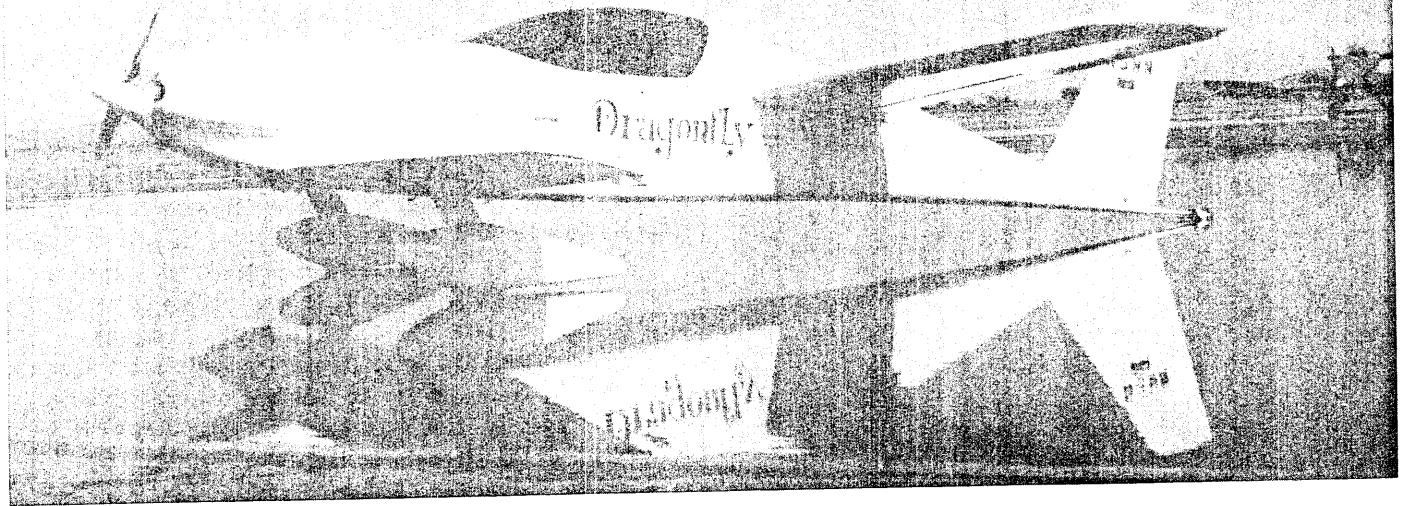


# Dragonfly



## Dragonfly Newsletter No. 15

SUBSCRIPTION PRICE \$8.00 - \$10.00 OVERSEAS

## Summer Issue 1984

Dragonfly MK II is now flying and fully flight tested. It has been a real battle to get it done for Oshkosh--seemed as though everything about the project resisted being completed. I am extremely pleased with the results of the last few months efforts though, and am sure that Dragonfly will find a wider acceptance now than ever before.

There were several design objectives to be sought--

- \*Better ground handling
- \*Rough field or dirt field capability
- \*Reduced susceptibility to damage on hard landings
- \*Differential braking
- \*More fool proof construction

There have been, I believe, three other Dragonflies built and flown with in board gear modifications.

I was not pleased with the appearance when the wheels were simply moved inboard and boxed in with big fairings similar to the originals on the tips, but perhaps more importantly, those mods had no provision for any shock absorption, the wheel fairings and axles being virtually rock solid. All stress had to be absorbed by the tires or transferred into the air frame. If all your landings are good ones, O.K., but a bad one would still produce major structural damage (read canard breakage).

Our approach to the problem was to build a fiberglass spring gear leg that fits into a metal socket in the canard. The gear leg has sufficient flex and shock absorbing ability to isolate the air frame from damage even when drop tested at one and a half times the F.A.R. Part 23 requirements. This was proven by performing drop tests on a mock up canard assembly and actual gear leg before the new canard was built. The unit was tested to destruction and ultimately a fracture developed in

the gear leg at 50% in excess of F.A.R. requirements for certified aircraft.

