DRAGONFLY BUILDERS AND FLYERS NEWSLETTER

THE OFFICAL VOICE OF DRAGONFLYERS ALL OVER THE WORLD

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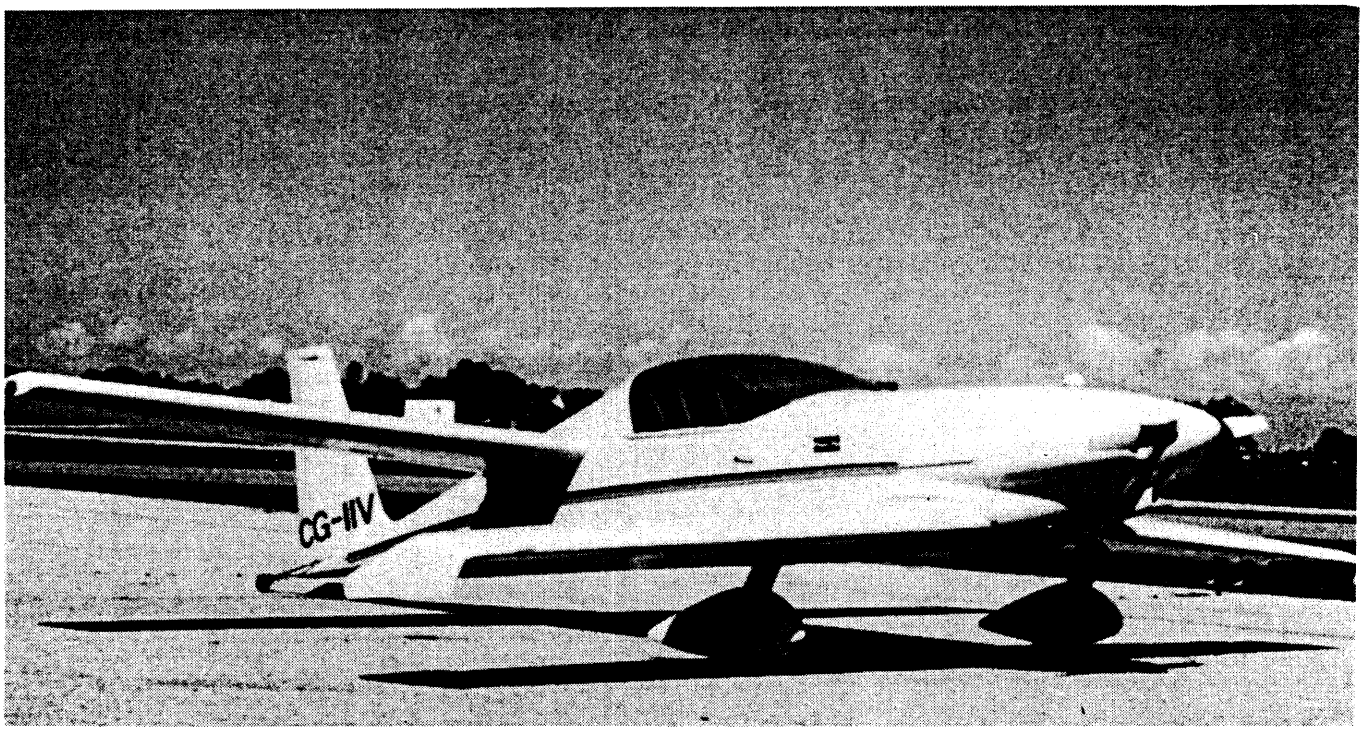


ROGER ENNS AND ROBERT BROBERG OF ONTARIO, CANADA'S SUBARU POWERED MARK II DRAGONFLY

Hi Spud.

Thought it was time to bring you up-to-date on our Dragonfly plans number #298 "C-GIIV". Our Dragonfly was started back in 1982, Hank VanBakel was the original builder. He worked on it until fall of 1990, completing and painting the airframe. The remaining work involved engine, wiring, and instrumentation. He estimated another 4 years of evening work before he would be ready to fly. Discouraged by this, he put C-GIIV up for sale. Myself and Rob Broberg, a fellow engineering student decided to purchase the partially completed kit in October of 1990. We were both students at the time. Through weekends at my fathers farm, and evenings at the airport, we were able to complete our work. The first flight was early December 1991.

Occasionally in the newsletter we hear of people having trouble flying the Dragonfly, with numerous landing gear problems, etc. Both Rob and I were very new private pilots when we started flying our DF. Thanks to some check out time, we had very little trouble. We have both found that after a decent checkout, the DF is quite easy to land! Only moderate crosswind's of about 8

knots have been challenged thus far. The approach speed of about 70 knots, or 60-65 knots solo if a short strip, is similar to the Cessna 152 we did our training in, so it is not a big shock. Also, at lower speed ranges, the descent rate is about 500 fpm, which makes for a nice controllable glide path. The biggest piece of advise we can offer is to get a check-out. Find someone nearby who has a DF, or Q-2 to get a check-out. That makes a world of difference when you know what to expect. I did my entire checking out flying from the right seat, but had little trouble adapting to the left.

I have moved on to flying in and out of a friends grass strip, which is about 2000 ft. long, but bowl-shaped, with a drop of about 20 ft. from end to middle. This makes for interesting approaches, but the uphill section does help to slow you down. We have had one gear failure due to an aggressive "triple-bounce" down the runway early on in our check-out. The gear cracked at the curve, and the wheel canted in about 15 degrees. We were able to taxi back to the hangar, drop the leg out and repair. If this is the standard mode of failure (ie. non catastrophic), then I must say I'm impressed! No prop strikes, or canard/fuselage damage involved. We noticed that the previous builder had not roughed up the gear leg surface properly before applying the layers of glass to reinforce it. Very poor bonding existed, with sections being able to be peeled off of the leg. We rewrapped the leg section with about 5 layers in the curved section for reinforcement. This appears to be holding, but we will see how it holds up to continued grass strip landings! I feel that overall the gear is satisfactory. If the aircraft is flown properly, they should last indefinitely. I'm sure this statement can be attested to by some high-timers in our group. We plan to do a fair bit of grass strip flying, so we will be monitoring our legs quite closely. At the present time we have not installed leg or wheel fairings, we have left the repaired leg unpainted. This allows us to look through the reinforcing layers of cloth to see if the cracks present in the main leg are progressing further. Note that nearly all of our training was performed in C-GIIV, so the legs went through a fair bit of abuse. We have improved greatly, but still occasionally thump one in. That's a sign to spend another hour doing circuits again!

