



# The **BIG RED MACHINE**

By JIM HAUGHT . . . Named after the author/designer's favorite baseball team, the model and the team were champions last year. BRM took first in A/2 Nordic at the 1975 NFFC in Taft, California.

I do not claim that this is the world's greatest model, but I feel that at least the reader can glean a few hints and tips from my model to further his own Nordic efforts. If this model helps others to gain some of the enjoyment I have from Nordic flying, then it has been an unqualified success.

## CONSTRUCTION

The wings, of course, are the heart of any Nordic, and therefore must have considerable time lavished upon them. Spare no effort to make them as strong and evenly matched as possible.

The ribs are cut from very hard C-grain sheet. A few of the lightest ribs should be saved for use in the wingtips, where strength is not critical and weight saving is important. Be sure all ribs are beveled carefully and fit exactly. With the type of construction shown, no force-fitting or looseness of parts is tolerable, as warps will inevitably follow.

The I-beam spars are assembled before being placed on the plans, using 5-minute epoxy for assembly. After the wing framework is assembled, the spars are sanded flush with the ribs.

Titebond or other aliphatic resin glues are recommended for all basic structural joints. It gives the joints a very slight degree of flexibility. By the way, all joints should receive an extra coat of glue just prior to final sanding.

The wing-wire tube is installed in both wing halves simultaneously to assure good alignment. Liberal use of 5-minute epoxy is advised to secure the tube.

The original wing was assembled on a jig shaped to fit the bottom contour of the airfoil. It would be a good idea to fashion a simple jig from thin cork and illustration board. It is a great help in aligning the structure during construction and makes sanding the wings much easier.

The dihedral is installed HLG style, by beveling the tip panel rib to fit the end rib of the main panel. The thick end rib will crack on hard impact, popping the panels apart and saving structural damage to the tip.

To insure similar wing halves, spare no effort during sanding. Make the wings as smooth and accurate as possible. If there are variations in the airfoil, the model will be impossible to trim for flight.

Following sanding, the wings must be pre-doped over the entire structure with 4 to 6 coats of thinned, clear dope. Sand lightly with No. 500 grit sandpaper between coats.

Cover the wings with Japanese tissue, preferably in Cincinnati Red and white. Use thinner to attach the tissue to *all* ribs and outlines, and shrink the tissue with rubbing alcohol.

Give the wings one coat of thinned clear dope, then attach a second layer of tissue to the undersurface of the main panels. This strengthens the main panels and greatly increases resistance to damage from stubble or other minor obstructions.

Following the addition of the second layer of tissue, give the wings 4 to 6 coats of thinned clear dope, and set aside for at least a week to allow the finish to cure and the surfaces to achieve a "set."

After the wings have cured, steam in about 1/4 inch wash-out in each tip, and 1/16 washin in the right main panel. The washin is a spin-preventative measure (model glides to the right).

Stabilizer: Very light wood should be selected for the ribs. The stab will NOT be truly durable . . . it must be light. A 1/4 of an ounce is a good weight figure to aim for. Cover with a single layer of Japanese tissue, and finish with 3 coats of very thin clear dope. A coat of cyanoacrylate adhesive at the leading and trailing edges of the stab center can

increase durability of stress areas.

Fuselage: NFFS sells excellent fiberglass booms, which make fuselage construction a snap. Simply attach the boom to the plywood keel with 5-minute epoxy, add the front pod pieces and fair the boom to the front of the fuselage with Epoxolite fillet material. Finish the front end with several coats of lacquer sealer, topped with a coat of colored epoxy.

point, using Cerrobend for ballast material. Check all warps and incidence settings to be sure they are as indicated.

Flying: It's rather a difficult proposition to trim a Nordic by hand gliding, but there really is no other way to establish initial trim, aside from taking a rather large gamble and towing the model without any glide tests.

About all one can expect to accomplish in glide tests is to assure sufficient incidence and ascertain that the glide circle is in the proper direction and not too small in diameter. What we desire to avoid is too little incidence, causing a dive, and/or too small a glide circle, causing a spin. If the model is a little stally to begin with, that's fine . . . If not, it may destroy itself on the first tow trial.

After hand gliding has been completed, set the model's timer for about 15 seconds, and place the autorudder in a neutral position for tow. If all goes as it should, only minor incidence and rudder adjustments will be needed to complete flight trim.

Once basic trim has been accomplished, practice as much as possible with the model to learn its habits and performance potential. Again, I do not claim the model is a world beater but I think it will perform well for you in all conditions. If it performs as well as its namesake, then it will DEFINITELY be a world beater, and I hope a source of many hours of enjoyable flying. ●