Radio Controlled Soaring Digest

May 2007 Vol. 24, No. 5

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Front cover: A peaceful scene at the Natal Championships, Natal, South Africa. Photo by Paul Boswarva/Mark Stockton. FujiFilm Fine Pix S7000, ISO 200, 1/320 sec., f5.6, 46.8 mm

Back cover: Brio prototype. Photo by Kevin Newton. Canon EOS 10D, ISO 200, 1/90 sec., f19, 30 mm

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.

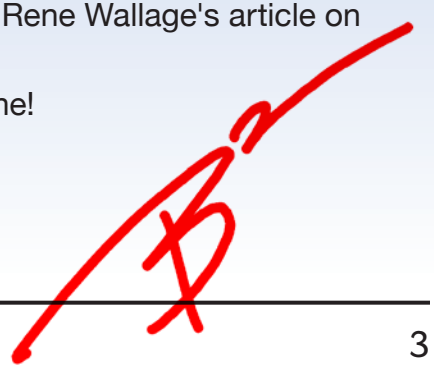
In the Air

The international coverage in this issue is focused on New Zealand and South Africa. This is not unexpected, as being in the Southern hemisphere both regions are just now getting into Fall and RC soaring is still in full swing. We're always eager to see what others are flying, particularly as local conditions can vary so greatly, and to follow how contests are run outside the U.S. Winch launched F3J tasks and F3B event structures are not uncommon. We hope you find the event coverage in this issue interesting, if not downright fascinating.

The Natal Championships served as the venue for the introduction of Simon Nelson's retreiver, descibed in detail in this issue. Simon's been working on this concept for a number of years, and the system is not like anything we've seen before. It certainly avoids many of the problems associated with the typical line-twisting retrievers in use now. Our thanks to Simon for submitting this information to *RC Soaring Digest*.

It looks like we were fairly consistent in misspelling Ariel Erenfrid's name in the last issue. Our apologies to Ariel, who provided the photos for Rene Wallage's article on RC soaring in Israel.

Time to build another sailplane!



Soaring DownUnder

By Les Stockley, stockley@slingshot.co.nz

AucklandSoar SoarFest February 24-25 2007

Since 1995 the AucklandSoar SoarFest has been one of the must attend thermal duration contests in New Zealand. Two days of man on man thermal soaring, Ten minute tasks with an FAI spot landing.

Normally between 10-14 rounds are flown depending on weather, and pilots are allowed to drop their worst round score over the weekend.

AucklandSoar is based in New Zealand's largest city, and although we have a club field on a city owned farm, SoarFest is usually held about two hours drive away in the Waikato region near Matamata. Matamata is well known for its full size soaring conditions and for models its no exception. The flat plains have rich soil that is intensively farmed and thermals abound. Contestants normally stay together at the local full size gliding clubrooms, using the basic but comfy cabins they have, cheap too.

This year saw 24 competitors turn up at the large field, with two visitors from overseas being Joe Wurts and Carl (Emu) Strautins. We also had a few flyers from our South Island, a fair trip and much appreciated, as we don't often get to fly with them.

The weather forecast for the weekend was looking good in the days leading up to the event and for once it turned out to be accurate. Saturday morning saw the PA system (a compact disc times the flight groups) and shade tents being set up in hot, calm conditions. Models were pulled from cars and vans and the set up continued. Some new models were seen at the event, two types making their first appearance in New Zealand. After a briefing from the CD, Aneil Patel, the contest started on time and first flights were away at 9AM. Lift was not easy to find in the early rounds and a few were caught out following lift downwind that disappeared quickly and they had to return home through the sink, some ending up having a retrieve by car (oh the shame) the models landed so far downwind. The expected wind came up at 90 degrees to the winch set up making launching a little tricky for some and so the winches were re-aligned during a quick lunch break. The wind continued to increase and ballast was secured into many models, it was still quite warm and the lift still wasn't at all easy to find or even work once you did find it.

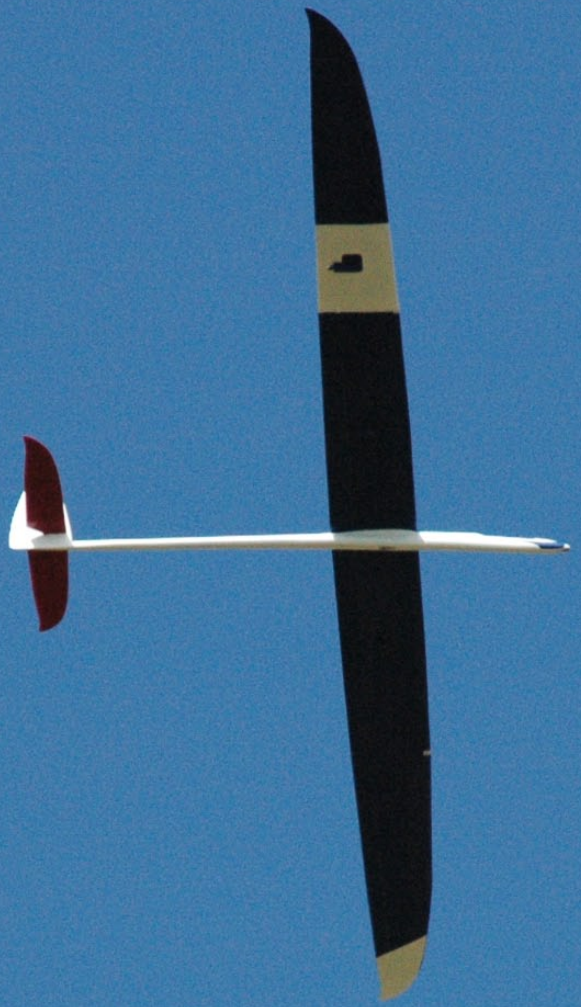
There were a few minor incidents through out the day, one model suffered a wing failure on tow, and one mid-air was had with one of the pilots having the nose of his model come loose from the impact. He realized he had serious elevator trim problems and with excellent flying managed to land the V-tailed model inverted with no further damage.

Opposite page: Group photo taken at lunchtime on Saturday.

Left: One these pilots is not like the other... Action from a group, one pilot has gone off downwind.

Left: Joe Wurts launches his Supra. John Shaw's Perfect awaits a launch by Sven Zaalberg. Right: Joe takes the strain prior to a launch.

Left: Peter Parata's Space gets a launch from Tony Gribble.Right: Action at the start of a group.

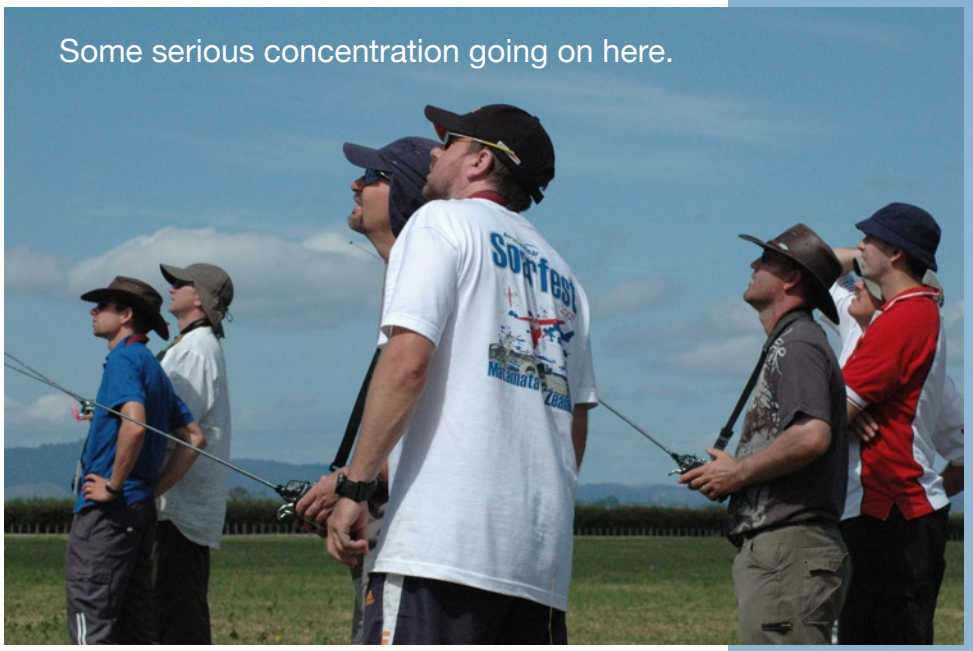


Above: A Space Pro heads out looking for lift in the beautiful Sunday sky.

Above right: John Shaw's Pike Perfect heads for home.

Right: A Caracho 3.1 losing some height prior to landing.

Kevin Botherway concentrates on flying while caller Craig Dawson (both members of the 2007 NZ F3B Team) looks for signs of lift.



Some serious concentration going on here.

John Shaw's Perfect lined up for some landing points.

Les Stockley guiding his Pike in for a landing.

Seven rounds were completed on the Saturday and the masses retired to the gliding club for an excellent BBQ meal by our CD and chief chef, Aneil. Steaks, ribs, breads and even salads were wolfed down and then battle began with all up last down DLG flying until dark. Much merriment followed although some would say by most soaring weekend standards it was a pretty quiet Saturday night.

Work the rudder! A Crossfire comes in for a landing.

An Eraser heads for the spot under crow.

Sunday morning dawned clam and hot again, just perfect. Up early again and on the field by around 7:45 am. But of course, hot weather leads to lots of thermals and there were many on offer as the day drew on. Imagine the sight of 5 models in the one thermal, with Joe Wurts about middle of the pack and thermalling inverted! The next group launching often found by heading into the same area, that said thermal had not moved, because of this more than a few rounds came down to a landing competition.

The BBQ was stoked up mid morning and the left overs from the night before were heated up for a sumptuous Sunday brunch. In the afternoon the thermals seemed to become more frequent, even the lower launching contestants had no trouble finding the upward moving stuff easy to locate. In most rounds the 10-minute time was the norm for everyone. It was just that sort of day.

A halt was called after 12 rounds were completed, scores were added and double-checked on the laptop. Our hospitality to the visitors continued and we allowed them (or they flew very well) to take the top spots, with John Shaw from the South Island being the first New Zealander home in 3rd and also taking the Grey Eagle class as well.

As usual thanks must go out to many people, Joe and Carl for really showing us a new level of flying and thermal spotting and for making the trip. The South Island guys for making the trek up, those that drove a long way, and of course not forgetting the farmer who allowed us the use of his magnificent field.

The three placegetters.

Soaring scene in NZ

Radio controlled soaring in New Zealand has steadily evolved over the years. What was once a very thermal duration based contest scene had changed for some years to an F3B oriented scene. A popular F3B series was run in both main islands, which has lifted the overall standard of flying. It's not surprising then that most models purchased or made were aimed at the F3B tasks, sacrificing some of the pure thermalling performance to have an all round model.

New Zealand is a small country and you are never far from the coast, which usually means a bit of wind is likely, so the F3B models perform well in thermalling events as well with the ability to travel home from downwind. Lately though, a return to the thermal models has started, and there are now several models such as the Pike Superior and Perfect, and its likely after watching Joe's Supra that a few of those will find their way into the country soon, too. At the recent SoarFest with the predominately calm conditions it was probably the first time the F3B model fliers really felt at a disadvantage.

In New Zealand contests, competitors are required to provide their own launching equipment. Once a pilot has progressed onto intermediate models, they usually purchase a winch and the associated equipment. Our winches are checked to F3B standards so they are all equal, and monofilament is the line of choice. We are fortunate to have an excellent winch manufacturer here in New Zealand, Dave James, a flier who is also an engineer for a living. Check out <http://www.geocities.com/winchnz/index.html> to see what he does.

We do not use skegs for landing. Our landing task is the FAI spot which does not require the accuracy that seems to be the norm in some US competitions.

Overall, New Zealand soaring is in a healthy state. We have regular contests and RCHLG has become very popular in the last few years and it now also has its own series. Quite a few pilots have travelled to the US to sample Poway and performed well, indicating that we aren't too far from the top despite our isolation.

Joe Wurts is soon to settle in New Zealand, which will no doubt lift the skill level again. We have teams attending world champs and travelling to overseas contests regularly, so you may see one of us on a field near you soon.

If you are travelling to NZ anytime, drop an email to our SIG Secretary at <nzsoaringtc@hotmail.com> and bring a model with you.

AEROSPHERE™

OLYMPIC 650

A kit review by Jim Spell, jspell@vailgov.com

Cartoon by Pamela Spell

My first glider was a Gentle Lady. My wife gave it to me for a wedding present. It has been twenty four years since then and I still love them both.

A quarter century ago, building a “stick built” glider or “woodie” as they are affectionately called now, was the only way one could get into the hobby of radio controlled airplanes.

Gliders with names like Paragon, Challenger, Gentle Lady and Olympic were built, flown and fixed as a right of passage into the hobby.

Time was when a great repair on a broken wing or a dented fuselage was met with reverence and awe at the local flying field. Being a great builder carried as much prestige in the hobby as being a good pilot. For the builder it was more than the satisfaction of a beautiful glider, it meant that “what was well built... flew well.” Balance, handling, glide capability (Lift/Drag ratio) and the like were all enhanced by a “great build.”

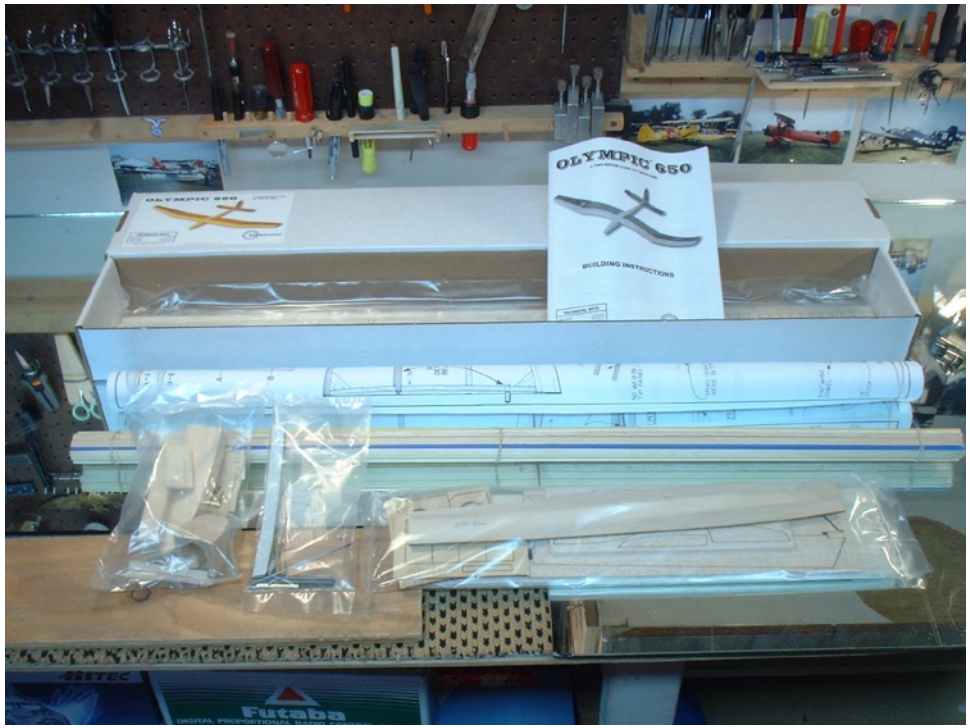
In addition, knowing how a model was built meant understanding what was needed to repair damage so as not to interfere with its flight characteristics.

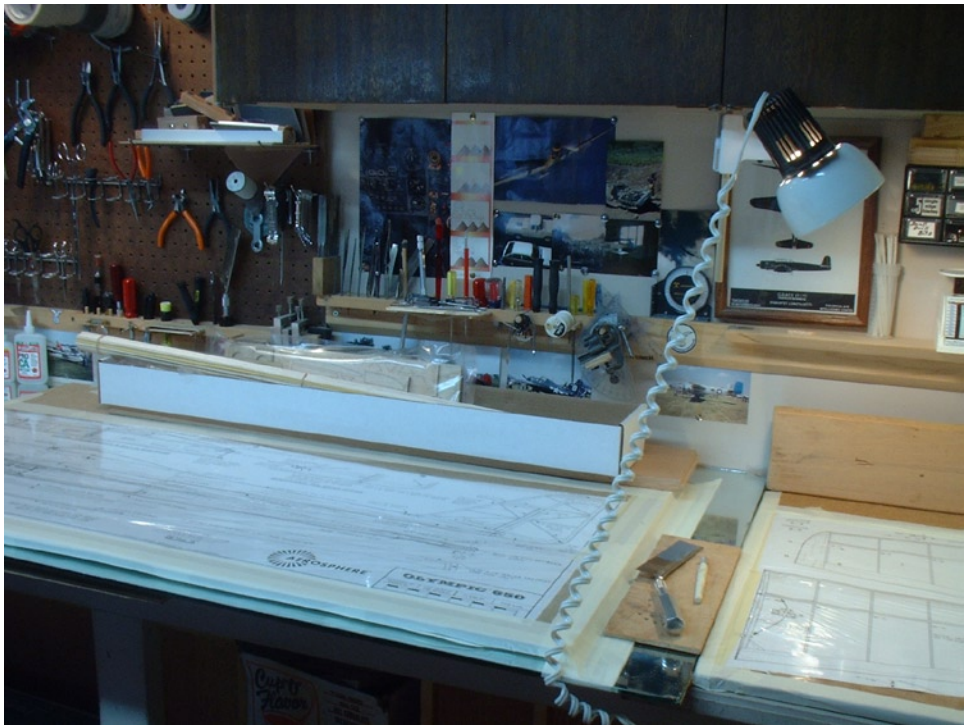
How many hours have been spent staring at a patchwork of Monokote catching endless bubble thermals?

