

# "Dragonflyer"



CHRIS GENTRY AND HIS ABLE ASSISTANT LOUISE

**DRAGONFLY NEWSLETTER**  
#4 FALL 1981

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16551 PERDIDO KEY DRIVE  
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The DRAGONFLYER is the only method for disseminating information concerning plans changes for the Dragonfly. All builders MUST subscribe. A one years subscription is included in the price of the construction manual. The DRAGONFLY will be available for viewing in the Pensacola area in the very near future. Write or call Viking Aircraft for further details.

**ERRATA SHEET:** Before each newsletter is published, the errata sheet that is sent out with each set of plans is up-dated to include all the significant plans changes. This means that it is not necessary for new builders to have all the back issues of the DRAGONFLYER in order to obtain the current plans changes. This is not to say that the updated errata sheets contain each and every building hint, but they are an up to date source of plans changes and alterations. For the information of you non-plansholders, these changes are all of a minor nature such as dimension errors, typos, minor omissions, etc. They do NOT include major alterations to the airframe, nor do we anticipate any such changes.

For you early plans purchasers, it is not necessary for you to have the updated errata sheet since all the plans changes are published in the DRAGONFLYER. Just be sure to keep your subscription current.



**NEWSLETTER EXPIRATION:** Some of you DRAGONFLYER subscribers are receiving your last issue with issue number four. Some of you may not have kept track of when your subscription expires. For that reason, Viking Aircraft has devised a secret code to notify you when you are receiving your last issue. This code is hidden on your address sticker and can be decoded by following these instructions: If your address sticker contains only your address, that means that your subscription is not expiring and that no action is required; however, if your address sticker has the words **LAST ISSUE** in bold type before your name, that means that this is your last issue and you should re-subscribe. It would be nice if you would mention that you are a renewal when you re-subscribe. Any builders experiencing difficulty decoding their address sticker may send \$25 and a self addressed stamped envelope for further instructions.

CLINTS  
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**FLOYD THE COMPUTER:** As you may have noticed, the newsletters are now written on a simple word processing system that we are using with our computer. In keeping with our low cost philosophy, we decided to purchase a small computer rather than hire an employee. A small but efficient staff allows us to provide you builders with the opportunity to construct low cost aircraft. It's no secret that a designer cannot support his design at a financial loss for very long. The builders pay for the operation one way or the other. The Viking Aircraft approach is to try to keep the total cost as low as possible. In order to do so, we have encouraged healthy competition among the materials suppliers rather than locking the builders into a sole source of supply. We have not spent a great deal of money on advertising. Rather we have spent a lot of time concentrating on providing personal service and honest answers. You don't get to read fancy color ads, but you don't have to pay for them either.

In keeping with this low cost approach to homebuilding, we decided some time ago to buy **FLOYD** (the computer) to help us keep track of our builders. That led right into word processing and now I am pounding the keys for things like the newsletter and answers to technical letters. Ching is still typing, mailing, and the thousands of other things she does during an average week, but some of you are receiving letters hot off the word processor. Errors are quite easy to correct, but since I'm the worst speller in the world and **FLOYD** is real stupid, some errors creep through. My apologies.

**WE'VE MOVED!:** You have probably noticed by now that Viking Aircraft has moved to the Pensacola, Florida area. Please make note of our new address and phone number. Our mail is still being forwarded from California, so don't worry. The system of forwarding has worked pretty well except for a few letters that chased us all over the place about Oshkosh time. There should not be any long delays from now on.

**LONG ADDRESSES:** If you receive your second newsletter with a typed address rather than a computer generated sticker, it means that your address is too long to fit into **FLOYD'S** small brain. This is usually a problem with you folks who use a long business address or who live in England or France. If possible, please send us a shorter version of your address. On the other hand if **FLOYD** is using an overly short, inaccurate, or otherwise less than perfect address; let us know so we can make appropriate changes.

**CUSTOM SPINNER:** Monnett is now selling a

spinner that Viking Aircraft had custom made to exactly match the upper curve of the **DRAGONFLY** cowling. The 12" spinner is available with both a back plate and a front plate and has the proper offset to match the HAPI prop hub extension when used with a Great American Propeller. We haven't mounted this spinner on a Monnett prop hub (which doesn't stick out quite as far as the HAPI hub) but the backer plate that Monnett uses for his stock 12" spinner should work OK. The proper front plate to use in this case is a mystery at this time, but will depend on your prop thickness. Monnett has a variety of front plates that (in combination with some spacers) should work OK.

**OSHKOSH 1982** As they say, "It's not too early to make plans for next year". Stan Kalishman has volunteered to be the Dorm Coordinator for Oshkosh 1981. This year a bunch of KR builders reserved rooms on the same floor and were able to get together for some interesting evening bull sessions. **DRAGONFLY** builders wishing to do the same thing in 1982 should contact Stan. He needs the following information neatly printed on a separate piece of paper:

LAST NAME---FIRST NAME---M.I.

STREET ADDRESS

CITY---STATE---ZIP

COUNTRY (if outside US)

TELEPHONE NUMBER

ARRIVAL DATE

CHECKOUT DATE

NUMBER OF ROOMS REQUESTED

TOTAL DEPOSIT ENCLOSED

The cost is \$14.50 per room per day. The convention is from July 31 through August 7, 1982. Rooms are furnished with linens, pillows, and towels for two persons. The deposit is \$14.50 for each room requested, American currency only. Make checks payable to: The University of Wisconsin-Oshkosh. Mail your check along with the necessary information to: STAN KALISHMAN 12 APPLE ORCHARD RD., ROCHESTER, NH, 03867 no later than 1 December 1981 to insure that everyone can get rooms together.

