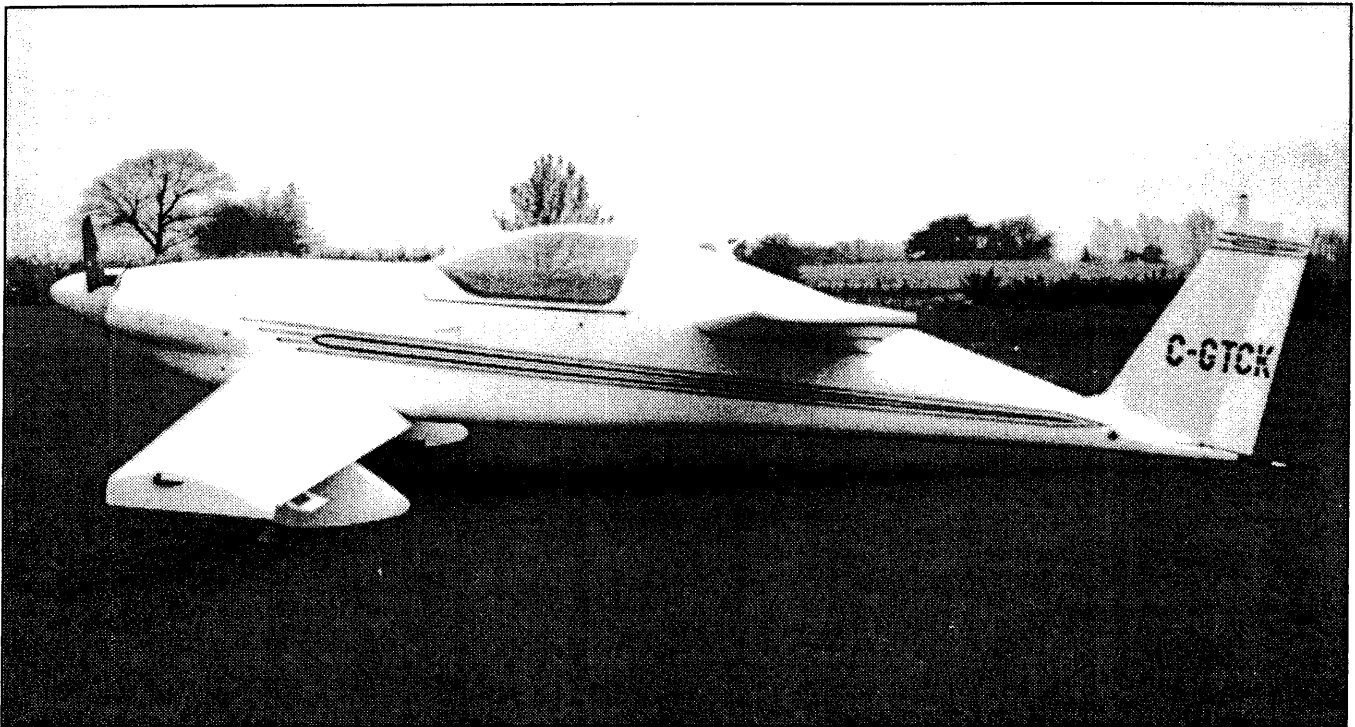


DRAGONFLY BUILDERS AND FLYERS NEWSLETTER

THE OFFICIAL VOICE OF DRAGONFLYERS ALL OVER THE WORLD

VOLUME 78

JULY - AUGUST 1998



John Kunz's Beautiful Mark II Dragonfly

Fellow Dragonfliers,

It is with great sadness that I must report that there is now one less Dragonfly in the world. It is with great joy however, that I can report that there were no injuries.

This past Saturday John Kunz, my hangar-mate, crashed into a wooded area shortly after take-off from the airport in Tobermory,

Ontario. The aircraft collided with the top of a tall tree, and then descended through to the forest floor. The aircraft was completely destroyed, with the tail section and wing completely removed from the aircraft. The canard was broken, airframe twisted, and engine offset laterally. Amazingly, the cockpit was relatively intact, with the canopy receiving only minor scratches. Both fuel tanks ruptured, spilling

fuel around the impact area and cockpit.

