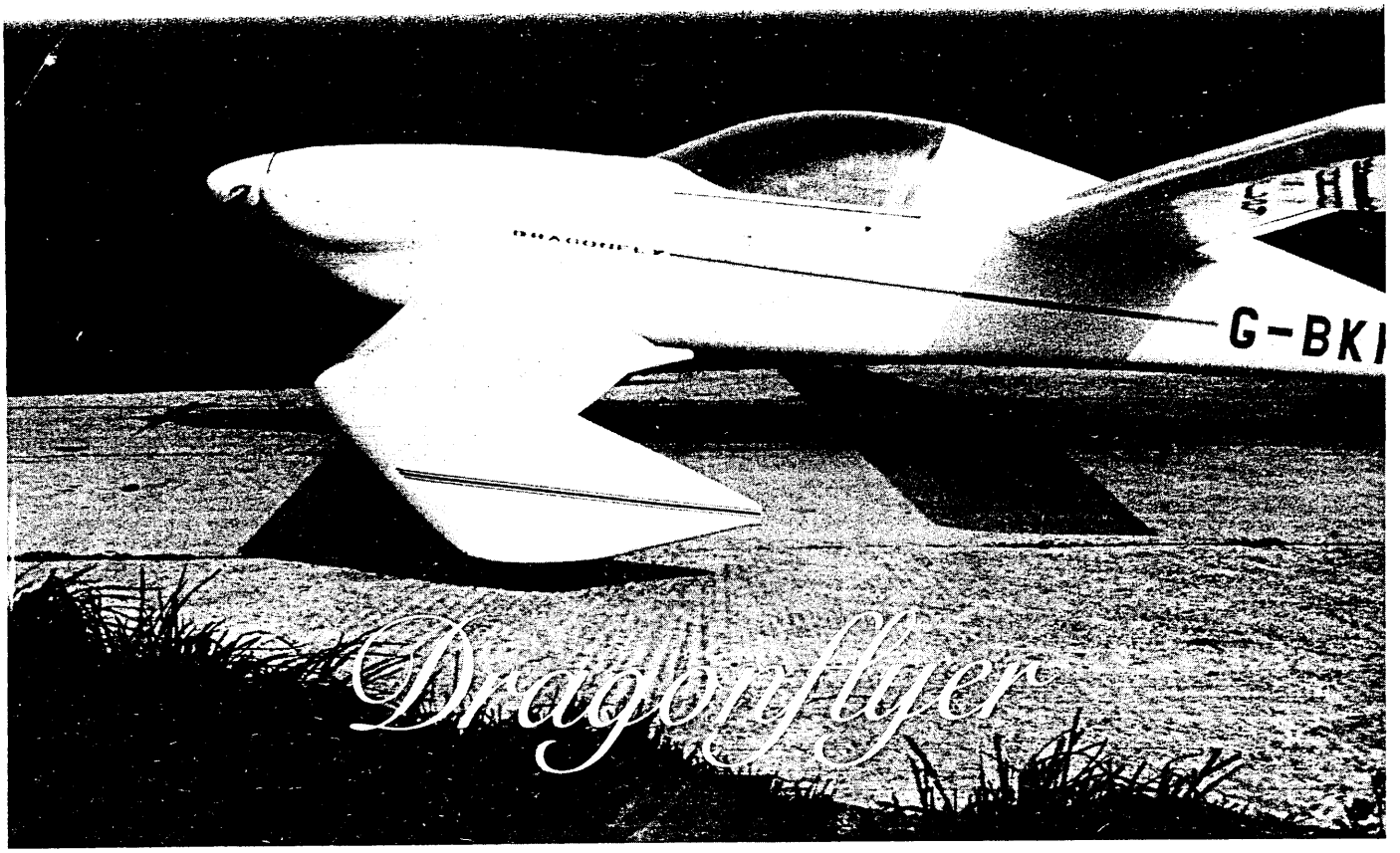

Dragonfly Newsletter No. 19 *Summer Issue - July 1, 1985*

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AWARD WINNERS

Some of the builders out there are building some really nice airplanes. David Bethard, from down in Orange, Texas, has built what I'm told is a beautiful Dragonfly, have not seen it as yet. I believe he did get some kind of award for composite construction down at Sun 'N Fun this year and he just recently got the grand champion award at the Hammond, Louisiana Fly-in. Congratulations, David, I'm looking forward to seeing your airplane at Oshkosh.

I believe that Gary Conrad also got some sort of an award with his Dragonfly down at Sun 'N Fun, but I haven't seen any results from down there yet. Gary flew down with Bob Verriest. Both of them hail from up around the Detroit, Michigan area. I got a letter from Bob to tell me that he was accompanied on this flight by his wife, said they flew the last 250 miles in rain and landed in rain down there. Well, canard means "duck" in French!

Tom Wolfe of Austin, Texas was selected for the Wright Brothers memorial award with his beautiful Dragonfly. He and his wife, Sharon, will be flying to Dayton, Ohio to be honored for two days there and pick up their trophy. Then I understand they are coming on to Oshkosh.

NEW DRAGONFLYS FLYING!

Since last newsletter we've been receiving a lot of flight reports and pictures of airplanes that have made their first flights. Please forgive me if I don't get them all in this newsletter. Sidney Wilker of Owatonna, Minnesota made his first flight on the 31st of May, a 40 minute flight with good results and sends the enclosed snap shot. Note the forward sliding canopy that incorporates a roll bar as part of its structure.

Malcolm Lovelace of Springfield, Ohio, made his first flight on June 19th. He says the airplane is cruising around 160 - 165 indicated and he has 12 hours on it.

Recieved a nice letter from Troy Burris, he began flying this spring at Chino, CA airport. Troy spent 22 months from cutting the first piece of foam to the first flight. Troy has a lot of time in a Swift and is a proficient taildragger pilot, reports no problems on the first flight, says he doesn't have too many things to change to trim it out so he expects it to fly quite well. Space won't permit printing his letter in its' entirety, but I did want to print one paragraph. Troy says: Recently, while shooting touch and go landings, I experienced the effects of airfoil contamination by thousands of bugs. At the end of an hour, landing number twelve, the approach speed was 100 MPH over the fence at 80MPH and touchdown at 70 MPH. Heavy back pressure was required for level flight. Even with extreme airfoil contamination I feel Dragonfly is controllable and safe. With the bugs the 3000 RPM cruise speed dropped from 155 MPH indicated to 140 MPH. If it appears that I have been listing only negative things about my Dragonfly, well, it is pleasure to fly. I enjoy every moment of flight. I feel that I have very few adjustments to make. Troy Burris.

FIRST BRITISH DRAGONFLY FLIES!!

We received a letter from Peter Sturgeon of England, who has built and is flying the first Dragonfly in Great Britain. Peter wrote a nice letter detailing some of the problems of building an airplane, where the building materials are not as easily available as they are in the states.

Peter sums up the airplane nicely in the last

paragraph of his letter: "There seems to be quite a bit written about first flights of Dragonfly. Let it be said that mine was an incredible experience. I have extensive taildragger experience and had thought a lot about how it would all go together on the first flight. The aircraft behaved perfectly. Only minor trim forces were experienced and a slightly flat top end on the engine. As far as I am concerned, the aircraft is a credit to Bob Walters and I am very glad I chose to build it. Sincerely, Peter Sturgeon."

