

on the Wing



Alula kit review

Michael Richter, as most *RC Soaring Digest* readers know, produces the Weasel and miniWeasel foam wings for slope and thermal flying. Following our review of those two aircraft within the pages of *RCSD*, he has been kept extremely busy producing kits for customers here in the U.S. and around the world. Our two Weasels went together fairly rapidly and have proven to be great flyers for us. As subscribers to the flyWeasel Yahoo! group, we were extremely excited to hear of Michael's plans for a small lightweight side arm launch (SAL) glider, particularly as it was to be tailless and sport swept forward wings.

The kit

Our Alula kit arrived in the mail and was immediately opened. The box arrived with absolutely no damage to any of the enclosed parts.

The completed aircraft has a span of 34 inches and an overall length of 20 inches, but the kit arrived in a standard 20" x 9" x 2" box. The accompanying photo does not do Michael's packing skills justice. The EPP foam wings were cradled in their beds, and the fuselage was inside its original blocking. The two supplied Depron™ fins were placed on the floor of the container with the wings resting on their top, and the longer carbon rods were in a box side corner. The fuselage block, along with a complimentary roll of covering tape, was used as a spacer, and a bag of small parts was left free to bounce around within the confines of some wadded packing paper.

The nine page instruction sheet was quite intimidating at first glance, but after some perusal, it became obvious the instructions are just very well detailed and not at all complicated. Three pages are filled with drawings and explanatory illustrations; another page provides some design notes and lists the kit contents and required additional items (radio gear, tools, glues, etc.); the five remaining pages are devoted to actual aircraft construction.

The assembly instructions are broken down into 16 major phases, and each of those phases is in turn divided into separate small steps which take a few seconds or a few minutes to complete. If you have just 15 minutes per day to devote to building, you can easily complete Alula over a period of a couple weeks or so. Actual total construction time is only a few hours.

The entire Alula construction manual, complete with color photos of the individual steps, is available on the Richter R/C Aircraft Design web site at http://dream-flight.com/instruction_files/Alula/main.html, so this review will not go into the construction process in detail.

A few procedures which might be tricky to perform are already accomplished when you open the box — the wing leading edges are finished, the tips are cut to the correct outline, and the channels for the spar rods are pre-cut; the elevons are beveled; the tunnel in the fuselage which carries the antenna and servo wiring is perfectly formed; and the battery and receiver compartments are fully cut out.

Construction notes

Wide tip Stabilo "Swing" felt pens were used for the color scheme with the carbon rod spars serving as the baseline for coloring the upper wing surface. We used red forward of the spar with orange and yellow rays fanning out from there. A fine black marker was used to put a bordering line between colors, and it matches the visible carbon rod quite nicely. The bottom of the wing was colored entirely black for visibility when flying overhead.