In the eighties the hobby/sport saw the development of “ARF” or “almost ready to fly” airplanes. These planes were easy to assemble and just as easy to crash, but as these kits improved the need for “woodies” seemed to fade.

More people and planes meant a growing and vital industry. But rapid growth meant quantity at a cost of craftsmanship. Building became more assembly, and replacement became preferable to repair. After all, flying is what the sport is all about, isn’t it?

Ironically, it has been the ARF pilots, sprinkled with some old timers, which have brought about the renaissance





Left: The Olympic 650 right out of the box. Individual packages, straight sticks and rolled plans.
Right: Plans cut and tacked. Masking tape to insure a flat build. Saran Wrap pulled tight. Teardrop stains from cutting the plans.

toward traditional wooden gliders. Today there are dozens of organizations, clubs, web sites and even sanctioned nostalgia events all dedicated to the building and flying of these time honored wooden gliders... gliders like the Olympic 650.

The Olympic 650 Kit

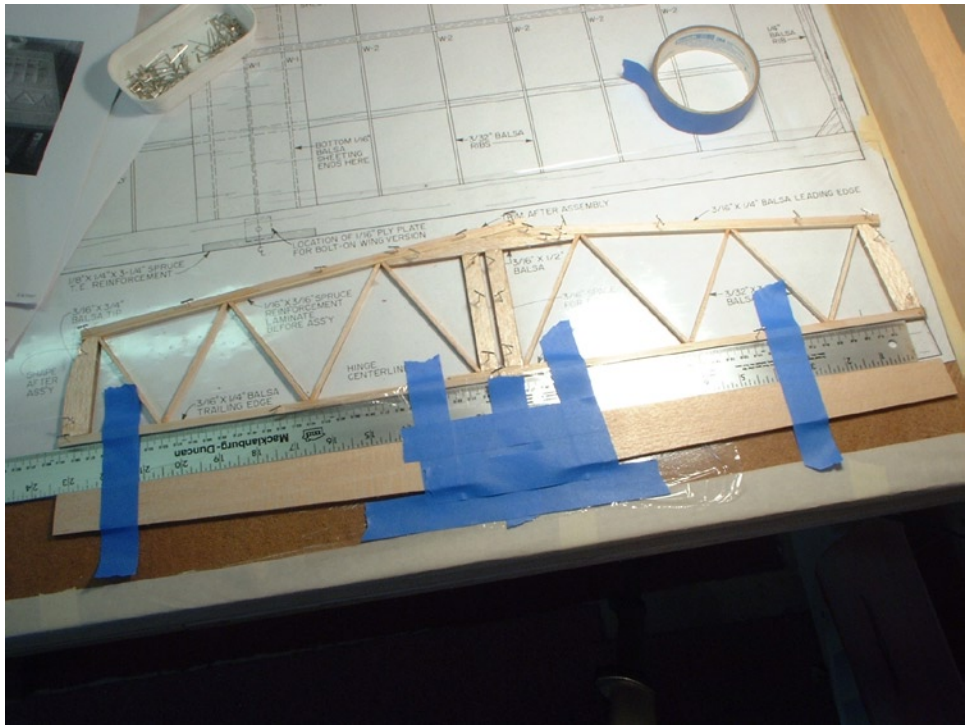
My assignment for *RCSD* was to build, fly and write about the Olympic 650 or "Oly 650" reissued by The Aerosphere Company. Aerosphere has taken on quite a task reproducing the Airtronics line of gliders, starting with the Olympic 650.

Historically, the Airtronics Company has always been known for the quality and completeness of their glider kits and opening the Aerosphere box does not deter from this tradition.

The Olympic 650, the "two meter" version of the Olympic II, with a span of 72", comes well packaged and stapled inside the box.

From the laser cut pieces to the quality and straightness of the wood, the kit is complete right down to the hinges, servo rods and hardware. Although the written instructions could use a little proofreading, they are clear and accurate. In fact, everything is a perfect compliment to the original plans of Tim and Lee Renaud. It is almost a shame to have to cut them up to build. Needless to say, it is all in the box; with everything divided and packaged to insure a safe delivery and a positive building experience.

It is a great compliment to both companies that Aerosphere has taken the best of the Airtronics legacy and improved upon it.



Left: Separate work areas. Note oak boards to insure flat building surface.
Right: Stab complete and still pinned. Stick ribs are secure. Elevator is being glued against straight edge.

"The design was developed with the novice in mind... and is recommended for those with no previous experience in R/C models."

Preparation

Find or create a perfectly level building surface.

Looking at the plans, however beautiful, it becomes apparent that they must be cut and placed onto a workable building surface, such as Homosote or dense foam. Thumbtack them on and then cover them with Saran Wrap or wax paper. I tape Saran Wrap with a slight tension over the plans. This releases the parts with minimal damage to both the plans and the parts when I am done building and ready for assembly. You will eventually learn what you like the best.

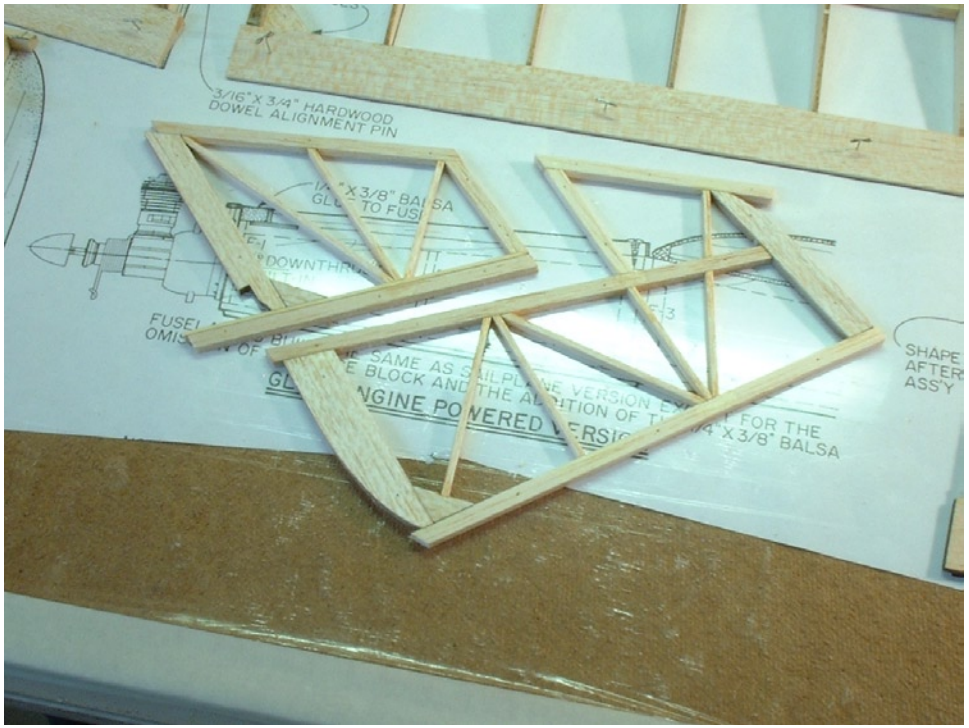
Organize tools and glue for the job at hand. Not having the right tool at the right moment can be frustrating. Preparation is the key to each step.

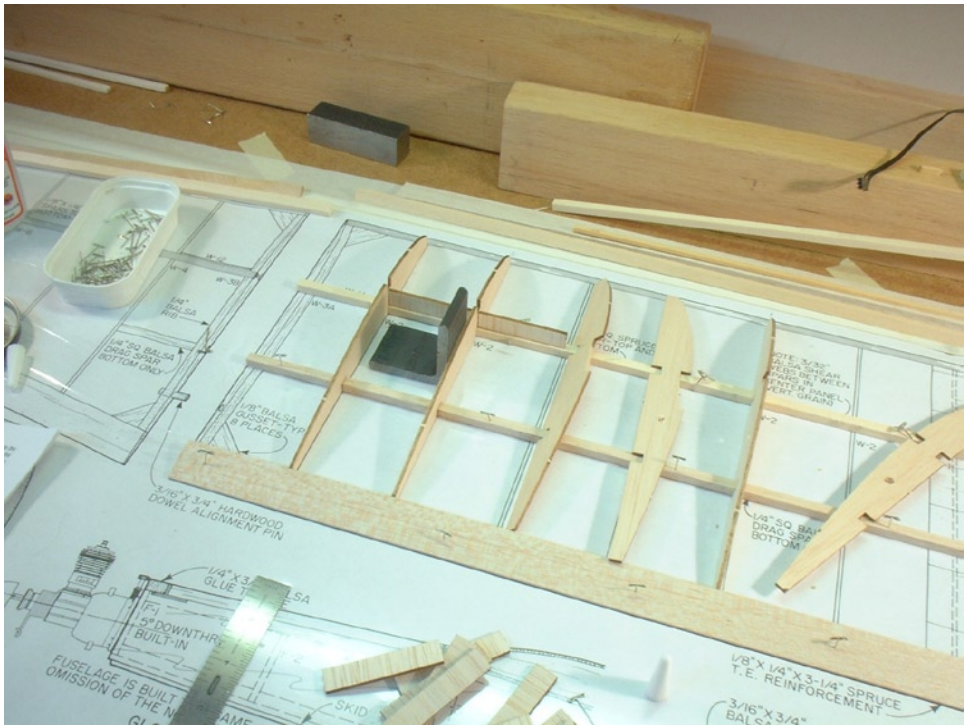
Read the instructions carefully as they are complete and well done. Leave the laser cut pieces in their planks until needed. You will need to know the exact number of the piece you are going to use. Even though they appear identical, putting the wrong piece in the wrong place makes for a long day of "retro-repair."

Stab (stabilizer) and Elevator, Tail and Rudder

Begin with the stab and elevator. These are easy builds and, if you are new to construction, they will give you confidence.

Read the instructions carefully.





Left: Rudder and tail assembly off plans and ready for rough sand and shaping. Stick ribs are solid.
Right: Rib and web assembly using 90 degree angle. Ribs have been “rehearsed” prior to gluing.

Rule number one, if you read something you don’t understand, do not proceed until you do. If you don’t “see” it in your mind, you will certainly see it later when it becomes a problem.

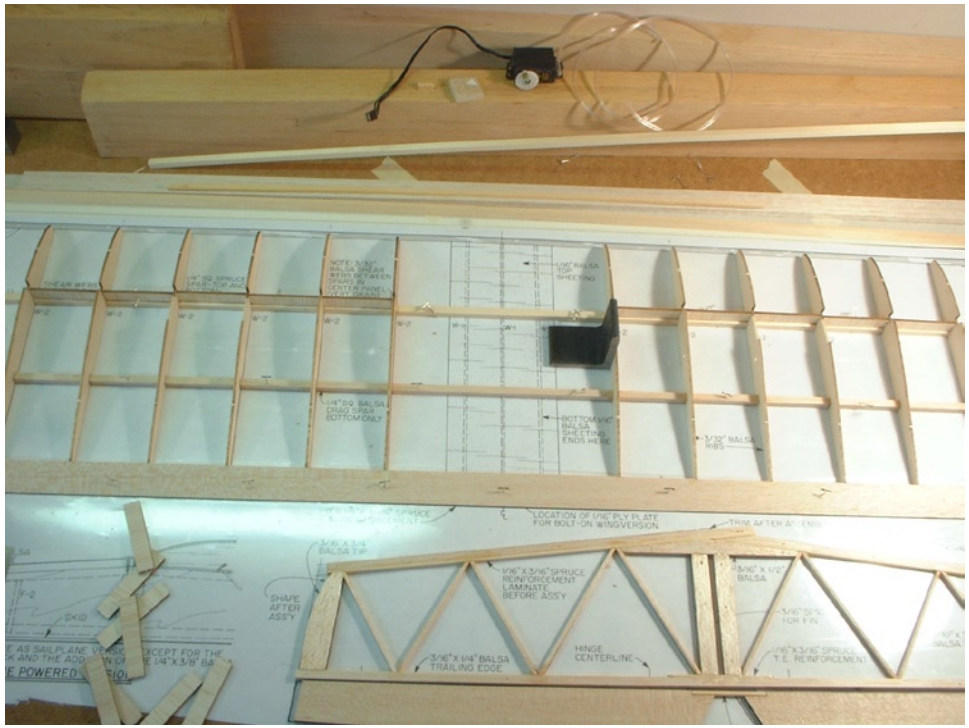
Study the plans, read and reread the problem sentence, then look at the plans again; but do not proceed until you understand exactly what the instructions are trying to tell you. “Read until you do... It’s too late after you glue”.

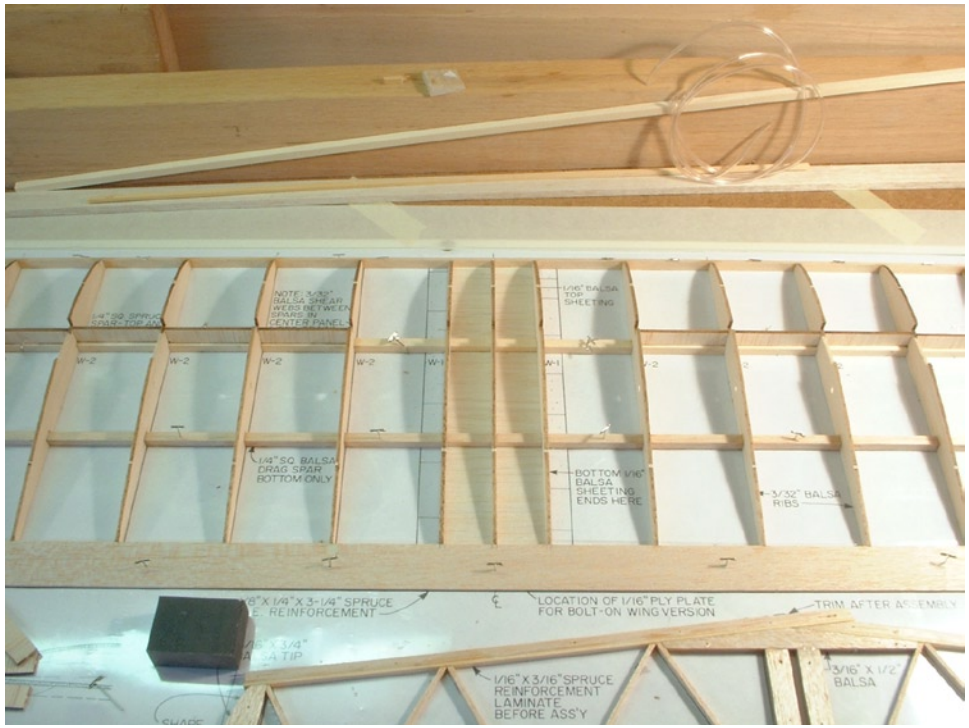
Adding the spruce reinforcement along the leading edge of the stab is the only tricky part and if you rehearse the gluing of these parts you will be rewarded. I use a mirror surface for a smooth and even assembly. If you are a little rusty, putting together the stab will clean out the cobwebs and get the motor skills back in place for the rest of the build.

The elevator is next to assemble, being careful not to glue it to the stab. I use a straight edge between these components after measuring and fitting parts to the plans. This gives me a good line as well as insures parts not sticking together.

Next, build the tail and rudder assembly.

Rib construction is probably the most critical aspect of these builds and the most often overlooked. In our haste to build the glider we are tempted to cut and jamb the delicate rib sticks into place. This is a mistake as these ribs are the only form of strength and support these assemblies have. If they are weak and misshapen your tail will be fragile and will break during sanding, or worse... during flight. So take the time to cut and sand the length and angles perfectly. Cut once but sand four or five times. Take





Left: Outside ribs of wing center section complete. Note extra webs just in case of a break. Right: Wing leading edge glued before center section is complete. W-1 ribs and balsa bottom pieces glued. Waiting on final webs where pins are located.

your time and remember these tail pieces are the only flight controls on this model. They will initiate all of the flight movement whether hunting for a thermal or coming out of a steep dive.