Fortunately, there was no fire, and John was able to safely and quickly exit the aircraft. After collecting himself, and surveying the remains, he spent time looking for his handheld radio to attempt communication. Being unable to locate the radio, he used his handheld GPS to log the crash site, and then navigate

back to the airport. The crash site was just over 1 mile from the airport, but the hike through the dense underbrush took an hour.

It is sad that my days of flying in formation with John in our Dragonflies is over. However, after hearing the description of the crash site, I am overjoyed that he is alive and well. Perhaps we'll fly in formation again some day...

John does not know exactly why this happened. He noticed a slightly longer-than-normal take-off roll, and pulled the aircraft off the ground at a low airspeed due to some bobbling on the runway. Once in that slow flight mode, he never made it out of the 'back side of the power curve'. As he flew over the trees at the end of the runway, he was indicating about 50, with the stick nearly full back, engine at full power. He was unable to lower the nose to get speed to build, as he was only clear of the treetops by about 10 ft. One tree stuck up above the rest, and he attempted unsuccessfully to maneuver to clear it. The aircraft was an early plans-build DF, with Mk1 canard, with inboard gear mounted in rigidly in pods built under the wing. The aircraft weighed something like 780 lbs. empty, and was powered by an 1835cc HAPI conversion.

I know of the slow-flight mode he was in, as I've experienced it in our DF many times when lifting off early during the takeoff roll. With the VW power, I was always able to accelerate out of this slow-flight mode, although it took a few seconds. With the Soob, it is now nearly instantaneous.

I'll keep everyone up to date. John is planning to send in a report to DBFN, with pictures.

I must say I am impressed with the crashworthiness of the airframe.

Roger

I hope to assist in the salvage operations, and will document our progress soon.

Roger Enns
C-GIIV,
EA81T-powered Dragonfly
Ontario, Canada

EDITOR'S CORNER

IMPORTANT FLY-IN NOTICE!!

We have gone through quite a few changes in regards to this year's fly-in since the last newsletter. Due to numerous personal reasons I have decided to remove myself from my involvement of the "The Field of Dreams Fly-in" for this year and in the future.

I had announced to the Quickie and Dragonfly group via the Internet that I was canceling the event and my further involvement. Fortunately, Don Stewart of Prescott, Arizona immediately stepped forward and has graciously picked up the responsibility of hosting the event. He has made several changes to the original itinerary. You'll find a new registration and schedule included with this issue of DBFN.

Please review closely.

I will be at the event for the Dragonfly forum and then visiting with attending Dragonflyers gathering information in behalf of the newsletter.

I apologize for any inconvenience this may of caused in your event planning.

Regards,

Spud Spornitz

It's time for a new Dragonfly newsletter editor.....

Due to numerous personal reasons it is time for Spud to bow out. I've been doing the newsletter since Oshkosh 1990 and it is time for a change. I am sure that this change will bring a fresh and positive look to the group and the Dragonfly.

Here's the game plan. I would like to talk to all interested parties in regards to taking over the newsletter. I would like to have the new editor in place by the last issue of this year, November/December 1998 (DBFN #80). Then all renewals for 1999 can be directly mailed to the new editor. Your patience would be appreciated as we start and go through this transition. We'll keep you posted.

