

# DRAGONFLY BUILDERS AND FLYERS NEWSLETTER

THE OFFICIAL VOICE OF DRAGONFLY BUILDERS ALL OVER THE WORLD

Volume 101

January/February 2003



In issue #99, Jeff LeTempt reported on the construction of his hoop gear for his Mark II Dragonfly. Drew Aurigema, on his way to the Coffey County Tandem wing fly-in, stopped in at Jeff's house and coordinated the lay-up of the gear.

The two of them then drove to the fly-in, and on the first day of the fly-in (Friday) they proceeded to remove the piece from the expertly built wooden mold Jeff constructed.

Jeff has made considerable progress

since then, as made evident by the photo here. This is Jeff's plane, a proven Mark II, which Jeff has converted to a Mark III, sitting in Jeff's front yard. Jeff has done other modifications, hopefully we'll be reading more in the future. ~Pat

## First Ottawa KS, then Coffey County KS, now Sullivan MO?

By Jeff Letempt

Some people say...”if it ain't broke, don't fix it”. Others would probably submit that there is almost always room for improvement. No matter what your philosophy may be you will almost certainly agree that over time things tend to change for a variety of reasons. With some good planning and a little luck, hopefully that change will be for the better. Where am I going with this? The 13<sup>th</sup> Annual Field of Dreams Tandem Wing Fly-In is moving to a new home!!!

Spud called me in December and one of the things we talked about was the fly-in. The 2002 event was GREAT and he was looking to



Outside view of the hangar and surrounding gathering area.

We talked on the phone for about an hour, brainstorming about the fly-in and the conclusion was that the facilities that I have available were much better suited, at least in the life support area. Spud said that he has always been a strong proponent

make this years event even better!

With all of that said...I agreed to take on the responsibility of organizing the 2003 fly-in. Along with Spud's expert advice I came up with a little decision matrix to weigh the advantages and disadvantages with available facilities. I considered things like lodging, restaurants, accessibility via commercial air, facilities on the airport, support from the community, and local attractions for the spouses that may not be as interested in airplanes as we are.

The fly-in has been and could be all coordinated via long distance phone calls, but I am sure you would all agree that it is easier to figure this stuff out face-to-face. Sullivan Regional Airport is almost perfect for our event. Using a comparison matrix it was better than Coffey County with only one minor exception, I will address this later.

Sullivan, MO is a small town with a population of about 7,000 that is located right on I-44 and is 30 miles from the population center of the US. Sullivan Regional Airport – KUUV

(<http://www.airnav.com/airport/KUUV>) was built brand new about 11 years ago. It has a 4500' X 75' runway and a parallel taxi way. There is a



Hangar space for meetings and forums

make the 2003 fly-in even better. Coffey County Airport was a fantastic facility, but most of the life support stuff (lodging and food) and accessibility to the area left a little to be desired.

of keeping the event in the middle of the country, but moving it around occasionally to different host airports to keep it interesting and fresh. After comparing a few more details it was collectively agreed that this was a great idea and the thing to

Continued on next page

## Sullivan MO Fly-In (Continued from page 2)

good size ramp area and with any luck, hangar space for every aircraft that would fly-in. This is really a great airport that is well outside the STL Class B airspace. The hangar will provide a great place for the forums and there is also a prefect area for the spouse's activities – more on that later.

With regards to accessibility, Sullivan is about a 1 hours drive from St. Louis Lambert International Airport and they are served by 14 major airlines. Being right on I-44 and right in the middle of the country, it is easy to get to by car. Of course I hope you will all be flying your tandem wing airplanes to the event and KUUV is perfect for that.

As far as lodging goes, it doesn't get much better. There are 5 hotels within about 1.5 miles of the airport. There should be something for everyone's budget and I am going to be working hard with the hotel managers and Chamber of Commerce trying to get a reduced rate. Camping will be allowed on the airport, but unfortunately there are no shower



facilities on the airport (this is the minor exception I mentioned above). There are also several bed and breakfast type facilities that are available for a reasonable price. Details for the awards banquet are not finalized yet, but there are an

abundance of restaurants within about 2 miles of the airport. I will also be coordinating with a local organization or two to provide food at the airport during the day on Friday and Saturday. I predict that no one will go hungry at the event.

There are lots of activities in the area for people who are not all that interested in airplanes. We will be only about 35 miles from Six Flags over St. Louis, 5 miles from Meramec Caverns and Jesse James Hideout, about 20 miles from some of the best winery's in the US....I could go on, but I will post all the details on a web site and will mail you out an information packet if you want one.

Speaking of activities for the spouses. My wife Jill would love to organize some activities for the spouses. She has some great ideas about some craft oriented classes

and of course we all hope the scrapbook activity documenting the past fly-in's will continue. I am also trying to coordinate with the Chamber of Commerce to provide a local area orientation of some hot spots (antique shops and the like). Jill



really needs to hear from anyone that has some ideas.