Wings (Center Section and Tips)

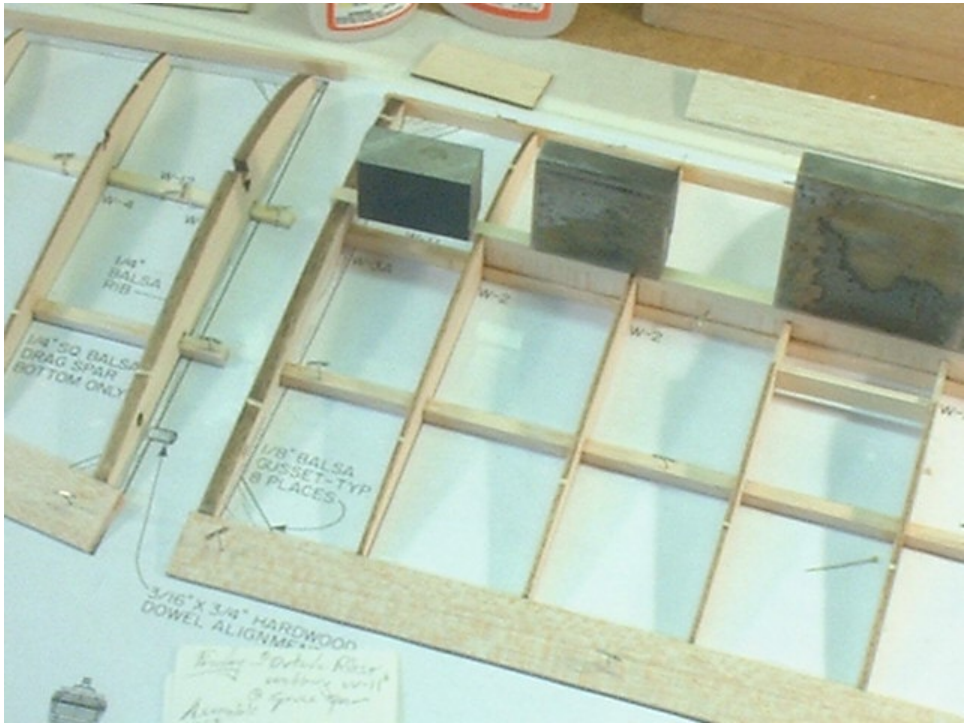
The wing is divided into three builds, the center section and two wing tips. Again, these are straight forward builds, emphasizing a flat building surface and the precision of laser cut parts.

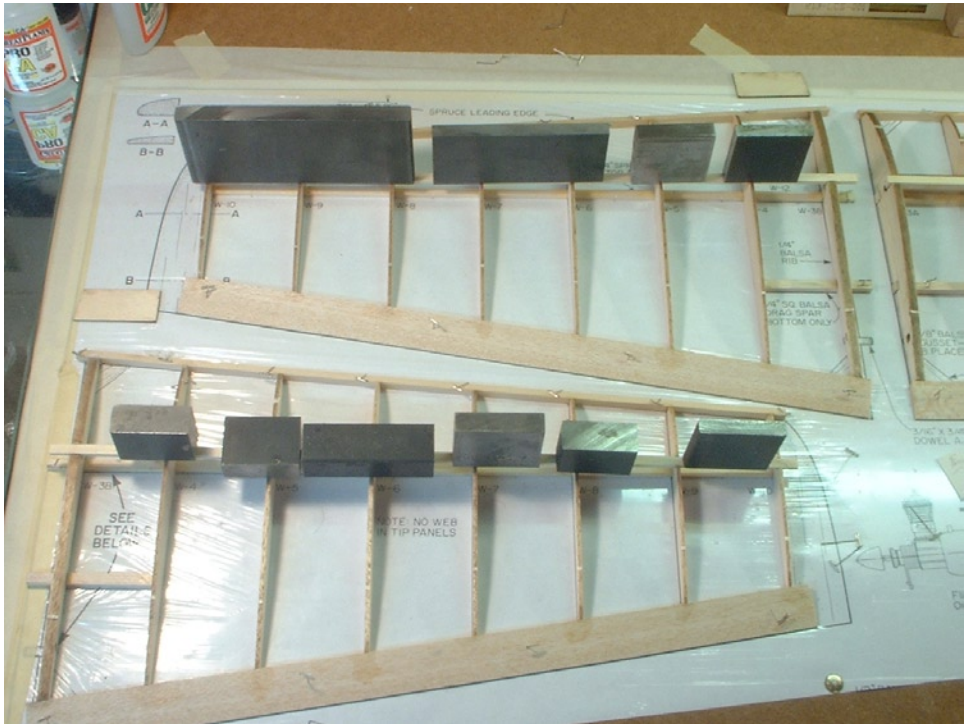
Older builders new to the technology of laser cut wood will think they are in builder's heaven. Parts just fit. No "noodling" the ribs or "fudging" the angles.

If it doesn't fit, you are incorrect. It is just that simple.

Make sure the trailing edge is angled correctly to the rib ends. There are two ways to pin the edge and only one of them will give you a correct angle to the ribs. Check it twice before pinning. This is true of the leading edge as well. Gluing it upside down will put this glider back in the closet like a bad secret, or worse, under the bench in the builder's graveyard where all critical mistakes go to die.

The web and rib assembly is classic stick built procedure and it is critical that ribs are at 90 degrees and flat to the building surface. Find a good right angle tool. I use an old piece of angle iron, but any precision tool will do, as long as it fits between the ribs. You may be able to eyeball the first few, but by the end of the wing you won't be able to tell and you will be glad you used a tool.





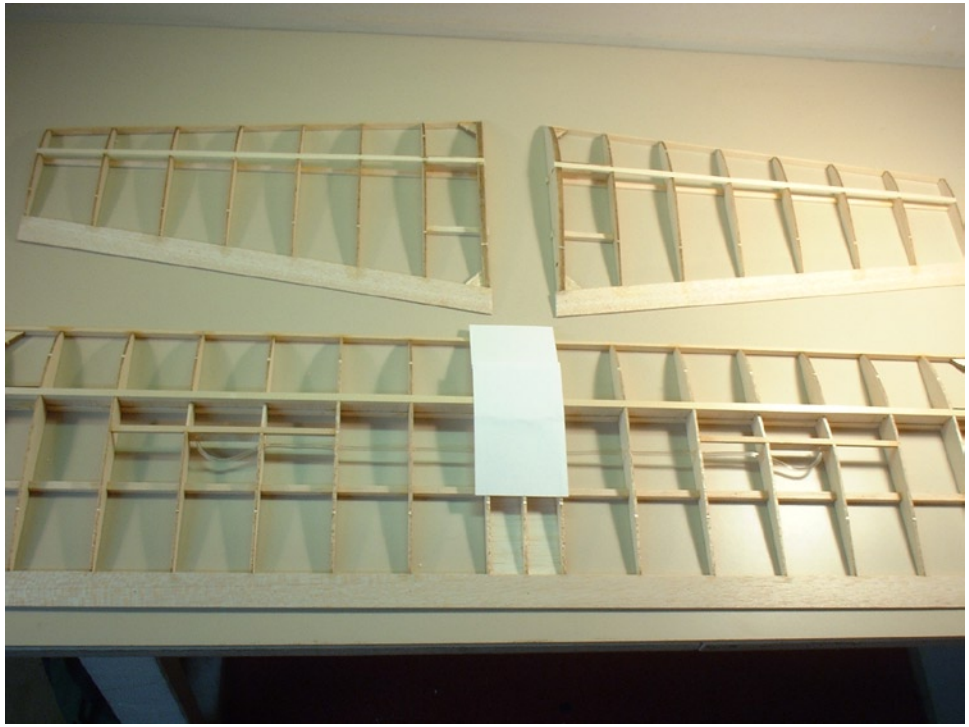
Left: Weights on spruce spar. Note “to do” list at lower left.
Right: More weights on wing tip spruce spars. Leading edge and tip drag spar glued.

The plans say to start from the outside in and the reason is probably due to the accuracy you will need for the thick angled ribs on the outside of the center section.

When you get to the center of the center section (W-1’s) you have a decision to make. If you are a novice builder, I recommend building the wing for rubber band attachment to the fuselage. This means sticking to the instructions and finishing with a smooth and efficient wing. Additionally, attaching a wing with rubber bands means a tip landing resulting in a “popped off wing” and nothing more. This is especially true if you resist the temptation to cross your bands and opt for three #64’s on each side of the fuse. This is a strong but crash friendly approach and common among new builders/pilots.

If you must build the wing/dowel assembly, you are pretty much on your own. While the plans show the assembly in the side fuse drawing, there are no written instructions. The plans also show a longer rod length and a higher former than provided for attaching the wing. Obviously this assembly can be modified with existing parts as in doubling the former with scrap and using a shorter wing rod; or by simply using “shop wood.” Either way, this is a job for an experienced builder. For now, let’s enjoy the beauty of a smooth, well built wing and finish the center wing section with W-1 ribs and the balsa center planks.

The wing tips are built in a similar fashion, but the angles and thinner spars make for a more thoughtful assembly. It is imperative, just as in the center wing assembly that you not pin into the spruce



Left: Angled ribs, angled webbing and wing gussets glued in place. Right: Wing finished and pulled from plans. Ends sanded ready for wing tips and polyhedral assembly. Index card indicates spoiler installation to be detailed in coming article.

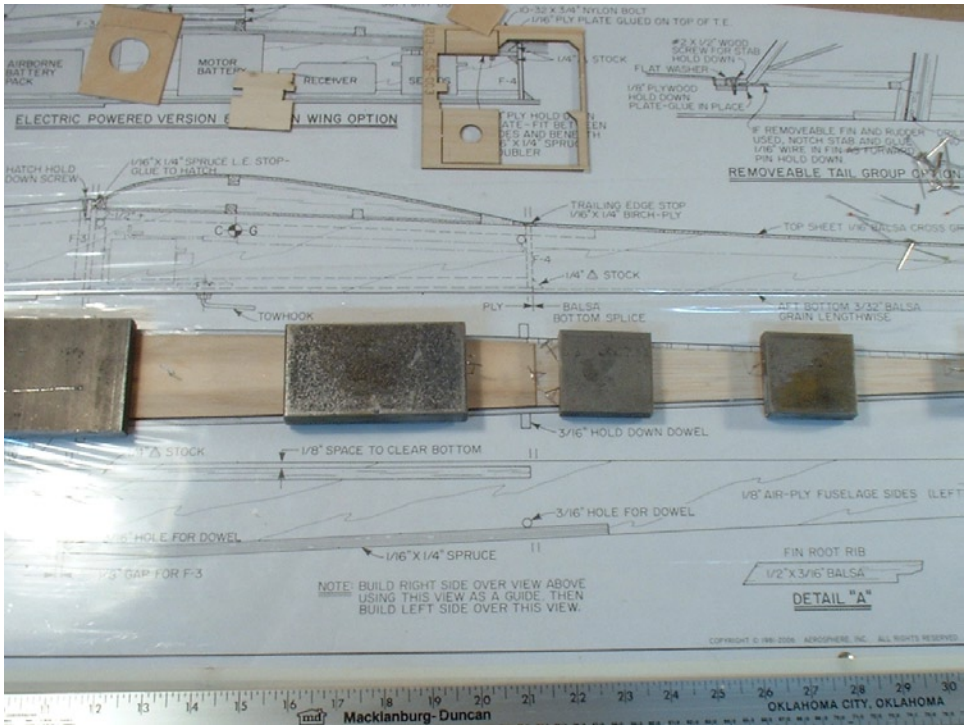
spars. Pinning and bending over them works fine as long as you pin where you don't intend to glue. If needed, remove pins as you work your way through the rib construction.

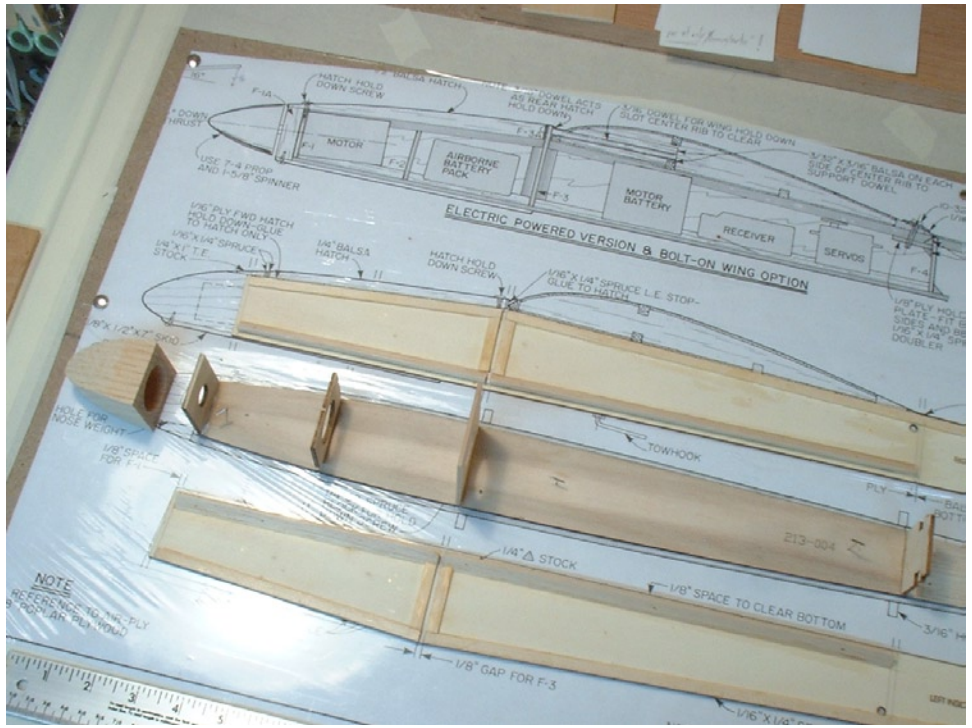
You may sand the ribs to fit the angle of the leading edge, but only after the ribs are glued to the bottom spar and trailing edge. Only a slight brush with a straight edge sander is needed. Be careful anytime you modify existing parts, even if it is just a simple angle change. And speaking of angles…

When is comes to the thick angled ribs at the outer ends of the center section and the wide side of each wing tip, assemble them exactly as described in the instructions. This angle determines the wing polyhedral and your patience and skill now will be rewarded during final assembly.

The plans describe the installation of the large angled ribs by noting the position of the rib to the angled web, either W-11 or W-12 depending on whether it is the center section or the wing tips.

Make sure you measure by placing the angled web inside the rib and spar construction exactly where it will eventually be glued. This gives not only a correct angle to the final rib but provides the correct alignment for the angled web to the inner rib and surrounding spars. This sounds minor and using the angled web outside will probably work, but if you are inaccurate in your positioning, you will spend time sanding the angled web to fit the final assembly. A good fit here leads to a straight forward tip installation later.





Left: Weights insure a flat build. Right: Triangle and strength strips glued correctly for wing dowel NOT rubber band dowels. Follow plans for rubber band dowels. Formers glued to base. Dry overnight.

The picture of the wing tip on page 10 of the plans shows the web on the outside and labels it W-11, when in fact it is W-12. Personally, I think all the angled webs are the same, but follow the written instructions and you will be fine. The pictures are meant as general help and the web is shown outside the assembly because it is easier to see.

You can remove the wing pieces now for further assembly. Sand the spars, leading and trailing edges to the four angled ribs. Be careful not to sand the ribs. This is a little tricky because spruce sands at a different rate than balsa and in your haste to sand the spruce you can literally grind right through the balsa. Take your time, as this is one of those critical moments in the build.

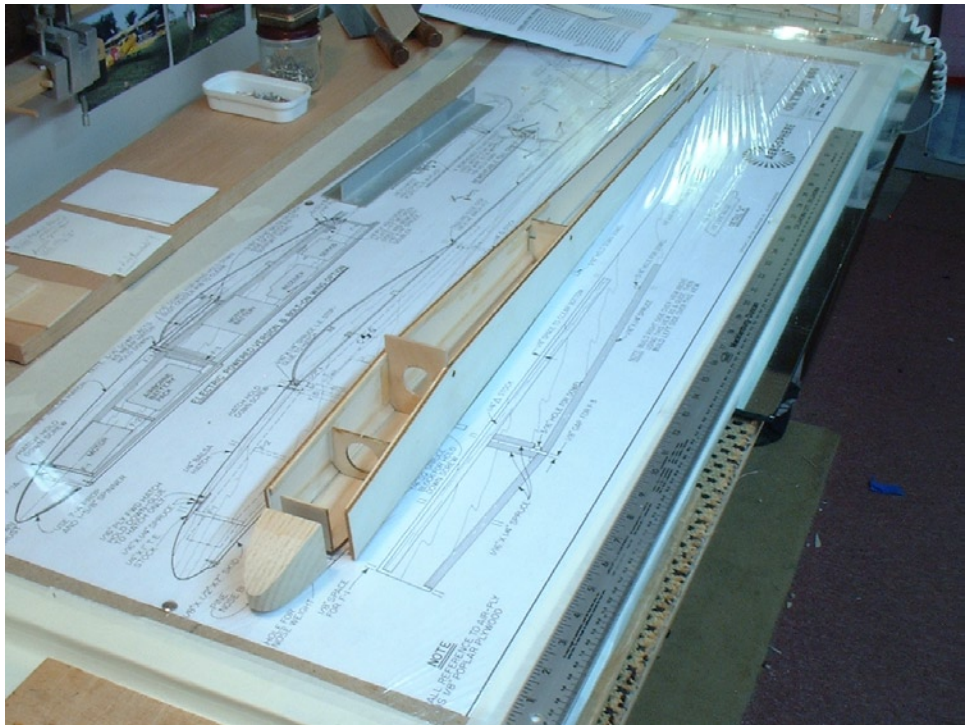
Once “sticks” are flush with ribs you can glue the wing tips on, making sure wing and tip are flat on the bottom and once dry you can rough sand the tip and begin planning the tip to center wing assemblies.

