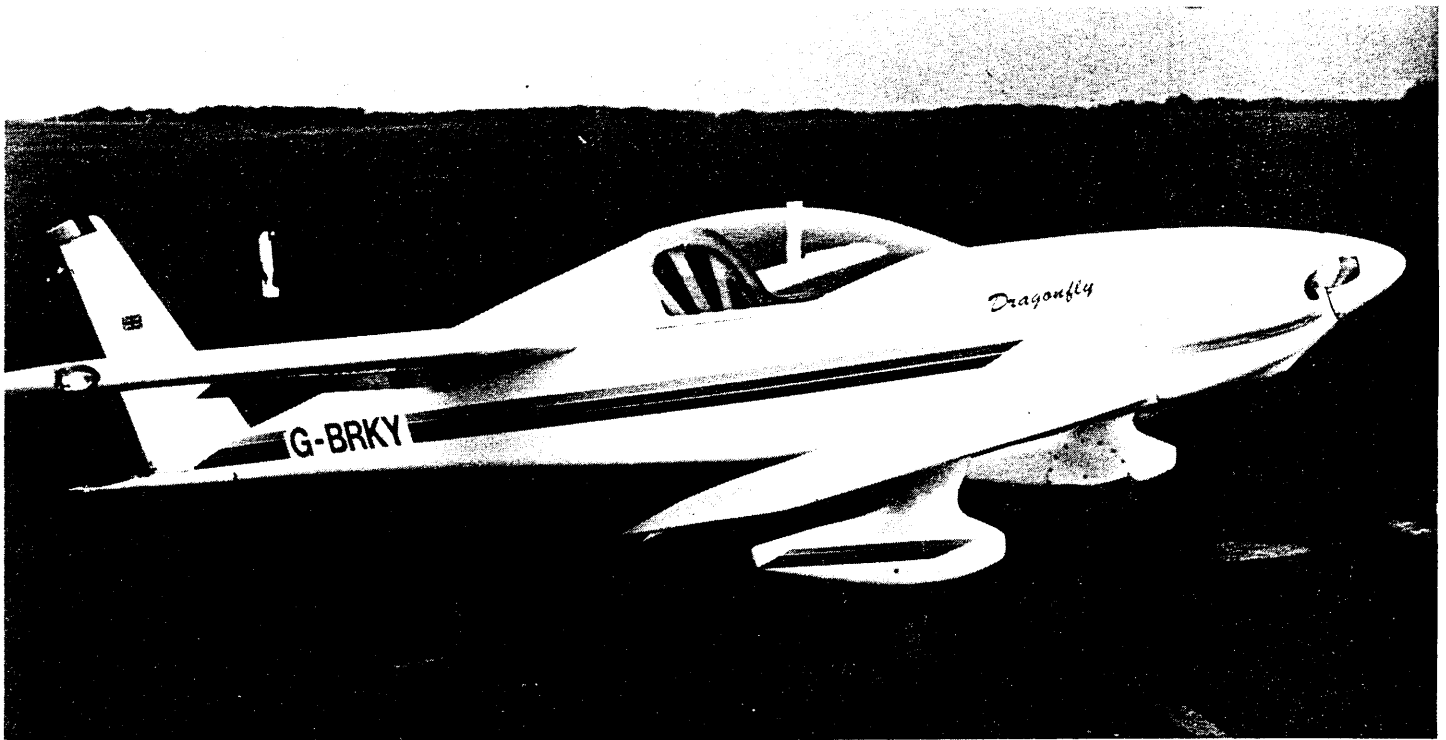


DRAGONFLY BUILDERS AND FLYERS NEWSLETTER

THE OFFICAL VOICE OF DRAGONFLYERS ALL OVER THE WORLD

VOLUME 39

JANUARY - FEBRUARY 1992



GERRY PRICE'S DRAGONFLY OF THE U.K.

Dear Spud

Thanks for the note along with the newsletter: This is now one informative and useful document - Thank You for 'picking up the reins' and making it happen. Yes, my Dragonfly is the only one flying in the U.K., though my friend, Neville Eyre will have his flying next year, and it will be the most beautiful MK I. I started my project in 1984, having built a VP-1 way back, and it flew on June 21st 1990. Going back to the 747 as Captain for British Airways, and the birth of no. 2 child, has meant only 30 hours flying since then, but other pressures should ease a bit from here on.

The details: It's a Mark II, weighing in at 710 lbs., a tad on the heavy side, with all the C.G. etc. right on the money. Power is an 1835 VW, done mostly with Hapi parts. The test flying was done off a 2100 foot hard surface runway with no big problems. I had to tweak the left elevator up a bit to get aileron neutral cruise. I had cracked a gear leg, just where it bends around the tire, due to a heavy landing when test at high weight on a very gusty - with my 10,000 + hours, I should have known better. Got the new gear legs, made them stronger at the bend area and have had no problem since. The engine is a different story, with just about everything I bought from Hapi needing either

extensive rework to make it usable, or trashing: I feel sure that this was just bad luck, as the Taylors were always most helpful, but a 'for instance' is the head which had threads so badly truncated the plugs would have progressively blown out with the heat and pressure of operation - fixed with Helicoils, but it should not have been needed. I'm just about to change to a Stromberg carb to see if I can fix the very high temps I'm getting, and the heads are coming off as I suspect a couple of sticking valves. All in all, I'm not happy with the engine as it is, and am in touch with Steve Bennett at Great Plains - I shall be building a new 2180 with their parts.