For Canada Day (July 1), Rob and I flew out to Rockcliffe Airport in Ottawa, which is where fellow DF'er Ted Givins is based. The distance covered was about 275 nm using the route we took. It was a great flight. On the way back, weather was moving in, and we flew in and out of rain for about 1/2 hour, so it was quite interesting to monitor the transition. At the near gross loading our aircraft, virtually no change in stick pressures was necessary. By watching the elevator position referenced against the end of the canard, we were able to notice a maximum deflection of about 3/16" when in rain. After flying out of the rain, the elevator returns to the "in-trail" position with the trailing edge even with the trailing edge of the canard. With our loading the aircraft was neutraly stable in pitch, which would explain the lack of stick pressure changes. The only concerns we have with flying the DF in the rain is erosion on the wooden propeller.

We are quite happy with the Dragonfly. It is responsive and economical aircraft. It is quite comfortable to fly in, and performs well for it's size. The biggest drawback we see at this point is the lackluster climb rate in adverse conditions. At gross weight, on a hot day, the climb is around 400 fpm, but keep in mind we at this time only have a 60hp, 1835cc engine. This would not be so bad, except after lift off at about 55-60 knots, it takes a while in ground effect for the aircraft to pickup speed to the preferred 90 knots for a decent climb. This can be unnerving when trees, etc. are approaching in the distance.

The engine is a 1835cc built from a Hapi kit. It has dual electronic ignition, an Ellison TBI, and dual port heads. This engine has no accessary case, but is mounted on a 2 1/2" aluminum plate shimmed off of the engine. This type installation doesn't look bad, and it is nice to be able to keep any eye on the alternator, which is a car type driven directly from the back of the crankshaft. I have sent another article in regards to this.

● Performance Specs:

Gross weight - 1150 lbs.
Empty weight - 660 lbs.
Engine 60 hp VW 1835cc.
Max. level speed - 145 mph ind.
Stall speed - 55 mph ind.
RoC, gross, sea level - 600 fpm
RoC, solo, sea level - 900 fpm

Our DF is converted from a Mark I, that is we kept the Mark I canard and retrofitted the Mark II gear leg. Basic VFR instruments, Narco Com, ELT, Intercom, Apollo Loran, Electric turn coordinator.

When installing the engine primer, we needed a source of fuel. Since the primer from the top of the gascolator is supposed to be routed to the header tank to help prevent vapor lock, that source is gone. We installed a tee fitting into the outlet of the fuel pump. The other end has the traditional barbed fitting for the 3/8" fuel line. The branch of the tee is fitted with a small line running to the primer. We have mounted our primer on the forward vertical bulkhead just beside the pump, so the feed line is only about 4" long. If any primer related leaks develop, we are able to shut off the fuel pump, and fly to the nearest airport for repair. If the primer is fed direct to the header tank, a dangerous situation could present itself.

● Gap Seals

I don't know if the topic of gap-sealing the elevators has come up recently or not. During a visit with a fellow DF (Bob Verriest), he mentioned the gap seals he had used to lower the stall speed. The seal is a rubbery material that is bent into a vee shape. With the point of the vee up, the backing on the adhesive is removed, and the v-strip is stuck to the

inside of the canard groove where the elevator sits. The use of a bit of 5 minute epoxy on the strip seems to help in bonding it to the canard. In flight the airflow slipping through the gap hits the vee, compressing the sides against the canard and the elevator. This allows the canard to create more lift. It can be quite noticeable depending on the tolerances between the elevator and the canard. On our aircraft, the gap is a bit larger than it should be, so we were able to drop our stall speed about 5 knots! with these strips. At one point the aircraft was flown with only one of the strips installed. It was grossly out of trim in roll, the strips obviously does something. Note that if your gap is very small, the elevators would have to be removed to install these. In our case the gap was large enough to slip them in. We have installed the gap seal in the ailerons as well, but little effect was noted.

● Update at 170 hours

Here's an update Spud on our DF.

We finally got our wheel pants and fairing installed. Wow! 15 to 18 mph increase. New top speed 165 mph indicated @ 2000 ft. cool day. Cruise speed 140 to 145 mph indicated.

Future mods we would like to do: Forward opening canopy, forward hatch, rear storage bin, new paint and a Subaru engine.

We are slowly progressing on the Turbo Subaru project. The intake and exhaust plumbing is finished. We manufacture our own intake from 1 3/8" - .050 wall header tubing (this will save a few pounds!) We used a shortened propane canister for a collector between the compressor outlet and the intake runners! Perfect size, and very light. We have mounted the turbo in the same position as Reg Clarke, just behind the distributor. We used a gear reduction starter from a Mazda pickup (shortest we could find). It slips under the intake runner, right up to the Sprint alternator (45 amp). We plan to test 3 carbs while on the test stand. A. 40mm CV sidedraft Mikuni B. 1 1/2" sidedraft SV C. Ellison EFS-2 . Well keep you all posted on the out come.

