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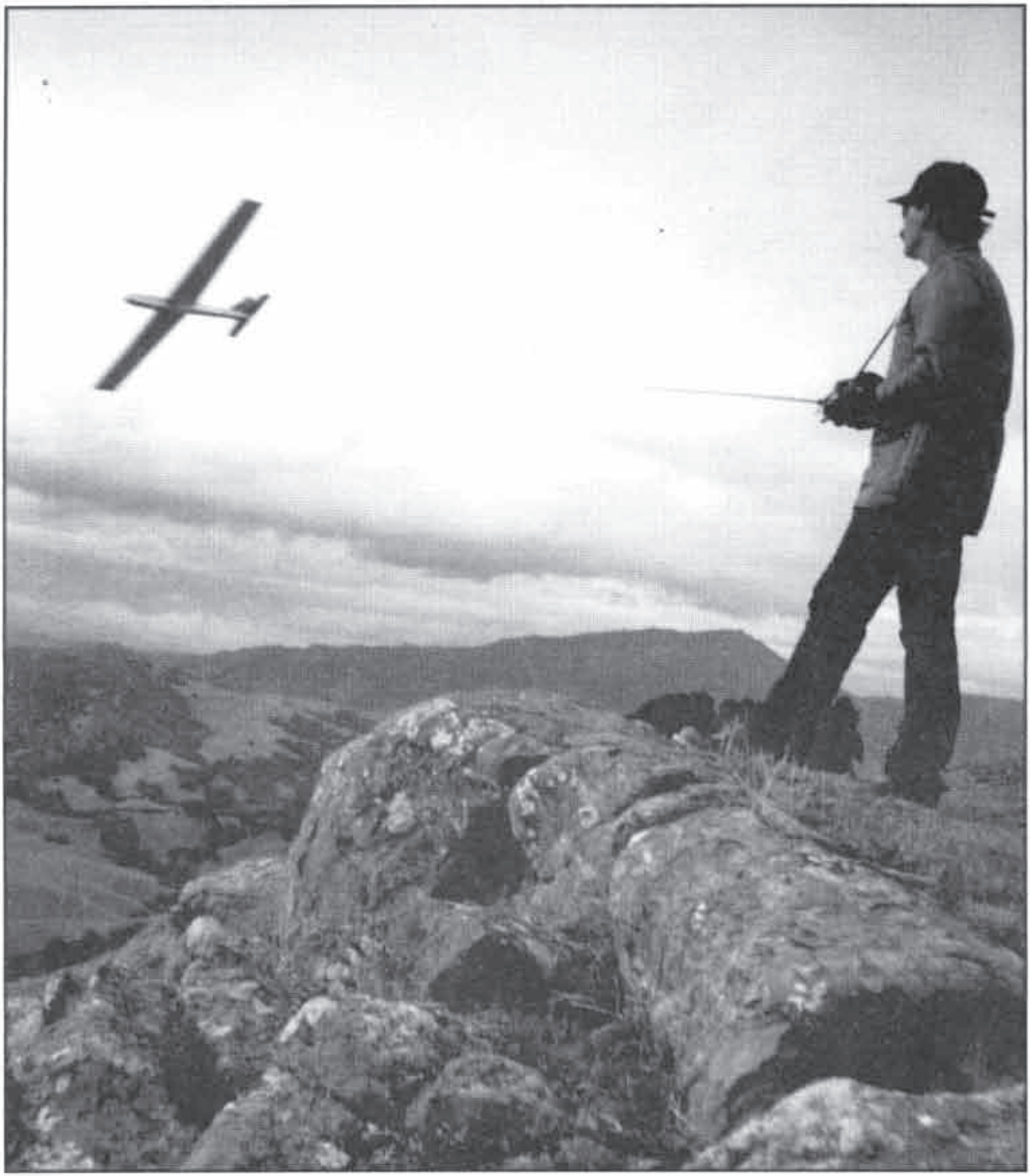
R/C SOARING DIGEST

Radio controlled

THE JOURNAL FOR R/C SOARING ENTHUSIASTS



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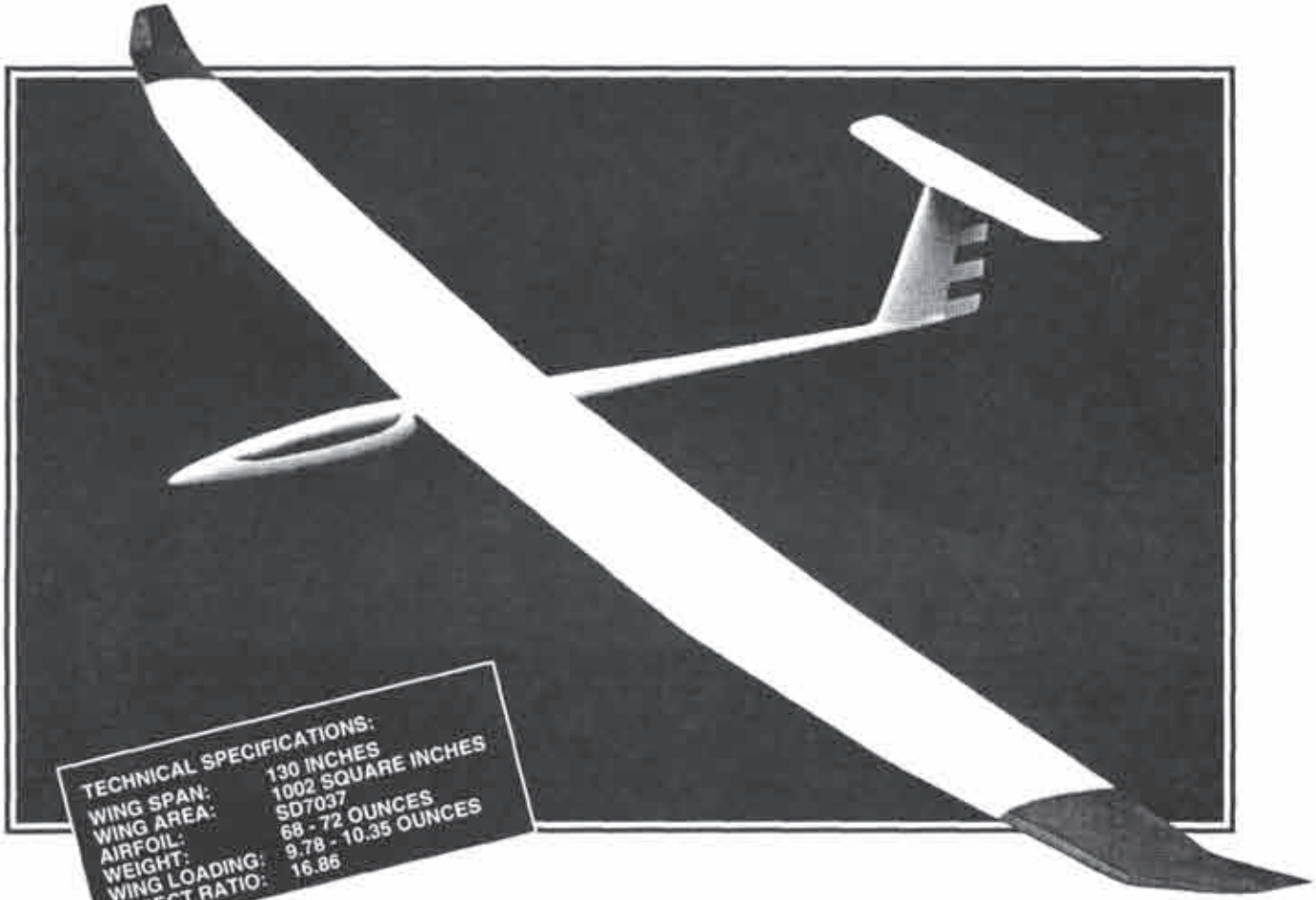

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THE JOURNAL FOR R/C SOARING ENTHUSIASTS

FLYING THE ELBOW

Bill Swingle of Pleasanton, California flies a Foameron at an inland site in the San Francisco bay area. Called the Elbow, it is reachable only by foot.

Photography by Roy Axford.

R/C Soaring Digest (RCSD) is a reader-written monthly publication for the R/C sailplane enthusiast and has been published since January, 1984. It is dedicated to sharing technical and educational information. All material contributed must be exclusive and original and not infringe upon the copyrights of others. It is the policy of *RCSD* to provide accurate information. Please let us know of any error that significantly affects the meaning of a story. Because we encourage new ideas, the content of all articles, model designs, press & news releases, etc., are the opinion of the author and may not necessarily reflect those of *RCSD*. We encourage anyone who wishes to obtain additional information to contact the author. *RCSD* was founded by Jim Gray, lecturer and technical consultant. He can be reached at: 210 East Chateau Circle, Payson, AZ 85541; (520) 474-5015; <jimpeg@metzone.com>.

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Artwork
Gene Zika is the graphic artist who designs the unique ZIKA clip art.

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..... **1/5 Scale Pilatus B-4** ..... Jerry Slates
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On-Line Articles - Great articles originally written for the printed version of *RCSD*.
Bookshelf Listings - A listing of recently published books of interest to aeromodelers.
Complete RCSD Index, 1984-1998

The Soaring Site

Event Coverage

Three sailplane enthusiast events are now available for on-line viewing at the *RCSD* web site:

1) Reporting on ***Elmira 99***, Dave Garwood has captured the action and essence of this 5th annual scale and aerotow event. For those of you who would like to attend next year's event scheduled for June, 2000, contact John Derstine at (717) 596-2392, or <johnders@postoffice.ptd.net>.
2) Reporting on the ***1999 Mississippi Valley Soaring Association (MVSA) Gateway Soaring Open***, Mark Nankivil takes us behind the scenes as fliers from several states dual it out at the Emerald View Sod Farm. For those of you interested in finding out more about this yearly event, contact Mark at <nankmc@ibm.net>, or (314) 781-9175.
3) Last month, Dave Sanders reported on the ***ISR Cajon Pass Spring Power Slope Scale Festival '99***, with photography by Shelby Sanders. That report is now available for on-line viewing with *new* action photography by Shelby, capturing the essence of this 2nd annual event. For updated information on next year's festival, contact Dave Sanders at <daw1@access1.net>, or (949) 248-2773.

In addition to doing all the web weaving required to provide us with event coverage on-line, web masters, Bill & Bunny Kuhlman, have updated the "Build Along" section to include parts 1 & 2 of their 4 part series, Modifying and Building the MB Raven.

When the other "Build Along" series are summarized, they'll be available, as well. In the meantime, for those of you who would like to take a sneak peek at Steve Savoie's U-2, check out Dave Garwood's report on Elmira 99.

And, for those of you that don't attend events, and are more interested in information on the subject of sailplanes and soaring, we hope you enjoy this issue of *RCSD*, as we pick up where we left off last month!

Happy Flying!
Judy & Jerry Slates

Congratulations

25k Pin

1. Dudley Dufort
2. Mike Bamberg
3. Jim Thomas
4. Rich Spicer
5. Scott Gradwell
6. Mike Gervais

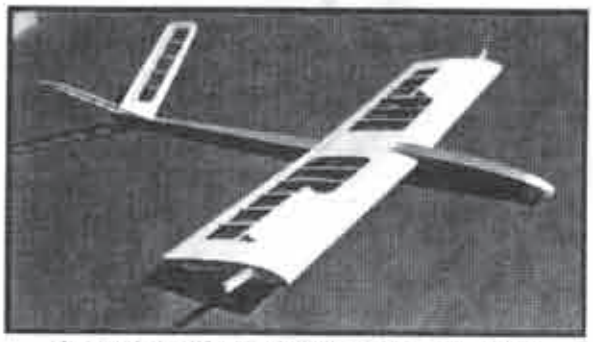
50k Pin

1. Jim Thomas
2. Mike Bamberg
3. Rich Spicer
4. Scott Gradwell
5. Mike Gervais

Montague Cross Country Challenge - June 2000

Jer's Workbench

Jerry Slates
P.O. Box 2108
Wylie, TX 75098-2108
(972) 442-3910
RCSDigest@aol.com



Low tech model "Flattopper" nearing completion.

Low Tech Design & Construction Rudder, Elevator, Spoiler Model RES - Part V

Flattopper is almost complete. All that's left to do are the wing panels.

Last month, we discussed making the fuselage using only plywood and 1/8" square spruce. While the construction was a lot of work, because of all the little parts that had to be cut and glued together, it was well worth the extra effort. The fuselage is very strong and exceptionally light. Of course, it is also likely over-engineered! There is no fear of putting fingers through the fuselage sides when pulling back on a highstart.

After working with the plywood and 1/8" square spruce, I did come up with a few creative ideas when constructing the next model.

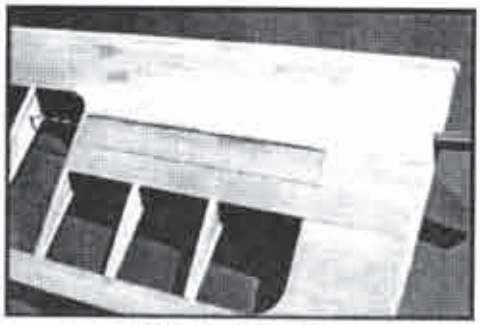
I am a bit concerned that the control surfaces are not big enough. If they're not, I'll need to make another set down the road. This is how we learn and, for me, it's part of the fun when designing and building our own models.

The last item constructed were the spoilers. I have never been fond of using one servo and pull strings in order to activate spoilers. They never seemed to work to my satisfaction. So, just as I did on the Paragon built last year, I've used 2 sub-micro servos, one on each spoiler. (See figure 1.)

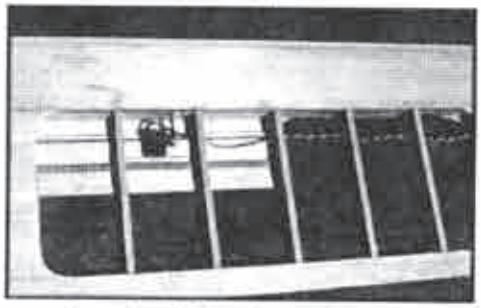
Each sub-micro servo was glued to the bottom of each spoiler. A rod was constructed to hold the servo arm. When the servo is activated, the rod will hold the servo arm; the servo glued to the spoiler will rotate up. The spoilers will only move 45 degrees.

Over the years, I have found that most fliers want their spoilers to rotate to 90 degrees. However, at 90 degrees, most models will drop the nose, coming in at a very steep landing angle. I like to be a little gentle. Hence, at 45 degrees the spoilers will slow the model, and kill some of the lift; if I'm not coming down fast enough, a little down trim or down elevator can be applied, without getting into any trouble.

Let's go fly! ■



Top view of spoiler.



Servo installed on bottom of spoiler.

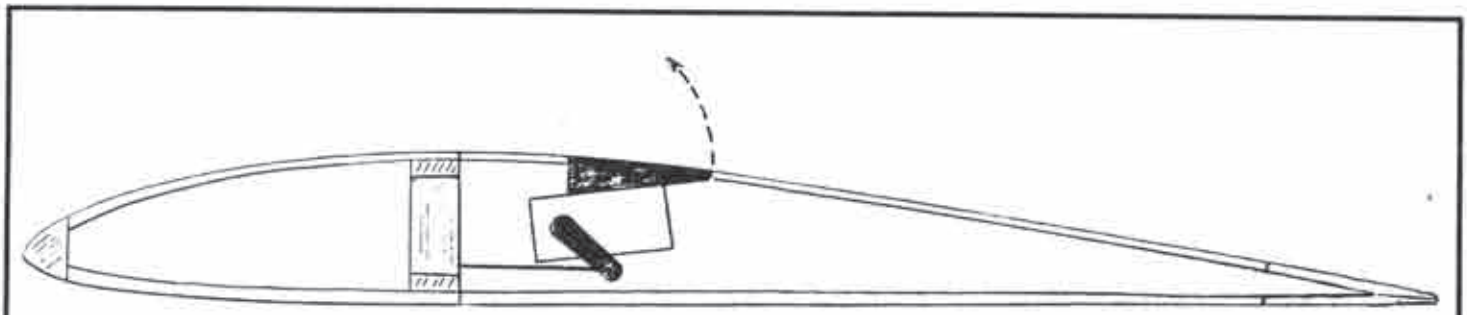


Figure 1 - Servo Installation for Spoiler

on the Wing

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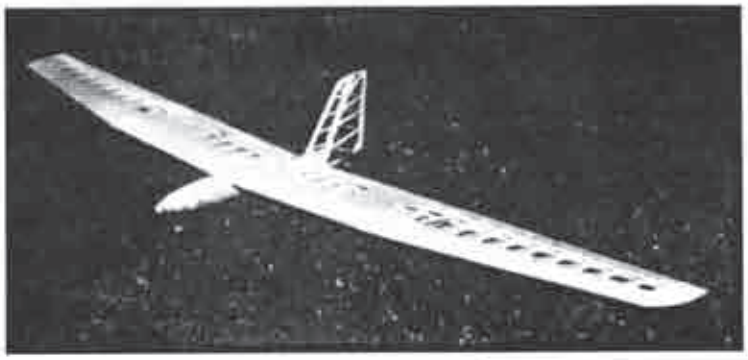


The modified MB Raven, ready for covering.

Modifying and Building
The Model Builder Raven
Part 3 — Constructing the Fuselage, Fin and Rudder

With the wing framed, the majority of the MB Raven construction is complete. This month we tackle the fuselage, fin and rudder.

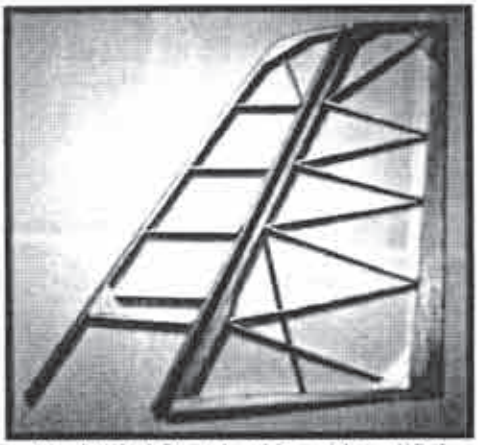
For those accustomed to tailed aircraft, the MB Raven fuselage appears truncated. Despite the appearance, the fuselage is streamlined. It's also easily built and incredibly strong. The short overall length is actually an advantage, as its contribution to inertia in pitch and yaw is exceptionally low. The recess in the bottom of the fuselage places the tow hook very close to the CG, so there is little leverage to drive the wing upward in pitch during winch launches.

Because we raised the wing to make its upper surface flush with the top deck of the fuselage, the template for the fuselage sides is different than what appears on the plans. The discrepancies are not much, but they are noticeable. The fuselage is a bit deeper beneath the wing and the wing saddle is of a different contour, the upper decking must follow the upper surface of the airfoil, and the former at the rear of the canopy must be moved a fraction of an inch forward to clear the leading edge of the wing.

