

DICK OHM SPECIAL

Larry Roberts' Goodyear racer for competition
under the N.M.P. R.A. 450 Class scale rules.

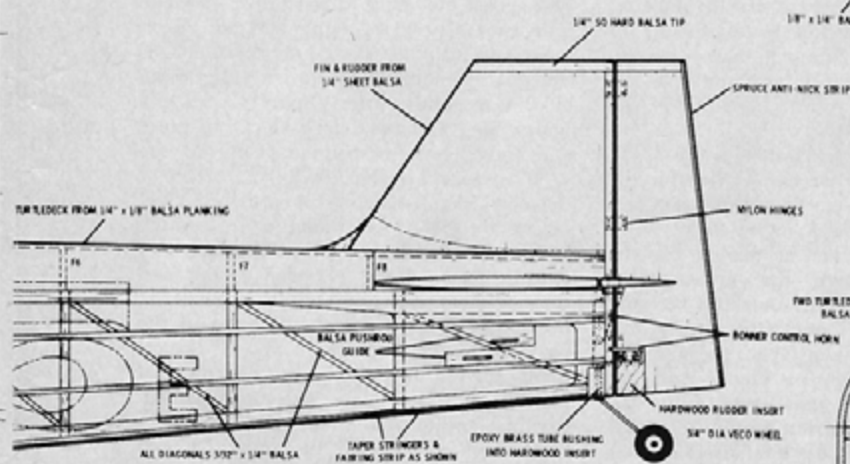
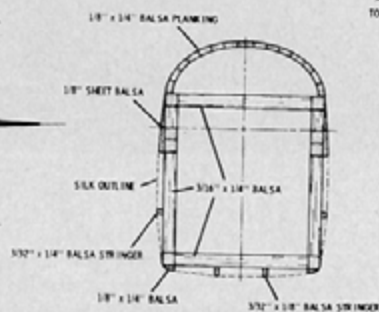
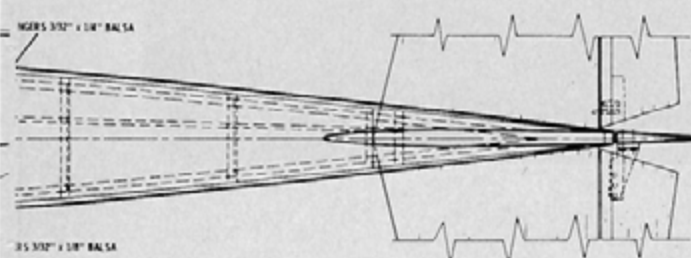
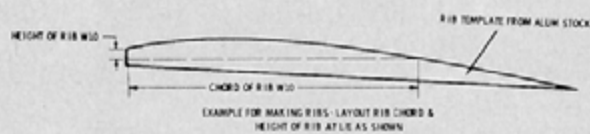
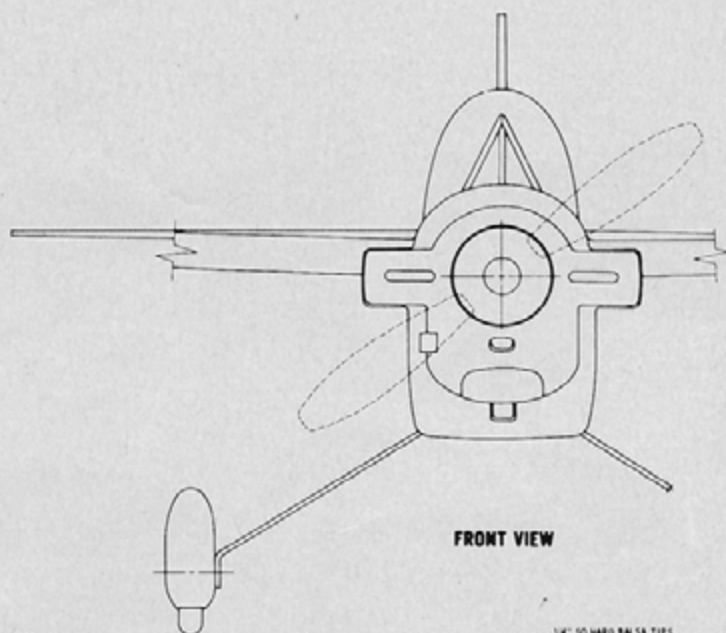
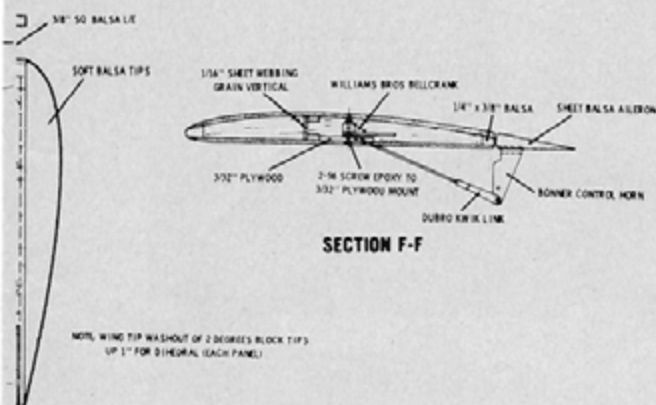
THE Dick Ohm Special was designed for competition under the scale section rules of the National Miniature Pylon Racing Association. This event as conceived by the East Bay Radio Controller's Club, and has been adopted by the A.M.A. The object of the N.M.P.R.A. rules is to create a multi-plane pylon racing event patterned after the full size Goodyear midget racers. So far, the Goodyear pylon races that have been held here in the Northwest have created more excitement and interest than anything that has happened to R/C in many years.

