



PRICE: \$295⁰⁰ + 6&H

The LASER is an all new, 2 meter thermal duration sailplane designed by Ron Vann. It is recommended for the intermediate to advanced flier. Clean aerodynamics start at the tight fitting, slip-on nose cone. The one piece, epoxy/fiberglass fuselage is reinforced with Kevlar™ for rigorous competition. The LASER features an efficient double taper wing planform, a standard tail, and full flying stab. The two piece wing is joined using a 3/8" carbon fiber rod system for maximum strength and minimum weight.

The LASER is a solid thermal sailplane balanced to feel light and nimble on the sticks. Thermals and light lift are easy prey for this modified SD7037 airfoil/planform combination, which delivers especially high zoom launches and slower than usual landing speeds. Large 2.125" chord flaps, coupled with generous aileron and rudder area, make landings a dream. The full flying stabilizer is used to extract a super positive pitch response at all flying speeds.

SPECS:
AIRFOIL WING SD7037 MOD & THINNED
AIRFOIL STAB SD 8020
PLANFORM DOUBLE TAPER
WING AREA 565 SQ. IN.
STAB AREA 70.6 SQ. IN.
WING LOADING 8.8 - 9.8 OZ./SQ. FT.

The kit features include:
• Sleek new design with plug-on wings, standard tail, and full flying stab.
• Pre-sheathed and finish sanded wings & stab. Construction is obechl over foam.
• Routed servo pockets and aileron & flap hinge lines; 3/8" carbon fiber wing rod.
• Epoxy fiberglass fuselage, Kevlar™ reinforced nose to tail. Slip-on nose cone.
• Easy instructions by Bob Duke Graphics, and all hardware.

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Steve Savoie of Gorham, Maine is test flying The Birdworks, ZIPPER, at one of the local, 15 foot slopes in the Portland, Maine area. Steve's review of the ZIPPER (construction, modifications, and flying characteristics) is on page 4. Photos by Steve Savoie & James Armstrong.



**ZIPPIDY DOO DA, ZIPPIDY DAY!
MY, OH MY, WHAT A BEAUTIFUL BAY!**



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The Soaring Site

NERCSC

The Third Annual New England R/C Soaring Convention will take place in Portland, Maine in the Fall of 1997. Steve Savoie, President of the DownEast Soaring Club says, "A special thanks to all who helped make our 1995, 2nd Annual NERCSC a success. The 3rd Annual event is scheduled for late 1997, and preparations are already underway! So, if you can join us next year, please mark your calendars now, or give us a call so we can add you to our mailing list."

Steve's phone number is (207) 929-6639.

Wind, Rain, Snow, And Everything Else

We hope that all is well with each of you, and that the unusual weather conditions that many of the U.S. states and other countries are experiencing has not caused any hardship for you and yours.

With the flying season upon us, as most of you know, it is always important to note any change in the weather around you; perhaps this year it is a bit more important than usual, especially in locations where thunderstorms can signal potential tornado watches or warnings. It might be well to consider having one of the folks at the flying field monitor the conditions by listening to a local weather station; of course, if the sky is clear, then a thumbs up is still probably in order. After all, it is still important to test out the direction of the air!

Anyway, please fly safely this season, and have fun!

Happy Flying!
Jerry & Judy Slates

Announcement To The RC Soaring Community

"I am no longer a partner, nor in any way associated with Northeast Sailplane Products (NSP) and Sal DeFrancesco."

...Stan Eames

"SHORT CUTS"

Steve Savoie
RR #3, Box 569
Gorham, Maine 04038
(207) 929-6639



Zipper Statistics

Wing Span	48"
Wing Area	260 sq. in.
Wing Loading	9 - 14 oz./sq. ft.
Airfoil	EH 2-10 mod.
Price	\$50.00 + \$5.00 S&H

ZIPPIDY DOO DA

Last month, I was pleasantly surprised when a Birdworks

ZIPPER kit was delivered by the man with the big brown truck. I saw one of Steve Hinderks' Zippers at the New England R/C Soaring Convention (NERCSC) last November and was really impressed with the unique design of the plane. Anyway, the Zipper came in a 26 x 2 x 7.5 box; included are foam cores/beds, a very strong fiberglass fuselage, canopy and detailed directions.

The remainder of the kit components are provided by the builder. Steve provides a very detailed list of additional components required to complete the construction. I started construction of the wings, which were white foam sheeted with 1/64 plywood.

One of the most unusual aspects of the wing is that the leading edges are glued on and shaped prior to the attachment of the plywood skins. In other words, the plywood wraps over the leading edge and is then sanded to shape.

I'm getting ahead of myself; time to back up. I used basswood for the leading edges because it's so easy to shape and sand. Duct tape was used over the cores to protect them from the planing and sanding.

Steve gives very detailed directions for using a combination of wing skin tape and CA to bond the skins. I elected to use a mixture of Aerosil and West Epoxy, which is just my personal preference. Also used was a dab of 3/4 oz. glass and a 1/4" strip of .007 carbon fiber to stiffen the evelons, which was my own modification. Each wing half



SHAPING FIN. DUCT TAPE SANDING GUARD.



EPOXY CENTER JOINT

was then bagged under 6" of vacuum for 24 hours. The elevons were then cut free with an exacto knife and beveled. The directions require the foam (both on the wing and elevon) to be melted out with a fine tip soldering pen just under the skins, and replaced with microballons and epoxy mixture when the caps are attached. At this point, the tip is attached to the wing

and shaped.

I had some problem with this procedure and would recommend the tips be added and shaped to match the airfoil, and then cut the elevons out. Once the hard balsa tips were shaped, I dimpled them with a 1/16" bit, and reinforced them with 1.7 oz. Spectra cloth and thin CA. The proper wing dihedral is pre-cut into the beds, so



SIDE VIEW, RIGHT WING - SANDING DIHEDRAL.



RIGHT WING PANEL & FUSELAGE.



WING UNDER WEIGHT & VACUUM BAG.

wing assembly is very easy and accurate. I used 2 layers of 4 oz., 2" wide fiberglass tape, top and bottom. The root sections of the elevons were reinforced at the control horn area by melting out the foam and filling the voids with microballons and epoxy. I used 1/2A nylon control horns and clevises, because they are small and will shear easily during crashes.

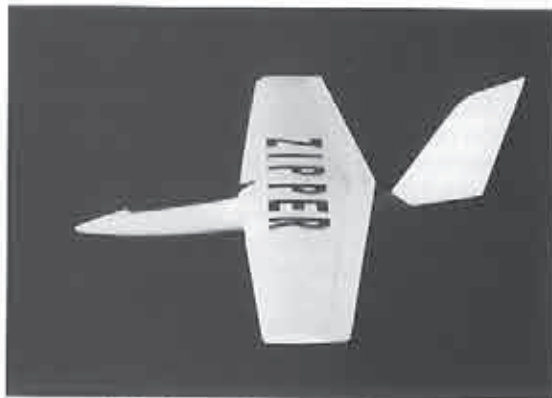
Instead of installing the 1/8" leading edge dowel directly into the wing, I installed a 1/8" ID brass tube, which is then cut flush with the leading edge. The 1/8" dowel is then inserted into the tube and can easily be replaced with a spare if sheered. A 6-32 nylon screw secures the wing to a hold down plate in the fuse.

The fuselage Steve supplies is very strong, and could be described as a variant of a Taco fuselage, except the glass wraps the nose area; no special jigs are required. One bulkhead is fitted forward of the wing to receive the wing hold down dowel.

The vertical fin was made of 3/16" hard balsa as per the directions. I reinforced the leading edge with a small strip of spruce.

The plans call for a 3/16" square of spruce to stiffen the base of the fin and fuselage; I replaced this with a length of 1/4" OD hollow carbon fiber tube that had the vertical sides sanded down to 3/16". This allowed me to snake the antenna out the tail of the fuselage instead of out through a wing tip. The canopy has an inner flange that allows it to snap into place without a securing device. Both the canopy and fuselage had referencing lines cast onto them from their molds. A great idea, I just sanded the saddle and canopy areas with a 2" drum sander mounted on a drill press. A perfect fit.

I mounted a standard, 6 channel Airtronics receiver in the nose along with a 250 battery pack. Steve said that a standard radio receiver can be used, so I used micro servos to ensure that all the radio gear was forward of the wing. I used my Infinity 600 to provide the mixing for the elevons, though a mechanical mixer from the Birdworks is available for an additional \$6 for non-mixing radio applications.



and black), and hinged with green vinyl tape. I used Krylon white on the fuselage and vertical fin; the canopy was shot with florescent orange.

The all up weight was 17.9 oz., which gave me a wing loading of 10 oz./sq. ft. This was the first plane I had ever built that didn't require nose weight. The balance point for a flying plank is more critical than a conventional tail configuration, so make it exact. Steve gives excellent throw recommendations for the elevons, which should be adhered to for **initial flights**; after that, set them up for personal preference. The plane was built with several minor modifications to increase survivability. These include vinyl hinge tape, small nylon clevises, control horns, and an easily replaceable, hold down dowel. Spectra on the tips and carbon tape and glass inside the elevons will most certainly toughen up the trailing edges. This is not to imply that the Zipper is easily damaged if built stock; it's a tough little plane. I purposely did not use Airtronics hinge tape, because it would

not give way on a crash like vinyl tape would; no need to tear up servo gears needlessly.

The first attempt to fly the plane was less than uneventful. An error with setting up the proper amount of trailing edge reflex (all my fault), and a 49% dual rate setting that I thought was cleared from the radio, created a very short, but spectacular flight. The flying site was a bowled out sandpit that's well known for unpredictable turbulent lift. Upon launch, the Zipper went straight up and drifted into bad wind; then it rolled over and began a downwind run at the face. The problem was I lost flying speed and had no turning authority because the dual rates were activated. The result was that both elevons were separated from the wing when the vinyl tape failed, a broken nylon clevis and a broken control horn, as well as shearing the wing dowel. **Don't ever set up control surface throws at 2 a.m.** A week later, the plane was flown, at a 75' coastal slope, without dual rates and with the proper throws. Anyway, the little plane flew well. The turns were very sharp and tight, with no tendency to tip stall. The wind was barely 12 kts., and the plane had a very respectable flight. The landing was hot, but controlled.

The third and successive flights were at another coastal slope site that has a 45 degree face, which ranges in height from 12' to 15'. The wind was at a steady 15 kts. and was about 10 degrees off from straight on to the slope. The Zipper flew great. Its ability far exceeded that of its pilot. That day, I had the plane up to about 50', and down to the top of the brush. The only incident was pilot induced when I took a 270 degree turn, and found myself going downwind at about 30 mph. The resulting cartwheel severed only the leading edge dowel, which was replaced in minutes with a spare. Several additional flights took place that afternoon, including

numerous, low level (10') banking turns.

I had called Steve several times while writing this article; he was quite helpful, explaining the ins and outs of a tailless flight. He did say that the Zipper performs best when ballasted up to 14 oz./sq. ft. Mine was flown unballasted at 10 oz./sq. ft. This unique little plane carries itself well on small slopes and even better on the larger, west coast slopes. At the NERCSC, we watched a video of a Zipper going through the turns at 90+ mph., so I know it likes speed. It's simple to build and fits neatly behind the seats of my Ford Ranger, always ready for a quick toss.

Steve offers a 60" inch version of the Zipper with pink foam cores, and a 36" version called the Zap. I'll be helping a friend bag the 60" wing with 4.5 oz. carbon/glass hybrid cloth, and no plywood.

Contact Steve at the Birdworks for more information; his number is 541-332-0194. ■



CANOPY - NOTE INNER FLANGE.

FUSELAGE

The Ace 310 servos were installed with balsa shims and hot glue. The wing was covered with Oracover (orange



ZIKA

SOARING EAST TO WEST

with
Bob Sowder
1610 Saddle Glen Cove
Cordova, Tennessee 38018
(901) 751-7252
FAX (901) 758-1842



R/C soaring in general."
(signed) For the LSF Executive Board,
Robert A. Steele, President.

I Like to Plan Ahead...

As the 5th running of the Mid-South Soaring Championships is within days, I have had the pleasure of talking and

Old flying buddies: Jim West (L) and Bob Sowder (R), with ASW 22, Wichita, Kansas.



LSF Announcement

The following press release was provided by Bob Steele, President of the League of Silent Flight (LSF)

"On April 27, 1996, the Executive Council of the Academy of Model Aeronautics voted to certify the League of silent flight as the official special interest group (SIG) representing Radio Control Soaring. This makes the LSF responsible for assistance in NATS planning and execution, as well as certain possible rule making activities for Soaring. It is felt that this action will help AMA achieve its goals, and also lead to improved representation to AMA by the Soaring community."

"Both LSF and AMA anticipate that the Executive Council action will be a step forward for both organizations and for

corresponding with many RCSD subscribers and advertisers during the past 6 months about the event.

I want to take this opportunity to personally thank all of the companies and individuals, who have undergone the time and expense, to donate the many sailplanes and sailplane related items to make this event such a huge success. Your interest and generosity adds value and enjoyment to everyone associated with the Mid-South, especially the contestants, who will take home and enjoy the fruits of your labor. To all of you, we say *Thank You*.

