Radio Controlled Soaring Digest

December 2006 Vol. 23, No.12

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Front cover: Phil Pearson prepares to launch his Encore into a nice ocean breeze for some light lift slope soaring. Photo by Christian Kalinowski. Canon PowerShot S3 IS, 1/1600 sec., f5.6

Back cover: *RC Soaring Digest* Desktop Calendar for 2007. This is a smaller version of the 12 page wall calendar already available on the *RCSD* web site. This desktop calendar is available as a separate single page PDF (1.1MB) directly from this URL: <http://www.rcsoaringdigest.com/pdfs/RCSDsm2007.pdf>.

R/C Soaring Digest

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R/C Soaring Digest (*RCSD*) is a reader-written monthly publication for the R/C sailplane enthusiast and has been published since January 1984. It is dedicated to sharing technical and educational information. All material contributed must be exclusive and original and not infringe upon the copyrights of others. It is the policy of *RCSD* to provide accurate information. Please let us know of any error that significantly affects the meaning of a story. Because we encourage new ideas, the content of each article is the opinion of the author and may not necessarily reflect those of *RCSD*. We encourage anyone who wishes to obtain additional information to contact the author.

In the Air

A couple of new contributors make their appearance this month.

Dave Jensen (Xperience Pro-X review) is a fellow member of the Seattle Area Soaring Society, and, as he explains in his article, considers himself a rookie when it comes to thermal soaring. Dave's piloting skills are extraordinary, however, due no doubt to his years flying both powered aircraft and helicopters. The decision to purchase the Xperience Pro-X was the result of much research on his part, and early test flights indicate he's very happy with how it handles.

Chris Adams and Bruce Nye (Make Your Own 'Chute) are both members of Sailplanes and Electric Aeromodellers of Tasmania <http://www.seat.lonnie.com.au>. Chris is the club webmaster, so when we first saw their parachute project on the SEAT web site, we immediately worked toward getting it into *RCSD*. Our thanks to Chris and Bruce, and the SEAT club, for allowing us to reprint this material.

We are always looking for articles and photographs to be used in future issues, and invite you to be an *RCSD* contributor. You do not have to be a professional writer or professional photographer. Aerodynamic theory, personal experience, review of a kit or an electronic item, construction method, new construction material, launching devices and techniques, flying sites, flying safety... Those are just a few of the topics which have appeared in previous issues. If you have an idea for an *RCSD* article and need a bit of prodding, send us an e-mail at <rcsdigest@themacisp.net.>. We'd appreciate hearing from you.

Time to build another sailplane!

Dave Reese/Reese Productions

Lift Ticket — The Director's Cut

A video review by Dave Garwood, dgarwood@nycap.rr.com

Dave Reese's latest video production is a first rate visual record of high-end slope soaring in the western US, including an extensive exploration of dynamic soaring. It can be considered two videos in one.

First is soaring action footage across 22 slope soaring sites in California, Oregon, Utah and Washington, and second is a visual chronicle of dynamic soaring speed record flights, from Joe Wurts' 156 MPH flight at Parker Mountain in May 2000, through Kyle Paulson's 301 MPH record run at Parker in October 2005.

This movie is packed with action and history, including interviews with Pat Bowman, first to cut EPP foam and make a sailplane from it, and Joe Wurts, who tells us how he "accidentally discovered" the tremendous power available on the back side of the hill in dynamic soaring conditions. Joe follows up with his early foamy experiments and relates how a year later he began flying fiberglass planes on the backside of the hill at faster and faster speeds.

There was an earlier release of "Lift Ticket," but this second release, entitled "Lift Ticket – Director's Cut" is an advance and an improvement, with tighter editing of some familiar scenes, more material – especially in of DS flying, and a new and most excellent musical score. Most of the scenes include advanced hot dog flying by Dave's traveling companion Scott Hewett and many other flyers including some of the notables in the sport..

A few of the scenes that were particularly interesting, or impressive, or memorable for me are:

SMOKE TRAIL FLYING from Fort Point just south of the Golden Gate Bridge at San Francisco with a John Higgins F-20 big-sky screamer. This is the opening scene, and the inspiration for the cover art. Watching Scott Hewett fly this aerial ballet with a lead sled screamer of a sailplane, and listening to the music makes me want to quit my day job and aspire to become a full time slope bum.

WALLOWA LAKE ALPINE ROAD TRIP is memorable. The scenery will take your breath away and suggests that Oregon should be on the itinerary of any west coast slope safari trip.

Wade Kloos' T-33 at ISR PSS Festival. Gregory Matson's P-51D at ISR PSS Festival. A 1/3 scale ASK 13 being launched at the Los Banos Scale Event.

A 1/3 scale ASK 13 fly by. Scott Hewett's John Higgin's F-20 Tiger Shark during opening sequence. Dave Sanders 1/3 scale CB15 Crystal at Soar Utah.

Scott Hewett's 2x Zipper "Lurch" at Eagle Butte. CR Climmax soaring at Dixe Butte, Oregon. Dave Nash's 1/4 scale P-51 at Soar Utah.

LOS BANOS SCALE EVENT and FOAMIE BASH are covered, reminding us that this Central California flying site is a slope soaring paradise. Both large scale sailplanes and foamie combat planes are covered and narrated.

SOAR UTAH. Dave Reese was in Salt Lake City for two of these magnificent events and captured excellent footage of a Dave Sanders' scale flight, Steve Savoie's giant U-2 Spyplane, Tom Hoopes' vintage Primary Glider, and New York Slope Dogs Rich Loud and Dave Garwood flying a pair of Doug Buchanan BAe Hawks.

ANTELOPE ISLAND STATE PARK, in the Great Salt Lake has got to be one of the prettiest flying sites in North America, and Reese caught the beauty of that site and some Slope Scale Party action with Brian Laird, Carl Maas, and Ralph Roberts.

SOUTHERN CALIFORNIA PSS FESTIVAL – "The Big One" for power scale sailplane builders and flyers. The movie captured the action and the spirit of this high-end event, and presents particularly impressive footage of Greg Matson's huge, super-detailed P-51 mustang with machine gun sound effects flying on the edge of a fog bank, and Wade Kloos' giant Lockheed T-33 with turbine motor sound effects. Watching this footage makes gives the viewer a "You are there" feeling.

Soaring Footage at the following 22 slope sites appears in the movie: Fort Point, Seascape, Sunset Beach, Buckhorn Lookout, Dixie Butte, Abert Rim, Goose Lake, Tick Point, Los Banos, Point of the Mountain, Francis Peak, Antelope Island, Cajon Summit, Kiona Butte, Eagle Butte, Chandler Butte, Parker Mountain, The Mecca, Backdoor Dump, Richard's Roost, Cape Blanco, The Slot. If you're like me, some of the sites will be familiar, and some will be new. All are interesting.

The final third of the film focuses on Dynamic Soaring, from its "discovery" by Joe Wurts through the record-setting flights in California and Oregon from Joe's 156 MPH flight at Parker Mountain through Kyle Paulson's 301 MPH flight, the world's fastest flight of an RC sailplane at the time the film footage went into the editing room.

The DS footage is simply stunning, and it's amazing that it could be captured this well on film. Footage and narration of these record setting flights, and interviews with some of the key players appear in the movie. These record flights and more, including the Cape Blanco DS Fest appear in this video:

Joe Wurts - 156 MPH
Paul Naton - 173 MPH
Joe Wurts - 179 MPH
Craig Toutolmin - 202 MPH
David Reese - 206 MPH
Gary Legerton - 232 MPH
Kyle Paulson - 301 MPH

Dave Reese has taken particular care in the filming of the action, in the editing of the film, and in the addition of the sound track, making this a thoroughly professional production that results in a highly enjoyable film for those interested in slope soaring. One technical note, to ensure that this DVD is compatible with DVD players worldwide, Reese Productions has all movies replicated, region free, on DVD-5 discs. These are commercially pressed discs which differ from DVD-R media in that they are expected to be 100% compatible with both PAL and NTSC DVD players around the globe.

You can get a copy of the film on DVD for $29.95 from:
Dave Reese
Reese Productions
Web site: www.reeseproductions.com
E-mail: info@reeseproductions.com
Phone 831 457-9442 (9 AM - 5:00 PM Pacific Time, Monday - Friday)

Xperience Pro-X

A rookie's experience

A review by David Jensen, david.jensen@comcast.net

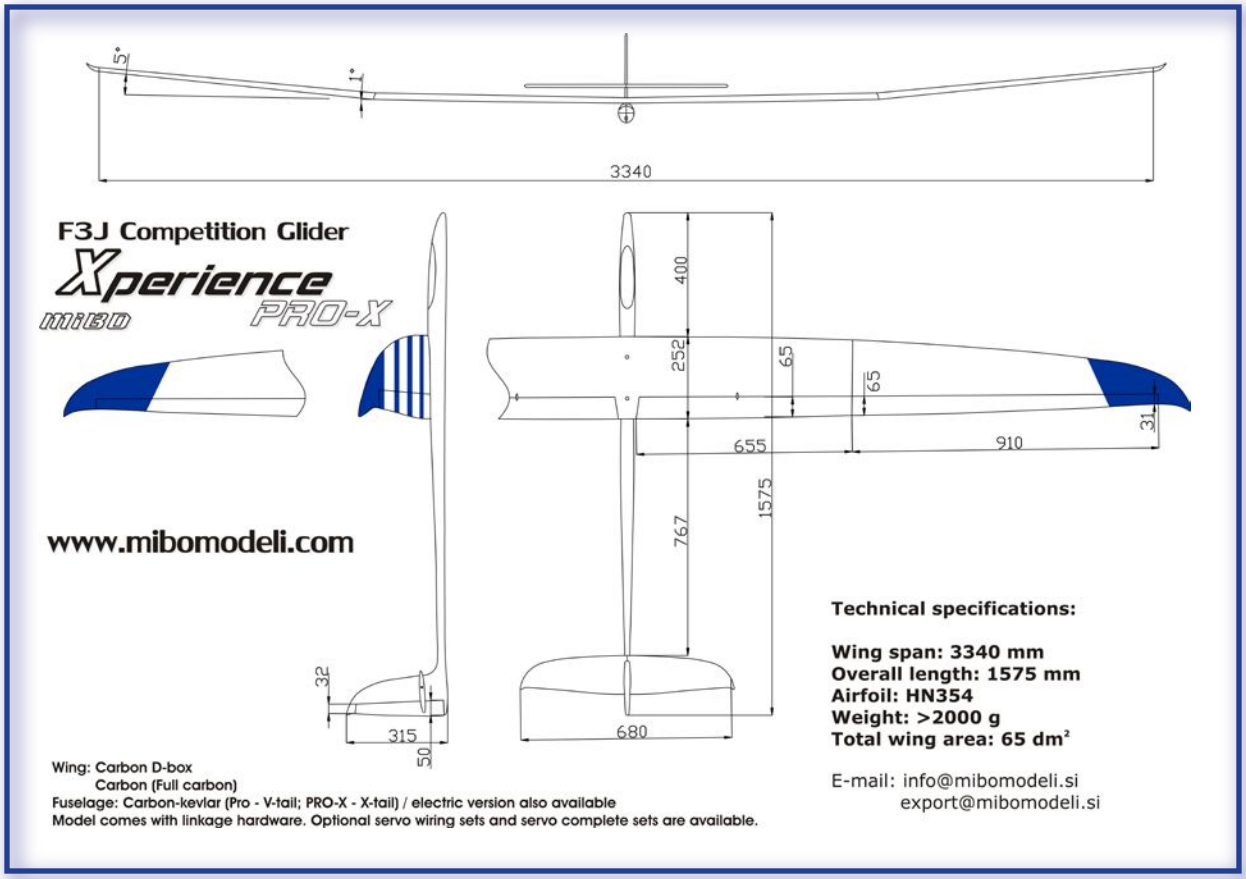
Dave's Xperience Pro-X at Visalia, immediately after purchase from Soaring USA.

So, what makes me a rookie? Well, if you read on, you'll think I'm anything but; however, I do consider myself a rookie to F3J TD-style flying.

I started flying RC in the spring of 1988 and I have not stopped since. I have been an active flight instructor for power planks since 1990, averaging 40 + instruction flights per season. I flew sport and pattern planes until 1996. I began flying helicopters in 1995 and flew them a lot until 2002. I wrenched on at least eight (of my own) heli's during this period. Heli's got too expensive and I could not continue to justify the ever increasing fuel, parts and bling bills. I started slope soaring in 1999, and now have a nice quiver of slope ships adorning my shop walls and floors and benches and chairs. I literally have flown well over 150 different RC aircraft, big and small, fixed wing and rotary, including blimps and even an ornithopter.

My first winch launch wasn't until the summer of 2004 with a 2m Whisper I purchased as a light wind sloper. It taught me a lot and proved not to be very durable. In 2005 I got my first and only 3m TD ship. A 1992 design, well used and repaired, ready to fly, 122" Jaro Muller Esprit. I picked it up from a friend and have stuffed a lot of electrons into the battery over the last two seasons. I have developed an understanding with my Esprit. It reminds me of an old pair of skies I owned for many years. They were not very forgiving, and demanded they be skied their way. When you obeyed and skied them correctly, as they dictated for the conditions of the day, life was good.

