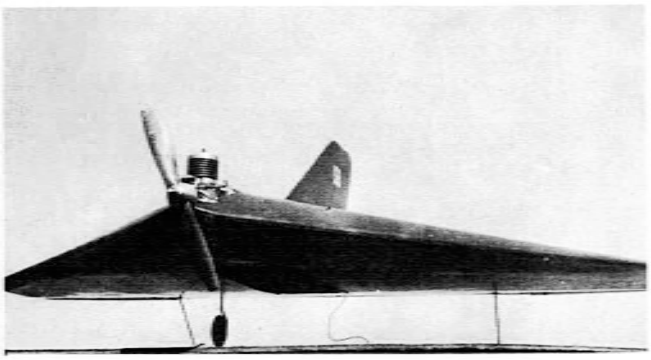
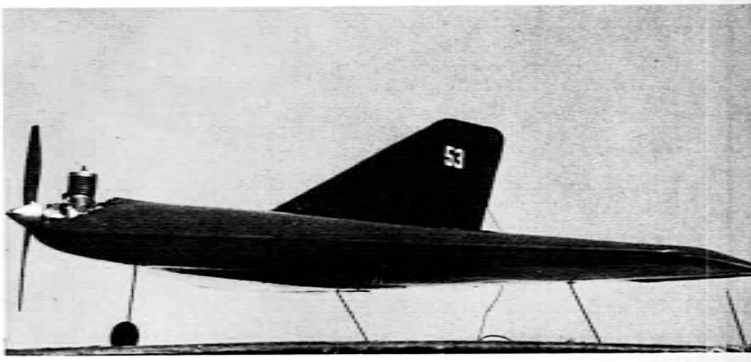
delta too



THE DELTA TOO CONTINUES MAN'S POLICY OF PRESENTING AMA PYLON RECORD HOLDERS AND NATS WINNERS, THIRD IN A LINE OF GOOD WINNERS.



Skinny legs with the antenna hanging at the rear gives the Delta Too a weird look. 75 mph speed to set record and win Nats is hardly weird.



Crisp, sharp leading edges and tips help efficiency. Weight very important, total all-up of 32 ozs. ideal. Light wood, little glue help.

NBC television crew knew how to pick the winners, here we have Austin during interview for the Christmas Day show. Dee Bee X'mtr below tip.

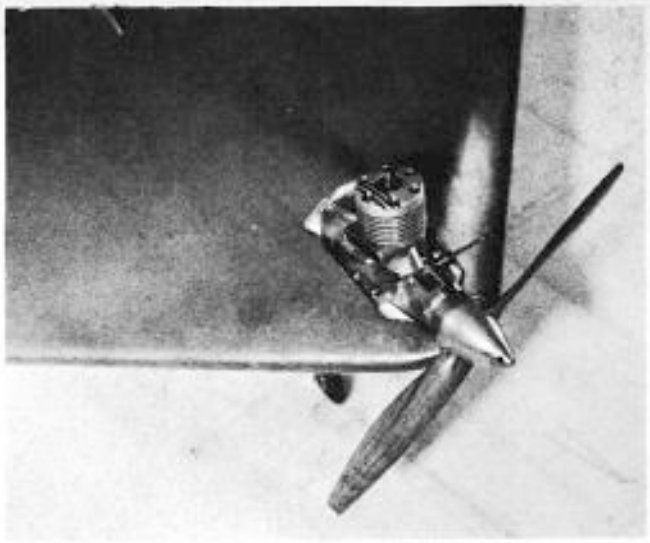
By AUSTIN LEFTWICH

► The name implies a sameness with other delta designs which actually doesn't exist.

Delta-Too has the conventional plan form, of course, but its similarity to other deltas ends there. To begin with it was designed and built to the minimum area and weight for .15 size engines in the AMA Pylon class. In the author's opinion, the long existence and popularity of the 2.5 cc. competition classes in Europe has given the European engine manufacturers a slight edge in the .15 size engines. If all other factors such as wing loading, scale effect, etc., can be held comparably equal (and they can) then this engine superiority dictates that the .15 is the ideal size for the AMA Pylon event.

Other then the slight advantage derived from engine selection, the superior performance of Delta-Too is directly attributable to two major factors. The first is its extreme light weight. The 32 ozs., total (*Continued on next page*)

Our Western author, Western Pennsylvania that is, made a vow at the '64 Nats that he would do it in '65. Being a man of his word, he came through.



And here we have the end that gives it the momentum to set the new speed records. Latest Super Tigre .15 with high speed prop does the job.