**MATERIAL PROCUREMENT** Add the following information to your material procurement list. CLARK FOAM 491 S. River Oaks Drive, Indialantic, Florida 32903 Ph# (305) 724-6007. Larry Pope is the Clark distributor on the east coast. He is selling all the urethane for the **DRAGONFLY** for around \$180 or so, which is a pretty good price. You may pick up the foam at his warehouse in Melbourne, FL which is about 55 miles east of Orlando, or Larry will ship the foam to you. Contact him for details.

ALPHA PLASTICS Rt #1 Box 231, West, Texas 76691 is handling some materials including fiberglass cloth.

Contact them for additional information.

THE GREAT AMERICAN PROPELLER COMPANY was mistakenly left off of our latest list (sorry guys). They make very nice props and have a nice trial policy. Contact them at 555 Westmont Drive, 212 San Luis Obispo, California 93401--(805) 481-4450.

The zip code of CUSTOM AIRCRAFT PARTS is in error on some lists. The correct zip is: 92110.

Wicks is now selling canopies and cowlings. The canopies and cowlings are still available directly from the manufacturer. The price of the canopies is expected to remain the same for the immediate future; however, the cowling cost has increased to \$175. FIBERTECH will ship up to 5 cowlings in the same box for one \$15 crating charge. You can also save lots of money on shipping if you order several to a box, so get together with other builders in your area and save a few bucks. FIBERTECH also offers additional discounts for larger quantities. Contact them for details.

A lot of DRAGONFLY builders have been very successful in obtaining materials at a large savings by buying in bulk. Contact builders in your area and get together to save a few bucks wherever you can. If you have located a good source for materials, let us know so that we can publish it in the DRAGONFLYER. One builder in the central part of the US has located the styrene for less than half the cost of some of the major homebuilt suppliers; however, the outlet is not able to ship at present. If this builder is able to arrange shipping, we will publish full details in a future newsletter.

**COMPONENT PARTS** As you know, Viking Aircraft does not have a business arrangement with any suppliers except the canopy and cowling folks (because we own the tooling). Some of you may have noticed recent advertisements published by a number of companies for various DRAGONFLY component parts. Some of these ads imply (or just come right out and say) that they are authorized distributors for DRAGONFLY parts or materials. This is, of course, not the case. Viking Aircraft does not put its reputation behind any company that it has no control over and in no way endorses any of these companies. While their products may be fine, we have no way of guaranteeing their quality. In fact, we know of several instances where companies have supplied components that were supposed to be correct DRAGONFLY parts, but were completely unsuitable. While the companies listed in our material procurement list are believed to be reliable, we encourage builders to shop carefully and be sure that the materials you purchase are the same ones listed in the construction manual.

**ADDRESS CHANGES** If you change your address, please notify us. We have had a few newsletters returned because the post office was unable to forward it for some reason. Remember that the DRAGONFLYER is the only way to keep up with plans changes. It's important for us to have your correct address.

## KEITH FATHERS FROM SUSSEX ENGLAND



**PLANS TRANSFERS** If you purchase a set of plans from someone who has decided not to build a DRAGONFLY, or you have sold your plans, please contact us. We are interested in keeping our files up to date and we want to make sure that the builders are receiving their newsletters. Give us the details on names, addresses, serial numbers, etc.

**PATCHES** The San Diego guys are first again! They have had some patches printed that show a nice front view of the aircraft with the word DRAGONFLY printed below. The patches are black on a white background with a stitched blue edge. They are about 4.8" x 2.8" and cost \$2.50 each. Contact: Tom Lynch Rt #1, Box 495A, Ramona, California, 92065. Wicks Aircraft Supply is working on some DRAGONFLY patches that will show a planform view of the bug similar to the front of the construction manual. We'll let you know when they're ready.

**ANTENNA LOCATION** I had a chance to talk to Jim Wier of Radio Systems Technology at Oshkosh this year and he looked over the antenna installation in the DRAGONFLY. He agreed that the navigation antenna location was pretty good, but was concerned that the communications antenna was too close to the pilots body to allow good transmissions. After operating the system for a while, I have noticed some com. problems that I believe are related to the ant. location. Jim suggested that the half wavelength com. ant. be located on the underside of the fuselage turtle deck using a horizontal position since the polarization is one of the least important factors. This makes sense to me and I believe it's worth a try; however, I have not had a chance to try it. Since the antenna locations are easy to change, some of you builders might consider using an alternate location. Let us know what the results are.

**BUILDERS LIST** OK you guys! How 'bout getting on the stick and sending in your licensing agreement so that we can issue you a serial number and release your names to other **DRAGONFLY** fans? The list of builders who haven't taken the time to let us know about releasing their names is longer than the list of those who have responded. By the way, only about one percent have asked not to have their names released. Because builders are encouraged to purchase materials locally where possible, it is nice to be able to contact other builders to find out where to get the best prices. A strong builders group is good for all of us.