I consider myself very lucky I get to fly two to four times a week during the spring/summer/fall and even indoors during the winter. Even with all this flying it took me a long time to learn how to launch the Esprit (it has to be the ship). I keep hearing this phrase "duck or bleed" every time I approach the winch. This year was my first visit to Visalia, and let me tell you that was an eye opener. I have attended many contests, and CD'd over 20 events myself, including some large heli fun-flys with 80 or more pilots. The sheer number of pilots, and the effort the CVRC club put forth is amazing. Oh, and every launch I had at Visalia was good. So why do I consider my self a rookie? I have never built a full house F3J TD (ARF) ship. So the following is my experience with my new Xperience Pro X. This is part one, "The Build," and part two will be "Flight Testing and Impressions."



Choosing the Xperience Pro-X

I had been looking at all the new high end TD/F3J ships for a while, and kept shying away due to the high cost of the airframes and the need for expensive quality radio components. So what does an American do? Break out the plastic. I had to rule out the top contenders due to the high price. I wanted to limit the airframe to 1K plus or minus in an attempt to top out the bleeding at $1500.00. During my search I decided I wanted an X-tail, mainly so I can pack it into a flat padded bag. I also wanted something un-built so I could set it up and not have to compromise. In the winter of 2005 I saw some of the ships from Mibo Modeli out of Slovenia Europe, show up on the web at www.mibomodeli.si. The first to catch my eye was the 123" Vision V-tail. This ship is light and strong, with a wing loading as low as 8 oz./sq. ft., and, unfortunately a V-tail. In Europe, this ship has been doing very well

in competitions. The 132" Xperience Pro (also a V-tail) came on the radar next, and then the new 143" Shadow. The Xperience Pro X-tail was the first (and only, so far) of these designs to hit the US in any quantity. The Shadow X that was at Visalia this year was reportedly the only one in the US at the time and it placed 4th in the open class. This ship was so new, it had only one flight before arriving at Visalia. Rumors have it the Vision X should be crossing the pond this winter.

Mibo Modeli started out in 1990, building limited numbers of high quality RC scale and sport model kits. They produce the 1.5m Spider, the Sixty, and the 2.5m Mystery aerobatic slope ships, along with many others, including large scale power aerobats. In the first 10 years, they produced 10,000 kits, shipping them world wide.

Mibo put together a development team of dedicated RC pilots and aircraft designers, and the result is their new "competition line" of F3J ARF's that are now hitting our shores. These ships have been competing in Europe and doing very well against the best the world has to offer. All three of the competition ships are priced less than most others in this class, and look to bring real value to the niche that is F3J. I purchased my Xperience Pro X from Bob Breaux/Soaring USA <www.soaringusa.com> at the 2006 CVRC Fall Fest, Visalia. The show price (under $1000) made it very hard to pass up and, more importantly, it was the right color. So do you get what you pay for?

Overview

My first impression looking at this model is that it is a cross between the Pike Superior and the Sharon Pro. The fit and finish is almost flawless. The high aspect ratio wing looks great and the control surfaces line up perfectly.

No instructions came with the kit, however the Mibo web site does have some pictures and there is a link to a PDF file in German with lots of good pictures.

The parts package includes all the bits and pieces to make the control links, servo connections, and servo covers. It also included two sets of wing joiners for the wing tip to center panel connection — a set of two degree for high wind and slope soaring, and a set of five degree for thermal conditions.

The first time I put the wing tips on the center section, I used the two degree wing jointers and there was a uniform gap along the top seam that was also of identical width on both sides. When the five degree joiners are used this gap disappears. The different joiners fit both the tips and mid panel well. The center wing section, which has two degrees of dihedral, mates with the fuselage nicely with no gaps, and registers using the two wing bolt threaded inserts that protrude up from the fuselage and slip into recesses molded into the wing. This makes it very easy to set the wing onto the fuselage and get the wing bolts started into the threaded inserts.

Total weight of this airframe — less the wing servo covers, wing control links, fuselage clevises, servo tray and ballast tube bulkhead — was 59.75 oz.. The right wing tip was 9.2 oz., which is 0.2 oz. heavier than the left tip. The center section was 22.1 oz., the fuselage with canopy 17.2 oz., and the elevators 2.2 oz..

I chose to use JR gear for this build. For servos, I decided to go with DS368 for the ailerons and rudder, and the DS3421 for the flaps and elevator. I knew these servos would add some weight, but hey, this is a 132" wing with large control surfaces. A JR 790 SPCM ScanSelect receiver with a five-cell 2/3 AA 1400 mAh NiMh battery, custom made by cheepbatterypacks.com rounds out the radio gear. I decided on a five-cell after preliminary tests showed I may need extra nose weight, and I have had good success with 6V systems.

Total weight of the radio gear — including the battery, switch, wire harness, servos, frames and battery monitor — is 13 oz.

The Wing

This Xperience has the carbon D-box wing (A full carbon lay-up is available.) The three piece 132" wing has 1007 sq. in of surface and uses the HN 354 airfoil that looks different from others. It looks very much like a thin semi-symmetrical airfoil until you get to the rear. The curve at the trailing edge is pronounced, and when the huge flaps are

Flap servo well and cover. Note trimmed lip. New servo covers will be fabricated.

set at 85 degrees down, the trailing edge looks like a snow plow. Note to self: "ALWAYS lift the flaps just before landing." The use of camber and reflex is said to allow a wide speed range and I can see the high speed aspect should keep me happy.

I had to shoehorn all four servos into the wing. I used servo frames purchased from servoframes.com, and the width of both the aileron and flap servos equaled the wing thickness at the back end of the opening. I remember the first time I installed retract gear in a pattern ship in the mid 90's. Those units went in and out a dozen times until I learned how to get the linkage set just right. Well, the aileron servos went in and out half a dozen times each. I found the spar in the right wing is 0.2" closer to the trailing edge than the left wing. I did not pick this up until I got the servo frames shoehorned into place and found them in different fore/aft locations. I had to sand on both servo frames to get them to locate the same in both wings.

The flap servos went in and out even more. Each one of the linkages had at least a dozen passes through the openings. I tried very hard to get the flaps to operate correctly with the short arms required so the servo covers would work. The supplied servo covers for the flaps have small bubbles that do not allow long enough servo arms to be used. Longer arms are needed to get the movement needed if you want to use effective aileron-to-flap mixing. I had to install longer servo arms and cut slots in the servo covers and trim the recessed lip to get the throws I wanted. This may be due to the larger, thicker servos I used. I will be making a new set of covers sometime this winter.

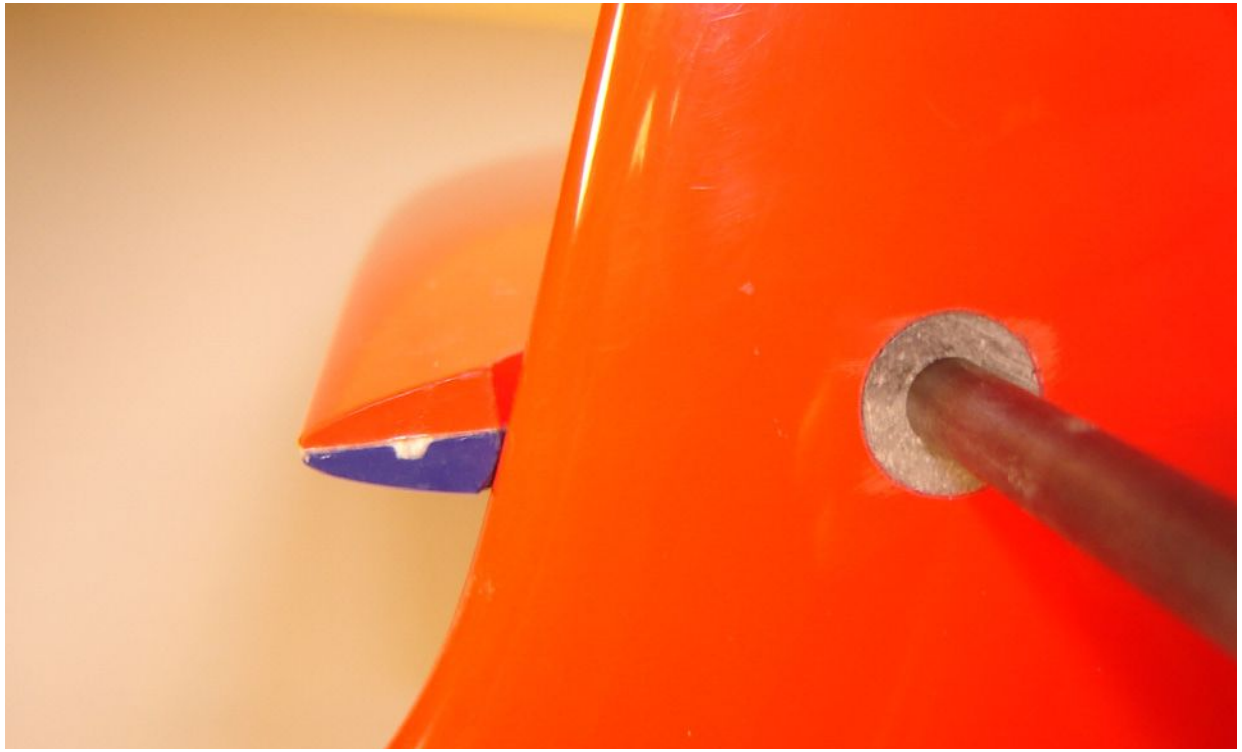
The lateral balance of the assembled wing is off to the right wing. I added three large white stick-on circles to the underside of the left wing to improve the balance.

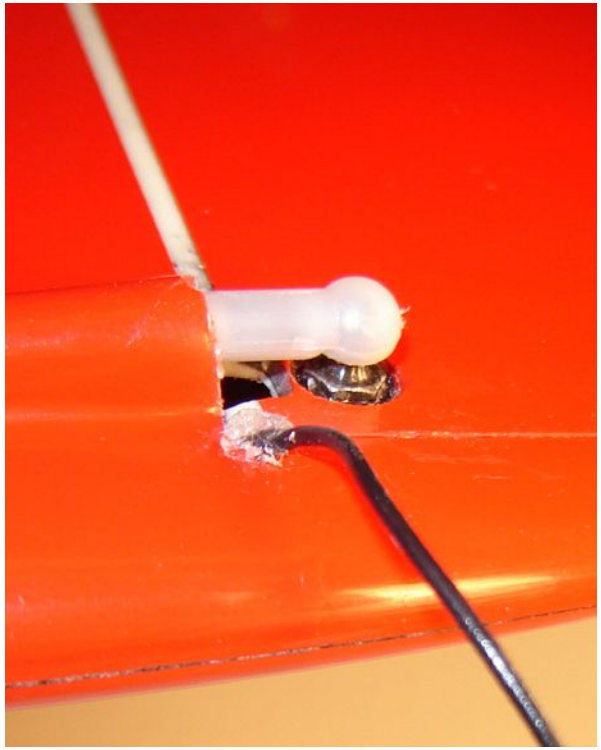
The Fuselage

The fuselage is a carbon/Kevlar lay-up, and has the nice drooped nose. The factory redesigned the fuselage in 2005 with a larger vertical fin and rudder, and a longer, more drooped nose with some added PNF (Pointy Nose Fetish — it's a Higgins thing) and this is the type I received. The fuselage comes with a pre-installed adjustable tow hook.

The back end of my Xperience needed modifications to get the control surface travel required. The elevators contacted the front of the vertical fin and needed trimming to allow full up travel, and the rudder also needed to be relieved to allow full throw in both directions. The elevator modification was shown in the pictures from the German build log, but the rudder was not. Both are now nice, tight and slop-free connections. The pre-installed control rods are well secured in the fuselage, but I needed to secure them just behind the canopy opening to make a completely flex-free system.

The kit does not supply a servo tray, but there is plenty of room for the servos. I built mine from a sheet of balsa/carbon laminate





Left: With the right elevator half in place, the bevelled surface behind the leding edge is apparent. With appropriate "adjustment," the gap is small, and the bevel rides very close to the vertical fin at deflection extremes. The elevator bearing looks quite robust. Right: The rudder linkage and antenna exit. Note the filed slot for ball link linkage clearance during full right rudder.

(5/16"x8"x10") I purchased at the Puyallup RC Expo many years ago. It is 1/4" vertical grain balsa capped with carbon skins. Very strong torsionally and light, it made a great servo tray and bulkhead for the ballast tube. The five-cell battery has one cell length-wise and the other four in a flat (side by side) pack behind all wrapped in a single piece of shrink wrap. I measured the entry and the area in the nose, and this battery fits perfectly. It fits so well it also has to be shoehorned into the nose. For a cushion, I Gooped a 1/4" thick EPP foam pad on the end of the battery that contacts the nose. I noticed the nose has some lead shot glued into it from the factory, and it forms a nice flat bulkhead for the battery to rest against.

The ballast tube in the fuselage fits 14" of 21/32" slugs, and I calculate this to be near two lbs. of brass jacketed lead slugs. This should make for quite the experience at Eagle or Chandler Buttes, if you know what I mean. This ship could be classed as an F3F with this wing loading, the HN354 airfoil, and the right hill. Can anyone say SPEED RUN?

The carbon canopy fits the fuselage lip well, and the canopy has a carbon rod factory glued to it for retention to the fuse. I had to add more glue along the length of the carbon rod to tighten the retention to help hold the canopy in place. The carbon weave of the canopy is semi-translucent, and you can see the battery monitor glowing inside.

Left: The DB9 connector mounted to the fuselage. There's a matching depression in the bottom of the wing. Right: Under the canopy of the Xperience Pro-X interior; from left — Hitec Super-Slim receiver, switch, battery monitor, rudder servo, elevator servo.