Soon,another Arizona Dragonfly! Of the fifteen or so Dragonflys under construction in the Phoenix, Arizona area, it appears that Bryan Seegers' Dragonfly will be the first to fly. I saw this aircraft in its' hangar at Falcon Field recently and it is pure beautiful.

Bryan came down and I gave him a little bit of air time in the prototype to prepare him for his first flight. Enclosed find a picture of his canopy treatment. He's done it quite differently than is shown on the plans. We don't object to builders changing things of a non-critical nature in the airplane and things that don't have any real effect on the aerodynamics of the airplane. Bryan has done a beautiful job with this gullwing door arrangement on the canopy. It might give some of the rest of you some ideas.

MONTANA DRAGONFLY I have received two pictures from Warren Yeley of Bozeman, Montana. Warren has been flying his Dragonfly for quite a while and that's about all I know about it. How about filling us in, Warren?

FOREIGN DOCUMENTATION

We have received several requests from foreign builders in various countries, for complete documentation on the design of Dragonfly. These builders apparently have been requested by their governments to supply stress analysis data, airtoil design data, loading limits and it seems a complete mountain of paper work such as you would have if this were a factory built airplane that had completed a certification program.

What you foreign builders must realize (and those of you who may not at this point in time have bought plans must realize) is that this is NOT a certified aircraft and the documentation such as these builders have requested cannot be supplied simply because it doesn't exist. Such documentation is not required of a home built aircraft in the United States. Here we are allowed to build the airplane in any way we want to, out of any material we want to build it out of and then we are put into a "restricted time" to prove that the airplane is in fact airworthy.

I really wish that I could help the foreign builders who have the need for this kind of information, but it simply isn't possible. Dragonflys are now flying in and accepted in Germany, Australia, England, Canada and the United States.

I am sure that if flight history on the design will help the authorities, in those countries where builders must submit documents to make a decision regarding Dragonfly, that we can get plenty of documented flight history with lots and lots of hours. There's a lot of airplanes flying.

OSHKOSH THIS YEAR

Dragonfly builders meeting, Sat. nite, Forum Tent 1, 8 P.M. All builders are welcome. Dragonfly Forum, Sunday, July 28, 10:45 A.M. - 11:30 A.M. Hey, how do you like this new type format? We got a Daisy Wheel Printer for ODIN and we think newsletters will be easier to read in the future.

ABOUT SYNTHETIC OILS

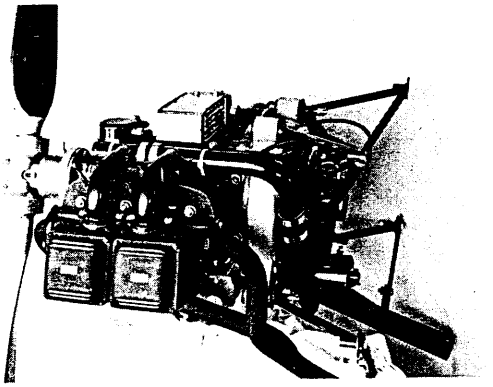
We have been using Amsoil racing oil 10/50 wt. in both the Dragonfly and our Cygnet aircraft for three years now. We have found it to reduce friction, reduce cylinder head temperature by as much as 50 degrees and oil temperature by as much as 20 degrees.

On gyrocopter engines, that we build for Ken Brock, we had always been plagued with heating problems in that application and a switch to Amsoil made a great change for the better.

Amsoil is the only synthetic based oil that we are recommending. There may be other good oils, we simply don't have experience with them. We've have several inquiries about Mobil Corp.'s synthetic oil. We've also had some reports of problems with fluctuating oil pressure in Volkswagen engines that have used that oil. It might be great stuff, but enough guys are experiencing problems, that I think I would stay away from it until we know exactly what the problem is. The Amsoil sells for about $7.00 a quart, terribly expensive, but we run it 100 hours in our airplanes between changes, so viewed in that light, it's not so expensive. You guys that are flying less than 100 hrs. per year could change your oil once a year at annual time.

MAGNUM 75 ENGINE

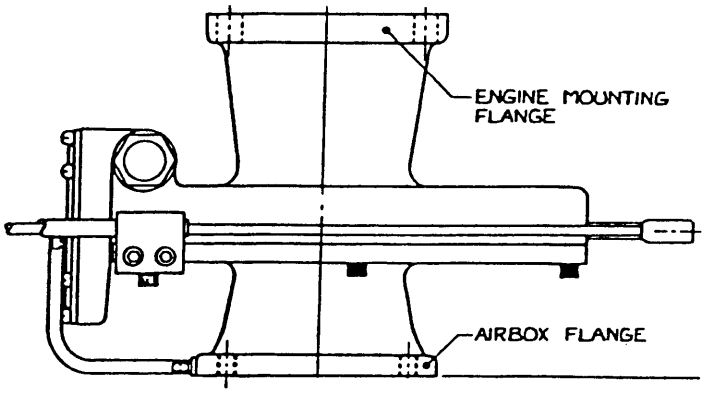
We finally got all of our ducks in a row and we'll begin shipping the Magnum 75 engine in August. We've had a lot of problems getting this engine into production. No problems at all with the engine itself, but it seems continual problems, first the computer controlled mill to make the heads, trashed itself out three times in a row with an electronic glitch. Patterns had to be redone at the foundry. In the midst of all this, we decided since we can't do anything anyway, let's see if we can't improve it.



What we will be shipping, will be the second generation heads rather than the first generation. In the picture supplied in this newsletter, you'll note that the shape of the rocker boxes and such is different than what you will see on display at Oshkosh and what some of you will be getting. The rocker box has been redesigned to reduce the overall width of the engine and several little machining bottlenecks and casting bottlenecks were rethought out and improved on the second go around. So maybe all these months of waiting has been in effect good for the engine customer.

There wasn't time to get this engine installed in Dragonfly. Expect to do that between now and the Dragonfly Swarming and develop some new performance figures based on this engine. We don't expect to make too big a dent in the sound barrier with it. Probably the cruise speed is going to increase by 5 or 6 MPH and we expect a better rate of climb. Quite frankly, the only reason for building this engine is, the buying public seems to be 'power mad'. I have never seen and still don't see any reason to increase the horsepower in Dragonfly.

Just recently coming home from Merced, I landed at Big Bear Lake, elevation 6,900 ft., refueled, something to eat, left there on about an 90 degree day with a density altitude of around 9,000 ft. Climbed out easily at 400 ft. a minute, was going up a whole lot faster than the Bonanzas and Cessnas and such that were leaving. So who needs more power and for what reason?



NEW CARBURETORS

H.A.P.I. Engines has been working with the Ellison Carburetor people for about a year now to develop a throttle body injector to fit the Volkswagen.

Some of you may remember reading about the Ellison carburetor in a recent issue of Sport Aviation. It's a highly sophisticated fuel delivery device that looks a lot like the POSA but delivers it's fuel in an entirely different manner. The fuel is delivered into the airstream through a system of very tiny holes about .003 inch in diameter in a spray bar that goes across the center of the venturi. As the throttle is opened, progressively more of these tiny holes are exposed. They are arranged in such a pattern, that the amount of holes exposed and the fuel delivered matches the amount of air being delivered by the current throttle setting.