Spud had initially set the date for the event, if it was going to be in KS, for 3-5 October 2003. We will keep the same date since many of you may have already made vacation plans. If you have any comments or questions you can email me at [texasquadj@prodigy.net](mailto:texasquadj@prodigy.net), phone me at (573) 364-2545 in the evenings or (573) 596-0165 during the day (ask for Mr. LeTempt). You can snail mail me at: Jeff LeTempt, 1107 Murry Lane, Rolla, MO 65401. I have also created website for more information:

<https://www.fidnet.com/~letempt/index.htm>  
It contains the registration form, schedule of events, as well as lodging information. We will include more info about the event in future DBFN issues.

I want to wrap this up by thanking Spud for his continued professional support of the tandem wing community. He has been, and will continue to be, a huge supporter of our cause. Thanks Spud!!

**Jeff Letempt**

**N1277W**



## Dave Morris' take on the Reflexor

Y.A.R.D.

### Yet Another Reflexor Design

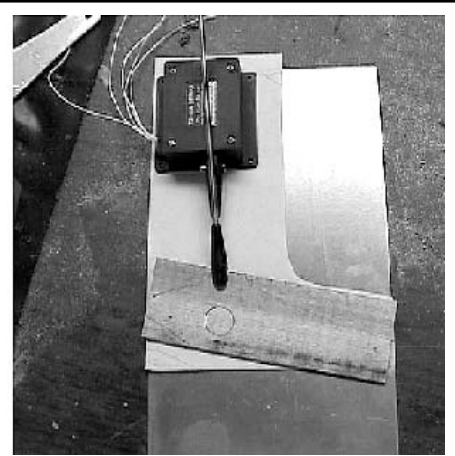
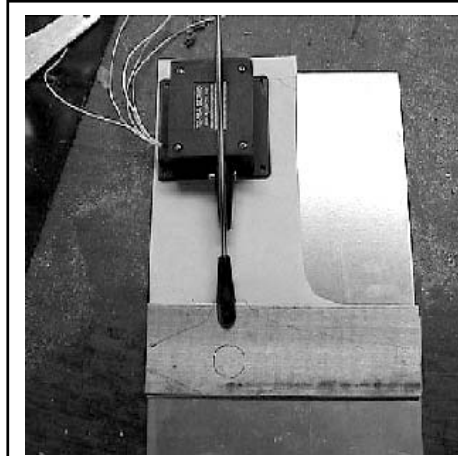
Dave Morris

I never did like the “captive-donut” mechanism that several builders were using as an aileron reflexor. Whenever I tried to build one, it came out all wrong. I wanted something that could be assembled on the bench and then installed onto the bulkhead in one piece, because I get tired of bending over the fuselage all the time, and after the rear cover is installed, I want to be able to service the unit easily outside the plane. I wanted a mechanism that was robust and used a Ray Allen (formerly MAC) servo motor ([www.RayAllenCompany.com](http://www.RayAllenCompany.com)) to move the ailerons up and down. And it needed to be something I could fabricate using existing hand tools and parts I already had lying around.



**Figure 1: Area on the Wing Lift Bulkhead where the reflexor will be mounted between the motion changers (looking forward)**

I wanted the mechanism to bolt onto the wing lift bulkhead. A piece of 1/8" thick aluminum plate, about 6" by 8 1/2" would serve as a vertical base plate, and all of the reflexor components would bolt onto the base. The aileron torque tube would terminate in a Phenolic bearing on a



**Figures 2 and 3: Layout of components on template – Servo motor, threaded rod, clevis, arm down and arm up, mocked up on aluminum base plate**

control arm about 6 inches long that would move up and down around 1/4" in each direction through the action of a servo motor.

Figure 1 shows the area where I wanted to mount the reflexor mechanism. I enlarged vertically the hole where the aileron torque tube met the wing lift bulkhead to allow up - a n d - d o w n movement of the torque tube.

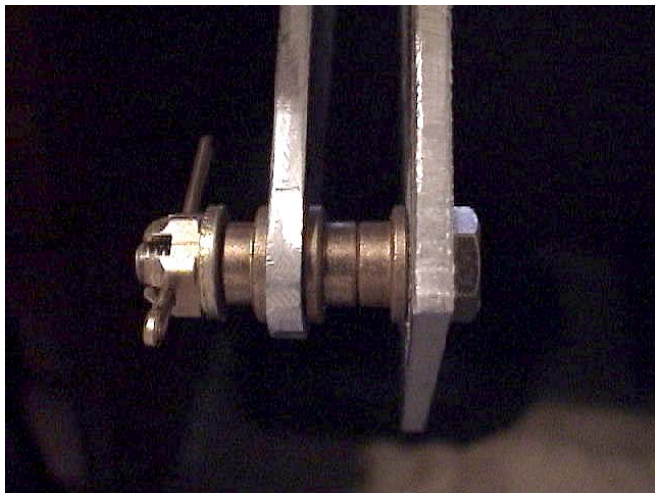
After taking some rough measurements of the area available, I then took a piece of paper and mocked up the layout of the components on the base. Figures

2 and 3 show the paper template with the components being positioned. After mocking everything up, I cut out the control arm from 1/8" thick aluminum plate (about 2" at its widest part) and trimmed the base plate to match the paper template, allowing the base plate to

clear the motion changers. As you can see from Figures 2 and 3, you could fabricate the control arm from the leftover base plate material cut out to clear the motion changers.