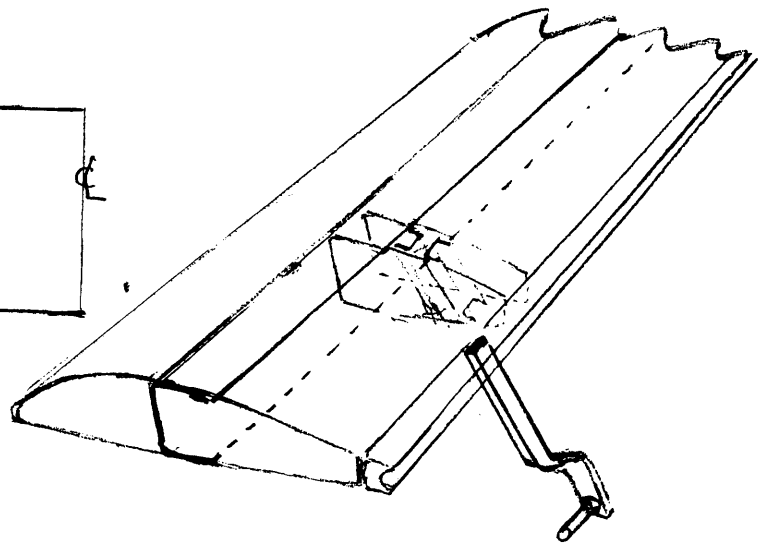
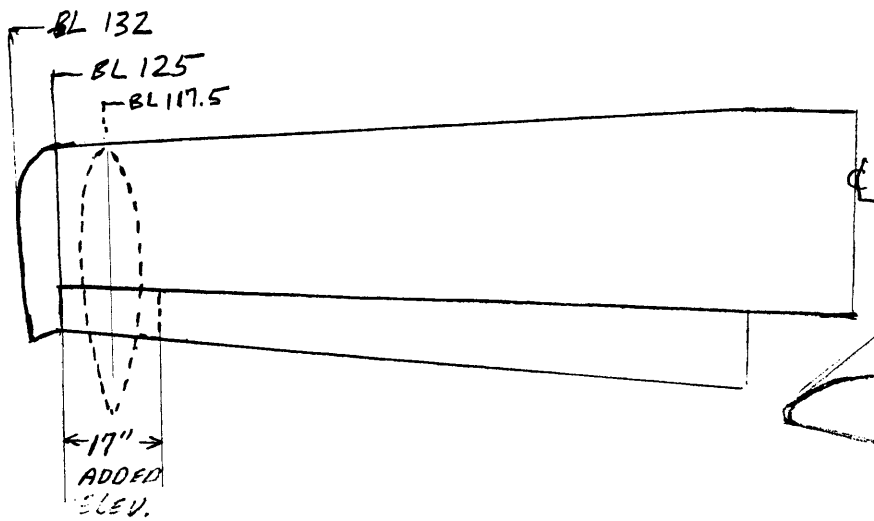
What this means to us is if you do louse up and really hit hard, you could break an inexpensive gear leg rather than break a very major portion of the air frame, the canard. A broken gear leg is replaced by removing one bolt and the brake line.

Flight testing has proven that the legs have far less rebound tendency than the original gear configuration, so things aren't as apt to get out of sorts on landing. Supporting the aircraft with the wheels at the wing tips and the load mass in the center effectively gives us a fiberglass spring board effect. I love the looks of the original but experience has proven that the tip mounted gear does have limitations and demands more pilot skill on landing.

The MK 2 version has an 8' foot gear tread width and with differential braking I find I can now make a "U" turn on a 30' wide taxi way without getting off the pavement. The new gear is rugged and well suited to grass or dirt strips. You might want to leave the wheel pants off and install "Big" wheels if you want to really "boom dock" with it.

The new canard is flat on top with all the taper on the bottom side which gives a slight dihedral to the canard. The big change in the canard is the addition of 22 inches of effective span and 5 sq. feet of wing area to the canard. We have also increased the length of the elevators by 17 inches on each side, giving almost 3 feet more elevator span and 2 sq. feet elevator area (included in the 5 sq. foot wing area increase). We then added a Hoerner style droop wing tip to the canard to complete the treatment.

What did this do to flight qualities? Our stall speed is reduced to 47 m.p.h. at gross, top speed is unchanged, but the



biggest advantage is much more pitch authority at landing speeds, allowing us to land much more nose high than before.

Because of the nose high landing attitude and slower stall speed, plus good differential braking, landing roll is very short, like about 700 feet without even trying hard. We also seem to have more tolerance to forward C. of G. conditions than before.

The molded fiberglass spring gear legs, with all of the necessary structure for the gear sockets, aluminum angles, plywood reinforcement plates, bolts, and nuts, nut plates and plans for the complete modification will be ready for shipment by September 1, 1984 (probably a little before).

This gear mod can be retrofitted into a standard canard with the anhedral also, so if your canard is already built, you don't have to throw it away to make a gear change though I do think the new canard looks better with the inboard gear. The price is \$350.00 f.o.b. Eloy. The plans will only be available with gear leg orders and no gear legs will be sold to anyone not having previously bought the gear mod package.

#### New Spar Material

One of a designer's greatest fears in composite aircraft is that the builder possibly might not meet design strength due to error or poor workmanship. The carbon spar has been a particularly critical area of concern, since a poor layup with air entrapment, poor resin mix or one of several other factors could possibly produce a very substandard assembly, not capable of carrying the loads it was designed for.

When Andy Marshall did some consulting engineering for us recently, he introduced us to a new material called Spar-Tuff which had some very unique properties. It was both stronger and lighter than the carbon fiber, and Spar-Tuff has more

strength in compression than it does in tension! This would greatly reduce the type of bending failure in landing load compression mode that has been experienced by some builders.

