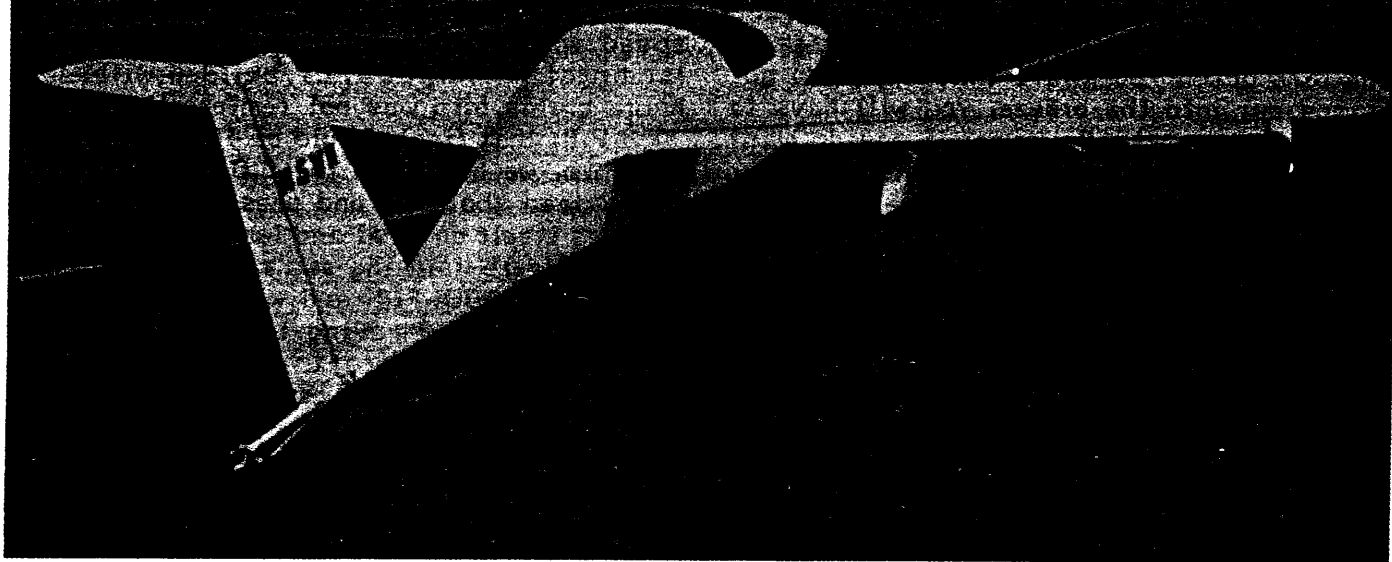


Dragonflyer



Dragonfly Newsletter No. 16

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Fall Issue 1984

This newsletter is being written at this point 9500 M.S.L. over Deming, New Mexico. This is my first trip as a passenger in the rear seat of our Cardinal R.G., with son Patrick exercising his newly acquired Private License as "Pilot in Command". It's also the first free time I've found in weeks where I could write a few hours without interruption.

OSHKOSH '84

We had a grand total of seven DRAGONFLYS at Oshkosh and not a bad one in the bunch! Attending were Bob Verriest of Allen Park, Michigan; Bill Hazelwood of Rice Lake, Wisconsin; Mark Mazzon of Columbus, Ohio; Tom & Sharon Wolfe of Round Rock, Texas; Ed Swan of Wapun, Wisconsin; Brad Chamberlain of Waconia, MN; and of course, the old reliable proto-type back for the fourth year in a row, sporting a new canard and landing gear arrangement now identified as the Mark II modification. Ed Swan's aircraft was picked by E.A.A. Judges as being the "Best Composite Construction" aircraft at Oshkosh '84. A terrific honor and all the more outstanding, when you find out that this is Ed's first airplane project. In fact Ed told me that he had never built anything before, even had to buy simple hand tools to build his DRAGONFLY.

If he can turn out a beauty like this first time out, what will he do next time?! Congratulations, Ed, you deserve the honor. Ed said that he followed the plans, didn't have any particular

difficulties finding the necessary information in them. Ed's DRAGONFLY is a simple one nicely upholstered with one nav-comm, equipped for daylight V.F.R. flight.