The following is a live up-date (Via E-mail on the "dragonlist") from Roger and Rob as the go through a series of flight test with their freshly installed Subaru conversion. - Spud

● Flight testing of the Turbo Subaru begins

First flight

Tonight, at 8:05 pm, C-GIIV lifted itself off the ground for the first time in almost 12 months. (And we thought 2 months work would get the engine in and running!) After about 20 minutes of ground testing combined with prop adjustments we were ready for the flight. At 45" MP I now see about 3300 rpm static, which I figured was close enough. Spectators in this fine event were co-owner Rob Broberg, and hangar mate (and DF pilot) John Kunz. As I taxied to the active, I think I was just as nervous as the first time I flew solo, maybe more. I informed tower of my intentions (climb to 4000 agl directly above airport), and was off. Takeoff and initial climb were identical to the VW (I was at part throttle). I was concerned about possible trim problems due alignment differences between Soob and VW, as well as the extra weight. Trim conditions were identical, so I continued the climb up to 5000ft, varying the throttle to experience different climb settings. I poked around a bit at altitude, monitoring engine instruments very closely, and then started my descent (the sun was starting to set at this point). It was such a thrill just to be airborne again. I had a hard time concentrating on the task at hand! My approach was a bit high (better than too low with a new engine!), so I slowed back to 60 knots, and did a couple of wide s-turns to lose altitude. The landing was a real squeaker! I think the long time without the practice made me concentrate much more.

The coolant temperature reached a max of 176 degF during climb (maybe we need to incorporate a thermostat in our system?). Oil temperature was a bit warmer, at about 190-200. Now that I'm safely back on the ground, I can't wait for the next flight!

Bye for now, Roger Enns

This morning I completed a short second test flight, again staying overhead the field. This time during takeoff and initial climb I used full power. What a difference! The speed built very quickly, and by the time I was ready for the crosswind turn, I was at 1500 ft agl! What a hoot! Temperatures during climb still didn't exceed 180 degF. We have installed a pressure switch on the cooling system, tied to an indicator light in the panel. The intention is to monitor the cooling system integrity during flight. Last night the light came on during descent for landing. I didn't worry to much about it, as I was already on downwind. After landing, I did a short run-up, and as the temperature built up again, the light went out. On descent the water temperature was down to 135 degF, so I guess the system pressure dropped low enough to trigger the light.

One problem we have is with the intake system. We are using a mixer chamber similar to Reg Clarke, and fuel seems to be pooling in the bottom of this chamber during extended periods at low throttle setting. Then advancing the throttle seems to whip the excess fuel back into suspension, making the engine run rich for a few seconds until it is burnt off. This is noticed during run-up before takeoff, after a long taxi, for instance. Maybe a new mixer with the bottom sloping directly into the intake runners would prevent this fuel build up. Any ideas from the group on this one?

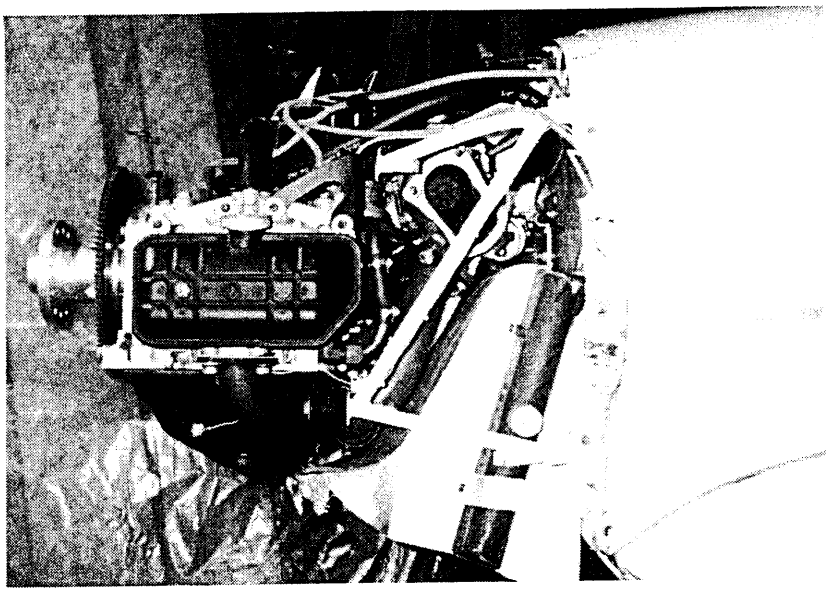
Boy it's great to be in the air again!

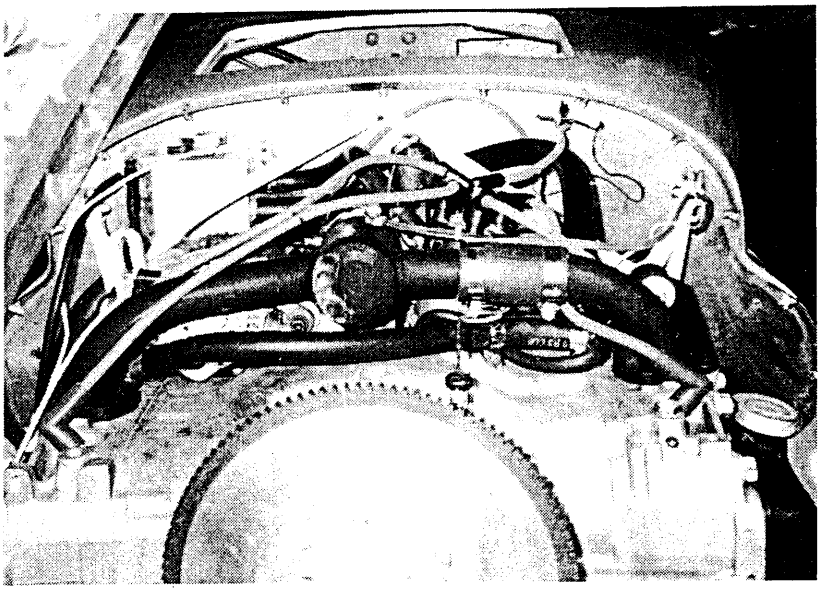
Later, Roger Enns

Turbo - Soob flight #2

Here are a few more details on the flights. OAT was about 50 degF for my two flights, and today at lunch probably 60-65 degF when Rob went up. Last night I took it easy during takeoff and initial climb, and tried a brief full power climb at about 4500 ft asl, yielding about 1600 fpm at about 100 knots. This morning, feeling more confident in the cooling system, I went to full power during takeoff roll (which was less than 500' I'm sure), and then held it low until climb speed of 100 knots was reached. Pulling up into a climb indicated 2000 fpm briefly, and then settled on 1800 fpm. This was maintained for only about 90 seconds, as I was exiting the control zone vertically at this point. Rob mentioned his climb was about 1500 fpm. I was low on fuel, and he had just filled up, and the air temp was a bit higher as well. I don't know if he was using full power or not, but I'm sure he'll post you with further details! Oil temps seem to be at about 190-200 degF. I think 220-230 in the pan is not an issue with any decent mineral based oil. Above that, and synthetic will be required. As we still have the carb intake scoop on the bottom of the cowl, we could baffle this air across the bottom of the pan for some extra cooling as well. My flights have been short, with very little time in cruise mode, so I don't have any good numbers there. Rob said the engine oversped (by VW standards) with boost, so we may have to play with the prop a bit more...If all goes well, we should be able to build time very quickly, as we are nearly bug-free at this point! (pun intended)