I fly my Dragonfly out of a 1500 foot grass strip which I share with three others - we have 2 nice hangars, runway lighting, our own frequency, etc. I only fly out of there solo at present, the 2180 engine should solve that, but its still a pretty nice way to go. When the engine O.K. my numbers are : - 140 indicated at 3200 rpm, climb 700 ft at 110mph solo - and about 400 ft with passengers, stalls at 60 mph indicated. Take off is 800 foot - lands about the same, also I'm using a Props Inc. 52 X 42. Like everyone, I'm watching Justins engine with great interest, and I hope he'll get time to put together a full info some time, Hank Brouwer, is putting a Subaru in his, and has always intended to from day one of the project. I would be unable to put one in G-BRKY as it's already heavy and I doubt that the gear would take it, so the way for me to go would be to build a super-light Dragonfly, and go from there, making it an absolutely unbeatable airplane. In conclusion. I'm delighted with my Dragonfly: It handles really nicely, is very safe, very pleasant to fly, doesn't use much runway or gas, and it draws a crowd wherever I go, but I do need to get the engine right, and I think that Great Plains may just have the answer. Maybe one of the nicest things has been the sharing of all the various experiences involved in building and flying - Thanx for making that part easier with DBFN!!!

All the best, and happy Dragonflying

G. D. Price

I wrote Gerry with some questions about his Dragonfly, To follow is his follow-up letter.

Hello again Spud,

I've enclosed a copy of some of the info I did for the Dutch builders, but I will do a more detailed article for the newsletter just as soon as I have the 2180 in the air!! I will also measure the dimensions you asked for (Gerry's DF as a high rake angle, I asked for ground to center of prop/spinner measurments-Spud) when the engine is installed. I think that deck angle has quite a bit to do with the stopping distance, but pilot technique, inparticular doing a good flight test schedule so that you are not frightened of a slow speed with a bit of power, power plays an important part. I really am stopping the Dragonfly in the quoted distance, not just wishful thinking. I'm hoping that those extra horses of the 2180 will let me get out of the

strip with passengers, if I get the prop right.

Gerry's test flight briefing;

1) G-BRKY

My DF weighs 710lbs empty, so it is a little heavier than ideal; it uses a 60hp VW-converted with HAPI parts, a 52 X 42 Props Inc. propeller. This gives 3000 rpm static and 3400 rpm maximum in the air at 160 mph. The C.G. is exactly on the plans figure, both empty and loaded. For first flight: I had 1/2 fuel in the main tank and 100 lbs ballast in the passenger seat. This makes the aeroplane perform slightly less than the empty case, but it is a little easier to land, as the tail goes down quicker.

2) TAKE OFF

With all the engine temps & pressures OK, we lined up, bringing the power up to 2200 rpm on the brakes and then releasing brakes, then full power. The wing lifted at about 45 mph, with lift-off at 65-70 mph. The best techniques is to hold full forward stick to about 55 mph, gradually coming to neutral by 55-60 mph. Then slight aft stick by 65-70 mph. In a crosswind - I have flown with 15-20 kts at 90 degrees from the right - I hold full forward to 70 mph and fly off very quickly with aft stick at 75 mph. The Dragonfly tracks very straight with good tailwheel steering and no need at all to use differential braking. Even on the smoothest runways.

3) CLIMB OUT

I initially climb at 85 mph (first 20 seconds or so), to be sure of clearing obstacles and then lower the nose to climb at 100 - 110. The Vmd is 105, so this is the most efficient speed for RATE of CLIMB (not for angle of climb). It also gives a better view over the nose and most important keeps the engine cooler. On my first flight I flew too slow and the oil temp went up to 230 deg F. and stayed there!! This was much too high, but later flights kept to 200-220 deg F. by flying faster and I never see higher than 180-190 now, though the engine is much "looser" which means it runs cooler. At 100-110 mph the Rate of Climb is 600-700 ft/min.. I climbed to 2000' on my first flight , staying within 1 km of the aerodrome.

4) CRUISE

On the first flight I flew no faster than 120 mph as I could not decide why the engine was so hot. I also needed a lot of left aileron, though this was quickly cured by adjusting the left elevator pushrod to make it longer, thus raising the left elevator slightly. A normal cruise now would see me climb at 120 mph to my required height. Putting the nose on the horizon and leaving full power until 150 mph, coming back to 3200 rpm. Sometimes I cruise at 2900 rpm which is quieter, and still gives 135 mph. Fuel consumption is 2.75 gph (Imperial gallons). Flying in the rain gives a slight pitch down, so put in a bit of aft stick. It is no problem at all, but a small wooden propeller at 3300 rpm will be damaged by long flights in the rain.

5) DECENT and LANDING

This is a very slippery aeroplane, much like a jet in a decent: Use carb heat and warm the engine every 500-1000' as the VW can stop when you open the throttle for approach if it is too cold!! I often descend with a little power at 130 mph and then allow the speed to come back to 110 downwind, reducing to 90 mph on base leg where I descend from 1000' to 600-700'. At about 1.5 miles out, I trim the aeroplane to 80 mph on final with about 1000-110 rpm, but the decent angle is very shallow - about 2 degree glideslope just like a Lightning or Hunter. You will need to keep your head well to the left to look over the nose, and make small adjustments of power. **DO NOT LET THE SPEED INCREASE-AS YOU COME OVER THE FENCE.** At Shoreham I am no higher than 15'. **THE SPEED MUST BE 70 MPH - NO MORE!!** Take all the power off, and flare normally, but as soon as the mains wheels are on the ground **APPLY FULL NOSE DOWN ELEVATOR.** This may seem odd to you when you first do it, but it makes certain that the canard does not fly, keeping the Dragonfly nicely on the ground. Keep straight with rudder and tailwheel steering as the wing as the wing stops flying.

*** The most IMPORTANT POINT: ***

If you come over the fence faster than 75 mph, **GO AROUND!** however much you think it would be OK to land. With anything less than 5000 ft of runway in front of you. **YOU JUST WILL NOT STOP.** I do not want you to think it is difficult; it is not , but you must set up the approach carefully.

6) CANARD STALLING

I did not do this on the first flight - I just checked that it would fly OK at 65 mph. After a while I did checks properly above 3000' with a parachute. Gently reducing the speed at 1 mph/sec, decent 200-300 ft/min should produce gentle "bobbing" as the canard stall/unstalls. Do this at all weights and C.G. positions, during this and straight and level: - There are no surprises and it will give you confidence in this very safe aeroplane.

