

ANOTHER YEAR GONE?

It doesn't seem possible that Oshkosh is upon us again and that we'll soon be getting together once more for another Dragonfly Swarming. I don't know where the year has gone, but it has been an interesting one to say the least.

We're very thankful here at Viking that our long and very expensive ordeal, fussing about the legal ownership of Viking, finally appears to be almost over. We always were sure in our own minds that we had bought a clear title to Viking Aircraft from Bob, and that Mr. Nelson had no claim whatsoever on us. That opinion was upheld in the local court, then reaffirmed in the the district court of appeals, after Mr. Nelson had appealed the first ruling and then again at the 9'th circuit court of appeals, after he had appealed the ruling on the appeal.

Finally, now, Mr. Nelson has run out of legal challenges and can't harrass us anymore. The only thing left to be decided is our motion petitioning the court to award us reimbursement for all the legal expenses over the past four and a half years. The cost has been staggering and by Arizona law, the court can award us reimbursement against both the plaintiff and his lawyer. Once in awhile someone does pass a good law. Nelson and his attorney are crying up a storm to the court now saying our legal costs have been too high. Seems to me we never would have had any legal costs if they hadn't started this thing in the first place. I'll keep you posted on how it comes out.

This lawsuit has been a real problem over the last few years. There have been times when I've been so depressed, I didn't hardly know which way was up over this thing, but now, at this point in time, it's over with and it's almost getting amusing watching the bad guys wiggle trying to get out of the mess they've created.

SUGGESTIONS FROM YOU

In past newsletters, I've asked you builders to please give me some input ... tell me what you'd like to see in the newsletter that would help you build your Dragonflys. Dog gone it, I very seldom get

anything back from the builders saying what you'd like to hear.

I have gotten a couple of letters recently though with some good suggestions and requests.

Seems that most of the builders have appreciated the photos and such of improvements that different builders have made in the Dragonfly design....nice little refinements that they've incorporated in their airplanes, and we'll continue to do that sort of thing as much as possible.

Another builder asked for a new set of performance specs on the Dragonfly with the Magnum Plus engine in it. After having flown it for over three years now with the Magnum Plus engine in it, I'll include that in this issue.

I'm looking forward to Oshkosh this year. Particularly meeting and talking with you Dragonfly builders....kind of sharing experiences. After going to Oshkosh seven years in a row, the prototype this year is staying home and I'm driving to Oshkosh.

I have to take a small trailer load of printed matter, records, etc. for NASAD to Witchita, Kansas, to drop them off with the new secretary of NASAD there. I have been President of NASAD for the last three years, so the duty of shuffling papers has fallen on my shoulders. Actually, I'm looking forward to driving, to have the opportunity to visit some relatives and kind of make a slow, leisurely trip this year.

My Dragonfly forum at Oshkosh will be in Tent 3 at 11:30 A.M. to 12:45 P.M. on Tuesday August 2nd. I'll also have a forum on HAPI Engines on Saturday, July 30, in Tent 7 at 10:00 A.M. through 11:15 A.M.

There will also be just a general Dragonfly builders get-together for fun, swapping experiences and such. It'll be held on Saturday, July 30 in Tent 9 at 8:00 P.M. Bring your wife and enjoy the company of other builders who are fighting the same frustrations you are. Please plan to be there. These little informal meetings have been a lot of fun and very informative in the past. Everyone who has something to say gets an opportunity to do so. Bring your pictures of your flying airplane,

unfinished project or whatever, and we'll have a good time.

As many of you are aware, the Taylor Family's HAPI Engines Corporation bought the Sonerai, Monerai and Moni designs that were auctioned off last August during Oshkosh week. We're working very hard at getting these designs back into production and are just busy as we can be.

This year we elected not to have a display at Oshkosh because it would involve taking people out of the plant for over two weeks and it is a terrible expense to move people and display back there for that amount of time...in addition to the lost production time. We felt that our time and money could be much better spent here cranking out parts, rather than Oshkosh, talking about it. All the talk in the world doesn't get any parts out the door.

I'll be the only emissary, so to speak, of HAPI Engines and Viking Aircraft at Oshkosh this year. You can find me near the Replica Fighter Association tent with a half scale War Aircraft Replicas P-51. The RFA will be located just a little south of the Warbirds, near the Warbird Cafe. What am I doing there? Associated with those guys? Well, we've got a brand new engine this year. Some of you may have been following the development of it in Kitplanes magazine. The 4-cylinder, liquid cooled, overhead cam, 12-valve Honda Prelude, with a Gates HTD Cog-belt reduction drive is in the nose of the half scale P-51. Come over and take a real close look at it, though it won't fit a Dragonfly, I'm kind of proud of it and think it'll be a real good addition to our product line.