Spar-Tuff is a prestressed, precured, unidirectional fiberglass laminate that comes to you rolled up in a 20"x20" box much like flat steel spring stock. We have found it to be easier to work with than carbon fiber and the beauty of it is that you can predict exactly how strong the spar is. All you have to do is imbed it into the structure and the strength is there.

George Burger of Burger Aircraft has done extensive structural analysis on many composite materials and has been primarily responsible for its introduction to the amateur-built world. George provided data to Andy, and Andy did some calculations for us, estimating a Spar-Tuff canard spar to be 43% stronger than the latest canard revision.

The homebuilt world is full of new materials and pipe dreams that sometimes don't pan out, so we decided to build a canard out of Spar-Tuff and carefully compare the load test results with engineering data.

Enclosed you will find pictures of the loading tests on the new flat canard. We built the spar just as if the wheels were to be tip mounted and loaded the structure to 4.4 G's at gross load or with full forward C.G., or 3874 lbs. To do this we had to build a fixture to hold the canard inverted, find, fill and weigh sand bags. Who would consider shoveling and sacking a ton and a half of sand part of building an airplane?

At 4.4 loading the tips were bent up two and three-fourths inches on each side but no structural wrinkling or sign of distress was apparent in the structure.

The canard has now been flown and subsequent flight loads of 5 G's have been recorded with no problems.

We supplied a set of Spar-Tuff spars to Bill Hazelwood to further evaluate the material and the level of expertise necessary to incorporate it into the structure. Bill reports that the Spar-Tuff worked "excellent" with only minor problems in learning how to use it. I passed on to him some techniques we have developed and we believe that Spar-Tuff is far easier to work with than carbon is, addition to being predictably strong and would you believe, Spar-Tuff is less expensive! A complete Spar-Tuff package, spars for canard, wings, and vertical fin, retails for \$299.50 with complete instructions how to install it. The only air frame change you need to make is to sand the canard cores at the center to allow for spar thickness before glassing. My own cores were stock and this produces a slight bump over the spar on the 8 foot center section. Sanding the core to recess the spar flush or even a

hair below the surface is preferable. The Spar-Tuff is installed separately and allowed to cure before the final glass skins go on the flight surfaces. Bill Hazelwood and his wife laid up the top of his canard in only two and a half hours time!

If you have carbon already, use it, there's nothing wrong with it, Spar-Tuff is just so much better, and easier, to use.

Hapi engines is the sole source for Spar-Tuff and if anyone offers you a look alike material, represented to be just as good, look out. We spent a lot of money and time to evaluate this material before we offered it for sale and use. How many of the people offering materials "just as good and cheaper" are spending any time at all assuring that their products are adequate. Think about that when you are tempted to bet your life on unknown bargain material.

---

#### Wanted: One Miracle Propeller

It seems every prop maker in the country has his own ideas about how a prop ought to be made and promises 5 to 10% faster cruise speeds and improved climb rates with his particular brand of prop. Several of you have swallowed the bull--horns, hooves, and all--and bought one of these wooden wonder props.

Next you are calling me lamenting that your Dragonfly is slow. Both Bob and myself have gone through dozens of props from several prop makers and what we use and recommend is what we have found to produce the absolute top performance on Dragonfly. We were only beaten by a very few points in the 1983 CAFE 400, still got second place. If there was a prop that would produce better performance on Dragonfly, I would be using and recommending it. Strangely enough when the slow guys finally put on the props we recommended in the first place, the speed goes up to where its supposed to be.

I will pay \$1000.00 to any propmaker for a fixed pitch wooden propeller that can increase Dragonfly's performance figures, both climb and cruise, by 5% and recommend his props above all others.

Sure would like to buy a prop like that--I would like to go faster.

---

From Tom Wolfe

Dear Rex:

This is a summary of my experience and opinions in testing my Dragon fly. I am a low time pilot, 150 hrs., and this was my first airplane. I flew my airplane about 20 months after starting construction. The building went smoothly and the best thing was meeting all the nice people, there was never a week went by without somebody stopping by to visit.

My plane weighed in at 676 lbs.. This included seats, shoulder harness belts, nav/strobe lights & power supply, extra carbon fiber mod to the canard, radio & headsets. I think I picked up a little weight in learning to paint. I painted the wing four times. The prop clearance is 12 in. at rest and about 4 in. with the tail held up to level flight attitude.

My empty CG was 57.8 in. ( 325 R, 328 L. & 23 tail ) and ready to fly with 170 lb. pilot the CG was 61.1. My initial flights were made at this CG which I now consider as my absolute forward limit, more on this later. My testing was done on a 4000 ft X 250 ft. asphalt runway. The runway surface was very coarse which subjected the tailwheel to a very stressful condition.

I'll tell you about the problems first and leave all the good stuff for last. I had some trouble with the posa carb.