As with the wing ribs, we used aluminum flashing material to create the templates for the fuselage sides. All interior fuselage parts — oak nose block, balsa formers and compression blocks — were fabricated with a table saw, radial arm saw, and sanding bars. Machinist squares were used throughout construction to assure the fuselage sides were always aligned and vertical.

As mentioned in our column last month, the servo to elevator connection for this version of the MB Raven is somewhat problematic. The elevator is in two parts, and each side is driven by its own control horn. We cut $^1/_{16}$" plywood control horns to the outline indicated on the plans, then notched them so they fit below the elevator rather than above. A small length of brass tubing serves as a bearing for the clevis pin.

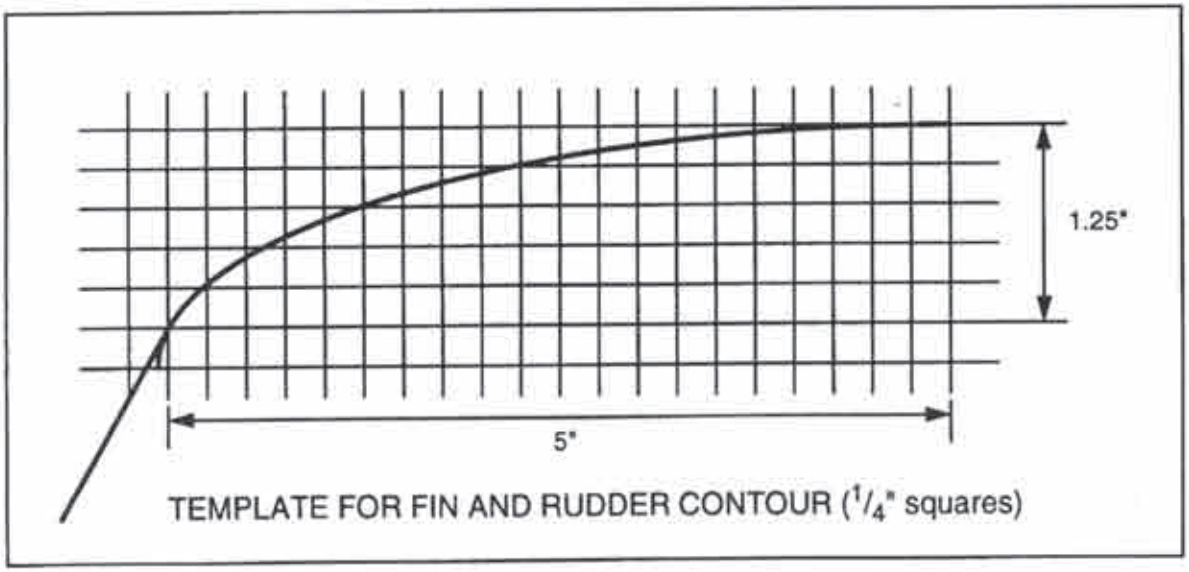
Installation of servos in the fuselage is easy as there is no tray, just rails. Due to the wing being higher on the fuselage, all of the pushrods are placed below the wing rather than curving over it. For this MB Raven, the receiver was moved forward to a position directly behind the battery. The servos are behind the receiver and in front of the leading edge of the wing, mounted at a sloping angle downward toward the fuselage rear. We exchanged the locations of the rudder and elevator servos in order to eliminate an unnecessary curve in the rudder cable. Mounting the rudder servo on the left side allows the cable to traverse the full width of the fuselage and have a relatively straight path to the rudder control horn which stays on the right side. The elevator hook-up utilizes a pushrod and so is very straight forward.



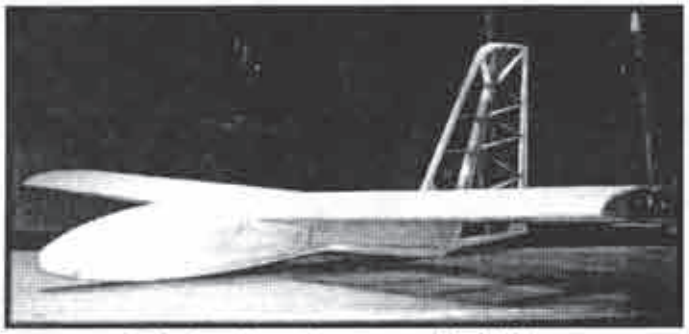
The finished fin and rudder, with modified tip outline. This modification did not change the overall area. The flexible hinge is glued in place after covering.

The elevator pushrod assembly must be connected to the control horns prior to mounting the wing on the fuselage, as all connections are on the under side of the wing. We used separate pushrods for each elevator half. A copper wire wrapped solder joint permanently connects the two pushrods to a single connection with the servo arm. Former 6, a compression block which also serves to join the plywood and balsa body sides, had to be carved out to clear the elevator pushrods and serve as a support for the rudder pushrod conduit. The elevators were temporarily attached to the wing using masking tape while all of the connections were fabricated. (MonoKote® hinges will be installed during the covering process.)

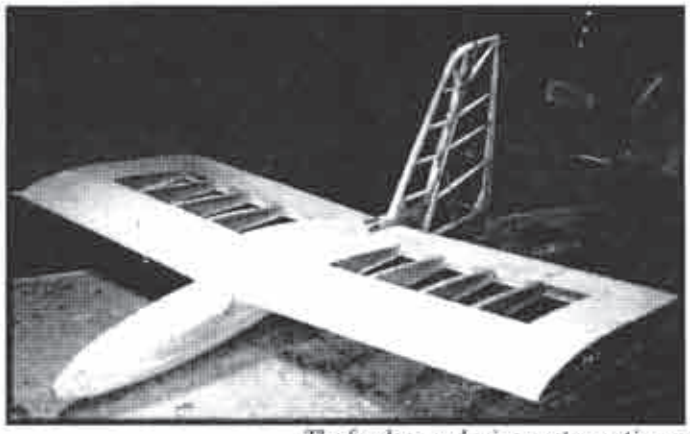
The canopy is cut and formed to match the fuselage framing and to feather into the top deck. The canopy cross-section is a semi-circle. We follow Dave



TEMPLATE FOR FIN AND RUDDER CONTOUR ($^1/_4$" squares)



This view shows the contour of the MB Raven fuselage bottom. The depression under the wing places the tow hook closer to the vertical CG.



The fuselage and wing center section are at this point glued together. The fin and rudder will be permanently attached after covering.

Jones admonition and always tape the canopy in place, so there are no fancy internal latching mechanisms.

We fabricated several concave sanding blocks to assist in shaping the fuselage bottom and canopy areas. We used a Forstner bit and a drill press to cut a hole in a scrap 2x4, then ran the table saw blade so the edge of the kerf crossed the center of the hole. A mixture of five minute epoxy and microballoons was used to join the sandpaper to the inside of the cutout. The first, 2 1/4" in diameter, was used to shape the canopy once we had planed and rough sanded the outline. Such sanding blocks are very easy to construct, so we made several more, each 1/4" smaller in diameter. The smallest has a diameter of 1/2", to be used for shaping the leading edge of the fin.

The aileron servo cables exit the wing at the center of the top surface, right behind the spruce leading edge and rear canopy frame. From there they go down the fuselage sides, below the rudder and elevator servos, to the receiver. We seldom do anything within the fuselage cavity except change battery packs, so this additional wiring is not in the way.

Because of the assembly schedule, we started construction of the fin and rudder before the fuselage was complete. The vertical fin and rudder are lightweight structures with quite a bit of cross-bracing to prevent the covering from wrinkling. The fin is essentially a flat plate airfoil of narrow chord with a rounded leading edge. The rudder is large, and due to its shape it must be built using a piece of trailing edge stock as a jig.

To match the added wing tip extensions, we constructed the upper portion of the fin by laminating 1/16" x 1/2" balsa sheet around a scrap pine form. The combined fin and rudder area remains the same as on the plans. The FrameMaker® arc function produced a very nice elliptical template for this purpose, and we've included it here on a 1/4" grid for easy duplication. The top of the rudder is a piece of 1/4" sheet. The leading edge of the fin was sanded to a semi-circle cross-section with a 1/4" radius concave sanding block. The laminated curve of the fin was sanded to this shape as well. The top of the rudder was then sanded to match the extension template contour and the 1/4" radius of the leading edge, with a smooth transition to the trailing edge.

The wing is mounted to the fuselage by epoxying the wing to the two compression blocks and the wing saddle. This joint, since it has such a large surface, is strong enough to withstand winch launches without pulling the fuselage from the wing. Once the wing was in place, a balsa block was shaped to transition from the rear of the canopy to the high point of the wing, and a piece of 1/8" sheet decking was fitted to transition from the high point of the wing back along the base of the fin.

An Airtronics adjustable tow hook was installed as called for on the plans. This lightweight assembly consists of an aluminum alloy channel through which a small nut passes, and the tow hook has a nut placed on its threaded section. The tow hook is screwed into the nut in the channel and then locked in position anywhere along the length of the channel by using the second nut to tighten the assembly. We've replaced the original hook with a piece of 1/8" music wire, bent to a 90 degree angle and threaded with a 4-40 die. A 4-40 nut must be filed down in thickness and width to fit in the channel, but the resulting installation is more than strong enough to take full power winch launches without bending. Unfortunately, Airtronics no longer produces this item, and we have been unable to find a matching extrusion.

Next month we tackle covering and flying.

The first and second installments of this series are now available on the *RCSD* web site. Just follow the "build-along" link on the *RCSD* main page which is at <http://www.halcyon.com/bsquared/RCSD.html>.

The plan set available from Bill Northrop's Plan Service includes a copy of the magazine construction article. If you have specific questions about construction of the modified MB Raven, please contact us at either P.O. Box 975, Olalla WA 98359 or by e-mail at <bsquared@halcyon.com>.

References and sources:

Bill Northrop's Plans Service, 2019 Doral Court, Henderson NV 89014-1075; PH (702) 896-2162 M-F 10A-5P, Pacific, FAX (702) 897-7775 any time.

FrameMaker® is a product of Adobe Systems Inc., 1585 Charleston Rd., P.O. Box 7900, Mountain View CA 94039-7900. FrameMaker® information is available at the Adobe web site, <http://www.adobe.com>.

Model Builder Raven. Dave Jones. *Model Builder*, January 1982.

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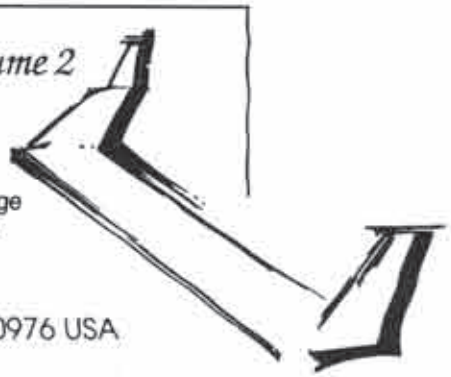

ELECTRIC CONNECTION

by Mark Nankivil
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EPRIMER - Part 3

Jim Gray, the founder of *R/C Soaring Digest*, is still active (very active!) with sailplanes and also partakes of electric flight. Jim sent me the following note that does a great job of expressing what electrics can add to your repertoire:

"Two years ago, I bought a Hobby Lobby "Skimmer" on sale for $79.00 and installed a Speed 600 motor, 7 cell battery pack, speed controller and a 8x4.5 folding prop. WHAT A BLAST!

"That ship has real soaring potential, and I made lots of good flights with it. A fellow club member bought one before I did, and after watching him climb out and thermal almost at will, I just had to have one too.

"A battery charger was needed, so I bought one of the cheaper ones... and it has worked just fine for 15 minute re-charges. It's nice to have a couple of extra battery packs, too, so that you can fly one, charge one, and have a spare.

"Think about launching: NO winch, NO Hi Start, NO retriever, NO tangles lines, NO interference with 'power' fliers, NO hauling or wheeling a big heavy winch around, NO lead-acid battery problems, NO standing in line waiting your turn to launch, etc. How simple can it get?

"The Skimmer stays assembled in the van and, once at the field, I'm in the air in two minutes..... providing my frequency is not in use by someone else. Just pick it up, turn on the motor and it flies right out of your hand with a simple throw. Talk about INSTANT GRATIFICATION!

"Even if you have to keep the wing and fuselage disassembled, in a smaller vehicle, how much work can it be to put it together with six #64 rubber bands and THEN fly?

"With a folding prop, the sailplane is almost as clean as it is without a motor at all, and for someone who wants even MORE performance and an e-launch sailplane that's bigger than a 2-meter, there's an almost infinite choice to suit any exotic taste... and e-ships perform with the best of motorless sailplanes of equivalent span.

"Sure, the wing loading is a bit higher with weight of the motor's battery pack, but I gain on that a bit by using a Futaba receiver that contains an 'on-off' throttleable motor-controller which eliminates a separate speed controller and separate receiver battery. Now, the only 'extra' weight is the motor itself, and the difference between the weight of a receiver pack and the motor battery. We're looking at - maybe - six or eight ounces here.... and who flies anymore with a wing loading of under 10 oz. per sq. ft. Anyway, which is what the Skimmer's flying weight turned out to be... and that's PENETRATION potential.

"I'm talking about simple, clean, easy and almost instant FUN! I used to be 'purist', but those darned electrons turned on a new light in my head!

"Oh yeah.... ONE MORE THING: missed that thermal, getting low, gotta land? NAW.... just open the throttle and climb for another try! You've got more than five minutes of power available, and you can use it in small bursts, all at once or in any combination. I try to save a little bit of battery reserve power to assist in landing when my judgment isn't what it should be.

"When are you going to join us?! "

* * *

The Skimmer is still available from Hobby Lobby. Be sure to get a copy of their latest catalog and also take a look at their extensive line of imported electric models and accessories.

I also received a note from Lee Murray who is a prolific contributor of good articles here in *RCSD* and also has the excellent PC-Soar flight prediction software available (take a look in the classifieds for further information). Lee has some useful experiences with electric flight that are well worth sharing with you. In his own words...

"My introduction to using electric power came with the purchase of an Airtronics Eclipse. The model used a can motor with something like a 3:1 gear drive and a 12.5" diameter folding prop. At times, the models would climb fairly well taking a little over a minute to get to winch launch height. Then the model would fly around fairly slowly if you wanted any significant flight time. The typical flights with a 7 cell 900 mah battery were about 15 minutes using the rest of the battery capacity for climbing when appropriate. Two climbs to altitude were easily achieved with some to spare. There were some flights longer than a half-hour but these tended to be rare for me. At first I used an AstroFlight on-off relay for motor control and as a prop brake. The sudden on and off power pulses did bad things to the countershaft gear in the gearbox - the plastic gear would turn on the prop shaft. I was going through a couple every season. I purchased an Airtronics speed controller with BEC (battery eliminator circuit) that put an end to the gear stripping problems. This also allowed me to take the receiver battery pack out of the model which added some performance. About this time others in the club (Valley Aero Modelers) got interested in electrics and purchased better equipment that really opened my eyes. Fran LeClercq purchased a Slegers Electric Storm and Bob Johnson was designing custom models with motors and gear systems he had read about or heard recommended by people at trade shows and electric events he attended. Bob probably has the best flying electric model in the club, and perhaps the state, for climb and thermal performance.

"Another club member, Dave Beck, started doing efficiency tests on motors, controllers and propellers for his solar powered model. With scrounged electronic parts and power supplies, he set up a test bench where he could monitor motor current, voltage, prop RPM and thrust. In addition, Dave had a way to turn motors with a drill press and evaluate motor efficiency with the motor being the generator. Dave has also developed personal contacts with prop manufacturers, distributors and other enthusiasts through the Internet. Dave has earned a string of honors including wins in international postal contests for longest flight times (6 hrs. 1 min. using solar power only - no batteries) over flat land, a solar powered world record and a former solar powered world distance record of 25 miles. You can obtain additional information from Dave's web page at <www.execpc.com/~dbeck/solar.html>.

"I saw myself as playing with a Model T and missing some real performance. After a long time deciding what to buy, I ordered a Falcon 550E and an AstroFlight 05 Cobalt motor, Aeronaut 8"x5" folding prop, New Creations M-60 speed controller w/BEC and Sermos connectors. It all came together with some help from my friends including Fran LeClercq who joined the wing for me. Now I am enjoying 15 second climbs to altitude and soaring performance more like a Falcon 600. I can just get a 7 cell 1700 mah pack inserted under the wing. This pack is sometimes all I need for 40 minutes of stick time when I go flying. There are times when people launching from winches cannot get to the altitude where I'm finding sustaining lift. I'm a satisfied customer you might say.

"My recommendation to a person just starting in electric soaring is to start out with a package recommended by people succeeding in the hobby. Know what you want to do and how much you are willing to spend. If you like getting technical, there are ways to test your ideas.

Pat Mattes' Blue Foamie

In keeping with the "simple is best approach" of this issue's column, I want to present another low cost way to sample electric flight. Patrick Mattes lives in Yoder which is located just outside Ft. Wayne, Indiana. Pat has developed a number of electric foamies and the Blue Foamie is probably his best known to date. The Blue Foamie is a straightforward, simple model with a performance to cost ratio that is quite high. I can't think of a simpler, less expensive way to go electric. A little tape, a radio and a Speed 400 size motor and speed controller, a bit of assembly time and you're all set! I'll let Tim Storey tell you about his Blue Foamie:

"The Blue Foamie is, by far, the easiest plane I've ever put together (that includes several ARFs). I followed the directions without any problem. The designer recommended building

the flat center section with tip dihedral and that's how I built mine. For a three-channel plane, I prefer the strength that comes from a flat center section. The final ready-to-fly weight: exactly one pound (16 ounces). I calculated a 11 ounce/square foot wing loading.

"My 11 year old son Ben held the plane while I ran up the throttle. After feeling the pull of the Speed 400, with a smile on his face, Ben pronounced, "She'll fly". And fly she does, right out of my hand with only a gentle toss. Climbs out with respectable authority. Slightly touchy on the elevator during the first flight; slid the battery pack a bit forward on later flights and that calmed her down. Not a speed demon, but keeping her in close can keep you busy. Turns in about a fifteen foot diameter and loops from level flight. About half throttle sustains level flight. Flight times somewhere between four and five minutes depending on throttle use. With this set up, the Blue Foamie does not lack power and yet lands at a jog. I haven't tried it, but one could easily catch the Blue Foamie in their hand. This is not recommended with electric planes where an accidental bump of the throttle would be very bad for the catching hand!

"There are only two slight problems noted. The trailing edge is razor thin and therefore easily damaged and rubber bands are already making a fairly deep dent in the leading edge (the trailing edge is protected by a piece of balsa as per instructions). I think both of these problems could be solved with a little more packing tape in the right places without adding appreciably to the weight.