Typical of all our HAPI Engines, by the time you see it at Oshkosh, it will have flown.

SPEAKING OF ENGINES

As you know, I have been flying a Magnum Plus engine in the prototype Dragonfly for three years now. It's been to Oshkosh twice and I've had absolutely no problem with it.

We began producing the Magnum Plus engine about a year ago on a custom-built basis and have quite a few of them out in the field.

Recently, Tom Adams returned from Hong Kong. If you remember, we stored Tom's airplane on the ceiling of our hangar for a couple of years. Tom removed the 60-2 engine from his Dragonfly and installed a Magnum Plus.

Tom has been assigned to the Pentagon in Washington, D.C. and after installing

his new Magnum Plus proceeded to fly his Dragonfly to Virginia. Tom was at about 1150 ft. ASL when he lost the spinner, prop hub, propellor, and the end of the crankshaft off of his Dragonfly. Since Dragonfly glides so well, he said he had about 15 minutes to pick out a spot to land and proceeded to do so in a wheat field with minor damage to the aircraft and no injury.

Tom called the next day, and told me of the problem. Immediately following Tom's call, I contacted Justin Mace, who has quite a bit of time on his Magnum Plus in his airplane, told him we'd had a problem, and asked him if he'd bring his airplane in. I thought it'd be a good idea to tear the engine down. We tore the engine down and found a cracked crankshaft in Justin's airplane also.

Four days after Tom Adams' reporting of crankshaft failure, we had issued certified letters to EVERY owner of a Magnum Plus, advising them to ground their aircraft, return the engines to us for complete crankshaft and propellor hub replacement, at our cost.

The cause of the problem is pretty basic. We have simply upped the horsepower on the engines to the point where we were overstressing the nose of the crankshaft. This problem had not shown up in testing. We have totally redesigned the propellor hub and the front end of the crankshaft so that the new crankshaft and propellor hub are 230% stronger than they were before. We now have by far the strongest front end on the crankshaft in the industry.

I hope you builders will take note of one thing though. As soon as we were aware we had a problem, we contacted all the builders and grounded those aircraft before anyone got hurt. We did this totally voluntarily. FAA had nothing to do with this. If it had been a Continental or a Lycoming FAA would have issued an AD after the predesignated amount of people had been killed, and then the owners would get an opportunity to buy new improved parts from Continental or Lycoming at an inflated price so that they could get their airplanes back in the air. Our Magnum Plus owners are sending their engines in. They are being totally rebuilt, at no cost whatsoever to the owner except the shipping cost. That's what the three-year warranty on a Magnum Plus says. What it says, is what you get.

DRAGONFLY SWARMING 1988

The weekend of October 7th, 8th & 9th will be the Fifth Annual Dragonfly Swarming

date here at Eloy, Arizona. We hope that all of our Dragonfly builders, flying or not, will make an effort to get out here and enjoy the comraderie.

As in the past, we will have hands on workshops to show you how to do some of the more difficult things that you'll have to surmount in building your Dragonfly. We expect to have several flying Dragonflies here. In the past, most of the visiting pilots have donated a lot of their time in giving Dragonfly builders rides in the various airplanes. I don't think anyone who wanted to get a ride in one of the airplanes went away disappointed.

Since our acquisition of the Sonerai, Moni, and Monerai line, we're going to expand the Dragonfly Swarming to include those other designs and also invite anyone to the swarming who is flying a HAPI engine powered aircraft.

I think what we're going to end up with is kind of a miniature fly-in here, but it'll be all homebuilts and for the most part powered by VW based engines.

If any of you guys want to fly in in a factory-built spam can, you will be allowed on the airport and welcome of course. We do try to be tolerant of those poor unfortunates who don't yet have a homebuilt to fly.

As usual, we will have a big dinner and fun-filled banquet on Saturday night. Last year we had whole roast pig with all the trimmings. Everybody really seemed to enjoy it, so we'll do that again this year.

At the back of this newsletter you'll find a little slip to be filled out and sent back for dinner reservations. Ground transportation will be provided at no charge from the airport to the various motels.

We usually have a couple of cars around here that builders are free to use for the odd errand.