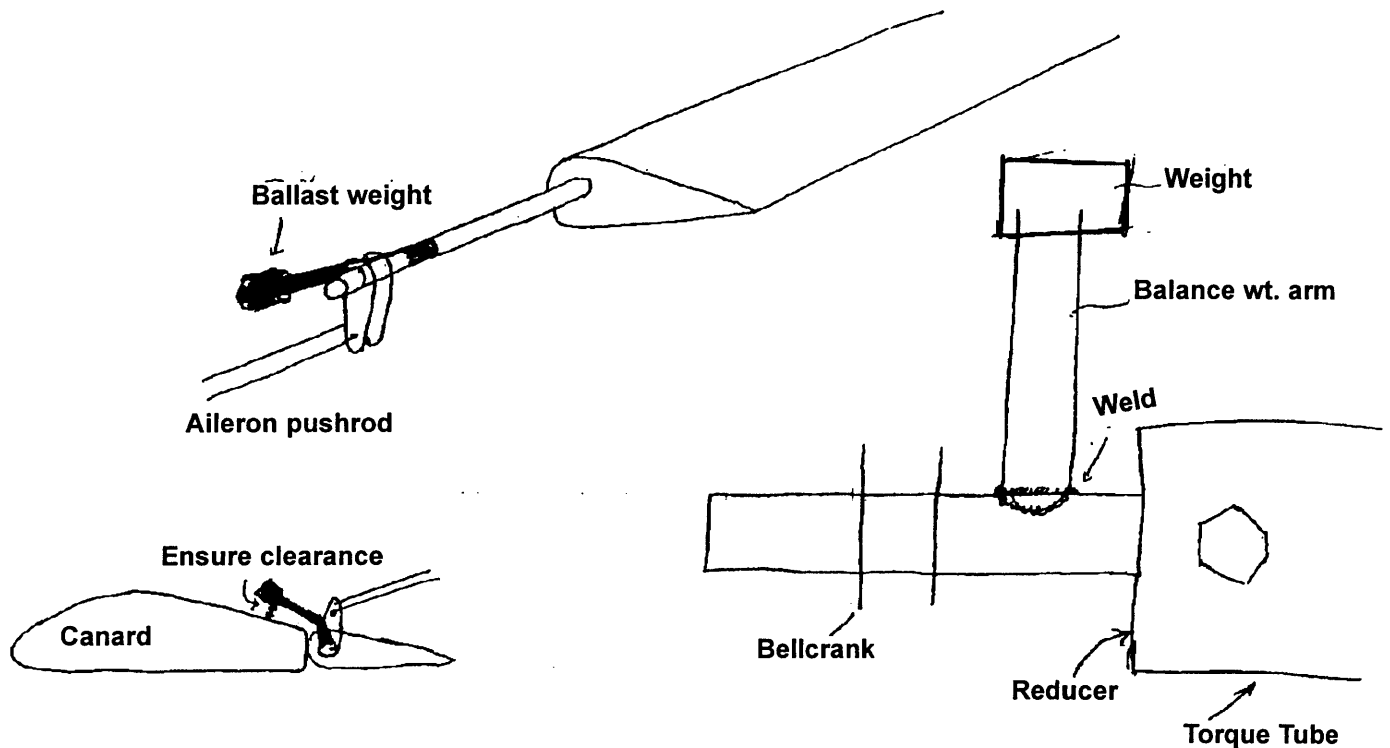
Regards,

Spud Spornitz

Mass Balancing

Over the last twelve months one of the most mentioned topics was, "How do you mass balance?" This is all brought on by the larger and more powerful engines that are being installed. Bare in mind a couple of things. The never exceed speed of the Dragonfly is 180 MPH. Rex Taylor said that Bob Walters did do a full flight test program to that speed. Mass balancing will help, but is not a replacement for a sloppy control system.

Below are drawing that Ted Givins has sent in on the subject. And the drawing where sent in by Tom Moore the editor of the Q-Talk (Quickie guy's) newsletter. Tom took these from an actual set of Q-2 plans. The drawings are not meant to be the absolute way to do this on your particular project, but are meant just to be "Food for thought"! Regards, Spud Spornitz



#2 An alternative method would to attach weights to the control arm and have them more in and out of the lower wing/canard surface.