My first Goodyear pylon racer was the Aeolus—designed by Dick Riggs, an old friend and flying partner back when he hailed from this corner of the country. I think that the Aeolus was, and still is, one of the best designs available for pylon

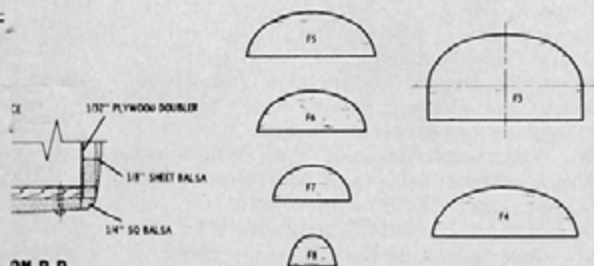
racing. However, as I began to accumulate experience competing in the Goodyear races I felt that the handicap start penalty imposed on the non-scale over the scale designs was simply too hard to overcome, and if one was to seriously compete, a scale design was in order.

Being able to evaluate most of the available designs at first hand under actual racing conditions enabled me to establish the parameters that I felt would lead toward a proficient competition ship. With most of the basic design requirements in mind I began a search for the scale Goodyear pylon racer that would best fit this bill. After much research, and many sessions with fellow modelers, the ship that seemed to qualify best was the NGH Stoppelbium and Ohm Special carrying racing number 15. This ship had a reasonably high aspect

ratio wing, a generous nose and tail moment length combined with a fairly clean profile. The original ship had a high rear turtledeck, rounded vertical fin, and a slightly longer wing span than the model version shown. For the races in 1947 the fuselage was modified by cutting down the rear turtledeck, squaring off the vertical tail, and refairing the front cowling to reduce drag. Other modifications included shortening the wing span and the installation of a bubble canopy. With the modification complete and the ship repainted in the original colors of red and black trim, the Dick Ohm Special had the classic lines and the basic potential of a winning racer. It is this version that I decided would best fit the design parameters I had established as being essential for a consistent racing contender.

