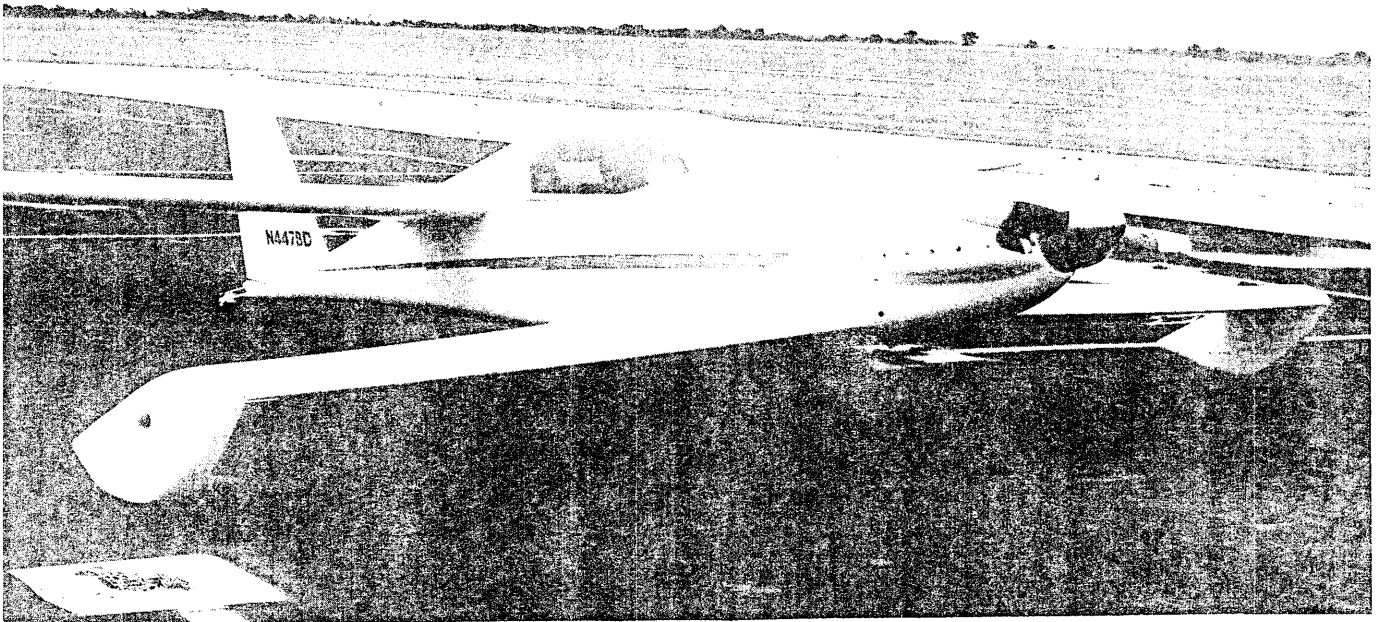


# DRAGONFLY BUILDERS AND FLYERS NEWSLETTER

THE OFFICIAL VOICE OF DRAGONFLYERS ALL OVER THE WORLD

VOLUME 47

MAY - JUNE 1993



## *BRUCE DIXON'S MARK 1 OF LAWRENCE, KS.*

Bruce Dixon of Lawrence, Kansas has been working on his Mark 1 Dragonfly for about 8 years, but feels he has really concentrated on the project for the last 4 1/2 years. Bruce now has the plane at the airport and is about to start on his taxi testing as soon as he gets a couple ignition wiring bugs worked out, he may be flying by this years annual fly-in.

Bruce has incorporated quite a few nice mods to his plane that has really made it a special Dragonfly. Bruce said he borrowed quite a few ideas from the late Del Bradley's Dragonfly which Len Griffin of Silver City, New Mexico now owns. We went to Ottawa to talk to Bruce and take a few pictures that we'll share with the readers here. We have had quite a few positive

comments about having lots of photos of Dragonflies and any mods or changes to show what we are talking about. I guess this goes back to the old saying, "A picture is worth a million words". We'll try to obtain or take more pictures for articles in future issues.

Bruce's Dragonfly weighs in at 710 lbs, Hapi 75hp with dual electronic ignition, 52 X 46 prop,. Those wanting a little more detail on some of Bruce's mod's can refer back to DBFN #32 which had a 4 page article and several excellent sketches.

First off, the pictures here of Bruce's Dragonfly don't show 1/10 of the quality and shine of this plane, the finish is just like glass. In the first Photo #1 is smiley himself! Note the canopy strut color is even coordinated

with the rest of the interior.

In photos #2 & #3 shows his cockpit and instrument panel. All of the cushions and headrest are Velcro'd into position, Hooker harnesses, also note the cover over the instrument panel. Also, but not shown, Bruce has the storage pouches in the lower seatback bulkheads.

In photo #4 is the rear hatch area above the wing. The shelf behind the upper seat back (under the head sets) is split in the middle and is held in place with Velcro. I think the rear vertical panel on top/rear of wing is a neat idea to stop stuff rolling back off. Also he has the top of the wing covered with a light gray felt material. The hatch release is actuated from inside.