As the '96 contest season is rolling in hot and heavy, I urge those of you who anticipate travel to various events, to plan ahead. Several years ago, when I was living in Wichita, Kansas, boy



TG 3 Navy Trainer, scratch built by Paul Bennett, Indianapolis, Indiana.

Lynn Deans, San Francisco, with Andromeda.



vacancy at 4 A. M.... Trucker checking out early. I was invited to sleep in my car until the hotel clerk rapped on my window to come in. This, in the mist of a major mid-west heat wave, 105 to 110 degree day-time highs. I forget

did I mess up. Not as some of you may assume by living in Wichita (the pearl on the prairie), but by overlooking a few travel logistics related to a certain contest in Higginsville, Missouri. I left Wichita on a Friday afternoon (as many natives do), in route to Higginsville. No hotel reservations, very little cash on hand, except for a credit card, uncharged batteries, and no sun-tan lotion.

Being the eternal optimist, I wasn't particularly concerned, because I had never had a problem finding a hotel vacancy, could always find an ATM machine, and I would simply charge my batteries when I got to the hotel.

As I drove within 50 miles of Higginsville, I began to stop at every single hotel along I-70. No Vacancy... No Vacancy... No Vacancy... As it was by now, well past midnight, my personal batteries were well zapped, not to mention my growing concern about finding a place to: A) Sleep; B) Charge the micads. At last, 50 miles the other side of the Higginsville exit, I found a hotel that would have a

what the night-time lows were, but I don't remember them being that low.

By 7:30 A.M. I had at least managed a few hours sleep, and a bit of a boost on the nicads. Near miss on the batteries though. Make sure when you're charging your batteries at some strange hotel, that you don't plug the batteries into a wall socket that's wired to a light switch. Gee, that never happens, does it, Mike Kelly? Make sure when you turn the lights off for the night, that those little red charging lights continue to glow, or you may have just made a long drive for nothing!

If you're planning an out-of-town contest this summer, do yourself a favor... Call ahead and make your hotel reservations, plan the trip adequately, make sure you have your wing rod, *both* stab halves, your transmitter, charger, and watch out for those hotel wall sockets. Above all, be safe, enjoy the contest, and come home in good cheer. Here's to the contest season. May yours be enjoyable and rewarding.

Thermals! Bob ■

Coming to "Terms" With Electric RC Aircraft Ni-Cad Batteries

...by Gordy Stahl
Louisville, Kentucky

Ni-Cad batteries have all sorts of classifications, idiosyncrasies, shapes and sizes. They have more written about them than almost any other part of our electric systems. You hear about cycling, peak charging, reversing, memory, balancing, capacities, voltages, current, thermal abuse, milli-amp-hour (mah) ratings, pushed, matched, SC, SCE, AR, SR, and SCR cells.

So... I put together an RC "laymen's list of explanations" that apply to Ni-Cads as WE use them. Are these explanations scientifically correct? Sure... Kinda. Well anyway, close enough for what you need to make a decision on what you should use. Or at least it'll give you enough information in order to help you ask the right questions.

BATTERY "PACKS"

First, watt's on the battery pack label? If the label is hot pink and says "super hot, extra auto cutoff, mega blast", chances are the batteries are the same as the ones with the plain gray label. It's buyer beware time again, guys. In some cases, the "no rules for advertisers" rule, is in effect.

What makes one supplier's battery packs "better" than another? Simple... And two things: the way the cells are connected, and what kind of cells are used in the pack. Itsy-bitsy spot welds on thin metal strips make that high tech, multi-strand wire used to connect the pack to the motor, a silly afterthought. The cool wire makes the buyer think he is getting something really hot... He is... The spot welds get hot every time resistance builds and you throw out a perfectly good set of batteries, because they got "memo-rized" or some other mysterious condition.

Fact is, they can't get the charge they need, and they can't get the power out through the bad connections. Building your own packs correctly is a sure way

to insure against poor current flow. Suppliers who specialize in electric aircraft packs are your best choice to buy from. They tie the cells together with our high current demands in mind.

The type of cells used is the other consideration in pack quality. Now we get into VALUE decisions. Depending on your power needs, that is, how much voltage and amperage (current) you need - to get the results you want - for the \$'s the pack costs. If you are flying a very light model that doesn't ask for a lot of current, and you're not planning to blast charge them after each run, then the batteries you buy should be SC or SCE type. If, on the other hand, you plan on doing some serious using and charging, then AR, SCR, or SCRC batteries will do what you want.

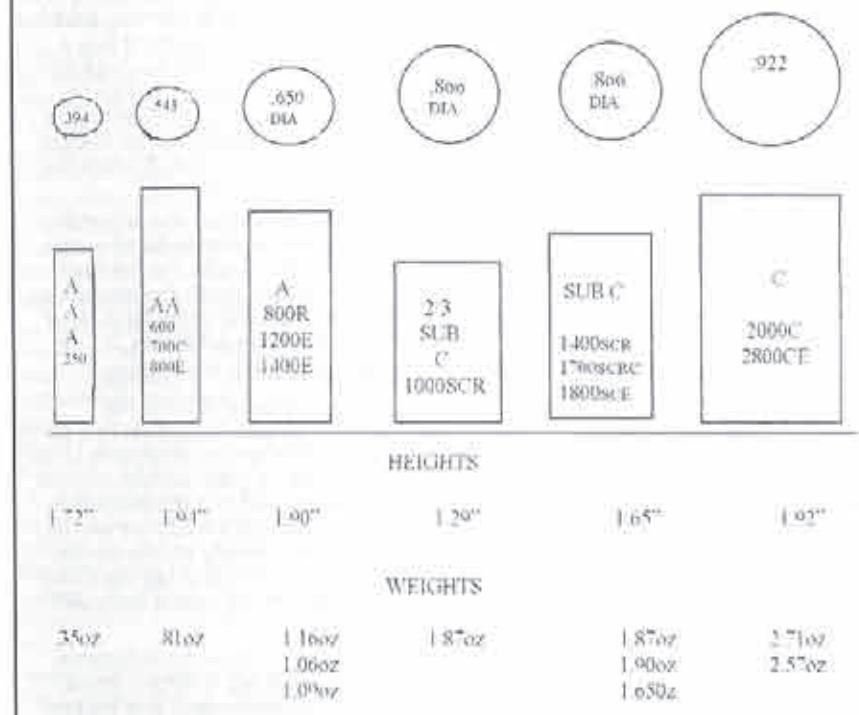
BATTERY TYPES AND BRANDS

There are a number of manufacturers of batteries that we use; Gates, Panasonic and Sanyo are the names we hear most. Sanyo makes the cell which meets the high current output (low internal resistance) that we need for real performance in our models, and that is the AR, SCR or SCRC versions. Some say the "R" stands for Racing. They also make a version called "SCE", which might stand for Extra. The big difference is in output.

The "E" series stores more energy in the same size case than an "R" series, but it wants to take its time about giving you the use of that energy (less current, higher internal resistance). At low amp demands, the "E" will last longer than the "R", however the "R" supplies a higher discharge voltage. What that means to us is POWER and RPM. Think of an alkaline battery which is rated at 2 volts and lasts a long time (here comes that bunny, banging a drum). If you take a thick piece of wire and short that cell, the most you get is a little wimpy spark. Do that to an "E" and you get a huge spark and a quick discharge; do it to an "R" and you get a violent arc and burning red wire. That's the kind of power we need to match glow engine type performance.

The Ni-Cad cells we use are all load

Ni-Cad Shapes, Sizes, Capacities & Weights



rated at 1.2 volts; pretty much their physical size depicts how much energy is in them. Our radio flight packs use an "AA" cell, rated at 450 to 700 mah. Regardless of the physical size of the cell, it still has the same voltage rating of 1.2. A button cell has 100 mah at 1.2v. If your system used 100 mah at .9 volts minimum to run its servos, you would get about ten seconds of actual operation, before your battery was empty, below your needs.

For electric flight motors, we use 800 mah AR's (slightly thicker than AA's), 1000 mah SCR's (approx. the same thickness of C's, but only 2/3's as tall), 1400 SCR's (same thickness as 1000's, but approx. 1/3 taller), and 1700 SCRC's (same thickness and same height and higher under-load voltage). 800 AR's and 1000 SCR's are used most often where space is restrictive in the

fuselage. They are lighter, but in no way compare to a 1400/1700 in performance.

AA, AAE, AAR, AE, AR, SC, SCE, SCR, S CRC... WATT?

Actually, yes! These nomenclatures do indicate not only how many watts the cells will provide, but they also indicate the cell size and its intended purpose. AA's are double A sized cells; add an E and you get more energy stored in the same size case. Add an R and you get a lower resistance cell, comfortable with high charge and discharge currents.

A's are slightly thicker and shorter than AA's. SC's (similar in diameter to an alkaline C battery but in varying heights and hence the term "sub-C") live by the same rules as the A's, etc. D sizes exist too, but are pretty heavy for

our use.

MEMORY VS BALANCING

I was convinced there was no such thing as memory, and in our applications there isn't. Constant, perfect cycling of a Ni-Cad can cause a build up of particles in the cell structure, which would reduce its capacity (vaguely similar to a rain bucket filling with leaves). Our motor batteries do not get that kind of exercise, so it does not apply. What is true is that no two cells have exactly the same capacities due to the consistency of the cadmium layering. (Picture the flows of garden hoses with varying kinks.) So, it is possible for a pack to have some cells discharged more than the rest. Those cells, during a fast charge, could end up peaked when the other cells are over-charged. You know how you feel when you've been over-charged; they and you get hot. It affects their performance and life.

A battery that reaches peak charge will start to warm up (just so much room in the can). If the charge is still forced down its throat, the battery will ultimately get real hot, then vent or pop due to its moisture turning to steam. So, here are three tips:

First, if when charging, you feel your pack gets warm (not hot), it's peaked.

Second, if you notice only a few cells getting warm, the pack is most likely un-balanced.

Third, if you over-charge hard, you could have a real safety problem; we're not talking shrapnel, but certainly a mess. Cadmium is a toxic waste. (By the way, that's why you don't throw Ni-Cads in the garbage; take them to the local battery store for proper disposal!!!) Cells that die on the shelf fairly quickly, usually have vented their electrolyte.

WATTS IN A NI-CAD

Well, that's a true statement, but I meant the physical construction. The metal jacket provides a number of functions. It protects and seals the inside, it acts as a conductor for the negative side of the current, and it acts as a heat sink to dissipate the heat developed during charging and

discharging. Inside is a small roll of nickel, much like a toilet paper roll, and it is perforated with a lot of holes for the cadmium material to cling to, as well as to allow some flow of gasses. Wrapped inside of this roll is felt, with some liquid (electrolyte), which acts as a conductor, much like battery acid in a car battery. The positive end has a membrane seal that has the capacity and duty to allow excess gasses to escape. That includes the electrolyte liquid in cases of extreme discharges and overcharges, definitely reducing the capacity of the cell.

Heating the outside of the cell with a soldering iron for connections won't normally bother a cell. I use a flat screwdriver tip to hold the connecting strip in place and to draw heat away from the cell, after soldering.

MATCHING AND PUSHING

Car racers are convinced of the importance of matching cells in a pack and put big \$'s where their faith is, to prove it. True, a pack is only as good as its weakest cell, but in most cases, under the high amp loads we use our cells at, it's not nearly so important. Why should you spend big bucks for matched cells?? To gain a competitive edge.

Cell Matching is done by computer (usually). Each cell is cycled, peak charged, and discharged at a set rate (10 amps) to a certain voltage. Its overall, average voltage is recorded, and the time it took for the cell to reach the discharge point. The cells that take the longest with the highest average voltage during discharge are the "cream". I've been told the Germans have found that the best performing cells weigh the most, so they start by weighing then testing.

Pushed cells are different, yet similar. Similar, in that they cost a lot more per cell. They deliver more power than a non-pushed cell, and are definitely a must for a competitive edge. They might make a good performer into a great performer. In the case of a speed record, definitely the way to go. Everyday use, is not worth the investment (unless they're on sale!!).

Cells are pushed by computer charging, also. Each cell is high amp

charged and discharged under controlled circumstances in order to break down any resistance or wake up any lazy sections of the cell's physical structure. Both processes are done by "pack" assemblers, and not by cell manufacturers.

A PEAK AT CHARGERS

The popular choice for modelers, who do not exceed cell packs of over 16 cells, is the new Astro Peak charger. They also make a peak charger for beyond 16 cells. Astro is dedicated to electric RC motors and electric airplane application chargers. SR Battery makes, arguably, the premium Ni-Cad charger available today, with features and a price to match.

Why are these chargers, versus all the car type chargers, available cheaper? Because they offer dependable auto-peak charging at a constant amperage, and voltage (current), which means faster charges and full packs, with real protection against overcharging. Most of the 16 cell and less chargers are AC/DC, meaning they can be plugged into the wall, as well as powered by a car battery, for field charging. The 16+ chargers draw so much current during a charge that the electronics get too expensive to allow them to work on AC.

For us "AC" means the wall socket and "DC" means the car battery.