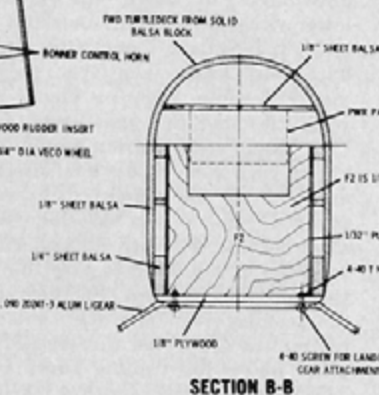
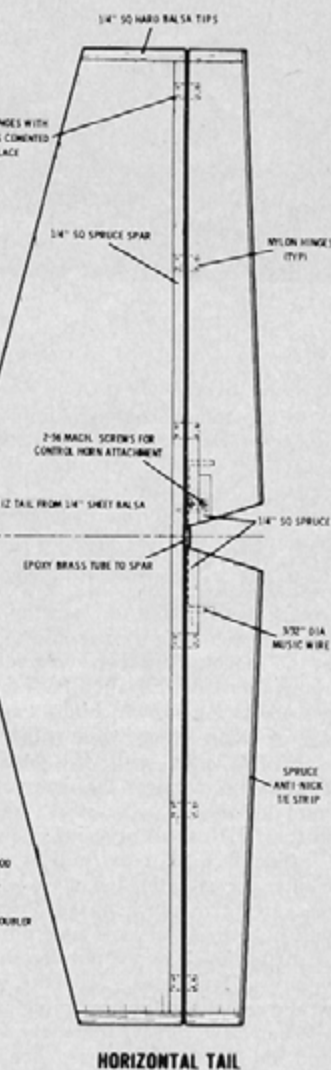


DRS UNLESS OTHERWISE NOTED



TAPER STRINGERS & FAIRING STRIP AS SHOWN. NOTE: ALL BULKHEADS FROM 1/8" SHEET Balsa UNLESS OTHERWISE NOTED

ON D-D



RADIO CONTROL modeler MAGAZINE

DICK OHM SPECIAL

DESIGNED & DRAWN BY: L. ROBERTS

FINED BY: G. FLORES

1 2 3 4 5 6 7 8 9 10



Construction of the Dick Ohm Special is similar to most multi-channel stunt ships with two exceptions, namely, the scale type fuselage and the unitized wing-body structure. I chose the built-in wing design because of the simplicity of construction and the inherent extra strength provided to the whole assembly.

I personally like the looks of fabric over stringer construction used on the full scale airplane, and wished to duplicate the effect in the model. This then dictated the classic built-up sides of $\frac{1}{4}$ " square balsa longerons and stringers, which also has the advantage of being strong while still being lightweight. To start with, the fuselage sides are built directly over the plans using fairly hard $\frac{1}{4}$ " square balsa stock. When dry, add the $\frac{1}{32}$ " sheet plywood doublers on the inside face of each built-up side. Set the sides up over the top view of the fuselage drawing in the inverted position. They will have to be blocked up from the drawing surface to allow for the step in the fuselage upper longerons. Join the sides together and cement in the remaining cross-pieces. When dry, remove assembly from board and add all of the formers. The plywood firewall and landing gear mount can now be bonded to the structure, using an epoxy cement. Tack cement the upper cowl, and rear turtledeck blocks in place and carve to approximate contour. Remove the blocks and hollow them to wall thickness shown and set aside.

At this point, the horizontal and vertical tail can be cut and sanded to shape from

$\frac{1}{4}$ " medium soft balsa sheet. Epoxy the hardwood control horn blocks in place on the rudder and elevator. Install the nylon hinges using the toothpick method of retention. Epoxy the tail assemblies to the fuselage, again carefully checking the alignment.