Our policy is to publish the names of any planholder who indicates that he would like his name released. This allows builders to easily communicate with each other whether they have good things to say about the **DRAGONFLY** or not. If you don't like the airplane or our company, we'll still publish your name. Unlike some companies, we don't try to conceal the names of any of our plans holders. We think our product will speak for itself and we hope that most of our customers have nice things to say about us. So far, we have had good results with this policy. There is one thing to keep in mind though. One or two of our builders are making major deviations from the plans. We have advised these folks that major deviations are potentially dangerous and not authorized, but, naturally there is nothing we can do to stop this practice. Rather than conceal their names, we publish them right along with everyone else, so if you contact one of these folks, be careful about letting him talk you into making a dangerous alteration to a proven design. A few of these fellows are actively contacting other builders to encourage them to use untested engine installations for example. We feel very strongly that the **DRAGONFLY** is not a suitable test bed for "hot rod" type engines and we certainly discourage the use of engines larger than 1835cc. Other builders are wonderful for providing help over any rough spots you may encounter during construction, but remember that wild ideas dreamed up by a well meaning enthusiast could prove to be wilder than you have bargained for.

**OSHKOSH 1981** This year was another successful year for the **DRAGONFLY**. Ching and Bob left Memphis on Wednesday before the convention. Ching drove the van full of plans, tents, beer, and other junk while Bob flew solo. The weather didn't co-operate and Bob soon found himself about to go "VFR ON TOP". Bob claims to be the worlds greatest instrument pilot, but only if he has an instrument. Since the **DRAGONFLY** is only basic VFR, Bob elected to return to Memphis and try it again the next day. This was the only significant weather delay experienced in over a year of operating the **DRAGONFLY** and points out the fact that quite a bit of cross country flying can be done without the expense of a full IFR set up. Things worked out better Thursday and Bob and Ching got settled in at camp Scholler about mid-day.

The normal routine during the convention was to fly in the fly-by pattern each morning and give a builders seminar at the Wicks booth most afternoons. The rest of the time was spent on the flight line talking to interested people and handing out free flyers. Eleven thousand flyers were given away during the week and each one of those eleven thousand folks asked at least three questions. Hundreds of people sat in the **DRAGONFLY** and quite a few people bought plans. As the week went on, we made a number of new friends and enjoyed evenings in town or at the campground talking airplanes, eating, and making quality control checks on the local beer.



**OSHKOSH FORUM**

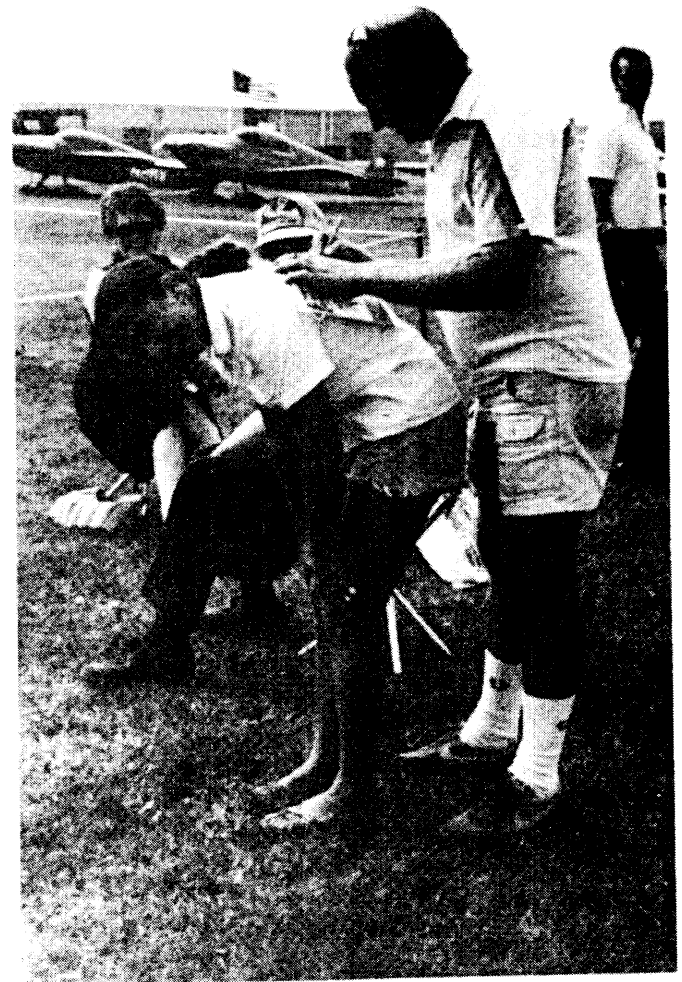


**TRUST ME! . . . .**



**HEADED FOR THE FLY-BY PATTERN**

It was obvious that many folks were at Oshkosh to make a decision on which homebuilt design to construct. Whenever Bob took off or landed there were several potential customers who actually measured his takeoff or landing roll by pacing off the distance between runway lights and calculating the distances down to the foot. These same folks went over every square inch of both the aircraft and the sample set of plans with a fine tooth comb. The combination of a poor economy and inflated performance claims by some companies has produced a crop of very, very careful builders who want the facts before buying. The highlight of the week for these fellows was the day that the Q2 was in the fly-by pattern with the **DRAGONFLY**. Bob was not aware that the Q2 was taking off behind him, but the interested observers were all watching with great interest. By counting the runway lights, they were able to measure the takeoff roll of the Q2 as double that required by the **DRAGONFLY** and the climb angle of the Q2 was startlingly flat compared to the **DRAGONFLY**. The steep climb angle of the **DRAGONFLY** is one of its strong points and is one of the things people comment on the most. By now a rather large group of people were intently watching the fly-by pattern to see the top speed comparison. Both aircraft were being flown solo. The Q2 pilot was flying a small pattern inside the pattern prescribed in the morning pilots briefing and within several laps had closed up the distance between the two aircraft. For those who have not been to Oshkosh before, the fly-by pattern is an oval racetrack course which is carefully briefed each morning.