7) HIGH SPEED

Before you fly the aeroplane, check that it has the modified elevator torque tube assemblies. Check the elevators by asking someone to hold one side at neutral whilst you try to move the other side. Do the same with the Ailerons. Some play in the ailerons is OK, but the elevators must have no or almost no play. Flutter can cause the lose of a surface in 1 to 5 seconds! I have flown G-BKRY to 180mph many times, but that is red line and I will not go beyond it!!

That's it Everyone! I am delighted with my Dragonfly _ it flies fast, yet uses very little runway or fuel. I think it looks great ! (it always draws a crowd!). You will all have just a much fun and I wish you all "Bon Voyage"

Regards

Gerry Price

THE ENGINE SHOP

BY CHRIS BARBER

Let's talk about the fuel system. The stock DF design uses a small header tank kept full by transferring fuel from the main tank via an electric pump. Header tanks are nice because gravity always works. Thus, when the electric pump stops, we have a fuel reserve that continues to function. Now, unless we get fancy and pressurize it, a header tank will supply only as much fuel pressure as the height between the carb and the tank allows (neglecting pulling "G's"). Here is the science: A liquid column will have a certain pressure at it's base depending on it's height and the density of the liquid. This is how pressure for our altimeter settings can be expressed as "in. Hg" (height in inches of a liquid Mercury column). It turns out that 14.7 PSI is 29.92 inches of Mercury, or 33 ft of water, or 48 ft of gas. This is why a 2 ft height between the header tank and the carb delivers just under 3/4 PSI (14.7 x 2/48). This is not necessarily bad, but the lines and fittings must allow enough flow into the carb at this pressure to meet the engine requirements.

To function properly, a Posa carburetor needs a constant pressure at the inlet. The same is true for a float bowl carb but to a slightly lesser extent. The fuel height in the float bowl acts as an internal pressure regulator. But feeding the float bowl smoothly requires a certain needle/seat (or grose jet) orifice size dependant on the fuel flow requirements of the engine and the inlet pressure. A needle/seat combination for a gravity fed carb will have a larger opening than for a fuel-pump fed carb. This is why needle/seats come in various sizes on highly adjustable carbs such as cylindrical slide Mikunis. You should be able to see why using an unregulated electric pump as a primary fuel system, backed up by a gravity fed header tank, is not the best idea. This is because a normal carb set up for pressure feed will not maintain enough flow under gravity feed conditions to operate the engine at full power, and if set up for gravity feed will not maintain the float bowl fuel height properly when being pressure fed if the pressure is much higher than during the gravity fed condition. Ever notice that the popular (and expensive) Ellison looks sorta like a Posa with a built-in regulator, but there may be more to it.

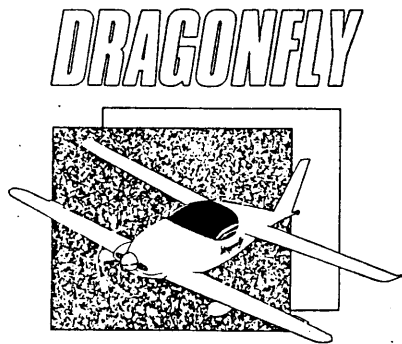
I removed my header tank to allow me to weigh my plane down with more gizmos on the panel (didn't help the electron supply shortage problem any either). Without gravity assist, I would now need a pump to supply the carb(s), the key word being **NEED**. Having already used up too much luck in my flying career, it would seem prudent to **NEED** as little as possible to keep the 'Flys engine running. Relying solely on an electric pump isn't much help as it needs: electrons, pump working, etc... sounds like a bad idea to me. Maybe I should install a header tank somewhere else.


A solution to this grim situation was instigated by my trusty VW bug, KP. It's engine has a mechanical fuel pump. Works great and needs NO electrons. My DF's 1776 engine got wind of this and insisted on having one of these too. A mechanical pump operating full time, with an electric boost/backup pump which would operate in parallel. A pressure gauge would allow me to monitor the operation. Two tanks (or two pickups) allow the system to be totally redundant and now I can locate the second tank anywhere (see the sketch). I would still have fuel flow if the electrical system went out, and the electric pump could be purposely turned off except during critical phases of flight to save electrons. I never have trusted electrons much and I hate to NEED them.

Nothing is as easy as it first seems. VW put the fuel pump on later type I engines right where my DF cowling is. The Limbach has a mechanical fuel pump is off to the side, out of the way. But they would not sell the necessary parts to install on my engine. (The same goes for the aluminum 90mm cylinders. Anybody not want theirs?) After reviewing my old literature, I noticed a picture of a HAPI engine with a side mounted fuel pump. Would they sell me the parts? Bingo! I took my engine case out to Ole' Rex when he was still at Mosler to modify for a fuel pump, blissfully assuming that things would be OK.

Well, things didn't work out quite that way. Rex left Mosler and my case languished in a corner of the shop. When the job finally did return, I personally felt it was unairworthy and needed much more development. I must say that Tim Kern did agree and they were pretty good about refunding. I have redesigned the set-up and am testing it in my 1776cc DF engine which is now installed into KP (running cool by the way on 87 octane gas due to the 6.6-1 CR). It works great so far delivering 1.5-2 PSI. The set-up can be modified to produce more pressure by changing the pump stroke, which I have now set to be slightly less than the stock VW. The machine work on the case is pretty simple but must be done with the case apart. The rest of the parts bolt on and the pump is a stock VW part. Looks pretty darn German now, even fits the stock VW engine tin. Any interest in a kit? Let me know.

CHRIS BARBER





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We appreciate Wick's super support during last fall's Swarming. I highly recomend that everyone try to support them whenever possible. A good start would be by making sure you have their catalog! - Spud

SWITCHES!!!!

Jim Smiley of Cocoa beach, Fl. sent in this info on switches taken from the FAA bulletin board. It's excellent and should be used by all of us for reference. Thanks Jim!