PEAK CHARGING, THE HOW TO'S

A cell is peaked when it can't hold any more energy. It can be detected by

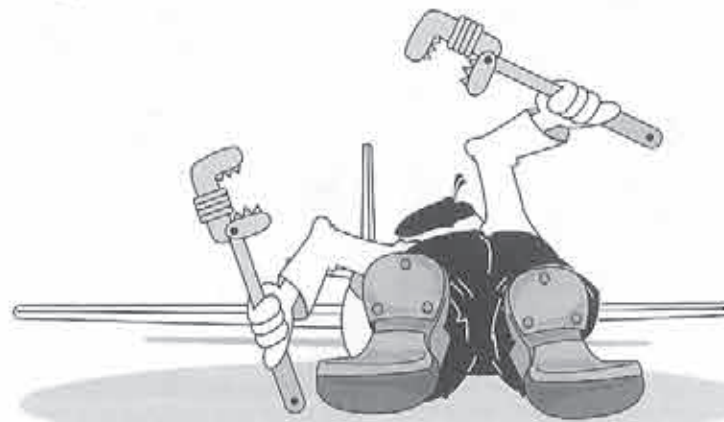
feeling the pack or cell for slight warmth, or can be detected with the use of a digital voltmeter. A charging cell can be seen gaining voltage; at peak a voltage decline will begin. The warmth test is a valid way to determine close-enough peaked packs for sport flying.

Balancing a pack is as simple as discharging a pack way down with your motor. Always let your pack cool before re-charging. A hot pack will get hotter.

SOME COMMON SENSE TIPS ON CELL, MOTOR, PROP COMBO'S

If your pack is cool after a flight, you either have incredibly good cooling, didn't run much, or you're not using a big enough prop/cell count combination to get maximum efficiency out of your motor system. If you are finding really, really hot cells and motor, your airflow cooling might need improving, less cells, or a smaller prop. An efficient system will produce a good amount of heat; that is, too hot to hold for very long, but not so hot that your wires melt down! Too thin, motor/battery wires, or car type battery connectors, make your mega-pack stupid. The current has to have enough road to travel on; don't save pennies on wire and connectors.

Want more details about Ni-Cads? Contact the real experts, such as Ed Slegers @ 201-366-0880, or SR Batteries @ 516-286-0901; or if you just want to shoot the breeze, call me @ 502-491-5001. ■



ZIKA

**The Dortmund
Intermodellbau 96
The biggest and best
glider show in the world!**

I would expect that some of you have visited the WRAMS and the Toledo shows upon occasion. For those of you interested in powered aircraft, these are excellent shows. For those of you interested in competition and fun fly sailplanes, there are always a few things to be seen. But you won't see much scale. If scale sailplanes is your thing then a visit to the Dortmund Intermodellbau is a must.

You may have heard of the Nuremberg toy show, which is held in Germany every year. That show features toys for children, and some model aircraft, but by far the biggest model airplane show is the Dortmund Intermodellbau held each year at the end of March.



Robin Lehman
63 East 82nd St.
NYC, NY 10028
(212) 879-1634



Herr Robers with his many kits. His newest is the 4.5 meter ASW 27. Sailplanes Unlimited Ltd. is bringing in his ASW 24/27, Discus and Pilatus B-4, all 4 meter, priced lower than last year at \$495.

Herr
Müller -
He built
the
monster
LS4 seen
at Elmira
last year.
He
custom
builds
just about
anything
you might
want.



This blimp flew overhead most of the day.



By 10:00 A.M., it's filling up. By noon, it's wall to wall people!

I had the opportunity of visiting the 1996 Intermodellbau. And what a show it was!

When you first enter this huge convention center, you quickly learn that there are seven enormous halls filled with cars, boats, trains, and airplanes. These are SERIOUS toys. Toys for adults!

What distinguishes this show from its American counterparts, is that roughly fifty percent of the entire model airplane display consists of sailplanes, Sailplanes, SAILPLANES. No matter where your interest lies, you will find something there for you! There were plenty of fun fly polyhedral ships in every size, color, and state of construction. There were serious competition ships of every description, but most of all there were scale sailplanes - from the you-build-it kit type to the completely finished, all-glass, ready-to-fly type! If you are interested in gliders of any sort, and especially scale sailplanes, this show is an absolute must.



This is where it all begins. Lots more kids at it than in the U.S.A. Why is that?

One of the nicest aspects of my visit to Dortmund was having the opportunity to meet some of the people I have been speaking with for many years. Herr Roebers was there, as was Herr Krause, and Herr Rumpf (Mr. Rosenthal, who makes most of the fiberglass fuselages for almost all large scale gliders flying



Herr Krause, himself. If he alone supplied America, we would all be happy. He has just about anything one might ask Santa for!

in Germany, 1/3 sized and up).

Herr Krause had a very nice stand displaying some 30 odd models from under two meters up to his five meter scale Libelle. He's coming out with a nice five meter ASW 27 which will sell for around 1400 DM. Roebbers has just come out with his four and a half meter version of the ASW 27 which, at under 900 DM, is a steal!

Also, as you might expect, well represented were Multiplex (distributed by Beemer R/C), Robbe, and of course Graupner (Hobby Lobby sells some of their line). None of these three seemed to be venturing into scale very much except for some rather nice smaller ships. Robbe has apparently merged with Futaba and has some rather nifty gadgets in their catalogs which are not available



The 1/3 Libelle and the ASW 24 soar over the Krause stand.



Master builder, Willi Kling, poses with his huge Connie. Many superb models were at the show. About half were sailplanes, but there were many, superb, powered ships!



Andreas Geitz of Fiber Classics with nifty, retracting electric motor.



This new retract system has a shock absorbing device in the front. You see here the inside of a retracting (electric) motor (towards the rear).



Mr. & Mrs. Rosenthal - They make probably 50% of the fiberglass fuselages flying today. They specialize in large scale fuselages. Just about everyone uses them (i.e., the EMS Minimoa, the 1/3 Fox, and the LS 4 seen at Elmira last year). Beautiful, quality work!

here in the USA. I saw a really great on/off switch which incorporates a volt meter. When you turn your switch on, the volt meter tells you "green" - you can fly, or "red" - watch out! Of course, nothing replaces a battery tester, which checks your battery under drain and tells you whether in fact you have enough juice to FLY, but that's another story. I found out, after three calls to the Robbe representatives here, that they unfortunately do not stock this item, they don't know about it, and they don't even have a 1996 catalog!!

If towplanes tickle your fancy, there was a LARGE, three meter plus, 1/4 size Pilatus Porter sold by Bräuer Modells. This is an all-glass version of the PC-6, and looks to be an excellent towplane.

Modellbau Kuhlmann also produces a 1/5 all-glass Pilatus Porter, which frankly I could not resist. I plan to have it airtowing by this summer, and if it turns out to be an excellent airplane, I will pass the news on. At 1800 DM, this kit is not a bad buy considering that it comes with a scale landing gear and all-glass flying surfaces with every single rivet molded in!

I also met Andreas Geitz, the man behind FiberClassics. He produces a whole line of scale powered aircraft, from a three plus meter DC-3 and Spitfire, to a DHC-2 Beaver (a nice towplane), to an all-glass 6.5 meter Nimbus. Of



(Above) Braüer carries some very large airplanes!
How about a 6 meter motor-floater!?!

(L) Try this huge, Braüer Modelle, 1/4 Pilatus Porter PC-6 at 3.52 meter span, 36 lbs. All glass, & quite light for its size. Would make an excellent tow plane with a 3W 80 R2 motor up front!



The Braüer Modelle, 1/3 Schöbe SF 25C - Falke, 5.1 meters, will perform on a 30 cc motor.



The PriBek team - Rosenthal fuselages for their 1/3 Ka6E and ASK 18. They produce a completely finished version of these ships, which weight in at 20 lbs. Beautiful workmanship! The best I have yet seen! Sailplanes Unlimited Ltd. is bringing in a few of these at cost.

particular interest however, are his retractable electric motor and shock-absorbing landing gears. With an Ultra 2000 motor, this nifty gizmo folds back down into the fuselage of a sailplane. It's very clean and neat, and with an introductory price of 349 DM, it's really not a bad buy when you see what you get for your money.

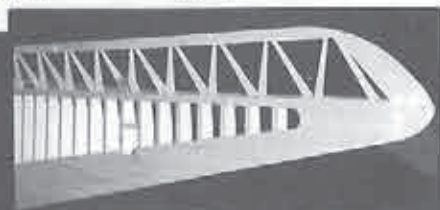
The high point of the show for me was running into two manufacturers of scale ships which I have hitherto only corresponded with. It is one thing to see photocopies of pictures of an aircraft, but it's quite another to see them in the flesh. Schüller and Fleckstein produce a completely finished, all-glass ASW 24 (5 meters, about 18 pounds, E 203), and all-glass ASH 26 (6 meters, about 20 pounds, HQ 3/14-3/12), and perhaps most interesting of all, the current world championship aerobatic sailplane, a 1/3 version of the two-seater Fox (4.66 meters, about 22 pounds, E 374). These aircraft have the scale color schemes molded into the fiberglass. In the case of the Fox, the bottom of the wing is



The span on this Vega was at least 8 meters!



The almost 1/3 Minimoa by EMS. 4.8 meters, it comes pre-built. Sailplanes Unlimited Ltd. has a few.



Detail of the finished Minimoa wing from EMS.



Lots of airplanes to see. One of the largest is this Habicht at almost 1/2 size! Over 6 meter span and weighs 45 lbs.

How about an R/C tongue?
Perhaps an airspeed indicator.
At any rate, it goes in and out. I wonder what airfoil it has!?!





The underside of the Schüler & Fleckstein 1/3 Fox. Color is molded into this all glass scale sailplane, and the hottest new world aerobatic champion.



Schüler & Fleckstein produce an all glass ASW 24, ASH 26, and 1/3 scale Fox. They are very large and very light. The 1/3 Fox should be a real floater at 22 lbs. The 6 meter ASH 26 weighs around 20 lbs. (I lifted one!) It comes with color molded into the glass. A good price for great quality, Sailplanes Unlimited Ltd. is bringing in a few.



Plenty of Oldtimers to be seen!



The X-Model team - ARF models are from 300 - 1080 DM, and come in many colors.

I visited the EMS stand, where their fleet of scale and non-scale sailplanes were on display. The almost completely finished Minimoa (cover it and install radio gear and fly) is of course spectacular. Their other offerings, a 1/4 size Pilatus, a Ventus, and their 6.5 meter Nimbus 4 are superb airplanes, if a little pricey. By far, the best buy is their four plus meter DC 800 which is an absolutely 100% completely finished aircraft with two plug in wing sizes plus winglets plus a retractable landing gear. Literally, put your servos in and



go fly! Sailplanes Unlimited, Ltd. is bringing in a few of these, priced at somewhere around \$795.00 these are a great value. Oh, and by the way, this bird will weigh in at somewhere around six pounds, and so will fly in the very lightest of lift. These will be sensational for winch, airtow or slope.

As you can see from the photographs, the quality of workmanship was superb. I shared a meal with master builder Willi Kling and could not resist getting a photograph of him with the

Over 50% of the static models were sailplanes. Many had finished cockpits. Have a seat in this ASH 25!



A tow release, anyone?



A jet, anyone? A jet powered towplane? Superb workmanship!



Many beautiful colors.

Lufthansa Constellation he built. This is his fifth one of these! It's a real masterpiece and an example of just how good the German craftsmen are.

One interesting model on display was an almost 1/2 sized Habicht. One day the builder of this enormous aircraft showed up and the pilot has a radio controlled tongue - yes, you read right



Nice, large motorgliders!!



These two sailplanes, 1/3 Kobuz 3, took first and second in the German 1995 master airtow scale sailplane fly-in. Beautiful! Scale cockpits!



Lots of non-scale ships to choose from.



Kuhlmann was there to supply all of your modeling needs. He also makes a 1/4 Huskey and a 1/5 Pilatus Porter. Both make very nice towplanes.

- he sticks his tongue in and out. Perhaps this gives him an added advantage when trying to tell whether he should enter the next thermal or not. At any rate, he stuck his tongue in and out, in and out, and seemed rather dissatisfied with the (smoke-filled) air he tasted inside the convention hall (I had to agree).

If motor gliders light your candle, there were three or four notable ships to be seen. A beautiful 5.8 meter Dimona, and a 1/3 Scheibe SF 25 C-Falke which was over five meters.



Which way is the wind coming from? Windsocks and kites of every shape and color!!



Gliders, gliders, gliders, in all shapes and sizes...

This ship performs well on a 30 cc motor.

Last, but by no means least, speaking of German craftsmanship, I was met outside the convention hall by PriBek (Peter Prinke and Seigfield Beck) who build a whole series of 1/3 sized sailplanes. This is the best workmanship I have yet seen - foam-obechi wings with capped spoilers and completely finished ailerons, stabs, and rudders. The fuselage is bright white gloss with wing rod tubes installed, and a nifty snap-on/snap-off device which holds the wings on. PriBek makes a 1/3 Ka6E (5 meters, E 207-205-205, 20 pounds), a 1/3 ASK 13 (5.33 meters, E 68-67-66, 20 pounds), a 1/2.66 ASK 18 (5.33 meters, E 203-201-193, 20 pounds), a 1/2.77 ASW 19 (5.4 meters, Ritz 3 mod, 20+ pounds), a 1/3 ASW 24 (5 meters, E 203-201-193, 20 pounds), a 1/3 ASW 27 (5 meters, HQ 2.5/12, 20 pounds), and finally the 1/3 MDM-1 Fox two-seater aerobatic ship (4.66 meters, E 374, 22 pounds).