Wiring harness

I wanted to build my own wire harness (What was I thinking?) to save money, and I think I saved about $25, but now I can build at least three more. I used heavy gauge servo wire and this added about an extra ounce or so to the overall weight. The completed wire harness, including the DB9 connectors, was 2.3 oz.. The wing and the wing saddle have very nicely molded recesses for the DB9 connector used (Mibo has a full wire harness available as an option) for the wire harness.

The battery arrived late in the build and the first time I assembled the ship and turned it on, the ailerons were not working properly. I detached them and decided to finish the setup of the rudder, elevator and flaps. The radio was working perfectly as I got the end points set for the tail feathers and then configured the flaps. I figured I must have somehow screwed up the wire harness for the ailerons. Later, I bypassed the wire harness and plugged the wing tips directly into the receiver, and got the same results. I plugged two other sets of old servos into channels 1 and 2, and still got the same jerky motion. I replaced the JR 790 receiver with a Hitec Super Slim and all worked just fine. At least I know my wire harness is good, and of course the Super Slim has to be shoehorned into the fuse. I had to make a tool out of piano wire to lift up the nose of the receiver while I wiggled it into the fuselage.

I found an article on Samba Models web site that details several alternatives for routing RC antennas in carbon/Kevlar fuses. I chose # 4. Double the length of the receiver antenna, pull it down the fuselage, and about

20" hangs out under the rudder. Others at 60 Acres have used this configuration with good success.

Balance

I have read that other Xperience Pro V-tails AUW came in at 72 oz., and the Pro X as low as 74 oz., so with the added 3+ oz. as listed above, I thought I was on target for an AUW to be somewhere in the 77 to 78 oz.. range. The final weight of the fully assembled ship prior to adding any nose lead was 76.75 oz. The total weight for the small stuff — wing control rods, servo covers, skegs, servo tray and bulkhead, etc. — was 3.1 oz.. The only other items that added weight was a pair of Superskegs from superskeg.com — a nose unit and the double landing skeg under the back of the wing. What I was not expecting was the need for 4+ oz. of lead to get the CG at 102mm, which is in the center of the range (100 to 104). The AUW is 81.0 oz., for a wing loading of 11.5 oz./sq. ft.. Considering the location of the extra weight in servos, wire harness, etc. that I added and which is all very close to the CG, I think this amount of nose weight is excessive. I like the feeling of a rear CG, but since this is my first X tail with full flying stab, I will start flight testing with the CG set at 102mm. Removing the center skeg and moving the CG to 104 (or farther) will get the AUW under 80 oz..

Impressions

My overall impressions for the build are all positive except for the weight issue and that is a big one. I do not know if mine is the one fat boy in the litter, or if quality control is a problem with the manufacturing process. The lateral balance is also in need of adjustment. The Mibo Modeli 'ships do require a little more work and tweaking to complete and prep for first flight, and the lack of instructions could be a problem for some.

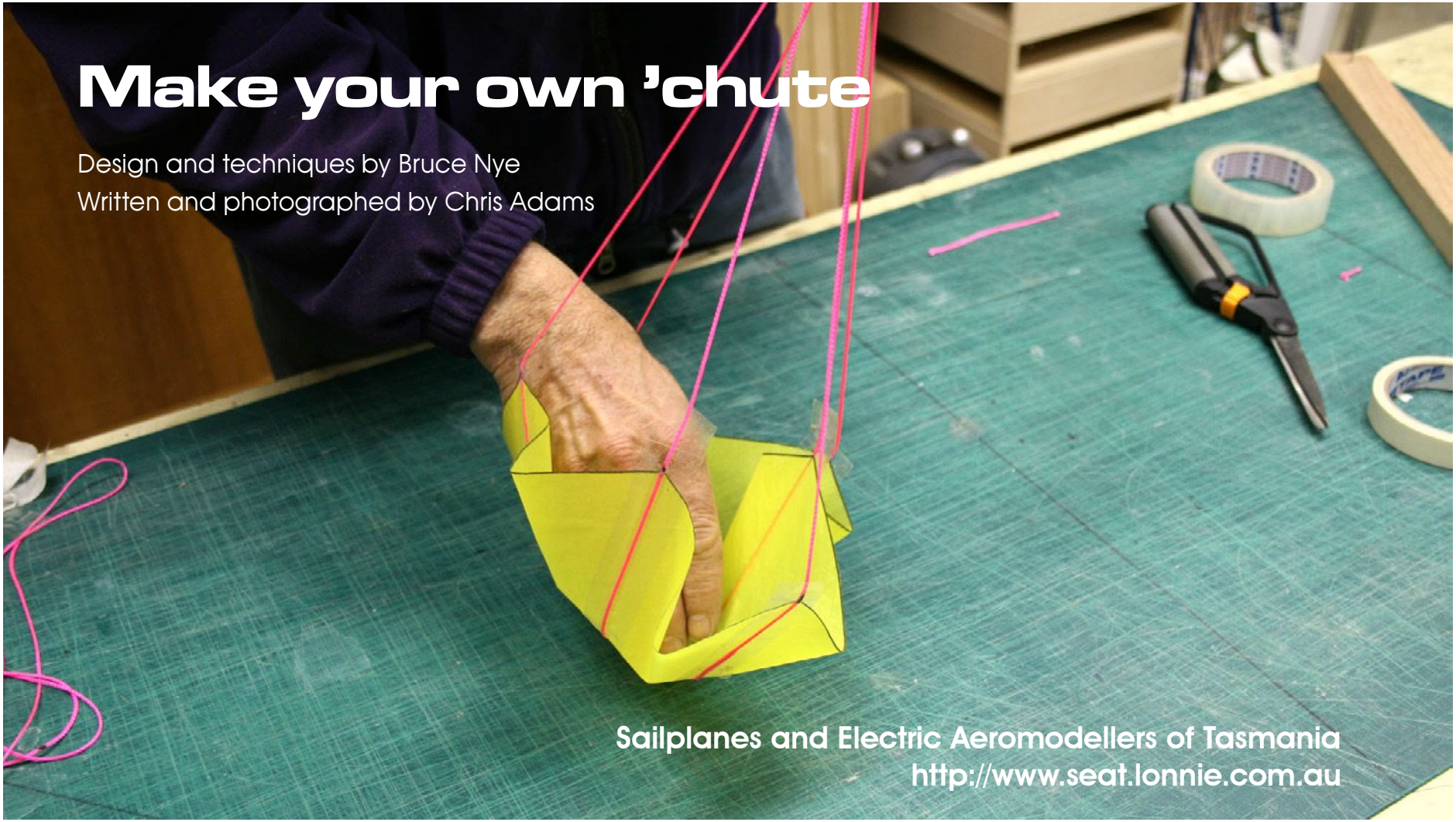
So, to answer the question "Did I get what I paid for?" Remember ,the Mibo ships cost approximately 30% less than most other high end ships, so for this quality and strength of the airframe I think the answer is definitely yes. The real answer and the only one that counts, lies in the Xperience flight characteristics.

So now I have a new 3.34m TD ship ready to fly and winter is here. I hope to get my Xperience soon, but it will be many months before this ship finds its first thermal.

Stay tuned for part two "Flight Testing and Impressions." Just remember, I live in the Pacific Northwest and one thing you can bet on is the PNW Rain Festival which starts in November and ends in May.

Make your own 'chute

Design and techniques by Bruce Nye
Written and photographed by Chris Adams



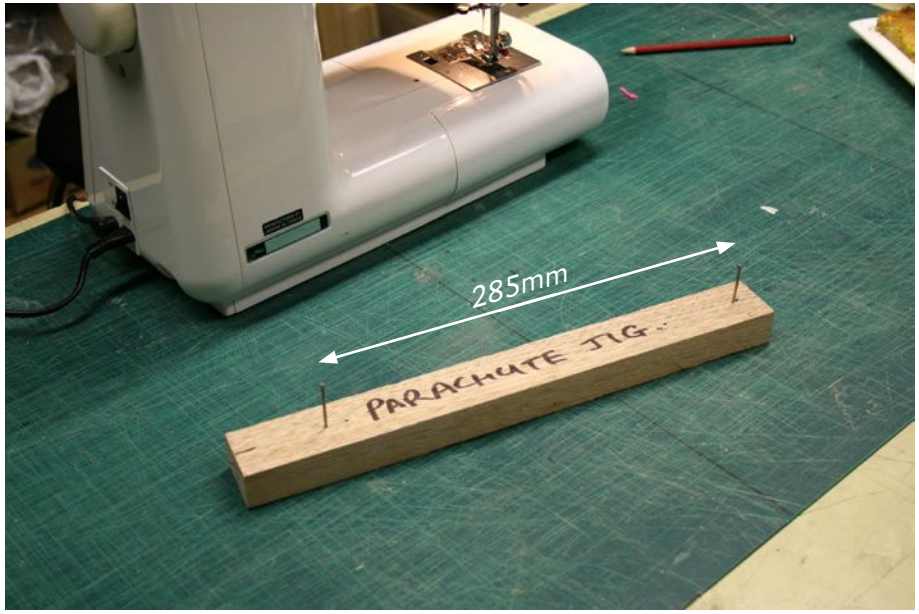
Make your own parachute!

The photos should give you a good guide to how to make your own cheap parachute that is cheap and rugged AND pops like a rifle shot after a good ping. This version is a single color which we have found is fine in terms of visibility.

Items needed:

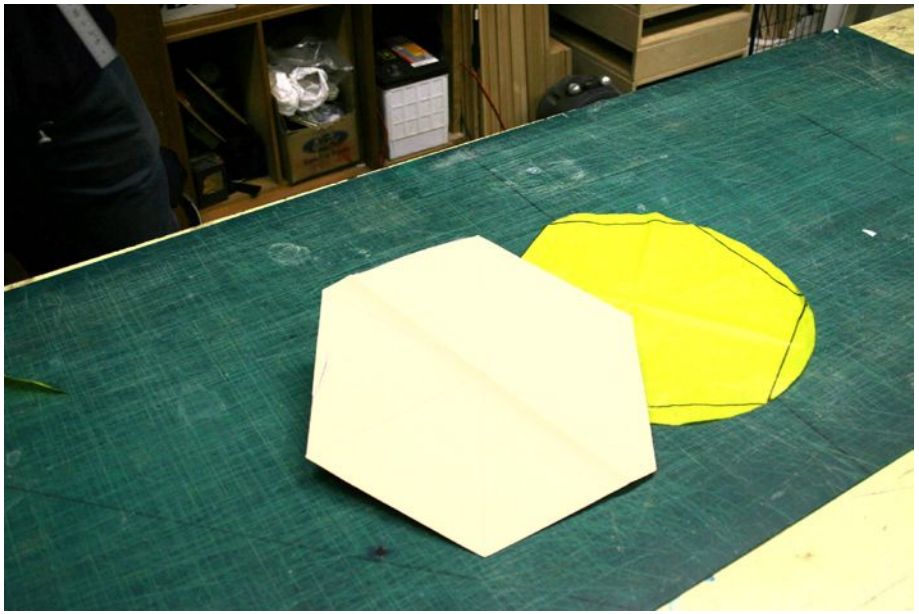
(1) #8 Plaited brick-layer nylon line, fluorescent pink for visibility (while making it),
(2) paper template,
(3) spinnaker cloth (rip-stop nylon).

#8 bricklayer line is used for the parachute lines.

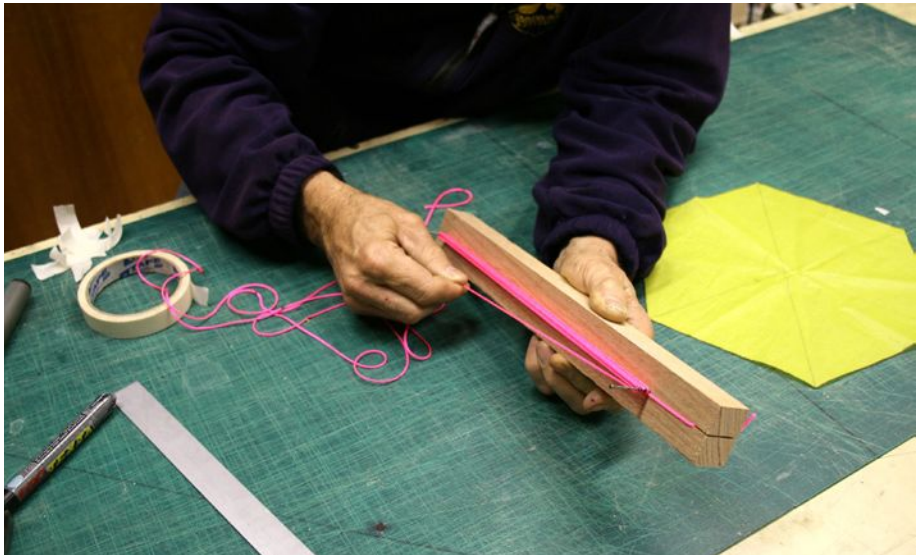


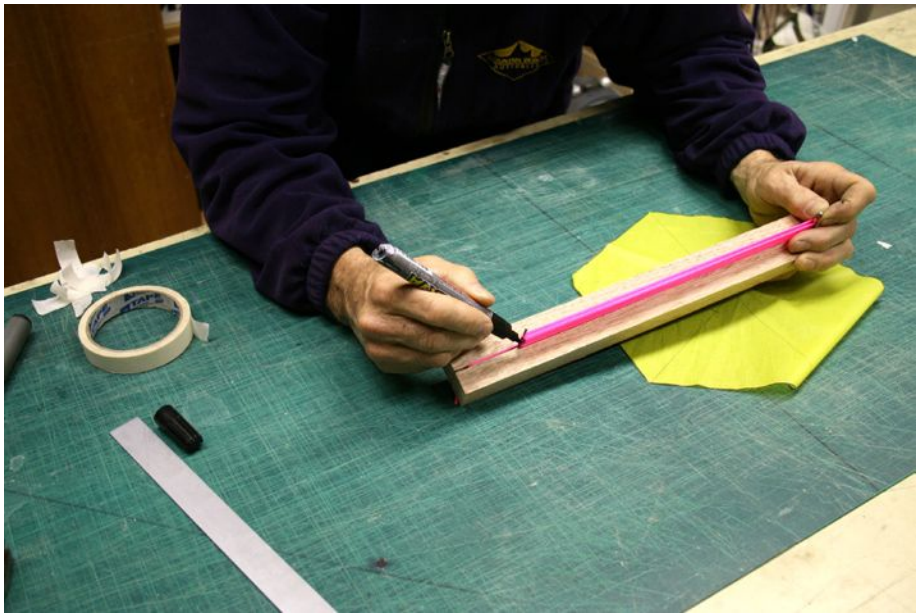
Make a simple jig to help you mark out consistent lengths of cord.