A SWITCH IS A SWITCH...OR IS IT ???

by Art Bianconi

Some years ago I was fortunate to be able to work alongside engineers from Underwriters Labs (UL) during destructive testing of electrical devices. This was part of my apprenticeship as a designer for a major electrical manufacturer and it was during this period that I acquired an appreciation for the real-world differences between AC and DC current and the impact those differences have on switch design and applications.

I share this with you because I am growing increasingly concerned at the widespread lack of appropriateness most home builders demonstrate when selecting switches for the cockpit environment. Each time a builder asks me to perform a pre-FAA inspection of an aircraft, I carefully examine the switches and, to date, over THREE-FOURTHS of the projects inspected have turned up AC rated or non-rated switches in DC circuits.

Current is current; What difference does it make DC or AC ?

The difference between AC and DC load carrying capability are dramatically non-linear and are best appreciated by carefully inspecting a high-quality switch carrying both AC and DC ratings. Typical of this is the roller and bar micro switches made by MICRO Corp. Rated at 10 amps at 125 or 250 volts AC, the same switch can only carry 0.15 amps at 250 volts DC! In real terms, we have lost more than 98% of the original load carrying ability and all we did was to go from AC to DC! The voltage stayed the same!

But I'm using 120 volt AC switches with only 14 volts DC....?

Those of you who can still remember the old Kettering coil ignition systems will recall that when the condenser in the distributor went bad, the points generally turned blue and melted down in just a few minutes. Cockpit switches don't have the benefit of the condensers to absorb the electrical inertia present in a DC circuit and as a result, the gap temperatures get hot enough to weld contacts. That includes AC rated switches, even those made with exotic high temperature alloys.

AC current changes directions 120 times a second in a 60 cycle circuit. As a result, there are 120 times each second when there is no current flow at all. The current actually helps turn itself off the moment it see a gap and the switch designers use this phenomenon to help reduce the cost of

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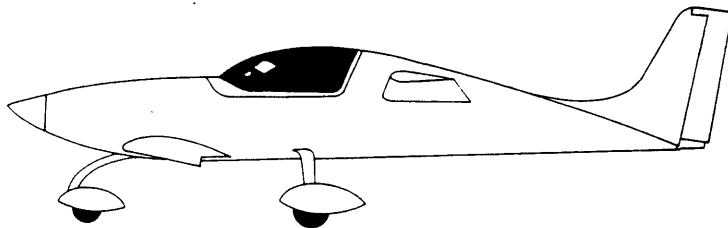
Build from scratch or pre-fab components using a construction manual written for the first-time builder.

Info pack — \$10.00 • Plans — \$259 US, \$300 overseas or send a SASE for all the parts available for the Dragonfly.

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the manufacturing AC switches. In DC circuits, however, the 'push' is constant even when the points begin to open and the resulting flash is DC current's way of demonstrating its resistance to termination.

But won't my circuit breakers protect me.....?

No they won't. Fuses and CB's provide overload protection, and a welded set of contacts will not, by themselves, cause an increase in circuit load. What often happened during UL testing was that the points welded shut, making it impossible to open the circuit. Cycling the switch to the open position was often misleading; yes the lever moved, but inside the switch the cam had separated from the welded points. While it appeared to have broken the circuit, the circuit was, in fact, still hot. If the load involved was your fuel boost pump and you thought it turned off, when in fact it was still running, what would be the consequences be? If it were a flap or elevator trim device or a landing gear motor, how would a tripped circuit breaker save you if the activating switch was welded closed and in a mode other than what is required for a safe landing?

A DC rated switch will cost you about 3 times more than a AC rated switch of identical current capacity. If your panel sports 10 switches (which is not likely) the difference will be less than \$35. You've gotten this far. Is it worth jeopardizing your investment or your safety by cutting corners with even one cheap or improperly rated switch?

You know what! I bet ya, theres a bunch of people checking switches. I hope everyone found this enlightning.... Spud

LETTERS, LETTERS, LETTERS

From Rob Kermanj of Boca Raton, Florida

I just received my newsletter today. A letter from Doug Harris caught my attention. The number of Dragonflys flying and showing up at the air shows is indeed disappointing. Here is what I think has caused the problems:

1. At the top of the list is the search for a powerplant 2. The search for a new gear 3. Fear of first flights

I think that if your objective is experimenting and education, it is fine to install various engines. However, I believe that the experiments will cost time and money. I venture to say that if you want a year cut from your building time spent tweaking engines, starters and carburetors, buy a Limbach engine and forget about it.

If you must operate from a grass field then look for a better gear than is currently available. If this is nor so, you do not need an inboard gear. I have flown my Mark 1 Dragonfly in cross winds exceeding 15 knots at 90 degrees to the runway many times with no problems at all.

I have written about the first flight before so I won't repeat it here again.

Now as to the cross country capability of the Dragonfly (I have flown mine for over 400 hrs. of enjoyable cross country) here is my opinion:

DF is fast but, it is not a Glasair. DF is much more comfortable than the Glasair. For that matter, it is much more comfortable than most other homebuilts I have seen and sat in. I am good for 2 1/2 hours in mine. Unlike the EZ's the sided by side seating is ideal for long cross country when you need help navigating, operating the Loran or just face to face conversation to stay awake! It uses very little gas.

I'll write about my trips to California soon.

Best Regards

Rob Kermanj

Rob has some very strong Dragonfly credentials, Mark 1 Dragonfly with over 700++ hours!

Chuck Ufkes of Ocala, Florida

Hi everyone

Rob & I made it home from the Swarming Sunday. I arrived at Ocala at 10:45 P.M., but Rob didn't get to Boca Raton until 1:00 A.M.

I would like to thank everyone for their help and concerns after my mishap (Chuck broke a prop). A very special thanks to Bruce Dixon for the loan of his prop which made it possible for me to get home.

About a hour out of Ottawa we ran into rain. The rain was light to moderate with low ceilings, which we flew in and out of for about a hour or so. As the rain got heavier the back pressure on the stick was proportional. It also took its toll on the leading edge of the prop. The leading edge protection did its job on the first six inches but the wood inboard for about two inches eroded one blade about 1/16" deep. Props Inc. said they could make it like new.

