MISS COSMIC WIND

A fast building, fast-flying Half-A pylon racer that will give you a competitive edge in this season's racing circuit. By Nate Rambo

● There is no question that any racing event is exciting. That truth is indisputable, whether the event be sports cars, airplanes, model airplanes, or any other activity. Perhaps it's the man-and-machine against "man and machine" aspect that raises the heartbeat. Whatever the cause, the electrifying result is the same for all race competitors.

Unfortunately, many model flyers have never actually tried model airplane racing, or have made only limited attempts at the sport because of the attendent problems and drawbacks in most existing racing events. Half-A pylon racing offers a solution. It is a racing event which differs from others in that it is relatively inexpensive and takes only a fraction of the effort normally required. Because of this, novice and expert flyers across the United States tried the event for the first time in 1975 and found it had plenty to offer. They found that a racer could be built in less than a week for an unbelievably low cost. The engines were cheap, could be easily started, and gave just as dependable runs as the big Schneurle forties. The models could be hand launched and, as a result, could be raced on very poor fields. Furthermore, officiating the races was simple and there was little haggling about who finished in what position. There were many other advantages to mention for Half-A racing; but, instead, let us discuss the Cosmic Wind.

Miss Cosmic Wind was designed to compete in the Half-A pylon event. The model was developed from Hirsch's scale drawings of the real shoulder wing racer (N36C). This text provides information to assist the reader in constructing and flying the model. Also provided are tips on setting the racer up to be really competitive in the 1976 pylon race circuits. It should be pointed out that the ship meets all of the 1976 RCM Half-A pylon racing rules.

The fuselage is started by cutting the sides and bulkheads to shape. They are then assembled to form a basic fuselage frame. The various stiffeners and doublers can be cemented to the fuselage sides before, or after, this fundamental assembly. A great timesaver in framing the fuselage is to use "Hot Stuff" or a similar cyanoacrylate adhesive. Critical joints should be reinforced with gussets of epoxy or a conventional air-drying adhesive prior to completing the structures.

The fuselage box structure is finished by adding the plywood landing gear mount, the top and bottom sheets, and nose blocks. Use soft wood for the balsa pieces to save weight. The fuselage is then sanded to shape either by hand or by machine. Some builders may prefer to sand the nose differently than shown so that a spinner can be used. Prior to electing that change, the builder should consider the fact that a spinner can be a source of problems. It may not run true at 20 to 25,000 rpm and it is something which may come loose in a race.

The tail group pieces are laid out and cut to shape next. The dorsal fin, vertical stabilizer, and horizontal stabilizer should be sanded and then bonded in place. The elevators should be cemented to the hardwood elevator spars. These and the fixed rudder are not added to the model until after covering.

Next, make the nuisance items, i.e., the upper and lower hatches. The plan shows that both of these items tongue, or dowel,

into place in the rear and are then held with screws in the front. The upper hatch screw goes directly into the motor mount as shown; the two bottom hatch screws secure into the landing gear mount plate. Proper attachment of the hatches is critical because they hold various components in place. The author's years and years of experience and expertise indicate that controlled flight is difficult after a hatch has blown off and a component like the flight battery has fallen to the ground!

The wing is built next. This structure, like the fuselage, is simple and can be rapidly built. The ten ribs are cut out and glued to the two spars. The leading edge and rear spar are then added. The bottom sheeting is two 3" wide pieces of 1/32" balsa butt-glued together prior to gluing to the structure. "Hot Stuff" works fine for all this bonding. It helps at this point to add some 1/16" sheet vertical webbing to tie the upper and lower spars together. This helps produce a very strong and rigid wing. The upper sheeting is then glued in place plus the wing tips. Sand the resultant assembly. Do not add the trailing edges and ailerons yet.

A lazy man's alternative to the built-up wing is the Ace constant chord wing. This can be substituted but the fuselage sides will have to be cut out slightly differently because of the different airfoil shape. Be sure to follow Ace's instructions on assembly and reinforcement of their wing if it is used. No sheet planking is necessary.

After construction of the wing assembly, it is slid into the fuselage and epoxied in place. Next, bend two aileron torque links from .075" music wire as shown. Cut the balsa trailing edge pieces to length and groove them to take the torque links. The links are put into place and the trailing edge pieces epoxied over them. Wipe the torque links with oil prior to this assembly to prevent sticking to the epoxy. The ailerons are cut to shape but are not installed at this time.