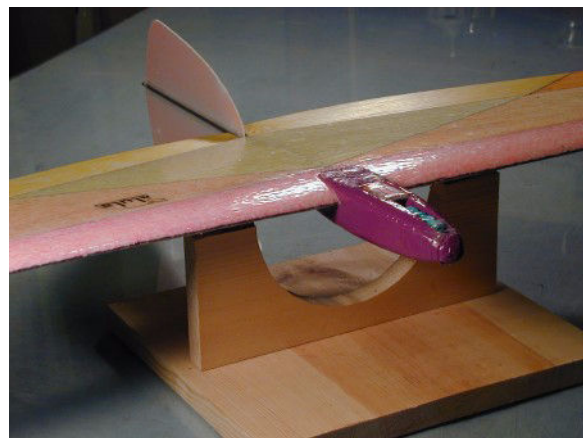
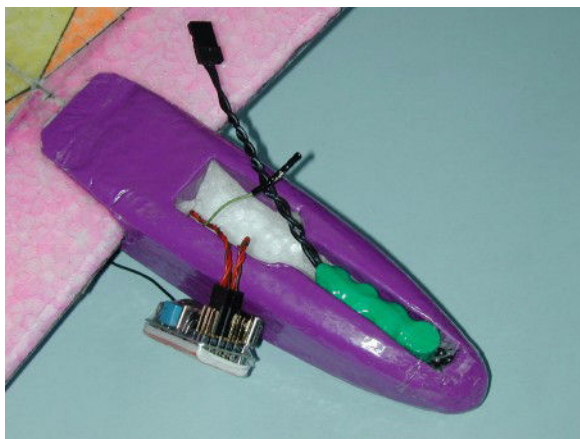
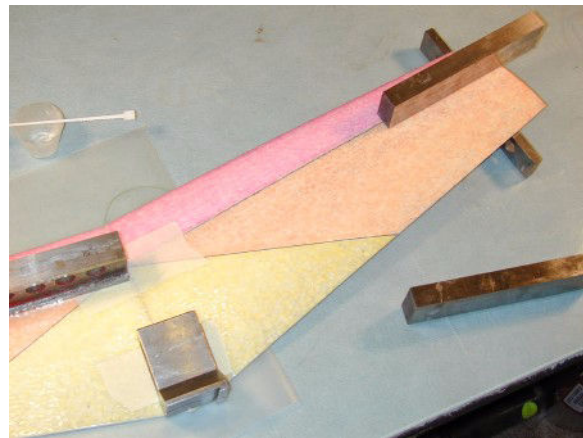
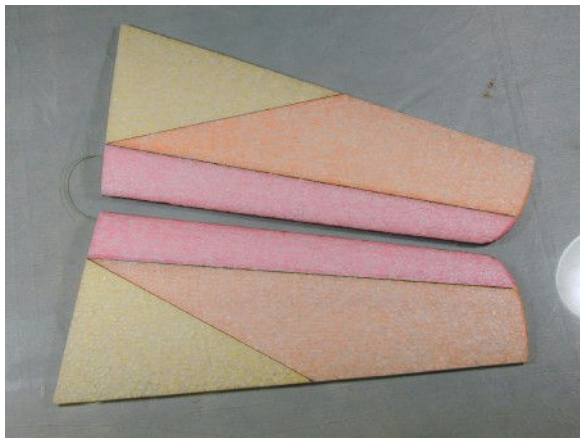
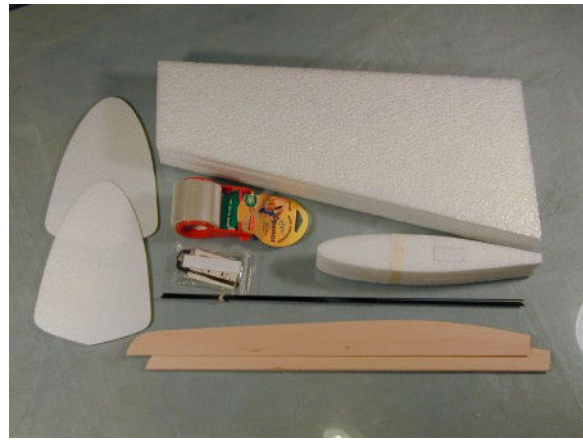
We ran the antenna through the wing as explained in the instructions, but did not want to be limited to having our FMA Direct M5 receiver in this single aircraft. An old set of JR connectors was cut apart to make a single pin plug-in with heat shrink tubing added to both leads for strain relief. In the future we can use this receiver in another glider with built-in antenna and matching plug.

There was only one problem during construction — taping the wing. Our first attempt was a disaster, through no fault of the instructions, and we finally resorted to using a heat gun to remove all of the tape. Alyssa volunteered another set of hands for the recovering, and with a second very light spraying of 3M-77 we managed a very good covering job without running out of tape. (We're thinking practice counts.)

We set up a holding jig for the wing to make the joining process more reliable. Masking tape was used to hold the top surfaces together, and a mixture of five minute epoxy and microballoons was then applied sparingly along the roots of both wings. The wings were then folded downward and the assembly was placed in the fixture overnight. This forms a good bond, and this root joint is plenty strong after the addition of the two carbon fiber wing joiners.

Rather than taping the elevons, we elected to use a single coat of clear dope over the colored balsa. Attaching the control horns is a simple task, and the elevons are attached to the wing with long pieces of regular household tape. We use Scotch Crystal Clear Extra Strength. Attaching the carbon rods to the fin and shaping and covering the fuselage pod are then the only major construction items to be completed.

The servos are nested into the bottom of the wing and appropriate cutouts have to be made, but that takes a matter of a few minutes. The pushrods to the elevons are fine carbon rods which are included in the kit, along with all of the other necessary fittings. Setting up the servos for proper operation is well explained in the instructions.