"The set up on my model is:

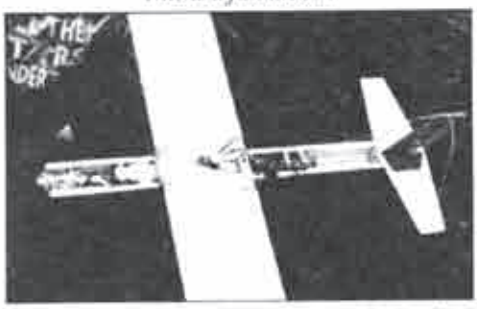
Motor/Prop - Graupner Pico Set
(#3320 Speed 400 6V motor
with Cam 6x3 folding prop)
Battery Pack - 7 Sanyo 500AR cells
w/ Sermos Connectors
Speed Controller - Jeti JES10
Hard Wired to Motor
Receiver - Hitec RCD Mini 535
Servos - 2 - Cirrus CS-21 Sub-Micro Servos

"All in all, the Blue Foamie has a very high fun-to-time-and-expense ratio. I look forward to night flying the Blue Foamie under the lights in the empty corner of the Home Depot parking lot."

The first Blue Foamie that I saw was one flown by fellow MVSA club member Brad Young. Brad had heard about the Ft. Wayne Freeze Fly and ordered his shortly after. Brad's Blue Foamie is a bit different in that it has ailerons but the concept remains true to the simple philosophy. So Brad, it's your turn:

"I first learned of the Blue Foamie when reading announcements about the Fort Wayne Freeze Fly Electric Fly-In in February 1998. Pat Mattes had developed a Speed 400 plane that was quick and simple to construct and that all entrants would build it and fly it in the same day at the Fly-In. The entrants were to bring their own receiver, mini-servos, motor, speed controller and a 7 cell 500AR or 600AE battery pack. The model would be flown in events that included pylon racing, aerobatics and those that survived, a little combat. I had originally considered driving from St. Louis to Ft. Wayne to join in the carnage but other events at home prevented this.

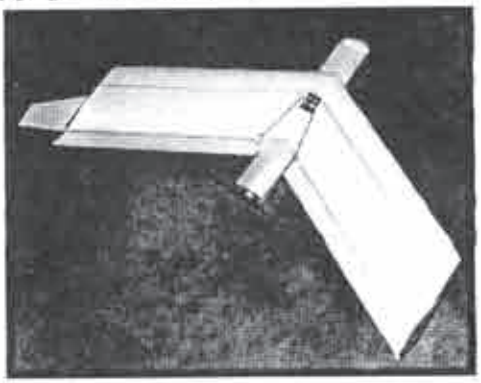
Brad Young's aileron equipped Blue Foamie. Aileron servo is a FMA S80 and tail feathers are moved around by Hitec S-50 size servos. This is a fun model!



Close up of the Blue Foamie's innards. Brad's version uses a bit more wood than an out of the box. Note the ply motor bulkhead/motor mount and 1/64" ply used on the wing to handle the rubber band "rash". Can't get much simpler!!

"The reception and excitement shown by the participants encouraged Pat to offer these quick building planes to others on the E-Flight mailing list. I bought mine with the intention of expanding the aerobatic capabilities by adding ailerons to the normal rudder and elevator controls. Other modifications I made were to reshape the horizontal and vertical stabilizers to make them more appealing to me. I added 1/64" play where the wing hold down dowels go through the fuselage to reinforce them. I used an old Futaba 4 channel receiver with the built in speed controller and a pair of MPI MX50 micro servos. The ready to fly weight with a Graupner Speed 400 6V motor, Graupner prop adapter, Graupner 6"x4" prop and 7 - 500AR cells is 15.1 ounces. A newer receiver and speed controller would probably reduce the weight by another ounce.

"When I attended the Land of Lincoln Electric Fly-In, I purchased another Blue Foamie to build the standard polyhedral wing and compare the flight qualities of the two wings. While my aileron wing may have improved the roll rate somewhat, I never really liked the way it performed pure aileron rolls. I have come to enjoy the polyhedral wing's flight qualities the best with its interesting snap rolls and great tracking loops from level flight. I occasionally add simple landing gear by just taping them to the bottom of the fuselage using the same packing tape used in the construction of the model so that I can practice touch and goes on a paved runway. The landing gear does cut into the flight time and reduce the aerobatic capability so I generally fly without it. Normal flight times without the landing gear are about 4.5 minutes of spirited performance with the 500AR pack and 5 to 5.5 minutes of more tame flying with a 600AE pack."



Finally, here's a photo of Pat's latest version of the Blue Foamie. It's a flying wing and Pat has flown it in both tractor (motor in front) and pusher versions and prefers the pusher version. Pat is not planning on kitting this version but there's no reason you can't convert a regular Blue Foamie kit and do it yourself. Any way you look at it, you'll have a fun, inexpensive model to take to the field with you.

Pat has Blue Foamie kits available for:

1 Kit - $16.00 + $4 S& H
2 Kits - $37.00 (includes S&H)
3 Kits - $54.00 (includes S&H)
4 Kits or more - contact Pat directly

Pat Mattes
9732 Lafayette Center Road
Yoder, IN 46798
http://members.aol.com/pimatte490/models.html

Remember to have fun and keep your fingers out of the prop!

Good Health and Good Lift!

■

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Here we are in August already! A good part of the summer is gone, and I hope you have been enjoying yourselves and making the most of it. Many of you in the South are cooling your heels indoors in nice ccccccool air ccccconditioning (perhaps building or flying on a simulator?), while the rest of us have been trying to get in some *real* flying.

When you catch your next thermal, DO remember NOT to take your eyes off your model when you're flying high! By now, you all should know why!

It occurs to me that there are a few things required, which make it possible to compete in a serious aerobatic event. I've given this a lot of thought because unfortunately, I don't have all of these necessaries and so can't even begin to think about competing for now; perhaps next year... In the mean time, I will have to be content with snapping some photos...

Serious Aerobatic Competition

What follows are the minimum requirements for a serious competitive aerobatic pilot (not in any particular order). He must have:

1. A good aerobatic sailplane.
2. The time to practice the required maneuvers.
3. The piloting skills needed to fly the various maneuvers.
4. An adequate towplane.
5. A tow pilot ready, willing and able to fly the towplane.
6. A suitable flying field easy to get to and not too far away.

It's not all that easy to come up with all these necessary ingredients needed to hone one's aerobatic skills!

The way the guys in Germany do it is that two or more aerobatic enthusiasts team up together and take turns flying the stunt glider(s) and the towplane(s). That way, each can have several aerobatic flights in a short flying session. (It takes but four or five minutes to get towed up and to fly the aerobatic routine.)

That's all it takes - just two enthusiasts! I'd bet that sooner or later a few "teams" will be springing up here and there and before you know it, aerobatics will take hold over here. It's just a matter of time before someone in this part of the world would like to try a little friendly competition.

I have planned a really nice trip to Germany this month. I will go armed with cameras and lots of enthusiasm! First stop will be a scale airtow fun-fly in Rödermark near Frankfurt. There I will see some 60 beautifully scaled out LARGE sailplanes being towed by Alex Frisch with his 1/3 Wilga, Gerhard Bruckmann with his 1/3.5 Piper Pawnee and who knows what else? It's sure to be a wonderful get-together where we will meet many old and new friends.

We will then go on to the Wasserkuppe for a couple of days during the week and fly with a few guys who then will move on to compete in the 1999 DMFV Akro-Cup the next weekend.

As the end of this month will be Akro-Cup time in Germany, I thought this might be a good time to have a good look at the 1999-2000 DMFV aerobatic routine. We've covered all the necessary stunts, one by one, so let's put it all together and run through this very interesting required program.

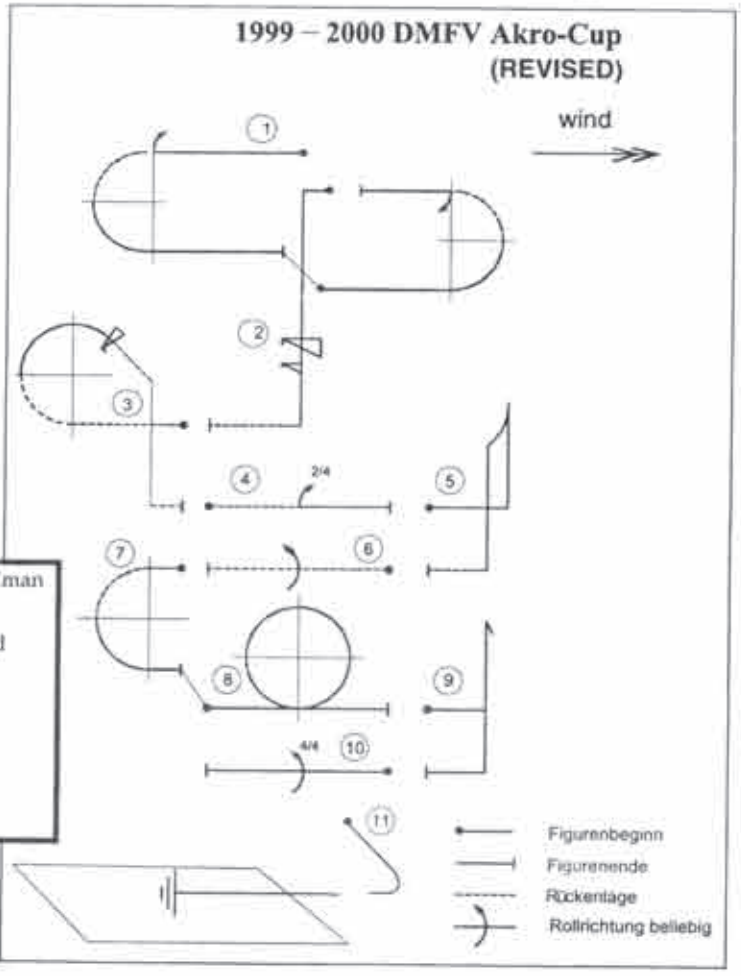
Fasten your seatbelts once again. Here we go!

The German Akro-Cup is beautifully crafted, with slow maneuvers, fast maneuvers and turnaround maneuvers coming one after the other in such a way that airspeed (and altitude), meaning energy, is used to the best possible advantage.

I must confess that at first this stunt routine seemed very difficult indeed, but after flying it on the computer for quite some time this winter (with the Great Planes *Real flight*), I got to know it quite well. I then flew it a few times with my 35% Carden Extra 300 and, when I could get a tow, with my Roedel 1/4 Fox and the wonderful Ripo all-glass 1/3.5 Fox (in Fayetteville this spring). What at first seemed very difficult indeed is now familiar to me and I find it rather fun to try to fly it better and better.

I have found the computer R/C simulator to be an excellent tool for familiarization of what the routine requires - what is needed and how to fly it. Of course, it's obvious that when you actually go out with a real R/C model, that flying of such a model requires different radio in-puts for the various maneuvers. But, it sure helps to have a good idea of what maneuver is coming next, how to do it and how much airspeed is required to fly it. This is where the practice comes in. Whether you are stringing together many maneuvers (as in

Full sized white Pawnee. Photo by Steve Roselle.



1. Split-S followed by an Immelman
2. 1 1/2 spins
3. 5/8 outside loop with 1/2 snap roll to inverted
4. 2-point roll
5. Tail slide to inverted flight
6. Very slow roll to inverted
7. 1/2 inside loop
8. Inside loop
9. Stall turn
10. 4-point roll
11. Approach & Landing

this case) or you're learning something new, *practice makes perfect* holds true once again!

It's important to become familiar enough with this routine so that you know exactly what comes next. It also might help to have someone "call" out the next maneuver just in case you forget what comes next.

By the time the guys in Germany get to the Akro-Cup competition, they know it by heart and call out "start" and "end". Everything in between is done one thing after the other in a flowing and artistic manner. The "prettier" the whole performance looks, the better!

Remember to "place" your maneuvers more or less the way the diagram is drawn: the right and left-hand turnaround maneuvers should be flown to the right and left of the flight "box", while the middle maneuvers should always be flown in the center.

Here we go:

Start Into the Wind

1. Split-S followed by an Immelmann

(Plan ahead: flying into the wind, plan to do your split-S into the Immelmann so that when you slow down and stall into your spin (#2), you're now in the center of the flight "box".)

Flying into the wind, do the split-S. Fly a nice big, round 180-degree half loop and make sure you pick up enough airspeed so that you can comfortably fly the Immelmann.

2. 1 1/2 spins (downwind)

Having just come out of the Immelmann, you should be just on the edge of a stall. Hold up elevator until you enter a spin. Do exactly 1 1/2 turns and when the spin is stopped, let the glider go straight down to gain quite a lot of speed, then push down elevator and pull out to inverted flight.

3. 5/8 outside loop with a 1/2 snap roll to inverted *(turnaround maneuver)*

You should be flying inverted quite fast; now push down elevator and pull up into a loop until you are pointed 45 degrees down again. Hold that position for an instant, then pull full up elevator with full ailerons and rudder for a 1/2 snap roll to inverted flight. You will find that just as soon as you begin to roll, you will probably need to neutralize all the controls (or go opposite with the rudder and ailerons) in order to do only a 1/2 snap roll. That's the difficult part: stopping the roll in so short a

Frank Oest's almost half sized Bruckmann Swift.

time!

After the 1/2 snap roll, hold 45 degree downward inverted flight for a short time and pick up a lot of airspeed.

4. 2-point roll to right side up (up wind)

Push down elevator to level flight and do a 2-point roll to level flight.

5. Tail slide to inverted flight (turnaround maneuver)

If you enter the vertical other than straight up, the danger with a tail slide is that it can easily turn into an unwanted stall turn!

From level flight, with still quite a lot of speed, pull up elevator and go into the tail slide. If you enter the tail slide flying absolutely straight up, you shouldn't have to steer (with the rudder) to keep the sailplane going straight up. If you are a little off center, steer with the rudder to get the glider going straight up. Just before you come to a stop and start to tail slide back down, push down elevator to make certain that the glider will flop nose downward (and not somersault flop over onto its back and then nose downward).

Now that you are pointed straight down, pick up a *lot* of speed and push down elevator so you come out flying level and inverted.

6. Very slow roll back to inverted flight (downwind)

With a *lot* of speed, do the slowest 360-degree roll you can (back to inverted flight).

7. 1/2 inside loop *(turnaround maneuver)*

From here on, it's all easy! Pull up elevator and do a 1/2 inside loop. Pick up a moderate amount of speed in doing so.

8. Inside loop (up wind)

Fly straight for a bit and when centered, do a nice big, round inside loop.

9. Stall turn *(turnaround maneuver)*

Fly into a stall turn. Start your full rudder almost as soon as you go vertical. Fly back down and pick up quite a bit of speed, then pull up elevator to fly level.

10. 4-point roll (down wind)

Do your 4-point roll. The longer you hold it between the four points of the roll, the harder it is, the better your score will be!

11. Approach and landing into the wind *(turnaround maneuver)*

I *know* you've done this one before. Do your approach and landing as smoothly as possible, touching down right in the middle of the flight box. Be sure to do a nice scale-like landing and let the glider roll straight out before coming to a full stop.

The whole key to this stunt program is from #2, the 1 1/2 turn spin to #6, the inverted slow roll. If you can master just these five maneuvers in a row, you will be able to fly this whole stunt routine with ease.

Of these five, the most difficult maneuvers are the 1 1/2 turn spin and the 1/2 snap roll, because it's so difficult to stop the glider from doing more. In just an eyeblink, you have done more than the 1 1/2 turn spin or the 1/2 snap and the whole maneuver will have been screwed up.

So in a way, the key to this whole program lies in just two maneuvers: the 1 1/2 turn spin and 1/2 snap roll. If you can master these two, the chances are, you will be able to fly the whole routine with ease.

This is where a good aerobatic sailplane is most important. If you don't have a glider which is able to fly these maneuvers with ease, you will find this a most difficult routine to master.

I'm quite certain that Frank Oeste designed this stunt routine to test the abilities of his fellow competitors – and he certainly succeeded in coming up with a wonderful and exciting challenge for the very best pilots! But as I said in the beginning, once you familiarize yourself with what's required, this routine becomes a superbly crafted test of your piloting skills and it sure is a lot of fun to fly!

Competitive aerobatics have really caught on across the pond and this is the third year they've held these events. This year there have been no fewer than four aerobatic events planned: two fun-flys and two competitive events, two in Switzerland and two in Germany! All these events are using this same aerobatic program.

Last year, Frank flew his 1/2.5 Bruckmann Fox to third place. This year, Frank is going to compete with an entirely new aerobatic sailplane.

The photos show Frank's Oest's new aerobatic Swift, which he plans to fly in the 1999 Akro-Cup the last weekend of August. Frank is the leading force behind this new German sailplane aerobatic event and is the person who started it all just three short years ago.

Here are some specs. on this wonderful aerobatic flying machine, which flew for the first time last year:

Wingspan:	585cm
Fuselage:	330cm

Weight: 17kg
Retractable gear from HOCK with shock absorber and brake
Wheel: 170mm
Wing rod: 28mm carbon fiber
11 servos: 2 ailerons and 1 spoiler in each wing (makes 6), 1 rudder, 1 elevator, 1 landing gear, 1 brake, and 1 tow release
2 x 5 cell batteries
Finish: Replica of the JEPPESEN-Swift HB-3123, flown by Henry Bolig, the German champion for 1997 and 1998. He came in 4th place in the World Championships at the First World Air Games held last year in Antalya, Turkey.

Frank has fully scaled out the rather large cockpit. This giant model Swift looks and flies just like the real thing! Talk about scale realism in flight; this giant Swift is relatively slow and majestic compared to the smaller models. At the same time, it's also extremely responsive and will fly any maneuver you can think of!

The photo (with Frank's son) gives some idea of the true size of this gigantic and wonderful-flying aerobatic sailplane. As you might expect, the bigger they are, the better they fly and this Swift is no exception. I saw it fly for the first time in Germany last year. This Swift has a very realistic airspeed, and does superb and very precise maneuvers. In the practice session before the competition, I saw several pilots fly this bird for the first time and several did what just might have been the very best aerobatic routines of the weekend.

Frank aims to place way up there at this year's Akro-Cup and I wouldn't be surprised to see him place in the top two. He certainly has the tools, the practice time and the ability to do so. If all goes well, I plan to be there and will be rooting for him! Go Frank, GO!

As for the rest of you, I hope you all go out flying and have a great time with your sailplanes too. Whatever tickles your fancy, do go out and have a great time and above all, happy landings to one and all! ■

HAVE SAILPLANE, WILL TRAVEL!

Tom H. Nagel
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This column is dedicated to soaring vacations.

An experienced fellow RC columnist responded to our May 1999 suggestion that flyers write articles about their home town flying sites, as possible vacation destinations. This contributor is VERY experienced; 82 year old Dale Willoughby has been modeling for more than 50 years, and wrote the RC flying column in *Flying Models* back in 1957, back in the days when I was still in elementary school, and aircraft radio control systems still ran on kerosene.

Sentinel Peak Park, Arizona
"A" Mountain

by Dale Willoughby

Last fall, as I journeyed from Anza, California to my home in Benson, Arizona, coming back from a trip in search of more information about the Italian prisoners of war during World War II, I happened to pass through Tucson on Interstate 10. I saw the sun reflecting from the polished wings of a model aircraft. I went to investigate.