Tom and Sharon Wolfe's DRAGONFLY recieved the "DESIGNER AWARD" for best DRAGONFLY at Oshkosh '84, judging for that award being done by Andy Marshall, the composite construction "Guru" from Walnut Creek, California. Andy scored the aircraft in 10 different catagories with a possible 10 points in each catagory. Tom & Sharon's aircraft won out 1 point over Ed Swan's aircraft. Glad I didn't have to pick them, they were all above average for homebuilts, and in my book, all were winners. The builders enjoyed comparing notes and flight qualities of their birds. One subject that always comes up is finished weight.

One builder states that all the DRAGONFLYS' are coming out at around 670 lbs. empty. Sorry, but that just aint so. In fact a couple of builders are below the proto-type weight of 610 lbs., and about half of the aircraft finished are within the 600 - 620 lb. empty weight range.

There are DRAGONFLYS flying with empty weights of 670 - 680 lbs. and they don't seem to suffer much of a performance loss. In my opinion, after having inspected quite a few finished DRAGONFLYS, and flown 5 of them now, the excess weight gain I see in these aircraft is due mostly to excess resin in the layup, the primary cause, and you guys are installing lots of extra equipment

hat the proto-type doesn't have, like gyros, extra radios, navigation strobes and landing lights, etc.,

If you want these goodies, that's fine, but please don't infer that the airplane cannot be built at design weight because it can and enough builders have done it to prove the fact.

In the same vein, some builders are reporting speeds slower than the advertised 165 M.P.H., and others are reporting cruises at "advertised" figures. I notice the "slow" aircraft are the ones with Nav & Strobe lights, Vacuum Venturis and other projections sticking out in the slipstream to slow the bird down. Be aware that if you do put extra lumps out into the breeze, you will have to pay for them in speed. However, if you do want these "do-dads", they can be faired nicely under formed plexi-covers allowing you to have your gadgets and your cruise speed too. Put anything you want on the aircraft, but please don't bad mouth me or the design when what you've added slows your DRAGONFLY down, that's not fair guys.

PLANS CHANGE

DRAGONFLY's original design weight was established based on using the 1600 cc. V.W. Conversion and gross weight was set at 1075 lbs. With the addition of the 1835 cc. powerplant that is virtually "standard" in DRAGONFLY's, builders have routinely flown at considerably heavier gross weights without problems. Dick Rutan and I flew the "Cafe 400" at 1140 lbs. take off weight and my wife and I have flown the aircraft at over 1200 take off weight. She won't leave anything home. We have therefore decided that based on experience, the gross weight can be raised to 1150 lbs. safely. Please do put into the mental computer though that these higher gross weights will have a correspondingly greater adverse effect when operating at high density altitudes. My wife and I took off from Truth or Consequences, New Mexico, returning from Oshkosh, with a gross weight of 1170 lbs. density altitude of 6200' MSL and encountered light rain over the departure end of the runway. The terrain rises to the West of Truth or Consequences and its climb or run into the hills. We climbed in light rain at 100 - 200 F.P.M. until we got out of the rain, then the climb rate increased to the normal 300 F.P.M. I like to use on cruise climb.

Rain effect on canard

You may or may not have a large pitch trim change when you fly into rain. I've talked to several DRAGONFLY builders about this and we seem to have several different reactions in our aircraft, ranging from minimal pitch change to severe pitch trim change that scares the Hell out of them. The proto-type with the old canard had a more pronounced trim change than the new canard does. Both canards are of the same airfoil. Talks with the Rutans' and various Vari-Eze and Long-Eze builders, as well as DRAGONFLY builders, tend to indicate that airfoil shape is one of the factors determining reaction to rain, and the C.G., also has

flown in the aft end of the envelope, pitch change is moderate, predictable, and manageable. As the C.G. goes farther forward, the pitch change becomes progressively more of a problem.

I have been repeatedly advising DRAGONFLY builders to ballast and test fly their aircraft at 66 - 75% aft in the C.G. envelope for the first flights. Those who have listened, have found that they have excellent stability, can land with the tail down. They also find that the aircraft is much easier to slow down and maintain the proper glide speed and attitude on final that makes for good landings. A DRAGONFLY builder with about 70 hours on his bird was not comfortable at the 65 - 70 M.P.H. that final should be flown at until I flew with him, we ballasted the C.G. farther aft with a 25 lb. lead shot bag and presto, an airplane that behaves itself on final and landing.