Regarding thermostats, has anyone seen the unit used by Reiner Hoffman on the Stratus conversion? It is a small in-line unit that he had spliced into the water circuit. I'll send him a note to see if I can get any further details. That would help with our low coolant temps, especially during descent. The other option would be to have a manually adjustable flap at the radiator exit (similar to the one you showed in an early Contact issue).





We still have the fuel pooling problem in the intake. The airfuel mix exits the compressor into a manifold of about 2.5" dia, and then splits off into two 1.5" dia runners (one to each head). The 1.5" tubes intersect the 2.5" one on centerline, and some fuel seems to lack incentive to complete the turn into the 1.5" tubes during low throttle operations. At higher power setting, this excess fuel is whipped back into the airstream, and causes a few seconds of sputtering and rich running. I will go over the carb adjustments again, and failing that, weld up a new intake using a 2" tube that intersects the 1.5" tubes off-center, so no low spots exist to collect excess fuel. Right now Justin Mace is smiling, as he is running EFI!) I will try to contact Reg, to see if he has had the same problem. It seems to me his intake system contained low areas in the manifold as well...

Another change will be to make a manual control on the wastegate, rather than leaving the stock Soob control (7.5psi gage). This will allow operations up to 24-26" MP without turbo involvement (heating).

Later, Roger

Turbo-Soob flight #3

(Third flight was made by Robert Broberg)

Hi all,

I had the opportunity to try out the new turbo soob DF C-GIIV over lunch

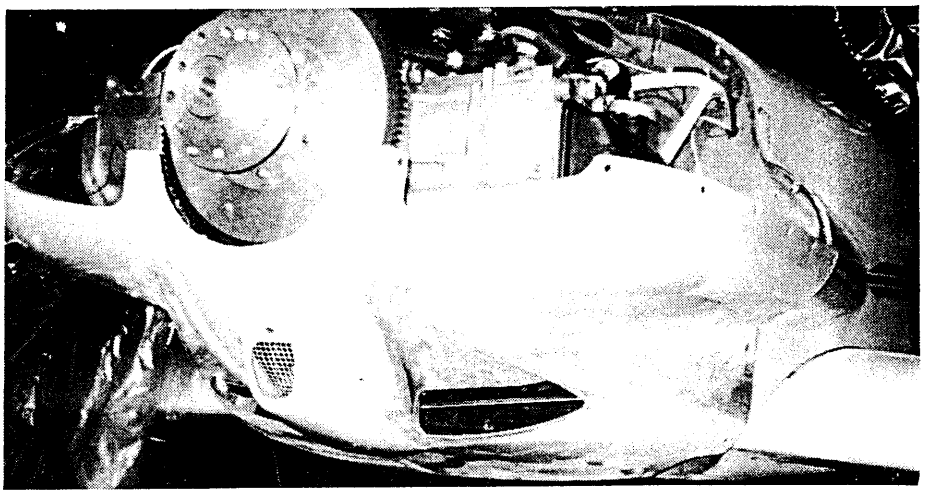
today. (I couldn't let Roger have all the fun.) It was a pure thrill! With the VW, I was used to WAITING for the tail to come up and then building speed to 55-60 KIAS before lift off, but this time I didn't even get the throttle to the stop and I was in the air. (Of course the 15 knot head wind helped a little :) I saw about 1500 fpm on climb out at 90 KIAS, although it was hard to get a stable reading with the air turbulence. All temps stayed in the green throughout the flight. I pushed it up to 135 KIAS before throttling back; the thermals were a bit rough for a more aggressive speed test. The flight ended with a successful landing, which was a little hot but quite smooth for someone who hasn't flown the DF for a year.

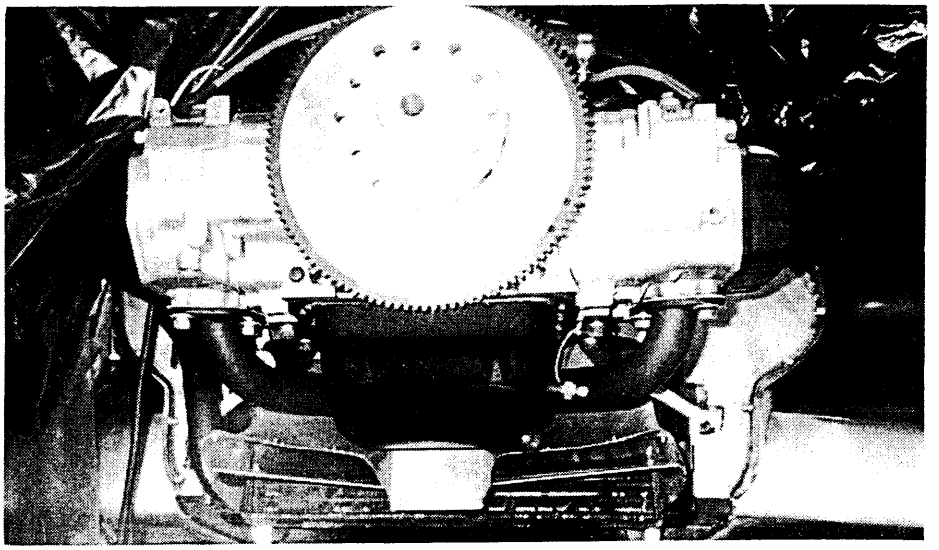
It's good to be back in air. I hope this adds some encouragement to those builders out there!