If you want to bring your motorhome, house trailer, or tent and sleeping bags, there are spots right here on the airport you can use at no charge.

We look forward to having you all here this year, and we'll have a great time together.

NEW GIRL IN THE OFFICE

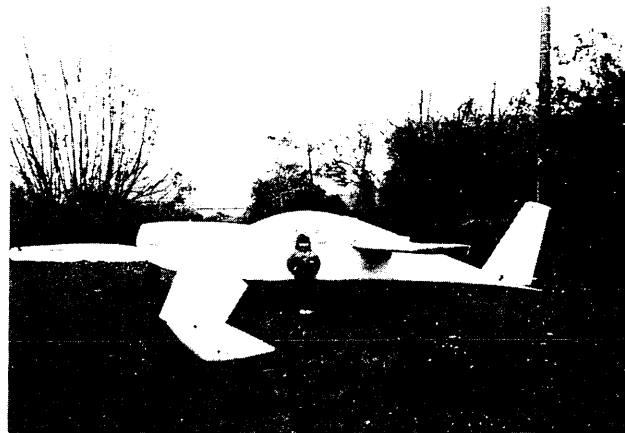
Over the years we have had some really good office help, and none have ever been any better than Lynda Fancher, who handles seemingly just about everything in the way of paperwork in the shop.

Lynda has become overloaded though, to the point where she had to have some help. Phyllis is busy answering phones all day long and talking to you builders and doing

some of the paperwork too. Robin is our Secretary/Treasurer and does all the bookkeeping, which keeps her pretty busy.

We have added a new girl to our staff, Susie Talbot, who is assuming some of Lynda's duties, to take the pressure off there and also is already being a great help to me, typing my answers to the letters that come in (you couldn't read my writing) and putting things like this in the word processor to be massaged and made readable before going to the printer.

Susie is already becoming a real asset around here, and we look forward to loading her down with the work that some of the rest of us haven't had the time to do.



FRENCH DRAGONFLIES

Received a nice letter from Jean-Louis LeBuzit of France with a picture of his Dragonfly project.

We've used the project picture here. Jean mentioned, "Today no Dragonfly is flying in France; three builders have broken their canards during taxi tests."

I want to emphasize once again, the extreme foolishness of trying to put the first test flights on a Dragonfly Mark I, without some previous time in type, if possible.

If you can't get time in type, for goodness sake, go out and get some sailplane time so you learn how to make a controlled approach, in a very slippery airplane, that glides very efficiently and does not want to come down.

Typical of a Dragonfly, a sailplane is flown down to within a foot or so of the ground, then leveled out and allowed to dissipate it's forward speed and kiss ever so lightly onto the ground when that forward speed has been dissipated.

It's really very, very easy to do, but does require some differences in landing technique that you have not experienced before.

Unless you are a super "cool" pilot, with lots of experience behind you, the type of guy who can sit there and coldly analyze what's going on around him and decide exactly what is necessary to correct the situation, the first flight could be trouble.

You SHOULD let somebody else who has the experience put the first flight on your airplane. Okay, so there's nobody like that around, so then what do you do? You read everything that has been written about flying a Dragonfly by the guys WHO ARE STACKING UP HOURS OF ACCIDENT FREE FLYING TIME on their ships and follow their advice. We have one builder who has flown 8 hrs. TT, busted his bird 3 times and now considers himself a flight expert on Dragonfly. Don't listen to the guys whose have all kinds of problems, listen to the guys who haven't broken anything. Obviously, they are doing something right.

Len Dyson of Melbourne, Australia had to do that, as many of our Dragonfly builders have and completed his test program quite successfully. Len is now helping some other Dragonfly builders in Australia with a little stick time before they fly their own. At this point in time, I believe there are four Dragonflies flying in Australia. Len's, David House's, Rob Jelliffe's, and one other.

At any rate, it hurts me to see people having such poor luck with their Dragonflies, when it is so totally unnecessary. The Mark I has some handling idiosyncrasies that are unique to it, but if understood by the pilot are absolutely no problem to overcome. Experience in the air in many different kinds of airplanes is highly desirable, but is no guarantee that a pilot with that experience won't screw up royally when trying to land a Dragonfly and get into a pitch porpoise situation, resulting in a broken prop or canard.

If you don't have an experienced Dragonfly pilot at hand to help you out, please go through all of the newsletters and read and reread everything I have written about flying a Dragonfly and what the other builders have written about their test flights also.