**BOB AND CHING IN THEIR PORTABLE OFFICE**

Faster aircraft are supposed to fly a large pattern on the outside of slower craft. This is, of course, done in the interest of safety because there can be top speed differentials of over 100 mph in the same pattern. Several pilots commented to Ching that the tight pattern flown by the Q2 pilot was not going unnoticed by the general public. At any rate, as both aircraft flew down the straightaway together, observers were interested to note that the Q2 apparently had no top speed advantage over the DRAGONFLY. By continuing to fly a smaller pattern, the Q2 lapped the DRAGONFLY a couple of more times. Each time they went down the straightaway together, the results were the same. The Q2 was unable to exhibit its well advertised speed advantage, much to the glee of the DRAGONFLY contingent. When it came time to land, Bob performed a normal landing and turn-off. The Q2 pilot elected to land just behind the DRAGONFLY and passed Bob on the runway just as Bob was turning off into the grass. The same group of scientific observers (including several aerospace engineers) again paced off the distances and pronounced the Q2 roll-out double that of the DRAGONFLY. Although a couple of spectators expressed surprise at the results of this rather informal fly-off, it came as no surprise to Bob. What came next; however, was indeed shocking. As Bob shutdown near his parking place, the Q2 taxied by. An embarrassingly large number of people started booing and giving the Q2 pilot the thumbs down signal. This sort of thing usually isn't done, especially at Oshkosh where folks are supposed to be on their best behavior. For some reason people seemed to become more and more emotionally involved in the DRAGONFLY as the week went on.

A large group of spectators gathered around the DRAGONFLY after Bob got it tied down in the parking area and a lively discussion ensued concerning the fly-by pattern. When Bob was a Navy fighter pilot, he received extensive training in recognizing opening and closing rates. In fact, a fighter pilot lives or dies on his ability to solve complex relative motion problems. Bob agreed with the ground observers that no one could claim that the DRAGONFLY was exhibiting higher top speeds than the Q2; however, if the Q2 were in fact faster than the DRAGONFLY then it certainly was not enough to make much difference. The general consensus seemed to be that the Q2 pilot seemed to be going out of his way to make the DRAGONFLY look good. Advertising claims notwithstanding, no one with an aeronautics background expected the Q2 to exhibit very short takeoff and landing distances. Unless people actually measure the distances (as some critical observers were doing), the average spectator will quickly forget just what a particular takeoff looked like. The DRAGONFLY looks best if it takes off behind a Vari-Eze rather than a Helio. The fact that the Q2 pilot would elect to take off and land right behind the DRAGONFLY on purpose and in front of a large crowd of spectators still has Bob scratching his head.



**BOB RECEIVING THE HAPI  
AWARD FROM PAT TAYLOR**

The DRAGONFLY forum on Wednesday was packed with interested folks wanting to hear the latest hot scoop. Bob gave some general background information as well as some information on the future plans of Viking Aircraft. Everyone seemed to enjoy the talk and Bob had the audience laughing when he listed some of the wild rumors that were circulating during the week. Some of these rumors pointed out just how aggressive the homebuilt aircraft business has become in the past few years.

The DRAGONFLY was judged to be the best VW powered aircraft and received a very nice plaque from HAPI. We are quite proud of this award and it is decorating our office wall.

On the way back from Oshkosh, Bob noticed an unusual vibration coming from the engine. After landing it was discovered that the prop was not tracking properly as if the prop hub had been bent. At first this was a mystery, but after some closer examination, an interesting story unfolded. Before going to Oshkosh, Bob was faced with the task of starting the DRAGONFLY by hand because of a dead battery. No one else was at the airport to assist, so Bob went through his usual safety drill. The tail was tied to a tie down with a strong rope. The wheels were securely chocked. Bob even parked his van in front of the aircraft so that if anything happened the van would suffer any damage before the nearby Aero Commander could be damaged. Bob cracked the throttle and prepared to prop the engine. Everything had been thought out, right? WRONG!

## FORUM AUDIENCE



The engine started alright, but the throttle was cracked a little bit too far. Without anyone in the cockpit the tail began to lift. The tail rope and chocks kept the **DRAGONFLY** from moving forward, but because the tail rope was about 8 feet long, it didn't do anything to hold the tail down. Naturally the prop hit the pavement and was broken. Bob shut down the engine right away and made an inspection of the prop hub area. The hub was checked with a dial indicator and no unusual run out was noticed. A new prop was fitted and nothing more was thought about the incident except that Bob learned a lesson about the **DRAGONFLY**. The tail must not only be tied back, but it also must be tied **DOWN** if it is to be started without someone in the cockpit. The FAA regulation requiring someone to be at the throttle is not without merit. These sort of things can make a person feel real stupid, especially if you think that you have taken every precaution to make sure that nothing can go wrong.

Apparently the diagnosis of no damage was incorrect and actually there must have been enough torque loading imposed on the hub keyway to start a crack that grew over a period of time. Eventually the crack grew large enough so that the prop went out of track and produced a noticeable vibration. A little luck goes a long way, and Bob didn't suffer anything other than a quick pulse that goes along with those strange noises. The most annoying part of the entire episode is that the engine had to be dismantled to make things right. It is hoped that others might learn from this incident and perform a more careful inspection of the prop hub area in the event of a prop strike.