The header tank vent was opened to ram air and this caused the fuel system to become pressurized as airspeed increased. This increased the head pressure to the carb and made it run rich. This happened at about 100 ft. over the end of the runway on my initial flight, fortunately the mixture control smoothed things out. I changed the vent and corrected that problem but I then experienced some trouble with idle, it would not remain smooth. I finally decided to change to the HAPI float bowl carb which is working fine. I now believe that most of my idle problem with the posa was caused by the fuel. I had a mixture of super unleaded and regular gas. The super unleaded contained alcohol which I believe vaporized in the fuel line. I observed that every time the engine missed a bubble came back up the fuel line. I now use only 100 octane lowlead.

The tailwheel bracket and the rudder horn arm cracked, the holes for the pushrod enlarged which allowed the pushrod to rattle. I corrected this by reinforcing the bracket and the rudder horn with triangular fillets. I also changed the pushrod ends from forks to balljoints.

The only other problem is the fresh air ducts which, as you are well aware, need to be forward.

Now for the good stuff. It flies great, I could not have wished for more, the performance is "as advertized". It is hard to give exact figures due to variable weather and temperature. Here in Texas it is usually bumpy and very seldom below 90 degrees. It will climb over 1000 ft per minute solo, 600 dual, at about 70 degrees. It definitely outperforms a Cessna 150 by a wide margin. My top sustained speed in level flight is 165 to 170 indicated. I prefer to backoff a little to a nice easy 140 to 150m indicated. The fuel consumption ranges from 3.0 to 3.2 gph - so why mess around mixing auto gas?

On initial flights the tail lifted very quickly and required considerable back stick force to lift the canard and maintain level flight. I now put about fifty lbs behind the seat when flying solo - very rarely, I always have willing passengers. With a passenger over 150 lbs.. I don't need any ballast. With this condition the tail still lifts first but only a couple of inches and the canard lifts with very light back pressure at about 50-55 indicated and climbs easily. I prefer to climb at 110 to improve the cooling. In hot air and max climb at 70 mph the oil temp gets up to redline 220 pretty quick but drops back to 180 as soon as I level off and get the airspeed up - it likes to go fast. I fly the pattern at 80 and come over the fence about 70 and fly it right down to a couple

of inches and hold it there until it touches and quickly release the stick back pressure. This is easy once you get the hang of it, at first I had a tendency to level off too high at about 18 inches and then when the canard stalled it dropped and hit pretty hard but thanks to all the advice I have quickly applied full power and flew out of these bad landings with no damage. I no longer have any doubts about the strength of the canard or the ability to fly with full power and full aft stick. The thing that helped me most on landing was to stop looking at the left wheel and the runway close to me but to focus my eyes several hundred feet ahead and rely on peripheral vision to judge my height. I have landed on a smooth grass 3000 ft runway with no problems, usually get stopped with 1000 ft left after coming in over some trees. I have the hydraulic brakes and they work pretty well but do require a strong pull and fade quickly when hot - especially when I forget to release the brake before landing. They never pull to either side and if I make a good landing are hardly needed.

The experience of building and flying your own plane can't be adequately described but I wouldn't trade it for anything. It is very satisfying to see people look at my plane and shake their heads in amazement. I had mixed feelings when several people told me that it was the most beautiful Q2 they had ever seen - and it had Dragonfly written on both sides. But I got sweet revenge when I took a Q2 owner for a ride - he's on our side now.

I'm look forward to seeing you in Oshkosh.

Tom Wolfe

---

Recieved the following letter from Jack Shafer, whom I had checked out about 2 months ago--

June 7, 1984

Dear Rex:

I had hoped that by now I would be writing to tell you all about my exciting first flight. However, due to a combination of wind and bad judgement on my part, I have broken my airplane!

Following is a detailed "crash report" detailing my accident, events leading to it, and what, in retrospect I think I did wrong. It seems so easy for me to see what I should have done now. But somehow the excitement of finishing a 2-year project seems to cloud ones judgement. Feel free to reprint all or part of it in the newsletter. Maybe it will keep another builder from going through the heart break I have. I know much of what I learned is what you have told us over and over in the newsletters but perhaps just once more might help to sink it into our thick heads. anyway, here goes!

I took my airplane to the airport on May 5th; one of my longest and most enjoyable trips of my life. The last two years of endless hours working on my project were finally coming to an end. Before very long this bunch of pieces I had been making would transform into an airplane! pp. Two weeks prior to this I had gone to Eloy to get some instruction from Rex. This is a must for this airplane. Rex was patient with me and showed me the fundamentals of takeoffs, flying and landing a Dragonfly. I feel this gave me an excellent "base" from which I could build my taxi test and familiarization time in my own Dragonfly.

Once assembled at the airport I began slow taxi-testing in my dragonfly. A "slow walking pace" is probably about what my starting speed was. I progressed to higher speeds a step at a time. When I felt comfortable at the speed I was at I moved up

a little.