The Swarming was just great! and worth every minute of the trip. All the builders and flyers there where just a great bunch of people. (That's what it's all about Chuck - Spud)

Thanks Again

Chuck Ufkes

DRAGONFLY

From Frank Dombroski of Dallas, Texas

Hey Spudmeister!

I just wanted to drop you a line to let you know that I thoroughly enjoyed the Swarming. Thanks for the effort.

It was a great to have a opportunity to fly a couple of Dragonflys prior to the the big event, coming soon to our project in Dallas. Many thanks to Rob, Wayne and the rest of the flying crew their many, many trips around the the patch with all those eager builders.

I also wanted to provide some information on the Subaru engines that we discussed in the Saturday forums. The import engines come from Japan, where regulations dictate that motors are replaced at 30,000 miles. Upon removal they are sold to importers in the U.S.. Several of these importers are located in Dallas, Texas and you can probably find them in the yellow pages of most major cities. They are listed under "auto motors".

The Subaru EA81 sells for about \$350.00, which is cheaper than most junkyard engines. Following are the Dallas phone numbers.

C & T Imports (214) 351-1668

Eric Japan Engines (214) 272-4186

All Star Engines (214) 788-4299

I have also spoken to several companies that offer PSRU kits for the Subaru engines. They all seem to be quite knowledgeable about the engines, making it well worth the dime to call them. They can be contacted as follows.

Huronla Aero (705) 526-6863

Rotary Flight Int'l (505) 298-9362

Amax (03) 842-3132 or Wicks Aircraft (their the US distributors) 1-800-221-9425

Well, that's all for now. As things progress on our projects I keep everyone posted.

See ya, Frank

MULTICOM

First off I would like to apologize for the tardiness of the newsletter over the last three issues. If one more car, computer, appliance or whatever breaks at my house I'll have to have my place declared a "National Disaster Area". Murphy's law has definitely been in full force. DBFN # 40 will come out ASAP after Sun N'Fun and then hopefully we can get back on schedule. I appreciate everyone patience in this area. - Spudley

Tom LaPointe of Wausau, Wisc.

Wants to invite all the "Glass boys" to there annual Pancake, Fly-in, Airshow on June 28th. He says the show needs some composite airplanes. So you people flying in Minnesota, Wisconsin and Illinois, sounds like you just found a good excuse to go flying.

Radio System Technology is expanding. - They have just acquired Azure's Long Ranger Aviation Loran-C product line. Units will be supplied on a factory built bases. Although noncommittal with regards to timing, McEnroe hinted that the Long Ranger may be offered in kit form in the future. Unit range from \$795.00 to \$945.00. Their order line is 1-800-824-6675. It might be a good idea to get their latest info. Radio System Technology, Inc. 12493 Loma Rica Dr., Grass Valley, Ca 95945

Einstein strikes again! - In the last issue (DBFN #38) Viking had a updating letter and a listing of all their approved vendors. Well we had just a "itty bitty little typo". I put down Aircraft Spruce & Spec's phone number for Alexander Aeroplane's. So let's try this again. Alexander Aeroplane's correct number is 1-800-831-2949.

Canopies. - I have had a lot of people contact me in regards to canopies. Here's the scoop. I contacted Aircraft Windshield who produce the Dragonfly canopy. One of the questions that I asked was about the close resemblance of the Dragonfly and the Lancair canopies. They pointed out that the canopies where basically identical other than the Lancair canopy is a little bit more square in the forward corners. The current price of the canopies are \$420.00. They prefer that they be ordered directly thru Viking out of Helena, Montana. The price is the same, either way. The canopies will be drop shipped directly from California to you.

Another gear leg option - One other possible gear idea is to use a aluminum gear. This gear is a 5/8 to 3/4" flat aluminum stock that can be bent to your spec's. Prices range from \$300 to \$350 depending on thickness and number of bends. Those interested may contact Great Plains Aircraft of St. Charles, Ill (708) 464-4178.

Hans Graesser of Germany is at it again. - Hello Spud, I want to inform you about my version of a "Dragonfly RG". Spec's are as follows: Both wings are detachable (like sailplanes). Center main gear with one 6" - wheel. Retractable wingtip mounted support wheels. Main gear retracts sideways (?). Engine is a Norton Rotary Wankel 90. will keep you posted as thing progress. - Hans

Reg Clarke of Alberta, Canada. Who has a really nice flying Mark II. He owns Clark Upholstery and one of his specialties is aircraft upholstery. He has created several very nice interior packages for the Dragonfly. He also has custom covers for; cowls, propellers, fuselage & wings. He's located right on the Wetaskiwin airport. Mailing address: 4813 - 57 Avenue, Wetaskiwin, Alberta, Canada T9A 1B6 (403) 352-5001 Give Reg a call and have him quote some prices for your project.

IF I DID IT AGAIN !

I talk to a lot of people every week, new & old builders. A question that comes up quite often is "Spud, if you where to do it again, what would you do different or what changes would you make? This generated a idea (I'm always thinking). I want everyone to write in with all the things that they would do different and/or changes that they would make if "they" were to build a Dragonfly again from scratch. We want to hear about the good and bad. The comments can be as short as an one liner or long as needed. They can be typed or hand written. The important part is that everyone put in their "two cents". So lets get writing, share those experiences - Spud

1992 CALENDAR

Get out those 1992 calendars and mark down these dates.

● Sun N'Fun - Lakeland, Fl. - April 5-11

We will have a forum scheduled on Sunday the 5th or Monday the 6th. They haven't finalized the schedule as of this printing, check schedule on arrival.

● National Gathering for Canard-Type Aircraft - Olathe, Ks. - June 5-6-7

We have been invited to participate in this event. They are expecting over a 100 Canard Aircraft. All Canard aircraft are invited. After the daytime activities the Dragonfly, Q-2, Q-200 group will break off for a separate dinner and a open forum at one of the local restaurants. We didn't have room for the entry form in this issue. Those needing one sooner than mid April please contact Spud.