With a little tail dragger experience, the Mark I is no problem at all on takeoff. On landing, there are two or three things that you must learn to do to land the airplane properly. #1- Airspeed and attitude must be stable down final approach. The airplane should be nose high, in the three point position and stablized in both pitch and airspeed in that attitude. Rate of descent is controlled by the throttle. Many people have been taught

that way and it's the proper way to teach a person to fly.

On the first flight, airspeed should be 15 miles above indicated stall speed. Whatever stall speed was "indicated", when you slowed the airplane down to stall, add about 15 miles an hour, across the numbers, to that speed. #2- Bring the airplane down to park the wheels one foot above the ground and hold it steady at that altitude. I highly recommend flying in something like a Cub or Citabria and doing lots of runway practice where you straddle the white line and hold the wheels a foot off the deck at say 10 miles an hour above stall speed. Do this, go round and round the airport. Learn how to hold the airplane steady a foot off of the runway. #3- This is absolutely the most important thing I can tell you. Burn it into your brain indelibly and as you are coming down short final keep programming yourself and telling yourself to do what I'm going to tell you now. Tell yourself as you come down final, "If it bounces, I'm going to apply full throttle and back stick and fly out of it. Instantly, on the first bounce...don't wait. Don't chase it into porpoise. Tell yourself, "I will apply throttle and backstick instantly if I bounce it". You'll find that if you've programmed yourself and are ready to act instantly, you'll get yourself out of trouble without breaking anything.

Then go around the pattern again, make a good approach, settle down smoothly and level 1 foot above the runway. Now simply hold that position 'til the Dragonfly touches on like a feather. Then keep it straight with the rudder 'til you are slowed to taxi speed. Hey guys, it's so easy when you do it right. You too can be an ace Dragonfly jock!

When I first started flying the Dragonfly, I bounced it and almost broke the canard, so I started talking to myself down final (I enjoy talking to a dummy), programming myself, 'if it bounces, backstick and full throttle'. Once you get that recovery technique into your head, so you can do it without thinking, you will be a Dragonfly pilot. Everybody bounces a landing once in awhile. It's what you do after the bounce that's super important in a Dragonfly Mark I. The Mark II is a whole bunch easier to handle. It doesn't have that rebound that the Mark I has. In fact, the Mark II is a pussycat. It's a totally different airplane to land. It doesn't seem to cause anybody that much difficulty.

Please do read and reread what I've just said and go back to the earlier newsletters. I don't like to see you guys

breaking these Dragonflies. It's frustrating for you having to rebuild it, and it's frustrating for me too because I know it is so totally unnecessary. Try doing it my way. You'll like it and your airplane will stay in one piece.

O.C. Hocker Flies

Ken Hocker is an old time pilot who has been to the Dragonfly Swarming several times and has been able to get some firsthand stick time while here.

I'm sure that this little bit of actual flight experience has been of great value and contributed to his "no problems" first flight.

Recently, Wayne Ulvestad was out here (he's a low-time pilot) and I checked him out in the prototype. He went back home and now has over 20 hours on his Mark I Dragonfly with no problems. The difference is "real world" experience.

For you French builders, it might be a very wise investment for you to pool resources and send a competent instructor pilot over here to learn how to fly Dragonfly right, so he in turn could teach you fellows. I'll guarantee it would cost you a whole lot less than busted canards will.

FROM O. K. HOCKER--Dear Rex,

The jig-table for N28P was built in January, 1982 by a naive, first-time builder who thought he was starting on a one-year project.

I had my first flight in June, 1988. In fairness, there was a year stand-down (no-a year and a half) but that still leaves a substantial amount of building time.

I stuck very close to the plans, incorporating every modification that was published in the Dragonflyer: forward-hinged canopy, Mark II Retrofit gear, the modified instrument panel, extended elevator bell crank arms and others.

Now for the first flight--greatest single thrill of my life--all made without incident--one hour of pure joy.

On take-off, the tail came up at 45mph; right out of the book, climb was established 80 mph, 600 ft. per minute. I don't know the speed the wheels cleared the runway but think it was about 60 mph.

I had complete control of the aircraft at all time--no surprises--except one perhaps, the fact that I am flying in my own airplane. I'M FLYING!

On leveling off at 3000 ft., I had to maintain back pressure to hold altitude. 3200 rpm produced 145 mph. Also I had to hold up a heavy left wing with the ailerons. Stall came gently between 55 and

60 mph indicated. All instruments seemed to be reading in the ball park. I landed 7:30 a.m. June 22, 1988 one happy man, and called you about 5:30 p.m. I was still at 3000 ft. and climbing.

