Radio Controlled Soaring Digest

February 2009 Vol. 26, No. 2

CONTENTS

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Front cover: Jorgen Nederland's EPP plank scoots along the Rodvig Slope in Denmark. Wing cores with the MH45 airfoil were cut by Adam Rogalski. It has a 1.6 meter span and 1.0kg to 1.5kg flying weight, depending on ballast.
Photo by Morten Enevoldsen
Canon EOS D30, ISO 400, 1/320 sec., f8, 105mm

Back cover: Mike May's Ventus 2AX overlooks the Tamatie Berg slope on the first day of 2009. Photo by Izak Theron
Canon EOS 450D, ISO 400, 1/640 sec., f8.0, 18mm

R/C Soaring Digest

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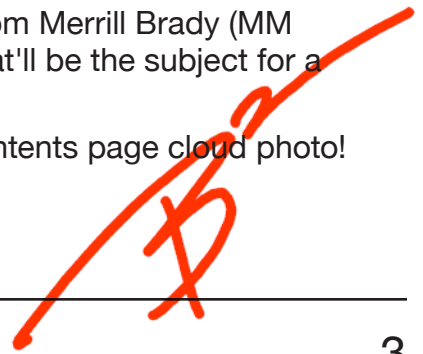
In the Air

We survived the severe weather of the latter half of December and we thoroughly enjoyed a white Christmas. Our inverter and winch battery, together with intact 'phone lines, kept us up and running during the two daylight hours we were without power. The *RCSD* offices are located on a very stable sloping hillside, so we didn't have the flooding problems which plagued those at lower elevations, nor did we slide downhill. Thanks to everyone who expressed concern. The forested area in which we live does have its hazards, however. The very cold snow, followed by rain, weighed down tree branches and in some cases brought down the trees themselves, to the point where a loud "crack," "bang" or "thud" was frequently heard. We had a metal roof installed during the early part of the year, and the sound of large sheets of snow sliding onto the deck was very much like a freight train passing overhead. We've heard people say the Farmers' Almanac has us scheduled for a similar experience in February. Hopefully we'll survive the second round as well as we did the first.

You'd think with being pretty much snowed in for nearly three weeks that we would have managed to at least start a building project, but such was not the case. We did, however, manage to construct a very cool hot wire system with the Powerstat variable transformer we picked up from Merrill Brady (MM Glider Tech) at Visalia in October. That'll be the subject for a future *RCSD* article.

Our thanks to Izak Theron for the Contents page cloud photo!

Time to build another sailplane!



Magnum Models

NORTHROP GRUMMAN F-5 TIGER

by Dave Garwood, dgarwood518@gmail.com

Not many gliders grab your attention like a sharp-dressed slope jet. And when a cool looking PSS glider flys well, the slope pilot is in a very happy place. I'm here to tell you that the Magnum Models F-5 Tiger is a great-looking and a fine-flying glider, supplied in a kit that's simple to build quickly and successfully.

The F-5A Freedom Fighter was designed by Northrop in the 1960s to be a light and inexpensive supersonic fighter. A highly successful design, they have been flown by more than 30 countries and hundreds remain in service today. An improved version, the F-5E Tiger II serves today with the US Navy, including some in "enemy" paint, glown ny "aggressor squadrons for air combat training. Later F-5 development included a reconnaissance version, the RF-5 Tigereye.

The T-38 Talon, first US supersonic trainer, derived from the F-5, has been flown by the USAF Thunderbirds and other aerial demonstration squadrons, and remains in USAF service today as a trainer. The single-engine F-20 Tigershark evolved from the F-5 design, but did not reach production. With the F-5 and T-38 flown by 30 countries and five air show teams, we have an abundance of prototype paint schemes to choose from when finishing a model.

I first saw Larry Blevin's F-5 Tiger slope jet fly in 2003, and so have known since that time that the model looks great and flys well. I built mine early in 2008, to have it ready for the Midwest Slope Challenge in May, and in order to join up with a couple other guys planning to have F-5s ready for the spring event, including OFBs Alex Paul and Joe Hosey, plus Mr. Magnum Models himself, Larry Blevins.

While not an ARF, the Magnum Models F-5 Tiger kit provides a build that proceeds without problems, and produces a slope jet that flys well. For me, there's a special pride and satisfaction that comes from researching and modeling a color scheme that you've selected personally - I do like that part of the project. See the resources listing at the end of the article for sources of photos of the prototype.

Kit Contents

Your $79.95 cost buys a complete kit, which includes:
- EPP foam fuselage, 1.9 pound density, three pieces cut and joined at the factory
- EPP wing, 1.9 pound density, three pieces to be joined by the builder, and CF spar inserted
- EPP exhaust nozzles. These and all foam parts demonstrate extremely accurate foam shaping.
- Carbon fiber tube for wing spar
- Pre cut, high grade balsa ailerons, vertical fin, horizontal stab and elevator
- Several small plywood parts, pre-cut
- Hardware package: nylon mounting bolts, threaded rod, clevises, control horn, elevator pushrod and aileron torque rod assembly.
- 12 page instruction manual; includes three drawings
- Later versions of the kit include a molded clear canopy.

Additional Components and Materials

My radio installation included an Airtronics 92515 Super Micro Receiver, a pair of very small Airtronics 94091 servos, Airtronics 95009 300 mAh square battery pack, and an Airtronics 97001 switch harness. These are tiny servos, about the size of the on/off switch, and they worked fine for ailerons and elevator actuation in this model.

Supplies and material used included Goop glue, Elmer's Probond (to secure the spar in the wing slot), epoxy, light spackle (drywall filler, for a smoother finish on the EPP fuselage), 3M-77 spray adhesive, filament tape, a roll of Ultracote covering, and small bits of Ultracote covering for canopy markings, national insignia, and intake and exhaust markings.

Dave Garwood's Magnum Models F-5 Tiger, flown over Wilson Lake at Minooka Park hill in medium lift (10-12 MPH winds). Joe Hosey was on the sticks; Dave Garwood behind the camera.

Construction

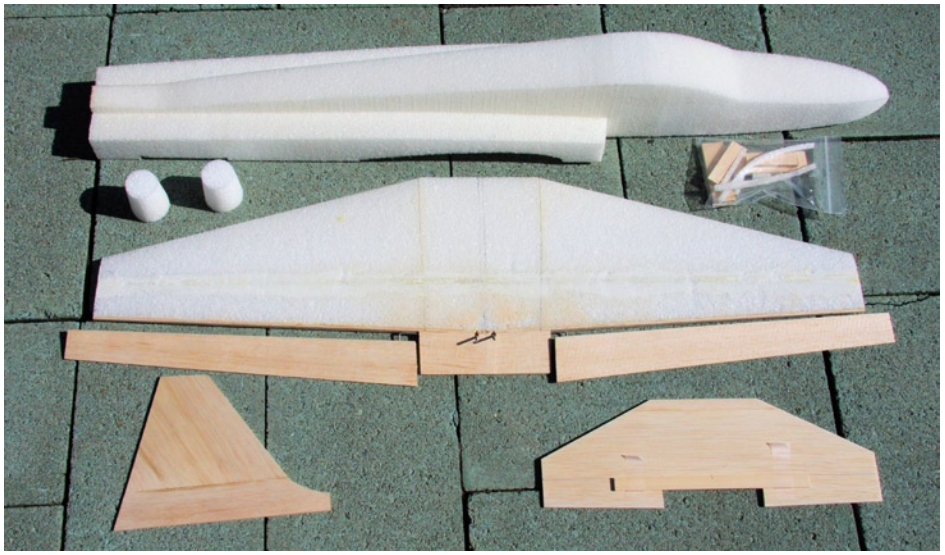
Building the model follows well established foamie building practice, with materials selection striking a balance between light weight and durability.

First for me was attach the wing parts end-to-end with epoxy, and fit the CF tube spar in place with Elmer's Probond, and fill the slot with spackle. I decided I could make my plane a smidge lighter and assure a snappy roll rate if I built full-span ailerons, so I shortened the torque rod assembly provided.

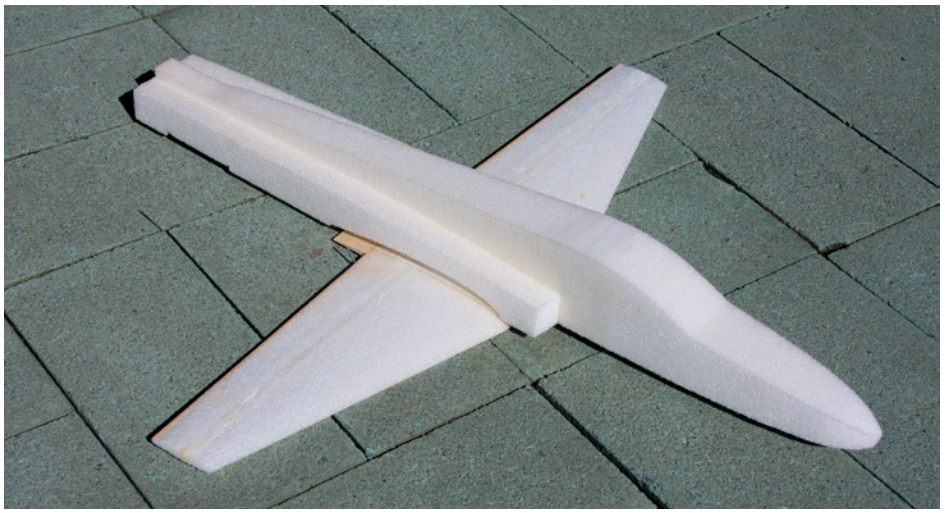
I carved the fuselage using internet photographs of the plane for guidance. I outsmarted myself on the receiver battery pack selection, selecting a 200 mAh pack and planning to mount it far, far forward to save overall weight over the recommended 600 mAh pack. Turns out that in that narrow, tapering nose of the Tiger, I could not mount it far forward enough to avoid the nose weight, and had to add 0.75 ounce to balance anyway. I say listen to the designer on this.