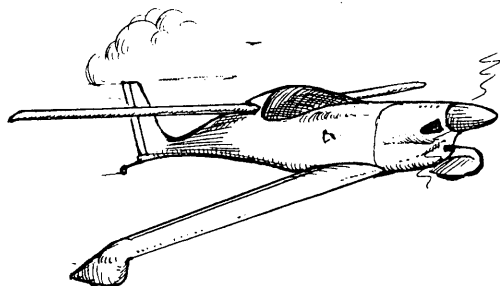
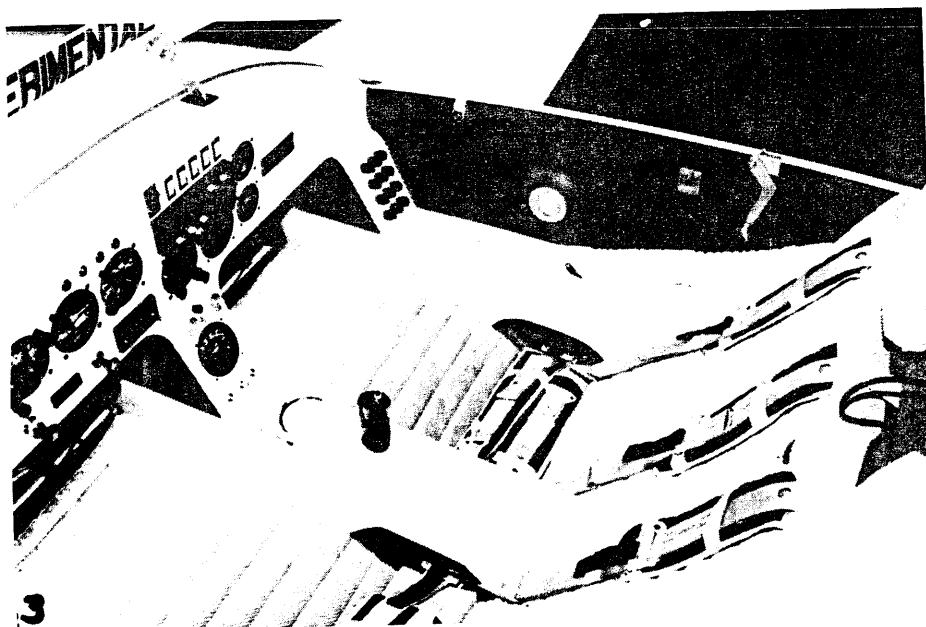
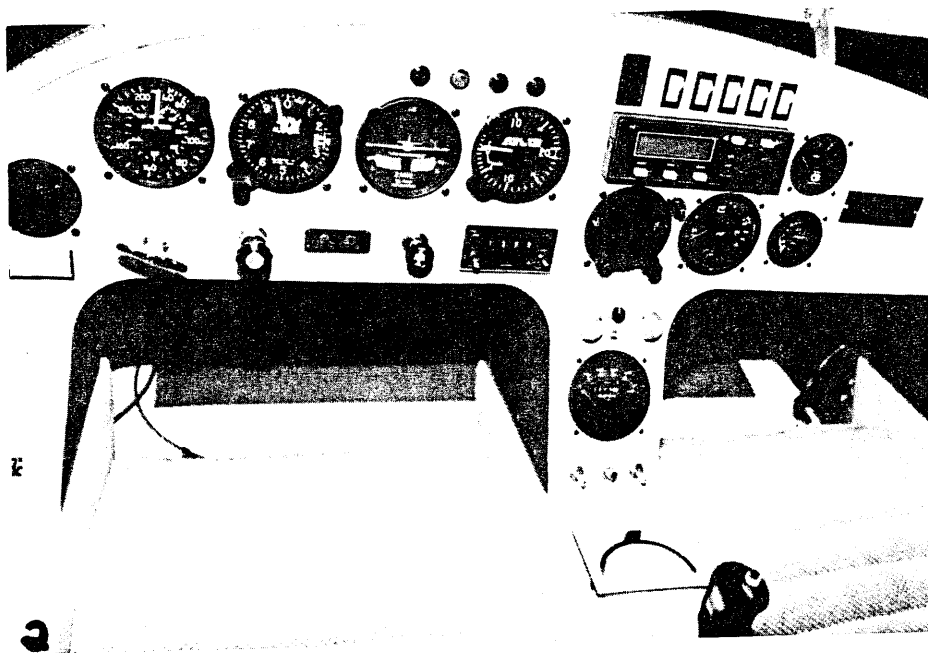
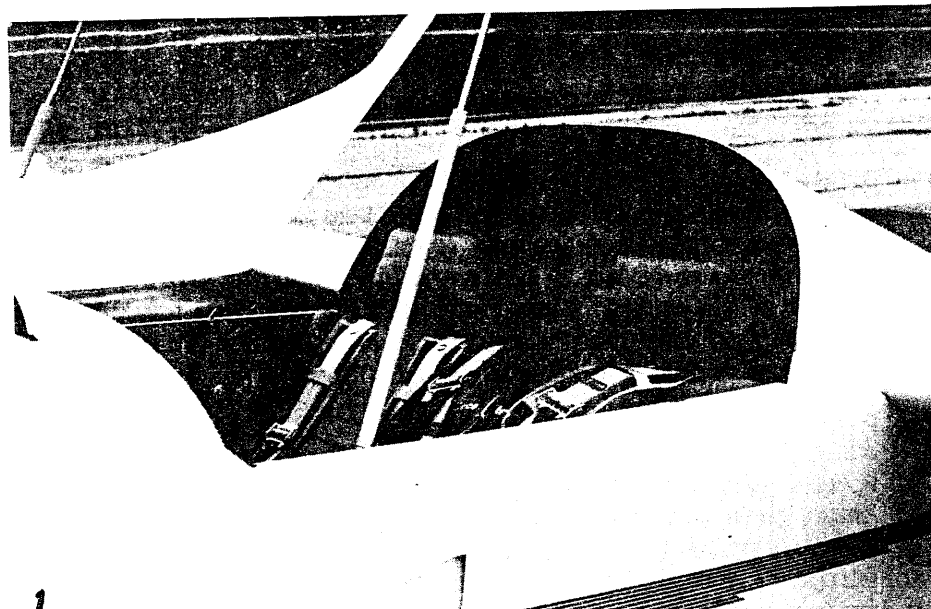
In photo #5 is the forward hatch area, note the little metal strut bar there to hold the hatch open. Bruce feels that the use of the forward hatch area on his DF will be minimal because he has installed his ignition coils, starter relay, battery and some other items behind the fire-wall. The forward hatch release is also actuated from inside the cockpit area.

Photo #6 Shows the small oil check access port. It has two locking tabs on the left side and the latch on the right. The spring loaded latch is actuated by reaching in through the forward cowling intake.

Photo #7 Shows where Bruce installed his rear white navigation light.

Photo's #8 & #9 show the way he did his oil cooler heat system, which you need that here in Kansas in the winter.

Bruce will check in again after he's made his first flight. - Spud



**Bruce Dixon's**

**LETTERS**

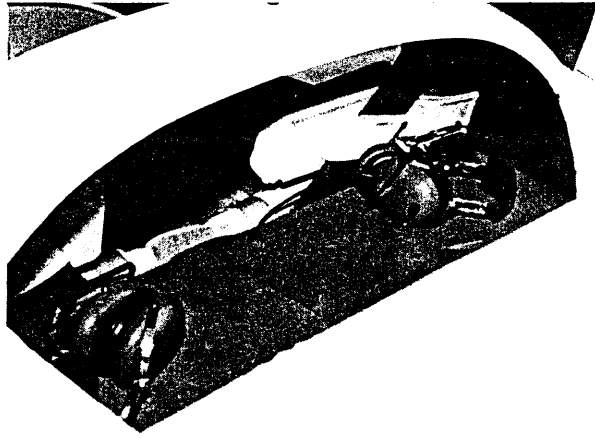
Spud, You may find the following experiences worth publishing. I landed our Dragonfly on an 88+ degree day & I was prevented from taxiing in for 10 minutes by an apparently blind helicopter pilot on the taxiway. I finally taxied in, parked & had a cup of coffee. We subsequently found that the trapped heat boiled the fuel in the line in about 15 minutes giving a giant vapor lock. I took off not knowing this & the engine quit downwind at about 700 feet. We now have a booster pump & ground ventilation in the rear engine bay. In level flight the head pressure of fuel from the header tank to the carb is in any case less than the 19" recommended by Tony Bingelis. We don't have any problem since the installation of the booster pump.

I encountered fine rain on final & gently bobbed (stalled) all the way to touch-down without any ill effects.