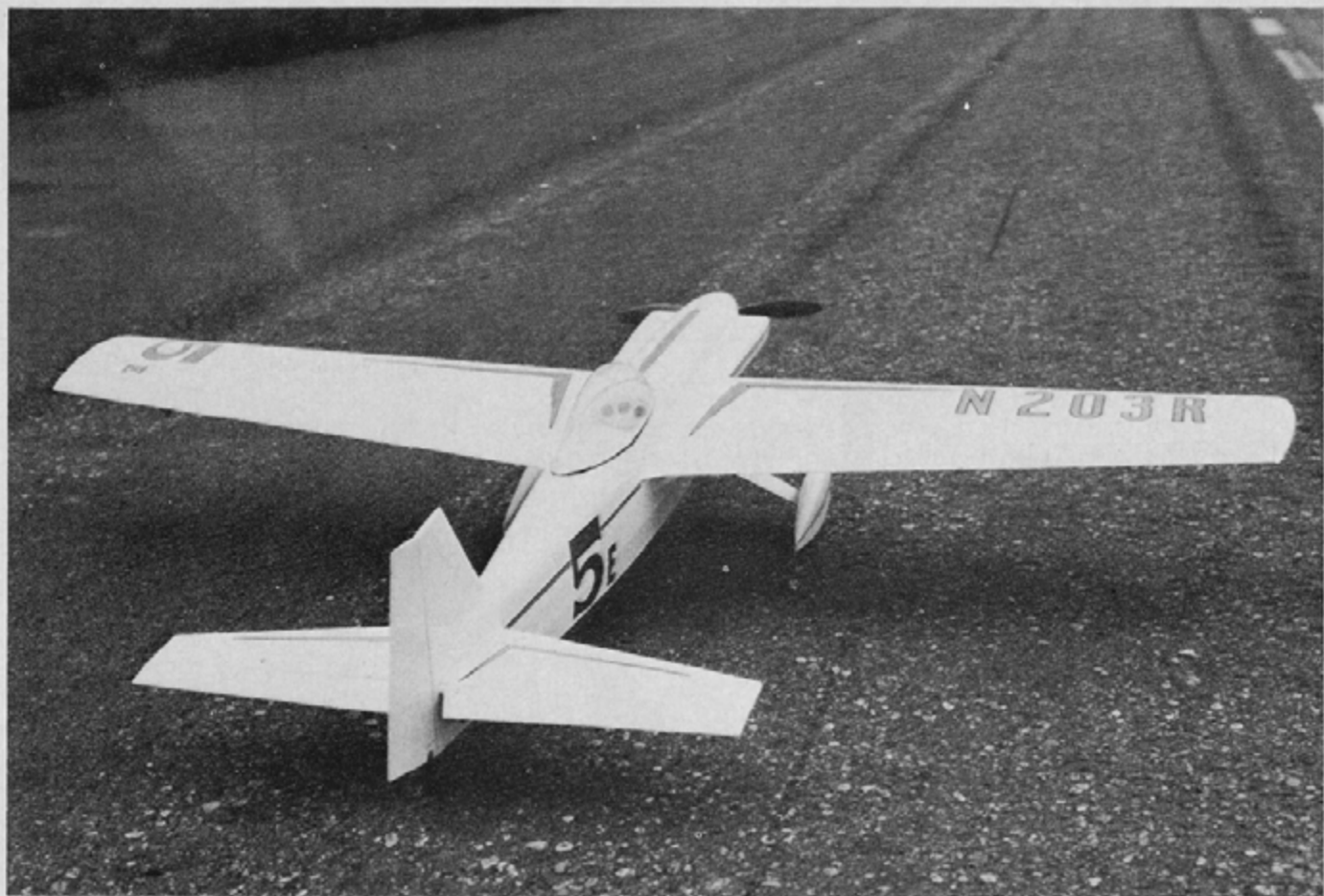
While this is curing, butt join the $\frac{3}{32}$ " balsa sheeting together as required for the wing panels using epoxy cement. Cut out the wing ribs using a metal or plywood template for a guide as shown on the drawings. Pin down the preassembled lower wing sheeting and mark off the spar and rib locations. Cement the $\frac{1}{8}$ " x $\frac{1}{4}$ " hard balsa lower wing spar and the $\frac{3}{8}$ " square leading edge in place. Add the wing ribs and the upper spar. Glue the $\frac{1}{16}$ " sheet vertical grain spar sheeting between each rib. When this assembly has dried, install the aileron bellcranks, and pushrods. Cut a tapered shim from $\frac{1}{8}$ " sheet balsa stock which fits under the trailing edge of the wing to give the required washout as shown on the drawing. With the leading edge and the center section rib pinned down and the tapered shim in place under the trailing edge, apply the $\frac{3}{32}$ " balsa upper sheeting. When both wing panels have been completed, sand the inboard rib face of each wing to give the required amount of dihedral. Butt join the wing sections together using epoxy cement and add the tip blocks. Cover the center section of the wing using one layer of glass cloth, hinge the ailerons and hook up the linkage.

