

Hafadussin

A Pair Of Vintage Type Half-A Racers

By Fred Reese

● These two airplanes were built to meet the requirements of 1/2A racing but are excellent sport flyers for two channel radios and the Ace constant chord foam wings.

During the pioneer days of aviation progress was accelerated by air racing. The designs of the time were unusual, intriguing and very colorful. Many famous aircraft designers began then and formed companies which bore their names. Nieuport, Vickers, Avro, Deperdussin, Bleriot, Bristol, and Curtiss were some of the most famous of these names. By 1913 the Deperdussin "monocoque" racer was the most advanced airplane of the era. The Hafadussin and NRC Racer are 1/2A racers that capture the color and style of those exciting times. I intended the designs for the RCM 1/2A racing class and also for general sport flying. They are especially suited for schoolyards or other small non-improved flying sites. I like the idea of models that can be built in a few evenings and are expendable in case of thumb glitch. Surprisingly though, they are quite durable and are quickly repaired with 5-minute epoxy.

The little racers do fly fast and are quite maneuverable with a good roll rate. In fact, they fly as if they had ailerons yet they will recover to level flight with hands off of the transmitter. Though not intended as trainers, they can be flown by people with only limited experience by using the larger 6/3 or 6/4 Cox props. The larger props will slow the airplanes down as the engines cannot turn up higher rpm. For serious racing pressure would be advisable but not at all necessary for exciting performance.

CONSTRUCTION

Except for the front hatch arrangement, the construction for the two airplanes is the same. Begin by cutting out the fuselage sides, all doublers, the two bulkheads and the firewall. If you are building the Hafadussin, glue on the top front side pieces and cut the doublers to go from the top to the bottom of the battery compartment. Use contact cement or epoxy to glue down the doublers, leaving slots at the bulkhead and firewall locations. Make the firewall slot slightly larger than 1/8" to allow the firewall to be installed at an angle to give the engine about 2° right thrust. Glue in the two bulkheads between the fuselage sides and epoxy the firewall into place, remembering the right thrust. Bind the wire tail skid to the rudder post with thread and, in one step, pull the tail together and epoxy the post between the fuselage sides. Take care with this step so that the fuselage is

straight, the rudder post is vertical and centered down the fuselage centerline. Now add the 1/16" plywood front fuselage bottom and then the 3/32" balsa sheet rear top and bottom. Epoxy the stab and rudder into place.

Now is a good time to add the plywood hatch hold-down pieces. For the Hafadussin use strips of 1/8" plywood, 1/4" wide, epoxied to the firewall and bulkhead across the fuselage. The 1/16" plywood hatch is held down with two small

sheet metal screws. The NRC Racer's hatch is cut from an aluminum soft drink, or beer can, and is held in place with four small 1/4" sheet metal screws. Epoxy four small squares of 1/16" plywood to the inside of the fuselage to receive the screws. The metal hatch can be stripped of paint and left bare metal or painted to match the rest of the airplane. Epoxy a 1/2" wide strip of 1/16" plywood behind the first bulkhead on the floor of the fuselage to reinforce the landing gear mounting. Bend the 3/32" wire landing gear and bind together with fine copper wire and solder together. I used a 1/8" wire axle as the 3/8" Williams Bros. wheels have 1/8" holes. The completed landing gear can be held in place with two "J-bolts" or can be bound in place with wire. The rear of the landing gear is held down with a rubber band over a dowel passed through the fuselage near the bottom. This allows the landing gear to flex on hard landings.