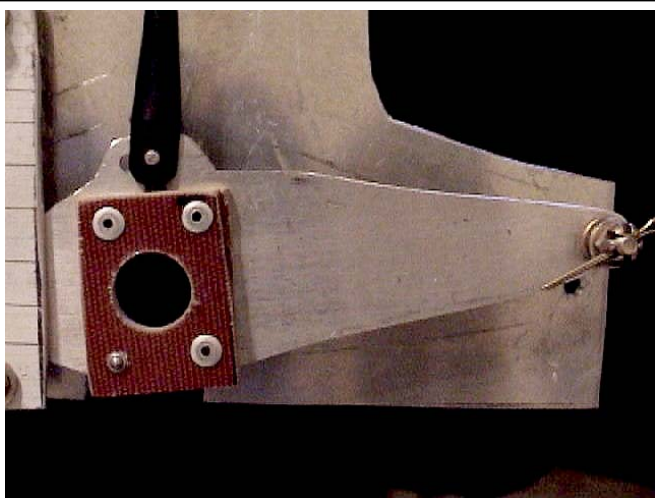
To act as a pivot for the movable arm, I used an AN3 bolt, 3 Oilite bronze flange bushings (FF303-01 at Wicks and part of your existing DF parts list), a washer, and a castellated nut with cotter pin (see Figure 4). This allows the control arm to move up and down smoothly without the possibility of binding or falling apart. Figure 4 shows the arm pivot. I wanted the arm to stand off the base plate by almost 1/2" in order to provide clearance for an extension splice on the bellcrank, because it was just slightly too short to make it all the way through the bulkhead and into the Phenolic bearing. Also, the servo motor's actuator, stands off the base plate by 0.675", and you cannot subject the plastic clevises to too much stress by putting the control arm much closer to the base plate than that. (Ray Allen advises that you can bend the threaded rod a little bit, but I did not do that.)

Next, I drilled a 3/4" diameter hole in the control arm where the aileron



**Figure 4: Pivot for control arm using oil-impregnated bronze bushings.**

torque tube would go, and cut out an area from the base plate in about the same area. I then fabricated a bearing for the aileron torque tube from a 1.5"x1.25"x1/4" piece of Phenolic, drilled to exactly the same diameter as the torque tube's outside diameter (5/8"), and riveted the Phenolic bearing onto the control arm (see



**Figure 5: Phenolic bearing riveted onto control arm.**

Figure 5).

In Figure 5 you can tell that I tried installing one rivet from the other direction, but decided that having the larger flat area of the rivet seated against the Phenolic was better than having it against the metal. In the

left-most area of the photo you can see the restraining bar that I built, to prevent the control arm from moving laterally. Figure 6 shows this a little better. The control arm does not really touch the bar in normal use, but would be restrained by it, if some forces were to try to bend the control arm outward away from the base plate. The bar is spaced from the base plate using double nuts, because they were handy, but real spacers would be more elegant.

Figure 7 shows the completed reflexor, with a Ray Allen T2-12A servo motor bolted onto the base plate and connected to the control arm by a short threaded rod and 2 clevises.

Before bolting the entire mechanism onto some reinforced pads on the wing lift bulkhead, I will design a control circuit that will interrupt current to the servo when it reaches the maximum upward and downward limits for the control arm. This is necessary, because this servo has a 1.2 inch range of travel, but the bolts supporting the restraining bar will interfere

with the control arm movement long before that, and could cause damage to the motor. You could mount micro-switches on the base plate to detect the end-of-travel spots. But the Ray Allen servos have a built-in slide potentiometer, which allow detection of the exact position of the servo actuator. I plan to design a circuit with an LM339 detector, which will allow me to establish not only the end-of-travel limit positions, but also several intermediate reflexor positions for cruise, landing, solo, passenger, etc., and be able to select those with a simple dial setting on the instrument panel, or through the glass cockpit software I am developing for an on-board computer. The LM339 allows you to compare one resistance (the slide potentiometer) with another resistance (an adjustable trim pot on a circuit board), which can be used to determine exact positioning anywhere along the range of travel of the servo. I hope to have photos in a future article of the finished installation, as well as a circuit diagram.



**Figure 6: Restraining bar to prevent outward movement of the control arm**

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Figure 7: Completed reflexor ready to bolt onto bulkhead.