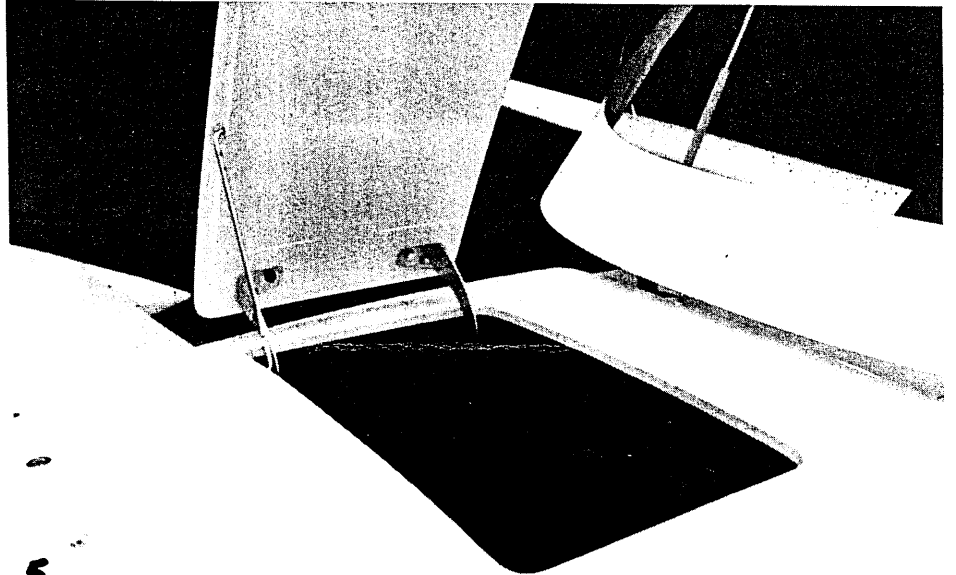
I also once had an ignition trouble on departure, turned back, mismanaged everything, I stalled at 300 ft in a 45 degree bank and so on. My subsequent landing corrected for this by being better than perfect. All of which makes me wonder how you can ever get into a stall problem in a Dragonfly, or why a reflexer system is desirable. However I can't help remembering Rex Taylor saying he once found A Dragonfly built with the rear wing trailing edge 1" too high. There is no limit to the building faults which could exist.

When we use the VW engine we change its fuel system, induction system, carb., exhaust system, ignition system, oil system, & cooling system. I

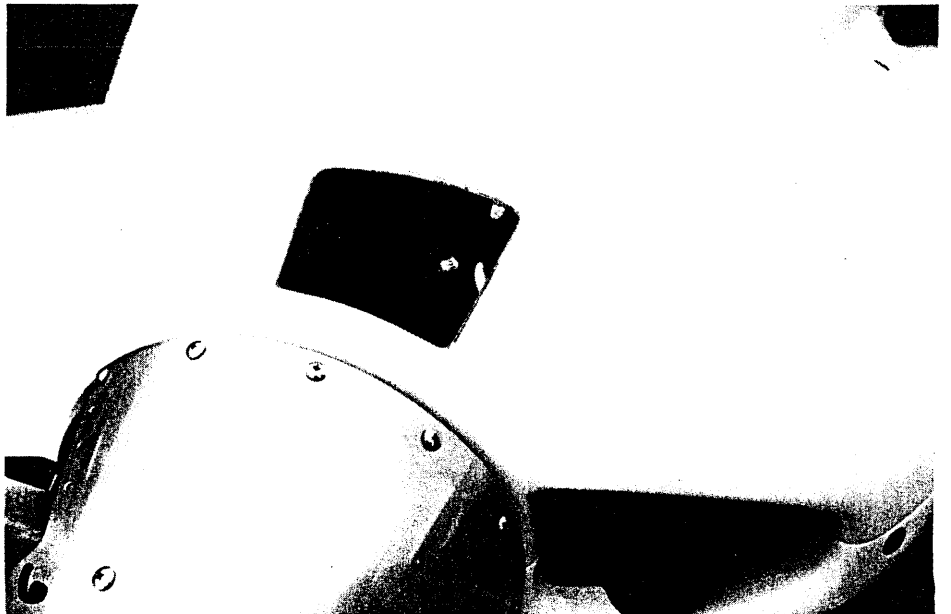
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## More of Bruce Dixon's

"LETTERS" CONT'D FROM PAGE 3

think it might be more important to get reliability into these changes to match the excellent engine, than to "soup up" the performance. I have a friend who can get 250 hp from a VW at 11,000 rpm - but not for long! I get 163 mph T.A.S at 10,300 ft & 4.2 gph from my 1835 with a special low speed cam. This is a far step from a Cessna 150 performance, especially when the cost are almost cut in half.

Regards

Lew Creedon, Port Townsend, WA.