**LIGHTS** A few builders have expressed a desire to fit lights to their aircraft. Since we aren't big fans of night flying for sport, we haven't fitted lights to the prototype and we don't have detailed plans on how to install a set of lights since we haven't done it ourselves. However, we do have a few thoughts that may prove helpful to those who insist in fitting lights. These tips are mostly in the form of don'ts. First of all, do not under any circumstances cut any notches in the leading edge of any airfoil surface for the purpose of installing landing lights. You must not compromise the structural integrity of the wing, canard, or fin. Also do not do something like hang a tail light on the trailing edge of the rudder. If you do, you are asking for serious flutter problems. A possible place for a landing light would be in the lower part of the cowling. Strobe lights could be mounted on top and bottom of the fuselage or on the tips of either the wing or canard. Check with your FAA inspector for his opinion. A combination running light and strobe light could be mounted on the outboard surface of the wheel pant as long as it was mounted aft of the multiple UNI cloth strips that attach the wheel pant to the canard. The wing tip is also a possible location. The best place for a tail light is probably on top of the tail skid just forward of the tail wheel assembly. Remember that Viking Aircraft has not tested any of the above suggestions and that if you install lights of any kind you must be very careful not to compromise the strength of your aircraft and you must constantly be aware of the possibility of inadvertently altering the aerodynamics of the **DRAGONFLY**. Proceed with care!

**HYDRAULIC BRAKES** When the **DRAGONFLY** was designed, we wanted to keep the cost as low as possible, consequently we used inexpensive mechanical brakes. The plan was to retrofit hydraulics if necessary or to make them an option for the rich guys. It seemed that the addition of more powerful brakes was one thing that could be recommended without the need for extensive testing. Our thinking has changed now, and we are recommending that builders not use hydraulic brakes for several reasons. A number of test flights have been made where Bob tried to use heavy braking as soon as possible. Because of the low wing loading, high aspect ratio, low position of the canard, and the general aerodynamic efficiency of the **DRAGONFLY**, there is not sufficient weight on the main gear to provide good braking action until the aircraft is moving at a relatively slow airspeed. Unlike an aircraft that has the elevator on the tail, we cannot either add apparent weight to the main gear by holding forward stick nor can we keep the tail from rising by holding back stick. By the time the aircraft is rolling slowly enough to load up the main gear sufficiently to provide good braking traction, you are starting to think about where you are going to turn off the runway. Even if more powerful brakes were fitted, the landing roll would probably not be shortened to any great extent. As it stands now, the brakes will hold the aircraft at full power and there is no tendency to nose over with heavy braking. There is also no tendency to ground loop because the equalizing toggle provides equal braking to each wheel automatically. Differential braking (especially if powerful brakes are fitted) could be asking for trouble unless the pilot were very, very careful. Although differential braking might help a little bit with ground handling in tight spots, we have had no real problems even at rather small airports with our present set up. The extensive wheel pants modifications, coupled with the added cost of hydraulics are two more reasons to stick with the mechanical brakes. After using them for over a year, it would have to be said that they are much more satisfactory than we originally thought, and are probably the best way to go. A few builders will insist on hydraulics in spite of what we say, so we will have some feed back in the near future if you guys will keep us informed of the results.

**WEIGHT CONTROL** We are hearing rumors about some of you folks who are planning to make your **DRAGONFLY** as much like a mini-747 as you can. **DON'T DO IT!** No one can say that we ever pretended that the **DRAGONFLY** is a "do everything" airplane. It is a small, light weight, inexpensive, sport plane and should not be thought of as anything else. Every pound of additional weight will hurt performance. Don't load up a \$5000 airplane with \$10,000 worth of electronics and expect it to see you safely through IFR conditions. You can't fool Mother Nature with big bucks.

Some folks seem to be rather casual about gross weight. We often get questions about increasing the gross weight by using a larger engine. Well, the truth is that a larger engine is usually heavier, so that the useful load will go down rather than up. The **DRAGONFLY** is not underpowered and larger engines will not give you a higher gross weight. The EAA has lots of smart folks who know a lot about aircraft structures and design, but a little knowledge can be dangerous if all the facts are not known. Everyone seems to be aware of the fact that fiberglass is pretty elastic compared to some materials, so in order to get the proper stiffness, most fiberglass aircraft use more glass than necessary for structural reasons. This gives the proper stiffness and, in many cases, produces a very strong aircraft. Unfortunately, some armchair engineers take this to mean that gross weight limits don't mean much when one is dealing with composite aircraft. The thinking is that there is so much reserve strength built in because of the need for stiffness, that if one overloads the aircraft, uses a large enough engine to get off the ground, and doesn't fly so fast that flutter becomes a problem that everything is going to be OK. The interesting thing is that this thinking isn't completely false and homebuilders are proving that they can get away with this sort of thing every day; however, just because an aircraft is smooth and white doesn't mean that it is overbuilt. The **DRAGONFLY** is able to save weight by using carbon fiber spars as opposed to fiberglass mostly because the carbon is much stiffer than glass. This means that it is not necessary to use lots of extra material in order to provide the required stiffness and the aircraft may be designed without all that unnecessary excess strength. It also means that the gross weight limit for carbon fiber aircraft should be considered a limit. Another consideration is that "sand through" damage to the spar cap should be avoided at all costs. You can do a little damage to a fiberglass spar and rationalize it by saying to your self "don't worry, there's plenty of strength left because everyone knows fiberglass planes are overly strong". Do every one a favor, and don't use that type of foolish thinking when you are using carbon fiber. This is not to imply that carbon fiber is not a great material to use for spars. It is an outstanding material in fact, but you cannot act like an idiot and expect everything to turn out OK. Build light and strong and resist the temptation to overload your aircraft with junk. It's one of the worst things you can do.