We are re-thinking and re-evaluating the C.G. range on DRAGONFLY and will have some answers that may involve moving the envelope aft soon. Each of these aircraft is different and each DRAGONFLY should be tested and evaluated during flight test to arrive at the best C.of G. range for that particular aircraft. Some of the figures generated by computer programs indicate that instability could become a problem if you get too far aft with the C.of G. and I'm sure it would. My own tests on the proto-type have not verified this to the degree predicted though and have proven to me the perhaps the programs may be in error. You can also prove beyond a shadow of a doubt that a bumble bee cannot fly, this verified by computer studies and predictions, but the poor bumblebee doesn't know this, so he goes merrily on his way, never knowing that he is in mortal danger of falling out of the sky.

DRAGONFLY builder, Rene De Lathauwer of Amwell Technology, 2744 E. Glenrosa, Phoenix, Az. 85016, has developed a strobe - nav light kit that fits entirely behind the plastic lenses of the pre-molded DRAGONFLY wing tips, ("TASK") The wiring for these lighting systems should be built into your aircraft at the time the wing is built if you plan on using lights.

Rene has a sketch available showing how to install the wiring. If interested write him at Amwell Technology, and he can tell you how it's done. This lighting approach is approved for DRAGONFLY, as it should not adversely affect cruise speed. Please contact Amwell with any further question about this system.

RUDDER PEDAL CHANGES

The original rudder pedal assembly as depicted in CH 7 P 12 has several shortcomings that were remedied on the MARK II. This assembly will become standard in all future aircraft. The original 1/2 tubing is strong enough for normal service but several of the people I've given rides have tested their strength by pushing forward on both pedals with undue force and bent the torque tubes. The original pedals are hard to remove from the

the aircraft, creating an awkward seating and leg angle.

These new pedals have been widened out for more natural placement, which creates a wide opening between the pedals that allows the pilot or passenger to extend their legs and cross them between the pedals and straight out. I find this to be a very welcome change on long cross countrys'.

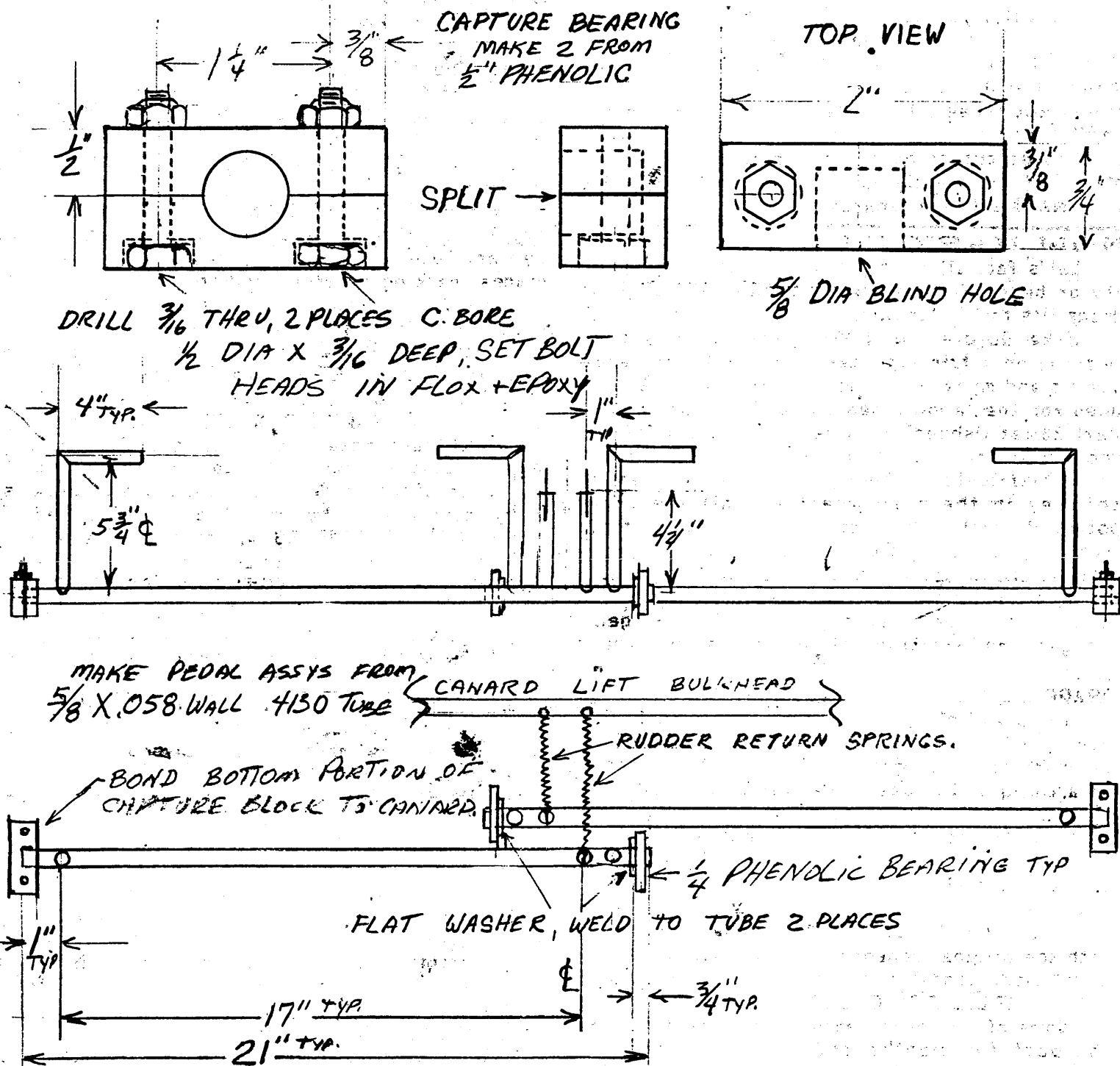
The new pedals require no more welding than before, less work, no bolts, and the capture bearings allow easy removal from the aircraft.