The carburetor comes in two modes; one designed to be used on a strictly pressure system, which will require a fuel pump behind it and it's also available for use with gravity feed.

If you chose to use the one with the pressure system, you could delete the header tank completely rom your project, but you would be totally ependent on the electric pump. An engine driven fuel pump is also available from H.A.P.I. but it must be put on the engine at the time the engine is built, it cannot be retrofitted later. Carburetors are on the expensive side selling for $299.95 but do offer the best carburetion I've ever experienced so far on a Volkswagen.

In the case of the one set up to run against the fuel pump, it will run at any attitude, right side up, up side down, it doesn't care and there is absolutely no variation in fuel mixture due to G load or header tank pressure or anything like that. The injector incorporates a supply-demand regulator that senses the airflow coming through the carburetor and matches the fuel pressure in relationship to the airflow so that it always maintains a constant mixture. It can be infinitely adjusted by the mixture control while in flight or on the ground and has an idle cut off. It can either be set up on a Dragonfly with the throttle quadrants as we are now using or it can be set up with a Cessna type push throttle. These carburetors are also available as optional extra cost equipment on all HAPI engines.

FOR EASY STARTING

There are many things that contribute to real easy starting on your electric start engines, and if one or more of them are overlooked, starting your engine can be an ordeal of frustration.

Battery cables - For best starting the battery cables must be kept as short as possible and the ables themselves must be heavy multi-stranded cable apable of carrying the amperage without line loss. The terminal ends, typical on all the ends are as illustrated in the small sketch here. I've found a good source of these to be auto parts stores associated with NAPA. Look for it in your phone book under NAPA Auto Parts Stores. These cables in a NAPA store are avilable in various lengths. You should be able to find them suitable for your particular installation.

The starter itself - The small starters used on a Volkswagen conversion will work fine if the system is in top condition. Should the battery voltage be down, or the cables too small to pass enough amperage, or the starter itself have worn brushes, bearings that drag, or anything like that, it won't get the job done. The front bearing on the starter should be lubricated periodically for best performance. This can be done by accessing the Bendix drive between the rear of the crankcase and the front of the accessory case, pulling it forward with your fingers and spraying the shaft and bearing area behind it with a good penetrating oil. This bearing is an oilite bearing but works much better when you give it a little bit of oil to work with. Every 25 to 50 hours of engine operation should be sufficient. The battery - We have been using a small Sears Die Hard motorcycle battery for several years now with good results. Last week, however, a battery with about three years use finally took a dive. Being in a hurry, I replaced it with a local discount auto parts store battery, supposedly of the same type and amperage. It wouldn't work at all. In ordering another Die Hard from Sears then, I came across another battery that is only 1/16 of an inch bigger in width and depth and about a half inch taller, would slip right into my battery box but has considerably more amperage and is two pounds lighter. Sounds almost too good to be true.

The battery we have been using, the number 44364, gave 155 cold cranking amps. The battery we are now recommending is Sears catalog number 28A44361N, delivers 195 cold cranking amps and sells for $39.99 at any Sears Catalog Store. Got one, put it in the airplane, and I'm very pleased with the way it cranks the engine over.

In some cases where the airplane is coming out nose heavy and to get the CG in the proper range you may have to carry ballast back to about the point of the wing lift bulkhead. It may be advisable to put the battery back in that area to move the CG to the desirable location. In that case, I would recommend using a light aircraft Gellcell battery, such as the ones sold by Aircraft Spruce, Wicks and several others. This is a twelve volt, 28 ampere hour battery as compared to the 14 ampere hour motorcycle battery in the front. With the battery that far aft, you'll have to use of course, long battery cables, which will give you an amperage loss. Consequently, you have to use a higher ampere hour rating battery. Tom Wolfe has moved his battery aft as have a couple of others and have reported good results.

Starting procedure - A cold engine start is always hard on any aircraft's electrical system. To accomplish a clean, fast start, make life a little easier on your battery. I have found that priming the engine with cockpit primer, two squirts of prime, pull the engine through four blades by hand; this gets the prime in all the cylinders as well as allowing me to feel the compression on all four cylinders thus knowing that the engine is in good health. I get back in the cockpit, give it one more little squirt of prime, hit the starter button, it usually fires off the first or second time it hits compression. A whole lot easier on your battery than trying to wind everything from totally cold.

DRAGONFLY SWARMING

The date of the Dragonfly Swarming this year will be October 11, 12 and 13.

We had originally planned to have it on the following weekend, but now find that the Arizona Council of Chapters has scheduled a Copperstate Fly-in on that weekend also. Since their fly-in is a

lot bigger than ours, I guess we have to concede them that weekend. Do hope that next year they'll get their scheduling done a whole lot sooner though.

The Swarming this year will be much more workshop oriented than it has been in years past. We intend to build two wings and two canards while you guys are here. Those of you who want to can get some "hands on" experience in learning how to do these things. We'll also do some assembly work on fuselages and demonstrate how to align an airplane so that the incidences and such all come out properly.

There will also be talks and video presentations on test flying your Dragonfly and of course the usual Dragonfly rides and such.

Those of you needing motel reservations will find two low priced nice clean motels; Albertan, five miles away, (602) 836-8376, rates are $17.99 and $29.99; and the Golden Six, a mile and half away, (602) 466-7374, rates range from $16.95 to $41.95. Also available is the Ramada Inn (602) 836-5000.

We have arranged with the Police Explorers group of Boy Scouts to have a spaghetti feed on Friday night, here at the hangar and of course, we'll have our usual dinner on Saturday night.

In the past, with smaller groups, we've had a complimentary dinner, but the groups are just getting too large to do that any more. We do have a nice dinner planned. The dinner tickets will be $6.00 . Viking will provide complimentary beverages,at the[meeting hall and I promise you a surprise guest speaker, whom you will really enjoy. All Dragonfly builders and their families and friends are welcome. Anybody who is interested in Dragonfly should find it a very enjoyable weekend. As usual there will be parking on the airport here for motorhomes, trailers, etc. For those of you who fly, on ground transportation will be provided.

We hope to see several Dragonflys here this year. It would appear that there are somewhere between 70 and 80 Dragonflys flying worldwide now.

MARK II LANDING GEAR

Anytime we come up with something new, there always seems to be start up problems. When we introduced the Mark II, we had no way of knowing what the acceptance of it would be. The positive response to the new gear arrangement just overwhelmed us. We have been trying for the past six months to catch up with the orders on Mark II gear kits and disc brakes.

We try to fill the orders in the same order they were received. TASK has the capability of building about two sets of gear legs per working day. They have been working feverishly to fill the orders, but initially the orders came in at a greater rate than that. As always happens, the orders are now tapering off, so that TASK is finally catching up with the demand for gears. Small companies simply cannot spend the amount of money it would take to create multiples of tooling to immediately crank out enough parts to meet the demand, because as soon as the initial surge is over, there wouldn't be enough quantity ever to justify the cost of that much tooling. Consequently, it just takes a little time to catch up with the demand. I hope the builders will realize that this is not a high volume industry and you are dealing with small companies with limited resources. When you see something new that you want, order it early, to help insure that you will have it at the time your airplane is built up to the point where you actually need it. If you wait until the time you need it, you may be competing with dozens of other guys who are also at that point in their construction process.