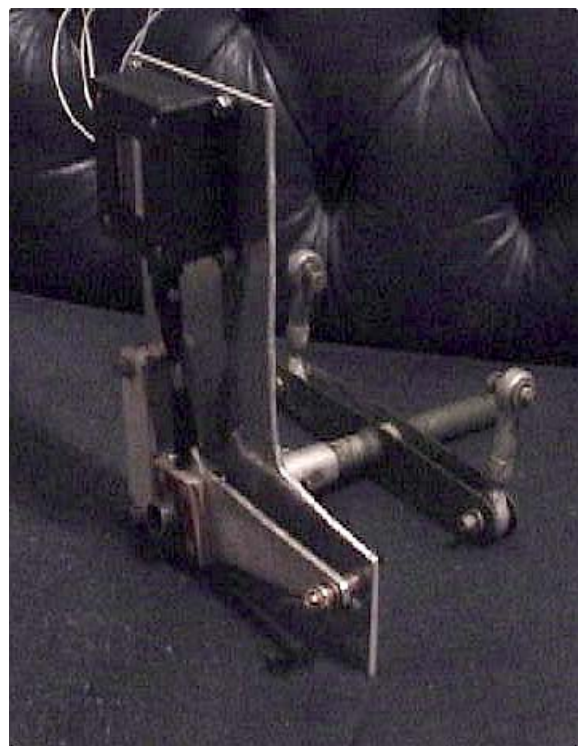


Figure 8: The completed reflexor (sitting on a chair) showing the bellcrank in its usual position, as it will be after installation.

Please apply the usual caveats to this construction article: I have not flown this device and do not guarantee its safety. One potential failure mode would be wearing of parts inside the servo motor, or even a failure of the servo motor or gears, which could allow the control arm to flop up and down uncontrollably

to the limits of the restraining bar attachment bolts. I have not taken apart a servo motor to see whether they use metal or plastic gears internally, but this should probably be inspected at regular intervals to prevent wearing and thus, flutter of the ailerons.

Dave Morris, N55UP

#### Parts List

(Substitute equivalents or different dimensions as necessary)  
1ea 2024-T3 sheet aluminum 6"x8.5"x1/8" (Cut into 3 separate pieces to create the base plate, control arm, and restraining bar)  
3ea AN3-10 or AN3-11 bolts  
3ea AN960-3 washers  
1ea AN310-3 castellated nut  
2ea MS21042-3 lock nut (or equiv)  
4ea AN315-3 nuts (or 2 spacers)  
3ea FF303-01 Oilite sintered bronze flange bushing  
1ea Phenolic sheet 1.5"x1.25"x1/4" drilled with 5/8" hole  
4ea 6-32 3/8" bolts, washers, nuts (for attaching servo motor)  
4ea 11/16" cherry pop rivets  
(This list does not include parts for any bellcrank extension)

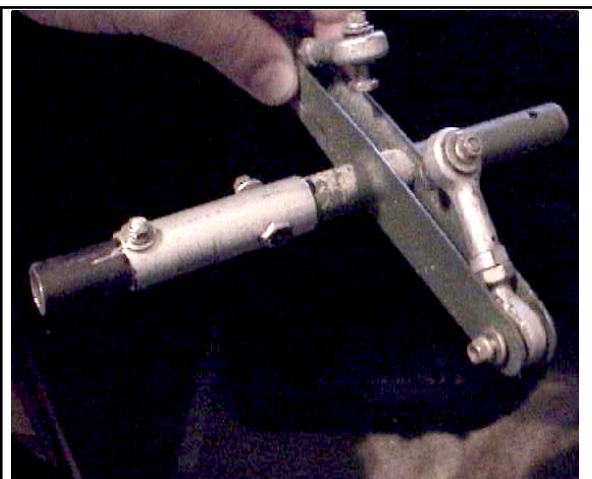


Figure 9: I had to add an extension onto my bellcrank to get it to reach all the way into the reflexor. If you have not yet built your bellcrank, add a few inches onto one side and you won't have this ugly extender. If you use an extender, make sure it is tight-fitting and has zero slop!

**By Jeff Letempt**

Pat came up with an idea a few months ago to go back through all the old newsletters and take a good hard look at the modifications that were once recommended. Some of the ideas may have been great and some may have not been so good. Some have had follow up articles and some not. I've agreed to take on the mission to validate and/or freshen up some of the old ideas. I will also document a modification or two that are now almost standard, but have never really been documented anywhere. I will take up as much space as Pat will allow me in the DBFN, but the stuff that will not fit in the DBFN plus additional detailed information will be made available on the internet.

My intent is to be the Andy Rooney of the DBFN with this column. I am going to start with Dragonflyer issue #1 and work my way forward. Some of the stuff may seem obvious to the seasoned builder, but may seem like total gibberish to someone just getting started. I have a few experts in my corner that have promised to keep me in line and help me out if I am missing the point. This ought to be fun and with any luck will benefit the builders and flyers both.

Dragonflyer issue #1 was published in December of 1980. There is really not much in the way of detailed information in this issue, but there was a brief article about construction materials. The part that caught my eye was about carbon fiber (CF). What I have noticed is there are really no clear instructions on how to ensure the CF is properly wetted out. On page 1-19 in the construction manual there is about 2 sentences on wetting out CF that basically says use plenty of epoxy.

I called Fibre Glast Developments Corporation and asked them about wetting out CF and the basic instructions were to use about an equal amount of epoxy (by weight) to the CF. It is not nearly as cut and dry as wetting out fiberglass cloth. Fiberglass cloth when properly wetted out becomes transparent. A good way to experiment with fiberglass is to take a Sharpie marker and write some words on some plastic sheeting. Now lay the cloth on the writing and you will notice you can not see through the cloth. Now apply your epoxy and as the cloth becomes properly wetted out you will be able to see your writing.