The pedals themselves are designed to accept toe

brake pedals for either hydraulic or mechanical brakes. Return springs are fitted between the canard lift bulkhead and rudder cables, so don't need to make return spring bellcranks shown on CH 7 P 11. The whole assembly is stronger, easier to build and less expensive than the original.

This change is optional, if you've already built your pedals use them, but all new pedals should be to this sketch.

This pedal assembly will be supplied in all pre-fab kits and is available from HAPI.



MARK II MOD KITS

By the time you receive this newsletter, the first of the Mark II inboard mod kits will be in the builders hands.

Getting the gear legs in production took a little more time than was anticipated. TASK is manufacturing the gear legs for us and found that the epoxy molds originally designed for the legs could not be cycled through the curing ovens continuously. The molds began to show problems, so time was lost while patterns that included the shrink factor were made and new cast aluminum molds were made and polished.

These molds are now on line and working, we pick up the first shipment of gear legs tomorrow. I think those of you who get this kit will like it.

Incidentally, you don't have to throw away your canard cores as someone has suggested, to go to MARK II configuration. You simply re-cut the anhedral angle on the center core blocks.

The re-cut takes all of five minutes to do and you don't throw away anything. If you already have your cores cut or have pre-fab cores, the Mod-plans tell you exactly how to re-cut them for MARK II or MARK III type canards.

NOW MARK III

Let's face it, some people just aren't going to fly or be comfortable with a DRAGONFLY that drags it's tail in landing.

Mike Quigley of TASK Research has been working on a tricycle gear DRAGONFLY for some months and many of you saw the fuselage that was used for the landing gear drop tests (per F.A.R. Part 23) at Oshkosh this year. The Mark III has unofficially made its first flight. While doing high speed taxi-tests to check gear alignment, possible shimmy in the nose wheel and all the other potential problems that could arise, suddenly there was 4 feet of daylight under the wheels!

The MARK III is getting painted as this is written and is scheduled to be at Eloy for the "Swarming". For those of you who like tri-gear, the gear modification will be available through Viking Aircraft and will retrofit into scratch-built DRAGONFLYS as well as the pre-fab kit.

Top speed of the MARK III is expected to be a little less, due to the increased drag but that's to be expected on tri-gear. Landing problems should be a thing of the past. The MARK III shares the same new canard configuration as the MARK II version. Price on the gear mod is yet to be established but it will include the gear legs, gear mount material, plans, and any other materials that are unique to the tri-gear system. You can retrofit the MARK III mods into an aircraft fitted with the original anhedral canard. Just cut off the wheel pods, install wing tips and the tri-gear.

FUN FLITE CENTER

Some of you have heard rumors about this for the past few months and now it's becoming a reality. HAPI Engines is establishing the first FUN FLITE CENTER at Eloy and soon establishing

more stores around the country. The concept is unique and will allow a builder to complete the major structure of his pre-fab DRAGONFLY kit in just 2 weeks!