By Oshkosh this year, we'll have gear legs in stock, ready for delivery and also have the disc brake systems in stock and available immediately.

I have been flying the disc brake system on Dragonfly for over a year now with absolutely no problem, as a matter of fact, there hasn't even been any adjustment made on the brakes in over a year. Both the disc and the linings show a wear patt where they wear to match each other, but appreciable lining loss has been noticed as yet, even though the prototype gives all kinds of demonstration rides usually lasting no more than ten or fifteen minutes and, always, demonstrating the brakes is part of it. Hard braking is just a way of life for it. Normal flying as you guys will do, we'd expect the brakes to go for probably at least a couple of years before they require any attention.

The wheels furnished with the disc brakes are 5" wheels and will take either the 11 X 400 X 5 tire that gives you an outside diameter of about 11 1/2 inches, or the 500 X 5 aircraft tire which will give you an outside diameter of about 13 1/2 inches if you desire slightly larger roller under your Dragonfly. Brake systems are furnished complete with all of the necessary parts, including dual master cylinders, toe brake pedals, lines, fittings, axles, bearings and all the other goodies. All you have to do is put them on and put the fluid in.

TRICYCLE GEAR FOR DRAGONFLY

We are in the process of building a brand new tricycle geared airplane and hope to have it flying for the Swarming this fall. Mike Quigley, formerly employed by TASK Research, has a tricycle geared Dragonfly that should have flown last December, but Mike became very seriously ill and is not yet back on the project.

After looking at Mike's airplane and a couple of others the builders have designed their own tricycle gear modifications for, we have decided the best situation for our Dragonfly builders will be a gear that will retrofit back into all the Mark I's including the plans built airplanes. We will using a round steel spring gear leg, retained i welded steel tube structure that sits behind the seat back bulkhead and ties to the bulkhead as well as the wing lift bulkhead. This will retain the upper end of the Wittman type spring steel main gear legs. The nose wheel strut is an air oleo pneumatic strut attached to the firewall with a castering nose wheel. On paper it all looks good. Considerably lighter in weight than anything else we've seen put on the Dragonflys. They shouldn't be a great hassle to install.

We don't have a price on the tri-gear yet. We won't have a price until such time as it has been test flown and we've proven we actually have a saleable product. Would expect that to happen before the swarming in Oct.

MORE ON TEST FLYING YOUR DRAGONFLY

Last week I was disturbed to get a report from a builder who had broken his canard on his Mark I, on his first flight. Doggone it guys, this just shouldn't happen and it won't happen if you and your airplane are both ready to go.

You, as the builder, are always going to be at a terrible disadvantage in test flying your own airplane, because you are emotionally involved with the airplane. You'll never fly at your best on that first test flight. You won't fly as well as somebody else, who is not emotionally involved in the airplane, will do for you. If you don't have any previous high performance aircraft time, or any time in a Dragonfly, if you haven't come out here and let me check you out in the Prototype or if you haven't rode a lot of right seat in somebody else's Dragonfly and learned what the approaches sho'd look like and how you use the whole airplane to s itself down and how it must be in the landi.g attitude coming down final, you're probably going to break something or at least bounce real hard, until you learn how to do it.

Some of you have gone out and got instructors to help you fly your Dragonflys and, believe me, if

they don't have Dragonfly time, they are as equally unqualified to fly a Dragonfly as you are. I don't care if a guy has 10,000 hours in a hundred different kinds of airplanes, if he hasn't flown a agonfly, or something very similar and there's not ny that are similar, he just may well get into trouble. Most guys however, that do have a lot of time in a lot of different types of airplanes, learn very quickly from their mistakes. I have checked out three different airline pilots. They are used to and trained to fly precision approaches, air speed and attitude controlled by the elevator, rate of descent controlled by the throttle, they don't have any problems. I've checked out several low time pilots who were trained properly in air speed and attitude control on final and they picked it up very quickly. I've flown with some other pilots, who may have been doing a wonderful job of flying the Cessnas that they were flying, but did a terrible job on approach with Dragonfly because it doesn't have those big old barn door flaps and everything to throw out in the breeze to slow it down, so you have to slow it down with pilotage instead of all the mechanical monkey motion.

The proper position for a Dragonfly on short final is exactly the same three point position that it sits on when it is sitting on the ground. You should be looking over the nose, the nose should be high, air speed indicator on the prototype is running at about 70 MPH, attitude is stable, rate of descent is stable and you're carrying a little bit of power. To slow down the rate of descent, put a little more power on it. To increase the rate of descent, take a little power off of it, but don't let that air speed move around at all.

By the time you get your Dragonfly finished, you'll have a bunch of money in it, a lot of time in it, a lot of blood, sweat and tears. Don't opardize it by being so foolish as to not get operly checked out before you get in it to fly it. If you have any misgivings at all about your own ability, lack of recent experience, lack of total experience, back away from it, let somebody who is competent and has recent Dragonfly experience put the first couple of flights on it and then check you out in it. I'm not going to say too much more about test flying, we're just going to print a letter here, in it's entirety, that we received from Marvin Hoffert, of Madison, Wisconsin the other day and I think it will graphically illustrate just exactly what I've been talking about. I'm still willing to check out any Dragonfly builder who wants to come out here and I think it's the cheapest form of insurance that you can buy for your airplane. Sure, if you live on the east coast, an airline ticket out to here costs a little bit of money, but consider the cost of a broken canard, that will buy you about four of those airline tickets.

Dear Rex,

Enclosed is a check for $7.50 to renew my subscription to the newsletter. The following is for inclusion in the newsletter:

What you must know about me is that I decided to build a Dragonfly so that I could fly a Dragonfly. I was not very interested in the building part. In fact, I had never done anything like this before, and was afraid of my limited abilities.

That's why when I heard about the Building School, I signed up right away. Based on my experience, I offer the following advice:

Do it! If you have any doubts about your ilities, do it! If you haven't worked composites before, do it! If you've considered it, do it! It's the best course for the money I've ever seen (and education is my business). It's an absolutely delightful way to spend two weeks away from it all, and it's a way to get to know the Taylors - a family of genuinely nice people, each with their own very special personality.

Plan to work very long (but enjoyable) hours. If you bring your spouse, don't expect to see him/her during the week. If you must socialize to avoid divorce, go to Puerto Penasco on your middle weekend.

Bring your worst clothes, and especially your worst shoes. Don't worry too much - whatever shoes you bring will become your worst shoes.

Plan to leave with your canard and wing glassed and fitted to your assembled fuselage. Most important, you will know that you've done things well, and that you will be able to finish the plane at home without real problems. You will have learned composite construction.

Don't forget the bottom line - do it!

Having said all that, it's embarassing for me to admit that shortly after I came home, Ed Swan put his beautiful completed Dragonfly up for sale, and after about seven minutes of thought I bought it and sold my project. Which brings me to my next topic - flying Dragonflys.