You will notice that the weight of the cloth and the outside air temperature will contribute to how long it takes to wet out the cloth. It may only take 30 seconds to wet out 6 ounce BI if it is 90 degree outside, but it may take 3-4 minutes to wet out some 22 ounce fiberglass tape if it is 70 degrees outside. You will quickly get the hang of it, don't rush it, it is very important to the strength of your structure regardless if you are using fiberglass or CF.

While we are on the subject of fiberglass and epoxy techniques, I may as well talk about the replacement epoxy system. The plans call for the use of an epoxy called Safe-T-Poxy, which is no longer available. There are a few replacements that may work, but I think it is generally agreed that PTM&W Aeropoxy is the epoxy of choice for all structural applications in the Dragonfly. It is relatively inexpensive and readily available.

What about filler material? There are two kinds of filler material used in the construction of a Dragonfly, flocked cotton fiber (flox) and glass bubbles (micro). There are several

differences in these two fillers, but what is really important is that flox is structural and micro is not. Flox requires more epoxy than micro and because of this it is heavier. Flox gets as hard as concrete, so make sure you only use it where you need to and clean up after yourself as you go...you will be glad you did. You can also mix these fillers to get a different consistency depending on where you want to use it.

You know what peel ply is and what is used for (if you don't read page 1-15 in the construction manual), but here is a possible cost saving tip for you. Rather than buy peel ply from Wicks or Aircraft Spruce, stop by your local department store (I go to Wal Mart) or fabric store. Just ask for 100% Dacron lining or "wind breaker jacket cloth" (the light and cheap stuff) or 100% rip stop nylon cloth. Get a yard of test cloth and run some tests. I have never paid more than \$1 per yard at Wal Mart. A general tip on color is do not use white (may not be able to tell the difference between the peel ply and the fiberglass) and do not use black with CF (for the same reason).

Some tips for a very strong fiberglass to fiberglass bond is to make sure you always do these things: (1) always use peel ply, (2) scratch sand with 40 grit sandpaper, (3) use compressed air to blow the surface clean, (4) use wet flox on every surface before bonding. I will also always use a wax and film remover (I use Prepsol - available from any auto parts store for about \$4 per quart) after I blow the surface clean with compressed air. Use the stuff sparingly because it could dissolve some foams if you try hard enough. Just a very light cleaning and then allow the surface to completely dry before you go on to step 4. You

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want a really strong structural glass to glass bond, but you forgot to use peel ply? Here is what you need to do: (1) scratch sand the area with 40 grit sandpaper (do not sand through the glass) (2) blow the area clean with compressed air, (3) repeat steps 1 and 2, (4) clean the area with Prepsol (very sparingly) and allow to completely dry, (5) mix up an appropriate amount of wet flox and paint the area, (6) apply peel ply to the area and allow to dry. Once it is dried you are ready for a structural glass to glass bond.

One important thing to add to this is the importance of using clean dry compressed air to blow the surface clean. After all we are trying to remove contaminants from the bond area not add more, so make sure you have a filter and water separator on your air compressor. You may also find it very helpful (depending on how big of a mess you have) to use your shop vacuum to clean the area before you try to blow the area clean with compressed air.

I have had to do a lot of destruction work in my MK I to MK III conversion and have found a few tools that are worth their weight in gold. A Dremel tool with cut-off wheels and spiral bit cutters are a real time saver. I have also found my angle grinder with an aluminum oxide flapper wheel is great for removing large build-ups of flox. Just make sure you are very careful because this is a very aggressive tool and you could cause a lot of damage if you are not careful. Also carefully watch for heat build up when using any powered abrasive tools. You could very easily destroy the existing fiberglass bond and/or foam if you allow it to get too hot – do not stay in one spot too long.

Interested in a few cost saving tips?

No need to use those expensive paper cups for mixing epoxy. Just go to your local store and buy the cheapest clear plastic cups you can find. The 8-10 ounce size works well for mixing good size batches and I like to use the little 4-5 ounce size for mixing small batches of micro or flox. To really save money just pour out any extra epoxy that may be in the cup and let it get hard, then you can use the cup again. This can also work as a witness cup to make sure your epoxy got good and hard.

Speaking of having to much epoxy...are you having a hard time mixing the right amount of epoxy? Here is a little tip that will get you in the ballpark. Weigh the glass and mix up about an equal amount of epoxy. Add a little more if you need to make some flox or micro or you are going to peel ply the lay-up. I use a digital food scale to weigh my resin and hardener that I bought at Target for \$30. Put it in a 1 gallon Zip Lock bag to keep it clean.

Not getting good use out of your brushes that you use to apply epoxy on some of your small lay-ups? Try cleaning your brushes after you use them with pure denatured alcohol. Don't waste your time and money using isopropyl alcohol it just won't handle the job. For applying epoxy on larger lay-ups I use a soft plastic spatula that is used for applying body fillers on cars. Clean them up real good after use and they will last a long time.

Something that has not been covered in great detail in the plans or newsletters is safety around composite materials. I am not going to go into to much detail, but I will tell you that most of the stuff we use to build our Dragonfly's can hurt us if we are not properly protected.