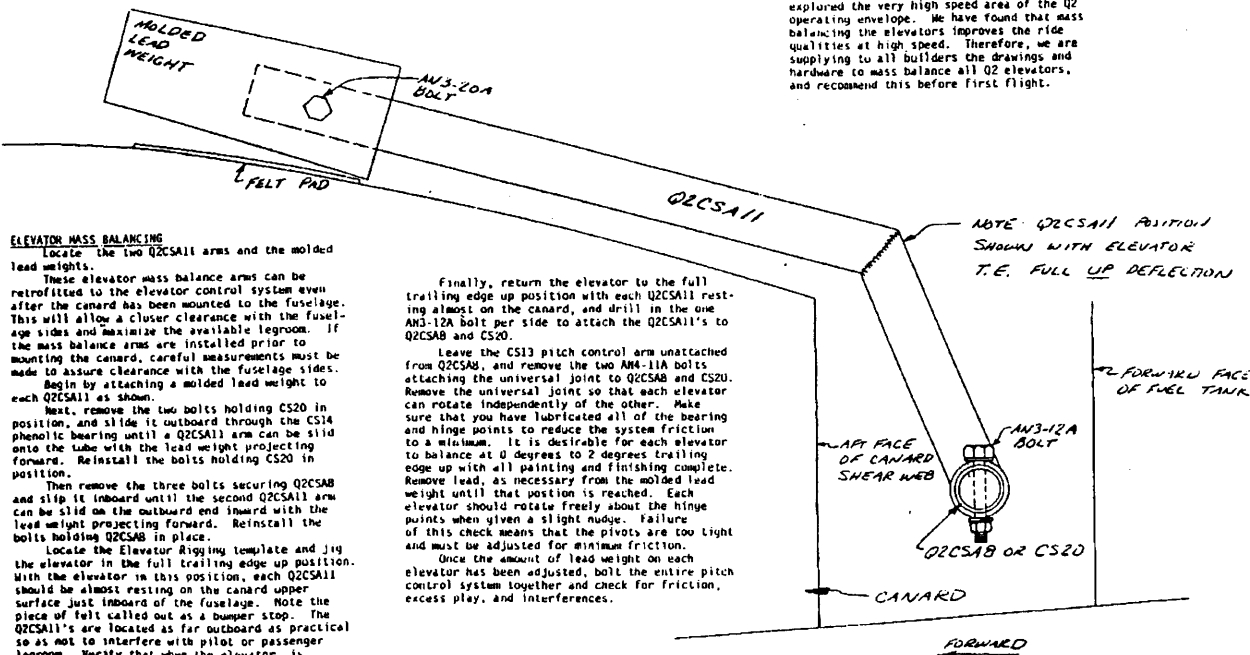


Hollow out enough to allow for control deflection - be careful to only remove enough material to allow control deflection. I

Prefer the internal weights - no drag penalty! Ted Givins

DESCRIPTION

MASS BALANCING ELEVATORS. In preparation for testing on turbocharged Revmasters and possible A-65 thru C-85 installations, we have further explored the very high speed area of the Q2 operating envelope. We have found that mass balancing the elevators improves the ride qualities at high speed. Therefore, we are supplying to all builders the drawings and hardware to mass balance all Q2 elevators, and recommend this before first flight.



ELEVATOR MASS BALANCING

Locate the two Q2CSA11 arms and the molded lead weights.

These elevator mass balance arms can be retrofitted to the elevator control system even after the canard has been mounted to the fuselage. This will allow a closer clearance with the fuselage sides and maximize the available legroom. If the mass balance arms are installed prior to mounting the canard, careful measurements must be made to assure clearance with the fuselage sides. Begin by attaching a molded lead weight to each Q2CSA11 as shown.

Next, remove the two bolts holding CS20 in position, and slide it outboard through the CS14 phenolic bearing until a Q2CSA11 arm can be slid onto the tube with the lead weight projecting forward. Reinstall the bolts holding CS20 in position.

Then remove the three bolts securing Q2CSAB and slip it inboard until the second Q2CSA11 arm can be slid on the outboard end inward with the lead weight projecting forward. Reinstall the bolts holding Q2CSAB in place.

Locate the Elevator Rigging template and jig the elevator in the full trailing edge up position. With the elevator in this position, each Q2CSA11 should be almost resting on the canard upper surface just inboard of the fuselage. Note the piece of felt called out as a bumper stop. The Q2CSA11's are located as far outboard as practical so as not to interfere with pilot or passenger legroom. Verify that when the elevator is rotated to full trailing edge down position, that the arc of each Q2CSA11 clears the fuselage and all other components.