Regards, Rob Broberg

Just a quick update on the turbo-soob. The new intake works great! The old cough-sputter-roar routine after extended periods of idling is gone. The engine now pulls more vacuum at idle, and responds much smoother at low rpms. We are pulling some engine oil past the shaft seal on the compressor side of the turbo. This is due to the fact that the carburetor is mounted before the turbo, exposing it to high vacuum during closed throttle operations. We will need to modify the turbo to accept an improved shaft seal. We will watch the oil consumption closely. Reg indicated oil consumption was not a big problem if care is taken to not induce high vacuum operations, such as rapid throttle return to idle.
Later, Roger Enns

● Turbo - Soob Update through flights 8.





The weather has been great in Southern Ontario, so we have been able to continue with the test flights under Soob power. All is well. We now have 8 flights (about 6 hrs air time) on the engine. Coolant temperature has yet to reach 200 degF. Oil temperature ranges between 200 -210 degF. The new intake plenum works much better than the previous one. Idle and off-idle operations are much smoother. As well, the cough-sputter-roar routine mentioned earlier is gone. The one problem that remains is oil consumption during taxi and descent due to the high vacuum present in the turbo compressor during that time. Takeoff and cruise are no problem as the manifold pressure is high enough to prevent drawing oil past the piston ring seal on the compressor shaft. After some work, I found a company that provides a parts kit for this Subaru turbo (IHI RHB52) that contains a positive carbon seal instead of the dynamic ring seal that is used in stock configurations. This is said to be the solution. Time will tell. The extra power sure is a treat!
Later
Roger Enns

Hi Spud, I got a hold of Reg. His new home number is 403-384-3525. He is just in the midst of rebuilding engine and turbo. He connected up a remote oil filter system, and plumbed it incorrectly. He says he was restricting oil flow, as well as providing unfiltered oil to the system. The engine only lasted 30 minutes in that configuration. What a shame. Well at least the Soob is cheap to rebuild!
Bye for now,
Roger Enns and Rob Broberg

TOUCHY ELEVATORS AND STIFF AILERONS REVISITED

In the last issue of DBFN #64 I had written an article on "Touchy Elevators and Stiff Ailerons" and what I had planned on doing with this situation in regards to my Dragonfly. To follow is a letter sent in by Von Leach of Shelbyville, Indiana, where he disagrees with my concept of the issue. I would like to point out a couple of things before we get into his letter. 1. This is superb, excellent, fantastic and awesome, if there is something in the newsletter that you disagree with, you need to "SOUND OFF"' just like Von does below. This is what the newsletter is all about!!!!! It is to get issues out on the table for discussion. 2. When ever a person writes in to the newsletter and they are a builder and/or currently flying a Dragonfly, These people in most cases are the experts, or know a whole hell of lot more than maybe we as builders. You need to think it's "EF Hutton" talking! Listen well and digest the information for yourself! - Spudley

● POINT!

Dear Spud,

I read your comments about elevator sensitivity and aileron heaviness in the last newsletter, DBFN #64. While the elevators are more sensitive than a certified they are "SAFE". Any first time Dragonfly pilot should review procedures for getting out of a Pilot Induced Oscillation (this is true for any airplane) prior to flying his aircraft. Simply freezing the stick in pitch and then making future inputs very gradually will solve the problem.

I am not in favor of making changes to the linkage, especially one that changes the amount of surface travel for a given amount of control input. Doing so is fraught with several pitfalls.

In your idea #1 you suggest shortening the distance between the fulcrum and the elevator push/pull tubes on the stick. This would reduce elevator travel as well as reduce elevator movement for a given stick input. You don't want to reduce elevator travel (That is correct! - Spud). You need the full deflection. Reduced elevator travel will make landings much more difficult, since you need all or nearly all of the elevator down movement during a flare, if you are slow. You don't need it if you are landing at 75 to 80 mph, but you do need all of the elevator travel if you are close to the stall speed. I don't recommend making it a practice of landing at 80 mph., you'll need lots of runway *(Very true - Spud)*.

Idea # 2 has the same problem as #1. It will reduce the amount of elevator travel available (Not true, see Spud's follow-up article - Spud). By making the elevator bellcrank/ control horns 2 to 2 1/2" longer you will be greatly reducing the amount of elevator travel. On my airplane there is not enough room to move the stick beyond where it moves now. If I lengthened the elevator control horns/bellcrank's the stick would limit the travel.

It looks too me like the the elevators on this design are correct. Any less travel would be a problem. To obtain an increase in stick force to reduce the tendency to over control in pitch would require more stick travel and there isn't room for more stick fore and aft travel.

Reducing the elevator area would reduce pitch sensitivity. However the full span elevators are required to pitch the nose up for flare at low speeds. Although very little elevator movement is needed at speed, great amounts of elevator is needed at speeds near the stall. Any reductions of elevator force, authority, or power, might be dangerous.

Aileron stick forces are indeed high on this airplane. The reason the aileron stick forces are high is that the ailerons are not very effective where they are located on the wing, therefore large surface movements are required to produce respectable roll rates. Had the original design placed the ailerons out near the tips of the wing the forces would not have been as great for a given roll rate. Since they are located near the wing roots their moment arms are very short and therefore a very large force must be applied by the ailerons to overcome the natural stability and inertia and roll the aircraft. To produce this force requires large aileron displacement and the accompanying high stick forces. The fact that we are using a very short side stick instead of a three foot long control stick amplifies the force required by the pilot.

Short of moving the ailerons the best fix seems to me to be the aileron servo tab system. Although I have not made modification, I intend to. I can see that it should reduce stick forces and pilot fatigues. I can not visualize any change to the linkages that would solve the problem.

Sincerely, Von Leach

● COUNTERPOINT!

I really think Von misinterpreted the information supplied in the article, but if he did maybe many of the other builders may have also misunderstood the information. With that in mind I think a closer look into the

subject is merited.