Ed built a magnificent plane, but I didn't like the way he flew it. His landings, in particular, felt like WWII low level strafeing runs. I had flown with Rex in Arizona, and somehow that had not been as scary. I started taking lessons from Ed's instructor, and we were back to WWII. I switched to a new instructor, who also seemed to have a kamakaze streak.

Finally, after an otherwise uneventful lesson, I noticed that my propeller had newly shredded tips. A quick call to Ed taught me that he had already shredded those tips before, and had trimmed them down before I got them. Something was wrong. I called Rex.

Rex politely suggested that I stop crashing my plane into the ground, and learn to land it instead. When he calmed down, he explained to me how to do that. It turns out that flying the Dragonfly isn't hard, it's just different. Don't expect you or your instructor to be able to figure it out - it's not obvious until it's been explained. But when you do it right, it's all pleasure.

I've put about 25 hours on my plane in the last 5 weeks, and I love it! The bottom line? Get a Rex Taylor check out or equivalent and you will be able to love your Dragonfly. Otherwise, you may feel like a stand in for John Wayne's stunt pilot.

Happy Dragonflying! See you at Oshkosh!

Marvin Hoffert

USING THE TRI-PLY CLOTH

Those of you builders who got the early shipments of the tri-ply cloth probably have it incorporated in your airplanes now. I talked with a couple of builders who are amazed at how easy it is to work with compared to the old way of doing things that they had used before. One word of caution with the tri-ply cloth: DO NOT. repeat, DO NOT, try to stretch it sideways or chord-wise on the airfoil. Stretch it out very tightly lengthwise of the flight surface and just smooth it down chord-wise by hand. If you stretch the tri-ply sideways, you will pull apart the very light innerweave stitching that holds all three plys of the cloth together creating a condition in the top unidirectional weave, kinda like a run in a woman's silk stocking. It doesn't effect the airplane structurally, but it does make a bad looking spot and also will make a spot that is a little harder to get a good finish on. One of the big advantages of this cloth is when finished and mopped out it does not have any ridges to mar the finish and it's much easier to get a good finish on the airfoil. The cloth will give you a surface as accurate as your cores are and as smooth as the cores, so do a real good job on those cores and you'll really save a lot of time when it comes to putting the finish on the airplane.

USING AUTO FUEL IN YOUR DRAGONFLY

We have had three reports now from builders reporting problems when using automobile fuel in the Dragonflys. After some detective work, we believe that we have determined exactly what the problem is. There is no problem with using automobile fuel in any HAPI engine provided the fuel is high-test, unleaded, 91 octane or better and further, provided that the fuel DOES NOT contain any methanol. In many states, apparently it is legal to use up to 10% methanol in gasoline without labeling the pump that the gas does in fact contain methanol. No fuel containing methanol should be used in the Dragonfly. Tom Wolfe encountered problems when using auto fuel and it was traced to the methanol content. A couple of other builders have reported the same thing. It appears that with Methanol the fuel delivery system is much more susceptible to vapor lock, therefore no automotive fuel containing methanol should ever be used for flight. What the heck, you use so little fuel anyway, why not use the good stuff? Just get the 100 octane low lead and it runs fine, you don't have to worry about it. If you do want to use the automotive fuel, know your supplier and know what you are getting. There is a way to know exactly what the fuel you are using will do; a gauge put out by Peterson Aviation Inc. To use this gauge, you take a little bit of the fuel, test it and immediately you know whether the fuel could possibly cause a vapor lock. The little testing device was originated in Australia and comes very highly recommended, sells for $48.50 plus shipping from Peterson Aviation Inc., Rte. 1 Box 18, Minden, Nebraska 68959. If you're going to run automotive fuel in your aircraft, I strongly recommend that you get one of these testing devices.

FUTURE AIR PROGRESS ARTICLE

Peter Lert, the writer for Air Progress who originally hung the name 'Sparrow Strainers' on the Dragonfly's elevator trim tabs was in the shop yesterday and in the air in Dragonfly for some reevaluation of the airplane. Peter will be doing an article in the near future, in Air Progress complete with lots of photographs. His comments concerning the aircraft in the Mark I version and Mark II version I think will prove very interesting. Peter did a good share of the test flying on the Q2 and Q200 and it surprised me yesterday when we were doing full stall, nose high, attitudes and rolling from 90 degree bank one way to 90 degree bank the other way, that he got decidedly nervous worrying about the airplane breaking off into an uncontrolled departure. I pointed out to Peter that I have repeated that thing probably thousands of times now. Many of you guys have ridden through that same demonstration and Dragonfly has never departed normal controlled flight anytime, even when I have flown it with the CG way out of the normal range to the rear to find out what it will do, or won't do as the case may be.

I have flown six different Dragonflys now and put over 800 hours in the Prototype. I've flown two test programs in it and I think I know probably better than anybody in the world what makes that airplane tick, simply by virtue of the fact that I've spent more time finding out what makes it tick.

ABOUT MODIFICATIONS

I have a couple of builders, who shall remain nameless, one of whom decided early on when he was building his airplane that Bob didn't know what he was talking about on the airfoils, and this particular builder modified his airfoil to improve (?) it. While this particular builder was in the construction process, the spar mod that required adding more carbon fiber to the canard spar came about. This builder added thea mod and wound up with a spar that was sticking up 3/16 of an inch above the top surface of the airfoil. He then faired that in with micro and got him a smooth upper surface, but who knows what the airfoil is now. Who knows what the characteristics of the resultant airfoil are?

If those of you who may be entertaining the idea of modifiing your Dragonfly will read back through the newsletter, you will find that the builders who are getting the "as advertised' performance are the guys who built the aircraf exactly to the plans. Bob did a fantastic job of designing, that's been proven by the many Dragonflys that duplicate the prototypes performance. Try following the plans as closely as you can, you'll like the results in performance.

You may note that many of the builders flying are reporting as advertised performance figures. This is highly unusual in an industry where it seems the vast majority of the plans sellers greatly exaggerate the performance of their prototypes. The new Sport Aviation has a picture of Len Dyson's Dragonfly. Performance, "as advertised".

SAVE MONEY ON PREFAB PARTS

Task is still building all the prefab fiberglass parts for us at HAPI.As is usual with any manufacturing process, sometimes factory "second" parts become available. We have three sets of fuselage shells that are prime quality except for a couple of small areas which can be very easily repaired and are not in structurally significant spots. Also have several side and center consoles and other small parts that have gotten a little over heated in the auto-clave, which resulted in some damage to the foam core structure, making voids on the opposite side of the structure from the appearance side. All of these parts are usable and the problems are such that the airworthiness of the structure is not compromised. These parts can be had at considerable savings off the price of the regular prefab. If any of you are interested in these parts, write or call and see what we might have available at the time and we'll quote you some prices on them.

INSTALLING CANOPIES

Justin Mace of Tucson, Arizona, a prefab Dragonfly builder, was following our instructions to turn the fuselage upside down and install the canopy using the canopy's own weight to hold it in place in the frame, first to determine the position and mark it and after the canopy had been removed and the bonding area prepared for bonding, again using the canopy's own weight to hold it in place while bonding the canopy to the canopy frame with an epoxy/flox slurry.