The Polyhedral Assembly

The polyhedral assembly is one of those critical building days in which you can end up with a winning wing or one that never quite flies right.

Read the instructions until you understand them completely and then rehearse the steps for completing the finished glue.

I use a straight edge with tape as a measuring guide for the distance between the wing tip and the building



Left: Rehearsal for fuselage glue. Cut and sand where needed for correct fit. Right: Final fuselage glue with weights and clamps. Tail was glued together first as indicated in plans, then sides were warped around fuse bottom.

surface. This requires a large and level surface. I have known friends to take up an entire kitchen counter for hours just to get this “glue” perfect. The good news is that the family got to go out for dinner.

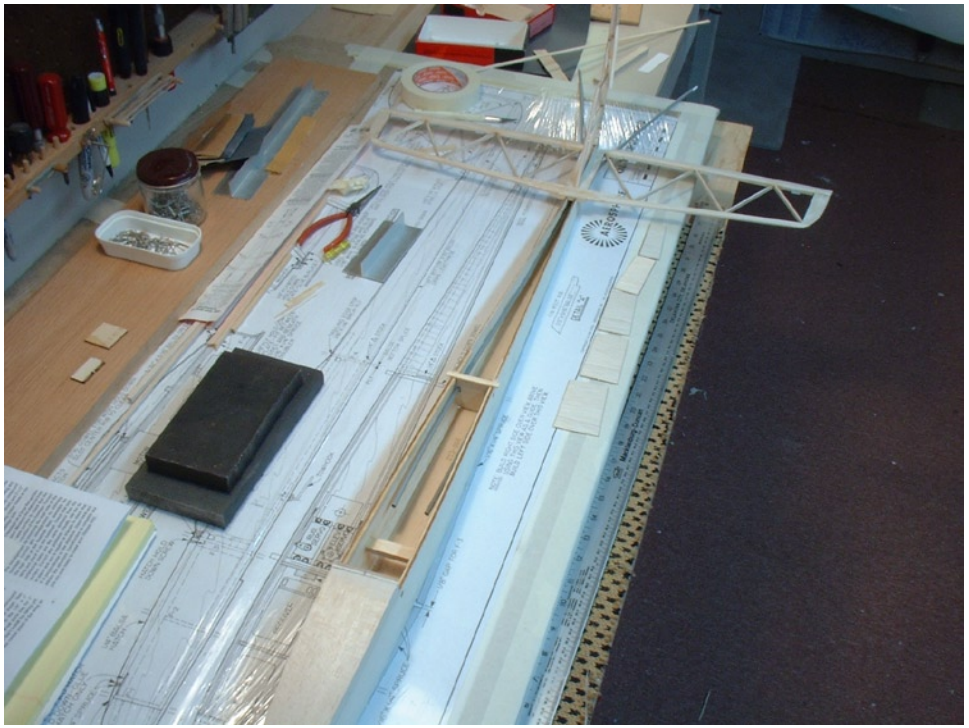
For the most part the ribs will be close to perfect. Any adjustment must be done carefully. Light sanding of the ribs being careful not to change the overall shape is all you need. Too much sanding and you will ruin the strength component of the wing, not to mention the polyhedral angle. You will need small clamps, preferably quick clamps, as you may be clamping and adjusting a few times to get the wing tips “absolutely perfect.”

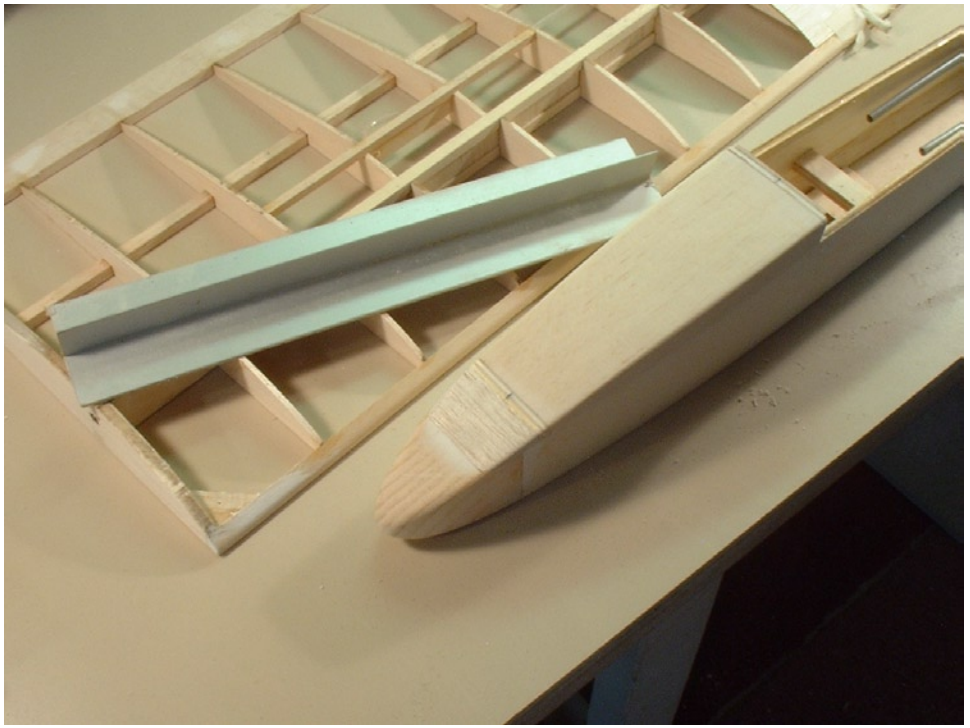
The holes for the brass tubing and rod assemblies are well prepared and very little adjustment is needed. Pay attention to the instructions for filing the holes flush to the webbing. This will give you a solid and even attachment. Again, follow the instructions and let the wing sit overnight. Once this assembly is complete the wing is done, except for final shaping, sanding and balancing.

Fuselage

One of the great design components of the Olympic 650 is the flat bottom fuselage. By creating a fuse with no bend in the bottom, the only variable to a straight build are the sides. This means no chance for a curved or “banana” fuselage. If you build the fuse straight on the plans you will have a centered fuselage that will provide a level surface for both tail assembly and wing.

Just follow the instructions and again, trial fit the parts and rehearse the gluing





Left: Main glue of fuse is done. Rods installed to insure fit prior to glue. Tail on to gauge rod location. Note rear servo holder is visible as well as wing stop. Right: T-bar sander ready for wing sanding. Hatch and nose after initial rough sand with block sander not shown. Brass tube indicates polyhedral assembly is complete.

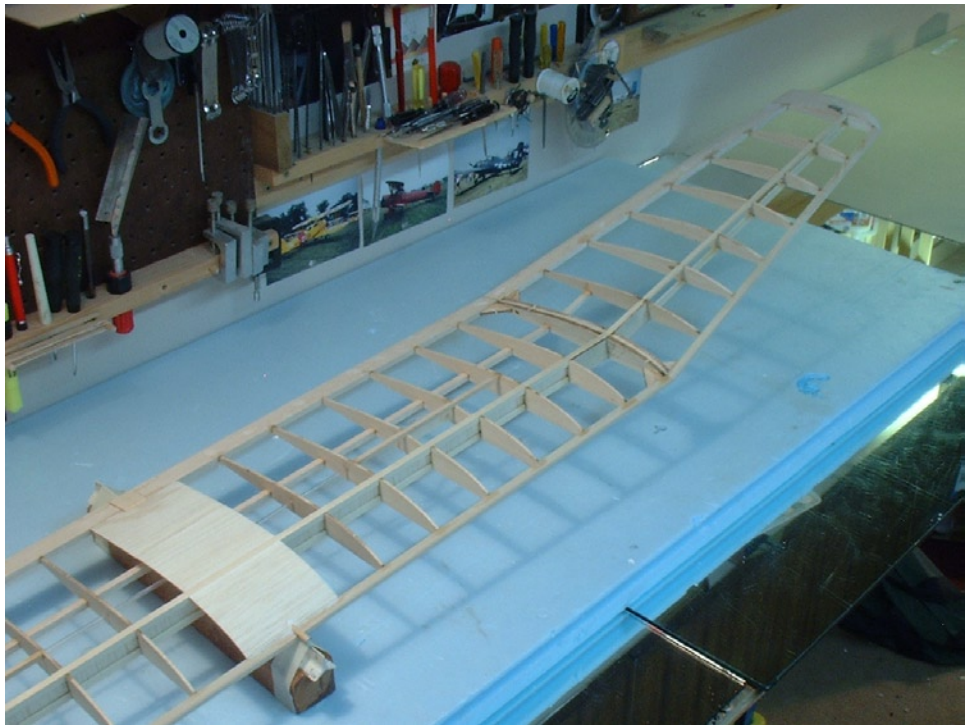
process. It is critical however, that you glue the tail first then “wrap” the two sides onto the bottom of the fuselage. This step is important enough for you to underline it in the instructions, as failure to follow this step will result in an uneven platform for the tail assembly. Bottom line, this small oversight will be met with hours of sanding and frustration.

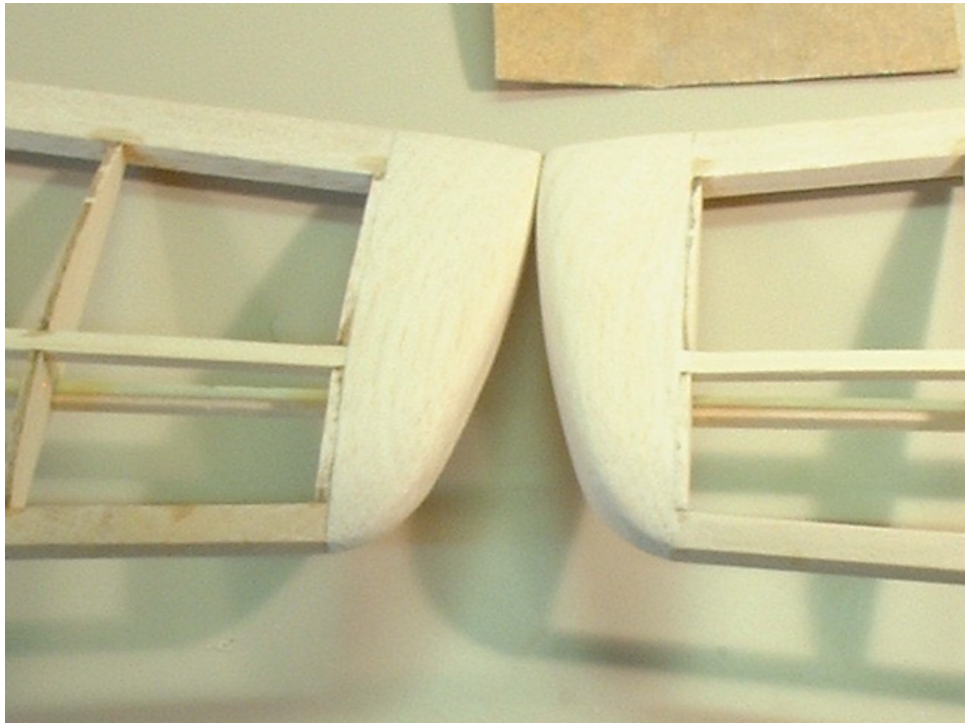
The fuselage assembly requires another overnight drying of the glue and any attempt to rush this will result in an “exploding” fuselage, either now or during flight. So in the morning I usually remove the fuse from the table and inspect the glued areas. This is a good time to add more glue if needed. A strong fuselage now means less repairs later.

The nose, rods, wing and tail stops and the balsa top pieces are next, as well as the tow hook reinforcement panel. When the panel is dry, you are free to make the hole for the tow hook. After covering the fuselage you will install the tow hook assembly. A dab of glue on the nut will insure it doesn’t rotate during launch.

The servo rod exit points will need some filing. Carefully lessen the angle where the rod covers exit the fuse and test the movement of the interior rods until you are satisfied. You can even install servo mounts if you know which ones you are going to use.

Follow the plans, as mounting the servos too high will result in servo arms that are above the fuselage top.





Left: Wing balanced on triangle ruler. Note tiny piece of lead on wing tip. Correct lead amount to be glued between spars inside last rib. Right: Rough sand of wing tips. Leading edge ready for sanding and final blend into wing tips.

Sanding and Shaping

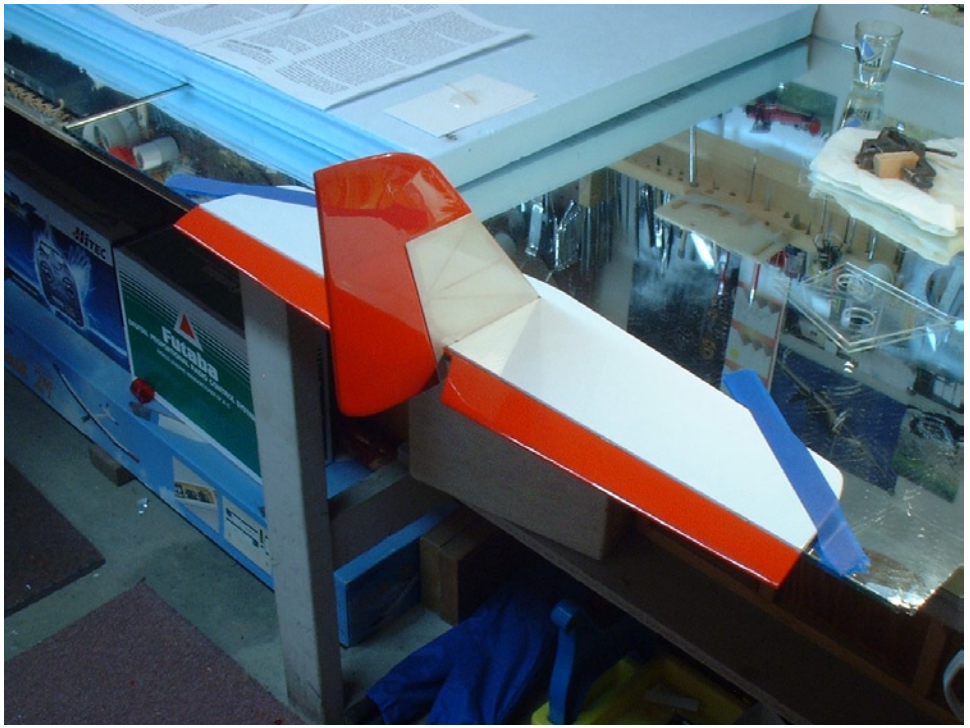
You are now at a point in the building process where you notice that “it” is beginning to look like an airplane. You have a wing, a tail, and a fuselage. For the most part, you are done with the “carpentry” aspect of building. What is left is the sanding and shaping of all the individual pieces.

Quite honestly, shaping is what most “woodie” builders live for. It defines the model, reflects the modeler and marks the “end” of the build.With a little practice and experience, sanding and shaping becomes the most relaxing part of the entire process.

If this is your first “sanding and shaping"" experience, let’s go over a few basics.

First, don’t sand when you are tired. Sanding is a series of hundreds, that’s right, hundreds of repetitive strokes. Whether it is shaping a leading edge or nose block, or gently gliding a straight bar of 220 sandpaper over ribs, sanding takes time, energy and a positive approach. Rushing only leads to mistakes. Over-sanding a glue spot on the trailing edge will result in a dip when observed from the end of that same trailing edge, but you won’t see it when you are too tired to turn the wing tip.

Second, have the right tools ready and be willing to change sandpaper often. Long and short straight bars, sanding blocks, assorted sandpaper grits and some lightweight spackle should get you started. You will acquire little tools as you progress. I have a dental tool I use to remove excess spackle and I use my wife’s emery board for sanding hard to reach areas.



Left: Completed glider prior to covering. Note model stand... another “woodie” project. Right: Covered tail pieces being glued together. Stab is flat to mirror and tail is perpendicular to stab. Hinges are cut and glued prior to this assembly. Be careful when cutting Monokote to expose wood.

Last but not least, take the time to practice. Take a piece of scrap balsa and sand it. Notice how firm and sturdy it feels against the light grits and how destructive the heavier grits can be. Try to curve a straight piece. See how weak it becomes at the ends. Do the same with some leftover spruce or a piece of plywood. Remember these motions and translate them to the model.

Start with the tail assemblies and plan aerodynamic but strong leading and trailing edges as well as smooth corners and ends. Don’t forget to flat sand both sides of each piece and fill in any problem areas with lightweight spackle and sand again.

The wing pieces will need their leading edges rounded being careful not to dip into the front of the ribs when you do. A gentle sanding top and bottom with a straight bar sander and a final shaping of the wing tips marks their completion.

I finish each piece with a light “review” of each inch of wood with a piece of 400 grit wet/dry emery paper. This seems to “harden up” the balsa wood and make the covering process easier.

The nose and hatch areas must be shaped and blended. Take your time and look at it over and over from every direction. I have lost count of how many times I have blended the top of a hatch into the round of a nose block only to discover a major indentation when viewed from the side. Finally, slightly round the edges of the fuse being careful not to diminish their strength in the quest for “roundness.” Now, fit all of the parts together, make adjustments as needed and take a few pictures.

Left: The Aerosphere Olympic 650 covered and ready to fly. Right: Transparent Monokote highlighting wing and stabilizer.