The runway I used is 4,500' X 150' with two closed runways forming a triangle with the main runway. The common practice here among home builders, I was told is to use the main taxiway and the two unused runways in a circle until ready to use the main runway. The wind sock here seemed to seldom point down. The wind almost always seems to blow. This caused me no problem at the low speeds and in fact I feel helped me to get in the habit of anticipating its affects on a turn on the ground before I actually make the turn. Seems like I never thought much about it before (typical tri-gear driver).

As I progressed to higher speeds I tried to limit my testing to days when the wind was "down the runway" and steady rather than gusty. This seemed to have the effect of lengthening the runway and giving me more time to come to target speed, stabilize with tail up, keep it on the center line, reduce power, slow and turnoff for another round.

Eventually I got to the point where I felt comfortable with this and could keep the "center line centered".

At this point I should have declared my "taxi-test program" complete. The next step should have been to double check the plane and wait for a nice calm morning and then mentally prepare me and go flying.

I thought "perhaps the next Sunday might be a good day". Sunday came but it was windy. We went to the airport anyway. Who would stay away from their new plane when they had nothing else to do on a Sunday? The weather man had predicted gusty winds for this day but so far we had wind but no gusts. So, I decided to make a couple runs down the runway. The wind would be no problem because I was "taxing" not "flying". (Big Mistake #1

I checked the airplane, taxied out, and pushed the throttle to about 1900 R.P.M.. Before long the tail was up. A few seconds later things got quieter yet. I glanced outside at my main wheels which were now about one foot above the runway. I'm flying! Everything felt good, wings level, I pulled power settled down and turned off the last turnout with no braking required. That was Exciting! I should have parked it and come back on a calm day to fly....but:

That felt good I think I'll try it once more then call it quits for today. (Big Mistake #2

I taxied back gave it about 2,000 R.P.M.. I figured an extra 100 R.P.M. would get me off a little sooner. The tail came up followed by mains lifting off. I was a couple feet off the runway this time. Everything felt O.K., wings level, lots of runway ahead. I was just about to pull power and land when all of a sudden out of nowhere BANG! One second I'm wings level above the runway the next second I'm 10 to 15 feet high at about a 45' bank (spectator said it was steeper) with 2,000 R.P.M.'.

The first of those gusts that were forecast had just arrived. Unfortunately the "gust of lift" left even quicker than it came. So here I am 10 feet up with very little airspeed, one wing high, 2,000 RPM and very little time to decide what to do. I wasn't prepared for this. After all I came today to taxi-test not to FLY! (Mistake #3)

My first reaction was to level the wings. My second reaction was to add full power to get some airspeed. My third reaction was to give full aft stick to initiate a climb.

I believe my second and third reaction probably came a full one to two seconds after my first reaction of leveling the wings. The result was that with very little airspeed my attempt to level the wings came at the same instant the gust

dimished and left me with insufficient airspeed to sustain flight.

My left main (the one pointing upward) slammed to the pavement in response to my wing leveling attempt. On it's way down is when I added full power. Of course I was too late. The canard broke on the left side just outboard of the fuselage. The prop ground down to about half its original length. The tail hit hard and cracked slightly. The plane slid on the underside of the canard and fuselage for about 200 to 300 feet, grinding away the outer skin in the fuselage bottom on the left side behind the canard.

The sadest part of this whole event is that in retrospect I know it was preventable. Even if I had made the mistakes of flying on a day such as this, if I had been prepared in my mind, to fly and to react to any possible problems, then I would have reacted instantly and climbed out of this situation and returned to land.

Builders, PLEASE, when you progress from your lower speeds to higher ones where the tail is lifting, BE PREPARED TO FLY. You are no longer taxi-testing you are flight testing. Prepare yourself for any situation that might occur. Go over them in your mind and say "if this happens what will I do!". My Dragonfly was ready to fly, I was not. Next time I will be!

Rex,

Sorry to rattle on so much. I didn't mean to get so lengthy. It feels like therapy to tell my story. I hope they listen.

I love to end letters on a happy note. I must say even with all this happening, this month has been a good one, for I have walked away from a potential disaster without being hurt and I also have learned that early next year I will be a DADDY! God has blessed me twice this month.

Sorry to have taken so much of your time with this long letter. Take care and I will be talking to you soon I hope.

Sincerely, Jack Shafer

#### DRAGONFLY SWARMING

Dragonfly Swarming is set for October 12, 13, and 14 here at Eloy and looks like we will have a great turnout. There will be workshops Friday afternoon and all day Saturday. Andy Marshall is conducting his composite construction seminar all day on Sunday, October 14th, at Ramada Inn, 4 miles away. If you want to really learn about this type of construction, pay the \$95.00 course fee and spend from 8:00 a.m. to 5:00 p.m. with Andy (meal included). Everyone I have talked with who has taken this course has praised it highly and the books alone are worth the price. Contact:

Marshall Consultings  
720 Appaloose Way  
Walnut Creek, CA 94596

As last year, we will provide a complimentary dinner to each plans holder and his wife attending. Others are invited to attend, meal cost will be under \$7.00 each.