Depending on the options, the basic kits for these (by no means basic, but completely finished) price in at around 1500 DM. An unbelievable price when you see what you get! Sailplanes Unlimited, Ltd. has several of these on order. If all goes well, some should be flying by mid-summer. Delivery time is approximately 10 to 12 weeks.

If you're interested in sailplanes or powered gliders, a trip to Dortmund is just about indispensable. Should you find yourself in Germany next March, make sure you make your way to Intermodellbau '97. No matter what

Internationale Deutsche Meisterschaft des DMFV für Scale-Semi-Scale Segelflugmodelle

This is the most important scale event in Germany, and takes place 13 - 15 September at the MSC Röttingen.

The sailplanes at this event are judged on scale fidelity; then, they fly various maneuvers and are judged on the flight performance. Gliders are towed up as high as they want. The quality of airtow is also judged. Semi-scale is judged from a distance, while scale is highly scrutinized from very up close and personal. This is certainly how scale should be run by the AMA. The very best in Germany will be there. Most of the sailplanes will be 1/3 size and up, with complete cockpit details, etc.

Contact DMFV (Bonn) 011-49-228-978500; or Michael or Rolf at EMS, phone 011-49-7161-929384, fax 011-49-929386. Both speak English.

...Robin ■

size, shape or kind of sailplane tickles your fancy, this show is not to be missed. It is by far the best in the world.

Don't expect many people to speak English, do expect excellent food, and above all, do anticipate seeing the best and latest sailplanes available in the world! What a treat!

Enjoy! ■



ZIRA



Mike Deckman
1154 Strawberry Lane
Glendora, CA 91740
(818) 914-0311

Curt Nehring
764 S. Knollwood Lane
San Dimas, CA 91773
(909) 592-2105

Paul Ikona
1010 N. Citrus
Covina, CA 91722
(818) 966-7915

"CLIMMAX 7037 HLG/ARF"

Curt: Sometime in early December, when the winch lines were down and there were about 15 guys waiting to launch, in line, ahead of me, I noticed a fellow SOARHEAD, Ron Adams (our equipment manager), across the field, flying his straight wing HLG off an upstart. I decided to wander over and see if I could get some stick time. Equipment managers shouldn't be having this much fun when the winches are all fouled-up, anyway! Ron was flying a Climmax 7037 HLG off his Vision and, after several minutes of prodding on my part, relinquished the transmitter so that I could play around a bit. Now, I've been turned off by poly HLG's, but this thing thermalled like crazy and, with a little camber, I soon found myself in a mini-boomer, quite aways downwind. I worked it back to the field and finished off with a speed run in reflex. It was probably the most fun I've had in a long time.

Paul must have gotten wind of this, because my Christmas bonus from CSP (California Soaring Products) was the pre-faced ARF version. Paul even tossed in the battery pack, RCD receiver, and servos (no switch necessary). The kit is a breeze to build

and includes everything except the obvious things like adhesives and covering materials (i.e., Flecto Varathane). Ron found me a towhook to practice zooms off the upstart after my arm gives out.

I began working on the plane on the kitchen table, while watching the Rose Bowl game on T.V. I finished coating the wings the next night and don't intend to paint the fuselage, although I did put some neon-orange on the wing tips and vertical stab.

The Climmax 60" HLG is a product of C.R. Aircraft Models at (619) 630-8775, and is commonly in stock at Paul's shop. These little things are a real kick, and highly recommended by all of us company pilots at C.S.P.

Paul: What more can I say. As usual, Curt's said it all...

"2M BARRACUDA"

Curt: I've basically been airplane-less for the past several weeks, so I've had to borrow planes to fly (that I've never flown before), in order to compete in our local contests. I usually try to get at least one trim-flight in before the pilot's meeting because everybody sets up their gliders a bit differently (i.e., aft C.G., transmitter functions, etc.). This month, Glenn Clifton (C.S.P.'s kit-review builder extraordinaire), loaned me his newly finished 2M Barracuda, designed and manufactured by Brian Agnew. This glider is a real sweetheart, and I'm not saying that just because it shagged me 2nd place against some very efficient open class ships. It's a 7037, but likes to be flown on the fast side; it even thermal well in reflex. It covers a lot of sky with minimal loss of altitude, and even slows down nicely when heavily cambered, with no tendency to drop off. Our club makes extensive use of monofilament on the winches, so I prefer to reflex going over the top of the zoom in order to grab some mileage. Well, this thing is rock steady going up, and ballistic off the line.

What did you think of it, Paul?

Paul: Well, I have been flying a 2M Super-V for over a year, now, and found flying the 2M Barracuda was a complete surprise for me. The flight

characteristics of the 2M Barracuda were comparable to that of the Super-V.

The 2M Barracuda launched very high, and tracked straight as an arrow. The zoom was awesome; the transition from reflex to normal flight mode was excellent! Thermalling was a real surprise; when it encountered small, thermal bubbles, the sailplane would maintain altitude, and not even drop the nose or a wing tip! Thermal turns were tight without any problems. I found that a small amount of camber would cause the Barracuda to fly almost out of sight without any problems.

For me, the landings produced the true flying characteristics. When the flaps were deployed, there was no ballooning that I could see; it landed right on the spot!

Curt: Speaking of spots, I've never been a big fan of anything under 100", but have now changed my mind. Our club (SWSA) is hosting our 1st Annual, 2 day, 2M Soarfest '96 on June 8th - 9th. (See RCSD calendar of events page in this issue.) I intend to beg Glen to let me use this glider to take on Super-V's, and anything else that shows up.

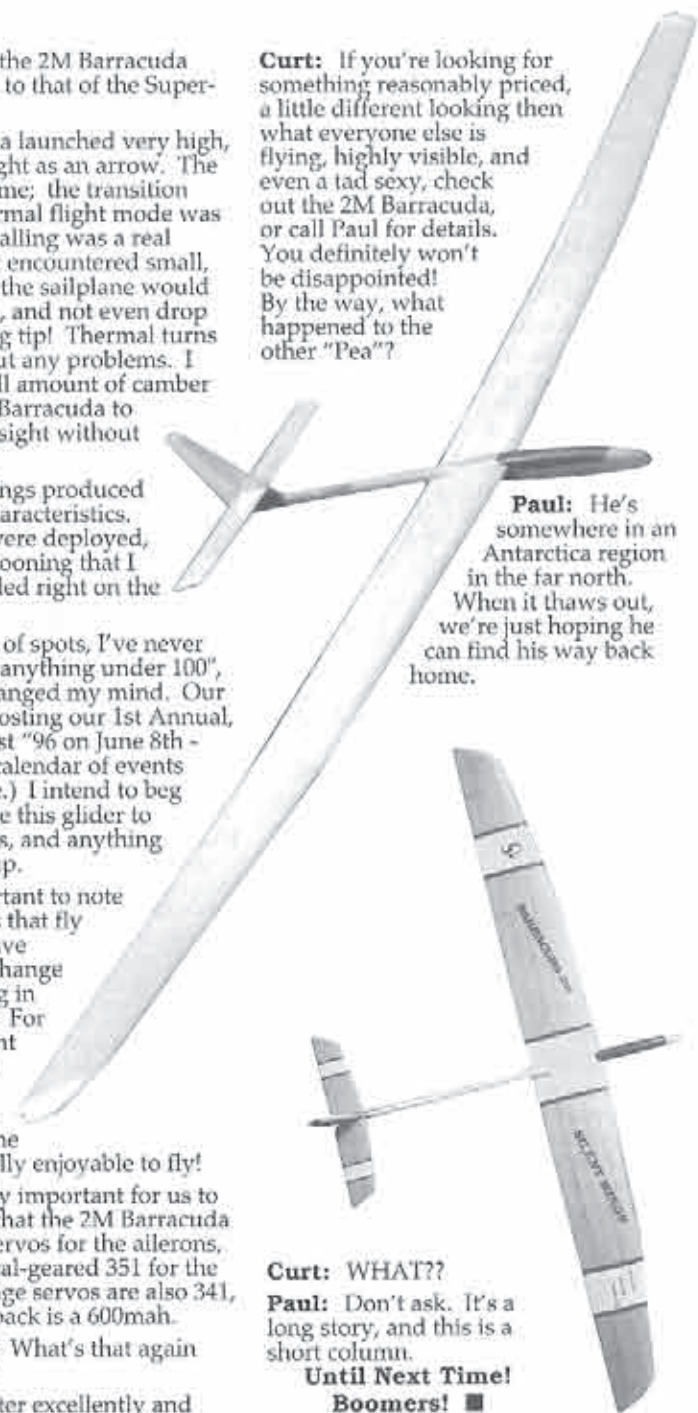
Paul: It's important to note that several folks that fly the Barracuda have found it best to change the programming in the Vision radio. For myself, I just went to the winch and launched it without making any changes in the radio. It was really enjoyable to fly!

It is also probably important for us to point out, Curt, that the 2M Barracuda is using JR 341 servos for the ailerons, and the new metal-gear 351 for the flaps. The fuselage servos are also 341, and the battery pack is a 600mah.

Curt: Whoops. What's that again about the 351's?

Paul: They center excellently and don't chatter. They work extremely well.

Curt: If you're looking for something reasonably priced, a little different looking then what everyone else is flying, highly visible, and even a tad sexy, check out the 2M Barracuda, or call Paul for details. You definitely won't be disappointed! By the way, what happened to the other "Pea"?



Paul: He's somewhere in an Antarctica region in the far north. When it thaws out, we're just hoping he can find his way back home.

Curt: WHAT??

Paul: Don't ask. It's a long story, and this is a short column.

Until Next Time!
Boomers! ■



Jer's Workbench

Jerry Slates
P.O. Box 2108
Wylie, TX 75098-2108
(214) 442-3910

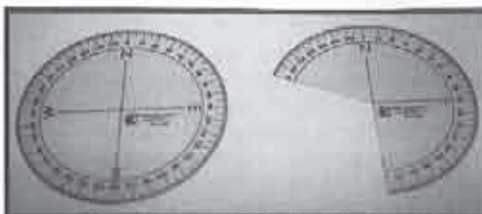
Another Way to Measure Aileron Differential

Today's modern models with full house controls (rudder, elevator, ailerons, and flaps), and the use of a computer radio, are the norm.

But way back when, or yesteryear (like they used to say on radio, before T.V.), when I started flying R/C, full house models were few. If one flew a model with ailerons, they were considered a hot shot pilot. Someone with a full house model with aileron differential was considered a hi-tech, hot shot pilot!

Back then, in order to get aileron differential, one needed a bit of mechanical engineering in their background. And, the first servos on the market were push-pull, with no output wheel, and no adjustments. There were very few over the counter hardware items. One even had to make their own bellcranks and control horns. To get aileron differential, all you needed was a set of 30° or 60° bellcranks and/or a set of off center control horns. And the final result was for more up than down in the aileron movement, and one usually settled for what they got.

Today, using state of the art computer radios, one can adjust the aileron differential very easily with just the push of a button. Many manufacturers



The protractor that I use. Just cut and trim to meet your needs.



Easy to use and read, aileron down.



Easy to use and read, aileron up.

also state in their instructions the kind of differential recommended for their specific model. It usually reads something like, "Up aileron 3/8", and down aileron 1/4".

Well, some of you still want to fine tune your model a bit more, and can do so by changing from "inches" to "degrees". How does one get degrees? With the use of a protractor. The pictures show how simple it is to do. ■

searching for ever since I discovered that what goes down (dive) comes back up (zoom). I had escaped from the bungee dungeon and I had been doing awesome zoom launches from the winch, but something was missing. I still had to fly my sailplane around the sky, burning up the altitude, land it and then chase after the line before I could do another zoom. I like the zoom a lot.

I was visiting the Winch Doctor's hut one rainy Saturday, and told him about my quest for zoom. "Wish you still had that old A. J. Interceptor, don't you Bungee Boy?" The old winch doctor smiled and motioned to me. "Follow me to the Library..." We made our way to the library in the next room. Stacks and stacks of vintage model magazines were everywhere, forming huge columns that went up to the ceiling; they probably supported the roof, too. He stopped in front of one stack with an even, thick coating of balsa dust, and ran his finger down the tall pillar and stopped, grabbed a magazine, and zip! Pulled it out just like the tablecloth out from under the dishes trick. It was a British magazine, *RCM&E*, from 1985. On the cover was a small scale-like jet model, attached to... a CATA-PULT! "Do you think this might blow your skirt up? Oh, you who wants to zoom?" I quickly scanned the article, and I thought, "Wow! This looks like fun, a short catapult launch, 200-300 ft. altitude, land at your feet and launch again." Then I thought a little more, "This is the last thing I need, another project to work on; I still haven't finished that triplane canard F3B model you got me all hyped up for..." The winch doctor looked at me and whispered, "When in doubt, farm it out. Get one of your friends to help with it."