Covering

Now that all the parts have been assembled, shaped and sanded, it is time to cover the Olympic 650.

The instructions call for a covering like Sig Aerokote and it is recommended not only for the wing and tail assemblies but for the fuselage as well. Based on this recommendation and the desire to build according to the plans, I have chosen Monokote for its strength, ease of application and availability of colors.

When covering any structure, the key to success is to read the instructions of the product you are going to use. Although most coverings look the same, the differences are in their application temperatures as well as their shrinking characteristics. Knowing the temperature of your iron is critical to success. Too hot and you will melt the covering, separate colors from the film, or worse, smear one color onto another. Too cold and the covering will simply fall off during the shrinking phase. When in doubt, practice.

Once I have found an iron temperature that I like, I mark the dial with tape. I have one mark for application and one mark for shrinking. An inexpensive iron temperature gauge works wonders as well.

While the application of the Monokote went according to plan, my choice of colors was somewhat disappointing. I used traditional white and transparent red for the wings but thought a fuselage of white pearl might be a nice change from the obvious white. I was wrong. Although it doesn't look bad by any means, the effect is not what I was hoping for.

Other than personal taste, select colors you can easily see such as red,

Left: Adding nose weight after the first flight. Flight box is another “woodie” project.
Above: Ready for the second flight. Wing dowel and screw assemblies as outlined in the plans only. Not for the novice builder.

orange or yellow. As you become more experienced you can use stripes or subtle changes in wing decorations to guide your model’s orientation.

Final Assembly: Tail, Radio, Trim and Balance.

Final assembly consists of gluing the tail in place, installing radio gear and tow hook, as well trimming and balancing the glider for flight.

When gluing the tail, make sure all glues are wood on wood, being careful to trim away the Monokote only where needed. The tail must be perpendicular to the stabilizer which in turn must be level with the wing. These are critical glues for the proper handling of the airplane.

After installing the tow hook into the hole you drilled prior to covering the fuselage, add a drop of epoxy to the nut inside the fuse to prevent it turning under the stress of launch.

Once dry, install servos and linkages to the rudder and elevator as suggested in the instructions and plans. Personally, I wait until now to locate the horns for rudder and elevator. Finding predrilled holes in balsa wood after you cover is almost futile. Instead, place the horn exactly where you want it on the outside of the covered piece (refer to the plans if you need to) using a dab of contact cement. You can relocate it if needed and when in place, you have a secure horn to finish with screws and a back plate.

I like to trim my horn down to the holes I am going to use and cut off the remaining screw ends to give the entire installation a finished look.

Above: “Check... check... double check.” Making sure radio and airplane are working correctly right before launch.

Right: No trim adjustments needed. Perfect launch.

The final assembly process is what I call “static trimming” as in setting up the electronics to perform exactly the way you want. Connect the electronics but don’t worry about locating them inside the fuse yet. Normally this means rudder and elevator aligned to their corresponding tail and stabilizer and “throws” that are even and correctly angled. If this is your first glider, “less is more than enough.” Beginners tend to move the sticks like a Hurst shifter in an old ’57 Chevy. As your piloting skills increase your model throws will become greater and your stick movement will become less.

Finish the radio installation by locating the battery and receiver as indicated. Pad the area and have the on/off switch accessible. Some modelers like their switch on the outside, but for gliders it is just as functional inside the fuse if you have direct access to the hatch area. Again, just another decision dictated by personal preference.

Add weight to the nose as needed to balance the glider to the location of the CG (center of gravity) indicated on the plans. I get a rough balance by simply placing weight on the nose until I have the location correct.

In the past few years I have used a “store bought” CG device as well as an incidence meter and it has been money well spent. The CG device dials the balance point to within millimeters and an incidence meter insures that the wing and tail are working together aerodynamically. Each device is less than $20.00 and is a small price to pay for piece of mind. When in doubt, balance nose heavy and then adjust after a few flights. A nose heavy glider will always fly, whereas a tail heavy glider will only fly once. Don’t forget to balance wing right and left as well as fuselage up and down. When satisfied, take a few more pictures and head for the flying field.

Flight Performance

Note: Total flying weight was not available. Airplane specifications are detailed in the instructions.

Before reviewing the flight performance of the Olympic 650 I would be remiss in not acknowledging the help of my son C.J. Spell and Gary Scrip, RC pilot *extraordinaire* and a professional photographer known for his camera work at the X-Games and other such sporting events. Their camera work allowed me to simply focus on the task at hand. What could have been a daunting job became an enjoyable as well as a productive day with friends and family. And after all, isn’t that what it is all about?

The first launch was off a traditional 100 foot rubber hi-start. Trims were set level and the CG was according to plan. The launch was perfect. It tracked well and released without incident. The controls were sensitive and it appeared to catch any bubble thermal in the area. This told me the CG needed to be a little more forward. The inability to really move out during forward flight confirmed this and the next few landings were spent adding weight.


Gary Scrip, gscrip@aol.com

One has to keep in mind that this is a flat bottom wing with a perfectly neutral angle of incidence. Some folks like to refer to these gliders as “floaters,” but their description does not have to end there. As a polyhedral wing with a flat center section, turning performance can also be described as floating or “drifting” through an arc. Once again, this design characteristic can be flown differently.

The key to a successful flight is an aggressive center of gravity. Once balanced with a tail high attitude for level flight, the Olympic 650 goes from “floater” to a glider capable of penetrating the wind while still being sensitive to thermals.

You can tell the Olympic 650 has reached this balance point when it moves out and turns as if on two rails. Not having a dihedral break in the middle of the wing like the Gentle Lady, the Olympic wing has more of an “aileron” feel, making it firmer in wind gusts.

To further stabilize this process I suggest a little “washout” in the wing tips. Although not emphasized in the plans, washout seems to maximize the design of the wing and contributes to further stabilizing the glider. Washout is simply turning the wing tip trailing edge slightly upward by bending it while reheating the Monokote. As soon as you notice an upward angle to the wing tip you are done. As stated in the instructions, “A small amount of wash-out is okay as long as both tips are the same.”

Performance-wise, a tight turn comes at the cost of altitude, but a steady down stick will bring you back to level flight and you will have gained some speed, always a good thing.

While there is very little propensity toward tip stalls, you must respect the flat wing design and not expect it to climb out of a slow speed tail drag. Raising the nose to get a few more feet of distance to the landing zone will not work. It will simply drop out of the sky.

But make no mistake, The Olympic 650 excels at exactly what it was designed to do, make long tacking lines combined with graceful arcing turns. The Olympic 650 becomes a glider against the sky, sailing beautifully into the next thermal wave.

By the third flight, flying was actually fun and I forgot about the review and simply enjoyed the flights.

The Olympic 650 is a great first glider and I would have enjoyed it thoroughly as my entry into the world of radio controlled airplanes.

Although the landscape of soaring has changed with the advent of Eppler wings and fiberglass fuselages, there is something to be said about a classic flight by a classic bird.

If you are looking for your first “stick built” project or simply want to relax and build upon a great tradition of memories, then the Olympic 650, at $79.95, is the glider for you.

The Aerosphere Company has improved upon a classic pedigree to bring you what I hope is the first of many quality kits designed with the idea that building is as much of the tradition and enjoyment of the hobby as is a perfect thermal on a cloudless day.

Aerosphere
<http://www.aerosphereonline.com>
17270 Commerce Way, Tracy, CA 95377
800.381.8240

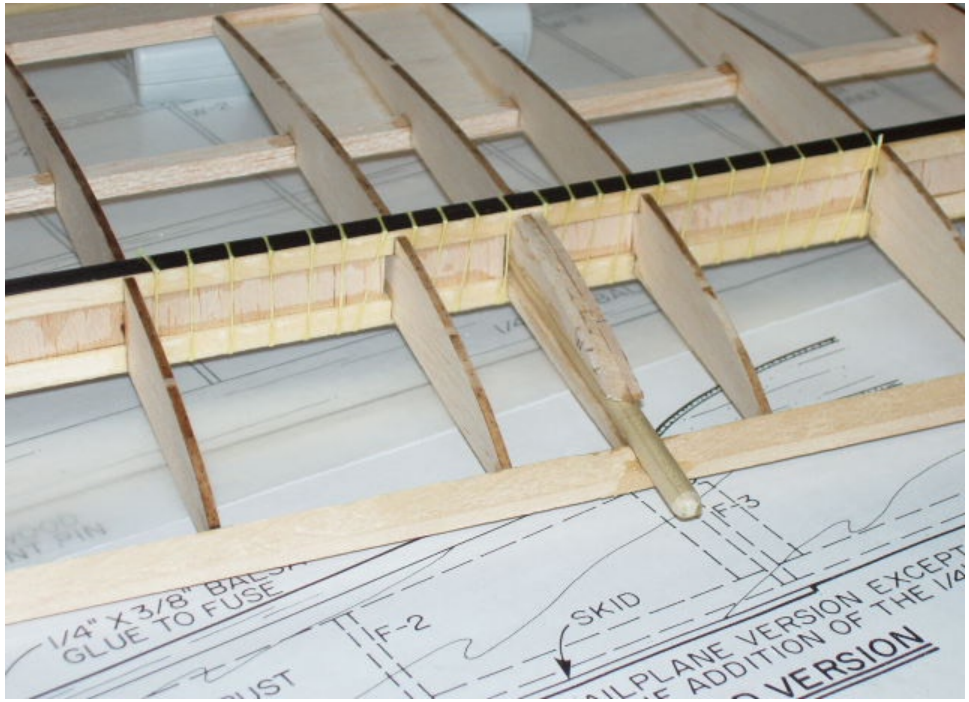

Gary Scrip

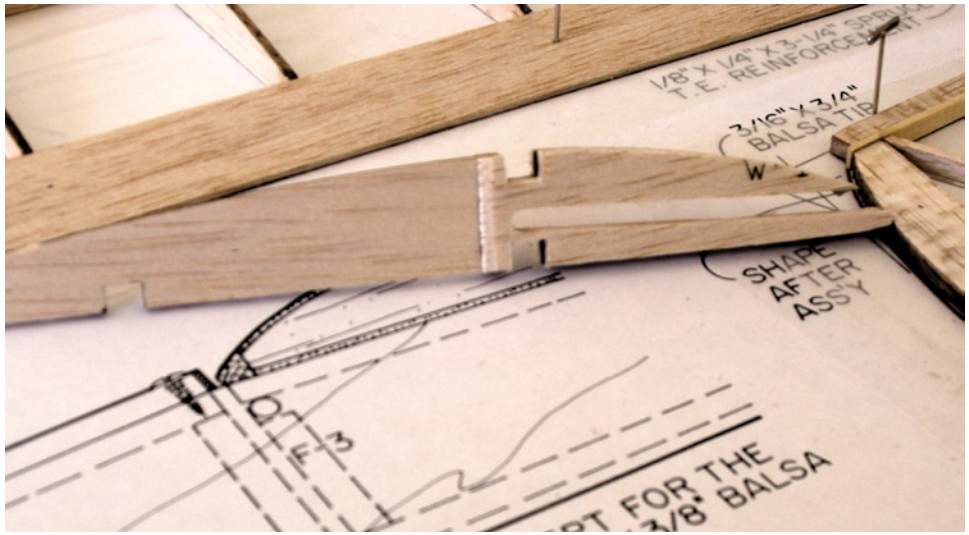
Modifying the **Olympic 650 Wing**

Rick Stone, rstone89117@peoplepc.com

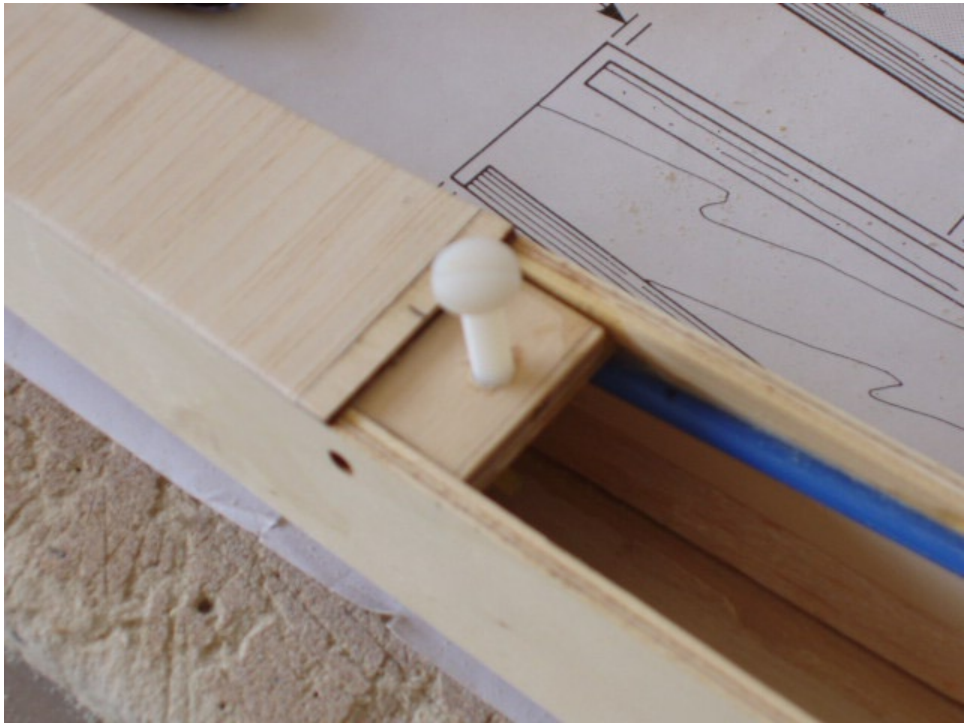
The Olympic 650 wing is a simple but strong design, using the time-tested configuration of upper and lower spruce spar caps with vertical grain balsa web between the caps. With a flat center section, assembly is very easy, and strength is improved since the spar caps are continuous, without a dihedral break in the middle.

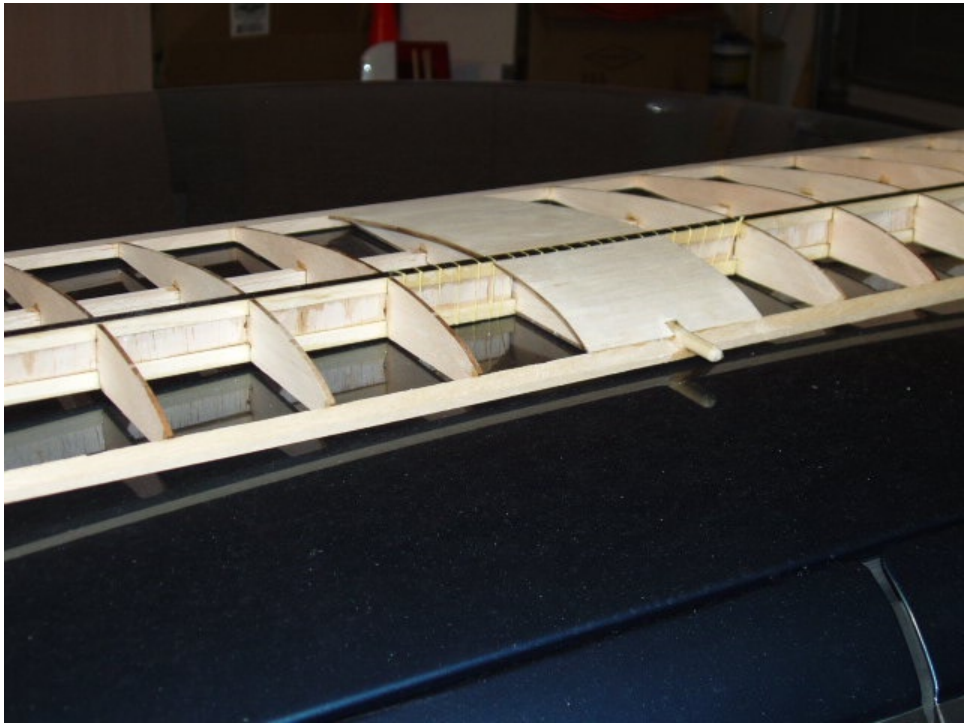
Nevertheless, due to my plans to winch launch my 650, I added some simple and inexpensive modifications to strengthen the wing even further. The following is done before adding the center sheeting. First, I added ¼" x .007" carbon fiber strip to the center section spar caps. The carbon fiber was cut to length, lightly sanded on one side for better gluing, then attached to the spar caps with medium CA. To avoid a big mess and glued fingers, I put my hand in a plastic sandwich bag, and then carefully lay the carbon fiber down on the spar cap, keeping it straight and pressing down with moderate pressure. This forces the excess CA from under the carbon, and with my index finger (inside the plastic bag) I smooth out the CA and allow it to cure, making sure the carbon fiber is completely flat against the spar cap. Next, I wrapped the first two bays with Kevlar thread, spaced about 3/16" to ¼". This is just a little extra insurance to keep everything together at the center of the wing where the bend load is highest.





Top: Wing center section showing carbon fiber, Kevlar thread wrap, and dowel for bolt-on wing option. Above: The W-1 center rib showing the cut-out for the dowel.





Left: Close-up of the nylon wing bolt, and hardwood block. Right: Completed wing center section showing mods.