Justin encountered some difficulty in getting his canopy to pull up tight against the frame in every area and solved the problem by simply drilling through the canopy frame and canopy, installing some cleco clamps to hold the two peices together while the epoxy set up.

Pop rivets could be used for this purpose, but there is a danger that the expansion of the pop rivet as it is set could fracture the canopy. If you don't have cleco clamps available, small machine screws with nuts on the back side could be utilized. Once the canopy is bonded in place, remove the cleco clamps or machine screws, whatever you have used, and fill the holes.

EASY V.O.R. ANTENNA

Justin came up with a clever way of building a very low cost V.O.R. antenna for his aircraft. The two legs of the antenna are half inch copper tape of the type that is used by the hobbiests who work in stained glass. This tape is available in most hobby shops. The connectors on the end of each leg copper tape, which has adhesive on one side of and will stick to the bottom of the fuselage are terminal ends that are used with 1/2 inch aluminum burglar alarm material, the kind that sticks around the windows so that it breaks when the window breaks. These connectors (see the crude sketch) are

EDITORIAL

THE WHEELS OF JUSTICE GRIND SLOWLY

Something happened yesterday that has us all in super high spirits here at Viking and H.A.P.I. this morning.

As you know, we bought Viking Aircraft from Bob Walters three years ago this August.

Some of you may know that Bob originally built the Dragonfly with the help of a man named Al Nelson. Nelson was supposed to help with the building of the prototype and being a lawyer he was supposed to organize the corporation for the sale of the airplane and do all the legal stuff to turn it into the big time. Bob financed the project totally. Al never did do any of the legal work he had agreed to do, in fact, all he did was help with the building of the airplane and he did do a good job of that.

When the time came to start drawing the plans and working like a dog sixteen hours a day, seven days a week to promote the airplane, Al decided it was too much work and walked away from the project.

Bob and his good wife, Ching, worked night and day, spent all of their weekends baking in the sun and answering questions at fly-ins, free evenings guest speaking at chapter meetings, put their life savings into the promotion; did all those fun things that make being in this business so enjoyable. After months of intensive work and agony, the plans were finally market ready and the income from the sale of plans and information packets and such began to come in. At this point, Nelson sued Bob, wanting half of the business.

The court dismissed the first suit as groundless. Nelson sued again and again the court dismissed it. By August, 1982, Bob was tired of the ordeal of working night and day trying to make a living in this business and offered it to us. All the legal paper work, titles on the airplane, copyright on the plans, everything of record, said Bob was the sole owner, sole proprietor and we bought it on those documents. Soon thereafter, Al Nelson filed another suit against Bob, which he won by default simply because Bob at that time didn't have the money to mount a legal defense to fight him anymore.

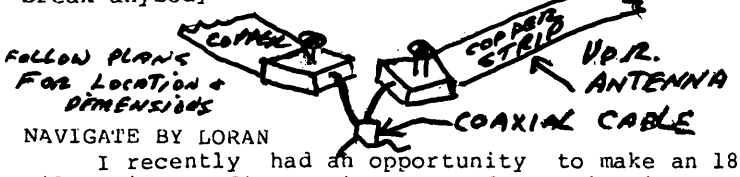
Based on a default judgement there, Al then sued us and has continued to sue us for the past two years, costing us scores of thousands of dollars. In fact, every dime that we have ever made on Viking has gone for legal defense to this point in time. HAPI Engines has also loaned money to Viking in order to keep it going. At this point in time, nobody in our organization has ever had a dime's worth of wages out of Viking or ever even had a draw.

Yesterday, however, we were delivered from our oppression. We finally had obtained our day in court two weeks ago and the judge handed down a decision totally in our favor. Al Nelson never had any interest in Viking Aircraft of Arizona and has absolutly no claim on it now or in the future.

In the future, we have high hopes of being able to give you, our builders, better service and better support than we have in the past. Now that we indeed do have a future, because we know finally that we own the company, we'll be able to forge ahead with a lot of things that we've had in mind but couldn't afford to do because the lawyers were getting every dime of our money. It has hurt HAPI Engines greatly too, because of the financial drain going into Viking, my own lack of productivity due to the mental strain of putting up with this thing, time spent in gathering evidence, making depostions, visiting lawyers offices. For a long time, it seemed like an endless battle.

Now that it is over, I am convinced that there is justice in our judicial system, but it sure is s-l-o-w! Although you builders I'm sure, had no idea what our problems were, I want to thank you for the past support you have given us in dealing with us and working with us, being patient with us when things didn't happen quite as fast as we would have liked them to. Please believe that we were doing our best over the past two years, with what we had to do with. Now that we can devote our full attention to running the business, I think you'll see some good things happen in the future that will benefit us and our builders. Thank You .....The Taylor's

available at Radio Shack, six of them for $2.49. That's enough for three Dragonflys, so it won't break anybody.



NAVIGATE BY LORAN

I recently had an opportunity to make an 1800 mile trip, my first using Loran for navigation.

I have to admit I'm an old die-hard and I've never had any problem navigating with single V.O.R. in Dragonfly, but navigating by Loran is really impressive. When position is selected, it gives you direct reading within sixty feet of true position latitude and longitude. The Loran is capable of having 99 way points programmed into it.Once a way point is programmed into it, when you want to go there you just select that way point and the Loran then gives you a true magnetic course to that point.Wheh you are in flight the Loran gives you the speed you are progressing over the ground approaching that point, also indicates how much time in hours and minutes it will take you at the present speed and how far away your objective is. The Loran is a course deviation indicator that tells you if you are on course or to the left or right of course. All this information is continuously on display.

The net result is the equivalent of a DME plus an R-NAV at a fraction of the cost. HAPI is distributing all of the line of Terra Radios and Terra has just bought S.R.D. company, one of the original Loran producers for aircraft.

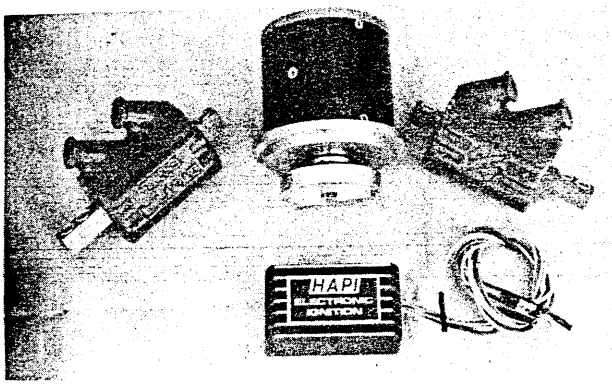
To introduce our Dragonfly builders to Loran, we've got a special deal on the S.R.D. Loran complete with antenna and pre-amplifier, everything ready to install at a super special discount price to Dragonfly plans holders only. If you are interested give us a call and we'll quote you a price that will blow your mind.

HOW MANY DRAGONFLYS

The nearest we can estimate, there are somewhere between 70 and 80 Dragonflys flying around the world now. Quite often we hear of a Dragonfly that has been flying sometimes for months that we were not aware of.