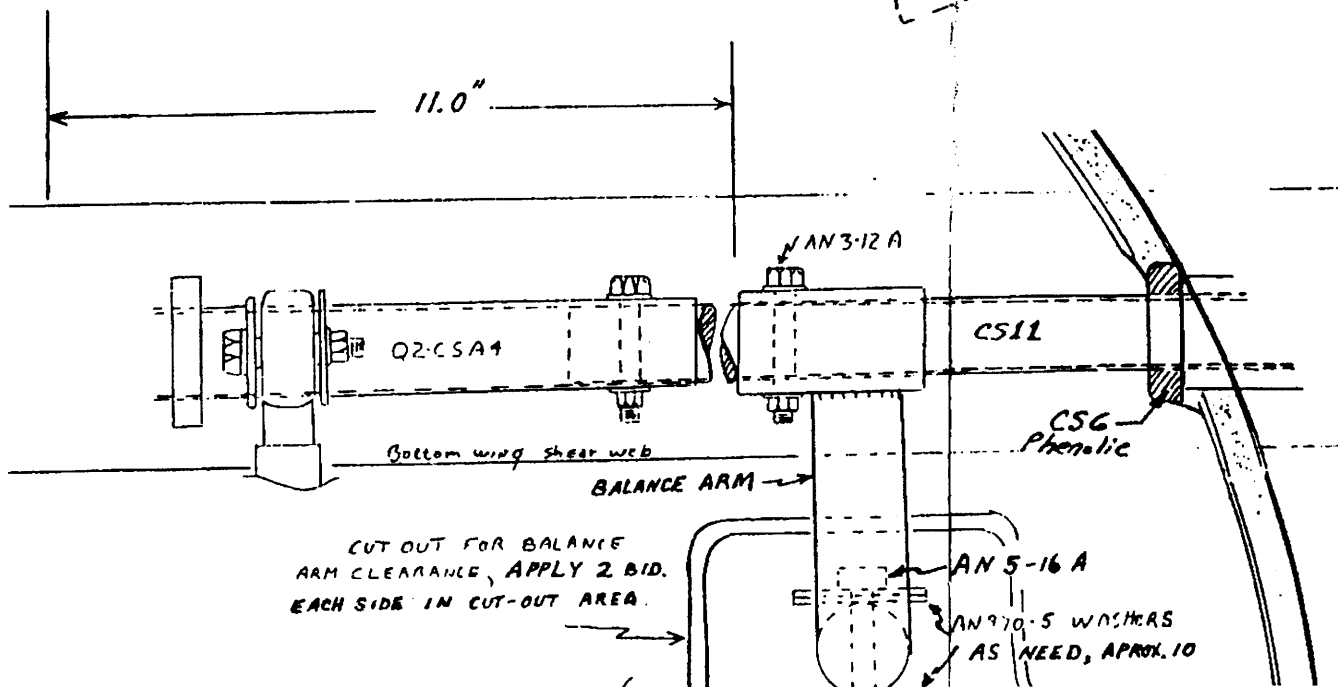
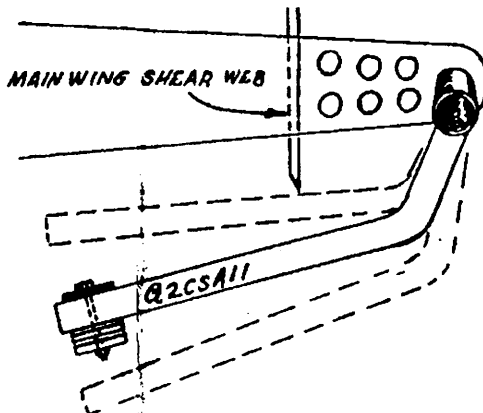
Finally, return the elevator to the full trailing edge up position with each Q2CSA11 resting almost on the canard, and drill in the one AN3-12A bolt per side to attach the Q2CSA11's to Q2CSAB and CS20.

Leave the CS13 pitch control arm unattached from Q2CSAB, and remove the two AN4-11A bolts attaching the universal joint to Q2CSAB and CS20. Remove the universal joint so that each elevator can rotate independently of the other. Make sure that you have lubricated all of the bearing and hinge points to reduce the system friction to a minimum. It is desirable for each elevator to balance at 0 degrees to 2 degrees trailing edge up with all painting and finishing complete. Remove lead, as necessary from the molded lead weight until that position is reached. Each elevator should rotate freely about the hinge points when given a slight nudge. Failure of this check means that the pivots are too tight and must be adjusted for minimum friction.

