

When work began on a flying wing glider design in 1974, which ultimately resulted in the Saracen (RCM April 1976), the idea of a 50" span .40 powered four channel flying wing had not yet entered my thoughts. The Simitar 540 is a result of an evolutionary process which included following the Saracen with a 48" 1/2A Simitar (RCM Dec. 1976) followed by the Simitar XV (MA Dec. 1976) which in turn was followed by the Simitar 503, a four channel, predecessor to the Simitar 540.

After completing the first 503 powered by a Super Tigre .23, it flew in the 1976 Tournament of Champions in Las Vegas as a part of the in-between rounds,

demonstration flying. The second 503 was powered by a K & B front rotor .40. Taking the 503 lines we began to design a fiberglass fuselage that would incorporate the 503 design plus a larger canopy, simulated air intakes, a jet-like exhaust and removable cowl.

Patiently we waited for the wooden plug to be carved, the molds to be crafted and, finally, the first 540 fuselage came out of the mold. It was only a matter of days before the completed ship took form around the new fuselage. I'll be the first to admit that my knees were weak as it lifted into the air. With a K & B .40 at full power, it flies at 90 mph plus; throttled back at 40 mph its a piece of cake. Response to control

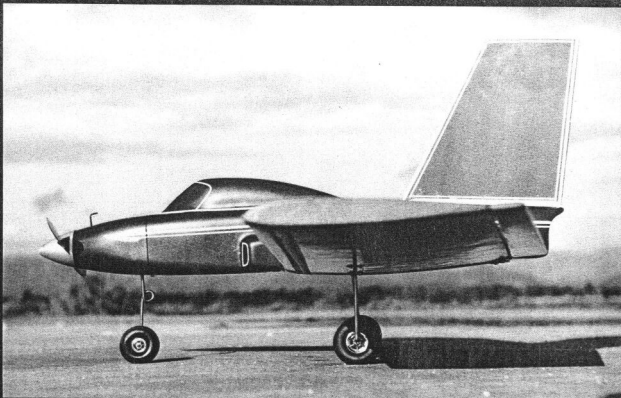
commands is instant. It performs tight loops, turns very tight, rolls instantly, inverts very well, will four point roll as well as vertical roll out of sight. Landing can easily be stretched; I particularly like to pull an inside loop just before touch-down on a dead stick landing.

One morning, late in March, I test flew five new Simitar 540's each one performed without a hitch, and handed the transmitter over to the owners to land.

Though shown with a four channel set-up, the 540 can be flown two channel (to operate the elevons which are a mixture of elevators and ailerons).

For a real hot set-up, we have flown a few 540's with the K & B rear rotor .40





SIMITAR 540

A 50" .40 POWERED FLYING WING THAT CAN TEAR UP THE SKY AT FULL POWER, YET WHEN THROTTLED BACK BECOMES A VERY GENTLE FLYING AIRCRAFT.

By Bill Evans

SIMITAR 540

Designed By : Bill Evans

TYPE AIRCRAFT

Sport Pattern Flying Wing

WINGSPAN

50 Inches

WING CHORD

14" Root - 8" Tip

TOTAL WING AREA

540 Square Inches

WING LOCATION

Bottom of Fuselage Pod

AIRFOIL

Symmetrical Reflexed

WING PLANFORM

Swept T.E.

DIHEDRAL, EACH TIP

1 Inch

OVERALL FUSELAGE LENGTH

27 Inches

RADIO COMPARTMENT AREA

(L) 12" x (W) 3" x (H) 2"

VERTICAL FIN HEIGHT

9 Inches

VERTICAL FIN WIDTH (incl. rudder)

6 Inches (Avg.)

REC. ENGINE SIZE

.40 Cubic Inch

FUEL TANK SIZE

6-12 Ounces

LANDING GEAR

Tricycle

REC. NO. OF CHANNELS

4

CONTROL FUNCTIONS

Elevons (2), Throt. (1), Nose wheel (1)

BASIC MATERIALS USED IN CONSTRUCTION

Fuselage Balsa & Ply

Wing Foam & Ply

Empennage Balsa

Wt. Ready-To-Fly 76 Ounces

Wing Loading 20 Oz/Sq. Ft.

and without landing gear. These are pushing speeds close to 200 mph.