Less than two miles from the business district in downtown Tucson, with its tall buildings, are two big hills in Sentinel Peak Park, easily visible from Interstate 10. One bristles with radar masts and broadcasting towers. The other hill is Tucson's "A" Mountain, one of the best and most used slope soaring sites in the state. "A" Mountain gets its name from the thirty or forty foot tall "A" planted on the mountain - "A" for Arizona. Sentinel Peak Park is a city park, with a two lane paved road circling near the top, and a large space for parking on the eastern slope.

There is no local soaring club that I know of, but the local flatland RC club does some aerotowing, and also flies slope at this site.

On my visits, I ran into Mauro Piccininni, who tells me he has flown off "A" Mountain for the last 10 years on most Sunday afternoons when the prevailing Westerlies are blowing. He is a full time auto mechanic during the week, but a genial and reliable volunteer "test pilot" capable of

using those elusive thermals which rise off the slope. I had given up flying for almost three years, due to an advanced case of seniority and chronic vertigo. But now, with Mauro's help, I am able to fly from a seated position and have flown my 31 year old KURWI 68 glider for sky high flights, lasting as long as I desire. (The KURWI 68 is a 2.5 meter floater designed by Krut Wilhelm in 1968.)

Now that I am back flying, I recently completed a Jamara Models USA Mini Discus, a 60 inch ARF scale model of one of the most efficient full size Schemp-Hirth planes. Mauro has been flying a Graupner FOKA 4, a 2.2 meter model with a fiberglass fuselage, and right now it is the best flying scale slope soarer on "A" Mountain.

Also actively flying on "A" Mountain are a group of Zagi and Boomerang pilots, Mike Legate who likes to build and fly unusual designs, and Fread Leamy who has an EPP flying wing done up as an XB-49. I remember seeing the prototype fly when I was 17 years old, and thinking it looked like a smoking boomerang.

Even when no breeze is blowing in downtown Tucson, fairly good lift is available at the top of "A" Mountain — especially in the afternoon when the sun is shining and generating thermals.

As a vacation spot, Tucson is located in south eastern Arizona, and is a wintertime mecca for the snowbirds from the colder parts of the US. Many RV parks are available for all sizes and types of motor homes. Other area attractions for flyers include the fabulous Pima City Air Museum, a great resource for scale research, and of course Davis Monthan AFB, home to the USAF's mothball fleet.

To reach "A" Mountain, take the Congress off ramp from I-10, and drive toward the hill with the big letter "A" on it. Look for signs to Sentinel Peak Park. The park is closed from 7 pm to 6 am daily.

(Editor's note: Dale currently lives about 60 miles from Tucson in Benson, Arizona, and runs Willoughby Hobbies at 370 East Fourth St., Benson, AZ 85602-6614. He says that sailplanes are a fairly small part of his business, but he has located a slope right across the street from his shop, and plans to spend some time flying foamies there, trying to generate a new market from amongst the local kids.)

***

Thanks, Dale!

If you have a favorite sailplane saga, consider writing it down for *RCSD*. If you are planning a vacation that includes your plane and transmitter, consider making notes as you go, and working up an article later. Take photos. Collect maps. And send your story to Tom Nagel at tomnagel@iwaynet.net for gentle editing and suggestions. *Tom* ■

GORDY'S TRAVELS

A Visit with the Most Prolific Composite Wing-Builder in the World!
Phil Barnes, Wing Master of the USA!

Phil Barnes, his shop, and his product. Clean and organized for repeated quality production.

By Gordy Stahl
Louisville, Kentucky
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I'd been to MudSouth Champs and had a good time (that means my scores were awful) and the boss called to tell me that he needed me to head to Maryland. I was kind of soar'd out so I decided not to carry a plane with me on this trip. Instead, I would take some time to visit with a few of our hobby's 'greats'.

Work went really well and that left me with some time to go hunting for those 'trophies'. I was in Hagerstown so my first quarry was to be Mike Waters, designer of the HLG revolutionary LOGIC sailplane... but found he wasn't going to be home!

Next on my route to Baltimore was Phil Barnes, master wing producer builder. Most modelers don't realize that their composite wings are actually produced in Phil's basement shop.

Phil builds bagged carbon composite wings for a living! Every day wing and tail-panels (even a few fuselages) are laid up or finished off in his shop.

Which wings? Psycho, Pelican, Grand Esteem, Magic, Merlin, Logic, Sparrow... on and on. Phil specializes in vacuum bagged, carbon skinned, carbon tube spar'd wing panels. The majority of the panels use a mix of Spyder foam and pink foam cores.

He started his hobby-ing as an international 'Space Rocket' competitor. Now while that sounds pretty exotic, actually that is what model rocketry is called on an FAI international scale. The rockets are only about an inch in diameter, and about 15" tall. He always wanted to do RC soaring but he was having fun with the rockets. The day he decided to begin RC soaring, he went about it very analytically, looking at and reviewing all the ships that were out there. Course being an East coaster he found Frank Weston and his Magics.

Frank's ideas fit perfectly with Phil's own thoughts as to what a TD ship should be like and how the construction should be done. They both believed in a utilitarian approach to construction and design. Clean, lean, simple and aimed at efficiency and task. In fact he liked the designs so much that he decided to become a wing builder for Weston Aircraft. After attending Frank's wing building school, Phil showed a definite aptitude for production.

Phil built hundreds of wings for Frank and continues to build a few wings for Magics (much improved in strength and finish) for the many Weston design ships still flying in the Eastern Soaring League.

In Phil's shop, I got to see all of the secret processes used to create the near flawless production wings... And now I am going to expose them for all of you!

First he starts with a FeatherCut Foam Cutter. Panels are cut one at a time, to insure that each is treated with the respect it is due in order to produce virtually identical wings so that if a left panel is purchased for a damaged original, it is still a match. Next step is to wax the mylars. He uses paste Carnuba, a couple of coats carefully rubbed out with clean cloths to insure a uniform release. (A flawed panel is a waste of time and money!)

After that the mylars are painted on a paint-board which consists of a walk-in closet with a piece of perforated paper-board set at an angle on sort of an easel. Behind the pegboard is a box that has a filtered industrial vacuum attached to draw in the over-spray. Course there is an exhaust fan in the window to draw out fumes. He usually does a set of stabs simultaneously with a set of wing panels as they fit in the bags with them.

His paint of choice is Krylon as it seems to be very consistent in its delivery and color. He begins his paint spray pattern at the bottom of the pegboard, working upwards coating the mounted mylars with very light mist coats. Great care has to be taken during this step to avoid fish-eyes in the finish coat.

The 1/2" carbon tube spar hole is cut into the first panel core, prior to joining it to the other panels, using a set of slotted templates. The slot is located on the bottom of the templates to allow the hot wire to enter the core. The slot is used to inject added resin to insure that a good bond is made between the core and the spar-tube. The slot is then filled in with spackle to protect against a surface flaw during the bagging process.

The leading edges are wrapped with a layer of carbon cloth prior to bagging and held in place with a very generous coat of 3m Contact Cement Spray. Plywood root ribs are glued onto the cores, over the carbon spar tube, and the core is ready for the bag.

The carbon cloth used for the skins is pre-cut to exact size avoiding waste and improving production time. They are laid onto the painted mylars and are coated with resin. A stiff thin-foam layered paint roller is used to work the resin deep into the weave of the cloth. The carbon tow is literally mashed flat filling in the weave openings in the cloth. The strength of the lay-up is extremely dependent on each intersection of the fibers being coated for good adhesion.

The cores are placed in their beds and sealed in their vacuum bags to cure.

Wow! Nothing special about this system; simple and repeatable! That is why Phil's wings have set the standard for our own designs. Many of us know the heartbreak of a folded wing on launch, but for kit

suppliers and for Phil, a folded wing is a catastrophe, as word spreads like wildfire and confidence in the kit plummets... But the big losers are us. Confidence in our wings strength makes each flight that much less apprehensive. We want to know that we can lean on the pedal, go deep in the bucket for the zoom, and that our plane's wings will take it, and survive.

Phil's simple obsessive procedure ensures us of dependability. Currently, his most popular wings are for NSP's Psyko. The Psyko has raised the bar on performance for TD ships in the USA. Following the template created by predecessors (Grand Esteem, Pelican, Victory and Edge), it embodies an optimized composite that is carried by Phil's wings. This plane inspired pilots to push the envelope of strength on launch and lead to the current use of Spyder foam for the main panels and lighter extruded foam for the outer panels.

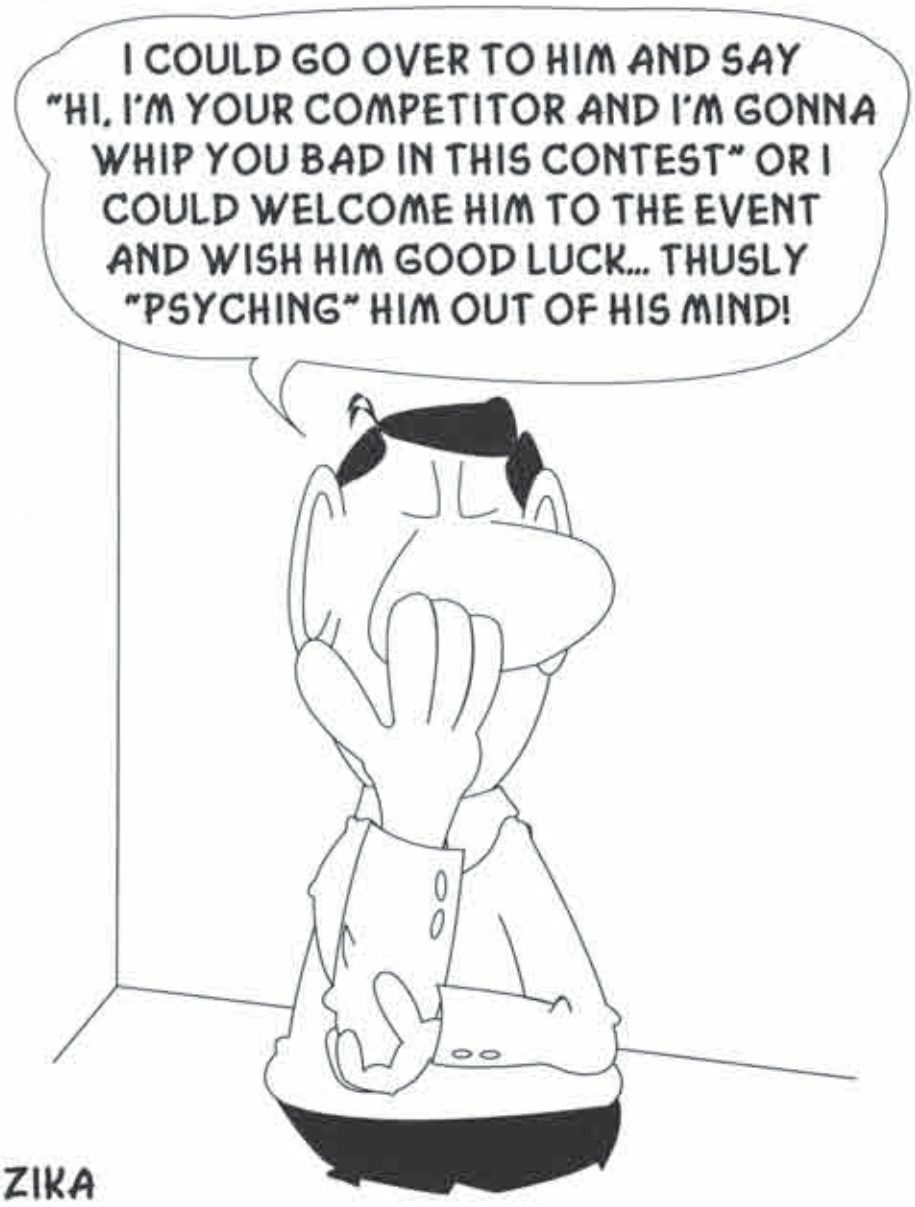
The bottom-line? Phil Barnes has provided more bagged, carbon composite foam core wing panels than any other human being on Earth that I know of.

Thinking of contacting him? Forget it! He's busy and he doesn't do piecework; he can barely keep up with orders for kits. Or consider this — would you want him to be answering phones and chatting with someone in the middle of laying up YOUR wings?

In any case, he isn't resting on his laurels. He sees the future of our hobby shifting toward hollow molded wings, so he is collecting all the information he can get. He will use his uncanny ability to figure the most efficient and most economical way to produce them.

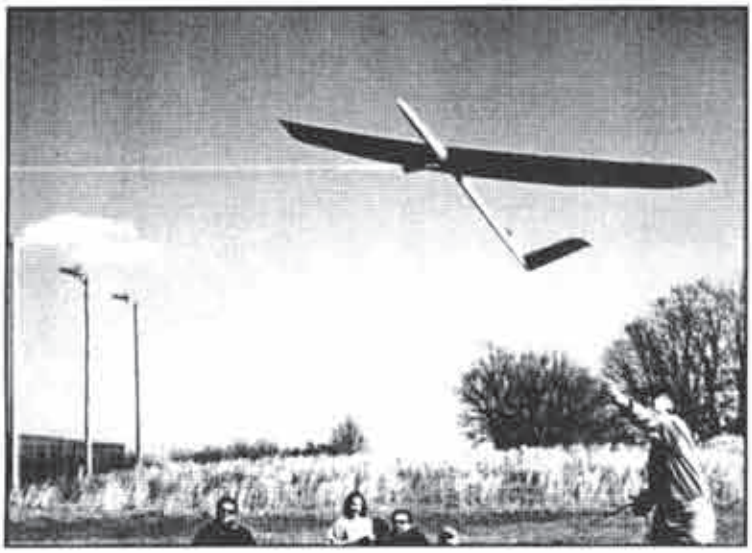
So, many modelers are flying his wings and don't realize how lucky they are to have Phil Barnes working for us! Every once in a while my travels take me to someone special to our hobby; this was one of those trips!

Hope you enjoyed this trip as much as I did. What's up next? Sweden (sort of) with a review of the Stork F3J all molded ship, and an amazing device that actually improves, reconditions and protects your winch batteries, keeping them like new for years! ■

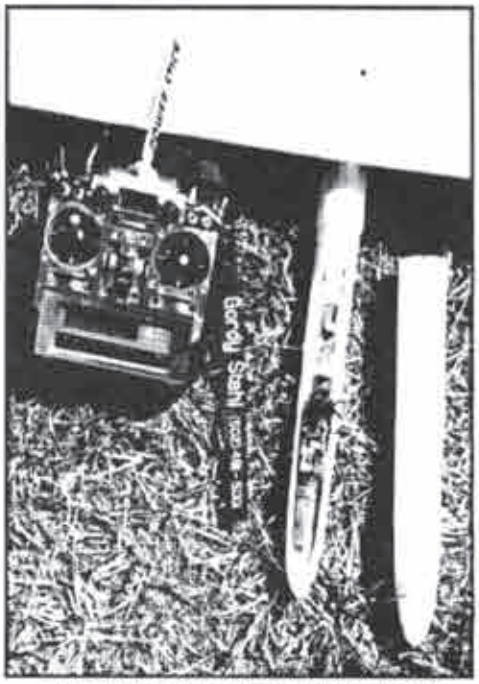


GORDY'S TRAVELS

Going Inside a Swiss Stork – One Outstanding Hollow Molded Sailplane!



The adjustable tow hook allows you to set the launch to your style. Full pedal launches don't show any wing flex.



The Stork's nose is confined but still fits 4 - 200 mah Rx cells! Servo tray molded for Micro-Maxx servos.

by Gordy Stahl
Louisville, Kentucky
GordySoar@aol.com

This trip really started way back at last year's Visalia TD competition, I was traveling with Michael Volz (creator of those awesome blue servos).

We had just completed a trek beginning in San Diego's Torrey Pines, then the Mecca of Slope Combat, Laguna Nigel, visits with various kit manufacturers and some of our hobby's more famous and colorful personalities; there was one fantastic day of Dynamic Soaring with JW, Pat Bowman (Bowman's Hobbies) and a couple of wild Kentucks. We then spent two resting days at the soaring paradise that is Los Banos, recouping our energies for our first Visalia contest experience.

Michael was telling me about many beautiful European all molded sailplanes that exist and how little the USA hobbyist knows about them. We discussed lots of things that day, but one of the topics was about me doing some reviews to raise awareness of the sailplanes that exist across the ocean.

Since most of the Euro-moldies take advantage of Volz Micro-Maxx servos, Michael is friends with most of the manufacturers and designers. [The first ship was to be FVK's Graphite (which actual ended up winning the contest that year in the hands of Ben Clerx, by the way), but that didn't work out.]

But, that win added the enthusiasm and interest to follow up on the idea. Keep in mind that this was the first time that a contemporary Euro-design had won a task that had been dominated by American-style TD ships.

Anyway, when Michael returned to Germany and the Graphite article idea was crunched, he mentioned the idea to Ueli, at Tun Modelbau, in Switzerland. Tun is a dealer for a number of sailplane kits, one being the Heinrich Stork. Ueli contacted me via email and that lead me all the way back to this article!

Two Storks were purchased, one for me and one for George Joy (one of our top TD thumbs located in San Diego). I felt that the model had to be valid for universal flying conditions, as opposed to limited to being best suited to East, Mid, or West Coast conditions. George's job was to fly it.... A lot! I chose to do the background research.

I had read a review on it in a recent *QFI* magazine, so I contact the author for his further thoughts, Kevin Newton (also writer for *QFI* and arguably the most knowledgeable authority on Euro-moldies). I found that Germany's leading sailplane publication was planning a review also, so contacted Bruno S, who had been assigned the project. Further investigation uncovered Ben Clerx, of California, and Illinois' top sailplane pilot, Jim Bacus. Both had a lot of good things to say about their experiences with the Stork. (Jim has a detailed piece of the Stork with photos on his web site: <http://www.mcs.net/~bacuslab/stork.html>.