It works like this -

A builder will come to Eloy and purchase his Pre-fab DRAGONFLY kit, then stay here for 2 weeks, working 8 hours a day, 5 days a week in the FUN FLITE CENTER, using our wing and jig tables, assisted by us on the critical parts, supervised and checked on all the phases of construction during the 2 week stay. At the end of 2 weeks, this builder will take his DRAGONFLY home on a light trailer with the fuselage complete, the wing and canard complete and the vertical laid up and joined to the fuselage. He'll also have laid up all of the control surfaces.

The beauty of this is that it will actually reduce the amount of money it costs to build a DRAGONFLY! If a builder orders a pre-fab kit he must pay the \$250.00 crating fee, plus the freight (about \$400.00) to the East Coast, absorb the cost of building jig tables and etc. to creat a "one off" airplane.

At FUN FLITE CENTERS, he will pay only a small fee to offset the consumables used at the Center, such as sanding belts & discs, bandsaw blades, marking materials and etc..

The net result is 6 or 8 months work on the average, compressed into 2 weeks and a cost reduction too! Plus, it's quite legal under the 51% rule, you're building your own aircraft.

FUN FLITE CENTER will have everything necessary to build DRAGONFLYS in stock, from raw foam and glass materials to the last little nut and bolt. A complete line of the common materials used in other aircraft, such as wheels and brakes, instruments, and hardware will also be featured.

FUN FLITE CENTERS will also provide exactly the same builder support and "build here" atmosphere for the CYGNET and STARLET kits marketed by HAPI. The complete line of HAPI engines will also be on sale at FUN FLITE.

In the past we have been plagued with discounters offering in some cases, materials both substandard and unsuitable for DRAGONFLY construction. It is our intention and goal at FUN FLITE to either "meet or beat" anybody's prices on the "geniune", plans specified materials.

FUN FLITE is now the sole outlet for TASK built DRAGONFLY kits and parts, TASK remaining very much in the DRAGONFLY business but getting out of the retail and builder support end of it.

A DRAGONFLY kit, absolutely complete with all TASK pre-fab, all control system hardware, nuts & bolts, cables & goodies, all resin & cloth, top of the line engine, prop, spinner, instruments, hydraulic wheels & brakes, deluxe upholstery, everything except the battery and paint, selling for \$12,995.00 F.O.B., Eloy.

Several sub-kits will also be available to allow the builder to spread his investment over a longer time period. We believe that with this new

marketing approach and super short amount of time that a builder will have to invest before that first flight, coupled with the landing gear options and increased versatility that DRAGONFLY now has, you're gonna see a lotta DRAGONFLYS real soon.

KERRVILLE, TEXAS FLYIN

Tom & Sharon Wolfe's DRAGONFLY and the proto-type flown by myself both showed up at the KERRVILLE bash, where a real good time was had by all. Sure like that Texas hospitality and especially that good bar-b-qued beef dinner they served at the Flyin banquet - WOW, worth flying to Texas just for that.

Tom & Sharon's DRAGONFLY was awarded "Reserve Grand Champion" plaque, and I think they deserved it. They did a beautiful job and now they're really getting a return on their work by flying it. How can you beat that?

PLANS CHANGE GASCOLATOR VENTING

Problem - On some aircraft, a fuel flow problem has shown up that causes an inadequate fuel flow to provide engine with the 7 1/2 gallons per hour flow rate recommended for take off.

Cause - Apparently heat from the engine builds up in the gascolator and causes a partial vapor lock, reducing fuel flow to carburetor, causing engine to miss from fuel starvation.

History - M.T. Sparks KR-2 engine would miss on takeoff but run smooth in flight.

Terry Nichols DRAGONFLY engine would also miss on takeoff, we replaced 2 of those damn no-good blankety-blankety carburetors, same problem. Replaced Posa with Float - Bowl type carburetor, engine still missed but farther out after take off. Finally discovered airlock in gascolator after a

"missing" episode and designed the system for venting gascolator sketched below which totally cured the problem. There never had been a carburetor problem in this aircraft, but rather a fuel flow problem that was showing up as a "too lean" condition. HAPI replaced 2 carburetors at "no charge", when the problem was in the airframe.
PLANS CHANGE

Vent your gascolator back to the air space in the top of the header tank to preclude this problem. The weight of the fuel will displace any air that builds in the system and purge it back to the tank. This is a mandatory plans change and should be incorporated in all DRAGONFLYS even if you are flying and have not experienced this problem.