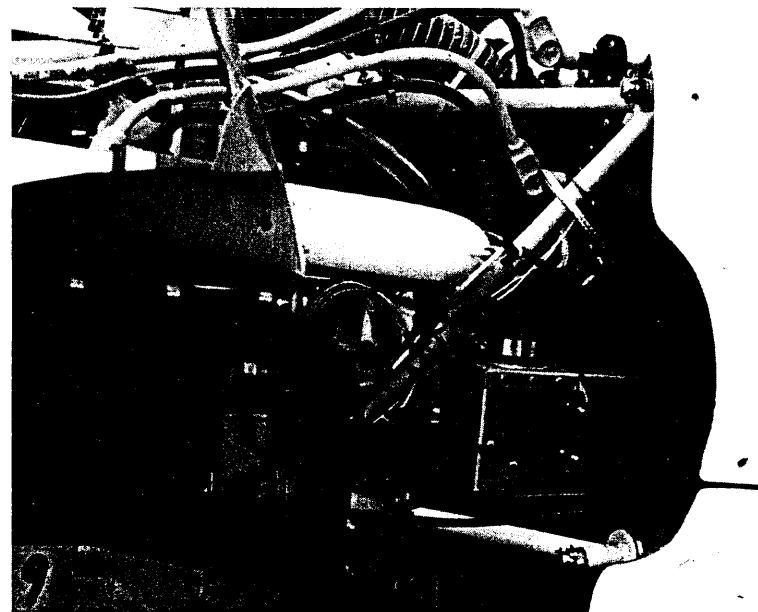
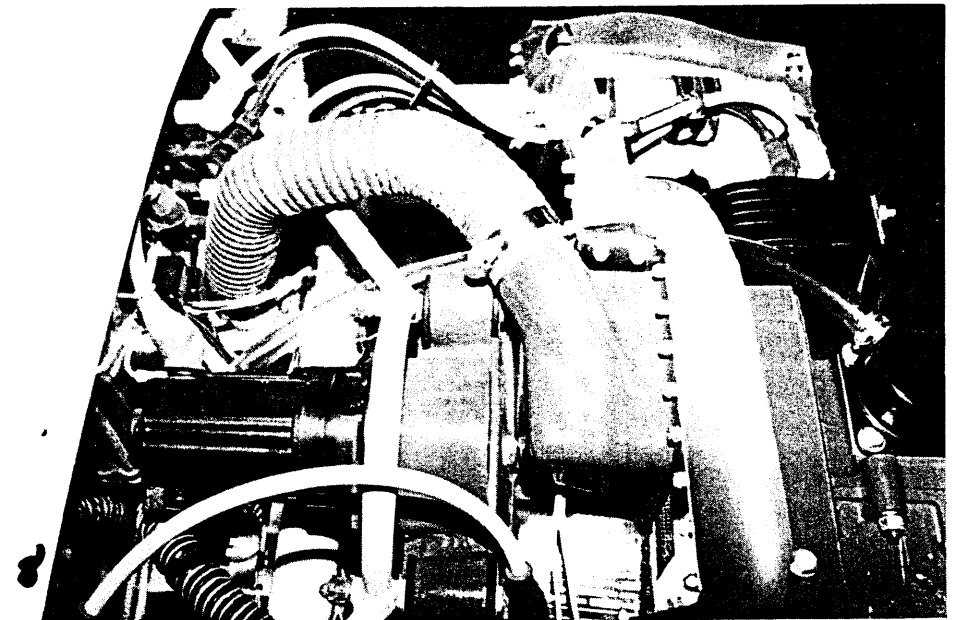
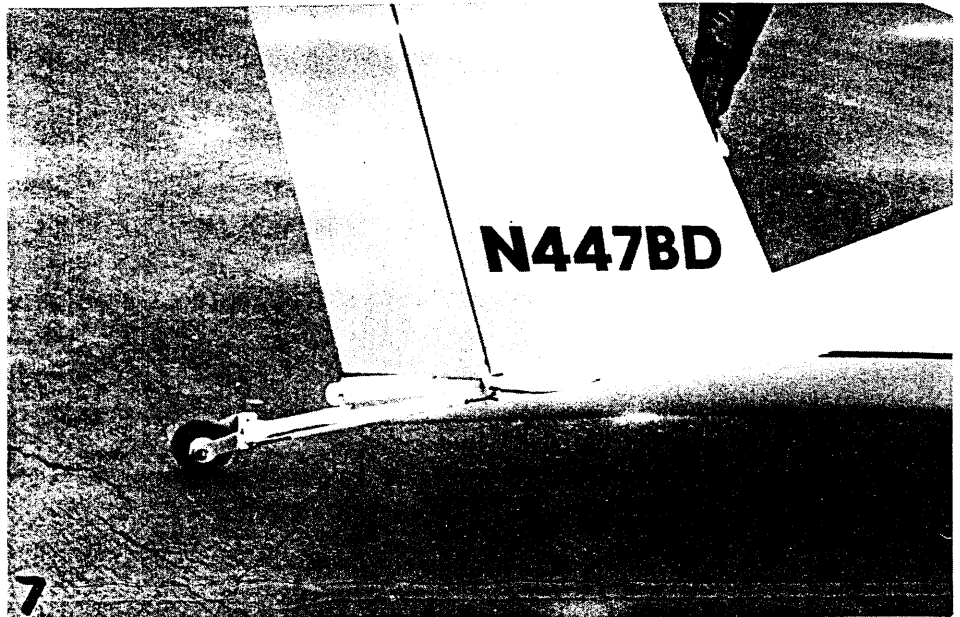
Hi guys!

Spud asked me to write with some info on my Dragonfly "Tweety". Some of you may remember seeing it at last years Dragonfly/Q-2/Q-200 Fly-in last September. An in-depth report would take a midsize book to expose all the heart breaks and triumphs that this project has endured, So I would like to touch on some of the more appealing mods that could be of interest to the Dragonfly group.

I want to preface everyone who reads this that they must understand that what I did with this particular airplane should not be taken as the "thing to do" or will automatically work on your project. So please read this as educational, interesting, something to ponder, but always understand and remember that this stuff can KILL YOU or worse destroy your airplane.

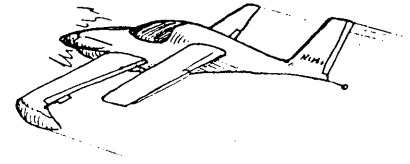
A little history on Tweety's. First flight was on April 29, 1989 at Centennial Airport-Denver, CO.. The airplane was started by Jan Karwowsky of Houston, TX., When I purchased the project from Jan it was about the 30% complete. It took me two years to get it to the

CONTINUED ON PAGE 7



## TWO ACCIDENTS

Bob Meador  
Hamilton, Ohio



We've had two major accidents in the last 6 months. Here's the stories and we'll comment on the end.

Ian Kinross Cheltenham, Australia (Ian is the one with a Norton 90hp rotary engine)

Dear Spud,

On Xmas Eve at 1800 hrs I took off in my tricycle Dragonfly for the first flight after 5 1/2 years of building. Everything went well, it flew hands and feet off. Then at 2000 ft. everything went very quiet, so I glided into a field which turned out to be very muddy. The landing was good, but as the nose wheel touched the ground it dug into mud, folded under still doing about 50 kts.. I finished upside down, got a few stitches in my head and elbow.

The cause was the gascolator was completely blocked with junk from the tank. I had been thorough in washing out the tank first with about 15 gallons of fuel, then with water. The moral to this story is to always check and clean the gascolator filter, especially in those critically early flights. The damage consisted of a snapped off canard, smashed canopy, damaged engine mount, prop and the Norton rotary had a cracked end plate. All is being rebuilt.

This is a very strong airplane, after a close inspection the fuselage, tail and wing has suffered no damage.

I will write when it flies again

Regards

Ian Kinross

*Bob is the Gentleman that had built his DF originally with the retractable gear, LS1-0417 mod airfoil, detachable wings. The retractable gear ended up to flexible. Bob had removed that assembly and installed the newer hoop style gear.-Spud*

Dear Spud,

Thanks for the phone call a few nights ago. I'm starting to get around better now, since my accident in 32T. (Bob is a very lucky gentleman, in the crash he had broken his back and fractured his neck. He's now home and is starting to walk around).

As you know now, I crashed in my Dragonfly on May 16th in attempt to make an emergency landing following an engine failure. I'm writing this letter in hopes that my experience will help someone to prevent another disaster.

I was on my 5th or 6th test flight. Testing some modifications to cure an oil temp problem. The engine started missing about 1/2 hour after take-off. I was slowly climbing over some rising terrain in a rural area (which was less than a mile from where I live).

My first reaction was to check the fuel in the header tank, I removed my headset so I could hear all the sounds up front. Both main and back-up fuel pumps were OK. I looked at the header sight gauge, and funny thing, I couldn't tell if the damn header tank was full or empty. Normally you could see the fuel somewhere in between, but when the glare from the sun was just right it was hard to see the level easy. In



**Ian's Norton rotary Dragonfly**

any event, my time was running out! I was now about 400ft. AGL and my choices for landing were not that good, a county road with traffic and power lines or an over winterized cornfield. I chose the field, and lined up to come in as low as possible to the power lines on the edge of the field. At this point my airspeed was about 80 mph. The descent was barely noticeable. To make a long story short, I ran out of space and had to bank the airplane to the right to miss trees. The airplane stalled at 20 feet. The fuselage hit the ground at probably 60 degrees and my guess at around 40-45 mph.