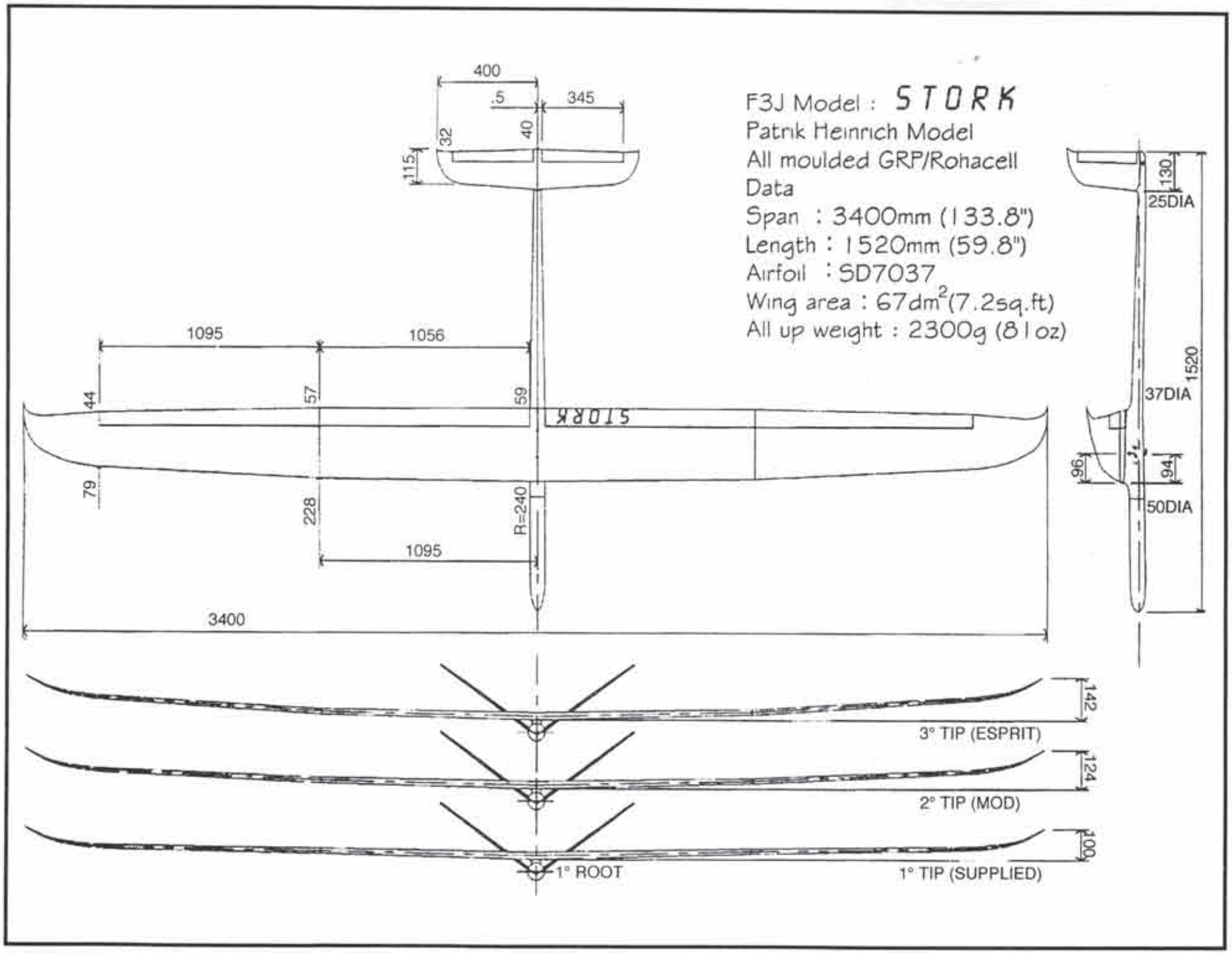
With a 134" span, we are talking about a big airplane. When I received the kit I found three wing panels, a V-tail assembly, a fuselage with slip on nosecone and a small bag of screws, with two rectangular carbon wing tip joiners.

The first thing you notice on the Stork is its graceful swept and curled wing tips. The V-tail has the same 'swallow' tips but without the curve up shape.

The colors of my ship were navy blue bottoms and tips, with white tops and fuselage. The tail paint scheme matches the wings. The white is extremely white. The wing and tail finish, unlike most of the Euro-moldies, is not glossy but sort of a satin, so it doesn't look like a plastic airplane. By the way, other colors can be requested!

The fuselage is best described as looking like a modern nuclear submarine... And I mean that! The nose is the same as the sub and the wing pylon mount looks just like the "Conn-tower" of the sub. The mount for the V-tail is molded so perfectly that, when the tail is mounted, it's difficult to see the joint. The V is retained by two small screws. The control links of the elevators have ball links on them that extend into the fuselage and can be seen thru a small access hole in the very rear of the boom. Waiting inside are the female ball link connectors, easily 'popped' on each link once the V is in place.

The wing is three pieces with a flat center section; the rectangular joiner fit very snuggly into their boxes; there are two locator pins fore and aft in the joiner ribs. A small recess in the fuse is molded with threaded holes to mount a 'D' type computer plug from Radio Shack; the wing base is likewise molded to mount the female 'D'. During assembly at the field,


F3J Model : STORK
Patrik Heinrich Model
All moulded GRP/Rohacell
Data
Span : 3400mm (133.8")
Length : 1520mm (59.8")
Airfoil : SD7037
Wing area : 67dm²(7.2sq.ft)
All up weight : 2300g (81oz)
400
.5
345
32
40
115
1095
1056
44
57
59
79
228
R=240
1095
3400
STORK
130
25DIA
1520
37DIA
96
94
50DIA
142
3° TIP (ESPRIT)
124
2° TIP (MOD)
100
1° ROOT
1° TIP (SUPPLIED)

Graceful, molded, swept and upturned wing tips (132" span).

the wing drops right on the connector; two cap head screws hold the wing in place.

The wing uses live skin technology for tape-less hinges and the gaps are fitted with molded wipers, so no gap is ever presented. Ball links are threaded into the molded-in threaded holes on each aileron and flap surface; the pre-assembled linkages are simply popped on and clevis mate directly to the servos.

Like many of the Euro-moldies, the wings have servo-wells molded in place and shaped to mount Volz Micro Maxx servos (although other brand micro servos can be used with some minor fabrications).

The wing and V-tail are hollow and VERY strong. From my field testing, I find it hard to imagine folding under any sort of extreme launch forces. (This is not a statement considered lightly.)

However, the wings are not set up for extreme high speed applications (This is a Thermal design.), so if you decide to attempt those terminal thousand foot dives, you will see the tails and even the wings twisting around some. Just don't bother abusing it like that. No, I did not say it would blow up. I said what I meant to say about the topic, so that you don't have some unrealistic expectations that this is a F3B ship.

The foil is 7037, so what you get is a very comfortable, amazingly aggressive, thermal grabbing airplane. Its rate of climb has to be experienced to be understood. Reflex is critical to optimizing its performance, as it will sit like a tanker in a strong wind without reflex. Adding reflex virtually turbo charges the plane's penetration. Camber to elevator is a sweet mix when working those light, low thermals needed to get those last few seconds.... And that is where the plane shows a weakness... As delivered, it comes with straight joiners. The dihedral built into the tips is just a little short to optimize the benefits of the V-tail for yaw assistance in thermal turns. It works and it's wonderful, but the optional 3 degree bent joiners really make a difference.

I (and a few others) bought a set of bent joiners from Mike Lachowski (mikel@eclipse.net) for $30. He had made a mold for some other ships he had, and offered to make some up for us since the fit was perfect. (A little polishing was actually needed since the fit was a vacuum tight one!)

The fuselage nosecone has a round cross section and it fits tightly on the fuselage. The inner fuse is actually an insert glued into the fuse. It is likewise molded for Volz Micro Maxx and the V-tail control rods are fitted with clevis' waiting to be connected to the Volz arms. I found, in both the wing servo wells and the fuse servo mount rails, that the glass itself was not enough to hold the threads of the mounting screws, so I fitted some 1/8" ply strips under the glass mounting rails with epoxy. It took a few minutes for this modification. I am not sure why some backer wasn't added during the molding, but the builder has been notified; maybe this will be added during the construction process.

Another unique feature and a critical one is that it comes outfitted with an adjustable towhook! This allows you to optimize the rotation angle of your launch, critical if you end up in a down wind launch set up. If you are stuck with a hook setup that has your plane rotating hard on launch, for those big kiting launches into the wind, then you get stuck with a plane that sticks its nose up and plows to the turn around on those down wind launches. A simple adjustment forward lets the plane take advantage of a super slippery front for a high speed zoom off the line!

For RX batteries I chose to use 4 Sanyo 2000mah SCR sub-C cells in a stick configuration, instead of using a smaller pack and lead to get balance. A 2" piece of that strip lead with two way tape, available at the hobby shop, was also needed. This battery 'stick' just fits into the nose and backs up to the forward servo rail. That leaves no room for a receiver... At least not 'inside' the fuse. But I found that the new low profile RX's like the Hitec Slimline 8, the FMA, or RC Directs Berg set neatly on top of the stick, mounted with some two way foam tape. The nose cone clears this assembly easily. I didn't bother with a switch since the battery plug and the RX receptacle are both easily reached in this configuration.

On the bottom of the nose insert is a molded 'notch' that looks like the notch in a revolver's body. That's the spot where the supplied-machined brass ballast slugs drop in, to load the ballast tube! I flew it fully ballasted and it really kicked it in thermal gear when the wind was up! A very cool feature.

Tun Modelbau (http://www.tun.ch) has done its homework and provides a very detailed list of set up information, including elevator launch settings, all mixes and throw measurements, in INCHES! With the assistance of the guys I contacted, I helped provide some flying tips for everything from launching to landing mode recommendations.

No provision is made for skegs and they are needed for our style of TD landings. This is a big airplane and its usual 80 oz. makes it a feather weight in the air (considering its square inches and efficient over-all design); it has formidable mass and inertia on landings. Most Stork owners take advantage of Tim McCann's new 'tape-on' nose and main skegs <tmccann@alltel.net>.

The fuse cross section shapes make the tape-on's an easy installation. The color impregnated resin used in the fuse means that there is no worry of paint damage from tape removal.

Since I found myself with a beautiful molded airplane, transporting it became a real concern. I wanted to keep it looking great, so I contacted Jim Prouty of JTMODELS (jtprouty@hotmail.com) for one of his magnificent 'PlanePak' carry bags. He created a work of art that protects and retains the curved tips from damage as well as the main panel and fuselage. The single piece V-tail assembly seemed a problem, but Jim made a large pie shaped bag with a piece of foam that fills the inside of the V to protect it from being crushed. This V-bag can actually be clipped onto the main bag, so that only one hand is needed to carry both the plane and the tail.

That leaves the other free to carry your Baglady Tranny Bag [bagladyal@earthlink.net (Albert E. Wedworth)]!

So, how does the Stork fly? Well, like I said, it's a big ship and we all know that big ships fly better. For those of you guys whose eyes are getting weaker and thumbs are getting lazier, or for the guys who just want to spend a few hours hanging around the cloud base, this is the ship for you. Its got hang time and its got visibility, a really perfect combination for this type of flying. The ballast tube and supplied ballast make it instantly universal regardless of your local average wind conditions.

For the serious TD or F3J contester, all of the above applies; but added to that is the outstanding energy retention of the ship on launch. That big wing and the clean lines seem to allow the plane to go on and on and on, off of zoom.

Is it better than the current batch of USA

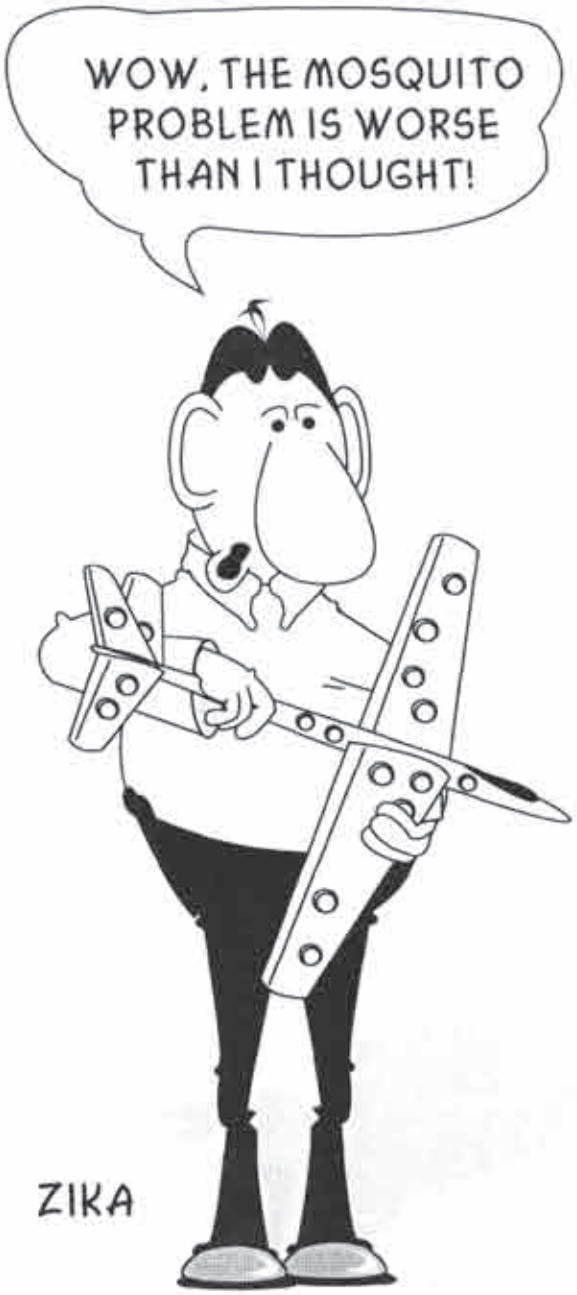
TD ships like the Psyko, Saphire, Addiction, Predator, Emerald, etc.? No, it's different. It looks different and it flies different. Mostly it's up to the task... And that is the major change compared to Euro designs of the past.

My version had Euro-style top-hinged flaps, so the best I could get was about 60 degrees; but a little extra aileron crow made it slow down just fine. The current version is bottom-hinged, so 90 down flap is no problem.

What else? Nothing, except that each of the major components are available as spares. Where can you get a Stork for yourself? At this time, TUN is setting up USA distribution, but you can contact them via their web site to purchase direct or to find a dealer nearest you (http://www.tun.ch). I wouldn't be surprised if, in the near future, you found this or other models available from Slegers International, Multilplex, or NSP, as the price/value/performance of the new breed of Euro-moldies is too good not be in demand for our TD tasks.

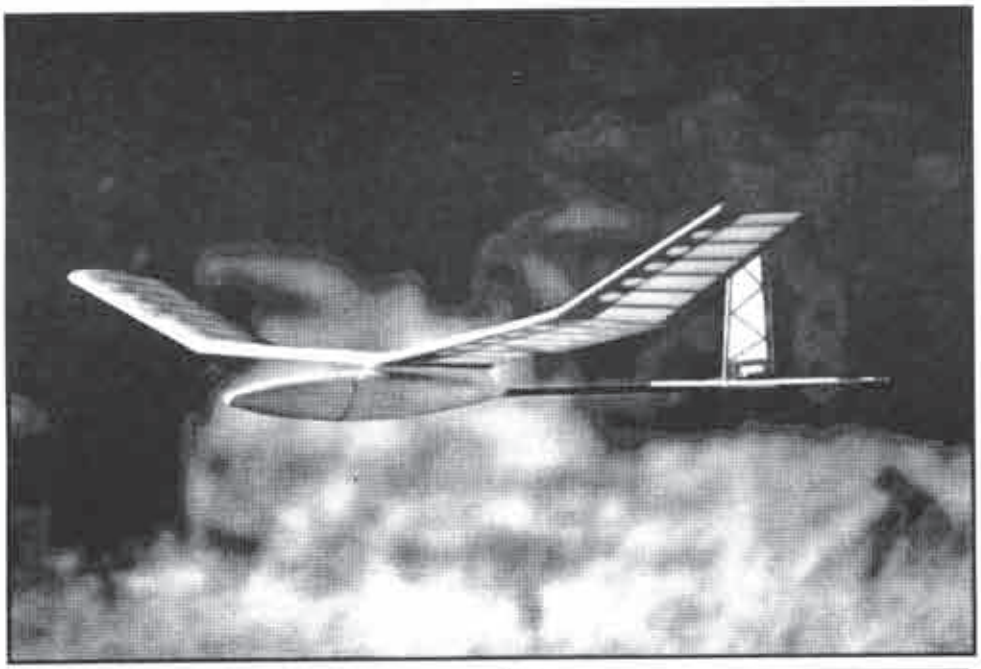
Traveling Switzerland was a lot of fun! Next up is a trip into some technology that does amazing things for your winch batteries, and does it while your batteries are waiting to be used!

See you next trip! ■



KIT REVIEW

Wind Weasel II from Dream Catcher Hobby



By Barry Fulcher
Broomfield, Colorado

A while back, I made the decision to obtain a light weight, hand launch glider. This came after I lost my favorite plane due to radio failure. I gave the selection of this new toy a lot of thought. The criteria was specific to the area in which I fly. I don't want to sound like a wiener, but the front range of the Rocky Mountains is a rough place to fly sometimes.

The first thing I wanted was a fuselage tough enough to handle the basic landing conditions that prevail. Next, the fickle winds demanded an airfoil that was at home on the slope, as well as on flat, open fields. Just to make the whole process more difficult, the weight had to be as low as possible, in order to allow flying the methane gas thermals generated down slope by the cattle. All other attributes required were of a lesser priority.

A polyhedral wing design would allow me to make tight turns in the quarter size thermals that pass through a lot of the time. And, overall appearance was a consideration, as a good looking glider is much more fun to fly. Last, but far from least, my pocket book didn't want to be abused, like my friend Bob is fond of saying. My budget was about $100, max. Call me a dreamer, but off I went in search of a glider that met all of the above criteria.

I found Wind Weasel II from Dream Catcher Hobby.

Specifications

Span:	60" HLG
Length:	32"
Area:	375 sq. in.
Wing Loading:	5.4+ oz./sq. ft.
Airfoil:	SD 3021
Weight:	12 - 13 oz.
Control:	2 channel - rudder, elevator (mixing required for V-tail version)

Kit Contents

The kit has a fiberglass pod type fuselage, with a boom rear fuselage section. The tail feathers and wing are built up from balsa and spruce; the controls are rudder and elevator, or 2 channel.

The tail can be built either as a V or standard. I selected the standard. Although I was told that the V type would be a bit lighter, I just don't care for them. My Weasel tipped the scales at a measly 10.3 oz., although more weight can be shaved off here and there.

For the bottom line, the cost of all these features was a whopping $69.95, which was well within my dollar goal!

Building

Because of the pod and boom type fuselage, building went very fast. I chose to use an air brush, misting it with a light coat of white lacquer paint. This kept the weight down, and gave it a clean look. Some grams were also saved by just painting the nose cone, and not under it.

The tail parts were also quick to build. I took my time with the installation of these parts to the boom, to ensure that it would fly well. The wing goes together slower than some, because of the rib caps that are glued top and bottom. However, the added time is paid back by the strength achieved.

The overall toughness of the Weasel is a credit to the designer and the selection of wood supplied with the kit. Following the fine instructions, this is a plane one can be proud of.

(A friend of mine hit a lamp post with the leading edge of the wing; then, crashed to the curb. To my joy, not a dent was found.)

Shaving Off Ounces

I shaved 3 oz. off the manufacturer's weight estimate. However, some of my work did add weight...

The standard tail added at least 1 oz.; plus, the paint sprayed on the bare wing and fuselage had to increase the weight, as well. I used radio gear that I already had from a dead system, which included a JR receiver, minus the case; and FMA 90 micro servos were rescued from my favorite, dead plane. I knew that both could be replaced with much lighter gear. For example, the FMA Tetra receiver weighs only .5 oz., and is smaller, even with the case than the JR is without one. The new sub micro servos like FMA's S60's are almost a full ounce lighter than the S90's that I used.