In the picture, you can also see the dowel added to the center rib for a bolt-on wing. If you opt for this configuration, I recommend cutting a slot in the center rib before assembly. Be very careful here, the center rib will be very weak until the dowel is glued in. Use slow setting epoxy and clamp everything together until the epoxy is fully cured. You will notice the dowel appears to rest on the hardwood L/E. Actually, I just filed a semi-circular notch in the L/E so everything fit together nice and tight, and provided a good gluing surface.

There are two other important considerations for making the bolt-on wing option. First, you will have to make a new F-3, making it tall enough to accommodate the dowel, which is inserted into F-3. Second, because F-3 is now taller, the stock forward hatch is not thick enough to match the contour of F-3 as viewed from the side. You will need to make your own hatch out of thicker balsa. I used 3/8", and it worked fine.

Finally, remember to add a 1/32" ply back-up plate to the top of the T/E where the nylon bolt will go, and an appropriate hardwood piece securely glued in the fuse for the bolt to thread into.

While all this may seem like a lot of extra work, and a bit of overkill for many fliers of the 650, I really like the clean look of the bolt on wing, and the superb strength on a good winch launch. I have winched her about 10 times now, without the slightest hint of wing flex as she goes up.

For a quick and easy build, the Aerosphere Oly 650 is hard to beat!

Trnava Eurochamps

Sydney Lenssen, sydney.lenssen@ntlworld.com

This year's European Champs returns to Slovakia, at Trnava, which is about 50 km north of Bratislava on the E75. Known as a region for wine, thermal springs and learning, Trnava boasts an old-established university and was known as "little Rome." The flying site, a sport airport, will have as a backdrop the Small Carpathian Mountains.

One day, FAI will explain why model glider championships convene so often in Slovakia. In 2001 we competed in Holic, last year in Martin and now Trnava. I suspect that the Slovaks are keen enough to volunteer, they do it extremely well, get sponsorship and help from local firms, and everyone enjoys good food, plenty of beer or wine, and cheap hotels if you choose to sleep in a bed rather than a tent or caravan. So no complaints. But it would be more mind-broadening to be elsewhere in Europe.

Keen spotters will have noted that Bulletin 1 for the 6th Eurochamps has been issued, inviting national teams to register and giving more details. Teams will start assembling on Thursday August 17. For the first time at a Eurochamps, everyone is invited to fly in the Trnava Cup contest, starting at midday on Friday with flyoffs around midday on the Sunday. Champs proper will run from Monday through to Friday with prizegiving on Saturday 25 August.

News from the various teams will emerge nearer the time, but the UK team has altered slightly. Tony Vale has dropped out to let Austin Guerrier in. Last year's league flyers will recall that Tony pipped Austin in the last round by a fraction of a point, particularly galling for Austin because he'd been almost certain of a place since round one. Now domestic pressures have let Austin in again, and as highest placing UK pilot in Martin's world champs, he deserves another go.

No official appointment yet for UK team manager, but it looks likely that Graham Wicks who flies in the Fairlop club, same as Austin, will step into Tony Guerrier's shoes. As organiser of the UK F3J league, Graham deserves this honour.

What will Adrian Lee be flying? He has a squad of Graphite 2's, two carbon, (2.07 and 2.13 kg) plus a glass version at 1.88 kg for early morning or evening when lift is slim or non-existent. Last year's squad still survives, so any damaged model can be replaced immediately. What a lucky man! I remember in the 2001 flyoffs at Holic when Adrian when almost quit the final round because several mid-airs had reduced him down to the last High Five and he needed to fly back at home in the F3J league the following weekend.

Simon Jackson has had a clear-out over Christmas leaving him with one model - his lightweight Shadow which he and Phil assembled overnight at the World champs - from last year. He hopes to be restocked soon with both F3J and F3B models.

Most FAI F3J championships are held in July, and Trnava's late August dates have upset the Eurotour applecart. Hollandglide has been brought forward to second weekend, 11/12 in August, and UK pilots driving to Slovakia might take the opportunity to go straight from Holland, across Germany and Austria or Czechia to Trnava. UK team pilots will miss the British Nationals which is why an extra two-day rounds has been scheduled for the 2007 BMFA/BARCS league.

2007 New Zealand SOARCHAMPS

Report by David James, New Zealand Soaring SIG, nzsoaringtc@hotmail.com
Photos by Rhys James and Neal Blackie

The New Zealand Soaring Special Interest Group (SIG) is charged with fostering and promoting Soaring in New Zealand. We are also responsible for the two biggest soaring competitions in New Zealand each year - the National Champs and the Soarchamps.

This year the Soarchamps was held in the central South Island town of Timaru.

The Palmerston North boys had travelled down early with the intention of assisting local flyer John Shaw with field setup. With the winch lanes marked out, the field and the weather looking great, it was time for the flyers to descend on the town. Over a short time during the late Thursday afternoon most of the flyers arrived at the field from Auckland, Hawkes Bay and Christchurch. The usual greetings and banter took place followed by HLG practice and some general trimming.

Day 1 – Friday 16th March. This was F3B day with John Shaw as Contest Director and clearly showing his intention to do three rounds. This event is a multi-task event testing the skills of the pilot through duration, distance and speed tasks. The course was changed from the previous day best guess to launch into the forecasted wind direction.

Duration proved to be interesting with conditions suiting some gliders more than others. This resulted in some tough scores. Dave Larsen had the misfortune of damaging a flap horn on landing putting him out for the rest of the day. Craig Dawson got close to a 10 minute maximum score while the majority of flyers could only manage 6-7 minutes. The Distance task started as a tail wind was building and by Group 3 or 4 was forced into a winch and course change. Best distance for Round 1 was 18 laps by Craig Dawson. He followed on with these good performances with the best Round 1 speed time of 17.53 seconds giving him a maximum Round 1 score of 3000 points.

Conditions improved for Round 2 with notable increases in duration times. The speed task saw junior flyer, Rhys James, peel off a nice 18.96 second run. Best scores for Round 2 were Craig Dawson's perfect duration score, Sven Zaalberg 21 laps distance and Kevin Botherway running a 17.76 second speed run.

The day was moving on by the start of Round 3 with a steady sea breeze prevailing. As in round one, good duration scores proved illusive. Kevin's 17.66 second speed proved too good for anyone else to beat. Best distance was shared by David James and Sven Zaalberg with 21 laps.

An enjoyable but long first day was completed with Craig Dawson first, followed by Kevin Botherway second and David James third. First Junior was Rhys James.

Day 2 – Saturday 17th March. Premier Duration & Champagne Fly-off was on the menu.

The weather was perfect for Premier Duration, a 10 minute thermal contest. At the contest briefing, Contest Director David James indicated that seven rounds were going to be flown with no discards. With the timed compact disc running the contest, things were ticking over great. Rounds 1 and 2 saw a mixed bag of scores with conditions proving challenging. Conditions for Round 3 improved and this reflected in better flight times and scores. Daniel James, a new junior flyer, was gaining in confidence as the competition progressed and was seen to thermal his 2 metre Spirit up through some of the moulded models.

John Shaw had arranged for the "Coffee on the Spot" to arrive around midday and a mix of coffees was produced to appease the appetite of the flyers.

Day Two of the Soarchamps. Craig Dawson launches Richard Thompson's X21.

Kevin Botherway flying Speed with Craig Dawson. Both are on New Zealand's 2007 F3B Team. Photo by Rhys James

Sven Zaalberg with Andrew Stiver's Fazer. Photo by Rhys James

Following lunch, Round 3 was completed and onto Round 4.

The day was progressing nicely until Round 5 Group 1. All flyers had launched and Les Stockley was flying out to the south and the going up like on an elevator. David James pushed out to join him and without warning a strong southerly ripped down the valley. Chaos in the pits with both gazebos launching themselves from the flight line out onto the field landing in a mangled mess of twisted aluminium. Models, tarps, score sheets, etc., all had to be secured rather quickly. The safest place seemed to be in the air.

The conditions were now very different and a winch change was imminent. With four rounds completed, an official result was possible and a decision to finish the contest was made. There were a total of 88 flights, only two were perfect scores, but there were 28 landings of 100 points. Scott Chisholm came out the winner followed by Andrew Stiver and John Shaw.

With the Southerly blow on us it was time to pack up – the Champagne fly-off was postponed until Sunday, if time permitted. Finishing a little earlier allowed us to enjoy a bit of relaxation prior to going out for tea at the Speight's Ale House in Timaru. This was a fantastic old stone building with high wooden stud that really had a good atmosphere.

Above: Coffee on the field... Fantastic! Photo by Rhys James

Above right: Aneil Patel launching Les Stockley's Crossfire. Aneil is the third member of the New Zealand 2007 F3B Team.Photo by Neal Blackie

Right: Dave Larson launches Chris Kaiser's Caracho 3.1. Photo by Neal Blackie

A really good meal was had by all along with the usual fun and good cheer.

Day 3 – Sunday 18th March. Hand Launch Glider was moved to an early start to make use of the light conditions and hopefully giving time for the wind direction to settle down for the Thermal J contest.

Eleven flyers were divided into various group mixes and with four unlimited launch rounds there was going to be a lot of flying. Kevin Botherway had laid down a challenge to Rhys James the night before at the Ale house, so it was all on. Thermals continued to "pop" and move across the field throughout the contest, providing opportunities to get great scores. Rhys flew his Taboo handlaunch into second place with Les Stockley first and Ken Duffell third. Kevin missed 3rd place by 0.4 of a point.

Winches were laid out in the direction of previous days flying and the Thermal J contest kicked into life. This was another thermal contest with times of 2, 4, 6, 8 and 10 minutes plus landing points being required of the pilots.

About an hour into the contest the wind was building from the Northwest forcing a winch change. Not long after changing around, a Southerly change came through with a thunder storm passing us and going out to sea. With a wall of grey cloud approaching from the South, a decision to end the days flying was made and we all adjourned to Timaru for the Prize giving as rain and hail chased us from the field.

Ken Duffell giving his Taboo the "Flick." Third place in Handlaunch. Photo by Neal Blackie

John Shaw catching his Taboo. Photo by Neal Blackie

1st Overall Champ went to Les Stockley, with Kevin Botherway and Scott Chisholm equal runners up.

Special thanks must go to the Soarchamps Sponsors. Through the Christchurch Star providing $2500 advertising space, Alan Knox of CMAC was able to secure $2000 worth of Vouchers from Acorn models and a loan of ten Supercharge batteries from Auto Electric City. Gary, from Acorn Models, was our guest at prize giving, handing out the prizes and awards.

Web site: www.nzmaa.org.nz/sigs/sigs_soaring.asp

Precision sanding – a tip by Henri Kaper

http://www.henrikaper.nl/tips/precisionsanding/index.asp

This is a rather simple idea, yet maybe you never thought of it.

After a club member run my beam of lime wood through his bench saw, the resulting longerons had some diverse thickness and slight bites of the saw blade. Here's what I do when I need some precision sanding. I tape little blocks with the correct thickness to the ends of my sanding block (on top of the sanding paper). The sanding is done on smooth MDF board, holding the work piece flat. First I check the result on a piece of scrap; if necessary I do some fine adjustment by adding tape. I use very coarse sanding paper (.80), stuck to the sanding block with Gudy© 870. It's fast, easy and very precise.

Never lift the working piece or the sanding block from the board and use your vacuum cleaner a lot, so no dust gets under it.

With some imagination and customized sanding blocks you can also use this as a manual alternative to milling and sand accurate notches and gaps (... for those who don't have the money or space for machinery).

On the 'Wing...

Bill & Bunny Kuhlman, bsquared@themacisp.net

Redwing XC, Part 3

With the wing nearly completed, we've temporarily shifted our attention to constructing the fuselage.

As mentioned in the previous installment, rather than making the nose proportional to the two meter version, we've decided to make the nose somewhat shorter. This will require somewhat more lead to achieve the appropriate CG location, but pitch inertia will be less than if the nose is made longer.

Our first task after completing the aluminum sheet template was to cut out the plywood keel and figure out what material would be used to construct the fuselage "cheeks." This proved to be a bit more difficult than originally anticipated.

The cheeks are hollowed for placement of battery pack, receiver, and rudder servo, and are held fast to the plywood keel by means of a number of 1/4" diameter dowels spaced around the perimeter.

In the past, we've used balsa blocks for these parts, with the dowel holes strengthened with thin CA. Because of the price of balsa blocks and the large size of these pieces, however, this turned out to be an expensive option.

We next looked at high density styrofoam. Because of the landing loads placed on the forward portion of the fuselage, the styrofoam would need to be strengthened by some means in order to withstand the pressure of the mounting pins. This would be a complicated affair, with specially cut plywood plates, fiberglass shell, etc.

What we needed was an inexpensive but strong material which would be not too difficult to carve and sand.

In our garage, we found a well dried fir 2x6 which was relatively clear of knots. Using the keel as a guide, we cut out the two fuselage sides with a saber saw, then drilled holes for the mounting pins using a drill press. See Photo 1.

A belt sander with 80 grit paper quickly brought the fir down to the exact contour of the keel.

We drew the top view onto the upper and lower faces of the blocked out fuselage using the lower edge of the keel template. Further sanding along the sides brought them down to the guide lines. See Photo 2.

Using plastic and cardboard semicircular female templates, a low angle plane and a coarse PermaGrit sanding bar, we worked the squared block into a rounded shape over a period of about two and a half hours.

Final sanding with a foam pad sanding block, followed with a preliminary coat of primer, yielded the results you see in Photos 3 and 4.

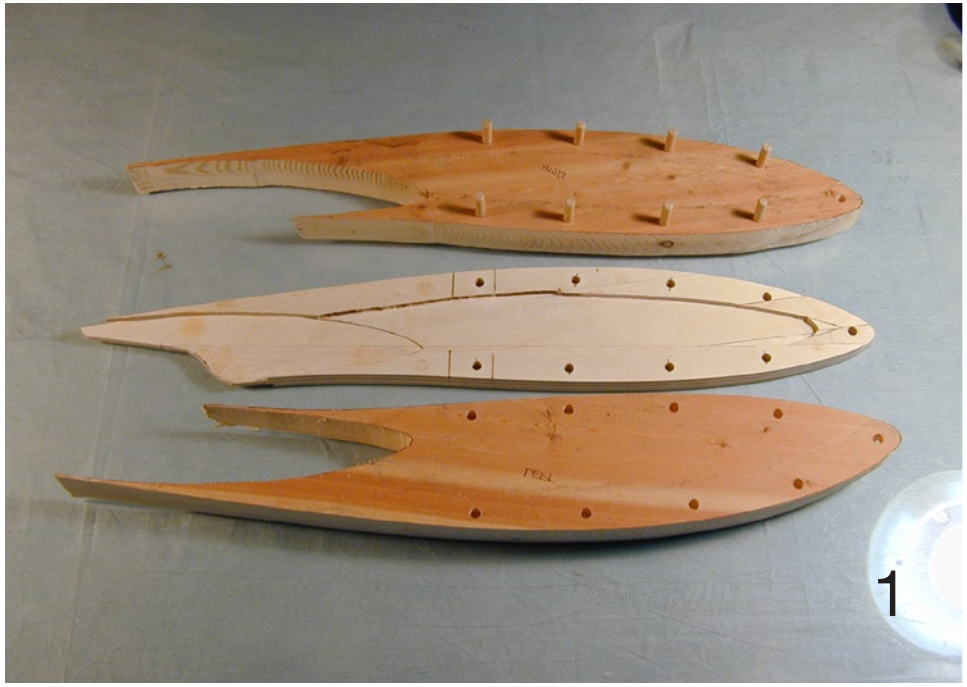
All that's left at this point is to hollow out the two side blocks and make cutouts in the keel for the radio gear.

Hollowing out the side blocks will be done using a drill press and a half-round router blade. This is not a time-consuming process. In this case, we'll start with the bottom of the blade about 1.5" off the table, and lower it about a half inch for each pass. We'll stop when the wall thickness is about 1/8th inch.

Interior photos of the completed fuselage will appear in the next installment.

Up next on the building board is the vertical fin and rudder, then it's back to the wing to finish off the leading edge and otherwise get it ready for covering.