● Oshkosh 92 - Oshkosh, Wi. - July 31 - August 6th

Everyone knows this one. We are working on getting the forums scheduled for the first weekend. Camp Dragonfly will most definitely will be open to all the Dragonflyers, Q-2, Q-200's gang. More details as we get closer

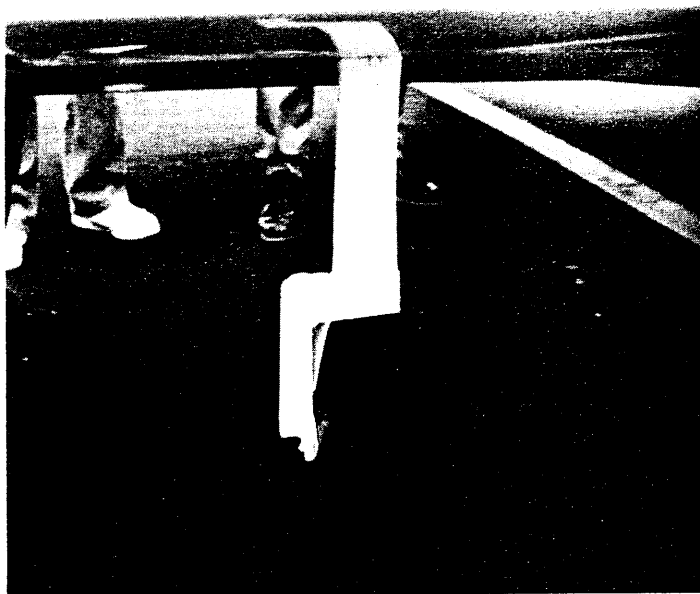
● The Dragonfly-Q2-Q200 Annual Fly-in - Ottawa, Ks - Sept. 18-19-20

I'm very excited about combining of these two equal span aircrafts events in one. We'll have the fly-bys, familiarization rides, expanded forums scheduled starting Friday night, Award programs for both aircraft families. Saturday evening awards banquet and more!

STEEL GEAR LEGS

Hello Spud

Here is some information on my steel gear legs. I decided to build my own gear legs after both of the fiberglass ones failed on a normal landing. They had less than 40 landings on them. Some of the early landings had bounced the airplane. The gear legs were examined and they appeared OK. The gear legs should not have failed based on the landings made with them. I discussed the problems with Rex Taylor who was concerned about this problem and was very willing to work with me on solving this problem. It was winter and I couldn't fiberglass so I decided to see if I could make a different replacement gear.



I am testing my fourth design. They are approaching 100 landings and they are doing a excellent job. I have less than \$25.00 in these because I used readily available materials. They fit into the existing fiberglass gear boxes with no problems. They are easy to make. A fellow Dragonfly builder who just broke a second set of fiberglass legs that he had made himself.

The steel gear leg has increased my DF's weight by 5 lbs., to 671 lbs.. The engine that I'm using is a Limbach L 2000 (70hp at 3000rpm) which was used in a German motor glider (single magneto). I had to change it from a dual to a single carb, build an engine mount, exhaust system and work on getting the proper propeller. I am currently using a 54 inch - 48 pitch propeller that does 2900 RPM, take off, and climb out. It runs up to 3000 RPM cruise which is the maximum for this engine.

CONTINUED ON PAGE 10

FLEXIBLE LANDING GEAR LEG FAIRINGS
by Ted Givins

The following describes how the foam fairings were made and installed on my aircraft C-GGEM.
If there are any questions, please contact me at the following address;

Ted Givins
6318 Fortune Drive
Orleans, Ontario, K1C 1Z1
Phone: (613)-837-6582

Materials; Foam Rubber -Seat cushion or radio packing
Aerolite Foam -High-density foam used in backpacking sleeping pads
Contact cement

The following shape was used on C-GGEM and can be modified as desired.

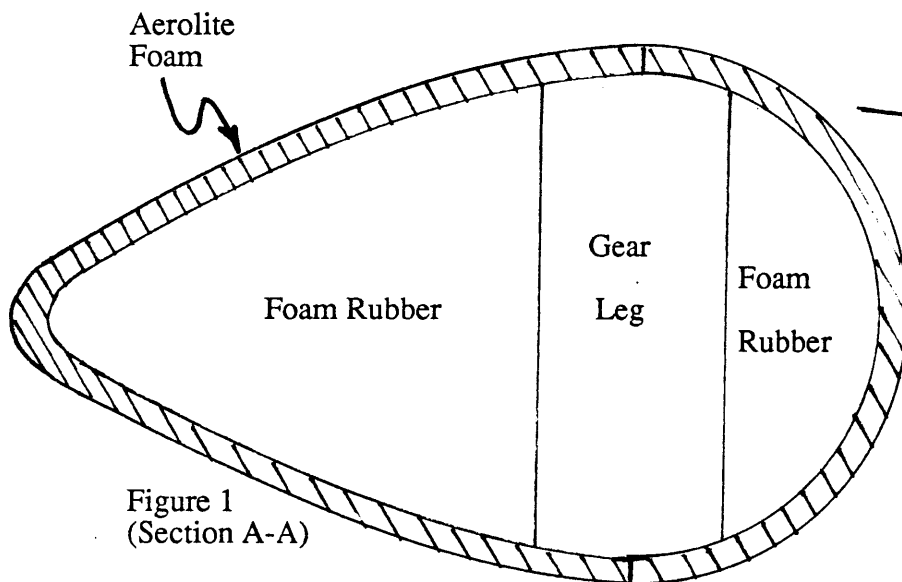


Figure 1
(Section A-A)