Rex, I really appreciated your enthusiastic congratulations, but what I came to fully appreciate the next day, was the critique you put together, off the cuff, after coaxing a disjointed, incoherent account of the flight out of me. "Nose heavy? Reflex both ailerons up 3/16 at the trailing edge. Left wing heavy? Drop the right elevator a 1/2 turn on the rod end, and next time climb out at 110 mph--you'll get the same rate of climb with better visibility."

I went back to the airport that evening and made the adjustment.

June 23--Second Flight. You nailed it on the button--climb out 110 mph 600 ft. per minute. I leveled off at 3000 feet and trimmed out hands off 155 mph. As you said "Not too shabby" and that was for 145 mph yesterday.

At this point, I am filled with gratitude for Bob Walters' design and for the wonderful set of plans. And for you Rex, and your whole family for the right-on help when I needed it--advice and friendship over these last very happy building years.

Respectfully, Ken

DEL BRADLEY'S DRAGONFLY

In the past two or three issues, since I went to Lake of the Ozarks, Missouri last year and bought Del Bradley's beautiful Mark I Dragonfly, I have been talking about it and passing along to you builders some of the neat little improvements that Del dreamed up and incorporated in his bird.

There is no doubt in my mind that, at this point in time, Del Bradley's Dragonfly is far and away the most beautiful construction job I've ever seen on a Dragonfly. There may be others to equal it, but so far I haven't seen one.

In the course of building his Dragonfly, I had an opportunity to become acquainted with Del, first over the phone and later on in person and developed a warm friendship with him. Last year on the way to Oshkosh, son Patrick and I had the pleasure of staying over night with Del and his lovely wife Shirley. I really enjoyed Del's friendship and companionship and had a lot of respect for his ability to turn out beautiful work with a minimum amount of tools.

After finishing his Dragonfly and flying it almost 100 hours, Del decided to

sell it since his health was deteriorating and he was having trouble breathing at altitudes. Del asked me if I could find a good home for the airplane. He wanted to see someone get it who would enjoy flying it and wanted some assurance that people getting into it would be checked out so they could fly it without any mishaps. I went back to Del's house in the Fall to fly the Dragonfly back here to Eloy and as usual, was greeted with warmth and friendship by Del and Shirley.

Del and I shared some very enjoyable hours of good conversation before I left, saying our goodbyes over the radio as I climbed away to the west, leaving the Lake of the Ozarks. All the way home I gained more and more respect for the construction job and the thoroughness that Del had put into his Dragonfly. The airplane performed faultlessly and I arrived back in Eloy with absolutely no problem.

About two months ago, I received word that Del had passed away; the victim of a heart attack. I shall always remember him as one of the truly fine human beings I've had the pleasure of coming in contact with through the medium of Dragonfly. Del's airplane now belongs to Les Price, but is hangared here in our show room as a beautiful example of what a Dragonfly can be. I know I'll never be able to look at that airplane without it bringing back a fond remembrance of Del. He will be missed, but not forgotten.

NEW FINISHING TECHNIQUE

Received a letter from Bill Brutsman recently along with camera ready copy that had been printed in a chapter newsletter, written by Bill Freeman of Chapter 200, Overland Park, KS. It's a relatively new and slightly different finishing technique that is reportedly a whole lot less work, less drain on the pocketbook and produces a better than average finish as a result. We haven't tried it ourselves but it looks very promising. Certainly, whenever we do another airplane, I want to try the procedure.

FILLING AND FINISHING YOUR COMPOSITE AIRCRAFT

by Bill Freeman, EAA Chapter 200
Overland Park, KS

Bill Freeman originally wrote this article for Chapter 200's monthly Newsletter. He is an accomplished homebuilder, who lives in Lenexa (southwest Kansas City) Kansas. Bill is currently finishing up with his

latest project, a Long Eze and is well known for his basic composite structure tape sold through EAA.

Filling and finishing the exterior of your experimental composite aircraft can mean the difference between a good looking, well performing bird, and an average looking, average performing bird. It is the intent of this article to show you how you can make your bird beautiful, by using the latest in high technology fillers, without all the hard work and long drying times associated with Saf-T-Poxy and micro balloons. It can be a fun process when using the latest materials.