First off Von says, that I said to add 2 1/2" to the elevator control horn, that is true I did, but that is additional material to support the new holes, don't get skimpy here! If you'll look at the article again you'll see that I planned on three additional holes at 1/2" intervals, 3 1/2", 4" & 4 1/2", not 2 1/2" which would make it 5 1/2". He also assumes that I would be putting it in the farthest location only.

Second, the whole idea is to increase the stick movement for a given movement of the elevator movement. Nowhere in the article does it say I planned or recommended a reduction in over all travel or change the elevator stop blocks that are established during your initial flight testing. For more information on elevator stops and how to establish up and down limits, see newsletter(s) issues #28 and #33 on this topic. *(Boy, is Don Stewart's newsletter index handy! - Spud)*

Let's see just how much of a change I will be making from the original setup with the three different positions. I setup a simple mock-up jig that would emulate the control system in a Dragonfly (I know this could have been done mathematically, but this is more fun!).

I set the jig up to show a 25 degrees of down travel of the elevator. I used this 25 degrees as the standard of travel for the elevator through out this simple mockup analysis. By that I mean for every stick movement the elevator was moved to this standard point of reference. In the stock mounting locations the control stick had to be moved 29 degrees to bring our elevator to 25 degrees. Location #2, a 1/2" higher than the stock location moved the requirement to accomplish the same amount of elevator travel was 34 degrees. Location #3 1" above the stock location required 39 degrees and #4 location 1 1/2" above stock required 44 degrees of stick travel.

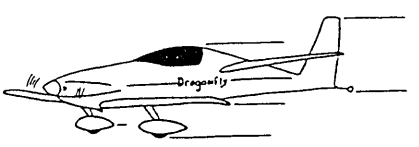
Even in the most aggressive setting, 1 1/2" above the stock location we have a 15 degree increase in stick travel, worst case. If you pickup a compass, degree wheel or protractor or whatever you'll see 15 degrees doesn't seem that radical. Now if you have a control stick like say in a RV-4 or 6 then with 15 degrees you got a big problem.

Von also mentioned that there very likely would be enough travel for the stick itself in the console. One could shorten the elevator pushrod tubes slightly to move the control stick slight ahead 5 to 10 degrees.

Again, all this is meant for "food for thought". Your the builder and the test pilot of your Dragonfly.

Best Regards

Spud



CHECK THOSE GEAR BOLTS!

● MK II Gear Bolts

While at a recent fly-in I encountered rough ground handling in my MK II. Some time later I found that the port gear strut was hanging by its hydraulic line and would almost unplug in flight. My years and years of experience told me that this was not correct.

Upon examination I found that the retainer bolt was sheared through the threaded area. I had installed too short a bolt. The danger of having a drooping strut or having it dangle flailing away in flight is only surpassed by the danger of the loose strut moving upwards under landing load and causing immediate or (perish the thought) incipient damage to the upper spar cap.

"For additional info, the retention method and design is poor. First, the bolt is in single gear rather than double. Second, It goes right through the gear strut at it's critical max bending section thereby weakening the strut."

Builders are cautioned to check these retention bolts for proper length.

Respectfully submitted, Nate Rambo - Camarillo, California.

Even though this is the first submision with this type of problem I think everyone should check their DF's and evaluate as soon as praticle and then they should add this to their annual check list.

If anyone else finds similar problems with their gear bolts please report to Patrick Taylor of Viking and Spud Spornitz - DBFN to be shared with the group via the newsletter. - Spud

FROM THE NET!

To follow is a discusion between Roger Enns of Canada and Rich Goldman of Chicago on the Internet on the "dragonlist' about the merits of using a warning light (Idiot light) vs a gauge. All of the information is excellent "Food for " thought and should be shared with all readers - Spud

Hi Roger,
Your idea of an idiot light for the pressure of your cooling system is good, however, in an effort to put my two prop blades in, I would suggest a pressure guage either in its place or in addition to it. If your cooling system is leaking, by the time you get an indication of the idiot light, you may be critically low on coolant, which at best will result in possible dirty laundry, at worst rebuilding or scarping of a beautiful d-fly and/or body. Instrument guages (digital or analog) are useful for showing absolute values, however their real value exists in the rehlm of enabling one to compare what is happening currently with what has happened consistently, and with that information get an idea of the future health of the machine. (sort of like monitoring blood pressure and taking proper action with a variance rather than waiting for clinical symptoms.) More to the point, would you consider an oil pressure idiot light only to trust your posterior to in your plane? Even though your engine will run safely on much lower pressure than your normal guage pressure, by the time your light goes on, you're probably in deep do-do. (even though at that moment your engine is still not metal to metal.)

The water pressure guage, in a similar way allows you to evaluate the trend. The water pressure rises as a result of the expansion of the fluid in the closed radiator system due to the heating of the fluid, and thus will rise and fall with h2o temp. In a closed system, the pressure developed at a specific water temperature should be the same each time the engine is run. A temperature indication different than that is an indication that something is wrong with the system ie leaking hose, fluid loss through the pressure cap due to over heating (which may not show on the temp guage) malfunction in the pressure cap. etc.etc (we always say etc. etc. when we run out of examples). Any one of these problems are easy to diagnose and treat on the ground, but if unfound, can be catastrophic in the air. If I had to choose between only one guage and one light, I would use the light on engine overtemp and the guage on the pressure.

In a similar vein, (especially since I mentioned high blood pressure before),NAPA makes a great and simple to use coolant system pressure tester. This unit (I think under $100) checks the integrety of the coolant system under pressure (on the ground) and checks the pressure caps
.....A MUST FOR LIQUID COOLED ENGINES.....

Using the pressure guage in the plane, I was able to deterimine that in the first few flights, I had pumped virtually all of my coolant overboard due to a defective radiator cap, even though I showed acceptabe temperatures and decent but decreasing pressures.--- in developing my system, it has saved my cheeks on multiple occasions.

By the way-- if you check the pressure on the ground with a hot engine, remove the cap to check your coolant level, reseal the system and then restart the engine, you will see little or no coolant pressure. This is normal since by removing the cap you have let the pressure out. When the system cools and air is allowed in to compensate for the shrinkage of the liquid, on the next startup and heating cycle the pressure should be normal----- or there is something wrong.