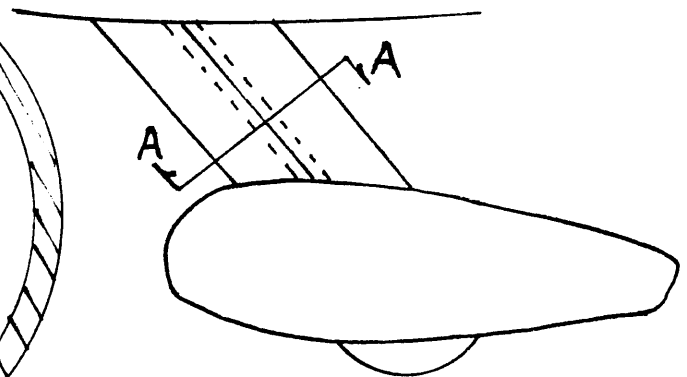
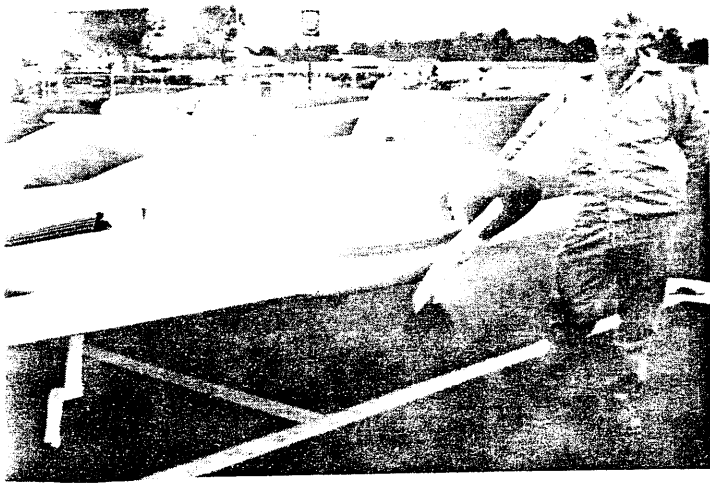


Figure 2

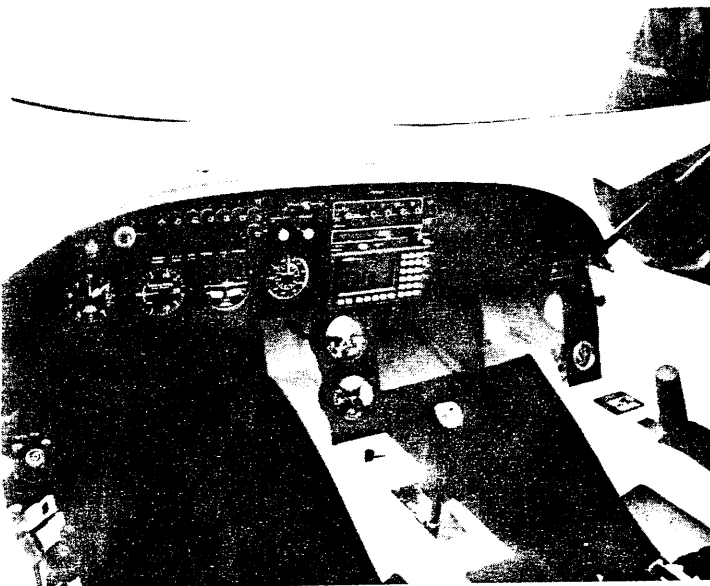
Construction/Installation:

1. Cut the foam rubber to the desired shape ensuring the length is sufficient to cover the complete gear leg as per figure 2. Sections of foam rubber may be glued together to obtain the necessary length.
2. Cut out the section of foam where the gear leg will be.
3. Cut Aerolite foam pieces to cover each foam rubber part and glue the foam parts together using contact cement.
4. Cut the fairings to fit the gear leg and glue to the leg using contact cement. Also glue the edges of the fore and aft fairings together.
5. The joints between the canard and fairing and wheel pants and fairing can be sealed with silicone.



The IAS is 130 knots without the wheel pants. With the outside temperature at over 90 degrees, the CHT is 285 and the oil temp is 180. With the current hot weather (density altitude of 6000 ft) it climbs at 600 FPM. In the cooler weather it will climb at 1200 FPM solo. I recommend this engine as it has performed flawlessly for me! I understand that the current price with dual mags and a single carb is about \$9000.00

My airplane is a Task kit with no changes from the plans except for the inboard gear and forward hinged canopy. I have carb and cabin heat and enough flight instruments to get me out of IFR weather. radios are transponder, 760



com, Loran, intercom, and ELT. It is set up for night flight with Nav lights, strobes and landing light in the bottom cowl.

I am currently developing a flight manual for the Dragonfly with two very experienced test pilots. They like my Dragonfly so much that they are both thinking of buying or building one!

Steve Larabee
703 Timothy Circle
Charleston, IL 61920
(217) 345-2633

UP & COMING

In the next issue of DBFN we will be bringing you;

- Update on Sun N'Fun 92
- Troy Burris's Aileron Servo Tab System
- Len Dyson's of Australia's Air brake System
- More letters and builders tips

THE CLASSIFIEDS

For Sale: Firewall forward for Dragonfly 2167cc VW engine, prop. through and including motor mount. No carb. \$4400.00 invested in 1986 dollars, have receipts. \$3000.00 for everything, firm. Call Chuck Kaplan - Walpole, Mass. (508) 668-4784

For Sale: Dragonfly project - Fuselage 65% completed, glassed inside & out, bulkheads, main & header tank installed. Wing completed less control surfaces & weave filling. Most foam for Canard. Get a head start & save 350 hours. First \$1850.00 firm. (913)764-5118 ask for Spud

For Sale: Canard-MKII canard w/ gear legs installed. Faring & elev. cut but not finished, Save months \$1800. Fuselage-bulkheads, panel & hdr tank inst'd, tapered consoles with stick mixers. Most other metal parts included. Next step is to glass-\$1800. Wing-glassed both sides, fair craftsmanship-\$500. Everything above for \$3500. Ask for Stan, Days(213)941-9763. Eve(213)402-5023