Wind around the nails to give you nine lengths of 285mm.



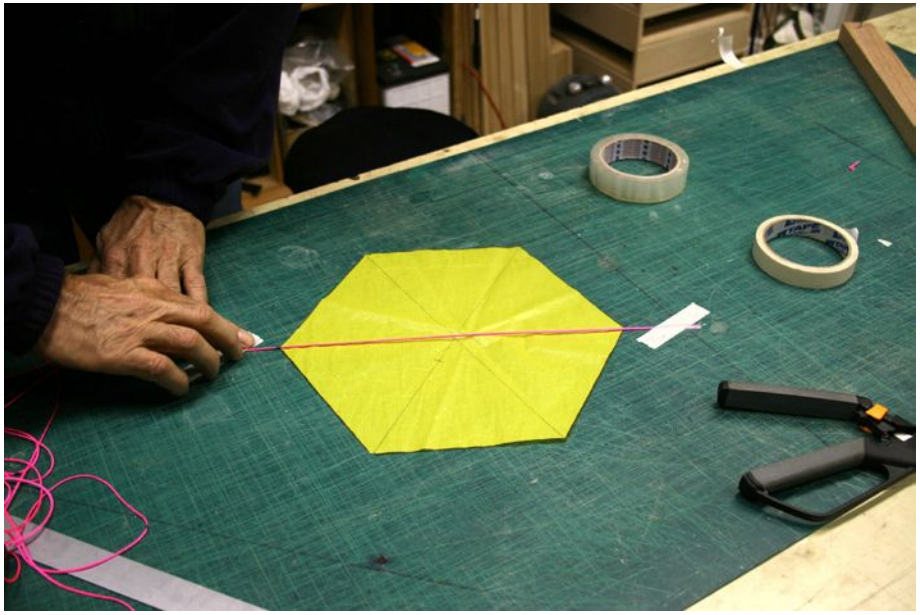
The template is a hexagon, 285mm diameter. F3B rules dictate a "5 dm^2 minimum area." Just use a compass, draw a circle, and then draw three lines across the centre and then join the adjacent perimeter lines producing six equilateral triangles. Use the template to cut out your 'chute material.



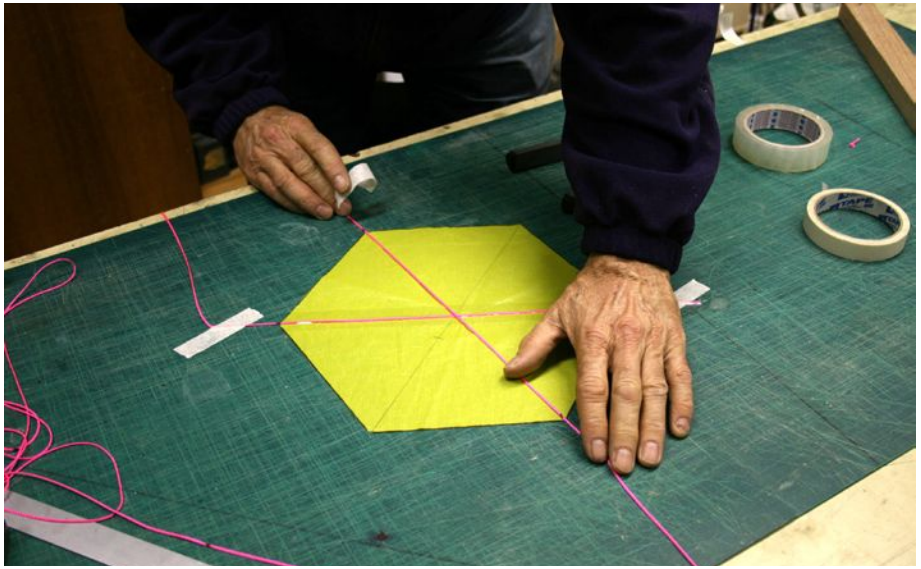


Mark the line at each nail.

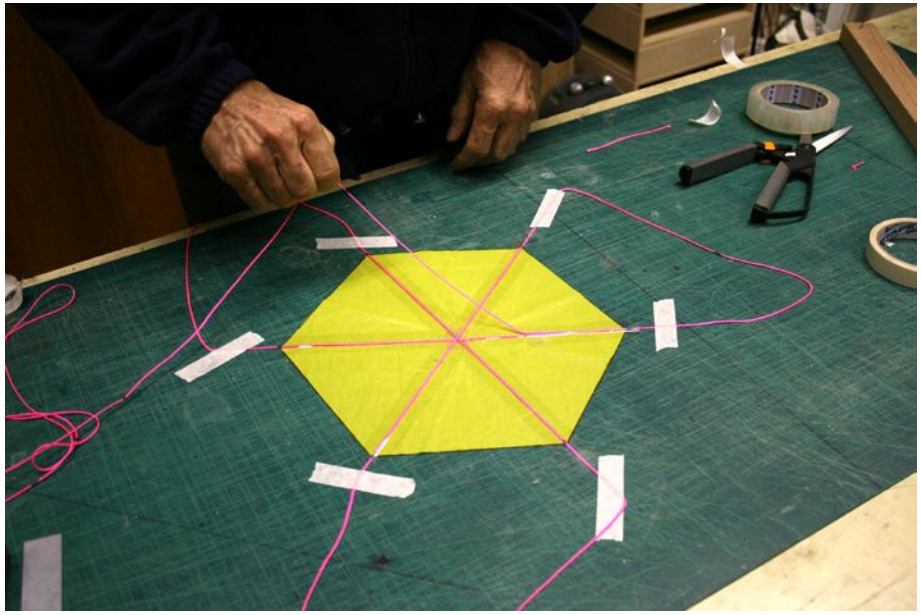
Use pencil lines to assist in laying-out the cord.



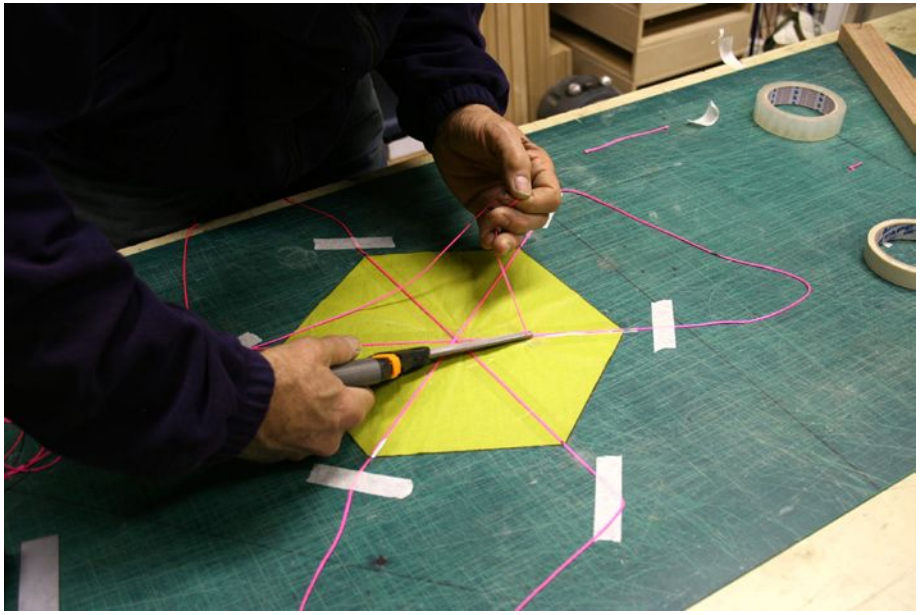
Use tape to hold the cord down while you lay it out.



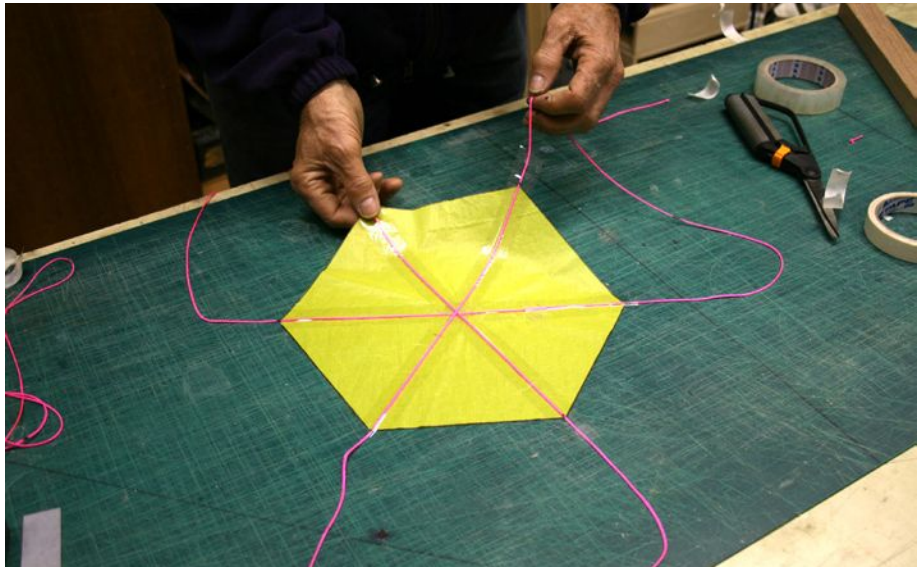
Your aim is to ensure all lengths are equal; get it wrong here and your chute can rotate on launch/ in the air and spin the lines which can reduce line lifespan.



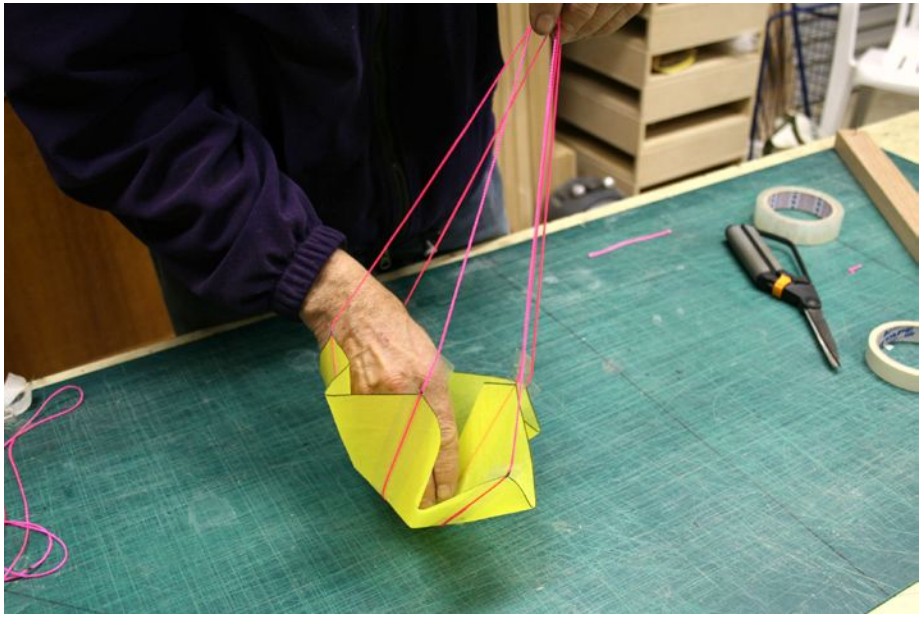
See the three loops? The final run is to return to the origin.



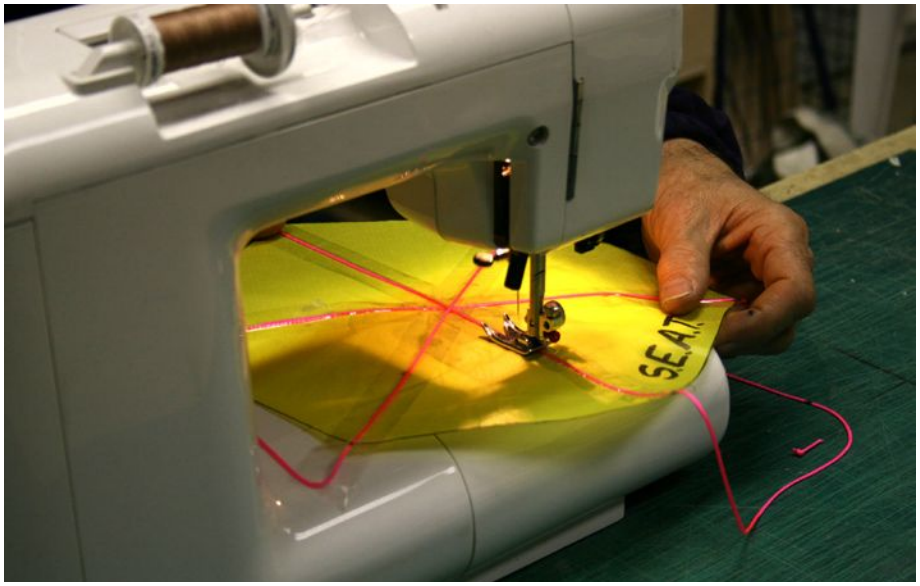
Once back at the start, cut the cord flush.