Prepare the wing by first trimming about 3/16" off of the trailing edge in order to match the thickness of the trailing edge stock used. The trailing edge stock is not really necessary, but the added wing area does help the performance and must be added if the plane is to meet the RCM 1/2A midget racing rules. If you choose not to use trailing edge stock, you must reinforce the foam at the rear where the rubber bands cross. Small pieces of plywood, balsa or dowel will work. Sand the center ends of each wing half so that they fit together with the proper dihedral and then epoxy together. The wing tips should also be beveled 45° which will also help the roll rate. The wing can be painted, left unpainted, or covered with Solarfilm or Top-Cote. Be sure to add the strapping tape on the underside of the wing before covering or after painting. Fit the finished wing to the fuselage and add the cockpit fairing. I used black contact paper for the cockpit and the 1 1/2" Williams Bros. pilot head is simply epoxied to the wing.

Either paint the fuselage and tail or cover with Solarfilm, Top-Cote or Super MonoKote. Look at the little Munson book, "Pioneer Aircraft 1903 to 1914" for a wealth of design ideas and color schemes.

Mount the servos, or brick, on pine or spruce beams epoxied across the fuselage. I use 1/16" piano wire for these short pushrods and scraps of 1/16" plywood for the control horns which are then epoxied to the rudder and elevator. I also use "figure eight" sewn hinges using heavy cotton carpet thread.

As indicated earlier, the engine should have about 2° of right thrust to start. You

HAFADUSSIN

Designed By: Fred Reese

TYPE AIRCRAFT

1/2A Racer

WINGSPAN

35 Inches

WING CHORD

6 Inches

TOTAL WING AREA

210 Square Inches

WING LOCATION

Shoulder Wing

AIRFOIL

Semi-Symmetrical

WING PLANFORM

Constant Chord

DIHEDRAL, EACH TIP

2 1/2 Inches

O.A. FUSELAGE LENGTH

25 3/4 Inches

RADIO COMPARTMENT AREA

(L) 9" X (W) 1 3/4" X (H) 2 1/2"

STABILIZER SPAN

14 1/2 Inches

STABILIZER CHORD (incl. elev.)

4 Inches

STABILIZER AREA

54 Square Inches

STAB AIRFOIL SECTION

Flat

STABILIZER LOCATION

Top Of Fuselage

VERTICAL FIN HEIGHT

4 Inches

VERTICAL FIN WIDTH (incl. rudder)