#### Oshkosh Get Together

A meeting of Dragonfly builders will be held in one of the TIME Forum tents Wednesday, August 1, at 7:30 during the convention. This will be an open meeting, no holds barred, ask questions, discuss problems, berate me, brag about your Dragonfly, get acquainted, whatever, lets all get together and enjoy the brotherhood of people with similar aims and goals. Check the Viking booth next to Hapi's. Time and place will be posted near Dragonflys on flight line

#### Look for New Items at Hapi's Booth

The new Hapi Series 75 engine will be on display with totally electronic ignition and new Hapi built cylinder heads that produce an honest 75 Hp. at 3200 r.p.m. continuous. They cost more but a 25% increase in real horsepower ain't bad is it?

#### Cockpit Intercoms

Many builders have inquired about the cockpit noise level in Dragonfly. I find it comparable to a recent Cessna 152. meaning it's too noisy for long term conversational comfort, and this old pilot doesn't hear that well in the first place so what's the solution?

Some months back I purchased a cockpit intercom setup from Aamwell Technology owned by Dragonfly builder:

Rene de Lathauwer  
2744 S. Glenrosa  
Phoenix, AZ 85016

I'd never had the time to properly install and use it so it took up space in my office for months. Just recently I saw an ad for David Clark H 10-30 Headsets normally \$180.00 or so, for \$118.95 and I bought a pair. (National Aviation Supply, 6740 Perimeter Road South, Seattle, Washington 98108\*206-762-7278) I put these headsets with the Aamwell cockpit intercom and WOW, all outside noise virtually blocked out, comfortable headsets and I can hear and understand the radio. You young whippersnappers pobably don't appreciate the problems us old fogies sometimes have hearing, but protect your ears while your're young from loud noises.

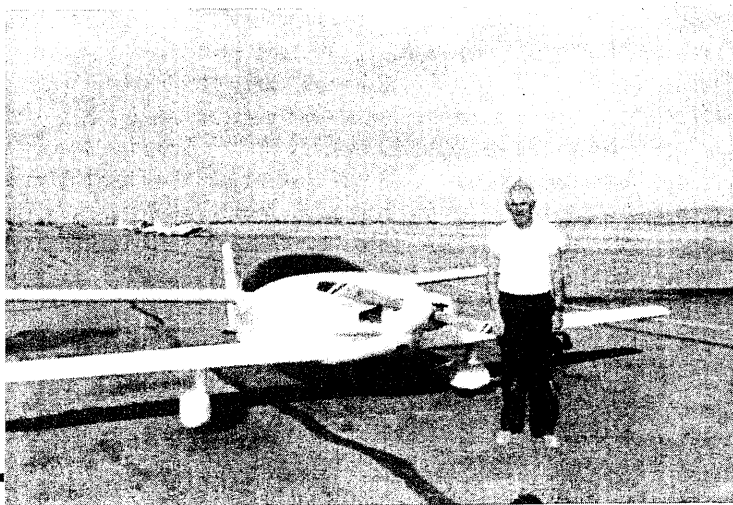
I heartily recommend both these units and oh yes, the intercom unit even has an input for sweet music when you're not listening to some motormouth on Unicom. Try it, you'll like it.

#### New Development (I think? at least new to me)

If you see me at Oshkosh, ask if you can feel my legs (gear legs that is) then I'll probably spend five minutes raving about my "Fantastic Flexible Fairings", real simple and easy to make. Solves a problem I had for years, how can you really fair something that has to flex and bend?

#### On Using Featherfill

We found in finishing this new canard that very dry micro squeegeed on could be sanded very easily without loading up sandpaper if we put the canard out in the warm sun for a couple of hours to elevate the temperature for a real cure. Same thing with the Featherfill primer. You gotta get it completely cured then it sands super easy.



PRECEDING PHOTO

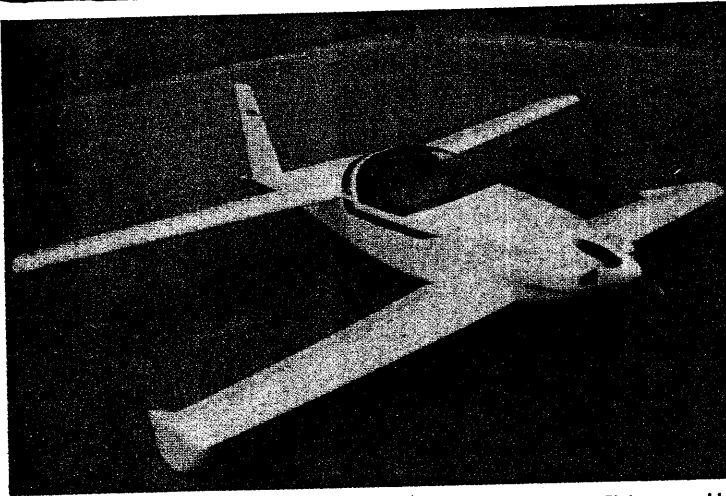
## ROGER RING + MARK II

My old buddy Roger Ring of Spring Valley California has been visiting here for the past month and helping me to complete the Dragonfly mods plus some other priority projects. Without Rogers help, I'd have never made Oshkosh this year.