The next day, I was on the phone to our esteemed Prez, and one of the fastest builders that I know, Don Pesznecker, and told him about the idea. He had seen a catapult glider in *RCSD* a few months ago. It looked just like a little slope ship, scratch built. "Well, let's build one," he says. We researched some small slopers that were available in kit form and found a suitable one: Douglas Aircraft Shilhouette, with a 40" span, about 17 oz. ready to fly, and most importantly, a very clean design. We ordered two kits and began to brainstorm. It was decided to mount the towhook about 1" behind the wing leading edge, and to mount it solidly into a pine block on the bottom of the fuselage. Pez, being a very speedy builder, had his Shilhouette finished inside of two weeks, with fiberglass on the fuse and Iron-on on the wings. We met at the secret

catapult glider testing range at Canby Canyon, and tried our luck. After the traditional test glide over tall grass, it was determined that we were ready. The trim was in the ball park, so we hooked this little rascal up to Pez's short high start. We stretched it back a regular amount and Don gave a count down. 3, 2, 1, Go! And Go it did! It went straight out front about head high, at a very high speed. I breathed an ever so slight amount of up elevator and the thing went vertical! Whee-Haa! On the way up, I tried a roll, which it did just fine, and topped it out at around 300 ft. altitude. I flew it around and adjusted the trim a little bit and landed it uneventfully. Subsequent flights found us pulling the short highstart *baaack* further and further yet. We took turns flying it and trying different techniques. Jerry Hinds had managed to get about 4 or 5 vertical rolls on launch, but I had lost count, as I was laughing so much. We wound up nearly breaking the stab off the fuselage during release and decided to call it a day. We all agreed that this was Big Fun!

That evening, I visited the winch doctor at his hut and told him in wild-eyed superlatives how much fun we had with the little Shilhouette catapult glider. The biggest problem we had was holding on to it securely enough, and then turning it loose safely without smacking the empennage with our hands as it rapidly departs. "Sounds to me like you need a release," says the old doc, matter o' factly, as though he were suggesting some kind of prescription. "I beg your pardon? What are you talking about?" I asked, wondering if this was going to cost me money, or get me dirty. "Remember when you were all excited about archery, Grasshopper? You had to hold that bowstring up to your cheek with the two fingers you'd rather scratch your nose with, right?" I nodded yes, scratching my nose. "Well, the high-tech Robin Hoods have come up with a do-hickey that straps to your wrist and holds the bowstring for you, and releases said bowstring at the touch of a button... a release." I remembered now, an arrow release!

Pez took a trip to the local pointed stick store and told them he needed a

Catapult Launch R/C Gliders, or Slope on a Rope

Still More Conversations With
the Winch Doctor

...by Douglass Boyd
Estacada, Oregon

Zoom! Power, Inertia, vertical performance. This is something I have been

release. They showed him several that were about \$40.00 and up. "I want a cheap release," he sez. I guess that they looked at him kinda funny and were about to suggest something in a trench coat, but finally sold him a Tru-Flite crack-shot for \$15.95. It is a T shaped device with a button on the top and a lanyard for your wrist. Attached to the rear of the fuselage was a loop of bowstring, -er winchline. This allowed us to pull back the hi-start even further, only the hi-start had become a loop of 2 strands of 3/16 latex tubing about 15 ft. long, each. This was attached to a pole 6 ft. tall secured with guy wires. One launch with this combination and the split ring that were using pulled out and looked more like a misshapen paper clip than a tow ring. Jerry Hinds returned the next week with a solid ring machined from unobtainium that would not pull apart.

At the Celebration of Silent Flight, Pez flew the Silhouette for a demo flight or two and people were lining up to try it out. Even die-hard power flier, Jerry Holcomb, liked it. The Silhouette received the award for "Most Impressive Flight Demonstration". Many people were overheard muttering, "...That's neat. I want one!" At a power-type fun-fly up in Washington, as many as 250 people were counting down: 3, 2, 1, GO! For flight after flight of this tiny little speed demon... Everyone said, "This is great! We need to come up with a competitive event for this." I wracked my brains, but couldn't come up with anything as unique as the launch itself. I went to visit the Winch.doc at his hut on another rainy, Saturday night. Where else would I go to get my brains wracked?

How about aerobatics? I asked, We could make it an aerobic contest... "For that, you would need some impartial judges to score the flight." The winch.doc looked like he was wracking his brains, too. "You know, the problem today is that everyone wants to make a contest out of everything. Why can't we just fly these little catapult gliders and say that whoever has the most fun, wins? Take landing, for instance; you know how there is

such a controversy about landing points determining the outcome of the contest? Shucks, we might as well go back to flying U-control carrier event..." Suddenly, a twelve volt light lit up over my head as I remembered how much fun it was to watch the carrier event. In that event, you had to take off from a scale carrier deck, fly a bunch of laps as fast as you can, then slow down and fly a bunch of laps as slow as you can, followed by a carrier deck spot landing! That night, the idea for R/C glider PSS carrier event was born.

We all have heard that the landing part of R/C soaring is probably the most difficult, landing exactly on the spot, exactly on time, usually with a crosswind while some buffoon calls out, "58, 59, 60, LAND NOW!" The high value of landing points has led to an evolution of pointy protuberances such as shark's teeth, landing skegs, and other stop-me-on-a-dime gadgets. Some experts say that it is important to demonstrate the control part of R/C, and that it separates the men from the boys. Others want to de-emphasize the landing, presumably, because they're the boys.

OK, here's the idea, Launch from the catapult, fly around a bit (a mission to be determined by being read sealed orders just moments after launch), then return safely to base with a spot landing on a sort-of scale carrier deck. Points are awarded based on where on the deck your plane stops and whether you have completed your mission successfully. No external hooks, crooks, skegs, teeth or cleats will be permitted. What do we use to stop the plane, you ask?

Go to the foam rubber supply store and buy a foam mattress single bed size. Cover it with gray terry cloth and put strips of Velcro on the deck area where landings are to occur. You can even cut out a foam rubber conning tower (avoid hitting this), to make it more recognizable as an aircraft carrier. The bottom of the airplane is covered with the hook part of the Velcro stuff, a relatively safe type of skid/airplane stopper. Scale details can be added as desired, and now the U.S.S. Hook and Loop is ready to set sail for parts

unknown.

Someone has the theme from Top Gun on the boom box, as you carry your power slope scale F14 out to the flight deck. You switch all R/C systems on, and hand your ship to the catapult officer. He stretches it back, and watches you for your signal. You salute, "3, 2, 1, LAUNCH!" The tiny ship rockets away towards the horizon. You add a touch of up elevator and go ballistic! OK, the sealed orders are opened; they say you must perform three rolls before returning to the ship. It seems simple enough, executing three rolls. "On my mark...now!" The three rolls twist almost as fast as an eye blink. Mission accomplished; returning to ship. As you line up on the small deck, you check your six one last time, just out of habit to make sure there are no bandits on your tail. Final approach control says clear to land, you call the ball... Scrootch! I love the sound of Velcro in the morning; it sounds like...

Evolution of An Inland Slope Flyer

...by Wildey Johnson
Lerona, West Virginia

The most enjoyable flying that I do is at an inland slope site. The hill is actually a 200' high, inactive dump site. It looks like the bottom 1/3 of a pyramid. The grass and weeds are kept mowed at ankle depth by the owner. The four sides are about 150 yards long and face North, East, South, and West. A perfect slope site you say? Well, not quite. The slopes are quite shallow. The prevailing wind is Southeast. There are 8' high vertical pipes every 100', and the owner has beautified the site by planting two dozen palm trees. The smell of hydrogen sulfide is sometimes present. And then, there are the FIRE ants!!

Although we refer to our hill as a slope site, in reality, the majority of green air is provided by thermal activity. On most good flying days, slope lift is used to extend the glide to aid in reaching warmer air. In effect, it is low altitude thermal flying without the need for any launching aid. Most areas of warm air do not develop into full sized thermals. However, when an area of warm air hits the side of the slope, it seems to pile up and develop into a large area of usable lift that extends out

Victory.

The Winch doctor waved his hand in front of my face to see if anyone was home. "Wake up, it's time for shore leave."

We brainstormed to come up with a few missions for the sealed orders part:

1. Three loops.
2. Three rolls.
3. Low pass over the ship before landing.
4. One minute precision timed flight.
5. Maximum time aloft.
6. Return to base immediately, in as short a time as possible. I'll bet there's more ideas that can be real fun and have some spectator appeal, too.

So get out that power scale slope ship, put a towhook on it, and get ready for some action in the 'danger zone'. Any takers? ■

about twice the distance to the bottom of the hill. How do I know? All I have to do is watch the dozens of vultures soaring there.

Several years ago, I read that flying a hand launch glider (HLG) is the best way to perfect one's thermaling skill. So, I built a 16 ounce, strip aileron HLG called the Zinger. This is an older design using built up everything, with a fuselage sufficient to hold the electronics of that time. I flew it quite a bit from an up start. But, the real fun began when it was flown from a slope.

It soon became apparent that the Zinger flew too slowly for a slope environment. Flying in wind became a series of recovering from stalls and balloons due to the varying wind speeds. The over the ground speed was more like flying a kite than an airplane. This was fixed by adding about three ounces of ballast and adjusting the aileron linkage to reflex the SD4061 airfoil. Now, the Zinger flew markedly faster and was able to penetrate in all but the windiest days. The added speed made the plane much more controllable and less vulnerable to changes in wind speed. Fortunately, the plane retained enough of the slow flight, low sink rate characteristics of a HLG. In weak lift (common), it could hang in there with the floater types. In a thermal, the plane showed the core well and quickly

climbed to altitude in just a few small turns. When flying at a dump site, the best lift is well marked by vultures. On most days, the game becomes: launch off the hill and glide out to the circling birds just upwind of the hill; then climb with that thermal until it becomes downwind. Break away and cruise upwind to the next well marked thermal. The birds do the same, so many times the plane will cruise as well as climb with them. When cruising, the birds speed up in sink and slow down in lift. By flying in formation with them (i.e., matching their speed), I can minimize the altitude loss during the upwind cruise. (Whoops, I just gave away one of my flying techniques!)

In cruising upwind to the next thermal, I discovered that the plane penetrated and held course better with a flatter glide if the rudder was uncoupled. I developed the habit of coupling the rudder while circling, and uncoupling while cruising. (Whoops, there goes another flying secret!) Had I discovered the perfect plane (for me) at this site? Well, not exactly (as they say in the car rental ads). The problem with the Zinger was its weakness. The robustness of a HLG is marginal. The added weight and speed, plus a slope environment, had pushed the Zinger into the unacceptable category. In particular, the fuselage would break on anything but a perfect landing.

My patience gave out one day when the fuselage broke on the first landing. I contacted Northeast Sailplane Products (NSP) and ordered a fuselage from their Sparrow slope flyer.

I decided to rebuild the plane without a rudder. So, a new fin needed to be designed and constructed. Also, the Zinger stab was far too flimsy. The old, 1/8" thick stab was sheathed with 1/16" balsa and sanded to a symmetrical airfoil shape. A section of hard 1/8" balsa sheet was trimmed and sanded to form the elevator.

An attractive, well constructed Sparrow fuselage with hatch arrived. The tail boom was trimmed off to give an over all length of 32 inches. A mounting platform for the stabilizer was made from a 3/8" x 1/2" x 3" stick. This raises the stabilizer up enough so the bottom of the control horn was directly behind the tail boom. The elevator control linkage came directly out the back of the fuselage. The stabilizer was attached by placing the fuselage upside down on a 2 x 4

and blocking the stabilizer up to give the correct decalage. One layer of 1.4 ounce FG cloth was laid over the bottom of the fuselage, up the side of the mounting platform, and out a short way on the bottom of the stabilizer.

A fin was fashioned from 1/4" balsa sheet. This was sanded to an airfoil shape, then trimmed to fit the top of the stabilizer. Two pins stuck in the top of the fin aided in alignment. Triangular stock was epoxied into all corners formed by the fin and stabilizer.

A small piece of 1/8" 5 ply was shaped to fit under the forward section of the wing saddle. This was drilled and tapped to accept the #10-32 nylon wing bolt. A blind nut was glued under the back portion of the wing saddle to take the #8-32 alignment/shear bolt.

The rebuilt plane was named the Gull. This was inspired by those beautiful flying seagulls at our slope site. Another reason was that my JR 347 Tx has a maximum name length of four characters.

The Gull was test flown from Vince Johnkoski's winch in Charleston, West Virginia. I was very pleased with the flight characteristics despite my lack of experience with a rudderless plane. The Gull weighed in at 22 ounces. The fuselage, stabilizer, and fin all had improved aerodynamics over the Zinger. This, plus the added 10 percent in weight, yielded improvements in speed range, control, stability, and glide slope.

The problem with a rudderless plane is getting through the turns efficiently. Back on the slope, the ability to try numerous things in succession, and with approximately the same perspective, was a great advantage in developing my flying technique. I found the best technique was to precisely maintain pitch attitude while entering, during, and leaving a turn. (Uah-Oh, there goes another flying axiom.) Using the transmitter's exponential rate for pitch is beneficial. [JR owners rejoice.]

My flying enjoyment at our inland slope reached a new high with the Zinger and Gull. A major factor was the very precise pitch control I had with these planes. I attribute this mainly due to a novel linkage system that I developed to save weight. In building the Zinger HLG, I had first planned to link to the rudder and the elevator with music wires through aluminum tubing. When it came

time to insert the music wire, I had the empty fuselage in one hand and the wires in the other. "Wait, this is too heavy (as heavy as steel), I can't do this." So, I replaced the music wire with braided kevlar fishing line (supplied by Bob Champlain). The line was held tight by a strip of surgical rubber attached directly to the control surface. Surprisingly, this does not cause the HS-80 servos to strain or hum. The single cable control line runs directly from the hole in the control horn through the hole in the servo arm and is secured under the center screw. No clevis is used. This keeps the friction in the linkage to a minimum, so that the tiniest movement in the servo arm is accurately duplicated by the control surface. Precise elevator control and centering allows the CG to be placed further back, thus increasing performance.