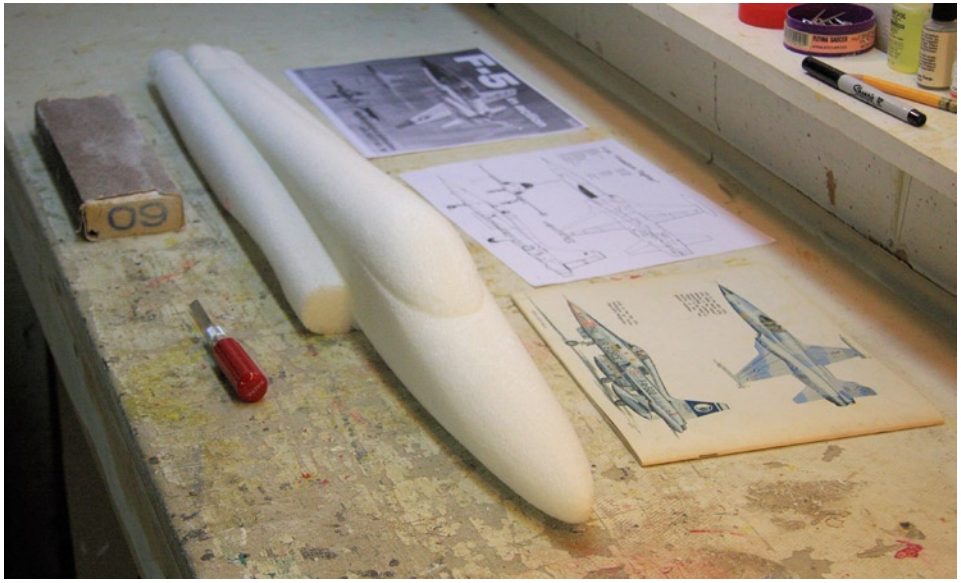
Construction took me 12.75 hours over nine evenings and weekend building sessions. Final sanding, spackling and sanding took two hours. Covering took me six hours. The Ultracote markings and panel lines took another two hours, for a total of ten hours spent on finish and markings.

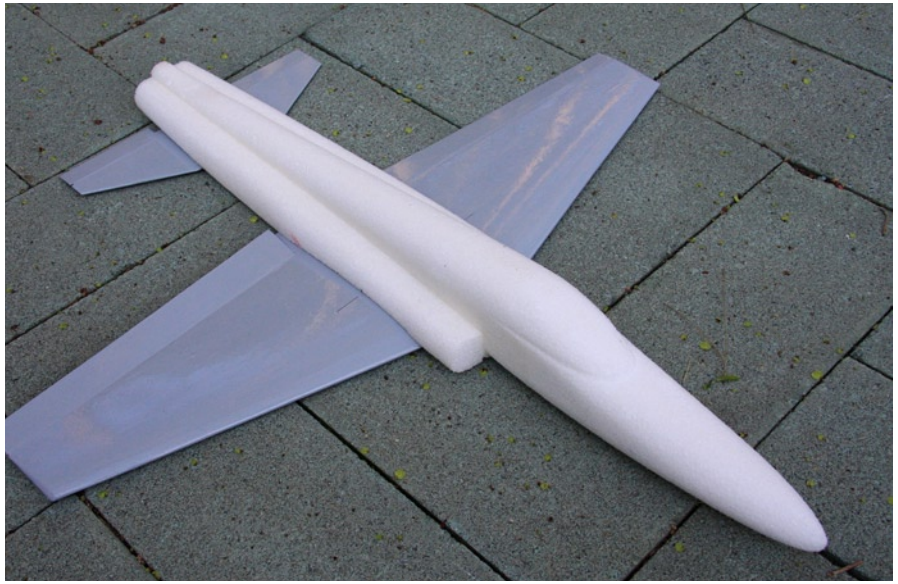
I was happy the design features a removable wing and horizontal stab, for ease of storage and transportation. Further, I did not glue in my vertical fin, it stays in place on friction alone, so it is removable to make packing even easier. My final RTF weight was 19.3 ounces and with my measured wing area of 172 square inches, I calculate my wing loading to be 17.2 ounces per square foot. The recommended balance point of 3 3/8 inches behind the wing center leading edge worked great, as did my control throw of 1/4 inch each way for aileron (remember, longer ailerons on my plane) and 1/4 inch each way on elevator.



Above: *Magnum Models F-5 Tiger kit contents shown after wing parts joined and spar inserted and covered with spackle. The EPP fuselage parts are shaped and joined at the factory. The balsa parts are mostly pre-cut and sanded, and the bag of small parts is shown. Not shown is the instruction manual.* ***Below:*** *Early construction step where the wing is completed, including installation of the aileron linkage, and now ready to begin fuselage shaping.*







Above left: *EPP fuselage shaped with knife and sanding block. The prototype fuselage has an "area rule" design feature, or "Coke bottle" shape when viewed from the top. Dave decided not to carve this detail, thinking the fuselage would be stronger with a straight-side fuselage, and easier to cover.* ***Above right:*** *EPP fuselage shaped, and ready for spackle filler. Wing and horizontal stabilizer covered in light gray Ultracote heat shrink covering.* ***Below:*** *Dave's F-5, finished in Ultracote, with Sharpie marked panel lines, Ultracote Swiss national insignia, and lettering from Joker's Graphics.*

Flying 1 - Dave Garwood

In the days just before, I'd seen Alex's F-5 and Larry's F-5's both fly fine, so I had no doubt about basic airworthiness of my Tiger, but I had been wondering how much of a limitation the scale-like short span would present to its maneuverability for rock-and-roll flying, and its ability to hang in light lift. I wondered if my light-as-possible airframe would be able to penetrate head winds and stay out in front of the hill when the wind speed kicked up. Turns out, these worries were for naught.

Joe Hosey launched for me from a 150 foot hill with about 10-12 MPH wind, maybe 15 degrees off straight in. The model was trimmed so well and felt so solid in this moderate lift that I was able to roll it on the initial climb out. After the first turn to cruise parallel to the hill, still no trim needed, and the elevator throws felt good, too. Could this short span slope jet pull a loop without snapping out? Why yes, with a preparatory dive it loops just fine. I was surprised how round and graceful the Tiger's loops were; it seemed as if I was flying a much longer span sailplane.

All righty then, now how about the stall? Climb for altitude and gently pull back on the elevator to produce an intentional forward stall. Uneventful - the F-5 dropped its nose straightaway, fell for a couple feet and just began flying again, like any well-behaved slope glider. I'm impressed.

In some mild turning and burning through the figure-8 slope pattern, I saw no tendency toward tip stalls. Further, I had no problems staying up in light to medium lift on a medium size hill, another relief.

After a few minutes for flying I passed the transmitter to Joe Hosey and asked him to fly for the camera.

In summary, my Tiger rolls at about 720 degrees per second, loops as well as a Sig Ninja (48-inch span sport slope sailplane), resists tip stalls, is well-behaved in intentional forward stalls, and hangs as long as I want in light and medium air. I conclude that the Magnum Models F-5 Tiger is a great-looking and a fine-flying glider.

To expand the breadth of the review, I've asked two other Magnum F-5 Tiger pilots, both are old flying buddies, to relate their experiences flying the model.

Flying 2 - Joe Hosey

I would say about the F-5 that it is a fun to fly slope jet that flies like it looks. I found it to be quick and nimble but not displaying any bad habits. As you know I flew the F-5 on a day that the wind wasn't blowing straight into the hill and it was rather light, too, but still had a great time while flying for the camera.

The nice feature about this airplane is it's size and it's sexy good looks; people stop what they are doing to watch it zoom by on a high speed past. My favorite thing with the F-5 was to climb up high and make a fast close-in pass. Or, if I got tired of going fast, I could trim it up and fly it like a 1-26 and give my thumbs a break.

All things considered, I would recommend the F-5 to anyone that wants a little jet time on the slope. Be aware all your slope friends will want you to hand over the transmitter for a while.

Alex Paul's Magnum Models F-5 Tiger, photographed here during one of the flights during its first flying day. Alex launched over Palmer's pasture in relatively low wind speed and was pleased with the with the model's performance in light lift.

Flying 3 - Alex Paul

I was surprised at how little lift the F-5 required to stay in the air. I know a number of us were looking at the short wingspan and thinking it would take a considerable amount of lift.

I think there are two key factors to its lighter air performance. First is a very light wing loading. With micro gear installed,

Above: *Joe Hosey, from Wichita, Kansas launches Dave's F-5 at Minooka Hill. After initial test maneuvers, Joe flew the model for photographs. Photo by Alex Paul.*

Left: *Alex Paul has a bounce in his step and a grin on his face after initial test flights. Al's F-5, finished in US Navy "aggressor squadron" scheme, was built and finished at the Magnum Models factory and delivered at Wilson Lake. Alex traveled to the MWSC from Nassau, Bahamas, and had two planes custom built and delivered to him at the event.*

Larry Blevins' personal F-5 Tiger, photographed here during first test flight on a 40-foot inland hill, actually a working pasture on Palmer's cattle farm in Lucas, Kansas. Note the clear canopy of a later-release kit.

it is very light. Though I don't actually know what the all up weight, it is without question the lightest scale sloper I have owned. The second thing is I believe the wing area is larger than it looks. With its bottom mounted wing, the underside of the fuse, both before the leading edge and after the trailing edge is broad and flat and appears to increase the wing area. I am no aerodynamicist, but it's in-air performance clearly demonstrates there is more going on with its light air performance than just the actual wing alone.