PROTO-TYPE

I have been hearing some negative comment about the old proto-type. "Looks rough", and etc. Please be kind to the old girl, she's led a hard life, has been rode hard and put away wet too many times.

Just a little history to remember before being too critical-

The proto-type DRAGONFLY

Has 812 hours total time,

Has been successfully flown through 3 flight test programs, Has never been broken,

Has flown to Oshkosh cross country 4 times,

Has flown to Sun & Fun twice,

Has given over 650 people demo rides,

Has been used for 22 pilot checkouts,

Has flown approximately 112,000 miles,

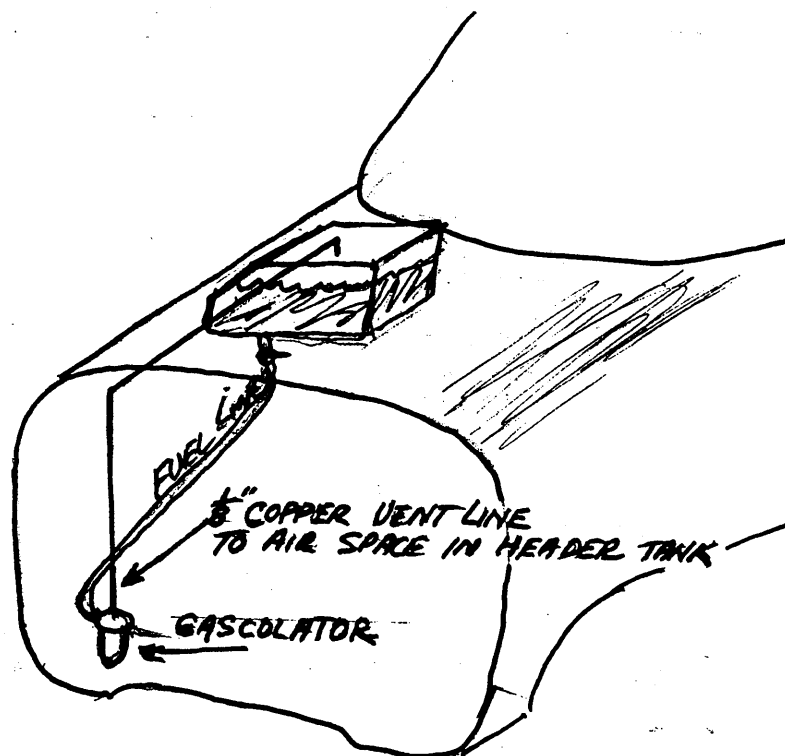
has had literally thousands of people hanging over it, bumping into it, poking at it, probing it an otherwise abusing it at Fly-ins we've attended.

So - I think she's entitled to her battle scars and also to a little respect. You might note that there have been remarkably few parts or areas where fixes or re-designs have been indicated by service wear and abuse. Bob Walters did a very good job of designing up front.

COLORS

We do plan to completely repaint the prototype someday when the #2 prototype now being built from a pre-fab kit is on line and flying.

There have been many questions about what color to use. White of course is the best for heat rejection in harsh sunlight. Very light pastel blues, greens, browns or whatever turns you on can be used, but keep them LIGHT pastels, don't go overboard. Several Dragonflies are now flying that display their builders color choices and frankly, think they look a whole lot better than hospital white.



The Second Annual DRAGONFLY Swarming will be held at Eloy, Az., Oct. 12, 13, & 14. That's almost now, so plan to be there. There is plenty of FREE parking space for self contained campers, travel trailers, and motor homes. For those of you who fly in, the Golden 6 Motel (602)466-7777 is 2 1/2 miles away, about \$25.00 per couple, color T.V., & pool; and Ramada Inn is 4 miles away, (800) 228-2828. Reservations are being taken for Swarming guests and ground transportation will be provided free.

A real Southwest treat "Carne Asada" (Spanish for roasted meat) and all the trimmings will be provided to DRAGONFLY builders, and their wives at no charge. See Robin and verify your valid plans number for meal tickets when you get here or preferably phone in and reserve your tickets and place at the table beforehand. All other guests are also invited to participate. Meal tickets will be \$6.00 per person.