The fiberglass construction absorbed a tremendous amount of energy. The engine and canard broke off while the fuselage continued in motion and settled upside down. I apparently hit the instrument panel with my head and continued on into the next bulkhead, which also broke loose.

I came to after a few minutes, with gasoline pouring out of the main tank onto my legs and arms. My legs were free, because (later to find out) there was nothing in front of where the instrument panel was.

Fortunately, some people saw me crash and they called for help. I spent 19 days in the hospital with a compressed fractured vertebra in my back, a fracture in my neck, some bruised ribs and a gash across my forehead.

The FAA's investigation determined that the fuel filter between the main tank and the header tank had become completely clogged with fiberglass and restricted the fuel flow.

Hind sight is 20/20, and its easy to see what could have been done to prevent this accident.

This fuel filter is the one that was recommended by Viking. It's a small glass (see thru) enclosed type that is reusable by unscrewing and cleaning or replacing the element.

I was aware of this problem from reading about it in all the newsletters. I had tried to clean the tank the best I could. This filter had 1 hour on the Hobbs meter, therefore I didn't check it during my preflight.

I had previously received the components to build Justin Mace's fuel flow warning device, but I just never got around to building it.

The accident made it vividly clear, what was needed to make this design even safer. I strongly recommend builders and flyers of Dragonfly aircraft to consider the following suggestions;

1. Install the largest fuel filter you can find, I'm talking about a "TIN CAN SIZE" filter, that has a large surface area. Then change the filter on a regular basis.
2. Install a low fuel level device (these are available from Wicks) in your header tank and/or a no/low fuel flow device like Justin Mace's has.
3. Build a header sight gauge that has a floating element that can be easily seen.
4. Install all gauges, switches and radios so you can reach them easily "WHILE USING" your shoulder harness. I'm over 6 ft. and I could not reach all the radios when I had the shoulder harness on. I'm convinced, if I would of had my shoulder harnesses on, I would of walked away from this accident.
5. Consider making a main tank out of aluminum, it's stronger, cleaner and probably won't rupture in an accident.



Spud and DBFN readers, I feel very lucky I'm alive. I regret this happened and I'm not sure if I'll ever fully recover. I just hope this letter will hit home the fact, it can happen to the best of us.

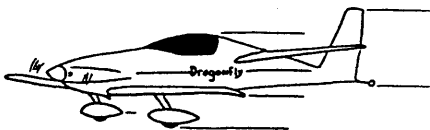
Thanks again

Bob Meador

First off, these problems could of happened to ANY airplane, but is a more frequent problem of composite aircraft. This topic has been discussed before in past newsletters, at Sun N'fun, Oshkosh and the Swarming forums.

The basic problem is that no matter how hard you try to clean these tanks you just can't get it all. Some people have even chose to circulate fuel for quite a few hours before even starting up there engines for the first time. But what also happens is that once we start running the engine and begin taxi testing we introduce different vibrations to the airframe/tank area which in turn will shake loose all though particles you missed when you cleaned the tank. We must remember that we will not begin to clean/flush out the tank until we start to move large volumes of fuel thru the system so the filters can do there job. The next problem that I see is these small glass filters. They have such a small area that it doesn't take much to clogged them. The area is so small that it clogs up so fast you don't get any warning. One minute its fine the next minute its like turning off the switch. We'll hopefully go deeper into the filter subject in DBFN #48.

*Bob has given some sound advice in his letter. There is one of his suggestions that I don't totally agree with and that is his thoughts on using an aluminum fuel tank. He is with out a doubt correct about the fact that the aluminum would be the cleanest. We must not forget that the composite fuel tank of the Dragonfly is an integral part of the fuselage and its strength. With a equal span aircraft you have a fair amount of fuselage torsional twisting between the canard & the wing. If one was considering the installation of a separate aluminum tank they would have to redesign the fuselage to offset the lose of strength/stiffness in that area. Also depending on what gusseting and thickness that was used in the construction of the aluminum tank would be the deciding factor if it would be stronger or not. A couple of options that one could consider is to, 1.Re-enforce the current tank design with additional gussets, lay-ups inside and out. 2. Another possibility could be, to build a completely independent composite tank, one that would have its own separate sides and bottom panels. Then, this could be taped and microed to the fuselage. The problem with this last one is, it would have to be made to some pretty exacting tolerances for a tight fit. I would proceed very cautiously in this area! - Spud*



point of first flight and two more years to get it where it is now. I feel I have at least one more year to go (Is it ever finished? I don't believe So!).

Just looking at Tweety you can tell I don't go by the book. The bird is YELLOW. It originally started out as a Mark II and seemed to do ok for my taildragger friends. I never felt comfortable with the taildragger configuration. After reading the stories about the some of the Mark II gear legs failing, along with myself taking out some runway lights, I felt a tri-gear set-up was in order. At about the same time (40 hours) the turbo gave up and demonstrated that a non-turbo 1600cc VW could not elevate my DF at Denver's 6000 ft of altitude! So...it was mod time again. I installed an aluminum main gear through a couple of slits in the side of the fuselage and sandwiched those with two aluminum plates of 7071-T9 alloy that I glassed into the fuselage between the fuel tank and the lower seatback bulkhead. The nose gear was made from 4130 steel tubing that attaches to the motor mount, firewall and the forward bulkhead (above the canard). Steering is by differential braking via Cleveland brakes. The VW was then punched out to a 1835cc and a new turbo was installed which was water cooled. So now I had a radiator and a water pump on top of the rest. These mods changed the total weight from 727 to 782 lbs.. The power was increased from approx. 85 to 105 hp.. These changes made the airplane very easy for me to handle (Cessna-man!). The performance stayed about the same, the weight canceled out the the horsepower increase. Performance then on the turbo'd 1835 was about 135 mph at 7500 msl. Now with this added horsepower, my engine had inadequate cooling, I found out real soon because the cylinder head cracked! Cooling was increased by opening up the intake area. The next thing to fail was the engine case, it cracked at the #3 cylinder and almost came off. I was told that this was a common problem and there is a fix, just weld in a plate in the rear web by # 3 cylinder and everything is cool. (This is now a standard practice by most VW engine conversion people - Spud).