One day, while maneuvering at high altitude, the Gull went out of control and would not respond to commands. It went straight down at a medium speed and pierced a heavy canvas tarpaulin used to cover the side of the hill. Removing it from the ground was a two handed job. What may have happened was that I flew it with a broken alignment bolt (#8-32 nylon). The wing had the only damage (broken in half at the center). Although this was unfortunate for the wing, it was a testimony to the strength of the Sparrow fuselage, and the tail feathers that I had built.

So, what to do about the broken wing? They say we are a sum total of our experiences. Well, after a contest in Bristol, Tennessee, Curtis Carter pulled a Weston HLG from his truck. After watching his flights for several minutes, the transmitter was passed to me. In the still of the evening, I found the controllability and stability of this little V-tail plane absolutely solid. In particular, the flight path in the turns was most impressive with no slip, slide, change in bank angle, or altitude loss. As they say, "It was as if it were on rails." I was amazed when Curtis told me that his plane had no rudder function! As an amateur designer, I attributed these wonderful flight characteristics to the low stall speed and aspect ratio of the wing. (Just why so many pilots love their Gentle Ladies.) Obviously, I had to consider the Weston Mosquito wing as a replacement. The question remaining was, "What about durability?" I phoned Frank and he agreed to build me a special, durable version of the Mosquito wing.

The new wing provided one more opportunity for improvement. That was the installation of a second aileron servo to provide camber and flight path control. The Mosquito wing was as complete as could be expected. It was painted on top. The leading edge was installed. The center of the wing is solid hardwood to accommodate the mounting bolt, and it has a solid, hardwood spar. I mounted the servos just behind the spar with the servo arms sticking out the top surface. Each servo case sticks out slightly, because of the extremely thin airfoil. A slightly undersized hole was cut out from the top, being careful not to damage the bottom skin. The aileron tips and roots were cut out with a razor saw. A metal ruler was taped to the wing, and the leading edge was cut with a #11 blade. Three blades were used for each aileron. A 2-56 push rod was used to channel a route for the servo wires. I made lace hinges with clear hinge tape. This was a challenge due in part to the thin aileron. The wing saddle was adjusted to give decalage of 3 degrees.

This new plane was named "Phoebe". It made its first flight on Friday the 13th in January of 1995. Frank Beckmann hand tossed it into a 15 mph wind. No real problem, Frank then released it from a small high start. I like to have someone else release when something has been changed on the plane so I can be on the controls from the start. The Phoebe performed wonderfully in the conditions that day. It has a bird-like appearance in flight. Frank said that it took him awhile to acquire sight of it amongst the birds. It shows and responds to lift very well, with little tendency to roll in gusts. It accelerates in the slightest of a dive. I almost got too high to see it in one thermal. It just got so high, so fast. I saw the disadvantage of trying to fly a very clean ship at the limits of my vision. The spoilerons saved it from being converted to the world's fastest FF.

Most slope planes are designed for high speed, maneuverability, and appearance. These characteristics are usually achieved at the expense of sink rate, slow flight, and L/D. Unfortunately, the weather and terrain at most inland locations will not support the vast majority of slope planes. From the Zinger to the Gull to the Phoebe, what has evolved is a plane that matches the typical conditions at my local, eastern, inland site.

AIRTOW RELEASES
 ...by Asher Carmichael
 Spanish Fort, Alabama

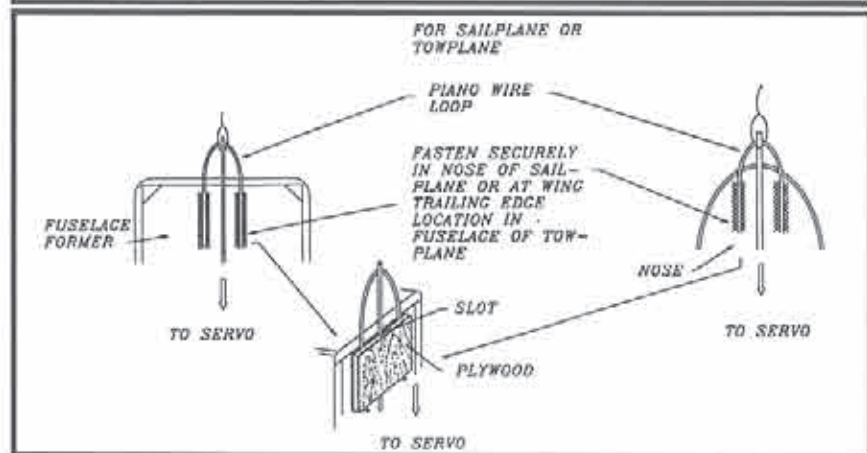
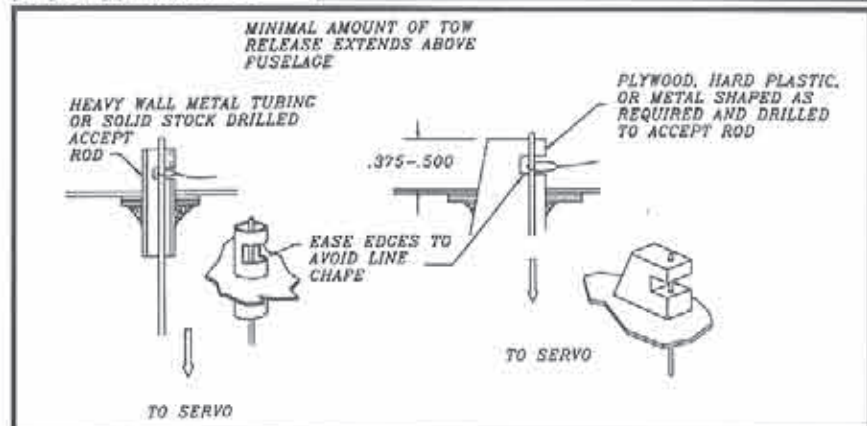
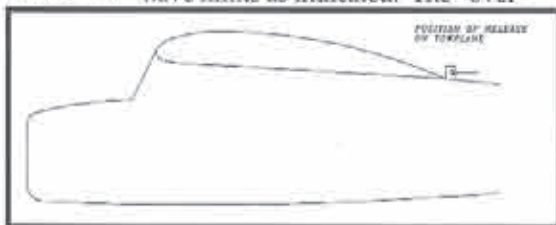
Reliable releases on the sailplane and the towplane are requirements for successful airtowing. Drawings for some of the more popular and effective choices are included here for your consideration.

Keep the following in mind: All sailplane releases should be located either in, or in reasonable proximity to, the nose. All towplane releases should be located on top of the fuselage at the trailing edge of the wing.

Use your imagination in adapting these releases to your requirements. They all work quite well in proper applications. A

bellcrank, or any other motion transfer device, can be incorporated as long as the total system is slop-free and efficient. Consider the forces that can be generated by a large sailplane-towplane combination when designing and choosing wire sizes for the "loop" variety of release. Wire sizes in the range of .078 - .093 for the loop and pushrod should be sufficient for all but the very largest of sailplanes.

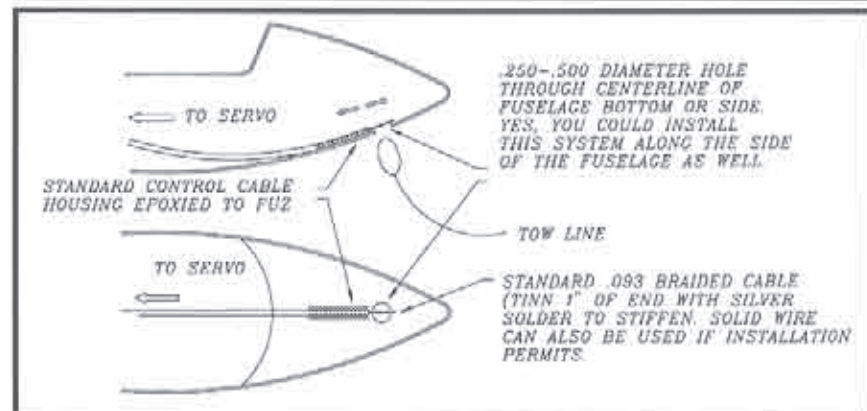
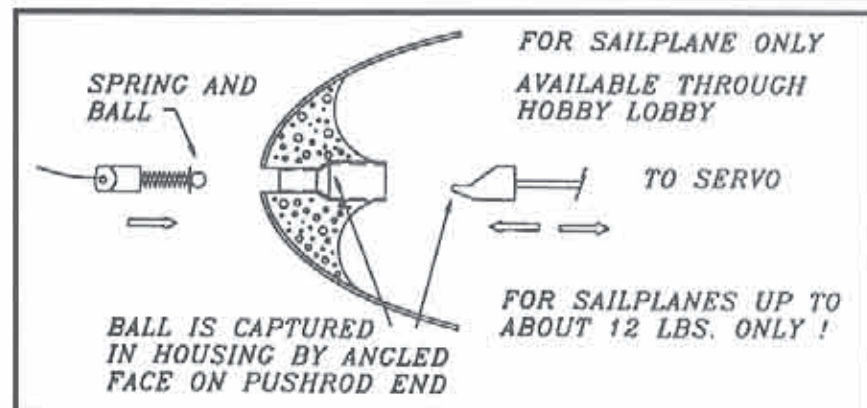
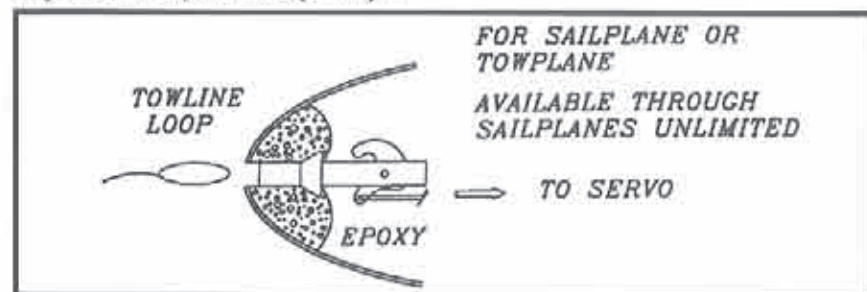
The commercial varieties shown may have limits as indicated. The "over-



center" type is perhaps the best for "in the nose" locations. The leverage afforded by the cam, rather than the overall size of the release, is the determining factor for suitability in a large plane.

Even though the amount of tension on a release system may change throughout the tow because of varying flight speeds between sailplane and towplane, it is a good idea to use as large a servo as you can, especially if

you are driving an additional function such as a retract. When you need to get off, you don't want the release system hesitating because of insufficient power. A servo in the neighborhood of 40 oz. of torque is a starting point for 1/4 scale planes. My 1/3 scale DG-600 uses a 1/4 scale retract servo that supplies 170 oz. of torque to drive the release and the retract. I would consider this to be minimal for this set-up. ■





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A Possible Solution to Tip Stalling in Swept Wings

Last month, we presented a simple solution to a yawing problem and promised to describe an effective solution for tip stalling in swept wing tailless.

Alan Halleck, a fellow enthusiast of tailless planforms, some years ago cut a foam core for a swept wing planform. This was one of the first planforms Alan designed using the Panknin computer program which he and Bill wrote. The cut wing was stored away and Alan built several other wings before coming back to it. Alan's ideas are always in flux, and so it was no surprise to hear he had trimmed the wing down to a smaller size before 'glassing it.

The wing was to be built light, as Alan had planned it as a thermal ship. Since the wing twist started at the half span point, the removal of the wing tips substantially reduced the built in washout. This latter point didn't seem to bother Alan as he was sure he had put in a bit more twist than needed.

At the thermal field, the foreshortened wing, when banked for a tight thermal turn, tip stalled viciously, taking nearly

a full turn and a lot of altitude to recover. Alan's 'phone call to us, while not an act of desperation, was clearly highly motivated. Alan covered the relevant points: the tip chord, due to the shortened span, was broader than originally anticipated for the design; straight and level flight posed no problems, so pitch stability was sufficient; the CG was in the correct position.

Since no solutions immediately came to mind, the conversation drifted to other topics. Alan started talking about his computer radio and all of the exciting things it could do, like mixing differential into and between various control surfaces. This got our attention! It turned out Alan had put nearly 2:1 differential in the aileron function of the transmitter. After some discussion, it was decided the differential was most likely the problem, and Alan decided he would try flying his creation with all of the differential removed.

Removal of all aileron differential completely eliminated the tip stalling problem, and turned an otherwise nasty airplane into a relatively docile flyer. Alan has since flown the wing successfully both at the slope during light lift conditions and in a thermal environment.