The standard filler material used on composite aircraft is called "dry micro", made by mixing glass microballoons with epoxy to the consistency of stiff peanut butter. When made with Saf-T-Poxy (the epoxy used by all Rutan and Viking designs), dry micro is very light and durable. Unfortunately, dry micro is very hard to sand and takes about 3 days to cure (enough so that it won't clog your sandpaper). The replacement for Saf-T-Poxy micro, is a micro made with "West System" epoxy. Dry micro made with the West System epoxy is 3 to 4 times easier to sand and cures (ready to sand) in 8 to 12 hours. The West epoxy is available with two hardeners, slow and fast. I have been using the slow hardener which gives just enough pot life to mix and use a one cup batch of dry micro. The fast hardener may be a bit tricky, and offers a shorter pot life. Another advantage of the West System is that you can order an inexpensive set of ratio pumps (look like hand lotion pumps) for about \$10.00 or \$15.00. The epoxy and hardener costs slightly more than Saf-T-Poxy at \$52.00 per 1.25 gallon kit. Mike Melville and Doug Shane of Scaled Composites and Rutan Aircraft Factory, have both recently recommended the West System highly (Scaled and Rutan don't use any other kind of micro for finishing work). Mike has also recommended the West System epoxy for regular glass layups which are NOT PRIMARY STRUCTURE, such as wheel pants and wingtips. West epoxy and mini-pumps

are available "factory direct" from Gougeon Brothers in Bay City, Michigan, or by calling 517-684-6881. If you don't want the mini-pumps (they're great!), you can move your resin platform balance point on your epoxy scale for the West System weight ratio.

Another area of concern for composite homebuilders is "weave fillers". Several different weave filler materials have been recommended over the years in either either spray or paint-on configuration. Morton's Eliminator, Featherfill (polyester) and Sterling (polyurethane) have been recommended and widely used. I started with Morton's and had extremely bad sandpaper clogging.....like ten seconds per sheet!. Featherfill was used by another area Long Eze builder (Brad Carter)but many folks in humid areas have had peeling problems (square foot sections of paint peeling off!). Another Chapter 200 member, Terry Yake (Long Eze) used Sterling (expensive at \$100.00 per gallon, with 2 or 3 gallons needed per Long Eze), and had good results except for a short sanding "window" and severe pinholing. Sanding was easy the next day, but difficult after a week. It also took much additional time and effort to fill each pin hole with lacquer spotting putty. Each material had its drawbacks. Rutan has been using a new filler and recommended it to me. It is called Ramanel, and costs only \$25.00 per gallon, versus \$50.00 for featherfill and Mortons or the more expensive Sterling at \$100.00. It sprays well, has excellent adhesion and sands like a dream with no pin holes. Ramanel is not affected by time (sands as good tomorrow as it will next week) and provides an excellent finish. It is manufactured by RAM Chemicals in the Los Angeles area and is based on polyester. It is pure white in color and has the consistency of latex house paint. It it has any weak points, it is a little hard to spray with a siphon gun, but works well with a pressure pot. You can sand 10 to 20 square feet with a single piece of 100 to 150 grit sandpaper...dry! Apparently, the

high performance glider people have been using it for years to perfectly contour their competition ships, without a topcoat! They just sand it with 600 grit and leave it. They probably don't get much life, but they're always recontouring anyway. Ramanel is available in the midwest from Associated Industries in Wichita, Kansas (phone 316-264-6311). Ask for Ramanel primer-surfacer, white, Part Number 46-32, and make sure you have them include the catalyst. Instead of spot putty, I use a 50/50 mixture of glass bubbles to Ramanel and it works perfect.

These new filling and finishing materials will substantially reduce the time and effort required to finish your composite airplane to the "standard" level expected of composites. These new materials are fully compatible with Saf-T-Poxy composites and other materials recommended by Rutan Aircraft Factory. Take advantage of these new materials for a beautiful and smooth exterior finish, that will take hours less than the "old" style materials.

UPGRADED PERFORMANCE SPECIFICATIONS

A number of you have written in and wanted performance specs on the Dragonfly with the Magnum Plus engine in it.

I have been flying my Magnum Plus powered Dragonfly now for three years. Justin Mace's airplane has been flying for almost two years. The first year on a 60 hp engine and the last several months on a Magnum Plus.

You may recall that Justin's airplane is the one that had an elevator flutter and we used it to prototype the improved elevator torque tube system. Justin has done some modifications in seating arrangement in his airplane to accommodate his long legs. He stands 6'4"! As a result of being gadget minded, he's got a real heavy Dragonfly coming out at about 675 lbs. empty.