Covering... Colors... Color scheme... Looks like we have lots yet to do.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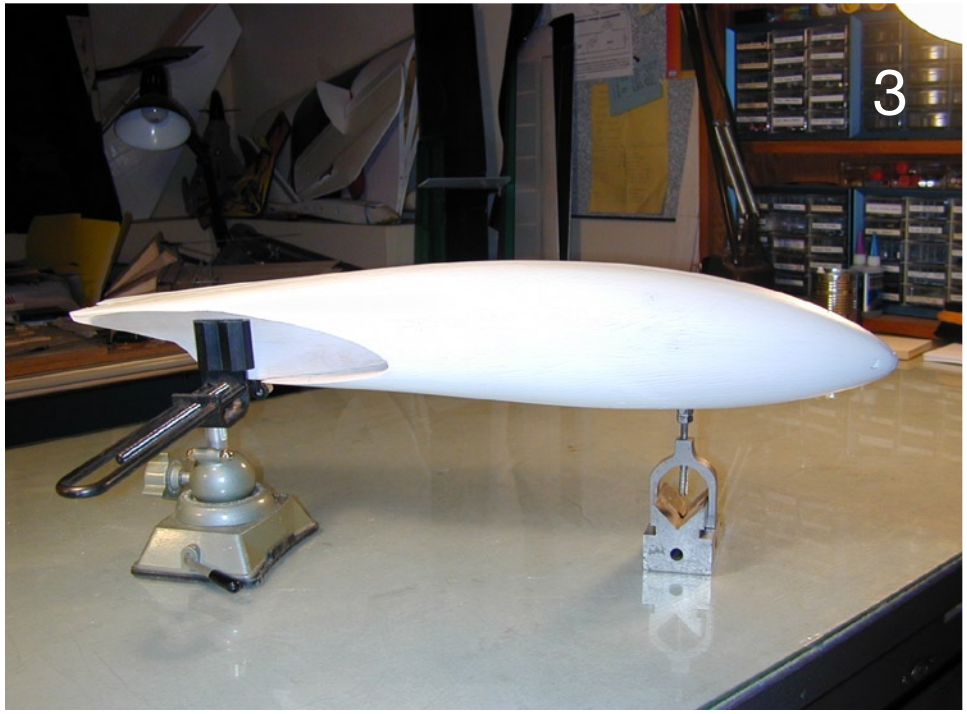
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4

Natal Championships

March 24-25 2007

Report

By Mark Stockton
with photos by Paul Boswarva

This year the Natal Championships where held at the Noodsburg Country Club on the 24th and 25th of March. The format for the Open Class event was F3J being flown of 200m (400m line) electric winch. In addition to this 2M (6 minute max in 8 minute working time) and RES/100 (8 minute max in 10 minute working time) where also flown. Being that this event was held 3 weeks before the first leg of South African F3J team selections, I expected a lot more Gauteng based pilots to make the 600km pilgrimage to what I consider to be the best gliding field in South Africa. It turned out that only two teams made the trip.

Practice Day - Friday the 23rd

This served as the travel day, however Kurt and I left at around 05h30 so that we could also practice on the field for the greater part of the afternoon. We arrived at Noodsburg at around 13h00 after checking into the B&B where we were staying. We where very surprised to find no one at the field. Also the fairly moderate wind was blowing from a very unusual easterly direction. I laid out the winches while Kurt assembled the models, only to find a broken servo lead on his number one Eish!. Given the wind, I initially only took out my Carbon Eish! and proceeded to have a lot of fun circle

Opposite: The group photo. Above: Pilots briefing (L-R) Conrad Klintworth, Fred Wittstock, Kurt Stockton, John Coulson, Volney Klintworth, Mark Stockton and event organiser (and father of F3J in South Africa) Dave Greer.


Xperience
PRO

Opposite page

Upper left: Paul Boswarva's Supra along with two Mini Graphites that dominated 2m.

Upper right: The set-up area.

Lower left: A Mini Graphite 2M in the set-up area.

Lower right: John Coulson working on his Experience Pro.

This page

Above: Fred Wittstock's magnificent Sagitta based models, model in foreground is RES100 while the background is the 2m. Unbelievable craftsmanship in the construction.

Above right: Brad Conlon with his Experience Pro.

Right: Cumulus being launched, note the flex in the wing joiner.

by the rumbling of thunder from the fast approaching storm.

Just as we got every thing packed away when Tim Potter, Rose and Fred Wittstock arrived to layout the field. We left to preform some surgery on the winch I had borrowed at the last minute as well as the wing tip I knocked off my Carbon Eish! while hastily loading it into the car.

Day 1 - Saturday the 24th

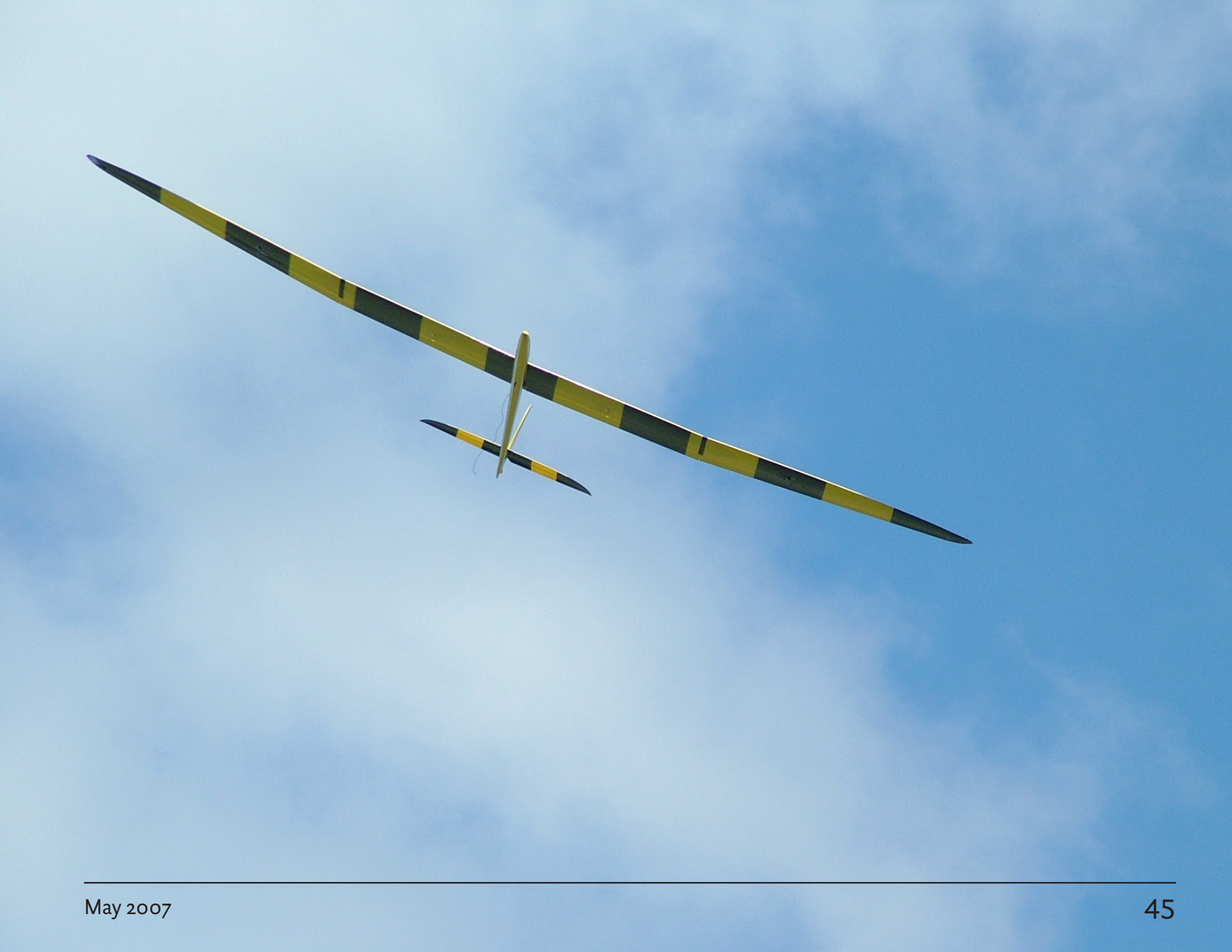
We awoke to find that while the wind had dropped to a very calm occasional breeze, however the cloud and rain had stayed. Also the occasional breeze was from a very un-cooperative Northerly direction while the 2 wind directions that had been laid out where easterly and westerly. However as the wind was fairly gentle it was decided to stick with launching cross wind.

The conditions proved to be a real challenge with rounds often being won the person who flew the smoothest in the extremely light lift available. Maxes where hard to find. Young Conrad Klintworth proved to be a master of this difficult conditions, racking up round win after round win. Eventually he would end the day on 3,999 out of a possible 4,000.

The flight of the day has to go to Denis Bird flying his aging Esprit. He managed

Left: Volney Klintworth prepares to launch. Right: An Eliminator (RES100) is launched.

Opposite: An Experience Pro cruises against the slightly cloudy sky on Sunday.



This page
Upper left: Fred Wittstock with Mark Stockton calling.
Above: Conrad Klintworth flying with father Volney calling.
Upper right: Simon Nelson with Brad Conlon calling.
Left: Allan Sneedon with William Cranmer calling.

Opposite page
Upper left: Ryan Nelson performing an F3J landing with Kurt Stockton calling.
Upper right: John Coulson landing.
Lower left: Allan Sneedon landing his Graphite 2.
Lower right: Simon Nelson landing a Mkulu (South African F3B model).

to eke out a max while the rest of his group where down at around 5 minutes. The most amazing part of this flight is that he was also at approach height from about 5 minutes to go. He masterfully worked little bubble after little bubble to decimate the opposition in grand style.

The incident of the weekend also occurred on the first day when John Coulson was flying his Experience Pro high and far down wind. I was flying in close proximity at the time when I noticed the yellow glider diving at the ground. Initially I thought the pilot had lost sight of the model. According to my caller the model pulled out at the last second, rocketing up to almost the same height I was at before plummeting back towards the ground at great speed. Eventually the model disappeared into the 10 foot tall sugar cane field. Various search parties undertook the very unpleasant task of hunting for the model in the cane field with out much luck. Listening to all the accounts of how the model went down, I as convinced that there would be little left. However at the end of the day, once everyone had packed up Dennis Bird joined the search

Upper left: Brad Conlon returning from the spot with his Experience Pro.

Above: John Coulson wiping drizzle off his Experience Pro.
Left: Dennis Bird flying.
Opposite: Contest Director Mike Summers

and found the model sitting on top of the cane and completely unscratched.

Flying was stopped just after the completion of round 4 due to low cloud. In fact the cloud was so low, I was zooming directly into it with my back up model that I decided to fly at the end of the day.

Most of the competitors gathered at the Wartburg Hof for dinner that night and enjoyed an excellent German meal while swapping "war stories". The happiest person there was definitely John Coulson.

Day 2 - Sunday the 25th

We arrived at the field to find that the low cloud, mist and drizzle was still present although this didn't stop me getting some flying done with my Tabooish DLG. To further aggravate matters the wind was coming from the North again and was a little to strong to ignore. It was decided to delay the start and switch the field lay out so that we could launch into wind.

Again Fred, Rose and the rest of the DMAC crew did an excellent job getting the field laid out in the new wind direction.

By the time flying started, the mist and low cloud had lifted and there was a fair amount of blue sky between the clouds. The conditions where a lot better than the previous day but still tough. Definitely not silly air. You had to be so careful not to loose any lift that you had as it would be a long way to the next bubble.

It was during one of the RES 100 slots that I saw Dennis Bird (again) record the flight of the event with his Eliminator. He was literally on final approach and being comprehensively beaten by Fred Wittstock when he felt a small bubble on the last leg of his approach. He worked this little bubble really, really hard not only to eke out a max, but to also clear the tall trees at the back of the landing area. Really entertaining flying.

Young Ryan Nelson and Conrad Klintworth's 2M models fell victim to into wind launches and blew up spectacularly during launch. Day 2 also saw John Coulson flying his Experience Pro again, this time with a new RX and no further incidents.

The only disappointment for the day is that the F3J fly off never happened. I'm not entirely sure why as Conrad, Allan Sneedon and myself stayed for some time set-up at the flight line for the event that just didn't seem to happen.

Thanks must go to Mike Summers for the excellent job he did of CDing the event as well as Dave Greer (organizing and matrixing), Rose and Fred Wittstock as well as Dennis Bird and the rest of the DMAC team. I can't wait to return for the Nationals in June.

Frequency control at the 2006 Viking Race held at East Lomond in Fife, Scotland, 9-15 September. Photo by Michael Shellim.

The Nelson Retriever

Simon Nelson, simonnelson@mweb.co.za

This set-up and layout for a winch retriever has been in my mind from about 1990. I built the motor frame about 10 years ago and finally finished it in February 2007!! Delays were, kids, work, getting the right motor (I did not really try to look here, but it was simple to find) and the actual 'A' frame set up. It had never been tested until a few months ago.

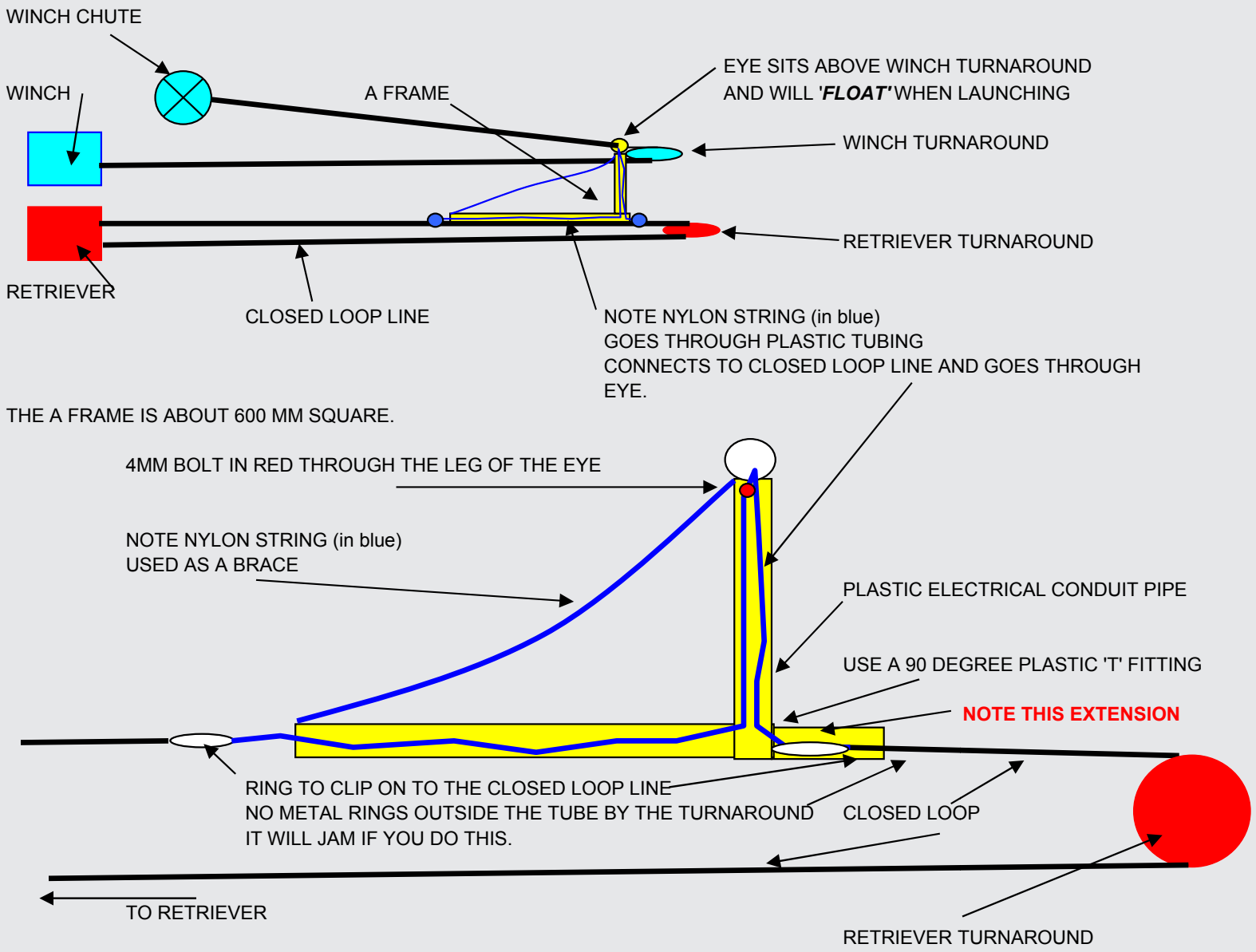
Concept

I have never liked the "bail" type retriever for a few reasons - complicated, lots of maintenance, and difficult to use over rough terrain. They also drag on the winch line during launch. So my thoughts were:

- The system must be able to retrieve when the 'chute has just come off, or the 'chute is on the turn-around, or lying full length at 90 degrees on rough ground.
- It must not interfere with the winch line at all, for a few reasons - other pilots are not keen on "things" on their lines that could interfere, damage their line or turnarounds.
- The unit should be able to be used with any winch set-up, including turnarounds of 400+ meters for launching scale ships.
- It must be able to be easy to set up and pack away.
- It must be easy to make with simple off-the-shelf parts.

Left: Ryan with Simon's retriever. Two way motor connects to the drum by way of a rubber belt drive.

Right: Simon with the plastic tube A-frame that runs between the winch and turnaround.


WINCH CHUTE
WINCH
A FRAME
EYE SITS ABOVE WINCH TURNAROUND
AND WILL 'FLOAT' WHEN LAUNCHING
WINCH TURNAROUND
RETRIEVER TURNAROUND
RETRIEVER
CLOSED LOOP LINE
NOTE NYLON STRING (in blue)
GOES THROUGH PLASTIC TUBING
CONNECTS TO CLOSED LOOP LINE AND GOES THROUGH
EYE.
THE A FRAME IS ABOUT 600 MM SQUARE.
4MM BOLT IN RED THROUGH THE LEG OF THE EYE
NOTE NYLON STRING (in blue)
USED AS A BRACE
PLASTIC ELECTRICAL CONDUIT PIPE
USE A 90 DEGREE PLASTIC 'T' FITTING
NOTE THIS EXTENSION
RING TO CLIP ON TO THE CLOSED LOOP LINE
NO METAL RINGS OUTSIDE THE TUBE BY THE TURNAROUND
IT WILL JAM IF YOU DO THIS.
CLOSED LOOP
TO RETRIEVER
RETRIEVER TURNAROUND

Now the unit you see here is the prototype, and, er, a bit rough! This unit can easily be made smaller and much more refined.