4 Inches (average)

REC. ENGINE SIZE

.049 - .051 Cubic Inch

FUEL TANK SIZE

1 or 2 Ounce

LANDING GEAR

Conventional

REC. NO. OF CHANNELS

2

CONTROL FUNCTIONS

Rudder and Elevator

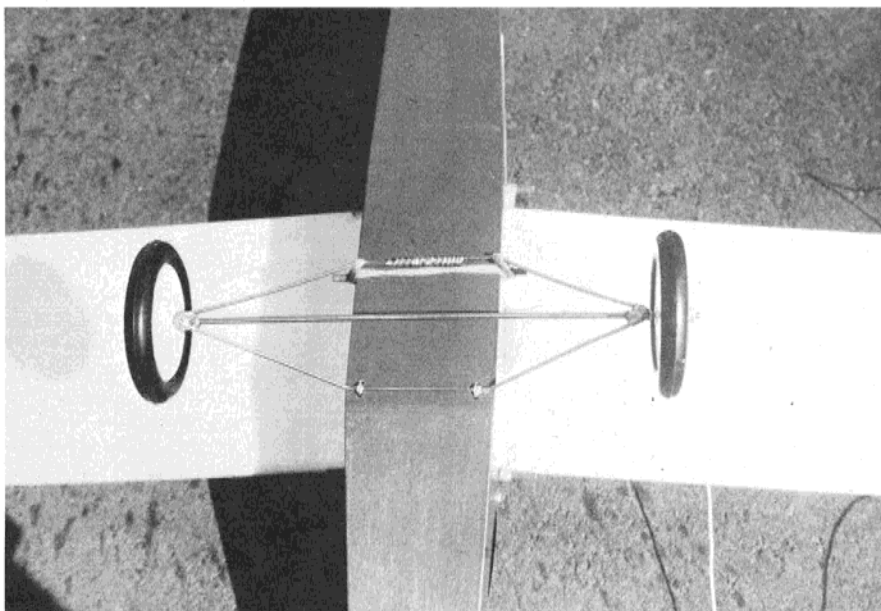
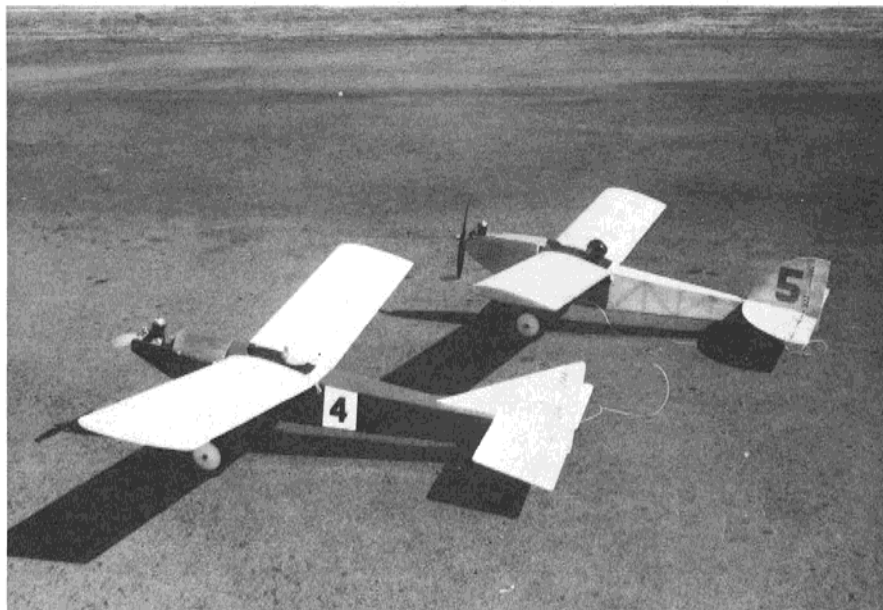
BASIC MATERIALS USED IN CONSTRUCTION

Fuselage Balsa and Ply
Wing Foam and Balsa
Empennage Balsa
Weight Ready-To-Fly 23 Ounces
Wing Loading 16.5 Oz./Sq. Ft.

can determine if more is needed if there is much trim change needed during the glide. The glide and sink rate is fairly fast but control response during the glide is slow. To start, set both rudder and elevator movement to about 1/4" in each direction or 1/2" total throw. You may decide you want more later but this is good until things are trimmed out.

A tail wheel would help for ROG's but I usually hand launch my 1/2A ships for safety reasons. I hate to run down a screaming .049 if it ground loops and heads for other people or planes. Races are started from a hand launch. For best performance use the smaller 5/3 Cox props.

As expected the two airplanes have the same flight characteristics and details could easily be switched or changed to produce different variations of these airplanes. If you do alter the shape of the rudder, maintain the same height for stability. Fly for fun. □



In the photo above the author's NRC racer is in the foreground while the Hafadussin is in the rear. The "structure" in the aft part of the Hafadussin fuselage and on the empennage is spray paint applied to sheet surfaces with an airbrush.

The photo to the left shows the simple wire landing gear and rubber band shock mounting. Williams Bros. wheels used for low drag profile and light weight. Both of these racers can be built in a couple of evenings due to Ace foam wings and simple sheet construction.

The photo at right shows a Kraft radio installation in RCM's prototype of Fred Reese's NRC racer.

Plenty of room for most modern radios. Front cowling is tin can stock held in place with sheet metal screws. For school yard sport flying use any Cox .049 or .051 engine and tank mount. For all-out Half-A racing, use a Kirnkraft Tee Dee .051 with bored out venturi, Kirnkraft needle valve, and backplate pressure. 1 ounce tank will fit in either racer when pressure is used. Be sure to wrap fuel tank with electric tape to avoid swelling due to pressure.