When sanding or working with micro always use a good quality respirator. Always use eye and hearing protection when using power tools and always use latex or nitrile gloves when working with epoxy. I want to make sure you are around for a long time after your plane is built to have fun flying it!

**Jeff Letempt**

### Gap Seals

**By Chris Walterson**

In one of the old newsletters, Reg Clarke mentions his experience with Gap Seals. After reading the article I also decided to try them. They are simple "V-STRIP" weather stripping that is available at most home building suppliers. The strip is 7/8 wide by 16 ft long. One side of the V strip has an adhesive. The strip is cut to length and then gently bent into the V shape and inserted between the bottom of the elevator and the fairing. The sticky side glues to the fairing. I had the same experiences as Reg, and picked up a few MPH and dropped the stall by a bit. It also gets the elevator to trail better than before. This is one of the cheapest speed mods you can add and for \$5, it's worth it.

They do add a bit of friction to the elevator, but it being so sensitive anyways, I don't find this a bad thing. I can't remember where, but I had read that it's not that good on the ailerons. The aileron gap isn't that big anyway and with the ailerons being a little tough to move as they are, I don't think the added friction would be welcome. So, if you want a bit more performance, this is a ten minute mod.

**Canada Chris**



## Dragonfly MKII Flight Report

By Jeff Letempt

Hello everyone. I had the privilege to get a little stick time in Justin Mace's MK-II Dragonfly while I was in Tucson in late February. I want to take a few minutes to describe my experience and want to make it very clear up front that I had a blast and have nothing but good things to say about Justin and his beautiful plane. First I want to tell you about my flight experience so you have a reference point. I earned my private pilots license back in 1982 and I have about 200 fixed wing hours, about 80% of that in Piper Archers and Warriors. I joined the Army in 1984 and attended flight school. To date I have about 3,500 hours in helicopters (last flight was over 2 years ago). I have no tail dragger time where I have landed the aircraft. I have about 30 minutes total flight time in 2 different Dragonfly's (no hands on take-off or landing experience). My last flight was on Christmas Eve in 2002 in a Cessna 150. I have been doing lots of take-offs and landing with a MK-II in X-Plane and spent about 1 hour the weekend before my flights with Justin. Why is all of this important to mention? Justin has flown 4 helicopter pilots in his MK-II and he claims that we all did much better than the fixed wing only pilots he has flown with in the past. We are trained to use or peripheral vision to detect minor changes and to pick up drift. We are also trained to focus our attention way off the nose of the aircraft when landing, particularly on slopes.

How about a few details on the plane? It was a MK-II with steel gear legs powered by a Continental O-200. The O-200 has dual electronic ignition, electronic fuel injection, and C-85 pistons. Modifica-



**Jeff (left) with his most cordial host, instructor and mentor, Justin Mace, in Justin's beautiful 0-200 powered Dragonfly MKII Note the Koger Sun-Shade as reported in the last DBFN issue.**

tions to the plane include a reflexor system, aileron servo tabs, forward access panel, landing lights in the canard, modified aileron control system, modified elevator control horn, chord wise sanding of the canard, and the seat has been moved aft 3 1/2" among other things. It is a Task kit that was built at the Fun Flight Center in Eloy (when it was still in existence) and the plane has about 980 total flight hours. The plane weighs in at 839 pounds empty.

Anyway...My first flight was conducted under good weather conditions and the winds were fairly light. I taxied the plane out of the hangar area and practiced some turns on the large open ramp. Then I proceeded to taxi the plane down the 1-mile long taxiway.... at about 22 KTS. I did not have any difficulty controlling the plane on the ground, but it did feel like we were going a little fast (it was a test). At the end of the

taxi Justin demonstrated just how good the Cleveland brakes are. After the run-up checks were complete, Justin took the controls for a take-off, traffic pattern, and landing. What he uses for a technique that works perfect for his plane, downwind at about 100 MPH, abeam the numbers he reduces the throttle to idle, maintains heading for 10 seconds and gradually slows to 90 MPH (sometime before short final) then turns base, pretty much a normal approach angle, hold about 90 MPH level the aircraft at about 1 foot off the runway and hold it there until you land. If you get it a little slower you will make a 3 point landing.

We did a touch and go and I took control of the airplane on climb-out. I did the same traffic pattern that I described (except I was much wider). I flew the airplane all the way to the ground and executed a

**Continued on page 11**

## 12<sup>th</sup> Annual Tandem Wing Fly-In Video now available

By Jeff Letempt

Let me give all of you an update on the video tapes. I had a total of only 7 orders. So few that it was not worth the trouble to have them duplicated by a video shop. I ended up having about 7 hours of video on 3 high quality VHS video tapes .

I am not getting rich off this by any stretch of the imagination, but I am happy to do it for you guys. With that all said.....If all I get is a total of 7 orders, I will not be video taping the event this year. It is not worth all the trouble. I spent the entire event chained to my video camera and have probably spent at least 50 hours editing and compiling the tapes. I am not bitter about the lack of orders, but I did expect more than 7 total from the entire group.