A couple of us flew Magnum F-5's for the first time at the Midwest Slope Challenge in May of 2008 and the plane handled everything from 7-10 mph winds up to and including 25 and 30 mph. The plane was very well mannered, and really had no bad habits. It was an outright blast to fly. It looks like the real deal in the air, flies easily in the conditions we covered with it, and of course it bounces well on those unintended landings.

In my opinion, Larry Blevins of Magnum Models did a most excellent job with the F-5 and I look forward to future kits from his company.

In conclusion, I have found that Magnum Models F-5 Tiger a fine-flying glider that can be built in about 12-13 hours of workbench time. It presents a scale appearance convincing enough that a few hours spent detailing the model is rewarded with a terrific looking slope jet.

RESOURCES

Airtronics
<http://www.airtronics.net>

Magnum RC Models
<http://www.magnumrcmodels.com>

Larry Blevins, designer and kit maker
<larryblevins@magnumrcmodels.com>

F-5 Freedom Fighter and F-5 Tiger
<http://en.wikipedia.org/wiki/F-5_Tiger>

F-20 Tigershark
<http://en.wikipedia.org/wiki/F-20_Tigershark>

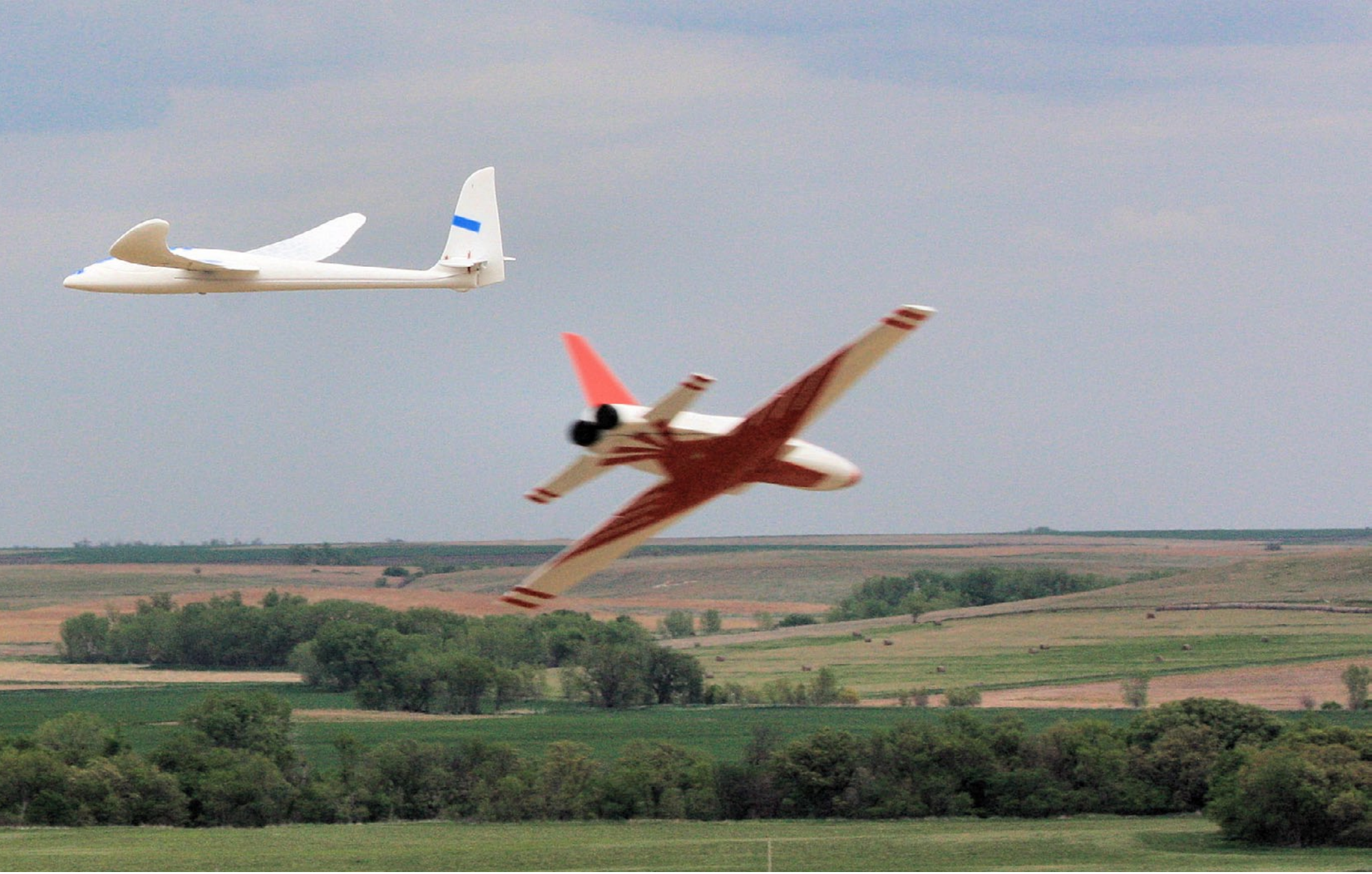
T-38 Talon
<http://en.wikipedia.org/wiki/T-38_Talon>

Aviation Photos for paint schemes
<http://www.airliners.net>

Aviation Photos: Northrop F-5 Freedom Fighter/Tiger (1876 photos)
<http://www.airliners.net/search/photo.search?aircraft_genericsearch=Northrop%20F-5%20Freedom%20Fighter%2FTiger&distinct_entry=true>

Aviation Photos: Northrop F-20 Tigershark (10 photos)
<http://www.airliners.net/search/photo.search?aircraft_genericsearch=Northrop%20F-20%20Tigershark&distinct_entry=true>

Aviation Photos: Northrop T-38 Talon (563 photos)
<http://www.airliners.net/search/photo.search?aircraft_genericsearch=Northrop%20T-38%20Talon&distinct_entry=true>



Larry Blevins' F-5 launched out over Palmer's working pasture and into light lift, maybe 5-8 MPH wind. That's Tom Hick's Multiplex Easy Glider floater already out in the slope soaring pattern.

Midsummer slope soaring trip

Volksrust 2008-2009

by Piet Rheeders, pietlewis@absamail.co.za
photos by Izak Theron, fuzzchucker@gmail.com

Once again, and likewise last years trip in January 2008, we head for “Tamatie Berg” for a midsummer slope soaring holiday. Last year only five pilots made the trip, but this time ’round we had about 20 RC glider pilots attending this informal slope soaring gathering.

My personal goal was to maiden the slope Rockwell Aero Commander that I did not fly at the PSS event in October last year, and therefore I planned to stay at least one week, knowing that the conditions on “Tamatie Berg” can vary from just about no wind to a raging 40 kph wind on any day.

Day 1

I was the first person of our group to arrive on top of “Tamatie Berg” at 12 noon on Monday the 29 December 2008 and found a group of hang glider pilots already unpacked and ready to fly.

However, the wind was a little too strong and gusty for them to fly their normal paragliders and two of the younger pilots decided to jump off the side using only their normal parachutes. After the long climb back up the mountain, they retreated for the day and I had the whole slope for myself. My friend Evan Shaw could not make it until 4.30 PM due to a part that he had to replace on his VW Combi microbus.

The wind was square on the slope and I could fly my lighter slope ships straight away.

I decided to fly the Hillbilly first, just to find that about 30 meters away from me it started to glitch badly and I had to turn back, land in a hurry, and sustain some damage to the right wing tip. Investigating the problem of short range found that the aerial was broken off inside the plastic sheeting and that I was effectively left with 12mm (1/2 inch) of aerial, proving once again the importance of a proper range check before flying.

Fortunately, I made sure that I had a good few gliders with me and switched to my two meter CMP Omei, an electric glider, but with all the electrics removed. Had a ball of a time until Evan and Edmond arrived just before 5 PM and they managed to fly for another hour until 6 PM before we retired for the day.

Day 2

On Day 2 (Tuesday) we had the normal morning mist and overcast sky, but by 10 AM all this had burned off and it looked like another glorious day on the slope. Once on top we found the slope lift very weak, but still managed to fly our thermal ship.

By midday the wind dwindled away totally and in the distance we could see some thunder clouds building up. At this stage we were not alarmed as it was far away, but the drama was still to unfold as a loose cloud cell started to make its way towards the slope. At first it appeared to pass to the left of the mountain, but then suddenly changed direction and headed straight up the hill.

We all scrambled to dismantle our gliders as fast as possible, but I just could not get to do the Aero Commander, which was in the shade under the tent when the first heavy rain drops came down. Edmond and myself were now trapped with Aero Commander under the tent, and in the meantime the cloud must have grown in intensity accompanied by some serious lightning bolts.

At this stage I reckoned that it would be safer inside my car and ran for it. Just as I got comfortably in my seat I saw the canopy of the tent filled up like that of a parachute. My first thought was to save the Aero Commander and I rushed right back just to be in time to stop the now mangled tent from crushing the Aero Commander. Edmond did likewise and together we managed to keep the Aero Commander dry and safe for the next 10 minutes.

Evan’s microbus was parked next to the tent when all this happened and he promptly photographed all the action. Then as suddenly as the rain, wind and lightning started, it stopped. Edmond and myself, totally soaked from top to toe, appeared from under the wrecked tent, fortunately unharmed and the Aero Commander in one piece, dry and undamaged.

After the storm pass over there was no wind on the slope and it took a while to

dismantle the damaged tent and then we retired (psychologically somewhat hurt) to our overnight accommodation.

Day 3

On Day 3 (Old Year eve) early morning indication was a light southerly wind, and this proved to be the case when we arrived on top of the mountain.

Evan was first to launch his two meter Tsotsi over the side and seemed to maintain height easily. I launched my two meter Omei and straight away struggled to maintain height. I worked the ridge in long passes from left to right and made my turns as smooth as possible, but still slowly but surely lost altitude until I was halfway down the hill.