Lines laid out and taped down. The tape is removed later after stitching. A better soultion would be to stick the line down with 3M77; the tape can cause the sewing machine needle to veer off.

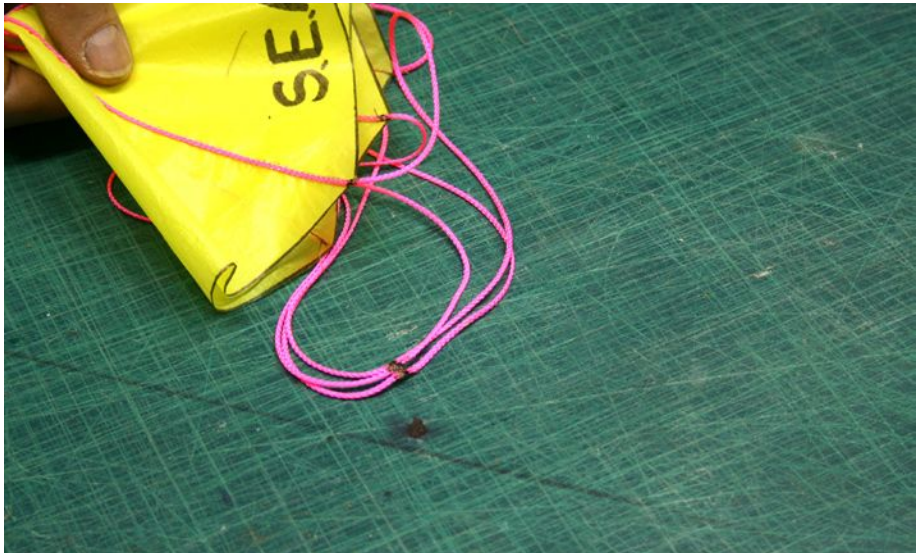


Unfurl the ‘chute and check the geometry.



Use a straight-line stitch and attach the cords to the ‘chute. Omit thread across 25 mm of the uppermost cord at the chute apex; this is the loop through which you feed the hook-attachment loop.

Once all cords done, unfurl again to check geometry and re-do any poor stitching.



Reinforce the cord intersection. Also reinforce the high stress areas.

To attach the ‘chute to the line; firstly thread the line through a strand of nylon piping and tie off.

Arrange the ‘chute cord to create a loop.

Loop made.

Pass line through ‘chute cord and secure as shown above.

To attach line to fuselage, follow these steps: Feed nylon loop (shown in white) through unstitched apex of parachute and then attach to towhook. All done! Takes demon launches and reliably pops-off. The method illustrated allows the ’chute to cling to the fuselage on launch, thus reducing drag.

The Best Laid Plans…

Distractions Are More Powerful Than a *Genie*

Chris Boultinghouse, caboultinghouse@yahoo.com

Those of you who are patiently waiting for the another installment of the "Let's Build A Genie" series will have to keep waiting. Why? Because it's still not finished!

When I began building the Genie earlier this year, I figured it would be finished in one or two months, or maybe three if I piddled around. Here it is seven months later, and while it does resemble an airplane, it is far from finished. What follows is a story about the distractions of life, and the fickle nature of the human brain and what makes it feel warm and fuzzy.

So, why isn't the Genie finished? There are several reasons. Not only did a major project at work cut into my hobby time (and my energy level) but I also contracted Chicken Pox! Yes, Chicken Pox at age 40. As you might imagine, that was a very unpleasant several weeks. But those things, while they did reduce my leisure time to some degree, are not the real reason the Genie remains unfinished.

I have a confession. I have strayed from the silent path. I have shunned the beauty and majesty of silent flight. I have forsaken soaring for several months now, just to be in the arms of… A helicopter! Yes, that's right. Perhaps the most opposite of flying creatures from a beautiful sailplane. A device that is reputed not to fly, but to be so ugly the earth repels it! Yes, I treated myself to a micro electric helicopter for my birthday, and the bug bit me, and bit me hard!

I quickly became obsessed. I spent my spare time reading about how to set up helicopters. I practiced hovering in the driveway. I practiced hovering in our dance studio. I dreamed about helicopters. I drove my wife crazy talking about helicopters. And then one day, I actually flew it. I didn't just hover it nervously, I actually flew figure 8's, and circles, and then magically stopped it in mid-air, and landed it at my feet. And I did it all in my front yard! Oh, yes. I was bitten.

Soon, my Genie was all but forgotten. A box containing hundreds of dollars worth of expensive digital servos was put on a shelf to make room for setting up and configuring helicopters. It's a sickness, I tell you! It's a drug! They tease you with low prices for a simple fixed pitch trainer, knowing that once you taste the challenge (and dare I say it? The convenience) of an electric helicopter you will want more, more, more!!

My little fixed pitch helicopter was soon joined by a small collective pitch cousin, and then by a larger collective pitch hotrod. And my fixed wing machines hang sadly on the wall, wondering what they have done to offend me, and make me hate them so much. The interesting thing is, I don't have an answer for them! I cannot explain what it is about helicopter flying that consumes me.

Perhaps it is the challenge? I've flown fixed wing aircraft for so long that I can do it without conscious thought or effort. I enjoy sailplanes because the challenge there is finding and working lift. But even that has lost some of the luster because I've gotten good at reading the air, and rare is the day when I can't easily find lift.

Perhaps it is the intricate mechanical nature of the beasts? I enjoy things mechanical, and

The Genie wing panels are bagged and trimmed, but I still have to cut the control surfaces, route the pockets for the servos, make a wiring harness, install servos, install RDS bits, cover the tail surfaces, paint the fuselage, and install the servos in the fuselage.

appreciate precision. Helicopters (especially micro class) require care and precision in the assembly, setup, and maintenance.

Perhaps it is the convenience? At a moment's notice, I can grab a helicopter, transmitter, and battery pack and head to the front or back yard (or studio, if it's dark or raining) and get my "flying fix."

The human brain is a fantastic creation, craving enjoyment and pleasure, and rewarding its keeper with the desire for even more. I think my brain has found something that, for the moment at least, provides it with the entertainment, challenge, and correct mix of endorphin and adrenaline to keep it feeling all warm and fuzzy. I guess for that I should be appreciative, since some people resort to much more expensive, dangerous, and illegal means to reach the same state.

What does all this rambling mean? It means you guys will have to wait a little while longer for your Genie wrap-up article. I hear a helicopter calling out to be flown in the living room.

Maple Leaf Design *Encore*

Fabrication walk-through, Part 7

by Phil Pearson

This month covers the finish work on the wing, with photos showing leading and trailing edge finishing, and cutting the ailerons with a living hinge. Jigs are also shown for these tasks and for cutting dihedral angles on the wing panels.

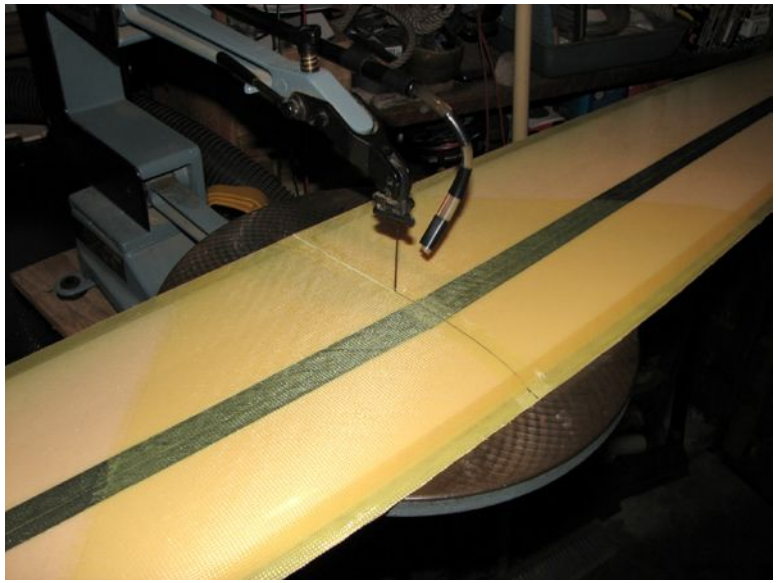
Aileron finishing is a high anxiety task, and much work can be ruined if a straightedge or wing panel shifts even a small amount during the cutting process. The clamps and jigs shown have been developed to minimize movement and minimize set-up time. They are so successful that a high anxiety task has been made enjoyable. If you are constructing planes, take a close look at the process.

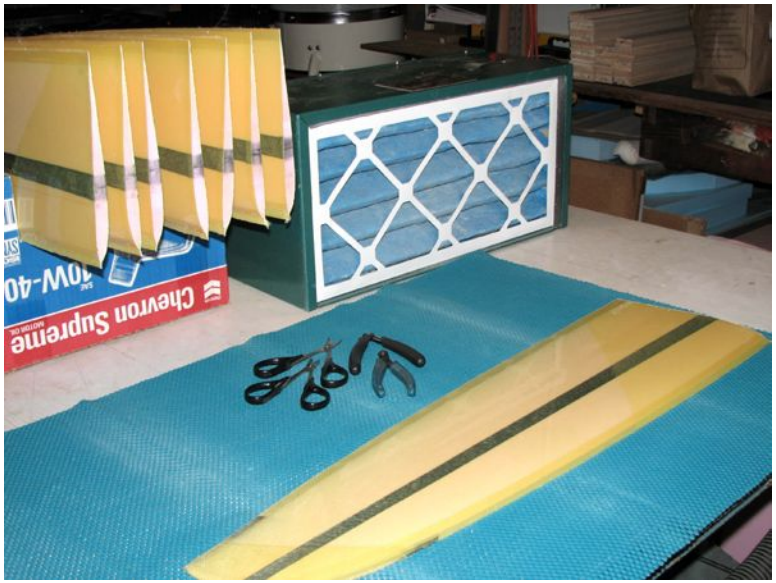
Finishing Kevlar leading edges is time consuming and monotonous work. The use of the Fein sander has reduced this time and improved the product. Sandpaper for the sander is available in pre-cut, adhesive back pieces made especially for the sander. I have found it less expensive and easier to get the desired type and size of grit by cutting several stacked sheets of sandpaper using a cardboard template and an old pair of tin snips. A new piece of sandpaper is given coating with a convenient spray-adhesive just before replacing a worn-out piece on the Fein sander.

This month concludes the series on construction of the Encore. Development continues on the design, and this year alone a new strake of AGc series airfoils has been used successfully on the wing, and new horizontal and vertical stabilizers have noticeably improved the performance and handling of the plane at all speeds. A ballast system has been incorporated to allow the addition and removal of concentric ballast tubes in a few seconds without removal of the wing. Using lead as filler in brass tubing allows a max gross weight of over a pound. At this weight the Encore is still a delight to fly; it still retains the easy forgiving handling of the unballasted version. On good lift days it is quite enjoyable to cruise from thermal to thermal at much higher cruise speeds.

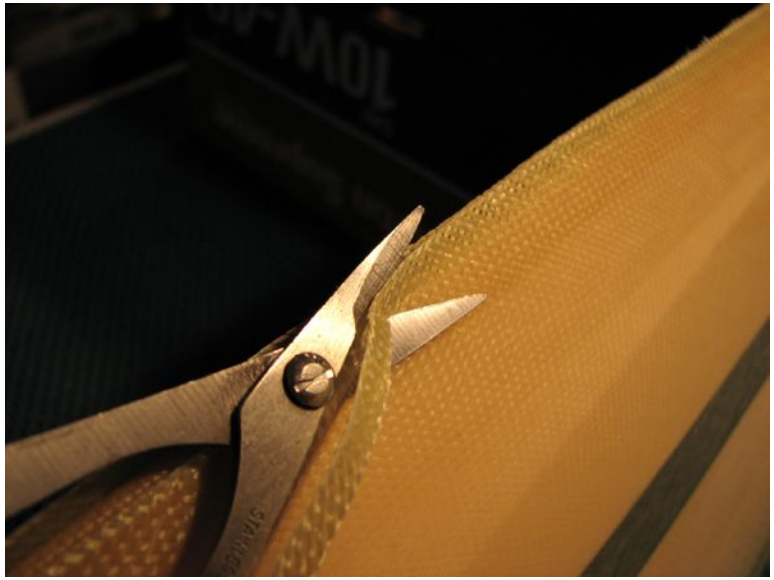
I would like to thank Don Peters, Joe Wurts, Jim Pearson and Adam Weston, Bill and Bunny Kuhlman and the many others that have contributed to the design of the Encore, and all the pilots flying hand-launch gliders, for sharing the fun and enjoyment of a fascinating hobby and ever unfolding of the mystery and philosophy of soaring.

Opposite: Phil enjoying some light slope soaring with his Encore. Photo by Christian Kalinowski.