Keep COOL

Rich Goldman - Chicago, IL

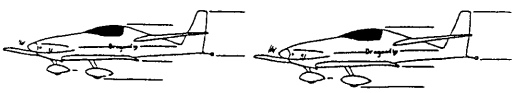
Hi Rich,

Thanks for the advice on the pressure gauge. Rob and I have discussed this issue extensively. If a 4 quart closed system is at say 190 degF, and 13 psi would the pressure not drop in proportion to the compressibility of the fluid?
As we are dealing with a liquid, the change in volume required to bring the pressure down to atmospheric would be very small. This logic was used to accept the idiot light as an indicator. If you do not agree with this let me know, as safety issues like this are important to all of us!

Regarding the gauge vs light readability, I agree that a gauge would be nice, but an idiot light gets your attention much quicker. If a problem occurs between instrument panel scans, the light will alert you, while the gauge may not. I guess both would be ideal. The problem for us is panel space. Maybe we can multiplex our oil and water temperature inputs to the 'Smartgage'.

One neat feature I discovered with the 'Smartgage' is that when any alarm setting is exceeded, the beeper causes radio interference, cancelling the radio squelch setting during the beep. This effectively notifies the pilot even with engine noise and a headset on!

Thanks again for the help,
Roger Enns - Ontario, Canada



● Our 6th Annual Ottawa DF - Quickie Fly-in

The Dragonfly - Quickie Fly-in is on schedule again this year for Labor day weekend. Those dates are August 30, 31 & September 1st at Ottawa, Kansas. The Taylors of Viking Aircraft want to know exactly what topic areas you want to discuss or explore. We will have a forum this year that will be devoted to the Subaru water cooled engine. The forum will discuss the merits of PRSU's vs direct drive, cooling systems, turbo charging. Reg Clarke has pledge to be there (weather permitting) to be part of this new exciting forum. Steve Bennett of Great Plains can't join us this year, but hopefully next year. We are also planning on having a forum on paint and finishing tips and techniques, hope to have that finalized by the next newsletter, will keep you posted. And of course Jimmy and Spud want to know what you want us to make it a better overall event, at the fly-in and at the awards banquet. Come on know you have to tell us, get out that pen and paper or pickup the phone and call. And yes ladies the "shopping/tour bus" is already setup and ready to go. Tell us where you want to go and what ya want to do. Where and what will be decided by the ladies. Please forward all call and comments to Spud Spornitz (913) 764-5118 or 1112 E. Layton Drive, Olathe, KS 66061

● Whoop!.....

Spud, Thanks for the plug about the mailist in the latest cool DBFN! I do have a small correction though. In Justin's letter you listed my web page address incorrectly, the correct address is:

www.interstice.com/~kevinh/dragonfly.html

Also, feel free to share any of the good postings from the list into the newsletter. Thanks again for the cool newsletter.

Kevin Hester

● No, a wing didn't fall off.....

In the last issue on the back page we posted a "characterization" of a jet fighter with only one wing. A couple of people inquired into the possibility of such a problem. No we have never had such a problem that I am aware of, ever. But I do appreciate the reminder to continue my harassment of Mr. Brutsman. We have been passing this cartoon/joke/harassment around the KC area here for 2 plus years. You see my buddy Bill Brutsman has had his new canard in the jig for almost 2 years. And I just can't miss a chance to harass a good friend. - Spud

● The troops checking.....

Hi Spud, Sign me up for the newsletter. I just purchased a partially finished project from Joe Sanchez in San Carlos, Calif. I have been working all winter and should have it ready to go sometime this summer. Looking forward to meeting all the other dragonfly builders around the country. Mel Clarkson - Farmington, Utah.

● Vortex Generators.....

I was cruising through the latest issue of the Canard Pusher (Long-EZ newsletter) . There was a person in there selling **"Molded Vortex Generators"**. The pre-molded generators are specially engineered for aircraft application. After installation, the sail appears to be a molded integral part, rather an "add-on". The final results not only looks better, it performs better than typical hand-made fences. Molded cortex generators adhere better. For those of you that like playing with the generators (They do work!) can contact CCI, P.O. Box 607, Plainfield, NJ 07061-2318. A kit contains fifty generators for $25.00 plus $2.00 shipping and handling. Installation documentation is included. Further question 6:00 - 10:00 PM EST Monday through Friday (908) 757-9573 or Fax (908) 755-9639

● Oshkosh 1996

Everything is set-up and ready to go for all Dragonfly/Quickie activities. Thursday evening 8:00 to 9:30 PM (Evening) Dragonfly-Quickie builders forum. This evening forum is becoming more popular with all the builders, less noise! The Dragonfly - Quickie Builders and Flyers banquet. Cash bar at 7:30 PM, Dinner at 8:00 PM at the Hilton. Same room, same menu (This was good chow.....It's Spud approved!!!) We had a great time at the Hilton last year so we going to do it on a on going basis. Sign-up for the banquet will be at Great Plains Aircraft booth K209 in the Central exhibit building. Please register no later than 1:00 PM Friday afternoon. We had quite a few "Show up's" at the banquet last year and your certainly welcome. We would really like to keep this to a minimum this year because there is just so much of a "Fudge Factor". If you are going to be late arrival's and would like to send your "Banquet funds" in advance that is fine but I must have those funds by no later than July 26th. We lost our special camping area this last year as Mrs. Gumz is moving, but we will try to set-up very close to that area in the trees. We will have the eight man "Spudley Hilton" setup and ready for any and all Dragonfly or Quickie pilots that fly their birds to the event. The Spudley Hilton will be set-up for use by our pilots Wednesday, Thursday, Friday and Saturday. (No Sunday night). Only thing we ask the pilots to do is share daily camping fees with your fellow camping partners. - Spud

HAND PROPING ACCIDENT!

Spud,

I told you in my last letter I would drop you a line on "How Not To Prime The Carb From The Front Of The Aircraft".

Well.....it was 6:00 Am on September 27th 1996. I proceeded out to the Kenosha, Wisconsin airport to make some "Hi-speed" runs down the runway before the control tower opened at 7:00 AM.