If anyone overseas was interested (I had one guy contact me for sure), I can provide the tapes in PAL format.

So here is the deal. Send me \$25 USD and I will mail you a tape anywhere in the world. Personal checks (heck if I can't trust you guys who can I trust) or money orders are ok. Send you payment along with your address to:

Jeffrey LeTemp  
1107 Murry Lane  
Rolla, MO 65401

I would like to get this project out of the way soon. This tape will not replace actually being there, but it is the next best thing. Even if you were there, this is a great reminder of the great time I'm sure you had!  
**Jeff Letempt**



**Jeffrey manning the camera at Coffey Break 2002**

## Tandem Wing Fly-In schedule for 2003



### Mattoon Platoon

**Friday-Sunday, June 27-29, 2003 Mattoon Tandem wing fly-in**  
PRELIMINARY info: <http://www.siinc-sources.com/MattoonFly-In>

**July 29th-August 4** EAA AirVenture Oshkosh, WI

**August 15th-17th** Livermore Fly-In Livermore, CA  
Contact Bob Farnam [bfarnam@pacbell](mailto:bfarnam@pacbell). or visit:  
<http://www.farnamengineering.com/LivermoreTandemWingFlyin.html>

**October 3rd-5th** The 13th Annual Field of Dreams Tandem Wing Fly-in will be held in Sullivan, Contact **Jeff Letempt** for more info. E-Mail: [letempt@fidnet.com](mailto:letempt@fidnet.com) Website: <https://www.fidnet.com/~letempt/index.htm>

Dates are subject to change. If you don't have e-mail access, and you'd like more information on any of these events, call 559-584-3306 and ask for Pat

Mattoon Fly-In (Coles County Airport) **MTO** Mattoon - Charleston, Illinois **June 27-29, 2003**

The Coles County Airport will provide free hangar space and tie-downs for our airplanes. You do not need to bring tie-down ropes.

MTO has two wide and long runways. The ramp area can hold a 100 airplanes. Use right hand pattern for 6 and 11. The restaurant on the airport is open 7 am to 8 pm, 7 days a week. Non-controlled field Unicom at 122.7Mhz and AWOS is on the VOR at 109.4Mhz.

This is really a one day event, but plan to fly or drive in on Friday afternoon or Saturday morning for an all day, full throttle, Quickie and Dragonfly fun get-together. There will be dinner Friday and Saturday night at a local restaurant. Plan to depart some time Sunday after a hearty breakfast at the airport restaurant.

## Dragonfly MKII Flight Report (continued from page 9)

very nice landing without assistance. I would say my first Dragonfly landing was as good as any landing I have ever made in a Cessna 150. [*Actually they were great landings in a Dragonfly! - Justin*] Once on the ground I relaxed elevator pressure and the tail wheel contacted the runway (if I were to get better I would probably apply forward stick upon landing to keep the tail wheel up and the canard pinned to the runway). We applied power and went around to do it again.....same results as the first landing. All together I probably did 4 or 5 touch and goes and was feeling very comfortable.

We flew out away from the airport for some maneuvering. Over the nose visibility is good and the plane is very fun to fly. The plane was equipped with aileron servo tabs and the ailerons were still a little stiff at say 160 MPH, but very manageable. The plane had no elevator trim, but can be very easily trimmed to fly hands off with a slight tweak of the reflexor. The plane at take off was probably at about 1250 and something like 62.5" for the CG. In level flight trimmed for hands off simply moving your feet from the pedals to the elevator torque tube well area would cause the plane to pitch up and go into a 100-200 FPM rate of climb, I thought that was very interesting.

Next came stalls. We were at about 4500 MSL and we pulled the power back and held the nose up. At about 65-70 MPH (the airspeed indicator was on the other side of the panel) the nose started to bob & there was a noticeable side-to-side rocking. I had full aft stick applied, the airspeed was stable at about 65 and we were descending at about 700-800 FPM. The airplane was very controllable and turns were easy. You

would have to want to stay in this condition because the airplane would naturally fly out of it on its own if you would just relax the stick pressure.

Another interesting thing that was demonstrated was to hold the stick in a neutral position and just press on a rudder pedal. The airplane just started a very nice turn (seemed coordinated). Well it was time to head back to the airport because it was getting dark. There were a few clouds and we had run into some very light rain. It was like a drop on the canopy and then 5 seconds later another drop then 10 seconds another drop...very light rain. This required some aft stick and the elevator control got heavier. We were able to trim the airplane for hands off flight with a slight reflexor adjustment. The rain went away. We entered the traffic pattern and followed the same procedures as mentioned before. All was good and Justin was pretty confident in my flying abilities at this point (I think). [*Jeff was doing just great - Justin.*]

Did I tell you the plane had dual control so both pilots fly with their right hand and the single throttle is on the left side of the plane (I was in the right seat)? All is good and at about 50 feet off the ground we got a single rain drop (about like before). I am at 90 MPH and approaching the runway with an increasing rate of descent. I am applying what I thought was pretty much full aft stick [*Not! - Justin*] and we were still descending faster than I wanted to. Justin said...."pull the stick back", I said...."I am" (remember I do not have access to the throttle). He pulled the stick full aft and added a little power and we rattled it in (in his words). Not a real bad landing (we walked away from it), but not nearly as good as my

other landing [*I have made much worse landings solo while trying to make a good landing - Justin*]