Dinner will be Saturday evening at 7:00 P.M. at the Lions Clubhouse in Eloy. Ground transportation will be provided and a nice evenings entertainment is planned. Hope to see all of you there.

As we did last year, we will be giving as many demo rides in the Proto-type as possible.

Dick Rutan is to be here if he can work the time into his busy schedule of trying to get all the details together to fly "Voyager" around the world. If something prevents his being here, we will show the video tape of his seminar on "test flying, you and your airplane", as a second best choice.

I will be conducting a forum on DRAGONFLY on Saturday afternoon. TASK research will be here to show you the easy way to do things right with actual "hands on" (yours) demonstrations during the Swarming.

Arnold Timmons will be conducting forums on welding, painting, and finishing.

Patrick Taylor will be talking about HAPI Engines. The new 75 horsepower engine, equipped with Vari-prop, cockpit adjustable propellor, will be on display, "running", of course.

We also expect to have some folks from the Quickie Builders Association here. Everybody's welcome. Andy Marshall will be conducting his very educational composites Construction Forum at the Ramada Inn all day Sunday the 14th, and I strongly recommend this course to all our builders. It costs you some bucks but the knowledge you gain is invaluable and the books alone are worth the price of the course.

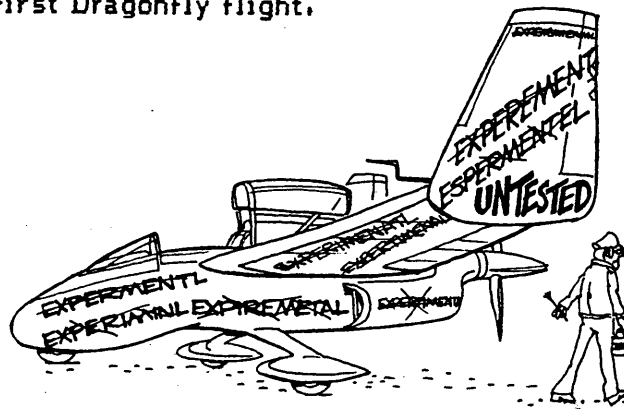
PRE-FAB

We will have several Task Prefab Dragonfly kits on hand for immediate delivery, so if you want to save crating and shipping costs, bring a light trailer or pickup with you and you can go home with a Dragonfly kit. We will also have a lot of the little goodies that can be used on all Dragonfly's whether scratch built or pre-fab.

Builders Letter

This is a letter from Gary T. Konrad of 33 Harvard Royal Oak MI 48072.

N19GK was first flown on July 1 1984. This was the culmination of three years of work by one person. The first takeoff was quite an exciting moment as it lifts into the air and begins its life as an airplane. Initial acceleration is quite brisk compared to others planes I have flown. Climbout at 85mph and 500 FPM seemed comfortable for the first flight. I circled the airport to climb to 300 ft, leveled off, which holds the nose below the horizon and backed off on the power to maintain 130mph indicated. The pitch control is quick and responsive and the ailerons are noticeably firmer but not complaints. After watching the engine temps all stabilize in the green, I tried slow flight. Back on the power first and then back on the stick to keep it from climbing, 60mph at 150 RPM seemed slow enough for the first try, at this speed the controls are still very effective. Rudder control at all speeds is very quick and the Dragonfly is not a "Rudder Airplane" like a Tri Pacer. The elevator trim tabs will need some adjustment to get it to fly hands off. I noticed that with my C.G. at 62" My Dragonfly Cruises with about 1/8" up elevator, which I hope will help high speed cruise. After about one hour of flying around getting comfortable with my new airplane it was time to get it down. Entering down wind at 100mph and slowing to 90 on base about three miles out gave plenty of time to set up the approach, about 75-70mph over the fence and let it settle onto the runway. I had 2 small bounces (no damage) and came to a stop less than 2500 ft from the approach end of a 6250 ft runway. Not bad at all for the first time. A lot of my success came from about 15 hours passenger time in Bob Verriest's Dragonfly N641D. I wish good luck to all others on their first Dragonfly flight.



WANNA BUY A CANARD?

We have in house a canard with latest spar mod, and TASK wheel fairings ready for elevators. Since we probably will never use it, it is for sale. It is built right, proper materials, good workmanship, and priced right at \$1,500.00, haul away Eloy. Take a look at it during the Swarming.