That's when I decided to head out over the valley to seek some thermal lift.

The glider was getting smaller and smaller by the moment, then suddenly the model surged upwards and I immediately turned into the weak lift. As slowly as the glider went down, it now began to regain the lost altitude, but at the same time drifting away to the right. About ¾ of the way back up, I cut out and headed back to the hill. The light wind on the hill had now improved somewhat and after two passes of the ridge managed to land safely on top. Twenty minutes had passed since the launch and my concentration and flying skills were tested to their limits, the kind of flight you're glad when it's done.

The wind now stared to turn easterly and we moved to the east point of the mountain and for the rest of the afternoon we enjoyed good lift. I flew my 'glass Zagi and eventually by 6 PM we stopped flying for the day. I could have flown the Aero Commander, but the landing space on the east side is not great, and it was clear to me that the slope Aero Commander was not going to fly in 2008.

Day 4

New Years day early morning yielded no wind and we decided to start out on the northwest slope. I phone my friend Glen from Durban who was due to arrive, and he confirmed that he would be there at 1PM. By noon a light NW wind set in and we could once again fly our light thermal gliders. This time 'round I was not so lucky and had to do an out-landing half way down the mountain. The binoculars and the two-way radios that I brought along came in handy as I drove around and down the mountain, and from the road below Evan gave me direction instructions to retrieve the glider which had landed safely with no damage.

Day 5

On the second day of the new year Evan and Edmond left for home and Glen and myself returned to the top of the mountain to find Ken Kearns from the JOMAC club already unpacked and ready to go. Other members from the BERG club (Mike, Charl, Peter and Len) were also due to arrive.

Big Electric thermal ships were the order for the day as there was not much wind on the slope to speak of. However, the forecast for Saturday and Sunday were for good and strong NW winds, and that was what I was waiting so patiently for.

Opposite page: The author's photo of the approaching storm. Left: Evan Shaw captured this photo of the author protecting his Aero Commander from the rain and wind.


N47RF

Day 6

Saturday the 3rd of Jan 2009 will go down in my book as a highlight in my aeromodeling career as this was the day that the Aero Commander finally got airborne, five months after the project started.

The wind started out from the NW and kept on building in strength until Len Tomas could maiden his ¼ scale Slingsby T21 glider. And then shortly after that, around 1.30 PM, with a steady 20 kph wind, it was the Aero Commander's turn.

All my fears of this model being too heavy were immediately put to rest as after the second pass she climbed high above the slope face. The CG and trim were spot on and I did not need to change any trim settings at all.

What surprised the most was that it was even sensitive to thermals and with four to five turns it would climb out above the slope ridge with more than enough height to do a proper landing approach.

Day 7

On Sunday the wind made up for all the days it did no blow — 30 to 40 kph. Needless to say, the Aero Commander thrived in these conditions and the more I pushed the model through its paces the more it had to offer... with near axial rolls and very little down elevator required to maintain level inverted flight. Consecutive loops also were not a problem.

The huge flaps came in very handy on landing and especially so on Sunday when the wind was very strong and the Aero Commander needed them to slow it down.

Izak Theron took launching and fly-by pictures of all this and it was very rewarding to see the Aero Commander in the air at last.

All of the big (4 meter plus) gliders took to the sky and everyone flew well with so much slope lift that you didn't even have to think about it. Later in the afternoon, some of the pilots, those that had their flying fix with their big ships for the year so far, switched to their Zagis and started to fly what I call a Can-Bat competition — that is, trying to hit the soft drink can on top of the flag pole.

Here Izak showed us the way with a perfect hit that I managed to capture on camera.

On Monday morning all the Berg Members shortly after breakfast headed home ready for the new year and all its new challenges and with another successful trip to Volksrust engraved in our memories.

PS: The slope Aero Commander was designed using only the full-scale drawings that I found on the internet and no CAD drawings were made to build from. This project was covered in a previous issue of the *RCSD* and also on the BERG gliders blog at <http://www.berg-gliders.blogspot.com/>

All of that flap area really helps when landing!

VOLKRUST 2008-2009

Photos by Izak Theron and Piet Rheeders

Norbert's SB-10

Left: Arrival of the second group, Mike, Charl and Peter.

Below: A collection of scale gliders on the Volksrust.

Right: Ken explaining to Glen how he makes the scale pilots.

Left: Piet posing with his Discus. Russel and Shane stealing some limelight as well.

Ken and his electric ASH26.


Slingsby Sky vintage

Ken's beautiful Slingsby Sky

Charl launching Gert's Coroplast MiG.

Andries launching his ASH26

Len’s built-up Victor. Very well detailed.
And it flew beautifully, as can be seen here.

Len's Slingsby Sedburg T-21

Len’s Slingsby Sedburg T-21

Norbert's SB-10

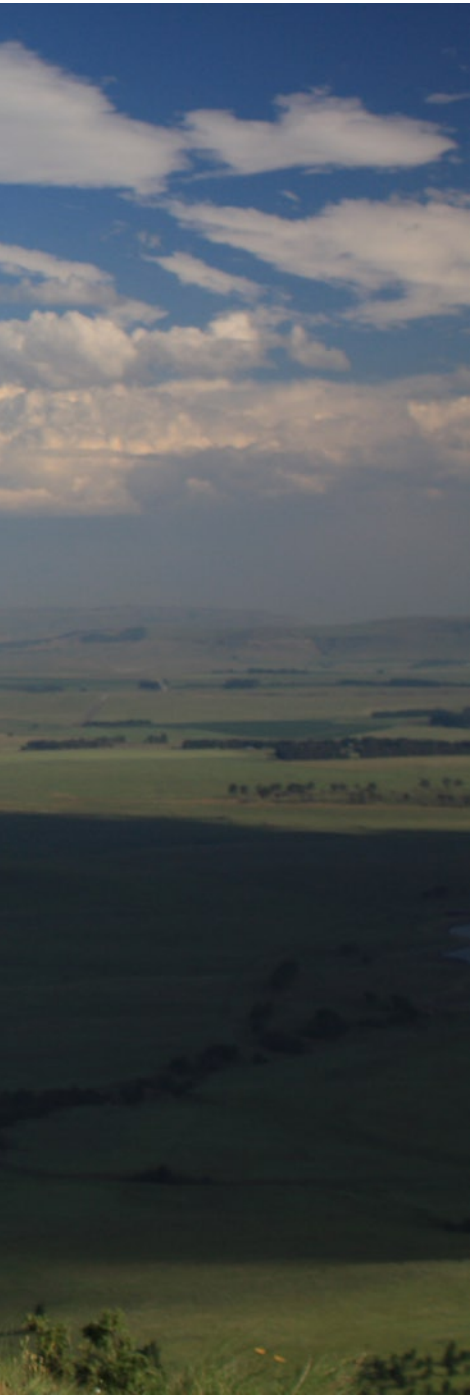
Norbert's SB-10


Ventus-2 ax


21

Mike’s Ventus 2AX with power pod, launched by Charl.


ZS-KFO
CELSTAR



Ken brought his Celair Celstar GA1 to the slope. It was flying well until the right wing folded some distance from the root.

Mike was given the carcass after all of the radio gear and fixtures were removed. Mike's progress on the rebuild is being posted on the BERG blog site <http://www.berg-gliders.blogspot.com/> starting on January 12th 2009.

Charl prepares to launch Mike May's Diana 2.

Piet’s Emoyeni in flight after being launched by Charl.

Top row: Charl and Peter carrying Mike's 15kg DG500, and Mike doing the pre-flight.

Bottom row: Charl straining to pick it up and finally launching it into the slope lift. Opposite page: Beautiful!

Peter and Len with the Bird of Time before it went just about out of sight on the good lift we had.

Evan’s Thotsi flying in the light lift on the south slope.

Some of the pilots flew the Can-Bat competition — that is, trying to hit the soft drink can on top of the flag pole.

Here Izak showed us the way with a perfect hit that Piet managed to capture on his camera.