**CHRISTMAS HOLIDAYS** Ching and Bob are going to try to take a week or two off around Christmas time if business permits. The next issue of the **DRAGONFLYER** will be published just before Christmas and will have the exact dates.



BUILDERS WHO HAVE RELEASED THEIR NAMES

PAUL V. LE BLANC  
 TOM DAVID  
 WILLIAM E. FARRELL  
 DANIEL A. MOORE  
 R. WAYNE GORRELL  
 STANLEY KALISHMAN  
 LLOYD LAFLIN  
 LESTER A. HEIM  
 PETER LOFGREN  
 J. BERNARD  
 ROBERT J. BELL  
 RICHARD W. HOCH  
 GROVER BENNETT  
 WILLIAM E. HANNA  
 JOSEPH P. TOPOLOSKY  
 RALPH W. VOIT JR.  
 ERIC C. CLAPP  
 GEORGE SAUNDERS  
 A.H. STANWOOD  
 J.F. GREEN  
 DONALD E. HEWES  
 RON HLOTZANSKY  
 F.S. LOVELACE, APT. #1003  
 ERNEST L. DE GIACOMO  
 CLYDE K. REES  
 G.A. DE PRIST  
 M.A. MAZTON  
 TOM RUGGLES  
 JAMES E. NALLY  
 DR. JOHN SPANDE  
 LOWELL R. WEAVER  
 LEO F. SHERIDAN  
 BOB VIOLET  
 GARY WILLSON  
 GARLAND A. MORRISON  
 GARY KONGRAD  
 ROBERT VERRIEST  
 JIM BLASTON  
 BUCK BUCHANAN  
 GERALD C. WEAVER  
 EDWARD L. DEPEW  
 RICHARD WHITEMAN  
 DALE A. HANSEN  
 PAUL T. HANKINS  
 G.A. PSCHAK

689 LOWELL ST.  
 BOX 541  
 1660 EAGLEVILLE R.  
 45 TREMONT ST.  
 8 BIRCH ST.  
 12 APPLE ORCHARD RD.  
 RT. #1 BOX 321  
 192 MIDFIELD RD.  
 R.D. 1 BOX 195

1530 HENRY RD.  
 7941 DENNIS RD.  
 62 MILL STREET  
 RD. #1  
 R.D. #1  
 19 N. JEROME ST.  
 13121 MADONNA LANE  
 RT. #2 BOX 213  
 927 CATSKILL CT.  
 11 DONNA RD.  
 12 MEADOW DR.  
 2498-1 ATLANTA RD.  
 3640 PEACHTREE COR. W  
 4852 PINETREE DR.  
 109 NOBLITT ST.  
 P.O. BOX 110312  
 8309 PORTER CENTRAL  
 2758 NOE BABY RD.  
 1812 GLEN ELLYN PARK  
 13732 OAK BROOK DR.  
 1815 ALDEN S.W.  
 660 ALAYNE AVE.  
 RR #2  
 RR #7 ONE PINE RD  
 3696 MOORLAND DR.  
 3313 HARVARD  
 16832 SALEM  
 357 E. WOODLAND  
 1448 SYLVAN GLENN  
 2312 WINTERS DR.  
 2293 BARBER RD.  
 14955 BIRCH LAKESHOR  
 RT. #4  
 RT. #5 BOX 4  
 830 N. DARLING

PEARBODY, MA 01960  
 NANTUCKET, MA 02554  
 TIVERTON, RI 02878  
 WARWICK, RI 02886  
 DERRY, NH 03038  
 ROCHESTER, NH 03867  
 JERTICHO, VT 05465  
 COLONIA, NJ 07067  
 SCHUYLERVILLE, NY 12871  
 DES MONTS FRANCE  
 PORT BYRON, NY 13140  
 ANGOLA, NY 14006  
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 R.R. 1 BOX 284  
 2416 E. DOUGLAS  
 RT. #1  
 233 BUTTERNUT ST.  
 7511 JOHNSON RD.  
 833 HIGH ST.  
 3240 S. QUINCY AVE.  
 RT. #1  
 217 HOWARD ST.  
 3455 S. COON CREEK DR  
 RT. #2 BOX 208-41  
 9523 YORKSHIRE LANE  
 200 STATE HWY 5 W  
 RT. #1  
 WEST SHORE ROUTE  
 3820 RUGEN  
 11633 W. 33RD ST.  
 334 BLACKHAWK DR.  
 464635 DOLLY LANE  
 990 N. LAKE SHORE DR  
 117 6th ST.  
 1509 HILLSIDE LN.  
 2527 THE STRAND  
 3234 NORTHERN AVE.  
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 907 TROUT  
 14848 RALLS DR.  
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 8602 GOODFELLOW BLVD  
 1509 NANCY LANE  
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818 W. CANO  
RT. #1 BOX 277  
1206 MORROW  
5531 1ST PLACE  
5595 W. COLORADO PL.  
25566 PLEASANT PK. HY  
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CORE LAB. BOX 1469  
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319 CEDAR ST.  
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13096 SKYLINE BLVD.  
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2140 OLYMPIA DR.  
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1 CITE DE L'AEROPORT  
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**BUILDERS TIPS MICRO** Some builders have written to say that they have let micro harden on the wing core before glassing it the next day. This practice is not approved and is to be avoided in all cases. Micro should be put on the wing cores with a squeegee just prior to glassing the wing surface and should not be allowed to harden! If you have dents that require filling, fill them with dry micro just prior to glassing. Do not let micro filler harden and then attempt to sand the filler on bare foam.