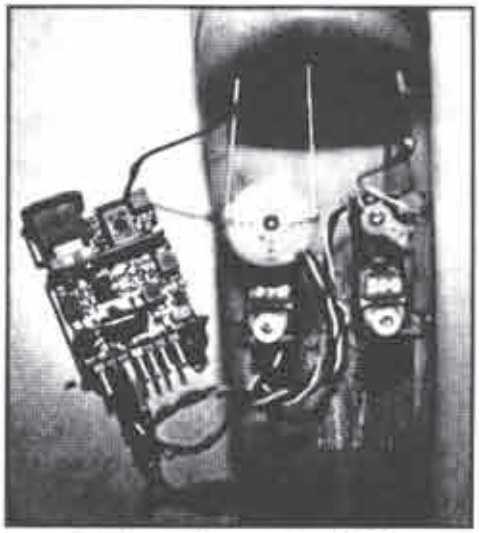
All the electronics were moved far forward, so that lead would not be required in order to balance the floater later on.

I knew that replacing steel pushrods with Kevlar™ string would surely make this little beast weigh less, but I couldn't figure out how to attach the string to the elevator and still clear the flying rudder. Hence, only the rudder got Kevlar™ string.

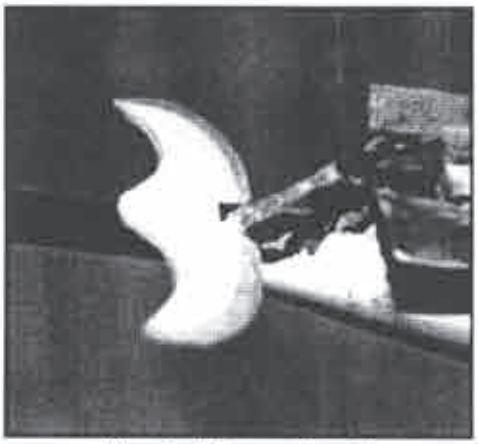
I made good use of the remaining rod by converting it to an antenna. This was accomplished by cutting the antenna wire and soldering it to the steel pushrod. Another unorthodox method used was to drill holes in the leading edge sheets, top and bottom, being careful not to affect the wing integrity.

One thing I tried for the first time worked out very well. After installing the servos, the wood between them was removed, so the receiver could be stood on edge, slid forward, and butted up against the battery; a one ten Mah configuration, the battery fit all the way in the nose. EPP foam cut to shape cushions the receiver and holds the battery forward.

Battery reconfigured to fit as forward as possible in fuselage.



Fuselage with servos installed for best effect of their weight.



The wing thing constructed as an aid in launching.

Construction done, trims set, and it's off to the flying field.

Flying

The first throw indicated that a little fine tuning was necessary. Once done, I gave Weasel a hard toss. It climbed out well, and a touch of down elevator leveled the bird off. All control was immediate and precise.

The Wind Weasel II really excels in the lightest of lift. A slight breeze can keep me on the slope as long as I want, and the batteries can last. Finding and staying in the bubbles of raising air is made easier, due to the plane's sensitivity to the changing air around it. For example, if the right wing tip goes up, a mere turn to the right causes the HLG to go up, and up.

Wing Thing

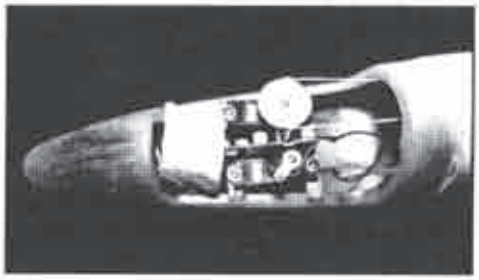
The only characteristic I'm not happy with is my lack of grip on the beast. Throwing was a bit awkward; using a thumb and forefinger hold where the pod and boom joined worked the best for me. However, wanting more height in the throw, I designed a wing looking thing, which was glued to the same point on the fuselage. This wing thing provides a lot faster and higher launch.

Summary

The Wind Weasel II is a tough, honest HLG, that won't abuse your wallet. It's at home on the slope or in the school yard.

My guess is that it can be built as light as 8 oz., without too much difficulty.

For the first time hand launch pilot, or serious competitor, I think that the Wind Weasel II is a great choice.



All electronics in and plane ready to fly.

Sources

Dream Catcher Hobby
P.O. Box 77
Bristol, IN 46507-0077
dchobby@skynet.net
www.dchobby.com
(219) 523-1938

FMA Direct
9607 Dr. Perry Road - #109
Ijamsville, MD 21754
(800) 343-2934
www.fmadirect.com

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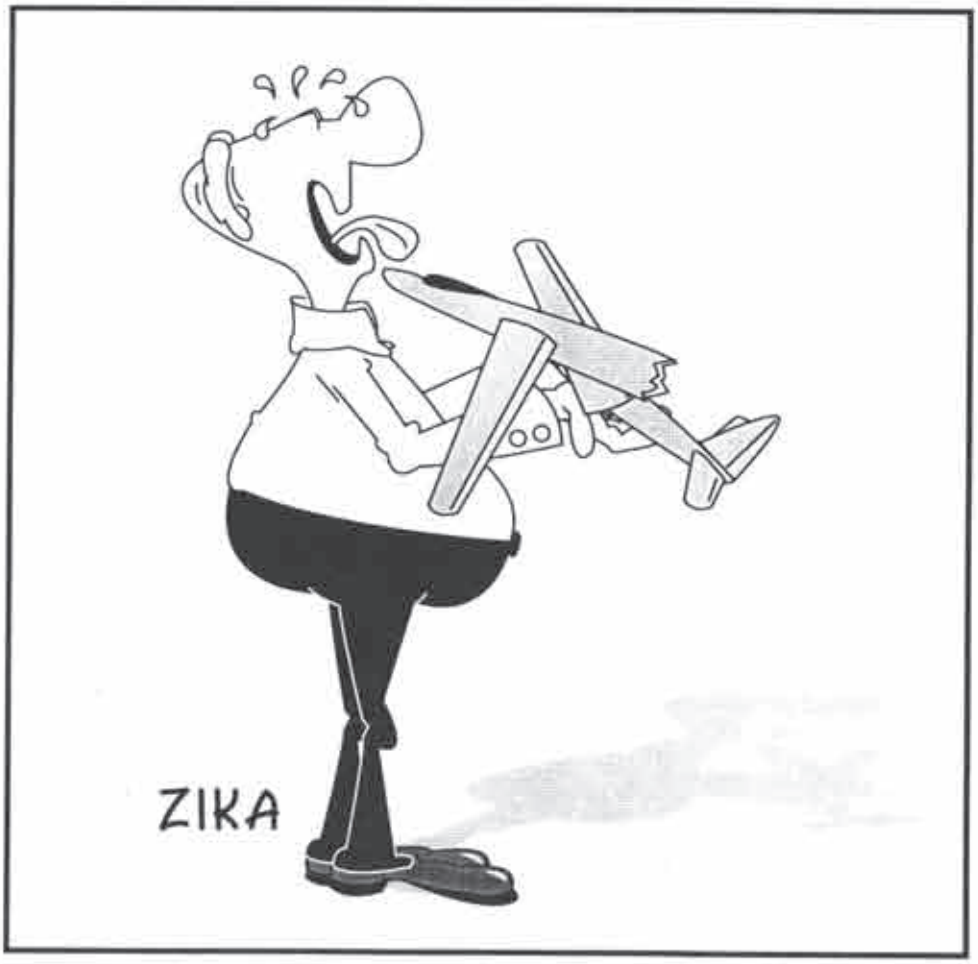


"SHORT CUTS"

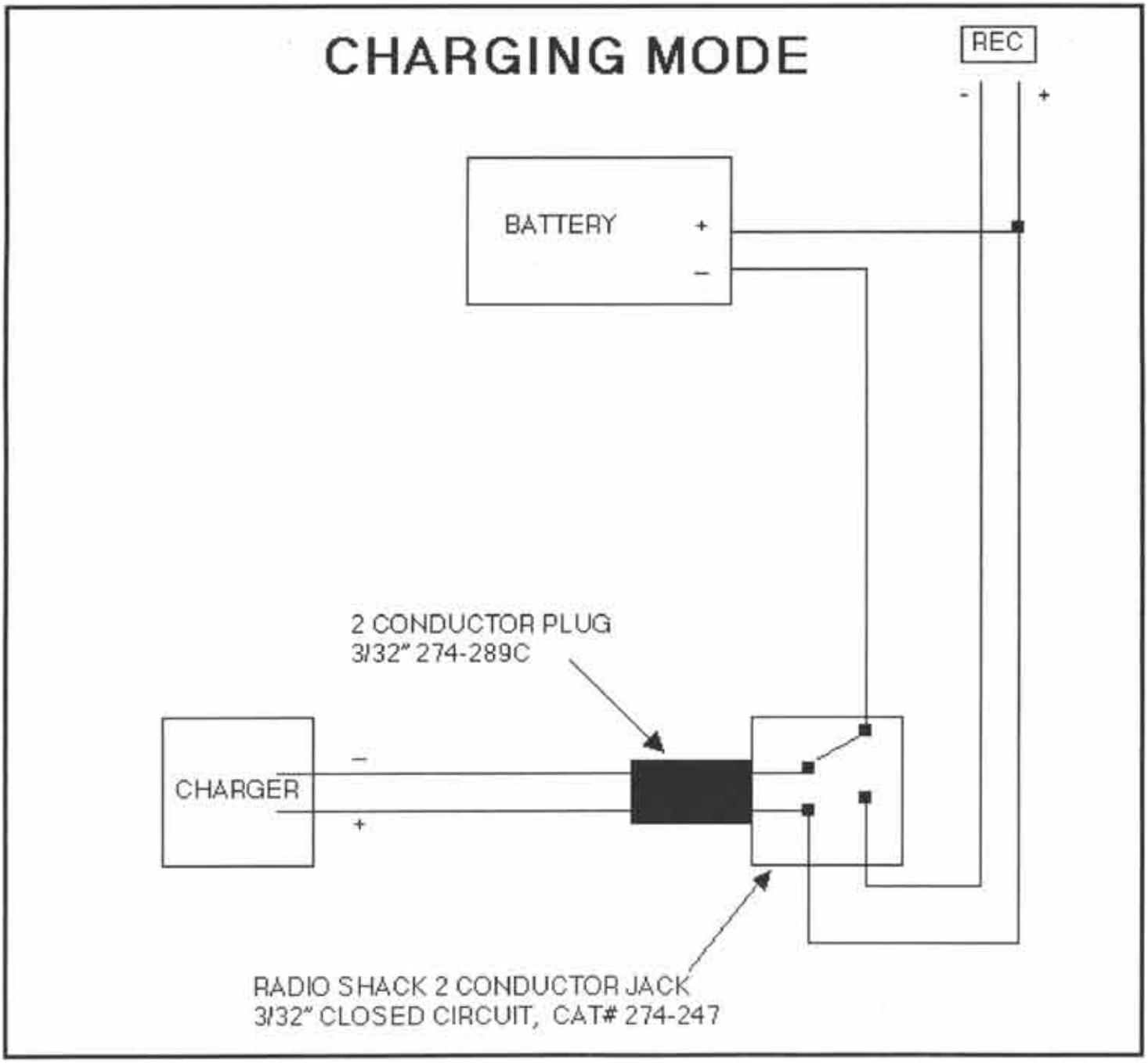
Steve Savoie
926 Gage St., Bennington, Vermont 05201
(802) 442-6959

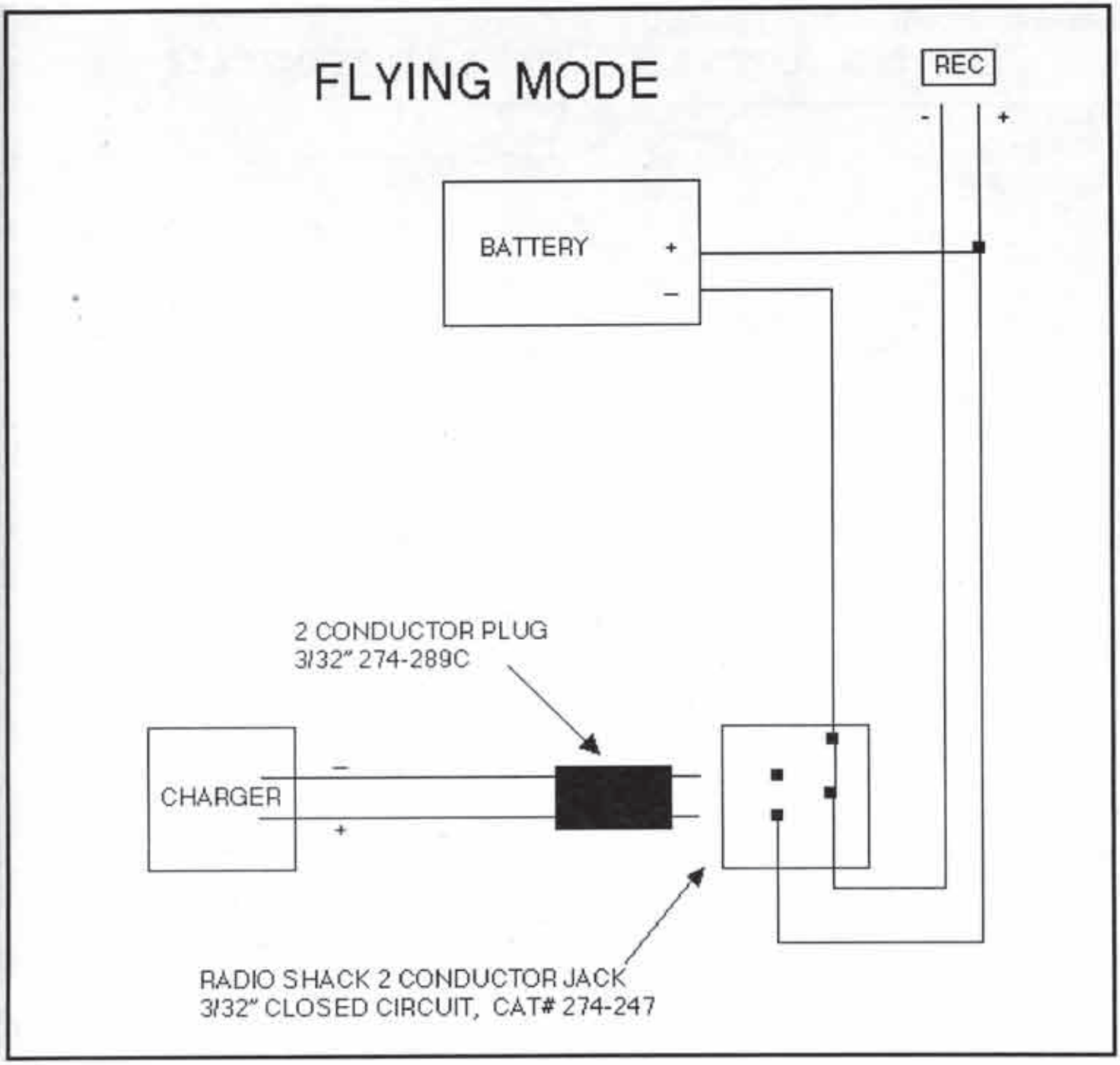
Switching On

Now that I've got a few minutes, I'm getting caught up on prior building commitments, specifically a kit review on Dave's Aircraft Works P-51 Mustang. No, this is not the review; it's coming. But an interesting thing about these planes is that the EPP foam is reinforced with strapping tape and encasing the fuse in a structural skin. This type of construction does not lend itself to an access canopy for turning the plane on/off or connecting to a charging connector.

Several years ago I used a closed circuit type stereo jack switch to turn a Bob Martin's Coyote on and off. For the mustang, I wanted to use the stereo jack for both on/off as well as charging. The enclosed diagrams show the circuitry, as well as the parts used. Remember that most on/off switches are double both (two switches in one) and have built in redundancy. The stereo jack I used (274-247) is very sturdy and quite reliable; don't use alternatives. The operation of this system is quite simple; with the jack plugged in, the battery is isolated from the receiver (turned off) and connected to the charging circuit. At the field the stereo jack is wired to a 8" length of servo wire connected up to a female connector jack. That way a battery tester or a fast field charger can be used. To fly, just remove the plug from the plane and the battery is connected to the receiver, turning on the plane.

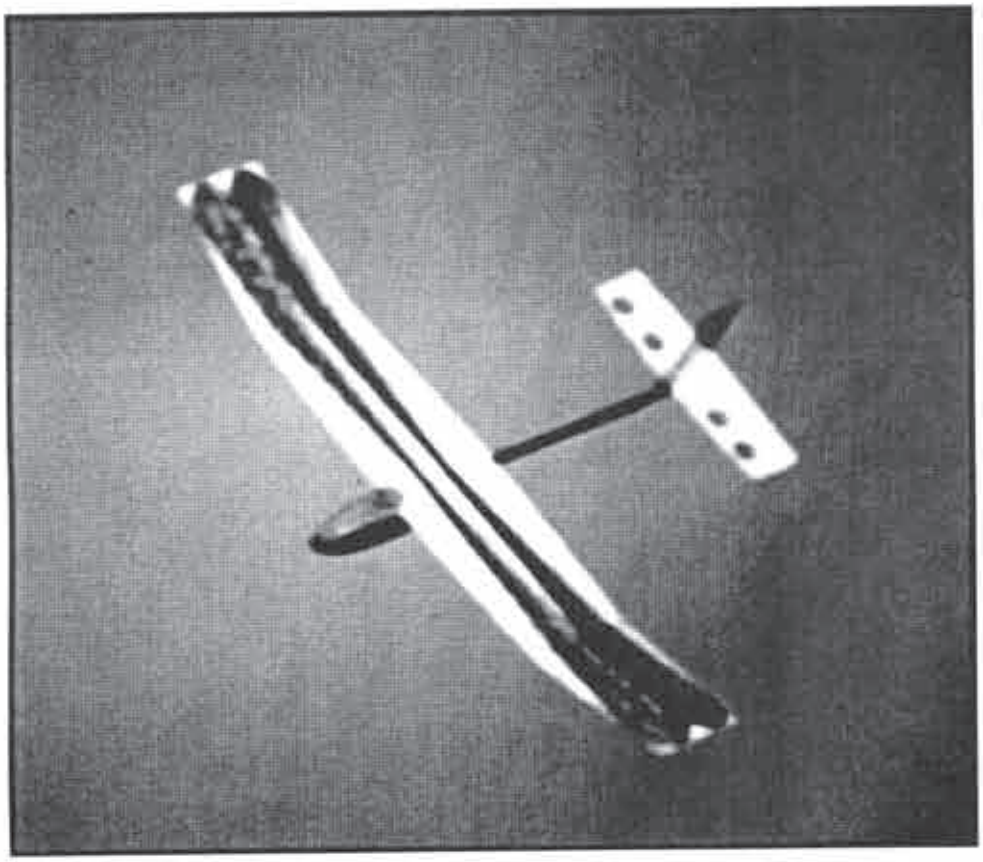
I can't take credit for this circuit; in fact, I remember noting it in a modeling magazine many years ago. ■




FLYING MODE
REC
-
+
BATTERY
+
–
2 CONDUCTOR PLUG
3/32" 274-289C
CHARGER
–
+
RADIO SHACK 2 CONDUCTOR JACK
3/32" CLOSED CIRCUIT, CAT# 274-247

ZIKA

Dave's Aircraft Works Dragonette



By Barry Fulcher
Broomfield, Colorado

One might ask, "What is a micro handlaunch glider?" By definition, it's a glider with a wing span of 750mm or less. For the metrically challenged, that converts to 29.5".