What's next?..... I felt the next item to suffer would be the crankshaft and I was not looking forward to watching the propeller fly away and leaving me up there hoping to find a runway I could use. In my mind it was time to look around for other engine choices. The EZ-boys say "aircraft", the Q-200 boys say "aircraft" and the KR100 boys are saying aircraft. The funny thing is that these guys are putting on hours, lots of hours on their airplanes and I'm always working on mine!!! The VW had been pushed to its limits in my assessment and I was tired of working on the "\$\$?%@!+ thing". I wanted something that would fit with out too much trouble and that would be reliable at this altitude, with enough power to carry all my extra weight (mods). First

I bought a Rotorway 100 hp. that was designed for Vari-EZ use. It was water cooled and looked pretty good until I took it apart to see what was in it. Guess what's in there....VW! More or less a water cooled VW with 350 Chevy pistons! To me this wasn't a big improvement (turns out later that it is a very good engine). I then went on to purchase a old Continental A-65 engine for \$650.00 which needed a overhaul. When I took the engine apart....Wow! What a difference! The components look like they came off a big John Deere tractor, everything in it was massive and overbuilt. As I further investigated these engines I found that they didn't change much over the years or as hp increased. So I decided to make my A65 into a 100 hp engine. I had to machine the case to accept the O-200 cylinder assemblies, modify the case for O-200 style case studs and install O-200 oil pump impellers to increase the oil pump volume for the now pumped up engine. The crankshaft, rods, and cam are all O-200 size. I guess you could say that the A-65 case and the rest is O-200.

The A-65 was produced with no starter or generator. For this I installed a Ninja motorcycle alternator and drove it via 1/4 belt from the prop hub. For the starter I used a Toyota Tercel starter behind the firewall and a long shaft to a ring gear behind the prop hub. The easiest part was installing the engine, it bolted right up to the Hapi engine mount! The upper cowling fit right over the engine, but the lower cowling had to be modified for the carb and the oil pan. I reinforced the engine mount/firewall with some steel gussets behind

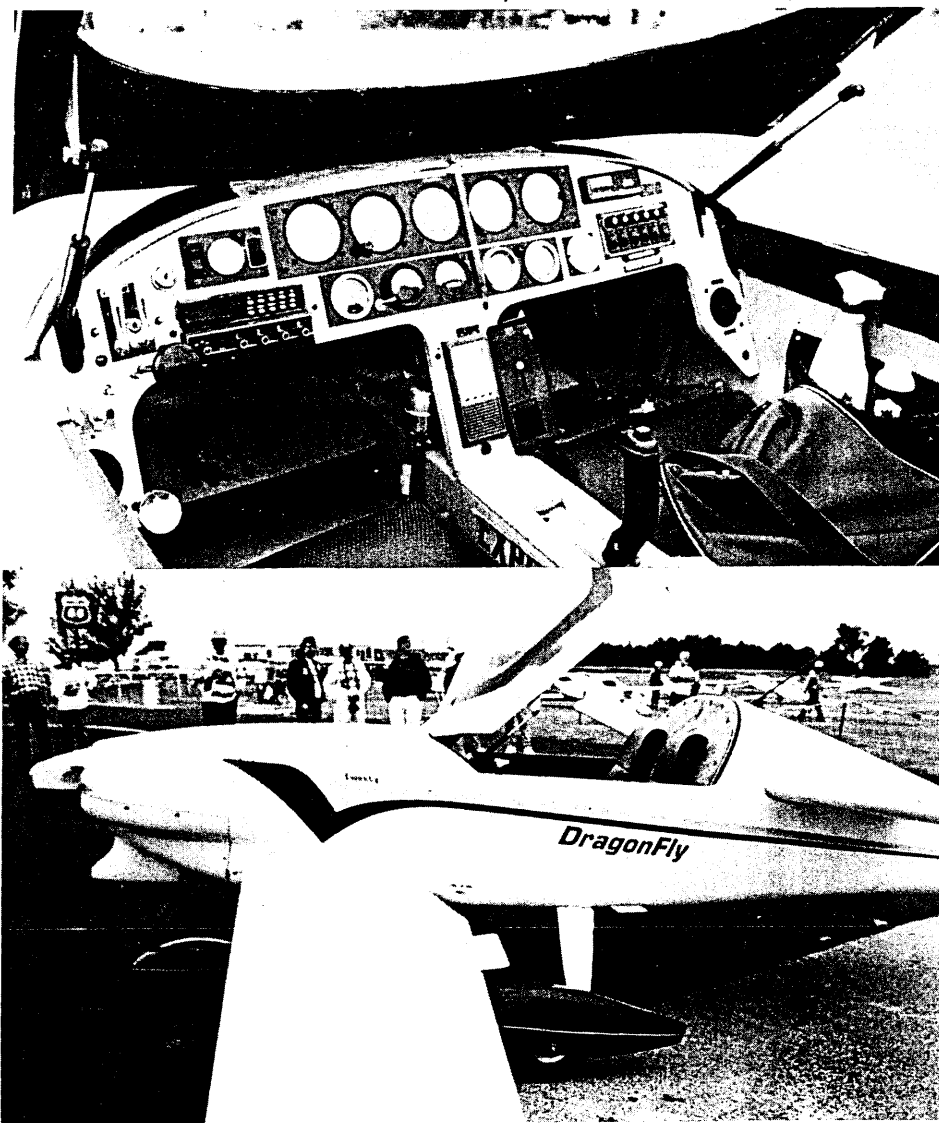
the firewall. This installation wouldn't be too difficult on a taildragger, but on my tri-gear it was a little more involved because the nose gear was were the oil pan was. The C.G. was kept in line by moving the battery back under the wing.

The airplane now weighs in at 825 lbs.. We have flown it several times at 1385 lbs., at a density altitude of 6500ft and it fly just fine. The wing loading is around 12 lbs. per square foot most of the time, and the stall speed is around 63 mph indicated, average cruise

speed is now 145 mph and the top speed is 155-160 mph according to the GPS. Fuel burn is 5-7 gph and climb at 6000 to 7000 msl is still 600-700 feet. When we were at Ottawa, Kansas (965ft.) last year it performed very well at that lower altitude, 1200 fpm grossed out. The airplane is heavier than most, but the additional power makes up for that.

The ride is still too rough to maintain cruise power in the summer, in the heat of the day, it seems we get b o u n c e d

around easier than most other aircraft. We have been comparing wing loadings with other sport aviation aircraft and just about everything else other than ultra/light aircraft have a higher wing loading. This is the next area to consider, we are planing on clipping some of the wing area down to get the wing loading up. The Q-boys enjoy a very smooth ride and we all like a smooth ride, right? Some of the Q-boys wing loading run as high as 16.4 to 1 at gross. A standard Dragonfly's wing loading at 1150 lbs. is 11.3 to 1.



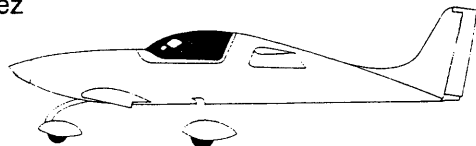


Actually we have already clipped the wings on another Dragonfly and are very pleased with performance improvements, but don't have any hot weather numbers to form any conclusions yet.....