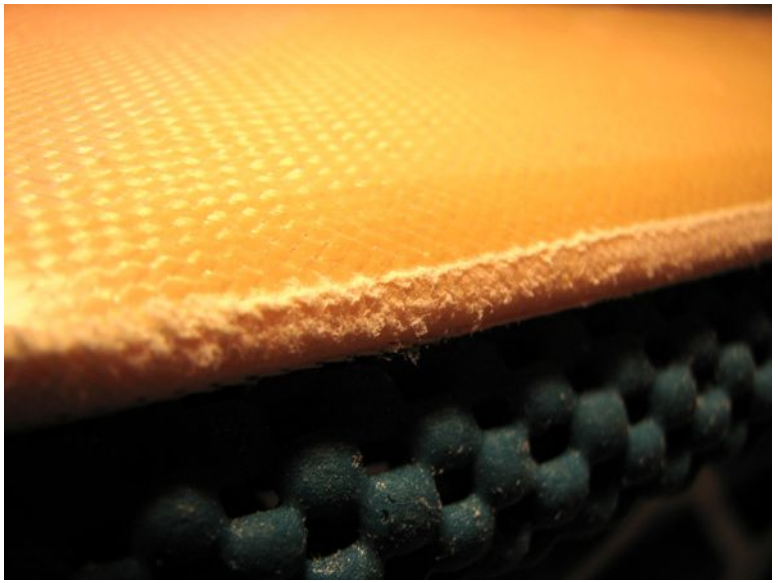




Left: After the mylars have been removed from the vacuumed-bag wing the wing is cut into two pieces with a fine-toothed jig saw. Right: Excess leading edge flashing is first trimmed with curved lexan-trimming scissors and sharp side cutters. Shelf liner material is placed under the wing to minimize denting of the surface.



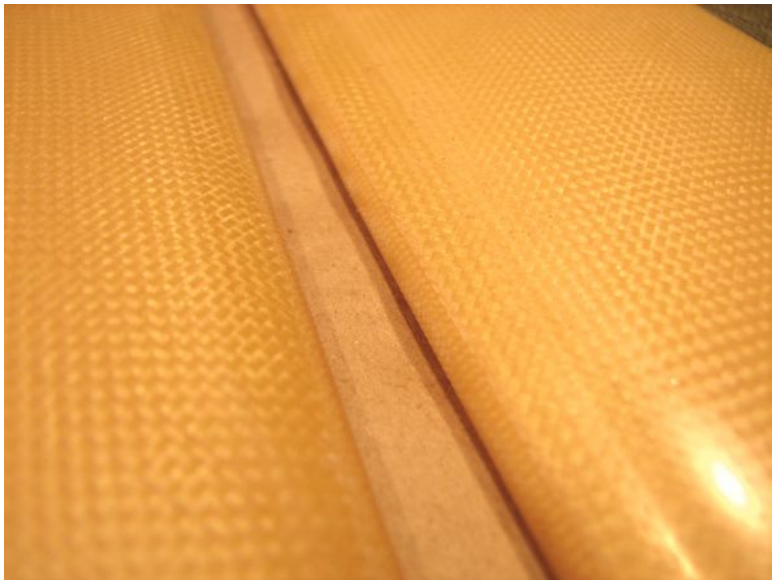
Left: Close-up showing leading edge trimming. Scissors are sometimes sold for trimming plastic kit parts. Right: Remaining flash is trimmed with a Fein sander and 80-grit aluminum oxide sandpaper. 20,000 orbits per minute allow rapid removal of the remaining flashing. Dust is captured with a bench-top filter from Grizzly.com.

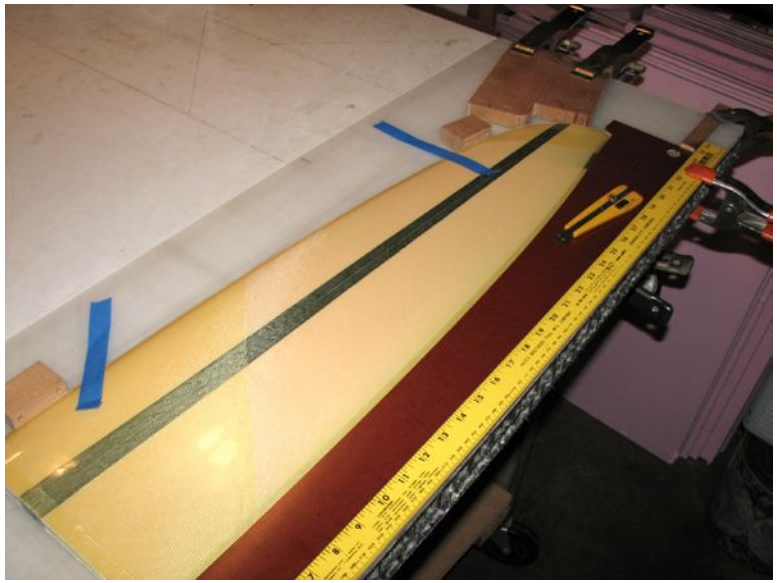


Above: Rough removal of flashing results in some fuzzing of Kevlar. Fiberglass covered wings are easier to trim because the fiberglass cuts cleaner and faster.

Above right: Close-up showing initial flashing removal on right and material to be removed on left.

Right: After initial sanding with 80 grit and then 320 grit sandpaper, the sanded area is wet down with foam-safe CA glue and sanded again with 320 grit. The glue is wiped on with a folded paper towel. Masking tape on fingers minimizes glue build-up on hands.

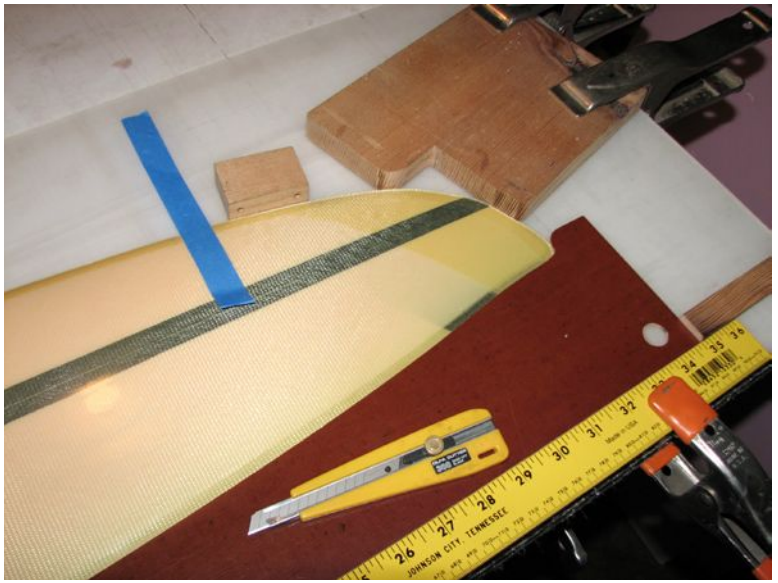




Above left: The leading edge area is then polished with buffing compound for plastics. Buffing wheels are cut from light-abrasive sanding pads.

Above: Polished leading edges after buffing.

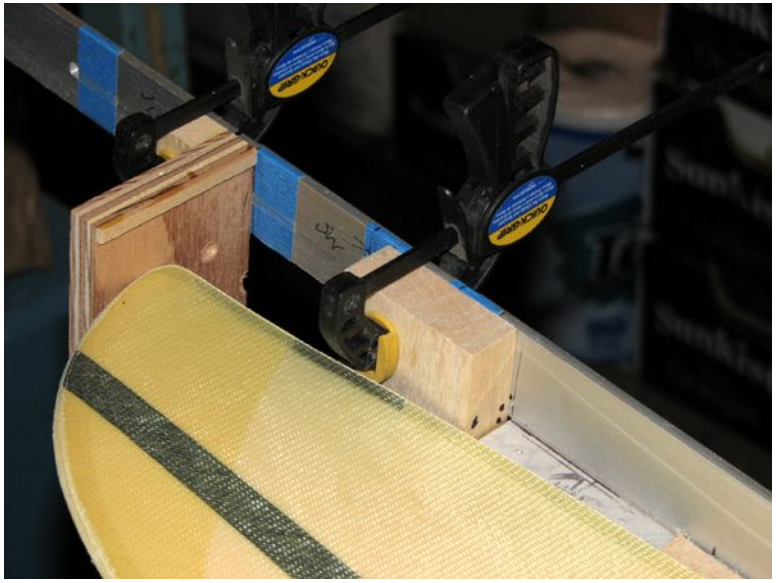
Left: Trailing edge trimming is next. The curved trailing edge of the Encore uses a CNC-cut template as a guide. A useful method of positioning the wing and template that prevents movement during the cutting process has evolved. The stops are clamped or held in place with double-sticky tape. The cutting guide is stopped on the right to prevent lateral movement and by the ruler clamped to the table. Fine location-adjustment is accomplished by moving the ruler.

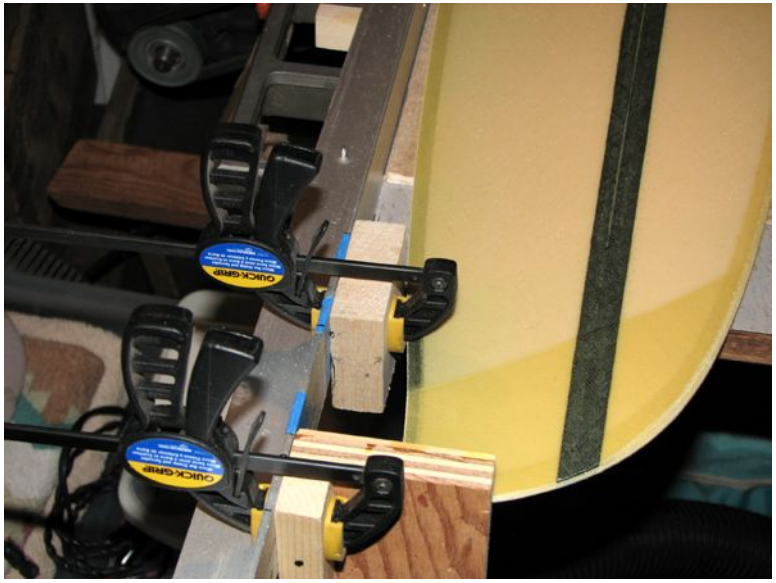


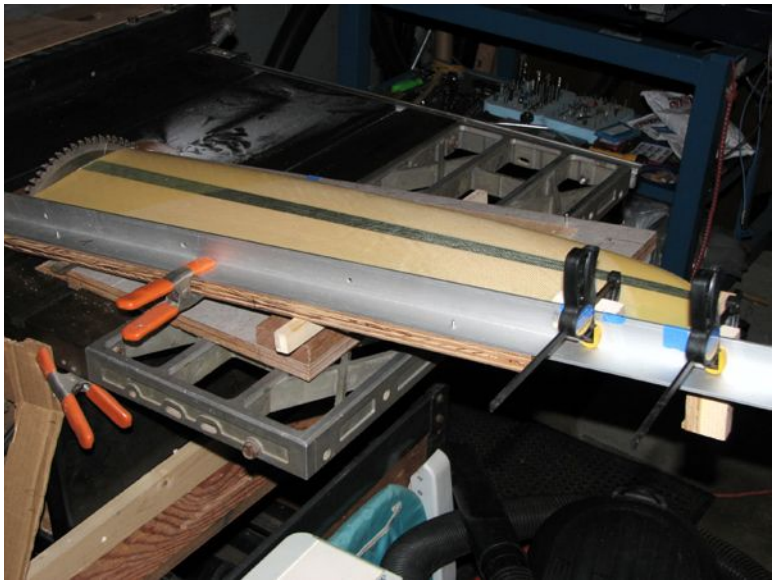
Above: View showing clamping and stops up close.

Above right: An Olfa 300 snap-blade knife is used for trimming.

Right Dihedral is cut using a 74-tooth carbide saw-blade. A special jig is used to position the wing and in this photo the cut has been finished. Movement of the wing panel is right to left in the photo. The saw-blade is reversed to prevent Kevlar fibers from collecting on the cutting edges. If the blade is used in the normal manner the Kevlar fibers "ball up" and deform the wing panel end. Any fuzz produced is trimmed with scissors.