For Sale: One Ken Brock Dragonfly hardware package, 52 pieces in all, for a center stick. Copy of the original invoice included, cost was \$612.00. I'll sell for \$458.00 including shipping. Frank Cabanillas - Aiken, S.C. - (803) 642-6406 (after 6 P.M. eastern time)

For Sale: Dragonfly Mark II, 70% completed, Most major components, complete except finish. 1835cc engine made with Hapi parts, engine/flight instruments, Rosenhan brakes/wheels, 2 sets of original plans, foam hardware for 2nd plane, canopy \$10,000.00/OBO Phx,AZ (602) 892 1427

Wanted: "Want to Buy", Dragonfly, Mark I, Mark II or Mark III's. I am interested in completed, damaged or kits finished or not. Please contact Skip Lawrence P.O. box 1295 Hamilton, Oh 45012 (513) 868-9736 or 863-2858

For Sale: Dragonfly N89VE Mark II - 37 TT hrs, New Hapi 60DM2, Hydraulic, Dual electronic ignition, all new instruments, Nav/Com, Loran, Transponder w/Mode C, intercom with 2 David Clark headsets. \$22,000.00 Invested. Steal it for \$15,000.00. Lost Medical, must sell. Will consider trade of Ultra light, motorhome, boat or what have you? Everett Vidrine, 1700 W. Laurel, Eunice, La 70535 (318) 457-5989

SOLD

Everett's plane

For Sale: Dragonfly project 85% complete. Initially built at Hapi Fun Flight Ctr. Wing & canard built and angle of incidence set. Hapi 60 HP with dual electronic ignition. Was bought as a complete kit including prop, spinner, instrument package, tubing & hardware. \$4500.00 for plane, \$3000.00 for engine, \$7500.00 for both Gary Schad (602)832-2203

For Sale: 1835cc, 65 HP, dual port heads, Hapi dual electronic ignition, intake & exhaust manifolds, Hapi alternator - accessory case, starter. Engine currently flying in Dragonfly. Reason for selling, upgrading to higher horsepower. Reg Clarke, anytime (403) 352-5001



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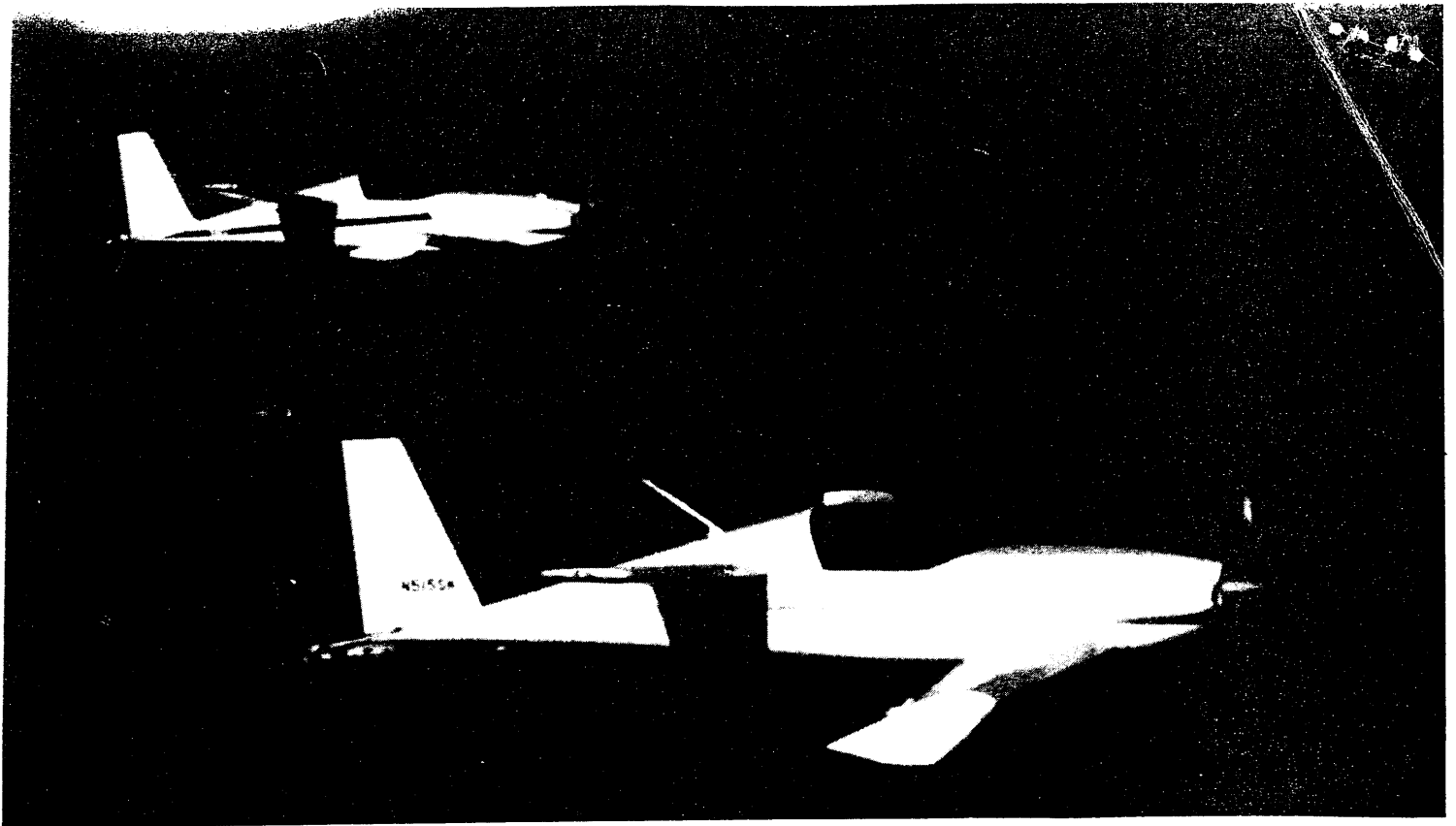
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