Justin weighs in at around 200 and was telling me that recently, he had a friend with him, who was 215 lbs., plus the usual tools and canopy cover, tie downs, etc., that you haul around all the time. At 8500 feet he was trueing out 180 plus miles an hour.

Justin's airplane is a little faster than the old prototype. It's getting a bit weary and tattered and we did a couple of

things on Justin's engine, one of which is the A higher compression, ^{THIC} has been incorporated in the stock engine. So, with his heavy weight, we feel it safe to say that with the Magnum Plus, any clean Dragonfly can be made to cruise at 180 TAS.

Now before any of you get alarmed and say you're cruising at the red line, note that I said "true airspeed". You can push them that fast right down close to the ground and see 180 on the airspeed indicator, but that's pure foolishness, and it could be dangerous. Dragonfly's best performance altitude is between 8 and 11,000 feet. At altitude, depending on outside air temperature, of course, you're going to be seeing an indicated air speed of 160-165, when the true calculates out to be 180.

The red-line airspeed is the indicated airspeed and that hasn't changed; it is a "never exceed" 180 indicated. Indicated airspeed is a function of pressure and it is also a measure of the pressure the slip stream is exerting on the airframe. Slipping through the air at high altitude, trueing out at 180, indicating 160-165, the pressure on the airframe is still in the 160-165 mph region.

All of the original specifications and design limits still apply. 180 mph is still the red line and we still go into the yellow caution zone at the same figure.

We can still cruise 165 TAS on the 60 horse engine, which is a very rapid airplane. Where the big engines show off their horsepower is in rate of climb. Justin's airplane, as heavy as it is, and with a cruise prop on it, will show 1100 feet a minute rate of climb at gross weight on a nice warm day. Solo, it'll go up a lot faster than that.

Justin's airplane will be here at the Swarming. Some of you will, I'm sure, get a chance to get a ride in it and all who attend will have a chance to see it perform. I think it's far more typical of the average builder built airplane than the prototype is. The old prototype, to this day, doesn't have much in it in the way of instruments, radios, and creature comforts. It's always performed well because it's light. Justin's performs exceptionally well, even though it's on the heavy side in all flight configurations. Takeoff, climbing, cruising, descending or landing, his airplane is just rock solid. It has a real good feel about it.

We have noticed aileron pressures, as we go progressively faster are becoming very, very stiff at high speed and on a long cross country, particularly one that exposes you to a lot of turbulence, can

wear out your shoulder muscles keeping the wings level. We'll be experimenting with an auto-servo tab mechanism on Justin's airplane in the next two or three months to see if we can reduce the control pressure load on the ailerons at high speeds and make them more harmonious with the elevator. If so it will make it a much more pleasant airplane to fly over long distances.

TERRA RADIO EQUIPMENT

The Funny Aviation Agency got part of what they wanted and we're going to have to have transponders with altitude encoders to fly in and out of a lot of airports now and also to fly above 10,000 ft.

I have found the transponder to be a very useful tool in the airplane and I think will add to the enjoyment and versatility of flying, rather than detract from it. As a for instance, one night last year I was going into Midland, Texas area, just at dusk, planning to land at a little private airstrip to the Southeast of town that wasn't even on the chart. To add to the confusion, my magnetic compass had taken a dive, because I had set a little tape recorder to close to it and the speaker magnets loused it up.

As I approached Midland, I got on approach control frequency, gave them the name of the little airport and asked them to direct me to it. They gave me a transponder code, identified me and then gave me a heading change to the right, another minor correction and then told me my airport was 12 o'clock, five miles. By that time I had it in sight.

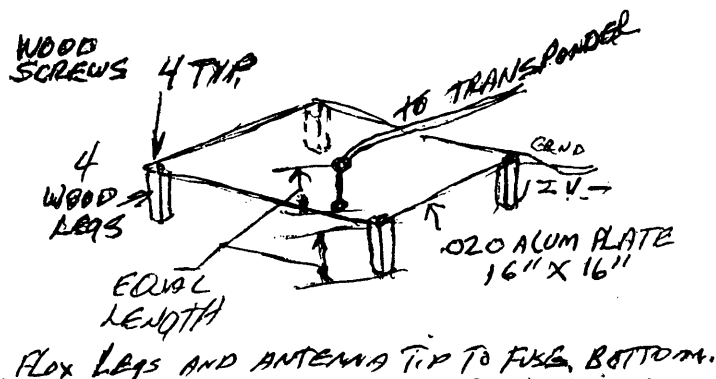
Yeah, a transponder is another added expense, but if we're going to continue to fly, we're going to have to start playing the game a little more seriously, perhaps. I personally am a little bit proud, perhaps, of having the ability to go into big busy airports, work with their approach control, towers, ground frequencies and such. I can go anywhere in my little old homemade Dragonfly that the big airliners can go and work within their system. Don't be afraid of the transponders or the system. Learn how to get in and use it. It'll really increase the enjoyment and versatility of your flying.