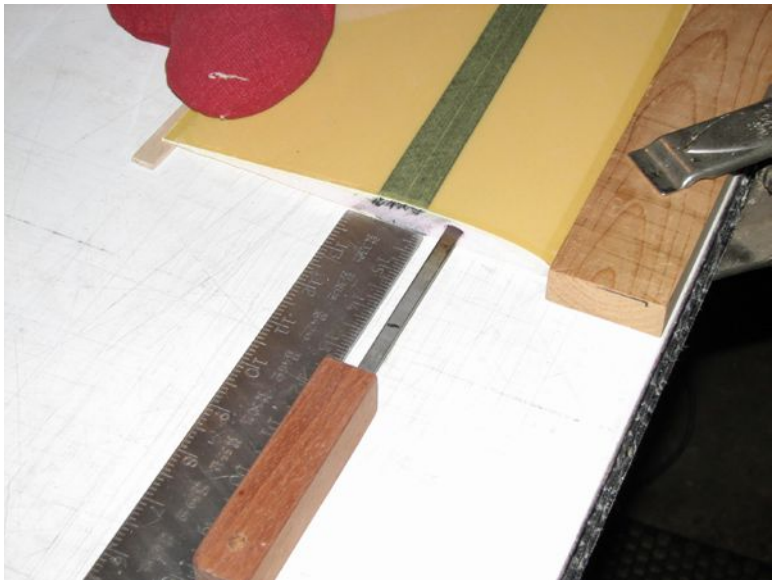


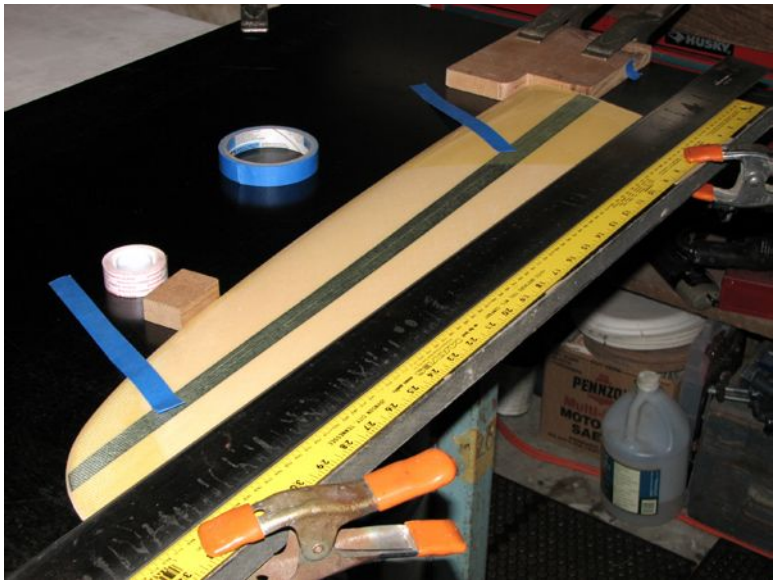
Above left: Close-up of dihedral jig end stop.

Above: Another view of the dihedral jig.

Left: Left panel being cut, movement of the panel is towards the camera. The left panel is cut with the aluminum extrusion located on the far edge of the jig, on the same side of the saw-blade.

Right: Servo-wire holes are melted with a rectangular tool and the use of jigs for alignment of the tool and wing panel.

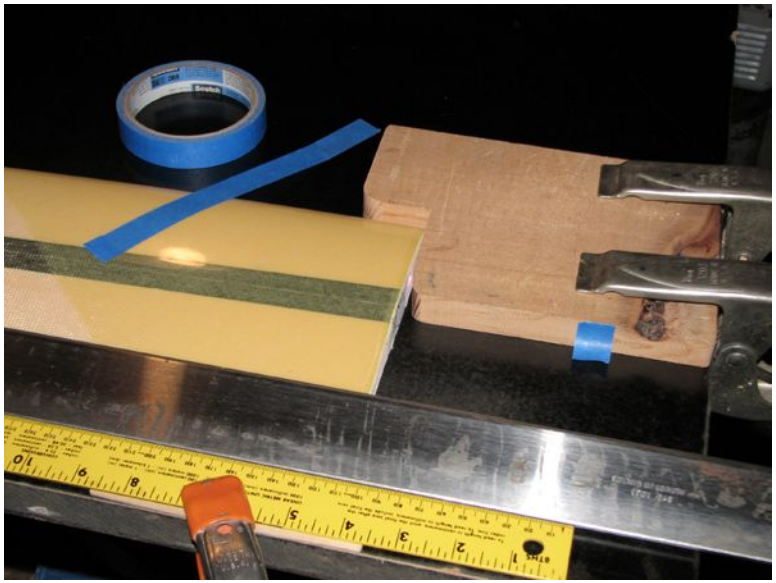


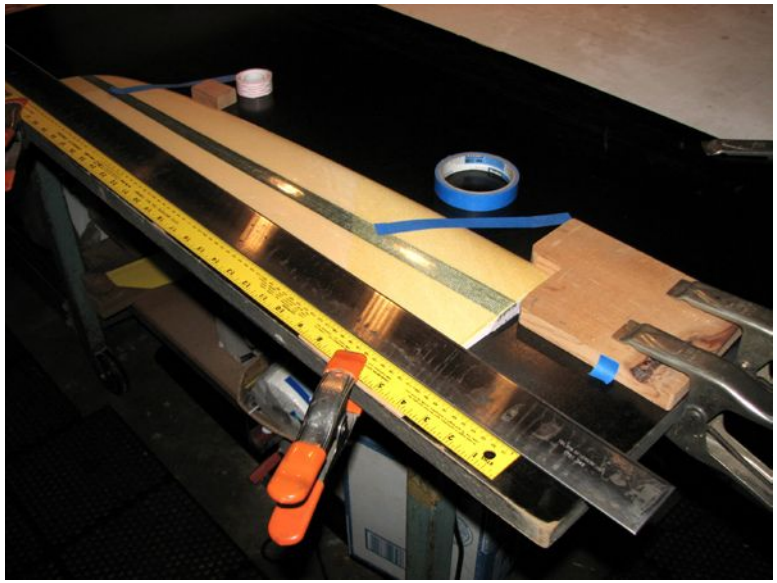


Above: After heating with a propane torch the hole-tool is pushed along a straight-edge-guide into the wing. Care must be taken to not overheat the tool as the foam melt-out is greater than the tool dimensions.

Above right: Ailerons are cut next and the wing panel and straight edge guide are held secure against movement in a similar method used for trimming the trailing edge.

Right: Once again the cutting guide is easily adjusted by loosening the orange clamps holding the yellow ruler. Note the shim under the ruler near the orange clamp that allows clearance for the trailing edge.





Upper left: Overview of the secured wing panel prior to cutting the aileron.

Above: Knives used for cutting the aileron. Initial cuts are made with the Olfa 300 snap-blade knife, next the foam is cut with a new #11 X-Acto knife. Since the Kevlar is left uncut on the bottom surface for a live hinge, a rounded-tip #11 blade is used to cut the foam close to the kevlar. The last knife blade is used to cut the aileron ends. A fine tooth saw could also be used to cut the ends of the ailerons.

Left: Apparatus for winding heat-shrink tape on tail-booms. Electric, variable speed 3/8" drill with foot on/off switch. Plywood bearing support for end of mandrel and "ski-pole" for mandrel.

Left: Cured boom ready to be removed from mandrel. 1/4" rod epoxied in ski pole and nuts jammed on for wrench to allow twisting of mandrel in tube to facilitate release. Wood clamp taped to shrink-wrapped carbon tube. Right: Another view of the clamp. This is a very effective way to hold the tube while twisting and pulling the wrench/mandrel during release process.

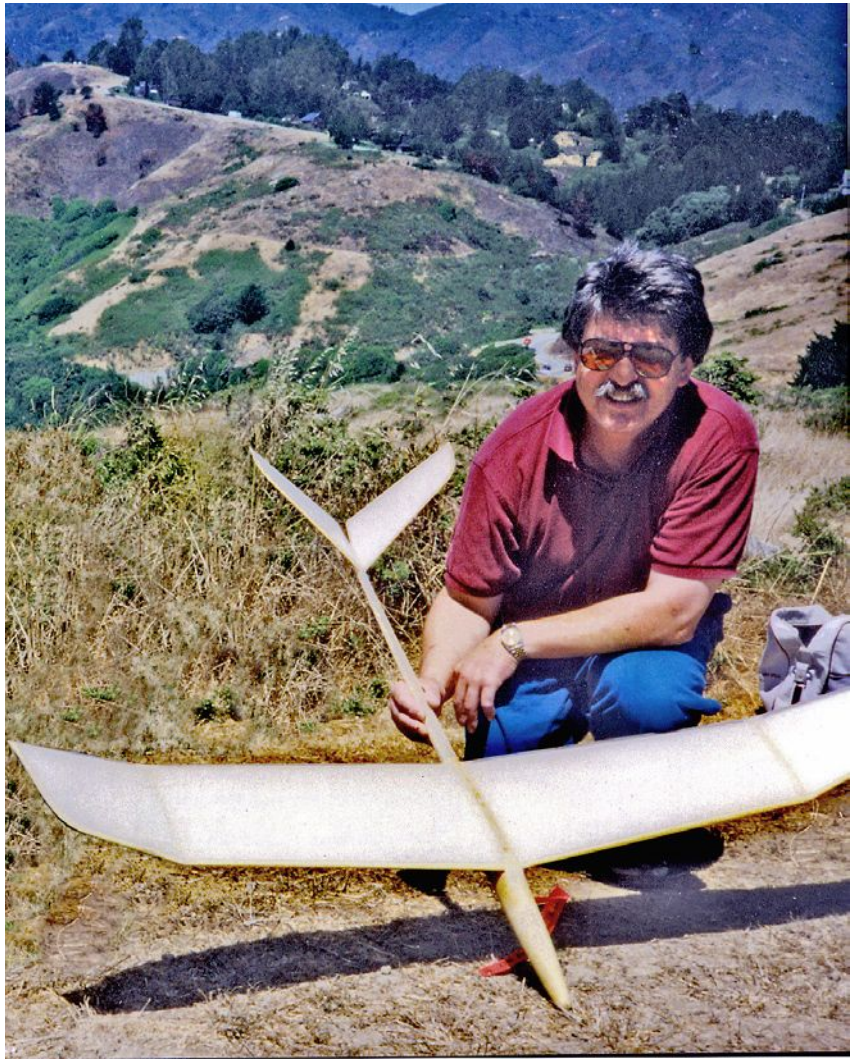
Left: Released tube and mandrel.

Right: Heat shrink tape removal.

Above left: Vacuum bag material is first wrapped around a silicone-greased mandrel and now must be removed from the inside of the tube by twisting. The vacuum bag liner allows easy removal of tubes from mandrels with little or no draft.

Above: Removed vacuum bag liner.

Left: Commercial tube top and hand-made tube below. The process using a liner over a mandrel allows tubes to be pulled off many found items such as pool cues or larger forms.



Don Peters, the founder of Maple Leaf Designs, a few years ago, with an early hand-launch prototype and black hair!

Jim Pearson with an early discus launch Encore and SASS Season trophy. Jim is responsible for much of the fuselage construction.

David Jensen (right) pilots Tor Burkhard's (left) Lunak at Eagle Butte, Richland, Washington. Photo by Derrick Dittes. Panasonic DMC-FZ5, ISO 100, 1/800 sec., f7.1, 31.6mm

Christmas and Gift-giving Ideas

by the *RCSD* Columnists

Dave Garwood

Winged Shadow Systems: How High Altimeter and R/C Reporter

Winged Shadow Systems makes a pair of tiny on-board electronic data processing and data recording devices which myself and another New York Slope Dog have found interesting and useful.

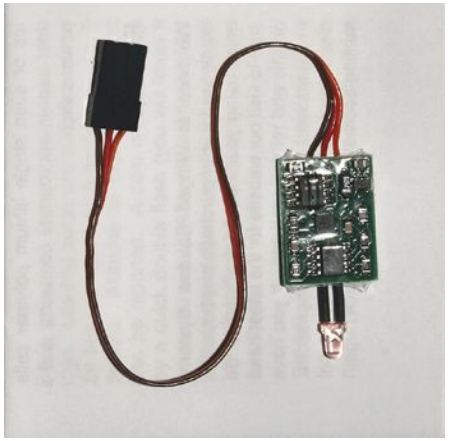
The "How High Altimeter" records the highest altitude reached during a flight. The diminutive device plugs into an unused receiver channel and records the greatest height reached since it was powered up. After the flight, wave your finger over an LED, and the altitude reached above ground level is transmitted in a series of flashes. The How High Altimeter works as advertised, and now we can know the altitude reached in that "higher than high" flight.

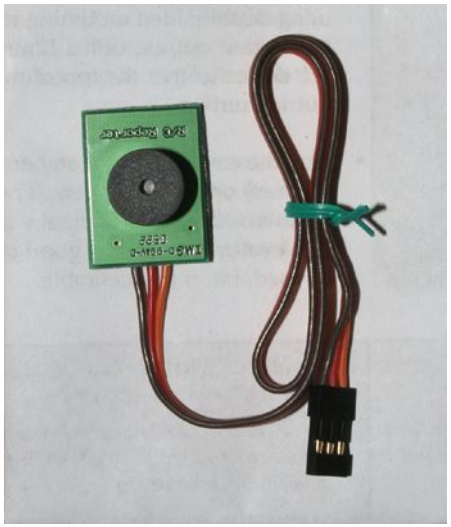
The "R/C Reporter" reports receiver battery pack voltage, radio glitches detected during a flight, and also includes a lost model audible alarm. OFB Jim Harrigan tested the R/C Reporter. Jim's remarks:

"The Lost Model Locator and Voltage Monitor features require no user interaction; just plug it in and it works. In case of a lost model, when the device detects that transmitter signal has been turned off it plays a melody. The way the "check the voltage before each flight" feature works is by emitting a tone followed by a series of beeps that represent the voltage. If voltage is low, the warning given is a repeated series of three beeps.

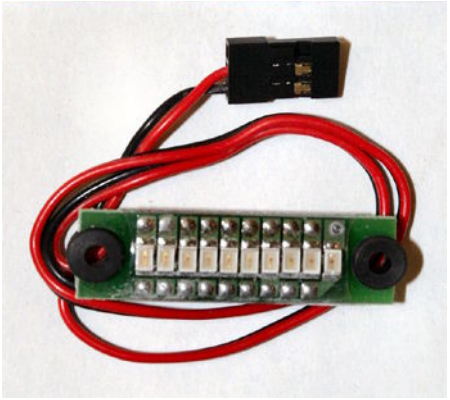
"The voltmeter feature requires two movements of the stick past 70% and the Glitch Counter three movements, but there is NO ANNOYING TIMING you have to get right. It just works, is easy and reliable. The way to measure the voltage reading is by moving the stick twice past 70% (within two seconds) and listening for a musical tone, followed by a series of beeps. A series of six beeps, followed by one beep, followed by three beeps would indicate 6.13 volts."