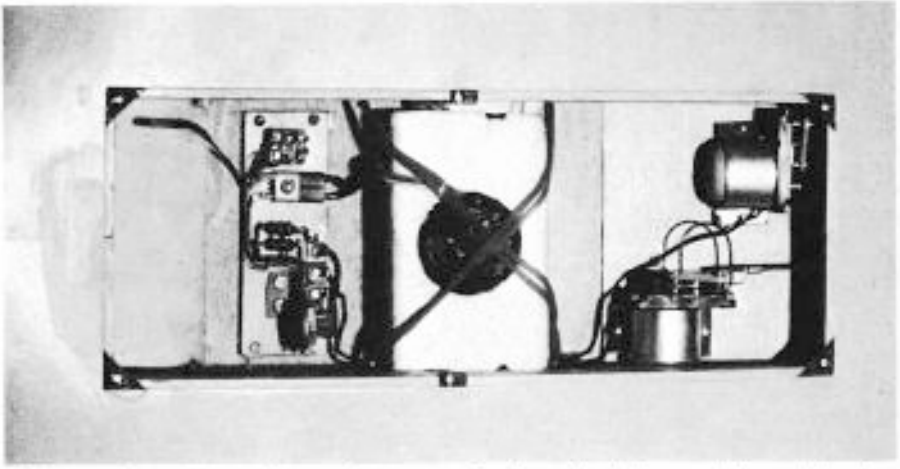
Good hands-off release helps it to one of its 48 sec. plus flights. Austin's ability to cut a real tight corner at pylons helped as well.

weight figure is difficult to achieve and requires constant attention to materials selection during construction, but results in a large increase in straight flight speed. Delta-Too has been clocked in straight flight in excess of 110 mph.

The second factor concerns the airfoil. Most delta designs, including some full scale craft, employ a double reflexed section. That is, the bottom curvature is convex and sweeps upward near the trailing edge and the upper contour is concave or depressed at the trailing edge. This reflexing is needed in a delta for the same reason that a positive angular difference between wing and stabilizer is required on conventional aircraft. Numerous observations at contests over the past several years revealed that all delta designs flown seemed to share a common inability to make a short radius, tight pylon turn. It was suspicioned that the double reflexed sections were stalling at the high angles of attack required for a tight vertical turn. A simple test program with an existing Talon delta, in which increasing amounts of elevator deflection failed to produce tighter turns, confirmed this suspicion. The airfoil created for Delta-Too does not, therefore, have any reflex on the upper camber.

The construction of Delta-Too is simple and straight forward. Begin with fabrication of the leading edge crutch. The upper 1/32" plywood plate can be attached to the apex of the crutch while it is still pinned to the plans. The engine bearers may also be glued in place at this time.

When the crutch is dry enough to remove from the plans, a building jig should be made by pinning 3¼" x 1" x 36" strips to the plans at the outer outlines. These strips are of course, placed on the narrow edge and should be notched at the leading edge to clear the bottom of each rib. Tack glue the leading edge crutch to the jig and next attach the ribs. The rear of the ribs should be supported by the span wise ¼" x 1" x 36" jig strip. The entire upper surface is then planked with 1/16" sheet balsa. When the planking joints are thoroughly dry remove the airframe from the jig. Reinforce the top surface skin joint on (*Continued on page* 62)



And here we have the innards, not much to see really. Servos at the back end are standard Dee Bee units, battery pack strapped in styrofoam. Dee Bee receiver forward, switch center.

The Delta-Too

(*Continued from page* 28)

the inside with cloth tape. Next install the aileron bell cranks and push rods. The firewall and tank compartment floor should be in place prior to planking the bottom surface. The tank compartment sides and top are built up of soft balsa blocks and sheet according to the installation used, then faired into the top planking. In all of the foregoing, do not overlook the weight problem. Use the lightest grade of balsa available and be miserly with your glues. The fin is glued directly to the top surface, along the skin joint. Apply ¼" wide pattern makers fillets (available from DuBro) along each side.

On the original, no prefinishing of the framework was done other than judicious sanding. The entire model should be covered with the lightest grade of Silkspan, applied dry. Three to four coats of butyrate clear with light sanding between coats is adequate to fill the covering. Two to three coats of colored butyrate is recommended for the final finish. The author strongly recommends that for once, you forget your favorite color scheme and paint your Delta-Too with solid contrasting colors on top and bottom. The original has a bright yellow bottom surface and a dark red top and fin. This color contrast provides instant orientation on entering and leaving your pylon turns. There is never any question whether your model is right side up or vice versa, unless you are unfortunate enough to be color blind.

The center of gravity (CG) position has little or no flexibility so you should make certain its location is as shown on the plans. The elevator and ailerons should be set so that at neutral stick the surfaces angle up about 5 degrees from the horizontal. Elevator throw should be limited to not more than ± 10 degrees. Aileron throw should not exceed ± 4 degrees. The original has always been flown with a greater deflection on the right aileron than on the left. The theory dictating this arrangement is that the larger deflection on the right side would give greater drag thus producing a reverse yaw during the pylon turns which would hopefully keep the model's nose from dropping. The theory is probably great but there exists no proof that it actually works.

If you have followed the plans and the foregoing instructions closely, the Delta-Too should fly "right off the board." As anyone who has tried AMA Pylon will tell you, flying a finely tuned ship in competition is somewhat akin to having "a Tiger by the tail" so we make no attempt to give advice here on how to fly your Delta-Too. We only wish to remind you that the guy usually in the winner's circle is the one who has practiced, practiced, practiced . . . and then some more.