The fin attachment method is both unique and effective. A small piece of Coroplast™ is attached to the bottom of the wing right behind the fuselage pod. The fin consists of a piece of Depron™ with flat carbon rods taped to each side. The two carbon rods fit very snugly into the Coroplast™ channel and the substantial friction holds the fin in place. The fin can thus be removed for transportation purposes, a great positive, making for a very small corrugated cardboard container, approximately 36" x 14" x 2" with some internal padding.

Installing radio gear

We spent some time figuring out placement of the receiver in the preformed slot, as it's designed for a narrow receiver with end plugs. Our M5 is shaped differently and does not have end plugs, so we opted to widen the compartment while keeping the depth constant. All of the servo and battery

wiring, along with the antenna plug, goes into the compartment bottom, and the receiver is then placed across the top of the compartment with a press fit. The contour matches the fuselage top and the receiver can be held in place with a small piece of tape. We'll place a piece of covering over the battery compartment once we get the balance point just right.

Balancing

We have a balance stand which we constructed for Diva and we checked the Alula CG location using it. (The CG stand consists of two pieces of 3/4" thick pine which are joined to form an inverted "T." The vertical piece has a circular cutout for any fuselage, and triangles cut from a rubber eraser are glued to act as pivot points against the bottom of the wing. See the included photo.) A bit of steel shot in front of the battery pack (about eight grams) got the

CG right on the mark — 25 mm behind the leading edge at the wing-fuselage junction. (Our current CG location is 26 mm behind the leading edge at the wing-fuselage junction.)

Flying

Initial test flights were a joy! First hand tosses in our relatively flat driveway were at least a hundred feet, with very little trimming needed. We moved out to the sloping field on the other side of the house once we had things set up to our satisfaction.

Straight ahead high speed throws, angled upward at 45 degrees, gained surprising height, and we were able to make two or three tight turns within the confines of the small opening in the tall firs and cedars which surround us before coming down for hand catches. We can officially say that dodging rain drops requires more exertion than throwing Alula to some pretty substantial heights.

Over the weeks since construction and initial test flying were completed, we've had the opportunity to give Alula a full workout. Straight ahead throws aimed upward at a steep angle can achieve good height, but the SAL method gets it up to some astounding altitudes for an EPP airplane.

Tight turns can be made with relative ease, and the glide angle is actually pretty good considering the various drag producing items which intrude into the air flow — servo cavity, pushrods and fixtures, open battery and receiver compartment, etc. The Alula is also aerobatic, and can loop and roll with the appropriate and coordinated control inputs.

Our most fascinating flight yet occurred at 60 Acres during the late afternoon of September 3rd. Alula was side arm launched into a flock of around 30 swallows which were happily catching bugs in a small thermal. The birds paid no attention to Alula circling in their midst, and our own little "bird" was able to follow the thermal bubble upward with them for quite a distance. We always enjoy flying in the company of birds, and this experience was no exception. The flight also proved Alula's maneuverability and thermal abilities.

Getting one!

The Alula kit is available from Michael Richter, Richter R/C Aircraft Design, 1250 Northridge Rd, Santa Barbara CA 93105. The kit is \$45.00 plus postage and handling (\$5.50 if ordered alone). The Richter R/C Aircraft Design web site URL is <www.dream-flight.com>, with the Alula page at <www.dream-flight.com/alula.html>. E-mail should go to <michael@dream-flight.com>.

We very highly suggest signing up for the flyWeasel e-mail group on Yahoo! <groups.yahoo.com/group/flyWeasel/>. The Alula was a hot



Our Alula circles through the trees in our "back yard" after being SAL'd from the deck.

These photos were shot by Mark Nankivil with his Canon EOS300D digital camera.

Mark was so impressed with the flight characteristics of our Alula he bought one for himself immediately upon arriving back home!

topic on the group for a while when it was first announced as being under development, so with the kit now available it's sure to be a hot topic once again.

At this point we are seriously considering the purchase of another Alula kit in an experiment to modify the control system to consist of central elevators and outboard ailerons. The extra servo will add a fraction of an ounce to the overall weight, but we're thinking the added controllability may make the project worthwhile.

Bill & Bunny Kuhlman
<bsquared@themacisp.net>