Sunset on Volksrust

EATON AIR RC

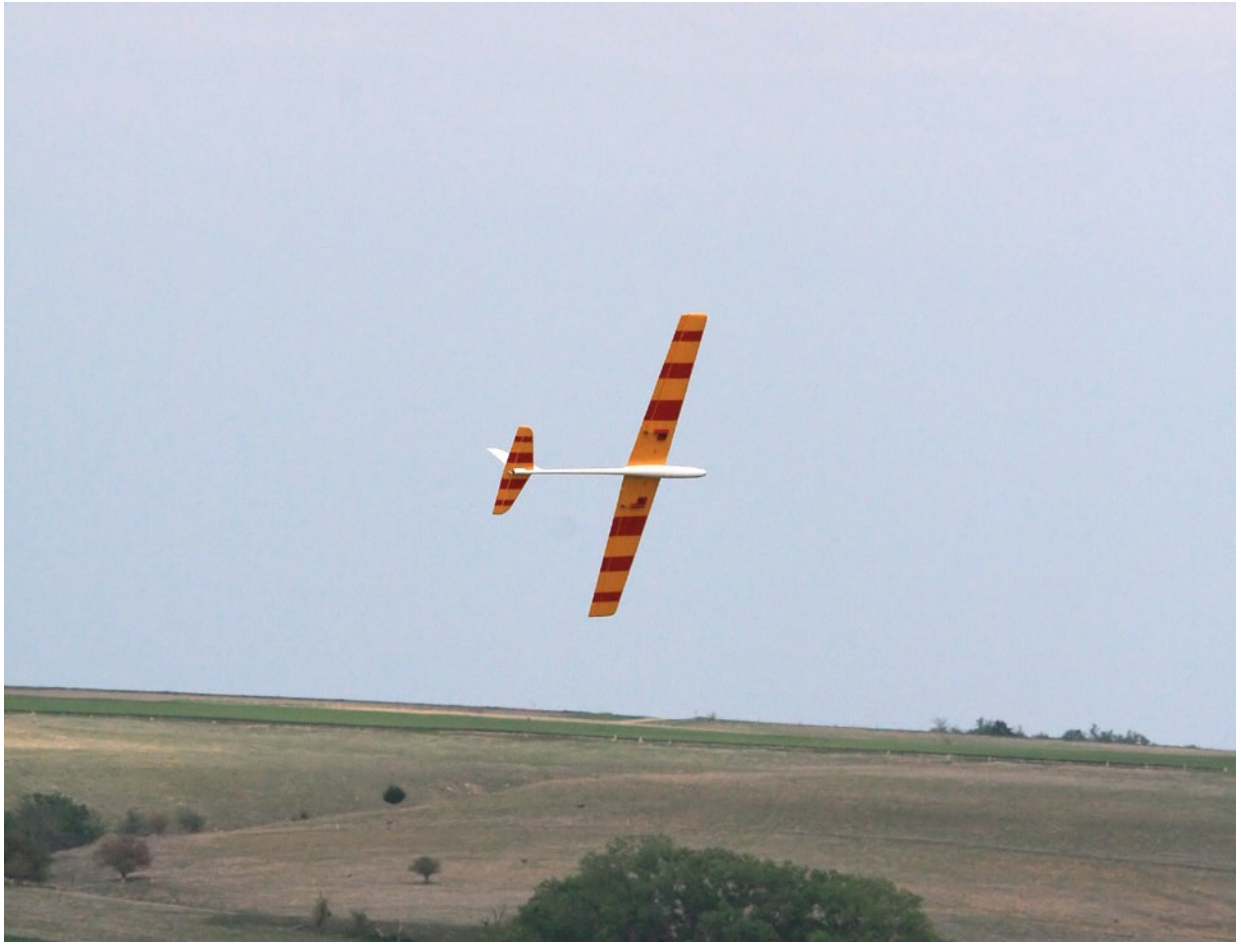
BAD VOODOO ODR

Review by Alex Paul, alexpaul@coralwave.com

Manufactured by Eaton Air RC, the Bad Voodoo "One Design Racer" goes beyond what I consider to be a typical ODR class racer.

A brief history of the One Design Racer: The ODR was originally conceived of to keep the cost of a high performance slope racer affordable while setting strict spec requirements. This narrowed the gap regarding individual sailplane performance advantages and helped insure it was the pilot's ability not the plane that was tested in a contest.

The author with his Bad Voodoo, complete with wing logo. Dave Garwood photo



Bad Voodoo on a test flight. Photo by Dave Garwood

The ODR was designed by the San Diego Torrey Pines Gulls model sailplane club in the 90's. The ODR's are in use by the Wings over Wilson club in Lucas, Kansas, for the Midwest Slope Challenge.

The 60" ODR can be constructed of foam and fiberglass, like the Eaton Air Bad Voodoo, or of all EPP foam like the Magnum Models Cobra Racer and various other offerings by some excellent manufacturers.

Eaton Air has done an amazing job of designing their second ODR kit. This one comes with a glass fuse. It flies light to medium lift very well, and absolutely loves rock and roll winds. The Bad Voodoo can be ordered as a V tail version or with conventional tail feathers consisting of vertical and horizontal stab with elevator.

When I entered the Midwest Slope Challenge for the May, 2008 event, I traveled from my home in Nassau, Bahamas. Though I have gliders here and in New England I decided to see if I could have a couple of ready to fly planes delivered to the event for me, to avoid shipping hassles.

As promised, I had an F-5 RTF built by Larry Blevins from Magnum Models and a Bad Voodoo RTF built by Erik Eaton from Eaton Air RC. Dave Garwood covered the F-5, so that is all I will say about it, other than I love it!!

A Bad Voodoo in the ODR race at the 2008 Midwest Slope Challenge. Photo by Alex Paul

Now to the Bad Voodoo!!! Man, what eye candy it is, with performance to match. I met up with Erik in Lucas at a farm hillside with fairly light wind coming straight in, and Erik was already in the process of flight testing and setting trim on three other Bad Voodoo's he had built for other competitors flying the MWSC. I had the same level of excitement once I saw the Bad Voodoo as I got when I finished building my first Charlie Richardson kit. I couldn't wait to give it a toss and play!! Erik worked with me on getting the trim dialed in and it was ready for its first flight.

You know how you feel with the first toss of a new plane? Well, that was me at that moment. The toss, the initial stick twitch, and it was slope soaring heaven with this beautiful thing even in the light conditions. I'm glad it was lighter lift as it gave me a chance to appreciate just how well it flies when you might otherwise be scratching.

It just got better through the week as winds started picking up. I can't comment in this review about the build as I received it finished and ready for receiver by the manufacturer, so this is more of a pilot's flight impression and

A Bad Voodoo dives into the course at the MWSC 2008. Photo by Alex Paul

Left: Setting travel on control surfaces. Author with Erik Eaton of Eaton Air RC. Photo by Dave Garwood

Above: Erik Eaton launches my Bad Voodoo. In the background, Marley Palmer from Lucas Kansas is preparing for the next flight with her Bad Voodoo. Photo by Dave Garwood

Left: Another Eaton Air Bad Voodoo being set up for a test flight. Larry Blevins (Magnum Models) on the left, Marley Palmer and Larry Purdy from Kansas with Erik Eaton and the author dialing in the Bad Voodoo. Photo by Dave Garwood

opinion of the quality and design, based on my many builds and stockpile of planes.

The Bad Voodoo has a carbon fiber reinforced glass fuselage with slip off nose cone. The fuselage looks like it belongs on a mini F3B ship and it is made strong.

The elevator servo is center mounted ahead of the wing saddle with servo control horn and screw easily accessible with the nose cone removed. A micro receiver, with switch and battery, fit snugly in the nose with room for lead up front to set the CG.

It comes standard with a carbon fiber reinforced sheeted foam wing with a strong spar system, complete with preformed leading and trailing edges. The wing halves just need to be joined by the builder. Eaton Air put together a two piece wing for me with removable tail pieces for packing and travel by my request.

The wing rod tube that was installed takes a 5/16ths wing rod. I have both an aluminum and steel rod for adjusting the all up weight for changes in lift conditions. There is plenty of room under the wing to add plates for lead-sledding it. The dihedral is set with a pre bent wing rod. The wings are very well made and appear to be bagged as they were strong enough that when pilot error caused it to plow a hillside the hard way (coming nearly straight in hot) the wings were unscathed other than extreme and uneven dihedral now set in the wing rod.

(This brings up another topic. The benefit of keeping color schemes on wings asymmetrical for immediate orientation and attitude recognition. It makes life better when flying at high speed, especially when playing chicken with the hillside.)

My Bad Voodoo came in so hard I heard a pilot at the other end of the slope scream “INCOMING!!!!!” as he hit the deck. Based on the loud thud when it hit, I figured the show was over for this one, and immediately began looking around for Erik to request a Bad Voodoo kit to take home and build. I didn’t see Erik, but when I got down to the scene of the crime I was pleasantly surprised to find fairly minimal damage. The rear wing mount and nose of the fuselage required some field repair work with a bottle of CA and some tape, but was ready for another toss with a half hour of field repair work. With new wing rod in place and reasonably minor repairs, it flew just as well as it did before the “unfortunate landing.” That proved to me that this is a tough plane that will take a good amount of punishment.

Due to this accident happening during a practice session before the race, I was unable to compete with it, but I am certain the Bad Voodoo is a top notch contender.

Flying the Bad Voodoo in lighter lift, the plane presents armchair flying with a light thumb. Medium lift gets the grin going with very good handling and it builds good speed. Stronger lift shows what it can do as a true racing class glider. It is fast, strong, handles tight bank and yank turns with no detectable fall off, while keeping your toes curled for the flight.

As far as aerobatics, in good lift “the sky is the limit.” I know this is now reading like ad copy, but I am just that impressed with the Bad Voodoo.

When a designer manages to raise the bar, it moves a pilot's soul., doesn't it? I believe that Erik Eaton has managed to do just that. He has kept the Bad Voodoo within specs of the ODR requirements but has a well designed streamlined fuselage that lowers drag which I believe results in an increase in performance. It is my opinion that he is a very gifted and committed designer, and I feel we will be enjoying a lot of good times with what he comes up with. I like my first one so much; I have ordered a V-tail version for the 09'MWSC event and have a new fuselage to replace the one I dorked.

Update: I was just informed that Erik Eaton, of Eaton Air, and Larry Blevins, of Magnum Models, have combined their companies and are now operating under the name of Magnum Models. This will be a great team for producing lots of excellent stuff to fly. Larry Blevins is another outstanding designer and manufacturer of EPP slope planes, so I am psyched to see what these guys do as a team.

To get information, order a "Bad Voodoo," or just take a look at what Erik Eaton and Larry Blevins have to offer, go to: <http://www.magnumrcmodels.com>.

A V-tail Bad Voodoo in flight.
Photo by Alex Paul

The Tool Room

by Lothar Thole, lothar.thole@gmail.com

Oscillating Tools – Part 1, the Bosch PMF-180 E

This is the first in a four part series reviewing three multipurpose oscillating tools.

Part 1 brings you an introduction to oscillating tools and a review of the Bosch PMF-180 E, available in Europe and Australia.

Parts 2 and 3 will cover reviews of the Dremel 6300 Multi-Max (available in the USA only) and the Fein Multimaster (available internationally).

Finally, part 4 will be a comparison of the three tools.