**WEIGHTS** Double Zip-Lock freezer bags filled with sand work well.

**FOAM JOINTS** When using masking tape to join foam pieces, use 2 or 3 regular paper staples through the tape to allow increased tape tension.

**TURTLE DECKS** Use lots of very small dabs of Bondo when holding the urethane foam in the forms. Large dabs will pull out big chunks of foam. Try dabs about the size of a pea.

**READ THE PLANS** Many of the builders who contact us for assistance are simply not reading the plans. The first attempt we make to clear up some point that isn't quite clear, is to read the plans word for word to the confused builder. Believe it or not, it usually works. Follow the suggestions in the construction manual and ask your spouse or neighbor to read the section that has you confused. On the other hand, if something is really unclear, please call us or write a letter so that we can get things worked out. Do not stumble down the path to disaster simply because you don't want to bother Viking Aircraft. Part of the cost of the plans is to get builder support if you need it. Remember that we're here to help.

## PLANS CHANGES

**Aft Cockpit Air Exit Vent Omission:** Cut an oval shaped hole in the fuselage bottom at about fuselage station 150. Make the air exit hole slant aft and make it about one square inch in cross sectional area. Glass the inside of the hole with one ply of 6oz BI cloth.

**Chapter 2 page 9-Fuel Tank Access Ports:** The outboard edge of the fuel tank access ports should be 5.6" from the edges of the tank (not the center of the port as shown in the drawing). These glass-to-glass areas are 5 inches in diameter which allows a 4 inch hole to be cut later on.

## Chapter 2 page 8

**Glass-to-glass bonds:** The glass-to-glass bonds along the top edge of the intercostal bulkhead and along the bottom edge of the canopy bulkhead were inadvertently omitted. Add them to the appropriate drawings.

**CHAPTER 2 PAGE 8 INTERCOSTAL BULKHEAD LENGTH:** Add 1/2 inch to the aft edge of the intercostal bulkhead drawing.

## CHAPTER 13 PAGE 3 ENGINE

**MOUNT DIMENSION:** Add the following dimensions to the side view of the motor mount. The distance from the top of the upper legs (at the firewall) to waterline zero is 6.8". The distance from waterline zero to the bottom of the lower legs (at the firewall) is 7.4". Note that the photographs show a slightly different mount design than the drawings.

YES... "BUTT LINE" IS AN AIRCRAFT TERM



## CHAPTER 6 PAGE 7 RUDDER HORN:

Note that the pop rivets that lock the rudder to the lower hinge thimble and those that lock the rudder to the rudder horn are installed after finishing and painting.

## CHAPTER 14 PAGE 1 POST CURE:

Add: It is desirable to raise the temperature of the cured parts to a temperature higher than they will see in service before any substantial load is placed on them in order to eliminate any possibility of high temperature creep later on. This is most important for the canard spar. The best method is to leave the parts out in the sun after they are covered with grey primer. An alternate method for those with a lack of strong sunlight is to put the canard and wing in the sun with the black spar caps exposed. The proper temperature is reached when you can no longer hold your hand on the surface for 10 seconds. Be sure that the parts being cured are well supported and not subject to any loads. Do not overheat your parts.

## CHAPTER 7 PAGE 7 BRAKE TORQUE

TUBE BEARING: The dimension for the aft edge of the BL-10.9 bearing should be 2 1/8" (not 2 3/4").

## CHAPTER 3 PAGE 11 COLUMN 2

ADD: Be careful when cutting the carbon fiber that you don't make each cut an inch too long "just to be safe". One inch added to each end will add up so that you will be about 4 feet short of carbon by the time you get to the fin spar. Be accurate! If you run out, Wicks will sell you carbon fiber by the foot.

## CHAPTER 6 PAGE 10 RUDDER

HORN: The radii on the ends of the rudder horn should be 3/8" and 11/32" (not 3/4" and 11/16" as shown on the drawing).

CHAPTER 10 PAGE 1, COLUMN 1, PARAGRAPH 3: Change "canopy" to "cowling".

## CHAPTER 2 PAGE 3, COLUMN 1,

PARAGRAPH 2: Add: "Naturally the templates will not produce the exact shape of the cutout and should be used only as a guide to the proper contour. Refer to the side view of the fuselage on page 11. If the cutout is left a little small, it may be enlarged the first time you fit the canard to the fuselage. If it is a bit too large, it may be filled in with dry micro during the finishing stages when you make the final canard (or wing) fit up. In other words, the cut outs are not critical.

## Chapter 7, page 14, column one, paragraph 3:

Braze an AN-3 bolt into each end of the tail wheel push rod rather than using the fork end and stud end and rivets. Use an AN665-21R clevis terminal and an AN315-3 lock nut on both ends of the rod. The overall length of the rod will vary slightly depending on the distance from the rudder horn to the tail wheel assembly.

Page A-2: Delete: 4 MS20470 3-7 rivets. Add: 2 AN3-13A bolts, 1 AN665-21R clevis terminal, 1 AN315-3 lock nut.

## Chapter 5, page 17, column 2

Add: While the wing is bolted in place, cut and fit the small piece of the fuselage cover so that it fits over the wing and matches the rest of the fuselage. Attach it to the wing with one ply of 4" wide 10 oz tape inside and one ply of 4" wide 6 oz tape outside. The bare edges of the cut receive floc corners and are glassed with one ply of 10 oz cloth. Be sure to leave about 1/16" gap after glassing. This gap is sealed with white vinyl tape after final assembly. Glass the aft fuselage cover to the inside of the fuselage sides with one ply of 4" wide 10 oz tape cut at 45 degrees. This glassing may require you to pre-wet the tape and unroll it into position using a roller on the end of a 4 ft long stick. Make the roller out of wire and scrap foam. Squeegee the tape using a small squeegee on the end of another stick. Use floc and scrap foam as necessary to provide a suitable transition between the inside of the fuselage sides and aft cover.