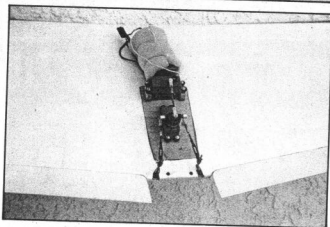
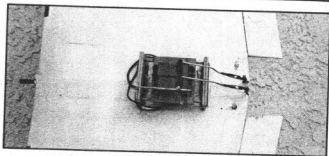
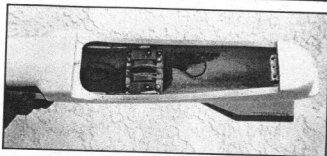
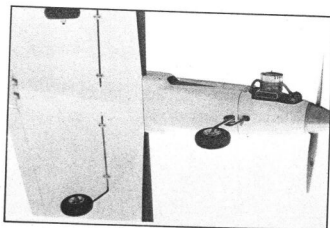
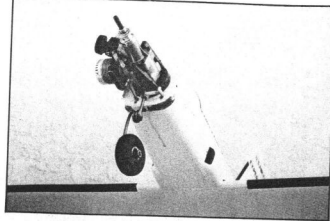
As you may wonder, the designation 540 comes from the combination of its 50" span and engine size .40 --- therefore 540. Which, incidentally, is also the wing area. Using four channels, two to operate the elevons, one for engine throttle and a fourth for the steerable nose wheel, the weight will come out between 4¼ to 4¾ pounds. So

the wing loading is about 20 ounces per square foot.

The one special note about building has to do with the landing gear placement. Set the gear in place per the plans and make sure that the wing sets with about 3/16" of positive with relation to the ground. This is to make for easy take-offs.

My best advice is to build the 540 per plans. If you have a modification in mind,





1ST ROW, LEFT: Cowling removed showing K & B .40 mounted on Kraft mount. Mount drilled for nose gear installation. **RIGHT:** Bottom view of fuselage and wing. With side mounted engine and cowl in place, makes a sleek looking aircraft. Very responsive in maneuvers.

2ND ROW, LEFT: After success of prototype, author turned out this glass fuselage. Very simple radio installation. Servos are throttle and nose gear steering. **RIGHT:** Simple sliding tray for elevons. This type has been used on almost all of Bill's flying wings, both power and sailplanes (see RCM Aug. '75, p. 58).

3RD ROW, LEFT: This wing was set up with Du-Bro's V-Tail Mixer which also works great. Note the MonoKote hinges used which keeps the elevon gap to a minimum. This is a necessity.

do it after you fly it as designed.

Soaring Research, 19216 Calvert St., Reseda, California 91335, can supply Simitar 540 wing cores for \$10.00; 1/64" ply wing sheeting for \$8.00; and the epoxy fiberglass fuselage for \$35.00. California residents add 6% sales tax.

540 CONSTRUCTION METHODOLOGY

Simitar 540 construction is very quick and has been kept simple. The use of a sheeted foam core gives tremendous strength. In a way, a sheeted foam wing is much like a piece of case hardened steel --- that is, the outside skin provides a fairly hard protective shield for the more soft inner core which serves as a shock absorber.

The fuselage, built on a flat surface, utilizes the technique of box construction with triangular stock in the corners which produces rounded and streamline results.

Glue and pin the 1/4" balsa leading and trailing edges to wing cores; make sure to keep the leading and trailing edges free of curves or bends; set these

aside to dry. (A white glue is very satisfactory for this purpose.)

Pin fuselage top down on flat surface. Glue and pin left and right sides to fuselage top.

Glue and pin 1/2" balsa triangle stock in place. (Push pins in through from the outside of the fuselage through the triangle stock this will help remove pins later.)

Glue and pin in rear fuselage tail blocks.

Glue and pin bottom fuselage corner squares in place.

Glue and pin fuselage front bottom.

Glue cowl block material together.

Let fuselage assembly dry.

Trim and sand wing leading and trailing edges so that the sheeting will fit nicely over them.

Cut wing sheeting to shape of wing panel with about 3/8" over size to allow for trim.

Coat wing cores and wing sheeting with a good water base contact cement. (Sig Core Bond or Carl Goldberg's Blue Goo is recommended).

Let contact cement dry per manufacturer's instructions.

Apply wing sheeting to cores; trim and sand where necessary.

Pin and glue on wing tip plates. After they dry, trim and sand to shape.