The airplane is now ready for covering. MonoKote is ideal except in the case where an Ace foam wing has been utilized. In this case, use a "lower temperature shrinking" plastic such as Solarfilm. The elevator should be installed during the covering process. MonoKote is excellent for hinging this surface. The rudder is glued in place and covered after the elevator is hinged. The ailerons may now be installed using MonoKote or regular hinges. An hour spent at this time to add numerals, decals and other decorative marking is well invested. This type of effort really changes the total appearance of any model.

After covering, fuel-proof the engine and tank compartments with some epoxy paint or polyester resin. Make, or buy, a landing gear and bolt this in place. The Williams wheels are attached using 4-40 socket head screws for axles.

No model is complete without a pilot and canopy. Be sure to add these. In fact, the canopy must be installed to meet the rules. The best way to bond the canopy in place is to run a razor around it lightly piercing the MonoKote, then press the canopy firmly in place so that it touches the balsa top block and use "Hot Stuff" for adhesion.

The Cosmic Wind is now ready for radio installation. Although most post-1969 radios will fit, the Kraft 2 or 2-3 "bricks" may cause troubles. If this type radio is to be utilized, the fuselage should be built slightly deeper than shown on the plans. Another point on radio installation is that the battery pack should be smaller than the 550 ma size in order to reduce weight. With these small models, there is always a weight battle, and it's hard to keep the Cosmic Wind weight down near the 20 ounce minimum rule specification.

MISS COSMIC WIND

Designed By: Nate Rambo

TYPE AIRCRAFT
1/2A Pylon
WINGSPAN
31 Inches
WING CHORD
6¾ Inches
TOTAL WING AREA
209 Square Inches
WING LOCATION
Shoulder
AIRFOIL
Symmetrical
WING PLANFORM
Constant Chord
DIHEDRAL, Each Tip
None
O.A. FUSELAGE LENGTH
27½ Inches
RADIO COMPARTMENT AREA
(L) 5¼" X (W) 2¼" X (H) 1⅝"
STABILIZER SPAN
12 Inches
STABILIZER CHORD (incl. elev.)
4 Inches (Avg.)
STABILIZER AREA
46½ Square Inches
STAB AIRFOIL SECTION
Flat
STABILIZER LOCATION
Mid-Fuselage
VERTICAL FIN HEIGHT
5¼ Inches
VERTICAL FIN WIDTH (incl. rudder)
3¼ Inches (Avg.)
REC. ENGINE SIZE
Cox T.D. .049/.051
FUEL TANK SIZE
1 Ounce
LANDING GEAR
Conventional
REC. NO. OF CHANNELS
Two
CONTROL FUNCTIONS
Elevator & Ailerons
BASIC MATERIALS USED IN CONSTRUCTION

Fuselage	Balsa and Ply
Wing	Balsa
Empennage	Balsa and Hardwood
Weight Ready-To-Fly	20-24 Ozs.
Wing Loading	13.8-16.5 Oz./Sq. Ft.

It is important that the controls of any racer be rigged for proper sensitivity. The amount of movement is a compromise which provides enough low speed control for landings without providing too much control during the high speed flight. Therefore, the Cosmic Wind control linkage geometry should be built so that full elevator travel is approximately 1/4" in each direction from neutral. Proper aileron travel should be approximately 1/8" in each direction.

The next subject is engines. The engine used most in Half-A pylon racing is the Cox Tee Dee .051. This is a jewel of an engine, but it must be modified for pressurization prior to installation in the Cosmic Wind. The modification is a simple process which is fully described in section "E" of the Cox operating instructions supplied with each Tee Dee. The instructions also provide invaluable information about removing gaskets to increase compression, removal of varnish, and other operating tips.

There are many minor things which can make an engine run well. First, remove the screen over the venturi. Next, substitute a Kirn needle valve assembly for the Cox assembly (Kirn also makes a pressure back-plate). If a friend is good at reworking engines, have him check the piston and cylinder fit.

Another avenue to a good engine, and probably the best, is to buy one of Dale Kirn's custom engines. These engines are loosened-up and polished for racing. They really turn out the power with little break-in required. A Kirn engine and Fox 40-40 fuel is a hard combination to beat.