We would really like to determine exactly how many Dragonflys are flying if possible, and how many hours each one has accumulated. In order to encourage you guys to let us know that you are flying, we're having a special jacket patch made up that says Dragonfly builder pilot, that we'll be more than happy to give to anybody who'll send us a picture of his flying Dragonfly and if you would care to, we'd really appreciate a little information on your particular project. How about sharing with us the agonies, we've all had them, and the ecstasy too that comes along whenever you finally get it in the air and 'your project' becomes 'your airplane'. To those of you who are still building, who may have something interesting or helpful to share with the

rest of the builders, we'd appreciate hearing from you too. If you have good pictures of your project under construction, we'd like very much to run them in this newsletter.



ELECTRONIC IGNITION

We'll also begin shipping the totally electronic ignition systems in August and unless otherwise specified by the customer, all engines will be shipped with totally electronic ignition. We've been flying Dragonfly for five years now with one magneto and one electronic ignition system. In that five years we've had one total magneto failure and have changed mags on it twice. The electronic ignition system has never had any new parts put on it, never had any problems.

We note with a certain amount of satisfaction that the new Porsche aircraft engine is touting the fact that it's got electronic ignition and that's the latest thing. Heck, we've been flying it for five years now. I believe we were the first to ever use the electronic ignition as standard equipment.

KEN BROCK HARDWARE AT DISCOUNTS

We recently purchased Ken Brock's total inventory of Dragonfly parts and have it in stock for the builders now. Some of the parts, such as the mechanical brake linkages have become slow sellers as the airplane has evolved and picked up hydraulic brakes along the way, etc. Consequently, for you builders who are still building with the mechanical brakes, we're going to offer a 20% discount off list price on all mechanical brake hardware. We have a new mechanical brake, fits the same 5" wheels as the hydralics, and is a good quality brake that works well. Wheels, axles, brakes, instructions, $99.95

For those of you who are just starting your Dragonflys and will need complete hardware kits, we can offer some attractive prices on complete sets of hardware also.

Beginning in August, we will have sets of hinges complete with the brass bearings and the bolts available. Seems many of you builders have been frustrated by having to get the metal parts from Brock, and the bearings from another source and the bolts from another source, and nuts and washers from still another source. In the future it will all be available from HAPI in one bag, at one price. Give us a call between 3 PM and 5 PM (our time) with your needs and we can quote you some prices. (602) 466-9244

GOOD USED RADIO

We have an excellent, near new, Escort 110 Navcom by Narco. This radio is in perfect condition, yellow tagged for return to service, has installation tray, a wiring harness ready to go in the aircraft, along with an operation and installation manual. It would sell for around $1000.00 new. We're asking $600.00 for it.

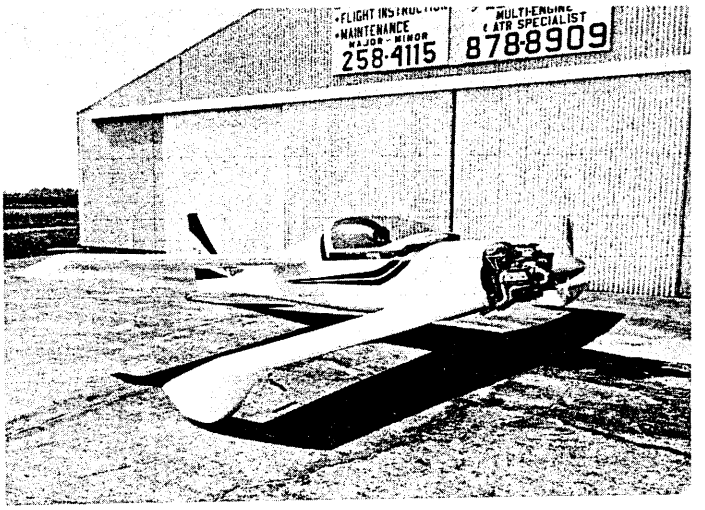
It's exactly like the radio that has been in the prototype Dragonfly ever since Bob built it and I've been all over the United States on it and found it to be all the radio I've ever needed.

We do have good used radios, antennas, flight instruments from time to time. I have a friend who buys aircraft for salvage and sometimes he comes up with some awful good parts at good prices.

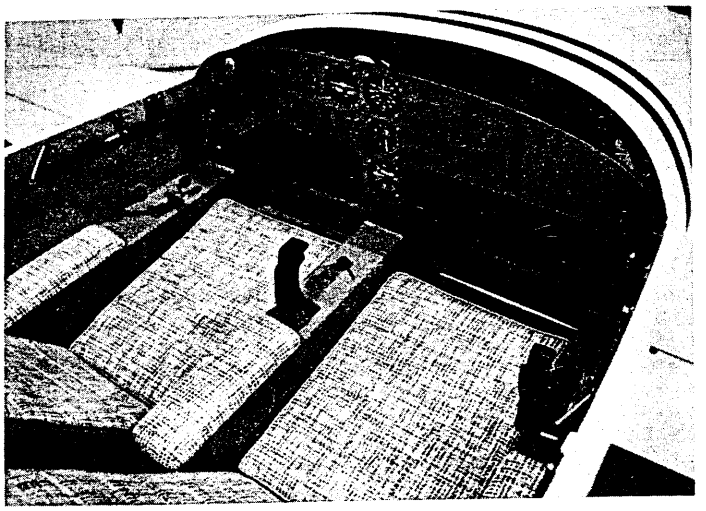
When we do have radios, they go through the radio shop and everything is yellow tagged so y don't have to guess at what you are getting.

PREFAB KIT BUILDERS ONLY - DIMENSIONAL CHANGE

Two prefab builders have run into a problem with the thrust line being too low when the engine is installed according to the directions that come with the TASK prefab kit. The correct location for the engine places the thrust line 1 1/4 inches above the dimension given in the Task plans, which is referrenced to the molded on water line on each side of the fuselage. Those of you who have prefabs, might want to call me if this isn't clear to you.

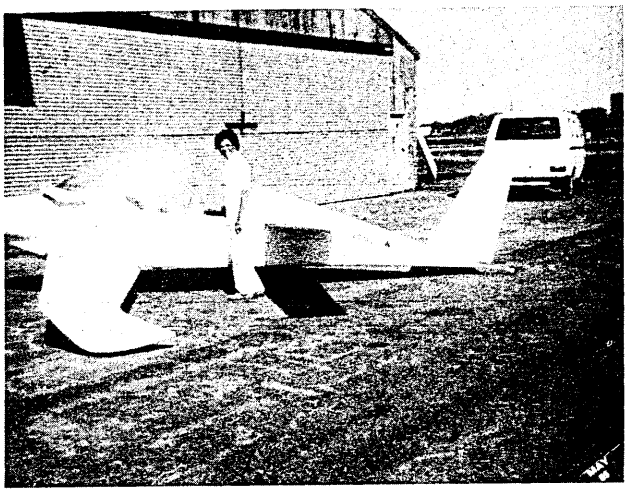


Rick Werners' "N4862H. First flight 6/26/85, empty weight 642 lbs., HAPI 1835, Hydraulic Brakes. Note canopy slides up and forward to open. Cruises 160 M.P.H. and Rick had no problems test flying. He has 63 hours T.T. in his log book, about 10 hours in taildraggers. Will be at Oshkosh.