## TOP SPEEDS

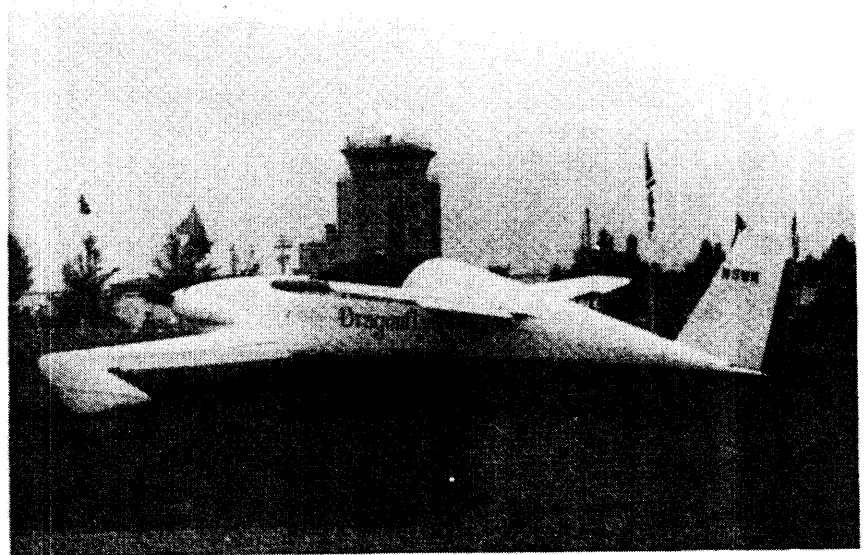
There is some confusion in the homebuilt aircraft world over exactly what top speed means. You might think at first that top speed is the fastest speed that an aircraft could go in level flight. That makes sense; however, some designers have taken to publishing the never exceed speed as "top speed". That isn't, strictly speaking, incorrect but it might be considered a little bit misleading. The never exceed speed of the DRAGONFLY happens to be 180 mph. The fastest it will go in level flight is a little over 165 mph with the 1835cc engine. That is the speed we publish because we believe that is the speed that most people are interested in. We are careful not to publish the never exceed speed for fear that some folks may think that the airplane will go 180 in level flight. Cruise speed is another confusing point. Most people publish the 75% power speed. This is usually the full throttle true airspeed at around 7500 feet and happens to be pretty close to the sea level full throttle airspeed for normally aspirated aircraft with fixed pitch props. Notice that the 75% power cruise speed is not the speed that you get at sea level with the throttle three quarters open. Also note that most people use around 65% power for normal cruise, but the 75% figure is pretty handy and seems to be a convenient standard for comparing cruise speeds. Watch out for miles per gallon figures. Sometimes you will see a mpg claim right next to a tantalizingly high airspeed figure. What you may not be able to discern at first glance is that the airspeed is the never exceed speed (which can only be obtained in a dive) and the mpg figure is the maximum mpg (which is achieved at cruising speeds that are down in the Piper Cub range). The point is: do not inadvertently compare apples and oranges when you're evaluating various designs.

**PILOT REPORTS** A number of people have asked where they can read a pilot report in one of the trade magazines. That is a good question and we're wondering the same thing. We have contacted the magazine folks and have gotten several responses. Sometimes we receive their advertising package encouraging us to purchase full page ads. Sometimes we get promises of flight reports. Sometimes we don't get any response at all. In any case, we're still working on the problem and hope to have some of the major publications do reports on the **DRAGONFLY** in the near future.

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 ILS.....  
 INS.....  
 RADIO ALT.....  
 AUTO PILOT.....  
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**PERFORMANCE SPECIFICATIONS**

CONFIGURATION	Canard
SEATS	2 side-by-side
CONTROLS	Dual side sticks
COCKPIT WIDTH	43 inches
CONSTRUCTION	Foam/Fiberglass
CANOPY	one piece molded
GROSS WEIGHT	1075 pounds
MINIMUM SPEED	45 mph indicated
RANGE	500 Miles
FUEL CAPACITY	15 gallons
WING SPAN	22 feet
TOTAL AREA	97 sq.ft.

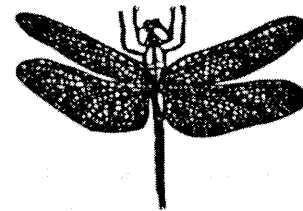
WING LOADING	8 lbs/sq.ft. solo 11 lbs.sq.ft. dual
LIMIT LOAD	+4.4, -2.0
GLIDE RATIO	14.5 to 1
FUEL CONSUMPTION	3 1/4 gph at 155 mph
COST	As low as \$5000

**1600 cc ENGINE**

POWER	45 hp
EMPTY WT.	590 lbs.
TAKE OFF	500 ft.
CLIMB	800 fpm solo 600 fpm dual
CRUISE AT 75%	155 mph
CEILING	17,000 ft.
MAXIMUM LEVEL SPEED	158 mph

**1835 WITH STARTER**

POWER	56 hp
EMPTY WEIGHT	605 lbs
TAKE OFF	450 ft.
CLIMB	1050 fpm solo 850 dual
CRUISE AT 75%	165 mph



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