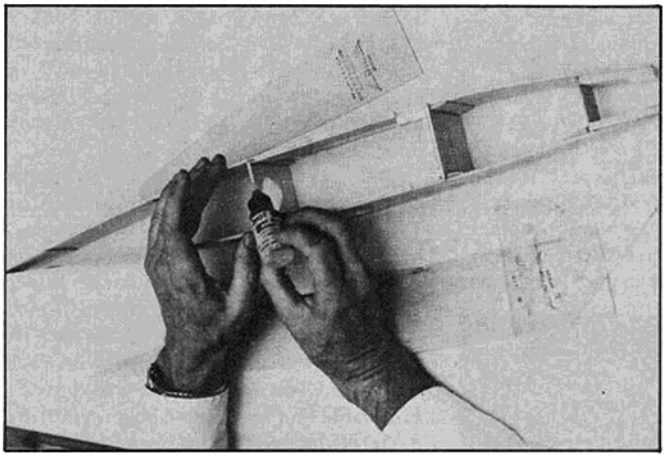
When it comes to fuel tanks, the Sullivan SS-2 is just about the right size. Its rated capacity is one ounce but it actually holds more than the round tanks of the same rated capacity. Install a fixed fuel pick-up tube placed at the bottom so the model can be rolled inverted to kill the engine. Then install a single vent line direct to the engine pressure fitting.

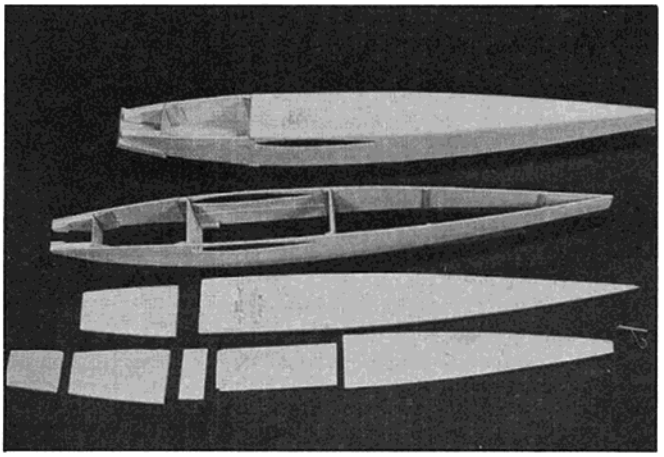
A little experimentation may be required to find the best propeller. The Cox 5/3 grey rigid plastic propeller is a good one to start with. It lets the engine turn close to its rate peak power rpm (22,500) and holds its shape better than the black flexible types.

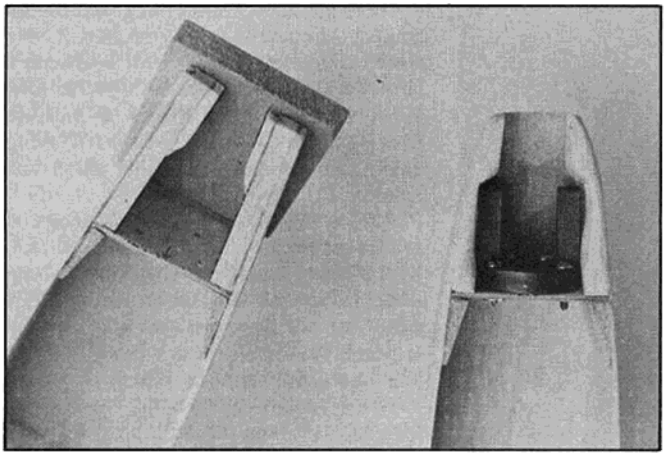
Some flyers, particularly those experienced with big engines, disrespect Half-A engines because of starting troubles and inconsistent runs. The pressurization will correct the inconsistency of runs and cause the engine to peak throughout flight. The best way to overcome starting problems is to use an electric starter. Just prime at the exhaust, pinch off the pressure line with your fingers, and crank with the starter. Be sure to flip the prop once or twice by hand to insure that too much fuel is not in the cylinder prior to using the electric starter. The connecting rod could be bent if this is not done.

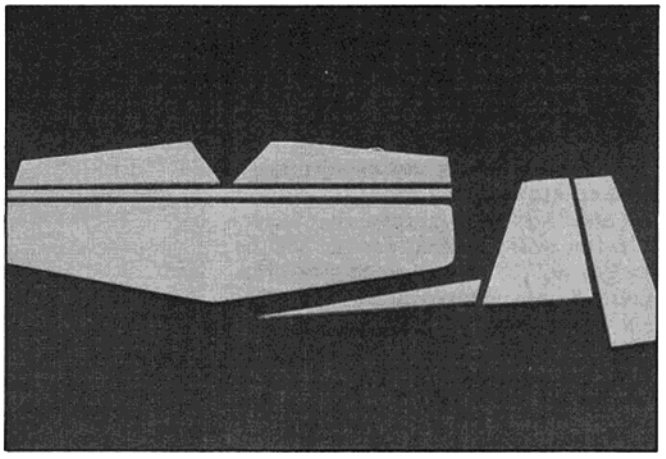
When first flying the Cosmic Wind, the modeler should be patient, particularly if he is not accustomed to the Half-A size machine. It takes two or three weekends to really start to handle the engine and aircraft with any degree of familiarity.