The oscillating tool was invented by Fein over 40 years ago, which means that the Fein is the most mature and has the most comprehensive set of accessories. Until recently, Fein had enjoyed patent protection over this technology. During the past year or so a number of competing tools were introduced including the Proxxon Delta Sander, the Rockwell SoniCrafter, the Bosch PS50 cordless and most recently, the Dremel 6300 Multi-Max. Bosch also introduced the PMF-180 E in Europe, Australia and other countries.

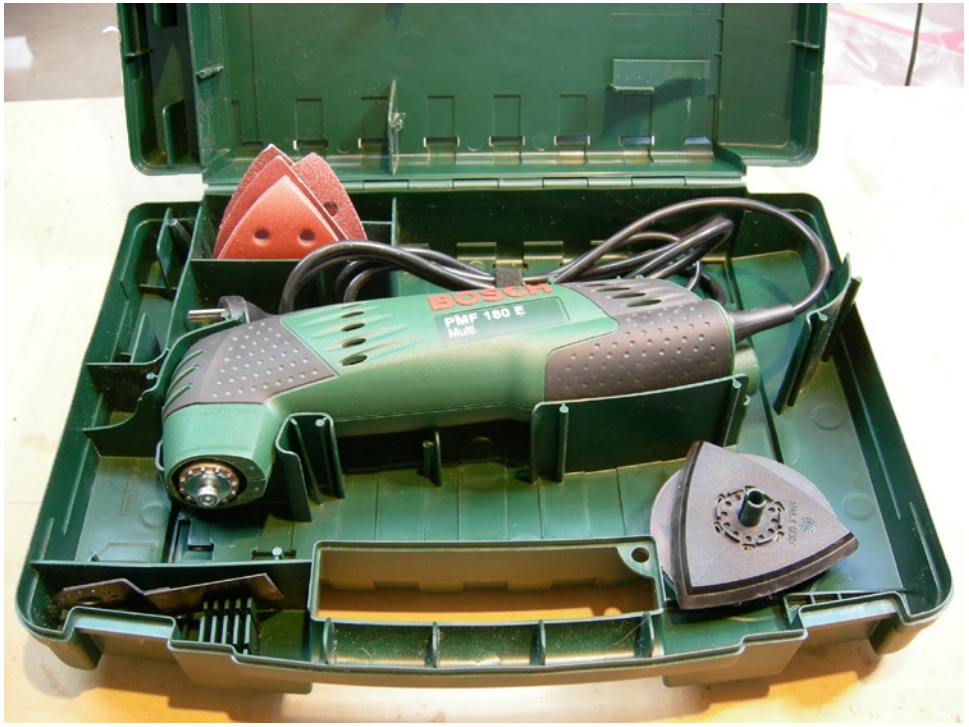


Photo 1. Bosch PMF-180 E

Oscillating tools are primarily designed for sawing soft metals, wood and plastics, for dry sanding of surfaces, corners and edges, for scraping, and for grout removal using the applicable accessories. The tools do their work by imparting a high-speed rotary oscillation through a small arc of around three degrees to the cutting blade or sanding disc. This makes it much safer to use than circular or reciprocating saws, whilst also allowing more accurate control of the cut.

The saw blades have an offset, making it possible to make flush cuts, and saw close to edges, in corners and hard to reach areas. Another advantage is that it is easy to make a plunge cut through the material without first having to drill an access hole for the blade.

It is important to let the tool do the work, which also makes it easy to guide the tool. This results in smooth cuts and minimal 'fringing' when cutting across the grain. Excessive pressure will result in poor handling and vibration.

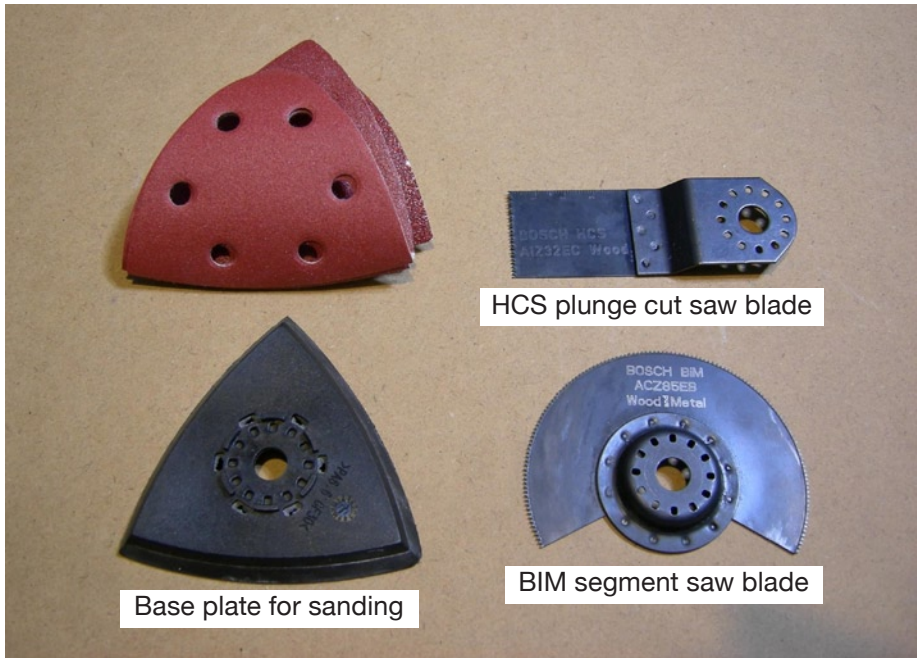


Photo 2. Supplied accessories

The Bosch PMF-180 E comes in a practical plastic tool case (refer to Photo 1), and is supplied with the following accessories (refer to Photo 2):

a) BIM Segment saw blade (wood, plastic and non-ferrous metals). This has a radius of 43mm, resulting in a saw tooth movement of about 2mm back and forth.
b) HCS plunge cut saw blade 20mm wide (wood, plastic, gypsum and other soft materials). This has a radius of 80mm, resulting in a saw tooth movement of about 4mm back and forth.
c) Base plate for sanding – has holes for dust extraction when tool is attached to a shop-vac.
d) Set of five assorted sanding sheets
e) Allen key

Optional accessories available at this time, but not included in the kit:

a) BIM plunge cut saw blade 10mm wide (wood, plastic and non-ferrous metals).
b) BIM plunge cut saw blade 20mm wide (wood, plastic and non-ferrous metals).
c) HCS plunge cut saw blade 10mm wide (wood, plastic, gypsum and other soft materials).
d) HM-RIFF segment saw blade (glass-fibre reinforced plastic and other abrasive materials, grouting joints, soft wall tiles)
e) Different types of Velcro-backed sanding sheets, with and without dust extraction holes:
(Dark) – for metals, fibre-glass and plastics
(White) – for paint, varnish, filling compound and filler
(Diamond Paper) – masonry, stone, cement and thin set.
Fleece pads, polishing cloth pads.
All accessories from the Bosch Delta 93mm series.

Bosch PMF-180 E Technical Data	
Rated power input	180W
Output power	73.5W
No load speed	15,000 – 21,000 rpm
Oscillation angle, left/right	1.4 degrees
Weight	1kg

Setting up the tool for use.

a) Remove the Allen screw and washer from the tool holder (visible in Photo 1).

b) Align the blade or sanding plate with the tool holder in such as way that the openings in the accessory engage into the cams of the tool holder (see Photo 3).

c) Use the Allen screw to fasten the accessory to the tool holder. Tighten with the supplied Allen key (see Photo 4).

d) If the sanding plate was attached, ensure that the Velcro backing is free from debris (see Photo 5), and apply the appropriate sanding sheet to the plate.


Photo 3


Photo 4

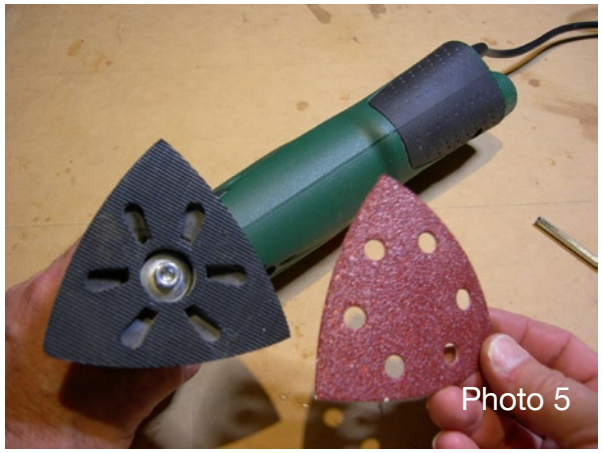


Photo 5

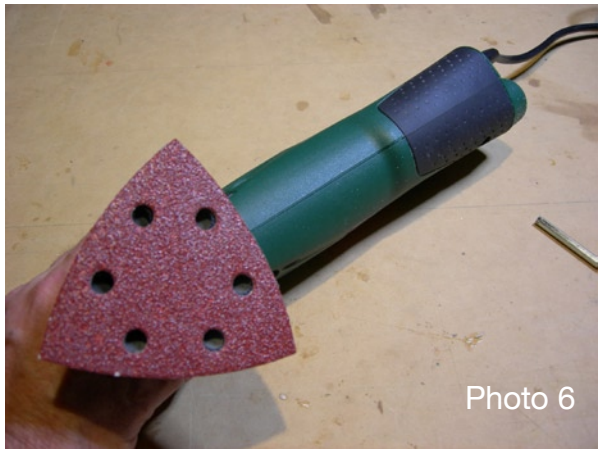


Photo 6

Photo 7

Photo 8

Photo 9

e) Press it against the backing plate with a light turning motion in a clockwise direction. To ensure optimum dust extraction, the punched holes in the sanding sheet should match with the holes in the sanding plate (see Photo 6).

f) For a safe and fatigue-free working position it is possible to position the accessories in any snap-in positions in the tool holder (see Photos 7 and 8).

g) The speed control wheel is located at the back of the tool (see Photo 9).

h) Warning! The dust from many materials may contain toxic chemicals. When sanding such materials attach a shop-vac to the vacuum connection on the rear of the tool (see Photo 9). Work in well-ventilated areas and wear appropriate protective equipment.