We can offer you tremendous discounts on all Terra radio equipment. It's light weight, good quality equipment, backed up with very very good warranties and customer service. Their transponder is one of the smallest and lightest in the industry. A matching altitude encoder can be obtained now for \$200.00 and I predict they'll be even less than that in the next year. If

you have a need for any kind of radio equipment, give us a call and we'll give you a quote on whatever you might desire.

INSTALLING A TRANSPONDER IN YOUR DRAGONFLY

Since we don't want to stick any antennas on the outside of our Dragonflies to create drag and slow us down, it's necessary to do things a little differently to install a transponder antenna. I've got one inside the prototype that works very well and is very easy to install. I have a piece of .020 aluminum plate 16" square setting in the bottom of the fuselage on the right side, just aft of the wing drag bulkhead (see the sketch) that becomes the ground plane for the little short stub transponder antenna. The stub antenna is mounted in the exact center of this aluminum plate and projects downward. At each corner of the aluminum plate is a wood block secured to the plate by wood screws; that is projecting down from the plate equal to the length of the transponder stub antenna. The whole works is secured in the bottom of the fuselage with five globs of flox so it sets and stays where it belongs. I've had it that way for over two years. It works out real good and when working with an approach control, they say our radar signature is very good. Will work with any brand of transponder. The aluminum ground plane itself is connected to the negative post on the battery.



FLYING TO OSHKOSH?

I plan to arrive at Oshkosh a couple of days before the big bash begins, and will make every effort to organize a line on the flight line near the main entrance gate where all of our Dragonflies flying in can be grouped. Tentatively, this is planned to be on the spot or very near where we have parked in the past. When you do arrive in your Dragonfly, tell the flagman on the ground that you are going to the Dragonfly parking area and don't let him divert you to some other place. I'll do my level best to reserve enough spaces for you guys to hug in together. Looking forward to seeing you there.

ENGINE BARGAIN

We advertised the 60-2 engine off Del Bradley's Dragonfly for sale awhile back and a builder put a deposit on the engine. The engine itself is still on the aircraft. We'll be putting a Magnum Plus on it soon. Our builder with the deposit on it has had a financial setback and asked us to find another buyer. This engine is in perfect condition, has about 100 hrs. on it. To help expedite a quick sale, HAPI will extend the warranty another 50 hours to the new owner. Price is very reasonable, engine is available now, so call QUICK if you're interested. This one won't last.

DRAGONFLY BUILDER CAPS -- PATCHES

We have a good supply of those nice silver/gray builder hats with a beautifully embroidered emblem on them. Good looking and identifies you with your aircraft. Caps sell for \$6.95 plus \$1.00 shipping and handling. Jacket patches sell for \$5.00 ea. If you order before Sept. 1 we'll send you one of each for only \$10.00 Sorry, U.S. only. Foreign builders add \$2.00 for postage.

NEWSLETTER SUBSCRIPTIONS

All too often it seems, I'll be talking to a builder, answering his questions and trying to solve a building problem for him. When I ask "Did't you read Nsltr.# so n' so, where we dealt with that problem?" "Oh, I don't get the newsletter, I look at my buddies copy".

It is still policy that a builder keep a current subscription to be eligible for builder support. If our builder reads the newsletter, he will have the answers at hand to solve most problems and won't have to resort to so many expensive phone calls.

When we spend valuable time on the phone answering needless questions brought about by lack of information; read 'no newsletter', all our customers wind up paying the bill because we have to build more overhead costs into the price of each part. In effect, those of you who do keep your newsletter subscriptions current, and we at VIKING, who don't always insist that 'no newsletter, no advice', are subsidising a few builders who aren't paying their own way. It shouldn't be that way and in the future we are going to have to follow the rules.

I've also had builders xerox their newsletters for other builders. Hey, guys, if the paid subscriptions list gets too small, there won't be a newsletter. It takes a lot of time and effort to put out this thing and if it becomes a big loss, I believe we will all lose. Please consider this and help us to continue to help you.

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THANKS



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