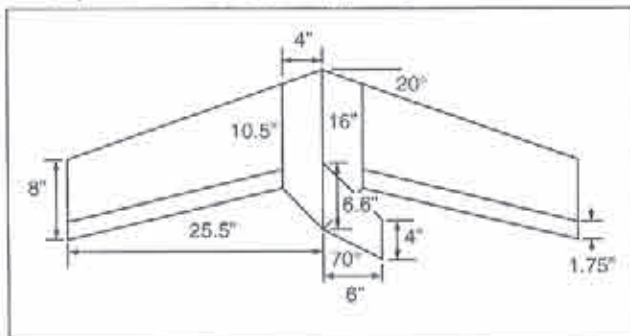
This episode has illustrated several points to be considered during design, construction and test flying of swept wing tailless sailplanes:

- match tip chord and minimum flying speed — make sure the chosen section can operate effectively at the expected low Reynolds number conditions;
- compute sweep angle, wing washout, and CG location accurately — check these again during construction and

once again before flight;

- perform initial test flights with no aileron differential — any addition of aileron differential for subsequent flying should be approached with caution.

Following the above guidelines should prevent or eliminate tip stalling.



Specific information on how aileron differential may degrade the performance of planks and swept wings may be found in our "On the Wing..." column in the August 1992 issue of RC Soaring Digest.

We are always appreciative of readers' suggestions for future topics. Contact us at P.O. Box 975, Olalla WA 98359-0975, or via e-mail at <bsquared@halcyon.com>. ■

Schedule of Special Events			
Date	Event	Location	Contact
June 7-9	Second Annual Aerotowing & Scale Fun Fly in the South	Fayetteville, NC	Wayne Parrish, (919) 362-7150 Bernie Coleman, (704) 536-5260 b1rdbernie@aol.com John E. McCullough, (919) 851-3538 jem1@nando.net
June 8-9	SWSA 2M Soarfest '96	Covina, CA	Pete Olsen, (909) 597-2095
June 8-9	HLG (8th)/2M (9th)	Baltimore, MD	Jack Cash, (301) 898-3297 or BadIdeas@aol.com
June 15	Desert Dash	Rosemond, CA	Merrill Farmer, (310) 923-2414
June 15-16	Int'l HLG Festival	Poway, CA	Ron Scharck, (619) 454-4900
June 15-16	Large Glider Fun Fly - Hiltenfingen	Hiltenfingen, Germany	Local Hobby Shop or Flying Club at Schwabmünchen
June 20-23	Mid-South Championships	Memphis, TN	Bob Sowder, (901) 751-7252
June 29-30	Ontario Grand Prix Soaring	Cookstown, Ontario	Jack Nunn, (705) 728-4467
June 29-30	I.G.C. Aerotow Fly-In	Belpmoos (Bern), Switzerland	Jack Kagi, 011-41-01-926-2187
June 29-30	2m, Unl.	W. Palm Beach, FL	Jim McCudden, (407) 967-8909
July 8-9	Soaring Contest w/ Airtow	Near Kiel, Germany	Hans Büchele, 011-49-741-21826
July 8-9	Large Sailplane Fly-in w/ Airtow	Lahr, Germany	Hans Büchele, 011-49-741-21826
July 11-14	Flying Circus Model Flying Festival - Fiss	Austria	Flying Circus, + 07161 929385
July 13-14	SOAR 96 (Unl., 2M)	Redmond, WA	Jim Thomas, (206) 488-2524
July 13-14	Flatland Open	Hillsdale, KS	Richard Kohout, (913) 897-3104
July 16-21	Canadian R/C Soaring Nationals - Write: SOAR NATS 96, 18C Arnold Dr.	Ottawa, Ontario, Canada	K1A 0K2 Dieter Bulling, 011-49-7305 21359 fax: 011-49-7305-24162
July 20-21	Large Airplanes w/ Airtow (Glider & Motor) - Airfield Erbach	Ulm, Germany	Christopher Knowles, (402) 330-5335
July 20-21	XC & Pig Roast	Omaha, NE	Bob Harman, (801) 571-6406
July 27	Wasatch Thermal Contest	Salt Lake City, UT	W. Palm Beach, FL
Aug. 3-4	2m, Unl.	W. Palm Beach, FL	Jim McCudden, (407) 967-8909
Aug. 3-4	Unlimited Soaring	Kirkville, NY	Dave Zintock, (315) 656-7103
Aug. 6-13	Viking Race	Hvolsvöllur, Iceland	Jón V. Gíslason, + 354 587 6789
Aug. 10-11	Thermal Grabber (Unl., 2M)	Redmond, WA	Jim Thomas, (206) 488-2524
Aug. 24-25	I.G.C. Annual Scale Slope Soaring Festival-Swiss Alps	Adelboden, Switzerland	Jack Kagi, 011-41-01-926-2187
Aug. 30-Sept. 2	2m, Unl., Fun, XC	Williston, FL	Ken Goodwin, (904) 528-3744
Aug. 31	SASS HL #2	Redmond, WA	Jim Thomas, (206) 488-2524
Sept. 13-15	Scale Airtow Meeting	Röttingen, Germany	Local Model Club or Hobby Shop
Sept. 14-15	Airtow Fly-in - Plettenberg	Germany	Local Model Club or Hobby Shop
Sept. 14-15	20th Annual NW Championship Soaring Tournament	Tri-Cities, WA	Tom Culmsee, (509) 375-1587
Sept. 14-15	Southern California Scale Glider Festival - Cal. State Dominguez Hills	Carson, CA	Rick Briggs, (310) 433-6327 75754.1422@compuserve.com
Sept. 21-22	Scale Fun Fly	St. Catharines, Ontario, Canada	Gerry Knight, (905) 934-7451 Don Smith, (905) 934-3815
Sept. 21-22	2m, Unl.	Orlando, FL	Hank McDaniel, (407) 831-3688
Sept. 21-22	Fall Thermal Soaring	Tullahoma, TN	Chuck Anderson, (615) 455-6430
Oct. 4-6	Aerotow Fly-In	Pensacola, FL	Asher Carmichael, (334) 626-9141 Rusty Rood, (904) 432-3743 Paul Siegel, (513) 561-6872
Oct. 6	Fall "Intergalactic" RCHLG Championship	Cincinnati, OH	Chuck Lohre, (513) 731-3429
Oct. 19-20	CSS STD & UNL (Sanct.)	Cincinnati, OH	Bob Wargo, (813) 938-6582
Oct. 19-20	2m, Unl.	Williston, FL	Ed White, (407) 321-1863
Nov. 29-1	Tangerine	Orlando, FL	Ray Hayes, (810) 781-7018
Various*	1.5m Hi Start Contests	Washington, MI	
	*June 8, 15, 29 & July 6, 20 & Aug. 10, 24, 31		

3rd Annual

Southern California Scale Glider Festival

September 14 & 15

To be held at the S.U.L.A. Field at the campus of
Cal. State Dominguez Hills
corner of Avalon Blvd. and Victoria, Carson California

Awards for:

Vintage (1908-1945) 1st, 2nd, 3rd
Modern (1945-1996) 1st thru 5th

Cash awards for:

Best of 4, scale landing attempts
Best of 4, longest flight

Aerotowing and winch launching

Events:

Saturday, 8:30 to 9:00 check-in, 9:00 pilots meeting, 9:30 to 3:00 open flying
10:00 static judging
Sunday, 9:00 pilots meeting, 9:30 to 2:00 open flying
2:00 awards presentation, 3:00 see you next year !!

Public Invited !

See, Full size vintage and modern gliders, Hot air balloon & Hotdogs



All model industry vendors welcome !

Entry fee \$25.00 All entrants must have a current AMA card ! no exceptions!!

For information call: Rick Briggs 310-483-6327 eve, fax 310-484-0155
Email Rick Briggs 75754.1422@compuserve.com
Dennis Brandt 714-821-4181 eve

20th

20th Annual Northwest Championship Soaring Tournament

September 14 & 15, 1996
Tri-Cities, Washington

- ♦ 1 1/2 days qualifying rounds
- ♦ 1/2 day final flyoffs
- ♦ two team competitions
- ♦ Saturday night banquet



Northwest
Soaring
Society

CD - Tom Culmsee, (509) 375-1587

Sailplane Homebuilders Association (SHA)

A Division of the Soaring
Society of America



The purpose of the Sailplane Homebuilders Association is to stimulate interest in full-size sailplane design and construction by homebuilders. To establish classes, standards, categories, where applicable. To disseminate information relating to construction techniques, materials, theory and related topics. To give recognition for noteworthy designs and accomplishments.

SHA publishes the monthly *Sailplane Builder* newsletter. Membership cost: \$15 U.S. Student (3rd Class Mail), \$21 U.S. Regular Membership (3rd Class Mail), \$30 U.S. Regular Membership (1st Class Mail), \$29 for All Other Countries (Surface Mail).

Sailplane Homebuilders Association
Dan Armstrong, Sec./Treas.
21100 Angel Street
Tehachapi, CA 93561 U.S.A.

THERMAL TALK



A NEWSLETTER FOR F3J ENTHUSIASTS WITH EUROPEAN F3J LEAGUE NEWS

Thermal Talk is an unofficial publication designed to act as a forum to discuss, educate, and exchange information concerning FAI Class F3J. Subscription Rates: £5.00 UK, £8.00 Continental Europe, \$11.00 North America, £8.00 Rest of World.

Thermal Talk

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e-mail: Jack Sile 100307,522 (CompuServe)
Or e-mail: Jack Termtalk@demon.co.uk



June 1996



The Vintage Sailplane Association

Soaring from the past and into the future! The VSA is dedicated to the preservation and flying of vintage and classic sailplanes. Members include modelers, historians, collectors, soaring veterans, and enthusiasts from around the world. Vintage sailplane meets are held each year. VSA publishes the quarterly BUNGEE CORD newsletter. Sample issue: \$1.00. Membership is \$15.00 per year. For more information, write to the:

Vintage Sailplane Association
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Lovettsville, VA 22080

T.W.I.T.T.

(The Wing Is The Thing)

T.W.I.T.T. is a non-profit organization whose membership seeks to promote the research and development of flying wings and other tailless aircraft by providing a forum for the exchange of ideas and experiences on an international basis. T.W.I.T.T. is affiliated with The Hunsaker Foundation which is dedicated to furthering education and research in a variety of disciplines. Full information package including one back issue of newsletter is \$2.50 US (\$3.00 foreign). Subscription rates are \$18.00 (US) or \$22.00 (Foreign) per year for twelve issues.

T.W.I.T.T., P.O. Box 20430
El Cajon, CA 92021

LSF



The League of Silent Flight (LSF) is an international fraternity of RC Soaring pilots who have earned the right to become members by achieving specific goals in soaring flight. There are no dues. Once you qualify for membership you are in for life.

The LSF program consists of five "Achievement Levels". These levels contain specific soaring tasks to be completed prior to advancement to the next level.

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We are expecting Robin Lehman, Sailplanes Unlimited, Ltd., and Jim Blum to be on hand, with their 1/3 and 1/2 scale gliders & tugs, to demonstrate and instruct in the art of aerotowing.

For additional information contact:

Gerry Knight, 360 Bunting Rd.,
St. Catharines, Ontario, Canada L2M 7L6
(905) 934-7451

Don Smith, 996 Lakeshore Rd., Niagara-
on-the-Lake, Ontario, Canada L0S 1J0
(905) 934-3815

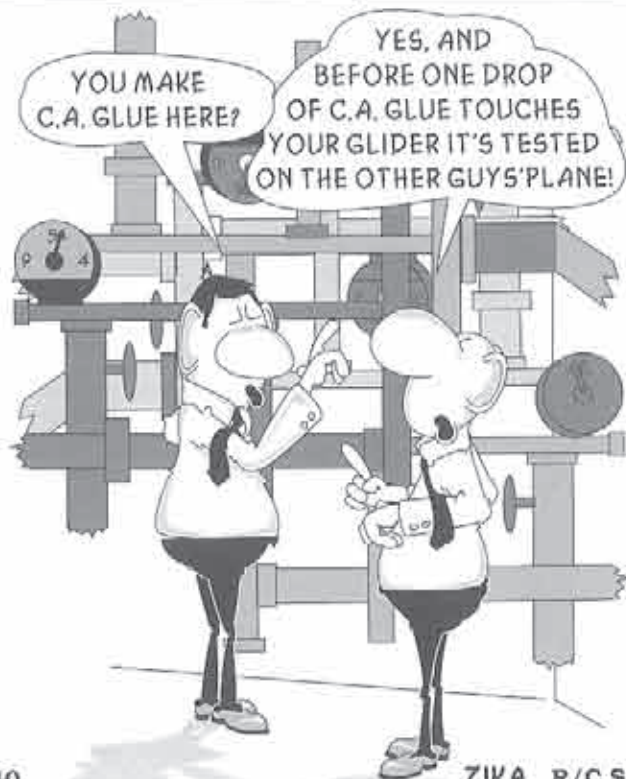
Reference Material

Still a few copies available of some issues of the printed transcripts of talks given on RC Soaring at the Previous Annual National Sailplane Symposium. Prices reduced to clear out stock. Talks were on thermal meteorology, flying techniques, hand launch, cross country, plane design, airfoil selection, vacuum bagging, plastic coverings, flying wings, etc., etc. Send SASE or call for flyer giving details. Many copies of most recent (1992) transcript left. Clubs have found them good for raffle prizes, gifts, etc. Al Seidmore, 5013 Dorsett Drive, Madison, WI 53711; (608) 271-5500.