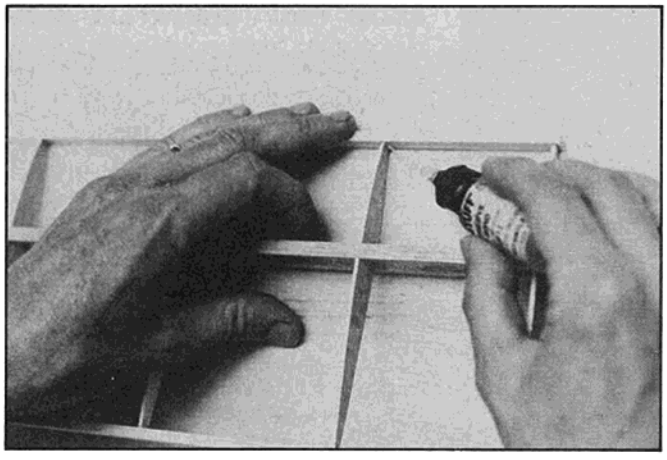
There is one final idea which should be brought out. Persuade some fellow club members to take a few evenings to build

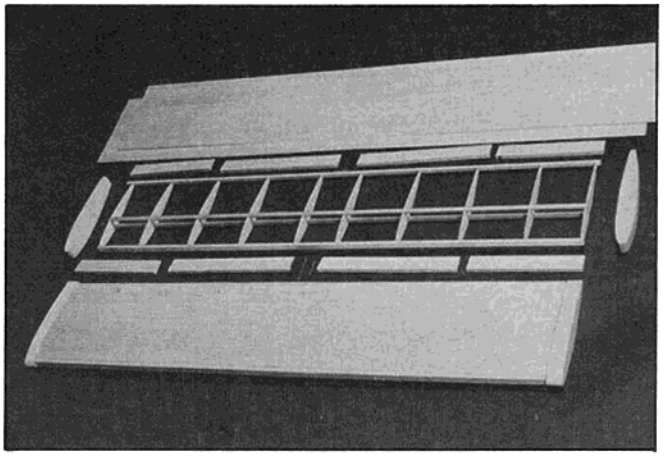


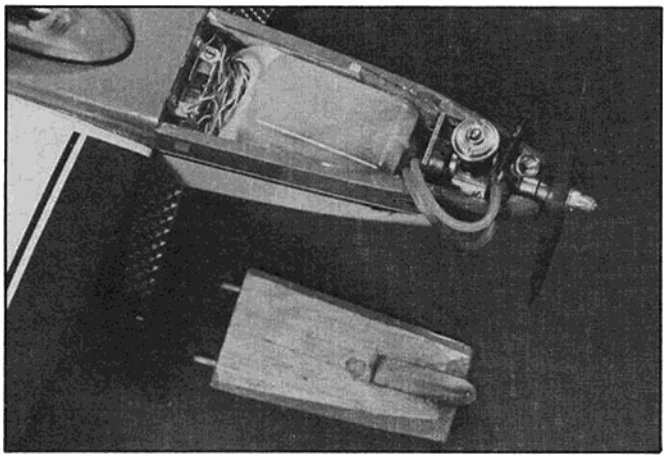


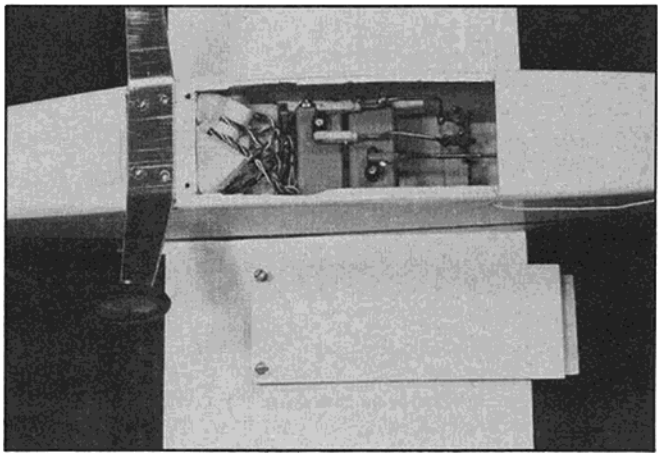












. . . . their own Cosmic Winds, or other Half-A design. This will really help generate interest because fun races, or simulated races, will occur spontaneously at the club field every weekend thereafter. That is when the excitement begins. □

Editing By Hlsat.
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