What happened? The rain (even though it was almost non-existent visually) . [*Jeff was a little pre-occupied flying the plane and I guess he didn't see that a good light rain started about 50' AGL on very short final - Justin.*] Increased the stall speed and we were basically stalling the canard at about 20 feet off the ground. Not that big of a deal if you are expecting it, but my crew coordination skills were a little lacking. The moral of this story is I will have VG's on my GU (that has been my plan all along and this just reinforced my decision). [*There is a very pronounced loss of lift in rain or when bugs contaminate the front wing. VG's almost eliminate this loss of lift - Justin.*]

The next morning we went out for another flight and I did all the taxiing and my first take-off from a dead stop. I was over controlling the pedals a little and we were weaving across the runway. [*Only as the tail started to come up - Justin*] Finally he said let's fly....a little aft stick and we were airborne. All in all the aircraft was very easy and fun to fly. I did not notice the pitch sensitivity issue that I had noticed in one of the other Dragonfly's I flew in last year. I am not sure if that plane was modified in any way, but Justin's plane had the elevator control horn extended about 1" longer than the plans (and later in the newsletters for the MK-II canard) call for. This seemed to have a huge impact on the pitch twitchiness I had previously experienced.

I also did a little drill that was suggested in an old newsletter. Fly the airplane down the runway at about 1 foot of the ground at 90 MPH. I did

## Dragonfly MKII Flight Report (continued from page 11)

this very well for about 3500 feet and then I climbed to about 2-3 feet off the runway and then I brought it back down to 1 foot and at one point squeaked the tires. I did not have a tendency to porpoise and it was a very good drill. All in all this was a great experience that has given me a lot of confidence that I will be able to safely conduct my first flight later this year.

Is the real thing anything close to what X-Plane predicted? YES, very close. Justin was kind enough to provide me detailed performance specifications on his plane and I tweaked the simulation to almost exactly match his real world performance numbers. There is no replacement for actual time in type, but I strongly feel that flying X-Plane helped me prepare for these flights. Would I suggest to someone that practicing with X-Plane would eliminate the need for a check out in a Dragonfly prior to a solo first flight in type – NO, but it should reduce your transition-training period.

HUGE thanks to Justin for allowing me to fly him!!! Look for a first flight report from me in a few months.  
**Jeff Letempt**

*Jeff is by far the best non-Dragonfly pilot I have flown with. I was comfortable with him in total control of the airplane on the second landing & he only got better. There has to be something about the way helicopter pilots view the area outside the plane because they all have the same gift for landing the Dragonfly. - Justin*



## Classifieds

**For Sale: Dragonfly MK I** N812RG, With HAPI 1835 engine, dual ignition, 40 hrs TT, A&E, Tera TXN923 Nav/Com w/ remote Tri-Nav indicator, new prop, always hangared, excellent condition, needs some engine and cowl work and touched up from sitting for too many years. Includes lots of extras, including all DF newsletters ever published. This has been a labor of love that I need to sell for several reasons. Located in central OH. Serious inquiries only. Asking **\$11,000**. Call or e-mail to discuss or for photos. Ronald L. Geese. (740) 964-9497 or [rgees1@columbus.rr.com](mailto:rgees1@columbus.rr.com)

**For Sale: Dragonfly MK II** N189SM, with 80hp Continental A-80. 250-hrs SMHO by Skeezix Adkisson, and dual Savier electronic ignition. 3 blade Warp Drive prop w/ Gary Hunter blades. Curses 145-150 mph on 4.9 gph. 21+ gallon fuel capacity, dual throttles, hydraulic brakes, ELT, cabin heat, oil cooler and filter. Garmin 195, vortex generators, electric pitch trim. Asking **\$23,000** or possibility trade for 2 place side-by-side, tri-gear with turbo or bigger engine. See photos in a recent KITPLANES ® magazine, featuring details on electronic ignition. Call 618-594-2681 and ask for Terry, or e-mail: [troneill@midwest.net](mailto:troneill@midwest.net)

**For Sale: Carbon Fiber NACA Inlets and Spinners.** Spinners are **\$250 each**, including back plate, but w/o front bulkhead. Inlets are \$30 per pair, set in glass. Contact Charlie Johnson, 2228 East 7875 South, Ogden UT 84405 (801)-479-7446 or e-mail: [OneSkyDog@aol.com](mailto:OneSkyDog@aol.com)

**For Sale: Dragonfly MKII H**, Parting Out. Wing, Canard, Loop landing gear, Revmaster 2100 engine 75 h.p., Cleveland brakes, transponder with Mode C, true airspeed, vertical airspeed. Turn and Bank, clock, Radio King X155 with VOR, GPS 2001. **\$7500 OBO** Project is located in Camarillo CA. Phone 805-388-5587 or e-mail Jim DeBay at: [bettyboo@lafn.org](mailto:bettyboo@lafn.org)

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