To sum it up the Dragonfly is really a neat airplane and it is easy to modify with our building system, however you must not get too crazy and always ask yourself if anyone has done this before? I always hear the same things about the Dragonfly over and over "engine, landing gear, bouncy ride & heavy roll" I think now that a Subaru engine could be the most logical answer to that problem (if you wanted to stay away from a certified engine). I know there is lots of landing gear options. For the heavy roll on my DF, I simply extended the aileron arms by 1" (increased the leverage advantage) and it works just fine The ride may be limited by the HP you have and the area you fly. We'll keep everyone informed about our wing area reduction thru the newsletter.

Regards

Butch Hernandez



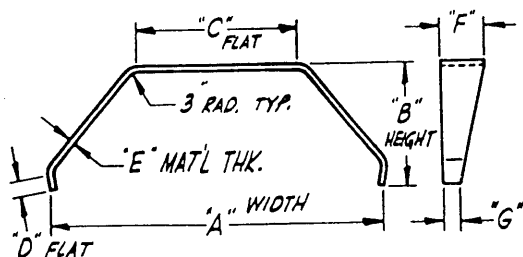
## MULTICOM

### • Blue light special on isle # 9

(I've always wanted to say that!) I was reviwed that latest flyer from Great Plains Aircraft and found a few items worth noting. First one is that they have their Hi-torque (geared) starter on sale, Regular price \$150.00, on sale for

\$99.95, Gascolators for \$15.95, Stroker rods for \$99.95, "New" Type IV engine cases \$450.00 ea. Special prices are good thru 7-25-93 They also now offer replacement flywheel and syncro alternators components for the Hapi accessory cases. Since the last issue that showed Van Fosters Aluminum tri-gear set-up, I've had quite a few calls on where to get this type of gear. Great Plains has been making these custom gear up for the KR and Soneri people for some time. Their 5/8" gear sells for \$365.00

Great Plains has just moved, their new address is Great



Plains Aircraft Supply, P.O. Box 304, Boystown, NE. 68010 Phone (402)493-6507

### • New Engine Vendor.

I just received a new price sheet from Formula Power, a new company that is converting Subaru engines for aircraft use. They are using Ross drives for their reduction unit. They have two model that may possibly be usable in our airframes (Subaru EA81's). The Model #FE100 is rated at 100 hp - it sells for \$7595.00 with Ross drive. The model #FE120 is rated at 120 hp - It sells for \$8595.00 with Ross drive. Those wishing more information may contact; Formula Power 2959 Treat Blvd. Suite E, Concord, CA 94518 (510)685-1689

### • More T-shirts?

I have had a few people ask if we were planning on running some more Dragonfly T-shirts. Ok, Lets here from some of you other people that want DF T-shirt, write, call, telegraph, shoot up a flare, If the desire is there I'll run another batch, but ya got to let me know! - Spud

### • A few Builders tips

Free small epoxy cups! Start checking out all the Yogurt cups that your wife or kids have been throwing away. I have found several that are unwaxed and perfectly flat on the bottom. Most have been 8oz. Works great for small batches.

In reading the Canard Pusher, the Long-EZ group has always been somewhat plagued with oil temp problems. In reading several of their articles, they having outstanding results by putting two coolers in series. I haven't look at how this could be done on VW, but is something to ponder, There's plenty of room!

### • Airplane covers and Interiors -

I have had quite a few inquires on where to get covers for a Dragonfly. Reg Clarke a fellow Dragonflyer owns an upholstery shop in Wetaskiwin, Alberta, Canada. He'll make all sorts of stuff for a Dragonfly. Of course he makes Custom fit covers (lined & unlined) for the Dragonfly but he also does full interiors, sheep skin seat covers, prop & spinner cover. He even makes canard & wing covers that have a special little spoiler to kill the lift of the airfoil.

Give Reg a call and have him quote you some prices.

Clarke Upholstery

4813 - 57 avenue

Wetaskiwin, Alberta, Canada T9A 1B6

(403) 352-5001

## 1993 OSHKOSH BANQUET!

### *Dragonfly / Quickie / Q-2 / Q-200 Banquet*

We are going to have a combined banquet this year with the Quickie group. We have had a lot of fun with them at the last two fly-ins at Ottawa, KS. It will be held at:

***Butch's Anchor Inn***

***Friday Eve, July 30th***

***7:00pm Open bar - 8:00pm Dinner***

***"Family Style" - \$12.00 per person***

***Lower Level***

There will be an open bar from 7:00 to 8:00 P.M. The dinner will be family style with 3 different entree's, haddock, sirloin tips, chicken and all the fixin's which will be served at 8:00 P.M. Those of you that have gone there before know that's it's excellent food! After the meal we'll get into lots of hangar flying!

Preregistration is required at the Great Plains Aircraft Supply booth in the Central Exhibit Building by no later than 1:00 P.M. Friday. If everyone could register as soon as possible after their arrival at Oshkosh it will be greatly appreciated, we must give them an estimate by midday Thursday. Preregistration may also be mailed to our banquet coordinator, but he must receive them by no later than July 21st. Any question feel free to give Spud a call (913)764-5118

**Mail to:**

**Bill Spornitz  
1112 Layton Drive  
Olathe, KS 66061**

***DRAGONFLY  
BUILDERS & FLYERS  
NEWSLETTER***

## OSHKOSH SCHEDULE

Don't forget that the convention starts a day earlier this year. Things kick off on THURSDAY July 29th.

The Dragonfly Forum will be held on Friday July 30th in Forum tent # 8 10:00 - 11:15 A.M.

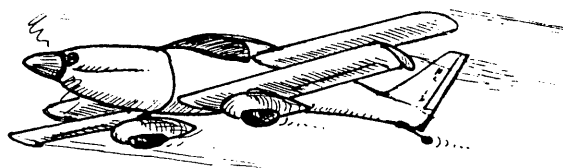
A Dragonfly / Quickie / Q-2 / Q-200 Banquet will be held at Butch's Anchor Inn 7:00 P.M. Friday July 30th.

An informal meeting will be held at the Homebuilders Corner Building - front porch. 10:00 A.M. till Noon on Saturday morning the July 31st.

Other forums and meetings that may be of interest;

VW engine conversion / Steve Bennett Forum tent #2 Thursday 10:00 - 11:15 A.M.