"Summary of Low-Speed Airfoil Data - Volume 1", Michael Selig wind tunnel testing results. \$25 USA (includes postage), \$29 surface outside USA, \$31 air Western Hemisphere, \$38 air Europe, \$42 air all other countries. Computer disk, ascii text files (no narrative or illustrations), is \$15 in USA; \$16 outside USA. Source for all "SoarTech" publications, also. Contact Herk Stokely, 1504 N. Horseshoe Cir., Virginia Beach, VA 23451. Phone (804) 428-8064, email: herkstok@aol.com.

Classified Note

Please note that the cut-off date for classified & display ads has been changed to the 1st of the month.



1ST ANNUAL

GULF COAST SCALE/AEROTOW MEET

October 5 & 6, 1996

SITE 8
Pensacola, Florida

For further information, contact:
Asher Carmichael, (334) 626-9141
ACarmic985@aol.com
Rusty Rood, (904) 432-3743

The Pensacola Aeromodellers is pleased to announce the 1st Annual Gulf Coast Scale/Aerotow Meet. This event promises to be an outstanding opportunity for pilots from around the southeast to meet, exchange ideas, and improve our skills. With interest in scale sailplanes & airtowing growing rapidly, this is a chance to experience this wonderful aspect of soaring first hand.

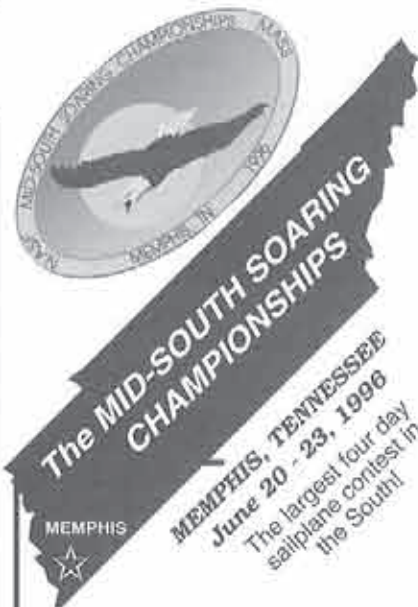
Site 8, located in beautiful Pensacola, Florida, is a 640 acre U.S. Navy practice field, grass covered and fully maintained. This premier site is used regularly by local fliers for thermal duration, scale/aerotow, and free flight activities.

For those who have not tried aerotow or scale soaring, come and experience the thrill. There will be one or two sailplanes available for those who want to give it a try. Or, you can equip your own open class, alleron ship with a tow release and bring it along. We'll get you some air time if you are an experienced R/C sailplane pilot. Towplanes are welcome, if you have one.

Robin Lehman of Sailplanes Unlimited, RLTD., will be on hand to teach and coach us along. His input and expertise will offer something for the beginner & expert alike.

While this first meet is a fun fly, there will be trophies: Pilot's Choice (Vintage & Modern), & Longest Duration Flight. Rules & competition format will be announced at the Pilot's Meeting. AMA insurance & membership is required; this is a sanctioned event. A \$10.00 per pilot entry fee will be charged the day of registration.

Pensacola has much in the way of entertainment for the family; beautiful beaches, a great zoo, and wonderful shopping are close to the flying field. Gambling casinos along the Mississippi gulf coast are 1 1/2 hours away, and the Naval Aviation Museum is an unmatched, 3 dimensional journey: the beginnings of aviation, present day and beyond.



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Due to the popularity of this event, pre-registration is required by June 3, 1996. For complete information, write to Max Hurst, 465 North Ave., Henderson, TN 38340, (901) 989-3508.

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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

GLIDER RETRACTS - high quality, 1/5, 1/4, 1/3 scale made in U.S.A. 1/4 are standard or heavy duty. Contact Bill Liscomb, 7034 Fern Place, Carlsbad, CA 92009; (619) 931-1438.

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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.

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PARACHUTES: \$10. Dale King, 1111 Highridge Drive, Wylie, TX 75098; (214) 475-8093.

For Sale - Personal

100" Super-V, 7037 airfoil... asking \$225, includes shipping. Don Trammell, 6532 Old Railroad Bed Rd., Toney, AL 35773-9587; (205) 420-2265.

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Airtronics Infinity 1000, ch 54, complete w/ extra 1100 mah TX battery, 10 ch PCM RX, new 700 mah RX battery, 5 servos, case, charger, as much of the manual as Airtronics has received (enough to fully use the radio)... \$825.00; new Airtronics Vision 85P, v3.0, ch 52 PCM RX, 4 servos... \$550.00. NIB kits: Multiplex Schaumpus (3 or 3.5 m)... \$375.00; Falcon 600 (Mark Allen version)... \$200.00. Shipping on all items extra. Jim Thomas, (206) 488-2524, Washington.

Airtronics Infinity 600, transmitter only, ch 36, basically NIB condition, moving up to a Stylus. Asking \$175.00 or best offer. Steve Savoie, (207) 929-6639, EST.

Robbe 1/4 scale ASH26, 4.5m, completely built with full scale cockpit detail, set-up for aerotowing and winch launch, excellent performer with exceptional speed range... \$650.00. Sal, (516) 922-7432, after 6 pm, EST.

OS 300 Gemini Twin 4-cycle engine, excellent power for aerotowing. NIB, never used... \$750.00 (list price over \$1500). Sal, (516) 922-7432, after 6 pm, EST.

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R/C Soaring Digest

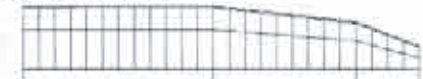
Airfoil Plot & Model Design Plotting Program Price Reductions

...from Chuck Anderson

Airfoil Plot and Model Design plotting program prices have been reduced. These programs are designed to aid modelers in scratch building model airplanes and will plot airfoils and wing plans on most dot matrix and laser jet printers. They are written for the average modeler who is not a computer nerd and may not have the latest in computers or printers. Emphasis has been placed on ease of use with minimum computer requirements.



Airfoil Plot provides everything you need to plot airfoils and foam core templates for your model airplane. Airfoils are plotted from coordinates or from built-in equations for NACA 4-digit, NACA 5-digit, and Quabeck airfoils. Maximum chord length is 40 inches and maximum thickness is 6 inches (3 inches for foam core templates or mirror image plots). The airfoil can be plotted with skin thickness and airfoil station lines, if desired. You can also plot a set of ribs for a wing panel if the same airfoil is used for the entire panel. If you have coordinates not included with the program, the you can use Data Entry to enter and edit coordinates. A Utility module is also included to allow you to change camber, change thickness, or combine the upper surface of one airfoil with the lower surface of another airfoil. This program is all you need if you only build foam core wings. The standard program comes with 25 general purpose airfoils, while the Pro version comes with over 225 airfoils.



Model Design will do everything that Airfoil Plot will do and more. If you do built-up wings or want to lay out complete wings with up to 5 panels, then Model Design may be what you are looking for. Model Design will plot ribs with leading edges, trailing edges, and up to 5 spars. Each panel can have a different airfoil at the root and tip, and the program will plot the intermediate airfoils. Airfoils and dimensions are entered into a Specification file that can be saved for later loading and plotting or modification. Model Design will plot a full sized or scaled down plan view of each individual wing panel. Model Design includes options to plot circles and ellipses with or without flat sections inserted in the sides, top, and bottom. Another useful

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

feature is the ability to plot angle templates for any angle up to 45°. Model Design is intended for the layout of wings and tail surfaces. If you need more, then you probably need a full blown CAD program.

The programs have been repackaged to better suit the needs of modelers. Standard Airfoil Plot and Model Design programs are intended for the sport and scale modeler. Airfoil Plot Pro and Model Design Pro are aimed at the soaring and free flight modelers.

Prices are: Airfoil Plot, \$25; Airfoil Plot Pro, \$35; Airfoil Plot Pro + AFEdit, \$45; Model Design, \$40; Model Design Pro, \$50; Model Design Pro + AFEdit, \$60. Includes shipping in the US and Canada. Other countries add \$5 for airmail shipping. Please send a self addressed #10 envelope with 55 cents postage for more information and a free demo program.

Chuck Anderson, PO Box 305, Tullahoma, TN 37388; phone (615) 455-6430, CompuServe 74757,1144, e-mail canders@edge.ercnet.com. ■

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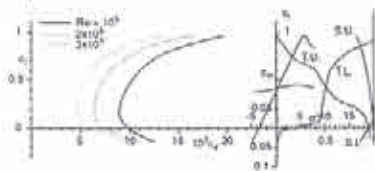
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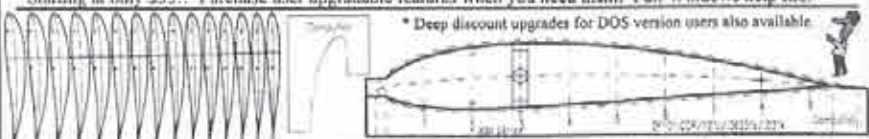
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 Airfoil : RG15
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 Wing area : 34,5 dm²
 Airframe weight : 720 g (Glider); 740 g (Elektro)
 Functions : ailerons, elevator
 Power : 10-12 cells (Elektro version)

Wingspan : 2 800 mm
 Airfoil : RG12
 Length : 1 230 mm
 Wing area : 54 dm²
 Airframe weight : 1 300 g (Glider); 1 250 g (Elektro)
 Functions : ailerons, rudder, elevator, airbrakes
 Power : 10-12 cells (Elektro version)

Wingspan : 3 600 mm
 Airfoil : RCG
 Length : 1 400 mm
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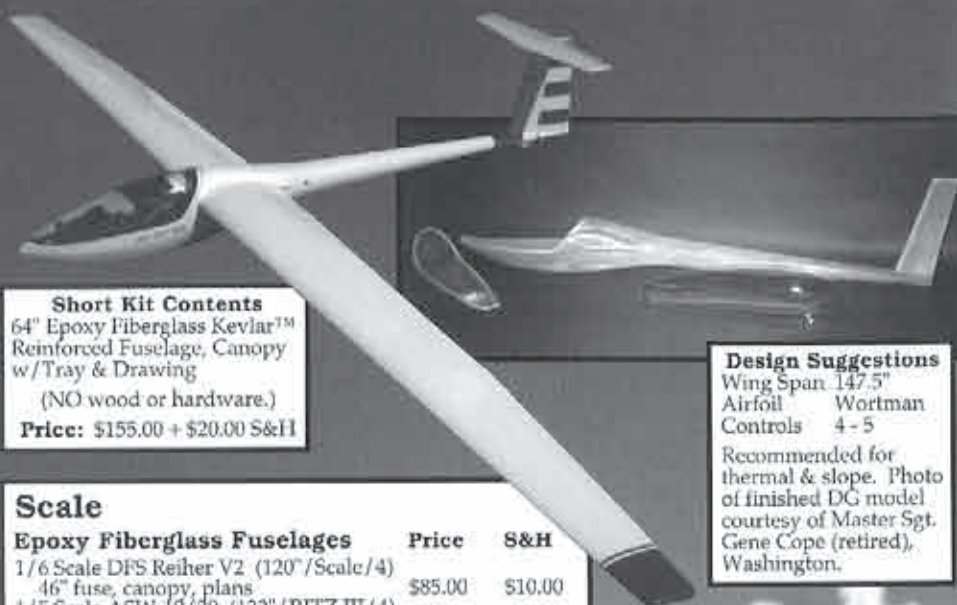
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THE CONDOR

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WING SPAN 112.5"
WING AREA 918 SQ. IN.
AIRFOIL SD7037
WEIGHT 62-86 OZ.
WING LOADING 9.7 - 10.3 OZ./SQ. FT.

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 beech from Kennedy Composites, which is applied with West Systems epoxy.

CONDOR *Tomorrow's Sailplane, Technology Today*

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 hinge-line. 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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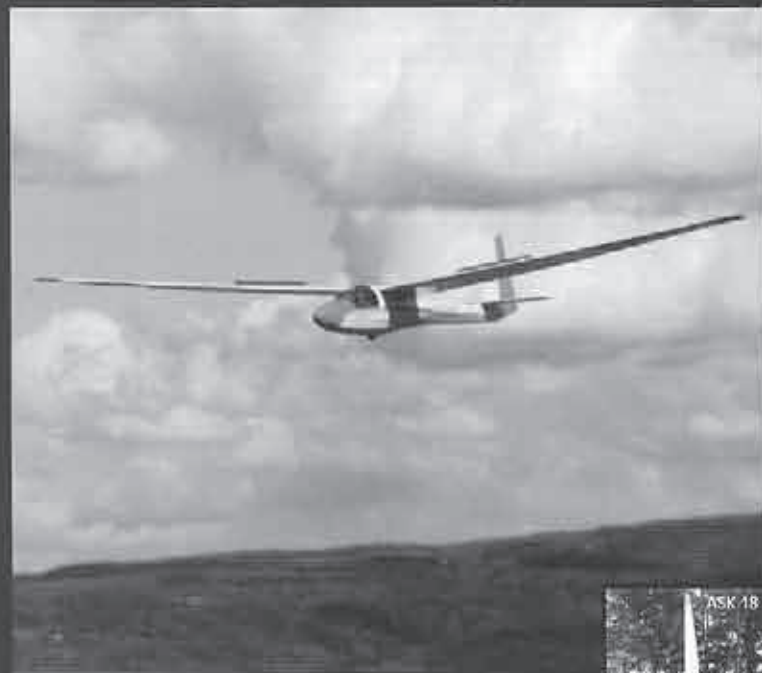
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