How it works

1. The retriever unit looks like a normal winch. The difference is that the motor can run both ways, same as a winch motor on a 4 x 4.

2. The winch motor in this case was geared by belt drive to give me more torque and was a simple way to connect it to the drum!

3. The retrieval speed is about the speed of someone running.

4. Set up your normal winch. Your 'chute will be at the winch ready to launch.

5. The retrieval unit is placed next to the normal winch, on the left or right, close or far, your choice.

6. 400 meters of line is used as per your normal winch, with 200 meters to the turnaround. This is wound on to the retrieval drum. Make a loop in the line and put it through a turnaround pulley. You can use any turnaround, just like your normal turnaround, and hook the line back to the retriever.

7. Now walk out with the turnaround, again just as you would with your normal winch.

8. Stake down your retriever turnaround next to your winch turnaround. The distance from the other turn a-round is determined by the size of the 'A 'frame, you will see why later. See #19.

9. You will then feed in/wrap around about four or five turns around the retriever drum, so it will go on the drum on the top and come out on the bottom of the drum.

10. You can connect the line to each other, temporarily.

11. As you can see, you now have a closed loop.

12. You need to tension up the line so when the motor runs the drum will grip the line. It does not need to be very tight, but you would be unable to hold the two lines your self with out help fairly soon.

13. An A-frame collects the 'chute. The frame is more like a number "4" with the long vertical side connected to the closed loop line, with simple connectors at both ends. Where the cross piece and angle part of the "4" come together, there is a ceramic "eye" that they use on fishing rods. It is about 30mm in diameter. See construction of the frame.

14. Now clip on the frame in the closed loop. It will be at the retriever end.

15. Unclip your 'chute, thread the line through the "eye" in the frame, clip the 'chute back on and put on a "ring," such as a 40 mm key ring, at the bottom of the 'chute where it connects to your winch line.

16. Run the motor so that the frame will run on the ground, next to the winch line, with the 'chute line running through the eye in the frame. The 'chute stays on your winch, or on your glider if you are getting ready to launch.

17. As the frame goes down to the turnaround, you will have a ribbon at the retriever end on the other side of the closed loop to tell you when to stop the frame.

18. With the frame stopped, the "eye" will be sitting over/on top of the winch turnaround.

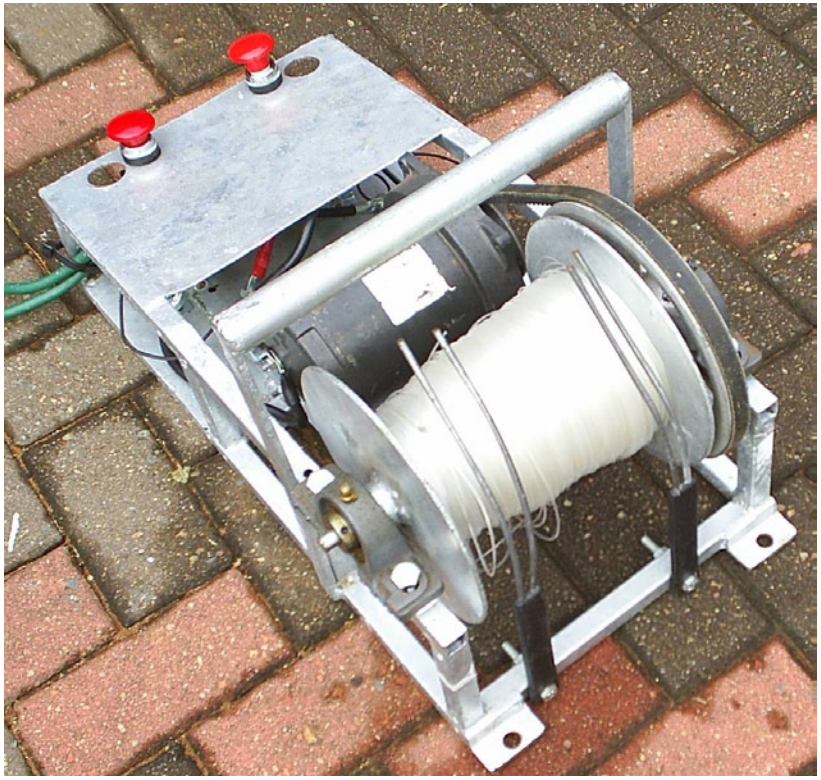
19. You will see now the distance needed between the two turnarounds should allow the "eye" of the frame to sit in the correct position.

20. OK, now launch your glider in the normal manner. Nothing but the "eye" at the turnaround is next to your winch line.

21. You may wind down or just let the 'chute float.

22. Due to the nature of the frame, and the size of it, the "eye" will follow the winch line during launch and hover over the turn-around. It will not interfere with your winch line during the launch.

23. Now reverse the retriever motor to bring back the frame. As you can see, the ribbon connected to the other side of the line will now start to go back toward the turnarounds, and the frame will come back to the retriever.



Left: Completed retriever, showing the forks (cut from an old shopping cart handle) and drum. Right: Side view of the retriever frame, showing buttons and wiring, solenoids, reversible motor and drive belt, and drum with bearings.

24. Regardless of where the 'chute is, the eye will pull back the line and it will finally collect the 'chute. The ring you put at the bottom of the 'chute will not go through the eye, and the frame / 'chute will be brought back to the retriever unit.

25. As the frame / 'chute come up to you, you can slow down by tapping, etc.

26. Hold on to the 'chute or clip it on the frame of your winch and then press the button to reverse the motor. The frame will head back to the turnaround and the 'chute will stay at your winch.

27. When you get to the ribbon / flag at the retriever end, you have completed the retrieve and the frame will be back at the turn-around, ready for launching.

28. To pack up the retriever, you simply have the frame at the retriever end. Take out the 'chute from the eye, unclip the frame, hand wind a few turns on the drum to trap the frame end of the line that is now loose, and then wind in the rest of the line as you would do a normal winch.

Constructing the drum / motor

As you can see, this is like a normal winch but uses simple bearings and does not have the loading or forces that normal winches have. So nothing fancy here.

Mine was just a welded 20 mm square tube frame, and off-the-shelf bearing blocks.

The drum is two 2mm steel discs, welded to a 80 mm pipe cut to length. The shaft is steel rod the diameter to suit the bearing blocks.

The whole lot is galvanized.

The motor is a cheap spare part - 4 x 4 winch motor (just the motor). This is a generic spare part (new) from one of those cheap parts shops. It was about R600.00 (US$85).

The pulleys and belt are also off-the-shelf. The ratio is about 3.5 to 1.

As the motor has to run both ways, you need to have two solenoids for each way. So you need to have four in total. There are much smaller solenoids on the market now.

You will have four wires going to the motor, one set of two (one negative and one positive) for left rotation, and one set for right rotation.

I used red machine switches, spring loaded to open circuit, and they do not lock. You have to hold them in with your foot to run the motor.

To make sure the line that runs in a closed loop on the drum does not catch or wrap over on itself, I have two "forks" in front of the drum, one for each line. The forks should be about 50 mm apart. Mine are too far apart in the photograph, and this is now changed. The "fingers" in the fork are about 10 mm apart.

These forks have just one bolt hole on the bottom of the frame so they can pivot outwards. You can wind the line back on the drum with out it getting in the way of the forks.

The forks are actually an old shopping basket handle. It has a plastic centre section with moulded-in 4mm steel rod out the ends to the basket. Cut in half, I have two forks!

You could use two fishing eyes on the frame mounted one high and one low in front of the drum, but it's the mounting that's a problem.

The Frame

Why a frame in the first place?

The frame is there to stop the line on the ground from wrapping around itself or twisting. It "runs" flat on the ground.

You need a stand-off distance between the retriever turnaround and the winch turnaround. This allows you to use different heights on the winch turnarounds, and you can make long or short frames.

The eye on the frame must be in a fixed position on the frame, but in a floating position above the winch turnaround.

The eye must not be able to turn or swivel on the frame or the winch line will tangle.

The layout of the frame is a "L" shape, with the bottom leg with the eye. The length of the leg for the eye must be long enough to be unable to twist around itself, and be able to reach the winch turnaround.

The size and layout of the frame make it run flat on the ground.

The frame will easily shake off grass and bump over clumps of grass. You can add a tennis ball in front and behind if you wish to be able to ride over those obstacles.

Sometimes the frame will flip over 180 degrees when retrieving and flip back again, but it will never do a full rotation.

I have a "double frame" for doing two winch retrievals at the same time. The unit sits between the two winch lines and both the frame eyes sit on top of the turnarounds. Launch one plane, launch the second and then retrieve both 'chutes!

IMPORTANT: On the end of the frame that stops up against the retriever turnaround, there must only be line coming out of the frame. NO metal links, rings etc, or they WILL jam in the turnaround. I have now added a 150 mm extension to the bottom of the frame.

On the 90 degree plastic fitting, there is a plastic screw down lid. I do not use the lid, but I connect the closed loop line by threading it into an extended leg so that

Far left: The fishing rod eyelet, 30 mm diameter, used on the A-frame.

Left: Plastic tube for A-frame, eyelet with cord attached (see diagram on page 52 and photo below), and attachment screw and nut.

Far left: Assembly completed. Screw holds the eyelet firmly in place.

Left: View of the “T” fitting for the A-frame, with cabling installed and the securable coupler for connection to retriever line.

Above: Eyelet “floats” at turnaround, captures ’chute for retrieval.

Right: A-frame at winch turnaround, as above.
Upper right: It may be helpful to make the A-frame in at least two sizes to match various turnaround configurations.

the metal ring connector is inside this “hatch.”

When the frame is against the turnaround, it is this extended piece of plastic tube that is bumping up against the retriever turnaround.

Frame construction

1. The frame is made from cheap electrical white plastic conduit. It looks like a bow saw, but were the blade would be, there is nylon rope used as a brace.

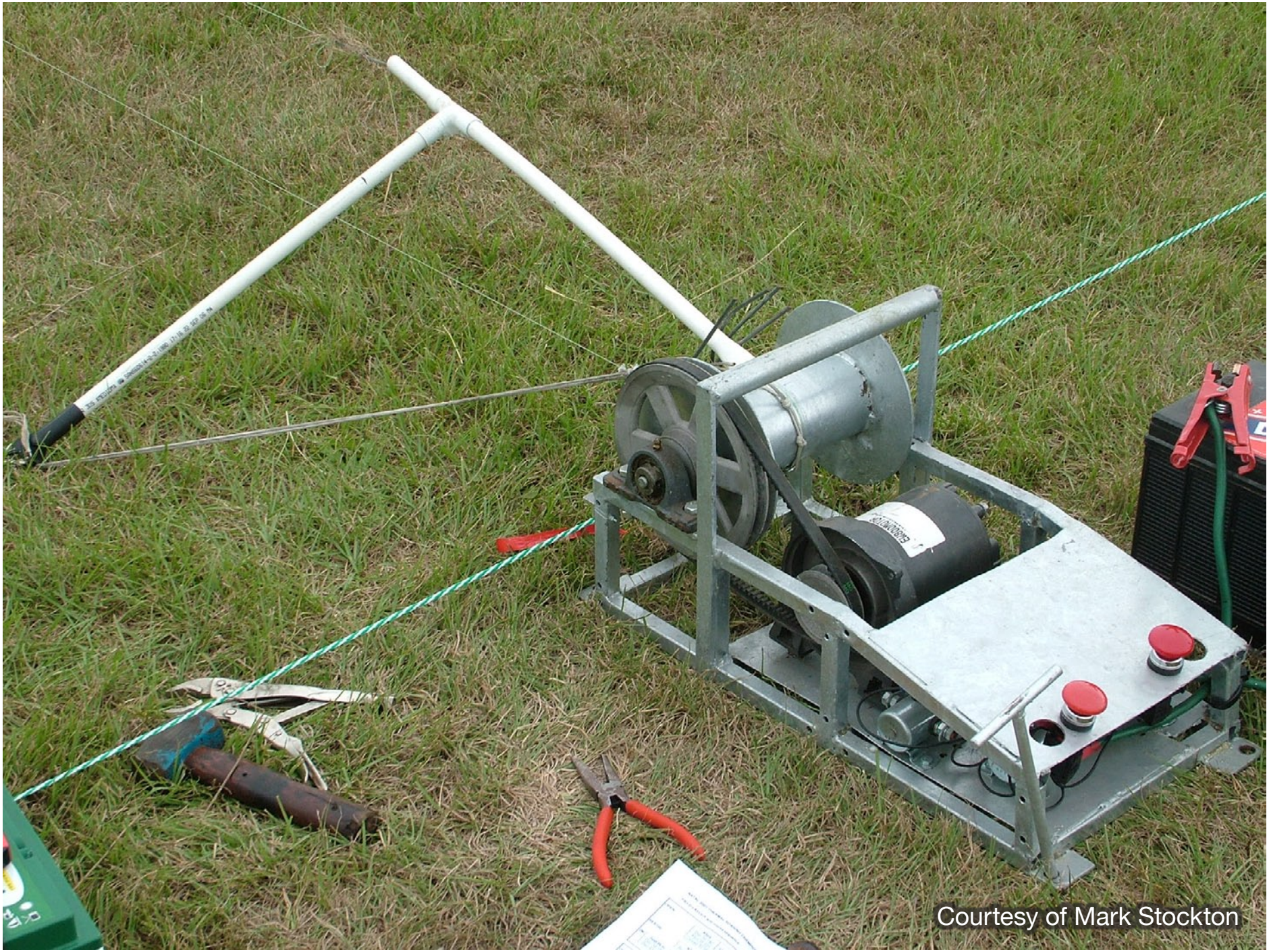
2. NOTE: You can have a left-handed frame or a right-handed frame. See #7. With my frames, the retriever sits on the right hand side of the winch. It really makes no difference, but make sure you get #7 correct.

3. The 90 degree angle is the same type of plastic fitting,. It is actually a “T” fitting.

4. The frame is in the shape of an “L.” The bottom of the “L” is were the eye goes, and the vertical tube is in line with the retriever line and the retriever line is connected to the top and bottom of this.

5. The eye is a +/- 30mm fishing rod ring.

6. As you can see in the pictures, the eye is at a 45 degree angle mounted in a slot in the plastic tube. Use a heat gun to soften the tube around the eye and use a


Courtesy of Mark Stockton

4mm bolt to lock it. This end is covered in tape or heat shrink.

7. The lower part of the frame / leg is at the turnaround, and the eye at 45 degrees is facing the winch / retriever. See the pictures.

8. I used 3mm nylon rope, with two couplers, to connect the frame to the line. The rope is run through the frame and down to the eye, through the leg, and back out the top.

9. This rope that goes through the frame and the eye is pulled tight when retrieving and stops the eye from moving around too much.

10. Now you have an L-shaped frame. I used the same rope to connect the open part of the triangle. You must do this as this will be under tension as the line is being retrieved. The frame looks like a “4” or triangle now.

11. Make sure that the coupler that you use to connect the frame to the line will not jam in the turnaround when it is ready for launch. Yup, it happened to me, and the line will just snapped.

12. I have made a double frame for retrieving two ’chutes at the same time.

13. On very rough ground you could put cheap plastic balls on each corner of the frame so it will ride over obstacles. But if you are flying on that type of ground, shame on your plane!

Other details:

A. I did use a steel ring to hold the ribbon on, but when I retrieved a bit too much it cut the line on the forks. Just use a loop in the line so it will go round the drum without harm.

B. The drum has no special surface for line grip, it was just galvanized. I think it must not be polished and not rough like sandpaper. I think you do need a bit of slippage when you go a bit far, but it does not seem to harm the line because it is running slow.

C. I use only two to three turns on the drum. Use more tension to stop slipping. I have not had a problem with slipping yet.

D. There was no special size to the frame. I made an equal sided one and then thought a smaller one would be better in long grass.

E. Please note the “tension” on the line is about the same as a normal winch when you are about to launch. This tension on the drum grips fine.

F. I have crocodile clamps to connect the battery, as it was intended to use the battery of the normal winch.

G. It is a simple matter to add in line for long line winches, with a turnaround 400 meters away for scale ships. You will need to move the ribbon up as well.

I have now done about 70 launches with only six problems: three with over winding and snapping the line; a guy did not understand the switch set up; as previously mentioned, the silly metal link I used on the pennant cutting the line on the drum; and the frame getting caught in the retriever turnaround. Make sure you add an extension to the bottom of the fame so only the pipe stops against the turnaround.

Final thoughts

It should be easy to make the motor in line with the drum and the solenoids smaller and then the whole unit smaller and lighter. I would like to see the winch and retriever as one unit.

I always had the idea that you could make the whole thing automatic. Launch the plane, press one button on the winch retriever unit, go fly. The unit will bring the ’chute back, the ’chute gets hooked up and locked and stopped at the unit, the unit then automatically returns the frame back to the turnaround… Mmmm.

Please contact me if you need help. This can be used freely to all for no commercial use.

Please have consideration and contact me if you are building for sale as this concept is under copyright.

Regards

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Natal
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Duff
BEER