Quickie Builders Association meeting held at the Homebuilders Corner Building - Back porch on Saturday July 31 at 9:00 A.M. and again on Monday August 2nd on the Front Porch at 9:00 AM



## THE CLASSIFIEDS

**For Sale:** Complete VDO gauge set - 8 gauges+, Autometer #2642 4000 rpm - 270 degree sweep tachometer, Hourmeter, Exhaust Temp., 70lb. oil pres & sender, Voltmeter, Fuel gauge & sender, 300 degree oil temp. & sender, Cylinder head temp. all 11 pieces for \$290.00. Kc hilites Quartz halogen landing light #1734-\$10.00, New tailspring w/ tailwheel yoke-\$20.00, Black & Decker "Dremel style" tool w/ power supply - \$35.00 Bill Brutsman after 7:00 pm (913)888-8942

**For Sale:** Warnke Almost Constant Speed Prop 56"D X 52P with leading edge protection, performance is 160 mph at 2950 rpm using a 70 Hp Revmaster in a Q-2, used only 18 hours \$250.00 - Revmaster oil pump - 165 hours \$20.00 contact Kimbull McAndrew (403)254-2883

**For Sale:** Subaru 1800 EA82 single port fuel injection engine with S.W.A.G. R/L control unit, high output fuel

pump. Gary Sheets, Indpls, Indiana (317)862-2617

**For Sale:** Brand new unassembled 2167cc VW engine, split port heads( Scat), Revmaster accessory case, exhaust manifolds and prop. \$4400.00 invested in 1986 dollars, have receipts. \$2500.00 for everything. Call Chuck Kaplan - Walpole, Mass. (508) 668-4784 /

**For Sale:** Mark I Dragonfly 840 hrs. TT. 525hrs on 80 Hp Limbach engine. Cleveland brakes, Aileron reflexor, Vortex generators, Quality workmanship. \$11,000 less radios, \$13,500 with Terra digital Com, King transponder, Narco encoder, David Clark intercom, Apollo Flybuddy loran and ELT. Ask for Rob, evenings (407) 395-9267

**For Sale:** New Viking Mark II gear legs, Hapi wheels and brakes \$350.00 Chuck Kaplan - Walpole, Mass (508) 668-4784

**Wanted:** 0-120mph airspeed indicator, altimeter, panel mount compass, call Steve Parkman - Tucson, AZ. daytime #(602) 323-1200

**For Sale:** 240 hr. Dragonfly less canard and engine, plans built. Call Kenny for spec's at (402)593-9492 after 6:00 CST \$4500.00

**Wanted:** Mark II gear legs only or entire gear leg kit, Must be very inexpensive. Ask for Spud after 7:00 PM (913) 764-5118

**For Sale:** Dragonfly Mark I, 62 hp Hapi w/Warke prop, electric start, day/night VFR w/strobes, Loran, Transponder/encoder, VHF nav/com, custom interior, dual side sticks, reflex trim, beautiful paint (cream), Flight-com headsets w/stereo intercom, Mark II landing gear kit in box w/wheels, plus many more extras. Looks and flies great. \$12,000.00 OBO Robert (510)210-1714 / PHOTO



**For Sale:** New propellor, birch with fiberglass tipped ends. 48DX45P for Volkswagen type. Also 3" prop extension for Lycoming/Continental call Al (303)936-1683

**For Sale:** "Zero Time" rebuilt Continental O-200 - 100hp complete with Mags, harness and carburetor with log books - \$6500.00 outright no exchange. New Cessna 150 prop \$1200.00 ask for Gene after 6:00 PST (209) 733-8358

## **DRAGONFLY** **BUILDERS & FLYERS** **NEWSLETTER**

### **Subscribers Information Center**

Dragonfly Builders & Flyers Newsletter (DBFN) is currently published Bimonthly at a rate of \$3.00 per issue/\$18.00 a year U.S. & Canada, \$29.00 (U.S. funds) per 6 issues to foreign subscribers. Send remittance to: DBFN, 1112 Layton Drive, Olathe, Kansas 66061. **PLEASE MAKE CHECKS PAYABLE TO: BILL SPORNITZ**

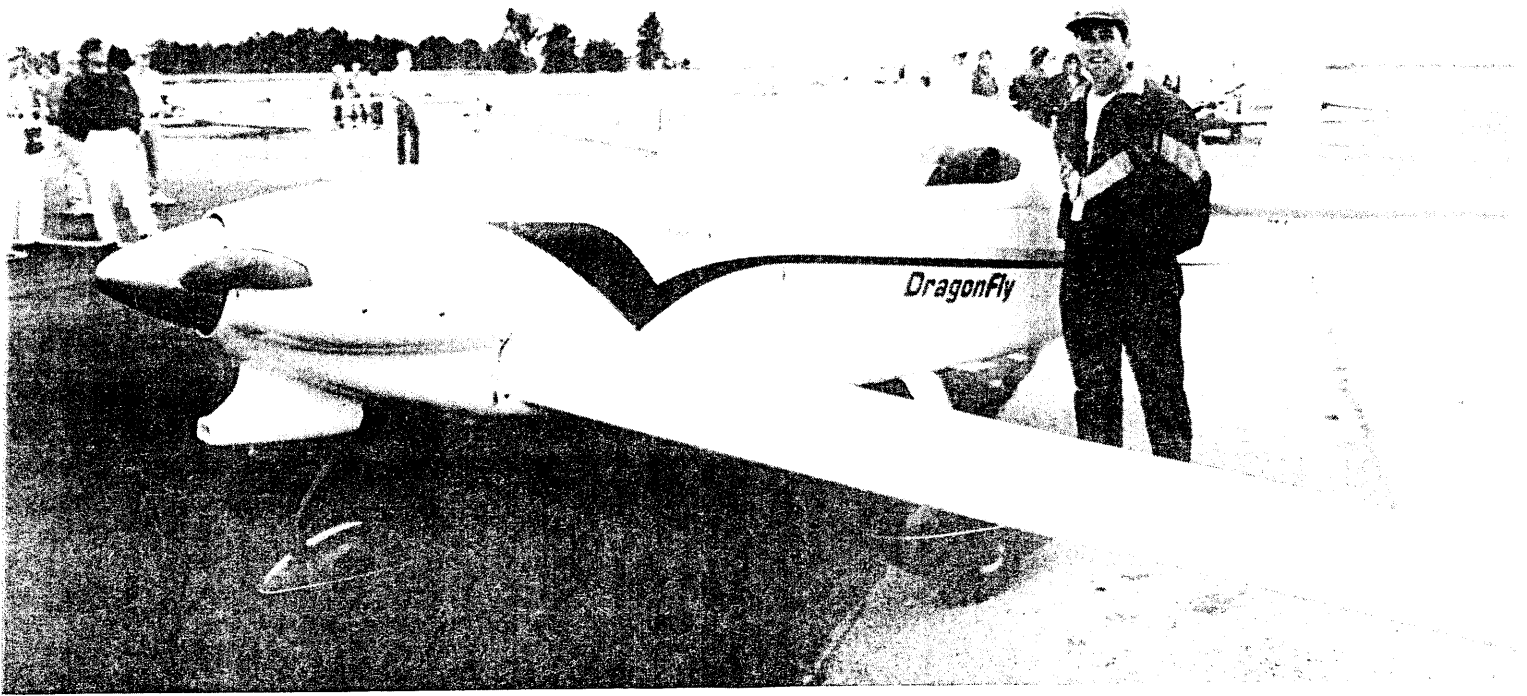
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The use of "VW" by DBFN is for the sole purpose of application and description only and is not intended to infer or imply a direct connection between DBFN and Volkswagen.

**PHONE (913) 764-5118**



**BUTCH HERNANDEZ'S TRI-GEAR DRAGONFLY "TWEETIE"**

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