Rogers own Dragonfly took a severe setback about a year ago when Roger had to have bypass surgery.

He's about to speed up again and our next project together is to get his Dragonfly flying.

Thanks so much Roger, you are a real friend, one of the very best assets any man can have!



N19GK was first flown on July 1st 1984. This was the culmination of 3 years of work by one person. The first takeoff was quite an exciting moment as it lifts into the air and begins its life as an airplane. Initial acceleration is quite brisk compared to other planes I've flown. Climbout at 85 mph and 5000 rpm seemed comfortable for the first flight. I circled the airport to climb to 3000 ft., leveled off, which holds the nose below the horizon and backed off on the power to maintain 130 mph indicated. The pitch control is quick and responsive and the ailerons are noticeably firmer--but no complaints. After watching the engine temps all stabilize in the green, I tried slow flight. Back on the power first and then back on the stick to keep it from climbing. 60 mph at 1500 rpm seemed slow enough for the first try, at this speed the controls are still very effective. Rudder control at all speeds is very quick and the Dragonfly is not a "rudder airplane" like a tri-pacer. The elevator trim tabs will need some adjustment to get it to fly hands off. I noticed that with my C.G. at 62" my Dragonfly cruises with about one-eighth inches up elevator, which I hope will help high speed cruise. After about one hour of flying around getting comfortable with my new airplane it was time to get it down. Entering downwind at 100 mph and slowing to 90 on base about 3 miles out gave plenty of time to set up the approach, about 75-70 mph over the fence and let it settle onto the runway. I had 2 small bounces(no damage) and came to a stop less than 2500 ft. from the approach end of a 6250 ft. runway. Not bad at all for the first time. A lot of my success came from about 15 hrs. passenger time in Bob Verriest's Dragonfly N641D. I wish good luck to all others on their first Dragonfly flight.

Gary T. Konrad  
3313 Harvard  
Royal Oak, MI 48072

## Workshop At Oshkosh

There will be a continuous and ongoing composite construction forum, assembling a prefab Dragonfly kit at Oshkosh this year in the outdoor workshops, located just west of the main vendor exhibit hall.

Jim Kern and his crew will be there full time, every day of the convention, building away and answering your questions about composite construction technique.

These guys are real pros at glass and foam so I'd suggest you plan on spending as much time there as you can. You'll get a real education in building glass and foam quick and easy. Don't miss it.

## Tricycle Gear Dragonfly

I have just returned from a quick overnight trip to Task, and I got my first look at the tricycle gear for Dragonfly. They had hoped to fly it to Oshkosh this year, but it's still perhaps one week short of initial test flying.

The gear itself has been thoroughly drop tested per F.A.R. Part 23 so no problems are anticipated there.

The canard is the same as the Mark II version which has already proven out well in the air so I am confident that the taxi test and flight test will be pretty much a routine matter of simply building up the required time to get it out of restriction.

Now, those of you who have perhaps been a bit anxious about having to learn to fly a taildragger have an alternative.

You will be able to equip your Dragonfly with the gear you are comfortable with and have previous flight experience with.

The main gear consists of fiberglass legs, much like the Vari-eze and Long-eze, (also made by Task) and are attached to the fuselage just behind the seat back bulkhead.

The nose gear is also a glass spring. I haven't heard a price yet, but I am sure it will be reasonable for what you get.

Viking Aircrafts booth (Center aisle main exhibit building) will have the "baby carriage," a prefab Dragonfly cut off at the wing leading edge that was used for the drop tests, on display you can sit in it, make airplane noises, and imagine yourself in your own Dragonfly.

You can also examine the tri gear mod and decide if it's for you.

The tricycle gear will be known as the Mark III. We now have landing gear configurations to satisfy anyone.

The "Quick Talk" builders newsletter editor said he was disappointed that Dragonfly was not at the Cafe 400 to participate this year. We felt our time would be better spent upgrading our aircraft to make it easier for a low time pilot to land.

I think our efforts will do more of real value for our builders than if we had competed and even won. Nobody ever flies like you have to in that race in real life anyway, so the chances of average Joe Elow duplicating race results in an everyday situation is very remote.

Incidentally, One @-2 builder is already planning to retrofit the Mark II Dragonfly gear into his project.

## IS IT SAFE-T-POXY?

Some epoxy is being marketed as genuine Safe-T-Poxy (at a reduced price of course) and we are concerned about it.