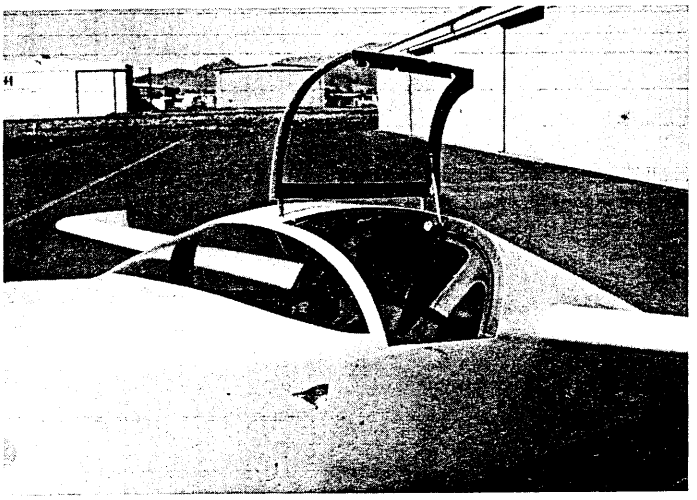


Panel is simple and nice. Note the armrest cushions. Control stick grips and throttle quadrant from HAPI.

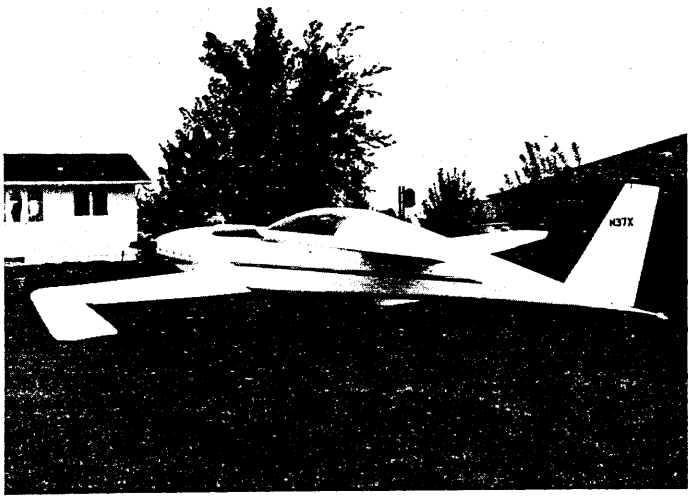
Seat cushions are from Wicks and are available in several different colors and fabrics.



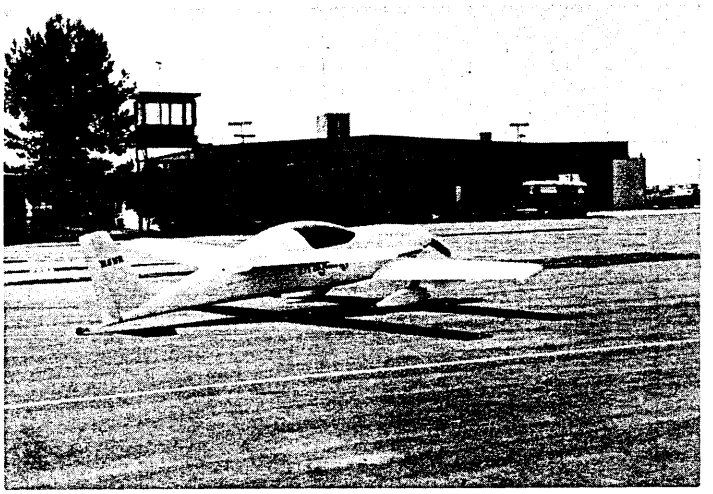
Sidney Wilkers' DRAGONFLY has a forward sliding canopy with a roll bar incorporated in. Sidney reports a May first flight and is now building time in the air.



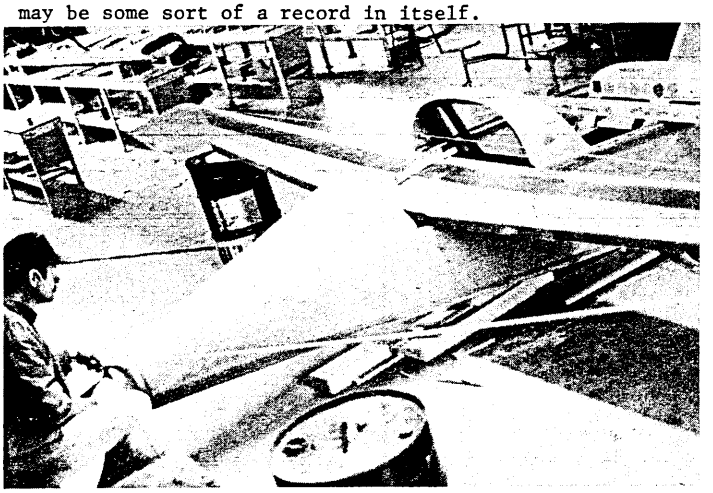
Bryan Seegers of Phoenix Ariz. did a gull wing treatment to his canopy, has rain gutters, detents to hold canopy open, lots of very nice features. Bryan is an engineer for Garret AirResearch.



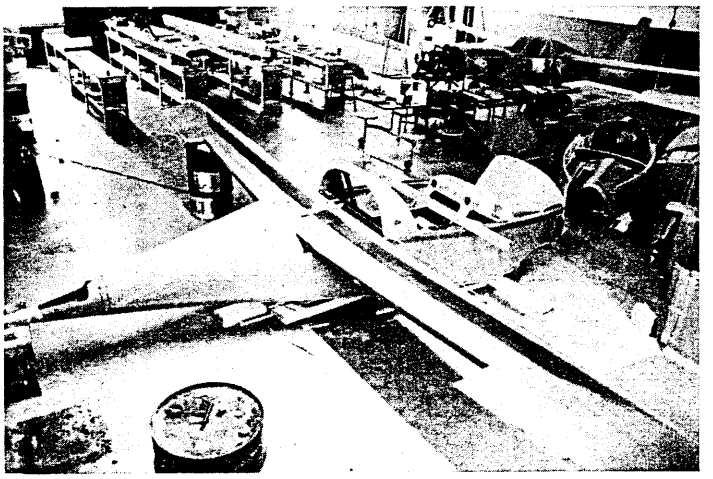
Dave Snyder of Big Rock, Ill., sent this photo of his craft. It's probably flown by now too.



Proto-type on ramp in front of HAPI hangar at Eloy Az. By Oshkosh this year this proto-type will have over 1000 hours in the air and has flown about 875 people. That may be some sort of a record in itself.



Justin Mace of Tucson, Az. in our Fun Flight Center checking alignment of wing to fuselage. Note level boards across upper longerons, on wing center, level string tip to tip. Justin will fly soon, he's about ready for paint now.



We have enough room in the main hangar to build 3 wings and 3 canards at the same time. Fuselages are also constructed at the same time on opposite side of room. 2 weeks get the wing and canard glassed, the fuselage joined wing and canard lift & drag bulkheads in, firewall on. These 3 big parts are then joined together, aligned, everything checked and bonded into place, to assure the builder that the plane will fly out right.

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