After pushing the D-FLY out on the ramp, I decided since I hadn't run the engine in quite some time, to pull the prop through a few blades to get fuel to the carb. After doing this, I climbed into the cockpit and hit the starter. The engine didn't catch on the first few cranks, and the battery was noticeably weak, so.....". The carb must not have gotten fuel yet, I'll just pull it through a few more blades".....(did you remember to check the ignition switch Ron??.....Well, no I guess not).....

On the second pull, the engine "Roared to Life" and instantly leaped forward at me. I dove at the ground to my right and the plane ran over me!

It felt like I had been tackled and the wind knocked out of me. I stood up to witness the plane "Going in Circles" between the rows of hangars. I didn't realize that I had been seriously injured, so just like in the movies, "I started chasing it". I finally caught it and got the canopy open and turned the switch off.

It was then that I noticed a stream of blood squirting out of my left hand. I grabbed my car phone and punched "911". While talking to them I realized that two of my fingers were gone and the prop had broken in my leg. Six minutes later the paramedics were there. After a 4-1/2 hour operation reattaching the muscles in my leg and closing the hand (minus two fingers!).

Four weeks later I took a Caribbean cruise and got married aboard ship (all is well that ends well).

The point of my relating this story is that maybe my obvious carelessness will cause others to stop and think about their actions, (or lack of) when dealing with potential hazard present any time you touch the propeller for any reason!!

In retrospect, there were several errors made that morning:

1. Trying to avoid dealing with the control tower.
2. Not securing the tail when touching the propeller.
3. Not "double checking" that the ignition is off.
4. Not keeping a fully charged battery (eliminating the need to touch the prop at all)

I am very lucky (Thank you Lord!) to be alive, and have recovered 100%. It was my left leg and hand, so I am still able to play the trumpet in my band, and will be able to fly. Ed Sterba has made me a new prop 52 X 42, and other than breaking off a sparrow strainer the airplane was untouched, (those birds are tougher than us humans!!).

Best Regards

Ron Price
2686 College Hill Circle
Schaumburg, ILL 60173
(847) 925-9251

P.S. If any of you DFers ever get around Kenosha, WI., you must stop by and see Rich Goldamn's Dragonfly. This guy is so clever and his workmanship is superb!!

Ron we really do appreciate you sharing your accident information! Takes a special person to share their mistakes!

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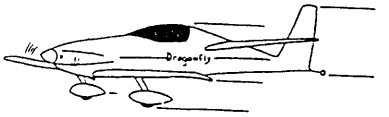

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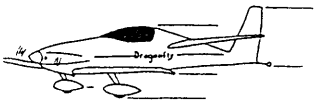
Wanted: I am looking for "original" copies in good condition of the "DRAGONFLYER" newsletter issues #1. Will pay fair price. Spud Spornitz (913) 764-5118 or mail to 1112 Layton Drive, Olathe, KS 66061

For Sale or Trade: Marquart "-Charger" MA-5, 2 POLB project. Fuselage on gear, jig welded by Marquart with fittings and tabs properly aligned, most new parts to complete project including flying wires. No FWF. $13,946.00 invested. $10,00.00 firm, or trade for equal value Mark II Dragonfly or project. Dick Goff (812) 882-4912 A

For Sale: Dragonfly project (partial). Fuselage glassed on inside, turtle decks glassed inside. Most interior parts completed. Includes wheel pants, strut covers, and full set of plans. Extra blue foam for wings. $500.00 (502) 545-7799 (western Kentucky) <64,65>

Wanted: Your extra materials, looking for canopies, 5" carbon fiber (for spar caps), bi or uni cloth, blue foam, Instruments, etc. Spud (913) 764-5118

For Sale: Kit DF for sale, all parts have been purchased or fabricated except the frame the canopy, must be assembled and finished. With or without the engine and PSRU. Jim Barrett, Arizona (520) 364-8573 (owed for)



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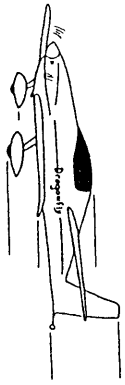

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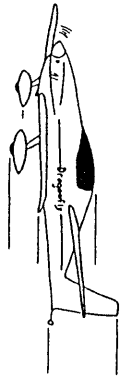

DON'T TRY THIS AT HOME!

● **This is a true story.....**

The Arizona Highway Patrol came upon a pile of smoldering metal embedded into the side of a cliff rising above the road at the apex of a curve. The wreckage resembled the site of an airplane crash, but it was a car. The type of car was unidentifiable at the scene. The lab finally figured what it was and what had happened.

It seems that a private individual had somehow gotten hold of a JATO (Jet Assisted Take-Off - actually a solid fuel rocket) that is used to give heavy military transport planes an extra "Push" for taking off from short airstrips. He had driven his Chevrolet Impala out into the desert and found a long, straight stretch of road. Then he attached the JATO unit to his car, jumped in, got up to a certain speed and fired off the JATO!

The facts as best as could be determined are that the operator of the 1967 Impala hit the JATO ignitor at the distance of approximately 3.0 miles from the crash site. This was established by the prominent scorched and melted asphalt at that location. The JATO, if operating properly, would have reached maximum thrust within 5 seconds, causing the vehicle to reach speeds well in the excess of 350 mph and continuing at full power for an additional 20 to 25 seconds. The driver, soon to be a pilot, most likely would have experienced G-forces usually reserved for dog-fighting jocks under full afterburners, basically causing him to become insignificant for the remainder of the event. However the automobile remained on the straight highway for 2.5 miles (15 to 20 seconds) before the driver applied and completely melted the brakes, blowing the tires and leaving thick rubber marks on the road surface, then becoming airborne for an additional 1.5 miles and impacting the cliff face at a height of 125 feet leaving a blackened crater 3 feet deep in the rock.

Most of the drivers remains were not recoverable; however, small fragments of bone, teeth and hair were extracted from the crater and fingernail and bone shards were removed from a piece of debris believed to be a portion of the steering wheel.