One might also ask, "What do you do with it?" And, I would say, "You can have fun flying almost everywhere." The combination of expanded polypropylene foam (EPP) and small size allow one to fly sites that could not be considered before.

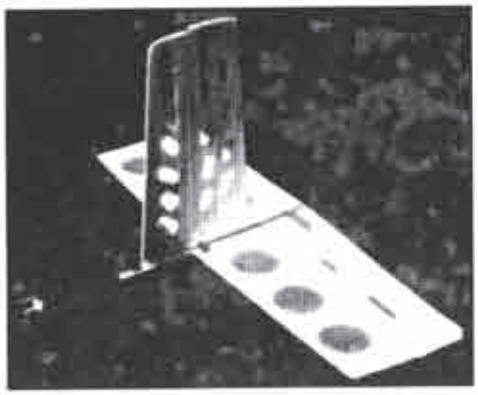
I have flown my micro handlaunch glider in the front yard, tree filled parks, a gym, and in 15 mph winds on the slope. It's no wonder that the Japanese created the class a couple of years ago. With their limited space, the micro is a shoe-in, pardon the pun.

Building the Dragonette

Dave Sanders of Dave's Aircraft Works (DAW) has been an innovative leader in the foam aircraft manufacturing arena for many years. His slope warriors were the first to look like real war birds; his foamies are now flown around the world. So, it's no surprise that Dave has designed and offers the soaring enthusiast a foam version of these mosquito class planes. The Dragonette is loosely taken from the Maupin Carbon Dragon, a full scale, ultralight, foot launchable, home built sailplane. The fuselage is a combination of EPP foam pod and carbon glass tail boom. The stabilizers are pre-cut balsa, while the wing is EPP with a basswood spar. There is little work to do; the EPP pod will take most of the construction time.

Specifications:

Span:	29.5" (750mm)
Length:	22.5"
Area:	150 sq. in.
Controls:	rudder, elevator
Airfoil:	7% thick MH-32



Cutting out spaces for the radio gear can be a bit scary the first time. The idea is to get the hole just big enough, so that the electrics fit snug. If you make a mistake, just glue in a piece and try again. Please don't take that statement to mean that you should rush the process. Rather, a few moments of extra care can add hours of flying enjoyment later on.

The radio equipment needs to be small and light. As luck would have it, there is an influx of new sub-micro electrics available. Dave's manual lists several choices, including the latest, even smaller servos: Cirus CS-10, FMA S-60, and Hitec HS-50. I chose the FMA SA-60s because of their smaller size, slightly higher torque, and low price. For the receiver, I stuck with FMA, installing a Tetra FM micro. This is a bit larger than other AM receivers, as well as a couple of grams heavier, but it provides much better range, glitch free. The batteries selected are 110 Mah, configured to get as much weight possible forward.

In order to obtain the lowest possible flying weight, you'll likely ***void*** your warranties. For example, if the receiver used has a hard plastic case, it can be removed, as the EPP should protect it.

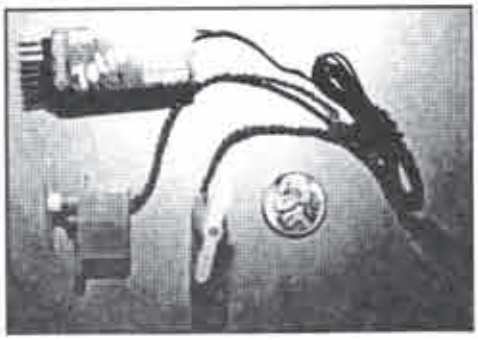
Next, measure the antenna wire; then, the longest piano wire pushrod. The difference is the length that the antenna should be cut to. What's left is then soldered to the pushrod. I have been doing this little trick for years, and haven't had any problems.

Servos are left as is, except that I remove the 'ears'.

I realize that none of these techniques add up to much by themselves, but together the weight lost makes a noticeable difference.

Also, I always put holes in the tail feathers. The grams taken off the rear end of a sailplane becomes ounces, which won't have to be added to the nose later on, for balance.

After the radio gear has been installed and all covered up with EPP, it's time to



cover the model. There are lots of options here. Since you can do almost anything to EPP and not ruin it, I painted mine with a light mist, and then put an eye to obtaining a dragonfly look. The wings got some paint also, providing a cool bug effect. The pod and stabilizers received a very light covering of clear Ultracoat. The wing did not get anything on top. However, I did apply scotch tape on the leading edge to keep it from tearing. Applying scotch on the hinges works well, too.

One last building tip I would offer is to attach the stabs with PFM or GOO, etc., rather than CA. Experience has taught me that the stabs will stay on longer using one of these, as opposed to CA. Yes, it will add weight, but it's worth it in the end.

The controls are via piano wire, and give accurate input to rudder and elevator. A 'Z' bend acts as an adjustment point for both controls; even the pushrod covering is in short pieces, not whole, keeping the weight down.

Completed and ready to fly, the little Dragonette weighs a whopping 3.8 ounces!

One tidbit I picked up from Dave is that he gets calls all the time from happy owners who tell him that they modified the Dragonette. Some have made it into a sloper, with ailerons, flat wings, and V-tails. So, versatility is also added to the description of Dragonette!

Flying the Dragonette

Now comes the really fun part — flying the Dragonette.

My first flights were in the front yard. After a couple of easy test throws, the light plane was trimmed out. Next, a 50% throw was done in order to check flight characteristics, which were very predictable. I gave the Dragonette a full throw, which is considerable due to a built-in finger pad at the rear of the pod.

This little plane launches like a cruise missile, headed for scourge of the free world! My guess is to about 75', from a hard, steep toss. The altitude attained provides sufficient time to do a quick loop, or a couple of overhead circles. With a little practice, the plane can be flown right into your hand.

Conclusion

I have found this little hand toss a great way for me to practice my skills at a moment's notice. My control has improved enough that I am able to fly many of the other sailplanes in my hanger right into my hands, thus saving them from the plane-eater rocks. On the slope, The Little Bug, as it's been called by some, is a real kick in the !*##. Just remember to keep it moving; it likes speeding across the hill, as opposed to floating slowly.

The Dragonette has been good up to 15 mph winds. After that, it gets blown around too much to enjoy flying with it on low wind days.

So, in conclusion, I recommend the DAW Dragonette, especially if you want a stress reliever during a coffee break or lunch hour. Plus, think about how impressed your buddies will be with all the control you have acquired.

The Dragonette is also a great, first-timer kit, due to the ease of construction, and its good flying characteristics.

And, for those of you interested, Dave and his family do this for a living, not a second job, which means you'll have a kit in your hands within a couple of days after they receive your check, rather than waiting for months, missing the best part of the flying season.

Sources:

Dave's Aircraft Works
34455 Camino El Molino
Capistrano Beach, CA 92624
(949) 248-2773
daw1@access1.net
http://www.davesaircraftworks.com

FMA Direct
9607 Dr. Perry Road - #109
Ijamsville, MD 21754
(800) 343-2934
http://www.fmadirect.com

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ZIKA

NEW PRODUCTS

The information in this column has been derived from manufacturers press releases or other material submitted by a manufacturer about their product. The appearance of any product in this column does not constitute an endorsement of the product by the R/C Soaring Digest.

Special Order & Updates

...from Sailplanes Unlimited, Ltd.

For those interested in winter projects, what follows is some information on some wonderful airplanes Bruckmann makes, but which are not on the sailplanes.com web site. However, they can be special ordered. The following prices do not include shipping.

SWISS TRAINER
Scale: 1:3.5
Wing Span: 2.85-3m
Wing Section: NACA 4415/4412
Weight: ~10kg
Motor: ~40ccm
Price: approx. $695

Fournier (new this year)
Scale: 1:2.5
Wing Span: 4.55m
Wing Section: SD 6060 mod.
Weight: ~14kg
Motor: ~40ccm
Price: approx. $995

Habicht
Scale: 1:3.7
Wing Span: 3.67m
Wing Section: n/a
Weight: ~6kg
Price: approx. $595

Lunak
Scale: 1:3
Wing Span: 4.7m
Wing Section: NACA 64-1-411
Weight: ~9.5kg
Price: approx. $785

Kobuz
Scale: 1:3.5
Wing Span: 4m
Wing Section: Ritz 2 mod.
Weight: ~6kg
Price: approx. $585

SZD - 22 MUCHA Standard (new this year)
Scale: 1:3
Wing Span: 5m
Wing Section: GÖ
Weight: ~7kg
Price: approx. $795

SZD-24 FOKA 4
Scale: 1:2.9
Wing Span: 5.17m
Wing Section: SD 6060
Weight: ~9kg
Price: approx. $785

ASW 15b
Scale: 1:3
Wing Span: 5m
Wing Section: SD 7062 mod.
Weight: ~5kg
Price: approx. $895

MUSGER Mg 19
Scale: 1:4
Wing Span: 4.4m
Wing Section: E 201
Weight: ~5kg
Price: approx. $495

MUSGER Mg 19
Scale: 1:3
Wing Span: 5.8m
Wing Section: E 201
Weight: ~9kg
Price: approx. $875

Swift S-1
Scale: 1:3.5
Wing Span: 3.67m
Wing Section: n/a
Weight: ~5.5kg
Price: approx. $595

Swift S-1
Scale: 1:2.2
Wing Span: 5.8m
Wing Section: SD 6060
Weight: ~16kg
Price: approx. $14495

Fox
Scale: 1:3.5
Wing Span: 4m
Wing Section: SD 6060
Weight: ~6kg
Price: approx. $59

Fox
Scale: 1:2.5
Wing Span: 5.6m
Wing Section: SD 6060
Weight: ~12kg
Price: approx. $1495

Additionally, Schueler also makes some of the very best German all glass kits. Here are some new ones he is producing this year:

(prices do not including shipping)

ASH 26 6m: ~$1995

ASW 24 5m: ~$1995

DG505, 4.97 - 6.29m: ~$1995
(Not producing until winter '99-2000.)

ASW 28 NEW from Schleicher 5m 1/3 scale: ~$1995
(Not producing until winter '99-2000.)

Sailplanes Unlimited, Ltd., 63 East 82nd St., NYC, NY 10028; (212) 879-1634, <http://www.sailplanes.com>.

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SCHEDULE OF SPECIAL EVENTS

September 4-5
LOFT/OVSS Fall Round Up (2M, Unl, RES) Muncie, IN
Marc Gellart, isoar2@wcoil.com
(419) 229-3384

September 6
DARTS Aerotow Fly-In Muncie, IN
Paul Siegel, (513) 561-6872
psiegel@fuse.net

September 11-12
CASA Open D.C.
Steve Lorentz, lorentz@fred.net

September 17-19
Last Fling of Summer Broken Arrow, OK
Jeff Naber, (918) 298-9019
Nxtdoor@webzone.net

September 18-19
LISF-2M Long Island, NY
Gordon Stratton, (718) 847-8299

September 25-26
ESL End of Season Reading, PA
T. Kiesling/J. Glaab, kiesling@ctc.com
(814) 255-7418

September 18-19
CAF's 2M & Unlimited Tullahoma, TN
Herb Rindfleisch (Sat.), herb@cafes.net
(931) 455-1836
Chuck Anderson (Sun.), canders@edge.net
(931) 455-1836

October 1-3
Great Midwest Oc-TOW-berfest St. Louis, MO
Scale Aerotow
Pete George, (314) 664-6613
twometer@worldnet.att.net

October 9
NASF Unlimited Huntsville, AL
Lars Ericsson, lars_ericsson@atk.com
((256) 859-0255

October 16-17
Tulsa Tow #3 Broken Arrow, OK
D.O. Darnell, (918) 481-5855

October 16
High Desert Scale Fun-Fly Apple Valley, CA
Stan Sadorf, (760) 245-6630
soareyes@aol.com

June 23-25, 2000
MSSC 2000 Louisville, KY
Ed Wilson, (502) 239-3150
ewilson1@bellsouth.net

For detailed information on events outside of the U.S.A., please view www.sailplanes.com event schedule.

Event Announcement

October 16 - Apple Valley, California

International Scale Soaring Association 2nd Annual High-Desert Scale Fun Fly

Aerotow and winching available for large scale sailplanes on large, obstruction-free field. Motorgliders welcome too! AMA or SFA required. Warmup flying on Friday, Oct. 15. Contact Stan Sadorf at (760) 245-6630 or <soareyes@aol.com>.

MARKET PLACE LISTINGS

VACUUM FORMED PRODUCTS, CANOPIES
Viking Models, U.S.A.
2 Broadmoor Way
Wylie, TX 75098
(972) 442-3910 • fax (972) 442-5258
RCSDigest@aol.com

ZIKA

Hobby Shops that Carry RCSD

Gunnings Hobbies
550 San Anselmo Ave.
San Anselmo, CA 94960
(415) 454-3087

Gyro Hobbies
23052 Lake Forrest Dr.
Unit C2
Laguna Hills, CA
(714) 583-1775

Gyro Hobbies 2
17431 Brookhurst Unit H
Fountain Valley, CA 92708
(714) 378-8924

Hobbies"N Stuff
9577-L Osuna Rd. NE
Albuquerque, NM 87111
(505) 293-1217

Hobby Town U.S.A.
8060 S. 84th St.
La Vista, NE 68128
(402) 597-1888

Hobby Warehouse
4105 South Street
Lakewood, CA 90712
(562) 531-8383

King R/C
Five Forks Village
King, NC 27021

Tim's Bike & Hobby
2507 Broadway
Everett, WA 98201
(206) 259-0912

Closet Scale Stuff
At Sailplanes Unlimited. Ltd.

1/3 Pribek ASW 27 - 5 meter span (196"), wing profile HQ 2.5/12, ca. 20 lbs.

1/4.2 FiberClassics Nimbus 4 - 6.28 meter span (246"), wing profile E 68-66, ca. 18 lbs.

1/3.6 Roedelmodell DG 800 - 4.15 meter span (163"), wing profile E 207, ca. 11 lbs.

1/3.75 Roedelmodell Fox MDM-1 - 3.8 meter span (149"), wing profile RG 12, ca. 15 lbs.

1/2.77 PriBek ASW 19 - 5.4 meter span (212"), wing profile Ritz 3 mod., ca. 20 lbs.

Please call for additional info: (212) 879-1634.

Classified Advertising Policy

Classified ads are free of charge to subscribers provided the ad is personal in nature and does not refer to a business enterprise. Classified ads that refer to a business enterprise are charged $5.00 per month and are limited to a maximum of 40 words. The deadline for receiving advertising material is the 15th day of the month. (Example: If you wish to place an ad in the March issue, it must be received by February 15.) *RCSD* has neither the facilities or the staff to investigate advertising claims. However, please notify *RCSD* if any misrepresentation occurs. Market Place Listings are $5 a month. Personal ads are run for one month and are then deleted automatically. However, if you have items that might be hard to sell, you may run the ad for two months consecutively.

For Sale - Business

PC-Soar Version 3.7 Sailplane Performance Evaluation Program with Airfoil and Sailplane Library expanded to 60 models including Chrysalis, Anthem, Genesis, Peregrine, Probe, Thermal Eagle, and Spectrum. Airfoil library includes 322 polars with 56 UIUC polars. PC-Soar with Libraries of Sailplanes and Airfoil Polars plus a new Excel utility for working with multi taper wing areas and aerodynamic centers. Reduced Cost: $50 + $3 P&H. PC-Soar library and software Upgrade to Ver. 3.7: $10 + $3 P&H. LJM Associates, 1300 Bay Ridge Rd., Appleton, WI 54915; ph: (920) 731-4848 after 5:30 p.m. weekdays or on weekends. E-mail: lmurray@athenet.net. PC-Soar Web Page: <http://www.athenet.net/~atkron95/pcsoar.htm>.

PRECISION AMAP WING CUTTER, replacement parts, and service. AMAP Model Products, 2943 Broadway, Oakland, CA 94611. Butch Hollidge, (510) 451-6129, or fax (510) 834-0349.

A.M.P. Aerial Model Products, sport, slope, race prototypes - all airfoils. 60" Del Valle Snake, 94" H&K Cobra, AMAP Flair, Kevin Cutler's full house Davenport Monitor. All race tested. Butch Hollidge, (510) 680-0589, eve, California.

PARACHUTES: $10. Dale King, 1111 Highridge Drive, Wylie, TX 75098; (972) 475-8093.

For Sale - Personal

1/4 Roedel Super Cub (towplane), 2.687 meter span, wing profile Clark Y mod. (suitable motors are 160 T, 300 T, OS BGX-1, Brison 3.2 or similar), NIB... $385.00. Contact Robin Lehman, 63 E. 82nd St., New York, NY 10028; (212) 879-1634.

ASK 18, 5.3m, very nice, w/serrvos... $1695.00; Krause 1/3 scale Salto, excellent condition, w/servos... $1495.00; EMS Minimoa, white/beige beauty, w/servos... $1995.00. Dan Troxell, (949) 831-8013, So. California.

ACE DIGIPACE II (Advanced Ni-CD Battery Management System), battery charger and cycler, simultaneously handles both Rx and Tx batteries, three different charge currents, two discharge currents (If you're not cycling your Ni-CD's, you should be!), $75 OBO. Keith Love, <KeithCLove@yahoo.com>, 282 Ontario Road, Milpitas, CA 95035, 408-945-0531.

Glasflugel Mosquito 1/4 scale, RTF w/all servos (8) & battery, aero-tow or slope... $950.00. Dale King, (972) 475-8093, Texas.

Multiplex Discus 4m... $550.00; Multiplex Alpina CS 4m... $500.00; Multiplex condor 4.2m... $1350.00; ASW-20 5m... $1550.00. Above are RTF. Just add Rx & battery. Airtronics radio gear in all. Greg, (760) 568-2224, California.

60" all moulded HLG, hollow core wing & tail, new... $200.00; all moulded F3B, hollow core wing & tail, new... $550.00. Peter Zak, (305) 687-7706, Florida.

Please send in your scheduled events as they become available!

R/C Soaring Resources

These contacts have volunteered to answer questions on soaring sites or contests in their area.

Contacts & Soaring Groups - U.S.A.

Alabama - North Alabama Silent Flyers (NASF), Ron Swinehart, (256) 722-4311, <ron.swinehart@lmco.com>, or Rob Glover at AMA3655@aol.com, http://sh1.ro.com/~samfara/

Alabama - Central Alabama Soaring Society, Ron Richardson (Tres.), 141 Broadmoor Ln., Alabaster, AL 35007, <ron_mail@bellsouth.net>.

Alabama - Southern Alabama & NW Florida Aerotow, Asher Carmichael, (334) 626-9141, or Rusty Rood, (904) 432-3743.