Jim Harrigan and I have concluded that the two Winged Shadow devices work as described, and are fun and interesting to use. They cost $39.90 and $24.95, respectively.





Winged Shadow Systems "How High Altimeter" and "R/C Reporter."



Expert Electronics Battery Voltage Indicator

Hangar 9 FS One R/C Flight Simulator

On November 13 2006, Winged Shadow Systems announced a new product, the "See How," which works with the How High instrument to more easily extract and display data captured by the How High altimeter during a flight. Cost $34.90. See the Winged Shadow Systems web site for a photo and details of how it works, and also for copies of instruction sheets for all three ingenious electronic devices.

Winged Shadow Systems
PO Box 432
Streamwood, IL 60107
Telephone 630 837-6553
Web site: www.rcreporter.com
E-mail: Support@WingedShadow.com

Expert Electronics Battery Voltage Indicator

This little beauty delivers an always-on reading of the state of charge of a receiver battery pack for as long as the receiver pack switch is on (and as long as there is sufficient voltage in the pack to power the device).
The compact device consists of an 18-pin IC chip, an extremely compact circuit board, and 10 LEDs - three red, one orange and six green. It mounts with two screws to your servo tray, and plugs into an open receiver channel.
Operation is dead simple - just note the color of the illuminated LED, following the stop light color scheme. The array of six green LEDs indicates if you have a full or medium charge, orange means warning of low battery voltages and red means don't fly before recharging. They cost $15.15 from Horizon Hobby.

Expert Electronics
Battery Voltage Indicator

EXRA500 for 4.8 volts
www.horizonhobby.com/Products/Default.aspx?ProdID=EXRA500

EXRA501for 6.0 volts
www.horizonhobby.com/Products/Default.aspx?ProdID=EXRA501

Mark Nankivil

All I want for Christmas is...

Hangar 9 FS One R/C Flight Simulator

Winter and the resultant non-flying weather is not too far off now and as such, I tend to think about what I can enjoy during those winter months. This year, I would like to stir the sticks with a flight simulator program, specifically, the new one from Horizon Hobby/Hangar 9 called FS One. Michael Selig had a strong hand in its development and there is a number of sailplane related features that look to be worth trying. To take a good look at what FS One can do, check out:
http://www.horizonhobby.com/

With controller, $209.99
<http://www.horizonhobby.com/Products/Default.aspx?ProdID=HANS2000>

Without controller, $179.99
<http://www.horizonhobby.com/Products/Default.aspx?ProdID=HANS3000>

Ryobi 9" Precision Table Band Saw

I saw this tool at Home Depot a few weeks ago and was impressed with the quality and how relatively quiet it is. With a number of large wood scale sailplane projects in my future, I would like to have the ability to cut wood with such a tool. Take a look at:
http://www.ryobitools.com/

Ryobi 9" Precision Table Band Saw

<http://www.ryobitools.com/power-tools/tool/bs902/>

Soaring Society of America DVDs

The Soaring Society of America earlier this year took two of their video classics and released them on DVD. I had the

Soaring Society of America "Running on Empty," and "Quiet Challenge"

VHS version of "Running on Empty" and "Quiet Challenge" and literally wore these tapes out. Now I look forward to viewing these DVDs in stereo and on a big screen TV some cold, chilly evening. There's also two other DVDs that cover soaring in New Zealand that look very interesting as well.

If you are looking for a some fun and enjoyable soaring related music, check out the CD "Cloudbase" by Ed Kilbourne. I received this as a gift a few years ago and it is wonderful!

Check out their online store at:
http://www.ssa.org/

<http://www.ssa.clientreadyweb.com/index.asp?cat=164150>

Lift Ticket the Director's Cut DVD

For viewing pleasure of the model sailplane type, check out Dave Reese's recently released DVD "Lift Ticket, The Director's Cut." Soaring of all kinds in different locations and different conditions should make for an enjoyable evening at home or to spice up the local model club's winter meetings. The web site also has info and a video clip of an upcoming DVD titled "Lift Ticket to Norway" that looks like a winner as well. Check them out at: http://www.reeseproductions.com/

<http://www.reeseproductions.com/videos.html>

(Dave Garwood's review of "Lift Ticket the Director's Cut," complete with still frames, is in this issue.)

And I'll finish up with my best wish of all, and that is that all of you have a wonderful holiday season and may 2007 be a fantastic year for all!

Merry Christmas!

Jerry Slates

The "Hat"

Anyone who spends anytime out in the sun for any length of time, like glider flyer's should have one good hat. You may be reading this in December, but come July and August when you will really need a good hat isn't that far off.

The "Hat," and the Hobbico steel ruler.

Finding a good hat , one that you will ware is not easy. They just don't have any good hat store's like they did in my father's day.

This hat that I wear was found hidden in the back of my local sporting goods store. Cost $17.99.

Hobbico Metal Bench Ruler

We have all needed one at one time or another? Right, but there was none in sight. What, a ruler. Hobbico, Part # HCAR0465, makes a 48 "/1.2m self adhesive/ sticky back metal ruler that you can stick onto the edge of your work bench and you will always have one on hand.

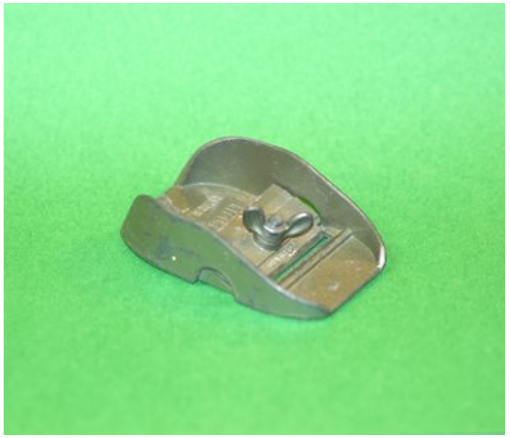
Cost $9.99, at your local hobby shop.

Wiha Quality Tools
400 10 Magnetizer/Demagnetizer

Everyone needs one, right? Right. There will be some time that you will need a or wish that you had a magnetic screwdriver to hold that small screw that's too small for your big hands and you don't have one. But you can make one with a 400 10 tool. On the other hand, you have a magnetic screwdriver that you don't want to be magnetic. Use the 400 10 tool to demagnetize it. It's easy.

I got mine at my local hobby shop. Cost $7.99, or you can go to www.wihatools.com. Check them out, they have a lot of other neat tools, too.

Wiha Quality Tools 400 10



Left: Wil-Kro razor plane in concave, straight plane, and corner arrangements.
Right: Little Giant razor plane.

E Cubed R/C M-72-Lite Micro Antenna

Those of us who fly hand launch or small slope glider's sometimes have to much Antenna. What to do with that unsightly, dangling wire hanging out of the back of our glider's.

Why not replace it with a M-72-Lite micro antenna. This center loaded antenna is just a little over 6" long.

This M-72-Lite micro antenna is not intended to replace the antenna in your Open Class glider that you are going to sky out into a speck. But as long as you stay within a 1000 feet of the transmitter you should be OK. Remember, always do a range check.

Cost $12.00 at www.ecubedrc.com, Tel. 937 849 0418.

Bill and Bunny Kuhlman

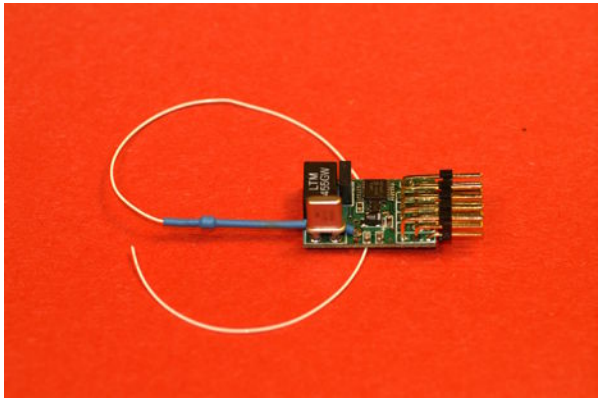
A True Razor Plane

All of the "razor planes" currently in production are designed to take specially made blades. These blades are double-edged and are strong enough to use on spruce and other high density woods. When planing balsa, however, we very much prefer using one of our antique/vintage razor planes which use real double-edge razor blades.

We have a number of these planes, and they are put to use on a regular basis, not only for shaping leading edges and tapering trailing edge sheeting, but also for shaping EPP.

The blade is mounted on either a central pin or ridge, but the depth of the cut is still adjustable over a relatively large range. We've always trued the bottom surface with wet-or-dry sandpaper before first use, then adjusted the blade depth by using paper of appropriate thickness in front of and behind the blade while the hold-down screw is tightened.

The two brands which are most easily found are Wil-Kro and Little Giant. The Wil-Kro plane consists of two, or sometimes three, pieces. The various parts can be configured to produce a regular hand plane, a plane for concave surfaces, or a plane which will go nearly all the way into a vertical corner. The Wil-Kro plane has a handle, but we find it sometimes gets in the way or makes guiding difficult. The Little Giant is a simple single piece plane which is a good fit to the hand. Both of these are available on E-Bay on a somewhat regular basis. Prices range from $5 to $15. Double-edge razor blades are still sold in small packages of three to ten blades at prices ranging from $2 to $6.



Mikro Design MikroTenna and SPF-5.

Try-Me Sized Microplane.

Norpro kitchen pots and pans scrapers.

Mikro Designs MikroTenna

This is the ideal base-loaded antenna for the Mikro Designs SPF-5 receiver. Each MikroTenna is hand-tuned to specifically match the SPF-5 receiver, guaranteeing maximum range. (While the MikroTenna will work on other receiver brands, it is not tuned to them, and for this reason it's not recommended.) This antenna is 7.5" in length and is soldered directly to the receiver printed circuit board, so it will most likely fit into just about any model.

The Mikro Designs MikroTenna is priced at $9.95, whether you purchase it and install it yourself, or order an SPF-5 and have the MikroTenna installed by Mikro Designs.

www.mikrodesigns.com

Mary Kay Satin Hands® Hand Cream

What's a hand cream doing in an RC soaring magazine? Well, there are times when hand protection and/or skin therapy is needed — like when flying in cold dry weather, after working with wood, or after using latex gloves. Mary Kay Satin Hands has specific advantages over the more common hand creams. It is hydrating, and forms a protective barrier, but it's not at all sticky; it also lacks fragrances, making it ideal for the male contingent. A three ounce tube is $8.00, and shipping can be arranged for any location, world-wide.

www.marykay.com/patriciapylman

Try-Me Sized Microplane

We picked up one of these on a whim for $2 at a kitchen shop, and have found it works extremely well on EPP and styrofoam. It's just 2.5 inches long, so it can be used in tight places.

Microplanes makes both kitchen and workshop tools. For the workshop, you may be interested in knowing Microplanes makes the replacement blades for Surfoam tools, in addition to rasps, disk and drum sanders, and hacksaw blades.

http://us.microplane.com/

Norpro Scrapers

We've used these for years in the kitchen, and also in the workshop. They're designed to scrape food remnants off "no stick" surfaces, but make great contouring tools when constructing fillets with lightweight spackle. They're inexpensive, less than a dollar each, and available at most kitchen shops.

www.norpro.com

Escali Precision Digital Scales

We're all concerned with the flying weight of our sailplanes, and we're often weighing individual components, in addition to ready-to-fly airframes. When looking for a digital

Escali Belecco Model 136DS and Primo Model P115.

scale, there are several features which make the choice more attractive.

1. An ability to weigh in ounces and grams,

2. accuracy to 0.1 oz, 1.0 gram,

3. a capacity of at least 5 Kg/11 lbs.

4. compact and portable,

5. inexpensive battery power,

6. a tare feature so container weight can be subtracted to obtain the weight of contents.

A hold feature which displays the weight of an item after it's removed from the scale, would also be a desirable feature.

Escali makes a wide variety of digital scales. The two which attracted our attention are the Escali Primo Model P115 and Belecco Model 136DS.

Briefly...

The less expensive Primo is available in eleven colors, and is easy to use with its two-button operation. It has a capacity of 5 Kg/11 lbs., which exactly matches the FAI upper weight limit for RC sailplanes. It's 8 x 6 inch footprint is small, and it's just over one inch high. The resolution matches our criteria, and it has the tare feature we're looking for. It takes two AA batteries and will automatically shut off. $25 to $30, depending on dealer.

The Belecco footprint is 7.25 x 6.25 inches, slightly smaller in area than the Primo. It is 1.5 inches high. The capacity is slightly higher than the Primo, 6 Kg/13.2 lbs. The resolution is 0.1 ounces, 1.0 gram.

The Model 136DS, with a flat surface, is pictured at the upper left of this page. The Escali Model 136D has identical specifications, but has a blue ribbed plastic platform.

The Belecco has the tare feature and also a hold setting, so the weight of an item is displayed after the item is removed from the platform. One heavy-duty 9V battery supplies power, and there's auto shut-off. Price is $55 to $60, depending on dealer.

Escali scales carry a five year warranty.

Primo Model P115
www.escali.com/Primo1.html

Belecco Model 136D/136DS
www.escali.com/postal_belecco.html

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