Lee Driscoll of applied plastics "Apco" informs us that all builders should carefully check their plastic containers. The back of the container will say "manufactured by Applied Plastics El Segundo Calif." if it's the real article.

The packager of the resin in question has enough respect for the reputation earned by Apco Safe-T-Poxy that he has designed his container to be virtually identical to confuse you.

Apco Safe-T-Poxy 1 and 2 are the only American made resins approved by Viking for use in the Dragonfly. Buy it from any source you choose to, but be sure you're getting the right stuff.

#### NEW MOTOR MOUNT DRAWINGS

A couple of builders have requested drawings from Viking for the new motor mounts and one of you was a little annoyed to find them unavailable.

Perhaps a clarification is in order here. Drawings of the new style mount are not available because the mount was developed by HAPI with HAPI money and does not belong to Viking to give away.

The details of the internal structural changes necessary to use this new mount were furnished to you in previous Newsletter #13 at no charge. Development money has to come from somewhere, and it costs a considerable amount to design, build prototypes, create permanent tooling, advertise and sell products.

When a company invests its money in a new product it must make a profit to stay in business.

The only things Hapi feels comfortable about investing time and money in are the projects like the new gear legs, SPAR-TUFF, the new heads on HAPI Engines or other such products. Here the investment is too great or the process of manufacturing too complex and expensive for the design thieves to duplicate with shoddy merchandise.

Viking has considerable time and money invested in cowling development and tooling. A design thief in Texas has simply pulled a mold from our cowling, duplicated them and sells them to you at a reduced price, (he should, they are very poor quality), and says we're ripping you off with higher prices.

We longer sell cowlings, but you can readily see why neither HAPI or Viking is willing to develop, prototype and tool up to produce more products to be copied.

If the design thieves want to produce parts for DRAGONFLY, let them do their own development work.

#### INCIDENCE CHECKING JIGS

Don Hewes received the checking jigs and we found that due to differences in airfoil shape from aircraft to aircraft, accuracy cannot be guaranteed as we thought that it could.

Don has devised a method, using a more elaborate but still easy to build fixture that will allow us to accomplish the desired result of checking exactly where the incidence is set on both flight surfaces.

This will be part of the next Newsletter, as it is a bit lengthy to include now.

#### ANOTHER DRAGONFLY FLYS!

Just got a call from Warren Yeley of Roseman, Montana, he has just put the first hour of flight on his new DRAGONFLY, needed a little advice on trimming it out.

He says everything is going very well and he seems to have very little in the way of adjustment necessary to get it fine tuned and up to advertised performance figures.

---

Send in your own contributions for this newsletter please. I need your ideas and experiences too. We hate to hear of incidents like Jack Shafers, but perhaps Jack's experiences and the sharing with you will help one of you to avoid problems.

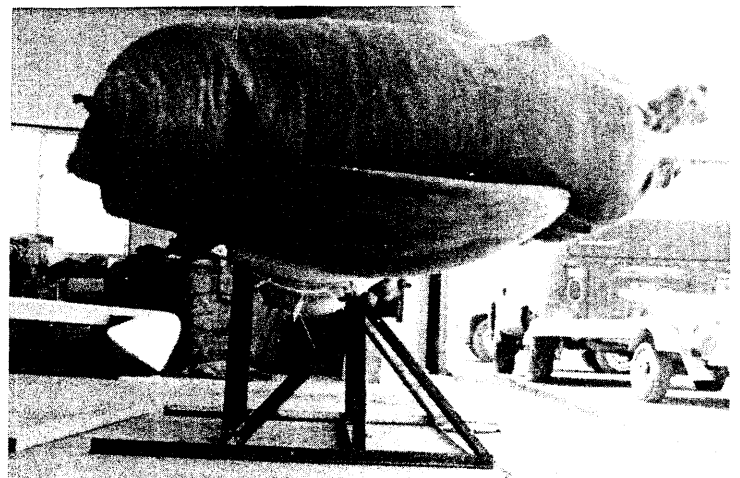
Thank you much Jack, it takes a far better man to admit a mistake than to keep it to himself, when it could help others.

---

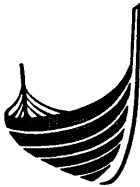
We still have a little space left but are running such a tight schedule that I must stop and get this to the printers for camera work or you won't get it before Oshkosh.

---

Hope to see each and every one of you there. The next Newsletter will be shortly after Oshkosh. We are going to try to get back on a regular Newsletter schedule.



CANARD SPAR LOAD TESTING  
7 NOTE BEND UNDER 4.4G LOAD



# VIKING AIRCRAFT

ELOY MUNICIPAL AIRPORT  
R. R. 1, BOX 1000V - ELOY, AZ 85231  
Telephone: 602/466-7538

*Dragonfly*  
Now  *Approved*



SUMMER ISSUE