Arizona - Aerotowing, slope sites in AZ (rugged), Arizona Flying Eagles R/C Demo. Show Team, Dave Wenzlick, (602) 345-9232, <azdw@uswest.net, or visit CASL at <http://www.public.asu.edu/~vansanfo/casl>.

Arizona - Central Arizona Soaring League, Iain Glithero, (602) 839-1733.

Arizona - Southern Arizona Glider Enthusiasts, Bill Melcher (contact), 14260 N. Silwind Way, Tucson, AZ 85737; (520) 825-2729. SAGE welcomes all level of flyers!

Arkansas - Northwest Arkansas Soaring Society, Tom Tapp (President), RT 2 Box 306, Huntsville, AR 72740; (501) 665-2201, eve.

California - DUST, Buzz Waltz, 68-320 Concepcion, Cathedral City, CA 92234, (760) 327-1775.

California - High Desert Dust Devils, Stan Sadorf, 14483 Camrose Ct., Victorville, CA 92392; (760) 245-6630, <Soareyes@aol.com>.

California - Inland Soaring Society, Robert Cavazos, 12901 Forman Ave., Moreno Valley, CA 92553, RCAV@aol.com.

California - Northern California Soaring League, Mike Clancy, 2018 El Dorado Ct, Novato, CA 94947; (415) 897-2917.

California - Sacramento Valley Soaring Society, Dudley Dufort, 225 30th St., Suite 301, Sacramento, CA 95816, (916) 448-1266, <www.svss.org>.

California - South Bay Soaring Society, Mike Gervais, P.O. Box 2012, Sunnyvale, CA 94087; (408) 683-4140 (H), (650) 354-5469 (W).

California - Southern Calif. Electric Flyers, John Raley (President), 1375 Logan Ave., Costa Mesa, CA 92626; (714) 641-1776 (D), (714) 962-4961 (E), e-mail: E-Flyer@ix.netcom.com.

California - Torrey Pines Gulls, Ron Scharck, 7319 Olivetas Ave., La Jolla, CA 92037; (619) 454-4900.

Colorado - Rocky Mountain Soaring Assn., Phil Weigle, 1290 Salem St., Aurora, CO 80011; (303) 341-9256 eve.

Eastern Soaring League (VA, MD, DE, PA, NJ, NY, CT, RI, MA), Tom Keisling (Pres./Editor), (814) 255-7418, kiesling@ctc.com; Ben Lawless (Sec./Tres.), LawlessB@lang.af.mil; Anker Berg-Sonne (Scorekeeper), (508) 897-1750, anker@ultranet.com; Josh Glaab (Contest Coordinator), (757) 850-3971, jglaab@pinn.net; <http://www.eclipse.net/~mikel/esl/esl.htm>.

Florida - Florida Soaring Society, Mark Atzel (President), 1810 SW Terrace, Ft. Lauderdale, FL 33312, (954) 792-4918.

Florida (Central) - Orlando Buzzards Soaring Society (www.specs-usa.com/~ingo/OrlandoBuzzards), Jerre K. Ferguson (Pres.), 4511 Pageant Way, Orlando, FL 32808, (407) 295-0956, <jerre@bellsouth.net>.

Georgia - North Atlanta Soaring Association, Tim Foster, (770) 446-5938 or Tom Long, (770) 449-1968 (anytime).

Hawaii - Maui Island Slope Soaring Operation (MISO), Duane A.K. Asami, 262 Kamila St., Kula, HI 96790, pgr. (888) 932-6247, <dasami@mauigateway.com>.

Illinois (Chicago Area) - Silent Order of Aeromodeling by Radio, Jim McIntyre, 23546 W. Fern St., Plainfield, IL 60544-2324; (815) 436-2744. Bill Christian, 1604 N. Chestnut Ave., Arlington Heights, IL 60004; (847) 259-4617.

Illinois (Northwest) - Valley Hawks R/C Soaring Club, Jeff Kennedy (President), 414 Webster St., Algonquin, IL 60102, (708) 658-0755, eve. or msg.

Indiana (NE Indiana and NW Ohio) - League Of Flight by Thermal (LOFT), Ft. Wayne, Marc Gellart, (419) 229-3384, <isoar2@wcoil.com>, <www.rc-aero.com/LOFT>.

Indiana - Bob Steele, 10173 ST Joe Rd., Fort Wayne, IN 46835; (219) 485-1145.

Iowa - Eastern Iowa Soaring Society (IA, IL, IN, KS, NE, WI), Ed Harris (editor), 2000 NW 84th Ave., Ankeny, IA 50021; (515) 965-5942, <harris.edwin@mcleodusa.net>, <http://eiss.cnde.iastate.edu>.

Kansas - Kansas Soaring Society, Pat McCleave (Contact), 11621 Nantucket, Wichita, KS 67212; (316) 721-5647.

Kansas - Aerotowing, Jim Frickey, (913) 585-3714.

Kentucky - Bluegrass Soaring Society, Frank Foster (President), 4939 Hartland Pkwy., Lexington, KY 40515; (606) 273-1817.

Kentucky - Louisville Area Soaring Society, Ed Wilson (Contact), 5308 Sprucewood Dr., Louisville, KY 40291; (502) 239-3150 (eve), e-mail <ewilson1@bellsouth.net>.

Louisiana - Capitol of Louisiana Soaring Society (CLASS), Leonard Guthrie (contact), 12464 Fair Hope Way, Baton Rouge, LA 70816, (225) 275-2122, flynguts@aol.com.

Maine - DownEast Soaring Club (New England area), <Jamesiii@blazenetme.net>.

Maryland - Baltimore Area Soaring Society, Erich Schlitzkus (President), 52 North Main St., Stewartstown, PA 17363; (717) 993-3950.

Maryland & Northern Virginia - Capital Area Soaring Association (MD, DC, & Northern VA), Chris Bovais, 12504 Circle Drive, Rockville, MD 20850; (703) 643-5513.

Massachusetts - Charles River Radio Controllers, Dick Williamson (past president), 21 Pendleton Road, Sudbury, MA 01776; (781) 981-7857 (W), <williamson@ll.mit.edu>, <http://www.charlesriverrc.org>.

Michigan - Greater Detroit Soaring & Hiking Society, Greg Nilsen (Sec.), 260 Rosario Ln., White Lake, MI 48386-3464; (248) 698-9714, GNilsen624@aol.com.

Michigan - Great Lakes 1.5m R/C Soaring League & "Wings" Flight Achievement Program & Instruction. Ray Hayes, 58030 Cyrenus Lane, Washington, MI 48094; (810) 781-7018.

Minnesota - Minnesota R/C Soaring Society, Tom Rent (Contact), 17540 Kodiak Ave., Lakeville, MN 55044; (612) 435-2792.

Missouri - Independence Soaring Club (Kansas City area, Western Missouri), Edwin Ley (Contact), 12904 E 36 Terrace, Independence, MO 64055, (816) 833-1553, eve.

Missouri - Mississippi Valley Soaring Assoc. (St. Louis area), Peter George, 2127 Arsenal St., St. Louis, MO 63118; (314) 664-6613.

Nebraska - B.F.P.L. Slopers, Steve Loudon (contact), RR2 Box 149 E1, Lexington, NE 68850, (308) 324-3451/5139.

Nebraska - Lincoln Area Soaring Society (Wilson Slope Races), Jim Baker, 920 Eldon Dr., Lincoln, NE 68510, (402) 483-7596, jcbaker@inebraska.com, <http://www.geocities.com/CapeCanaveral/Hangar/1671/lass-2.html>.

Nebraska - SWIFT, Christopher Knowles (Contact), 12821 Jackson St., Omaha, NE 68154-2934, (402) 330-5335.

Nebraska - Ken Bergstrom, R.R. #1, Box 69 B, Merna, NE 68856; (308) 643-2524, <abergst@neb-sandhills.net>.

Nevada - Las Vegas Soaring Club, Jim Allen (Pres), 7117 Caprock Cir., Las Vegas, NV 89129; ph (702) 658-2363.

Nevada - Sierra Silent Soarers (Reno/Sparks/Carson City/Minden area), Chris Adams, (775) 345-1660, chris@scrollsander.com, <http://www.scrollsander.com/SierraSilentSoarers.htm>.

New Jersey - Vintage Sailplane R/C Association, Richard G. Tanis (President/Founder), 391 Central Ave., Hawthorne, NJ 07506; (201) 427-4773.

New Mexico - Albuquerque Soaring Association (all soaring & electrics), Jim Simpson (contact), 604 San Juan de Rio, Rio Rancho, NM 87124; (505) 891-1336, <jimbonee@aol.com>, <http://www.abqsoaring.com>.

New York, aerotowing Rochester area, Jim Blum and Robin Lehman, (716) 335-6515.

New York - Elmira - Harris Hill L/D R/C, aerotowing & slope, John Derstine, (717) 596-2392, e-mail johnders@postoffice.ptd.net.

New York, aerotowing Long Island Area, Robin Lehman, (212) 744-0405.

New York - (Buffalo/Niagara Falls area) - Clarence Sailplane Society, Lyn Perry (President), (716)655-0775; e-mail perryl@sstaff.sunyerie.edu; Jim Roller (Competition Coordinator), (716) 937-6427.

New York - Long Island Silent Flyers, Stillwell Nature Preserve, Syosset, NY, Ze'ev Alabaster (President), (718) 224-0585, or Peter DeStefano (VP), (516) 586-1731.

New York - Syracuse area, Central NY Sailplane Group, Dave Zinteck, Minoa, NY, (315) 656-7103, e-mail Zinteck@aol.com.

North Carolina - Aerotowing, Wayne Parrish, (919) 362-7150.

Northwest Soaring Society (Oregon, Washington, Idaho, Montana, Alaska, British Columbia, Alberta), Sandie Pugh (Editor - NWSS Eagle), 1119 SW 333rd St., Federal Way, WA 98023, e-mail: parrot2luv@aol.com, (253) 874-2429 (H), (206) 655-1167 (W).

Ohio - Cincinnati Soaring Society, Ed Franz, 7362 Ironwood Way, Burlington, KY 41005; (606) 586-0177, <ejfranz@fuse.net>.

Ohio - Dayton Area Thermal Soarers (D.A.R.T.S.), Walt Schmoll, 3513 Pobst Dr., Kettering, OH 45420, (513) 299-1758.

Ohio - Mid Ohio Soaring Society (MOSS), Hugh Rogers, 888 Kennet Ct., Columbus, OH 43220; (614) 451-5189, e-mail <tomnagel@iwaynet.net>.

Ohio, Kentucky & Indiana - Ohio Valley Soaring Series, Marc Gellart, (419) 229-3384, <isoar2@wcoil.com>, <www.dma.org/DARTS/ovss/ovss.html>.

Oklahoma - Central Oklahoma Soaring, George Voss, (405) 692-1122.

Oklahoma - Tulsa R/C Soaring Club (TULSOAR), http://www.mccserv.com/tulsoar

Oregon - Bay Area R/C Fliers, Mike Shaw, <grizzy2@gte.net, (541) 269-2423.

Oregon - Portland Area Soaring Society (PASS), Pat Chewning (Secretary), 16766 NW Yorktown Dr., Beaverton, OR 97006, (503) 645-0323, e-mail: patch@sequent.com, www.europa.com/~patch/

Oregon - Salem Soaring Society, Al Szymanski, CD, (503) 585-0461, http://home.att.net/~aszy/sss/>.

Oregon - Southern Oregon Soaring Society, Jerry Miller, 3431 S. Pacific Hwy. TRLR 64, Medford, OR 97501, e-mail Milljer@aol.com, ph/fax (541) 535-4410.

Tennessee - Memphis Area Soaring Society, Bob Sowder, 1610 Saddle Glen Cove, Cordova, TN 38018, (901) 751-7252, FAX (901) 758-1842.

Tennessee - Tullahoma (Southern Middle Area), Coffee Airfoilers, Herb Rindfleisch, 106 Inglewood Circle, Tullahoma, TN 37388, (931) 455-1836, <herb@cafes.net>.

Tennessee - Soaring Union of Nashville, Terry Silberman, PO Box 17946, Nashville, TN 37217-0946, (615) 399-0846.

Texas - aerotowing, Dallas area, Andrew Jamieson, 9426 Hillview, Dallas, TX 75231, (214) 349-9346, e-mail ajsleep@aol.com. Larry Sengbush, (972) 291-4840.

Utah - Intermountain Silent Flyers, Tom Hoopes, (801) 571-3702 (eve). "Come Fly With Us!"

Vermont - Steve Savoie, 926 Gage St., Bennington, VT 05201, (802) 442-6959.

Virginia - Blue Ridge Area Soaring Society (Central Virginia - Waynesboro), Tom Broeski, (540) 943-3356, <tjb@rica.net>.

Virginia - Tidewater Model Soaring Society, Herk Stokely, (757) 428-8064, herkstok@aol.com.

Virginia - Appalachian Soaring Association, Virginia's Southwest (Bristol area), Greg Finney, 106 Oakcrest Circle #5, Bristol, VA 24201; (540) 645-5772, e-mail <gfinney@naxs.com>.

West Virginia & Pennsylvania - Tri-State Soaring, Chip Vignolini, 2784 Mill St., Aliquippa, PA 15001; (724) 857-0186, Voice mail (412) 560-8922, <ydne30a@prodigy.com>.

Washington - Seattle Area Soaring Society, Waid Reynolds (Editor), 12448 83rd Avenue South, Seattle, WA 98178; (206) 772-0291.

Wisconsin - Valley Aero Modelers, Lee Murray, 1300 Bay Ridge Rd., Appleton, WI 54915; (920) 731-4848, <lmurray@athenet.net>.

Outside U.S.A.

Australia - Southern Soaring League, Inc., Mike O'Reilly, Model Flight, 42 Maple Ave., Keswick SA 5035, Australia. Phones: ISD+(08) 8 293-3674, ISD+(08) 8 297-7349, ISD+(018) 8 082-156 (Mobile). FAX: ISD+(08) 8 371-0659.

Canada - Calgary R/C Soaring Society (Alberta), thermal duration & slope soaring, Chris Gregg (Pres.), (403) 226-1019, cgregg@cadvision.com; Eric Weder (Sec.), (403) 289-8844, eaweder@telusplanet.net.

Canada - Montreal Area - C2VM Glider Club, Jacques Blain (President), days (514) 443-5335, eve. (514) 652-6167.

Canada - Greater Niagara Area Thermal Soarers (GNATS), Flat Field Soaring & Aerotowing, Gerry Knight, (905) 934-7451 or Don Smith, (905)934-3815.

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Japan - Dr. Paul "Sky Pilot" Clark, 2 - 35 Suikoen Cho, Hirakata Shi 573, Osaka Fu, Japan; IAC+(81) 720-41-2934, <pclark@osk3.3web.ne.jp>
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Reference Material

Summary of Low-Speed Airfoil Data - Volume 3 is really two volumes in one book. Michael Selig and his students couldn't complete the book on series 3 before series 4 was well along, so decided to combine the two series in a single volume of 444 pages. This issue contains much that is new and interesting. The wind tunnel has been improved significantly and pitching moment measurement was added to its capability. 37 airfoils were tested. Many had multiple tests with flaps or turbulation of various configurations. All now have the tested pitching moment data included. Vol 3 is available for $35. Shipping in the USA add $6 for the postage and packaging costs. The international postal surcharge is $8 for surface mail to anywhere, air mail to Europe $20, Asia/Africa $25, and the Pacific Rim $27. Volumes 1 (1995) and 2 (1996) are also available, as are computer disks containing the tabulated data from each test series. For more information contact: SoarTech, Herk Stokely, 1504 N. Horseshoe Circle, Virginia Beach, VA 23451 U.S.A., phone (757) 428-8064, e-mail <herkstok@aol.com>.

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The Eastern Soaring League (ESL) is a confederation of Soaring Clubs, spread across the Mid-Atlantic and New England areas, committed to high-quality R/C Soaring competition.

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ESL Web Site: http://www.eclipse.net/~mikel/esl/esl.htm

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The Condor is designed by Mark Allen, who is considered one of the best model sailplane designers in the United States, if not the world. Mark has taken all of his previous experience in competition thermal duration flying, plus all the knowledge he has gained from his earlier contest and sport designs, to design the Condor. Mark Allen's previous planes, to name only a few, are: Falcon 880 and 800, Falcon 600, Swift, Thermal Eagle, Vulcan, Night Hawk, Sky Hawk, Electric Hawk, Falcon 550E, Rocket, Pocket Rocket and, of course, the molded, world championship F3B Eagle. By taking the best of these designs and the new construction techniques available today, Mark has come up with, what we feel, is the absolute best open-class sailplane available.

The wings are made in America by Ron Vann, owner of Spectrum Enterprises. Ron is also an avid competition flier, and is considered to be one of the best wing manufacturers in the industry. Taking his years of experience in manufacturing wings, Ron has produced wings and stabs for the Condor that we feel are world class. Starting with the spar that Mark Allen designed, Ron uses only the best and most accurately cut foam cores available. He then uses hand-picked obechi from Kennedy Composites, which is applied with West Systems epoxy.

CONDOR

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This is after he has first reinforced the wing with carbon fiber and fiberglass. The servo wells are routed out, as are the flaps and ailerons. What this means for the sailplane enthusiast is a minimum amount of work before getting the sailplane into the air. The wing is light but strong enough to take "pedal to the metal" launches. Also available as an option is Ron's unique internal capped hingeline. This means even less work for the modeler.

The fuselage is made by Steve Hug, owner of the Fuse Works. Steve is another master at what he does. Fuse Works makes what we consider to be the best fuselage in the business. Steve uses only the best fiberglass and Kevlar™ available. All fuselages are manufactured using the West Systems epoxy. Steve's fuselages have the least amount of pinholes, if any, that we have seen. In fact, the fuselage is so pretty that many people do not paint it. The fuselage is extremely light, and yet strong enough for very aggressive flying and landing. For those with very little building time, and those who don't like to paint, there is an optional pre-painted, in the mold, fuselage which includes a unique carbon fiber canopy.

All kitting is done at Slegers International's new and larger manufacturing facilities. We have spared no time or expense with supplying the modeler with the best materials available. The kit contains pre-sheeted wings and stabs by Ron Vann, fiberglass and Kevlar™ reinforced fuselage by Steve Hug, 3/8" diameter titanium wing rod from Kennedy Composites, optional 3/8" diameter steel wing rod by Squires Model Products, control horns and tow hook by Ziegelmeyer Enterprises, pushrods by Sullivan, or optional one piece steel rods. All wood is custom cut. Specially cut basswood of 60" is supplied to eliminate splices in leading edge, flaps and aileron capping. All balsa is hand picked, light to medium, to ensure light weight wing tips, stab tips, and rudder. Aircraft ply is used for the pre-fit servo tray and towhook block. A comprehensive instruction manual is included.

The Condor, designed by Mark Allen, wings by Ron Vann, fuselage by Steve Hug, and kitted by Slegers International, we feel, is the best open-class, thermal duration sailplane available, at an affordable price of $395.00 plus S&H.

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