Example of Use:

Wing Folding Mechanism for Ducted Fan Jet

a) Ply templates for the wing folding mechanism are cut using the BIM segment saw blade. Paper patterns are glued to the ply using spray adhesive (see Photo w1).

b) The blade is aligned with the paper pattern (see Photo w2).

c) Applying light pressure, a plunge cut is made through the ply (see Photo w3).

d) Cuts can be started from inside corners. This is difficult to achieve with a hand saw (see Photo w4).

e) One side has been cut out (see Photo w5).

f) The second side is cut out the same way (see Photos w6, w7).

Photo w1


Photo w2

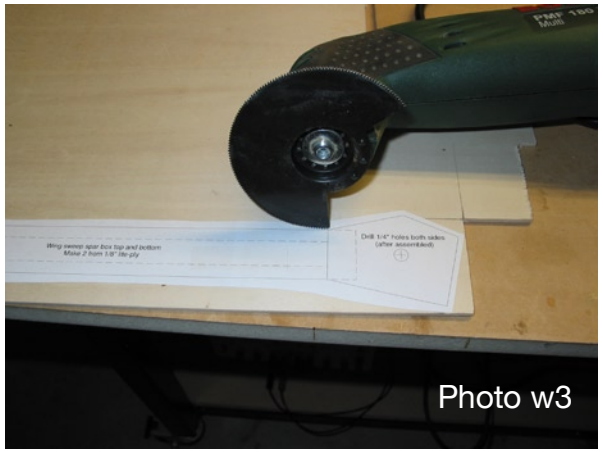


Photo w3

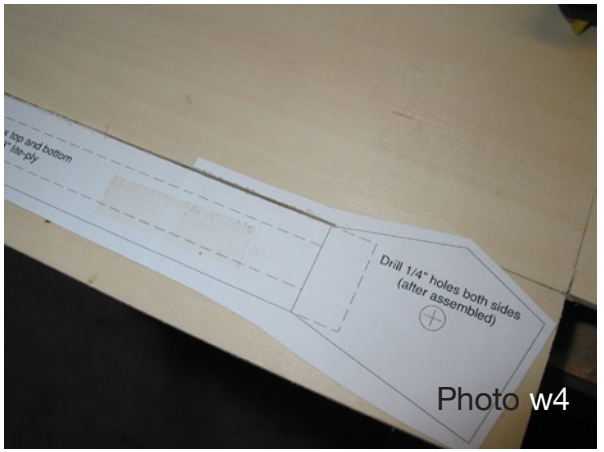


Photo w4

Photo w5


Photo w6

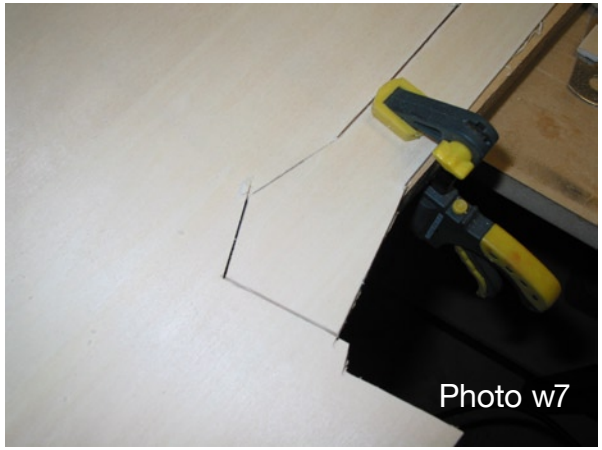


Photo w7

Photo w8

g) After attaching the sanding plate and 120 grit sand paper, the edges are sanded smooth (see Photo w8).

h) The other pieces are cut out in similar fashion (see Photos w9, w10).

i) Pieces can be sanded to fit even after gluing (see Photo w11).

j) The finished article (see Photo w12).

Photo w9

Photo w10

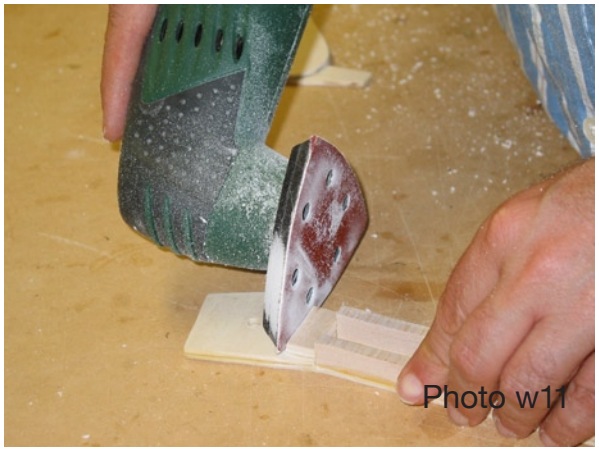


Photo w11

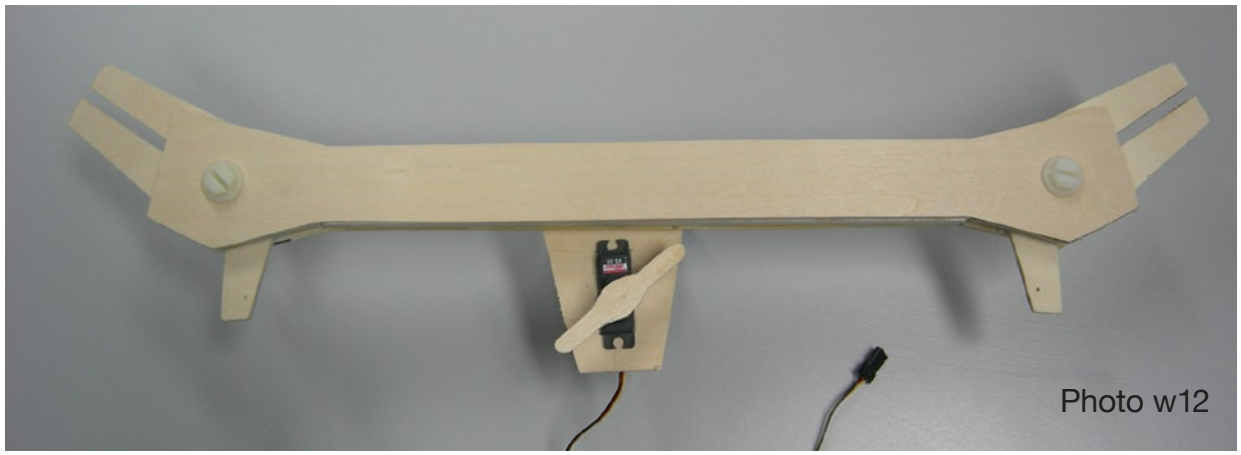


Photo w12

Example of Use:

Foam Canopy
for Ducted Fan Jet

k) Two ply templates are cut using the BIM segment saw blade. Paper patterns are glued to the ply using spray adhesive (see Photo c1).

l) The blade is aligned with the paper pattern (see Photo c2).

m) Applying light pressure, a plunge cut is made through the ply (see Photo c3).

n) The line is followed, taking care that the blade is cutting the ply at a shallow angle (see Photo c4).

o) Working all the way around, the entire template is cut out (see Photos c5 – c8).