Join wing panel using a good 5-minute epoxy. Do not attempt to make a perfect joint. Leave some gap so that when the epoxy is applied you virtually have a I-beam of epoxy all the way around the joint.

Apply a 2" strip of fiberglass over the joint; again use epoxy for this purpose.

Locate and mark hardwood gear blocks on underside of wing.

Make cut-out in wing so that gear blocks will fit flush.

5-Minute epoxy gear blocks into wing cut-out.

Cut the elevons from 3/16" sheet stock; trim and sand to shape.

Tack glue the cowl to the firewall and trim and sand to shape.

After the fuselage has dried, trim and sand to shape.

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.60-Size Pattern Designed by Dick Russ

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from page 156/36

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Make your plans now to attend next year's 7th Annual Mint Julep Meet at Rough River, Kentucky and plan to enjoy a fabulous weekend. □

from page 34/32

Cut the air scoops from 3/8" stock, trim and sand to shape. (If the fuselage is to be covered with Solarfilm or Monokote, it is much easier to cover the fuselage and air scoops before the air scoops are glued to the fuselage.) Before gluing air scoops to fuselage, it is important to remove that portion of the fuselage covering where the air scoops fit against the fuselage.

Construct the sliding servo tray to fit your servos.

Final sand all parts and cover with your choice of heat shrink covering; the original was covered with Solarfilm.

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AMA MEMBERSHIP APPLICATION

For Those 19 or Over by July 1, 1978—Check One Only!

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APPLICATION—1978 A.M.A. MEMBERSHIP

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Logictrol Nimbus	135.00	98.	2 no
2 Channel Dual stick			
Cox 8020	99.95	70.	2 no
Futaba FP-2GA	109.95	75.	2 no
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Cox 8033	229.95	148.	3 yes
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Futaba FP-4FN S17	269.95	175.	4 yes
Logictrol Nimbus	309.00	187.	4 yes
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5 Channel Dual stick			
Cox 8054	299.95	190.	4 yes
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Logictrol LRB 2-5	285.00	179.	4 Rxonly
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Logictrol LRB 1-5	310.00	197.	4 Rxonly
6 Channel			
Cox 8060	369.95	230.	4 yes
Cox 8068	479.95	305.	4 yes
Futaba FP-6FN	359.95	227.	4 yes
Futaba FP-6FN S17	319.95	202.	4 yes
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Futaba FP-7G	579.95	392.	4 yes
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SIMITAR 540

from page 158/32

Install control linkage, making sure left aileron control on transmitter results in the left elevon going up and the right elevon going down.

Neutral position of the elevons should be such that the elevons are raised 1/8" to 3/16" above which you would normally expect to be neutral. This will produce a slight reflex.

Install motor control servo and steerable nose wheel servo as shown on plans.

When using the Kraft motor mount, the nose wheel can be mounted by drilling a 5/32" hole vertically through the mount which will serve as the bearing for the nose gear.

Built according to plans, and following the suggested construction sequence, your Simitar 540 building project will result in a rewarding flight experience.

MATERIALS LIST:

Balsa:

- 1 — 3/8" x 3" x 36" (elevons).
- 4 — 1/4" x 3/8" x 36" (wing leading and trailing edges).
- 3 — 3/16" x 4" x 36" (fin and fuselage sides).
- 1 — 1/4" x 4" x 36" (fuselage top).
- 10 — 1/16" x 4" x 36" (wing sheeting) or 1/64" ply sheet.

P-47 THUNDERBOLT

from page 30

... Digital Commander

1-8 radio with Bantam servos and a 450ma battery pack. The wing and tail were covered with silver Solarfilm. The fuselage was finished with silver Hobbyoxy over resin filler, which matched nicely and also as recommended in the instruction booklet. Even though it weighed in at the top end of the recommended weight of 28 ounces, it performed beautifully, doing every two channel maneuver, just like the real T-bolt.

For a fun airplane which will shock the local lead-sled jockeys with its performance, we strongly recommend this model. Our hats are off to House of Balsa for giving the 1/2A enthusiast something to crow about.

NOTE: The review or discussion of any product by RCM does not constitute an endorsement of that product nor any assurance as to its safety or performance by RCM.

RADIO SPECTRUM

from page 27/24

digital. I know there are guys looking at shaft encoders, stepping motors and all

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