Block up the fuselage to the work table and epoxy the wing to the upper fuselage longerons. Check the wing and tail alignment carefully at this point, inasmuch as there is no method of adjusting alignment of the assembly later. Spot cement the upper cowl and turtledeck blocks in place and rough sand to contour. Cut out the $\frac{1}{32}$ " plywood facing for the aft surface of the cowl. Spot cement the plywood cowl facing to the firewall and drill through both parts for the $\frac{1}{8}$ " diameter alignment dowels. Remove the plywood facing and cement it to the cowl block. Extend the previously located dowel pin holes in the plywood facing and epoxy the $\frac{1}{8}$ " alignment dowels in place. Slip the cowl assembly on the fuselage and sand the entire fuselage to final shape. Remove upper cowl block and install fuel tank (I used 6 oz. metal Dmeco tank) and Tatone engine mount. Epoxy upper cowl block in place, apply $\frac{1}{8}$ " balsa sheeting on forward sides of fuselage and the side stringers. This completes the basic assembly, leaving the R/C equipment installation and miscellaneous details, which are covered on the drawing.

The prototype used the Orbit quad proportional radio and was installed as shown on the drawing to give the approximate correct CG location.

After installing the R/C equipment and checking out the control surfaces, the final silk covering should be applied to the fuselage.

The next step, of course, is the finishing



of the model which I feel is important, both in earning those all important handicapped start points and displaying your craftsmanship. I find that most of my ships invite many favorable comments as to the quality of their finish and what technique was used in the finishing. The particular steps I use in finishing are not new — they have been covered many times in past articles. However, if the reader is new to this game or just to refresh the memory, I shall point out what I feel are the major points.

First I always have various shape and size sanding blocks handy, including a hard rubber block for contours. Sand the model completely, except the covered area, with a fairly coarse paper, usually 4/0, using a hard rubber sanding block. Then brush on two coats of clear lacquer sanding sealer over the entire airplane. This raises the fuzz on the wood and seals most of the grain. Sand the entire ship again, this time using 5/0 paper. At this point, if a really good finish is desired, the brush must be retired and the spray equipment utilized to spray two coats of white automotive lacquer primer-surface. (I use Fullers or Dupont.) Sand lightly between coats with 5/0 paper. Next switch to 400 wet or dry and dry sand the last coat of primer. Looking at the model with oblique lighting, check to see that all of the grain and pivots are filled. Sometimes one more thin spray coat of primer is required. When satisfied that the ship is smooth enough, lightly sand again with #600 wet

or dry to remove any scratches left by the coarser sandpaper.

For the final finish coat, I use Dupont Dulux automotive enamel which has some distinct advantages over lacquer, which is that the enamel applied over the top of lacquer base will not have any tendencies to soften the undercoat. This then, means that the finish coat of paint will be as good as the last prepared undercoat. I have seen many otherwise good finishes come out poorly because of the softening of the undercoating due to the strong solvents used in thinning the final coat. Other advantages the enamel has are its excellent covering qualities combined with the ability to flow out evenly which of course gives a very professional looking finish with a minimum of effort. Often the question is asked about the fuel resistant qualities of enamel which I can only say that it is completely resistant to any of the commercial fuels after the final coat has had at least one week to dry.

After the racer has been finished to your liking and the equipment installed, we come to the final stage prior to flight testing. Actually, all of the basic airframe alignment has been designed to be built into the structure which leaves only the control surface deflection and the CG location to check out. With the CG located as shown on the drawing, the ship is very easy to fly and should present no problems. As has been noted before, the control surface deflection should be adjusted to a minimum and all systems checked for free-

dom of movement. With all of the pre-flight checks completed, including a run in of the engine to assure power reliability, the time is at hand for the first flight.

Since this ship is designed primarily for the Goodyear racing event, let's discuss the flight testing based on the procedures used for flying a typical race. Have an assistant hold the model tail down and with the throttle wide open, hold about 50% up elevator and full right rudder prior to the moment of release. At the flagman's signal the ship should track straight ahead with the tail lifting off almost immediately. Then with a gradual relaxing of right rudder as the initial starting torque decreases, the ship should gently lift off straight and level. You will find that the acceleration of the racers is really terrific and after a takeoff run of only 30 feet your ship will be airborne and really moving out, attaining the airspeed you'll need for that first pylon turn. If you're a newcomer to this Goodyear pylon racing, you'll find that a different type of piloting skill is required than with the multi-stunt ships. As with anything else, to become proficient, many hours of practice are required to develop the particular flying skills needed for this type of flying. However, I think that once a modeler has competed in the Goodyear event, he'll find that in any phase of R/C flying there is no equal to the thrills and excitement of Miniature Goodyear Pylon Racing.