Photo c1


Photo c2


Photo c3

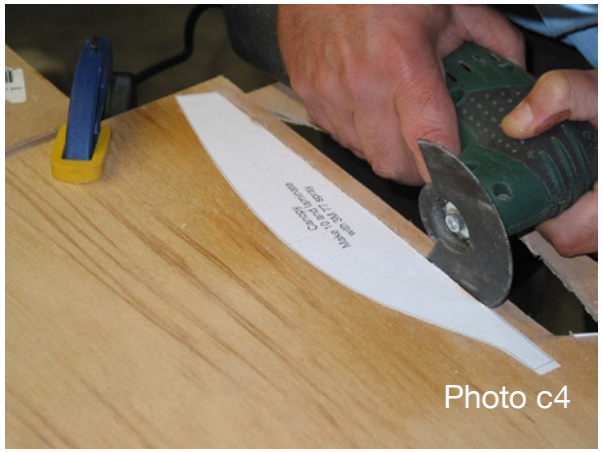


Photo c4


Photo c5


Photo c6


Photo c7

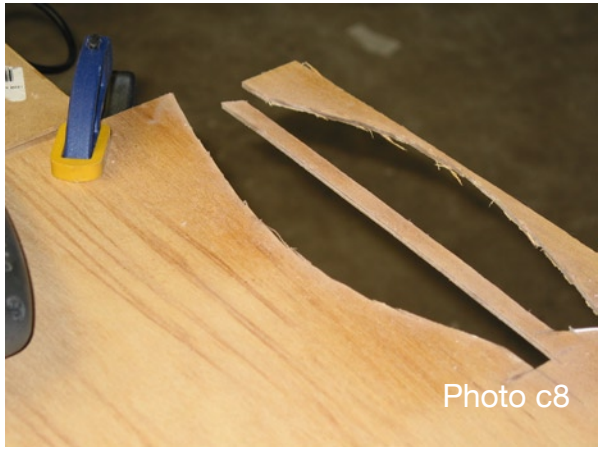


Photo c8


Photo c9


Photo c10


Photo c11

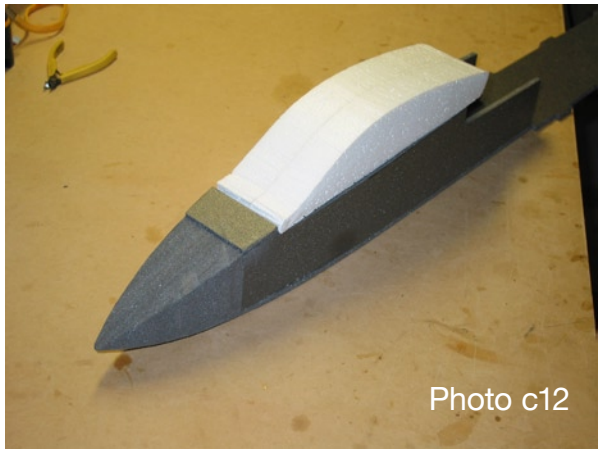


Photo c12

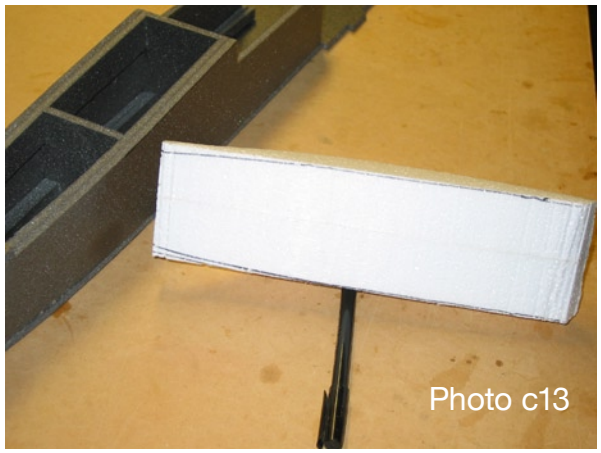


Photo c13

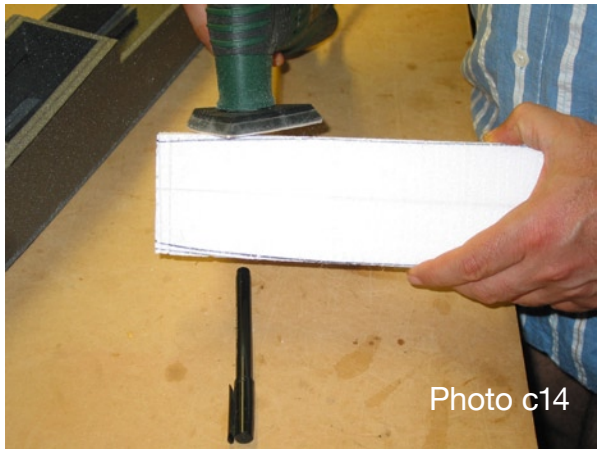


Photo c14

p) After attaching the sanding plate and 120 grit sand paper, the ply template is sanded to shape (see Photos c9, c10).

q) After clamping the ply template on either side of the canopy foam block, the foam is sanded to shape (see Photo c11).

r) The foam has been sanded to shape in the horizontal axis, and is trial fitted to the fuselage (see Photo c12) and marked from underneath.

s) The canopy is now sanded in the vertical axis (see Photos c13, c14).


Photo c15

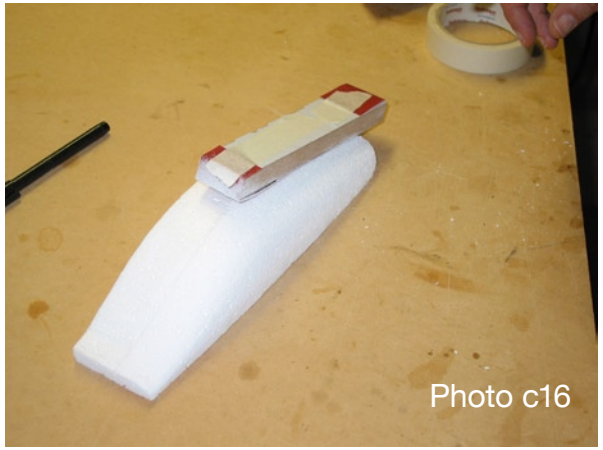


Photo c16

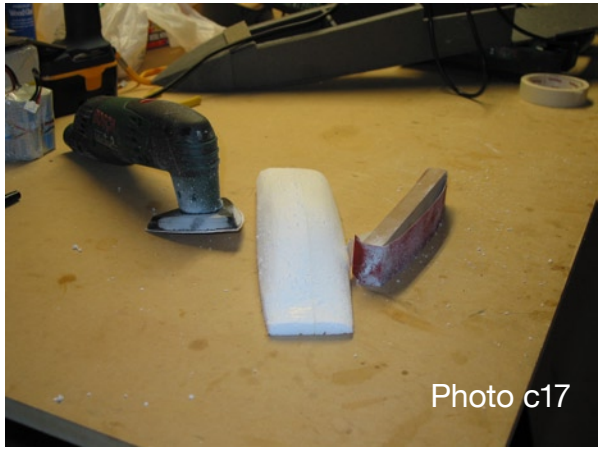


Photo c17

t) The rough canopy is complete (see Photo c15).

u) Final sanding is performed by hand (see Photos c16, c17).

v) The finished article ready for filling and painting (see Photo c18).

When sanding Styrofoam, attaching a shop-vac is a good idea to keep the mess to a minimum.

Thanks to fellow modeler Bruce Page for assistance in the application examples.

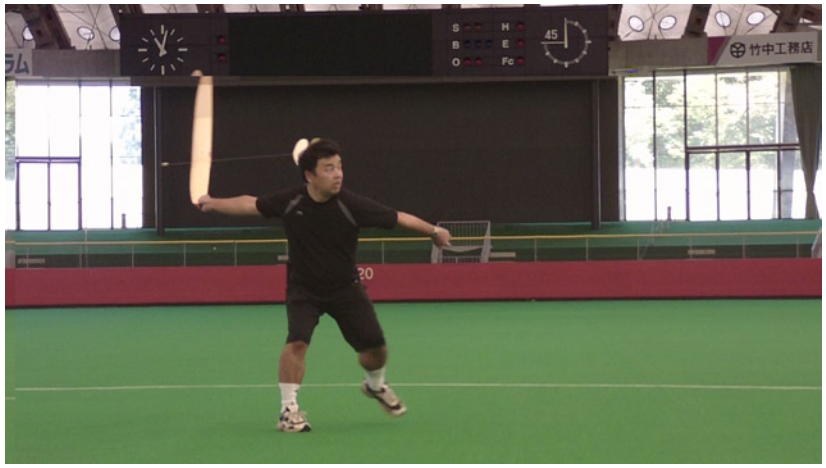
Part 2 will cover a review of the Dremel 6300 Multi-Max.

Photo c18

New FAI-F1N World Record Set For Indoor Hand Launch Gliders

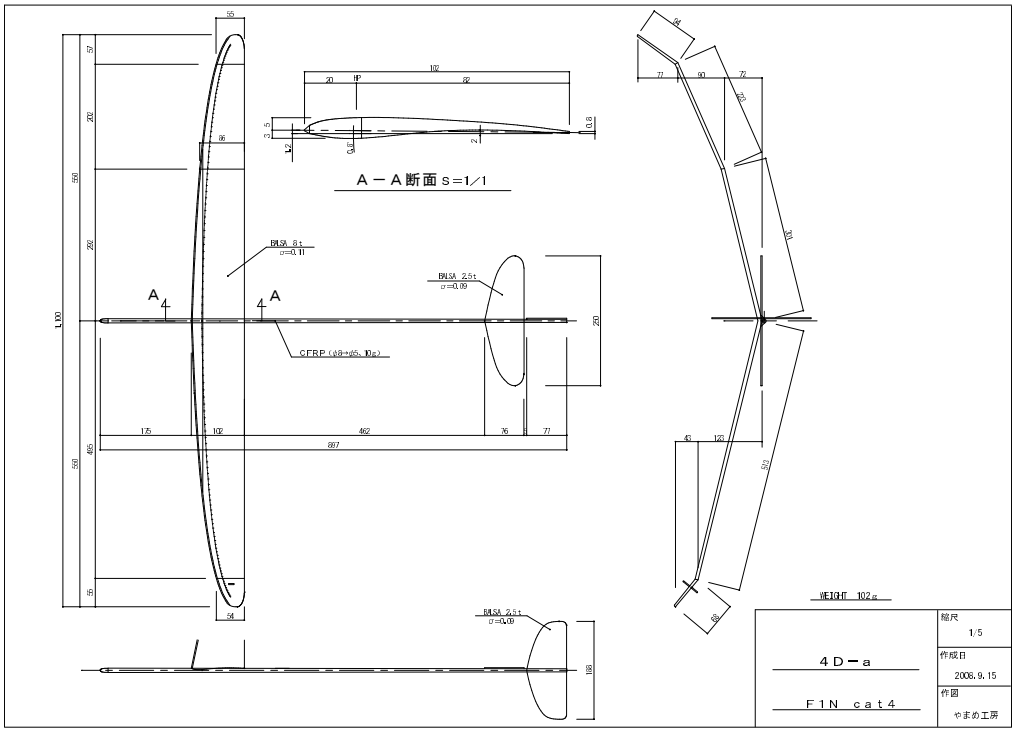
Courtesy Kurt Krempetz, krempetz@comcast.net

<http://hosted.schnable.net/amaglider/assets/indoor-gliders/handlaunch-gliders/new_fai-f1n-world-record-for-indoor-handlaunch-gliders.html>



The following information was obtained from Akihiro Danjo of Japan.

Mitsuru Ishii set a new world record at the Odate Jukai Dome in Akita, Japan. This dome has a ceiling height of 46.3m (152ft). This is the new FAI F1N record. The record is a time for one flight of 1 minute 41.2 seconds! To the left are pictures of Ishii and the model. The model's wingspan was 110cm (43.3in) and the model weight was 102 grams. It was estimated that Ishii was achieving launch heights for around 30m (98ft) to 35m (115ft). He was throwing with a peg. Congratulations, Mitsuru Ishii!




21