Once the amount of lead weight on each elevator has been adjusted, bolt the entire pitch control system together and check for friction, excess play, and interferences.

AILERON MASS BALANCING

The ailerons are balanced for obvious reasons of higher speed, and can be accomplished fairly fast. Assuming, of course, your aircraft can be disassembled behind the rear wing. As with the elevators, the ailerons should be as friction free as possible. The ailerons are bolted on the end of the internal balance arm to bring each aileron to full or slightly leading edge heavy balance. Make sure there is no interference with the arm for full aileron travel. Remember to disconnect ailerons from each other when balancing.



THE BEST OF THE INTERNET

Dave Morris Garland, Texas

PPSEL, Dragonfly, CAF, EAA

Best of the Net

(Due to the length of this article, this will be the only topic covered by "Best of the Net" in this issue.)

Kevin Hester brought something to our attention in May that I was not aware of. I think it's pretty common knowledge that you have to have your aircraft inspected by the FAA prior to your first flight. But how many of us schedule a *new FAA inspection each time we make a significant change to the aircraft?* According to the court records, you are liable to lose your insurance coverage (and probably get in deep water with the FAA as well) if you don't. Here are some excerpts from *Avemco v. William Davenport*, in the Ninth Circuit US Court of Appeals, April 7, 1998:

Davenport began building a plane largely from Rutan Aircraft's "Long EZ" plans. The FAA initially certified Davenport's aircraft as airworthy in April 1993, but one limitation required that "the cognizant FAA Flight Office must be notified and their response received in writing prior to flying this aircraft after incorporating a major change as defined by [14 C.F.R. S 21.93]." Special Airworthiness Certificate, Operating Limitation No. 10. A major change is any change having any "appreciable effect on the weight, balance, structural strength, reliability, operational characteristics, or other characteristics affecting the airworthiness of the product." 14 C.F.R. S 21.93(a) (1993).

Davenport's aircraft was equipped with a gravity feed fuel system at the time of the FAA's initial certification. After receiving his initial

certification, Davenport made a series of changes to his fuel system without notifying the FAA. Davenport first converted the gravity feed system into a pressurized fuel system. After flying the aircraft for fifteen hours, Davenport removed the fuel pumps and reconfigured the system to its original gravity feed design, again without notifying the FAA. Later, he added the fuel pump back, and then later again removed it again.

On May 7, 1995, with the most recent version of the gravity feed fuel system in place, Davenport crashed his aircraft near an airport in Santa Monica, California. The accident caused property damage on the ground, which in turn spawned numerous claims against Davenport in California state courts.

The district court ruled against Davenport because he had not recertified his aircraft after he modified its fuel system without notifying the FAA.

Davenport argued that the series of modifications he made to his aircraft's fuel system did not constitute a "major change" because the fuel system at the time of the crash was in the same configuration as at the time of the initial certification. The court rejected this argument. The fact that Davenport made repeated changes to the fuel system did not remedy his failure to notify the FAA prior to making each change.

The FAA has defined major alterations as including "[c]hanges to the basic design of the fuel . . . system." (14 C.F.R. S 43 app. A(a)(1)(xii).)

Synopsis: If you make any change to your fuel system, you must recertify your plane, even if you later undo your work and put the original

design back again.. The same would obviously go for any other changes of a similar or greater magnitude. We ARE all doing this, riiiiiiight?

The full copy of the court ruling can be found at the Ellison web site: http://www.ellison-fluid-systems.com/homebuilt_court_decision.htm

Terry O'Neill and the stall in the Dragonfly.

The DF is a wonderful plane, as I bragged in the Kitplanes article...better than anything else for the economy and the buck. Wifey and I love ours, and are planning more trips. Put over 100 hrs. on it the first year, with no problems...cruising 150mph, 30mpg, as high as 13k.

Yes, I had the same experience with stall entries... the DF is very resistant to stalling, and with the stick held full back the canard will keep being unstalled, because the rear wing remains unstalled. I could see this, with the tufts.

This doesn't mean — as some loyal DFers say — that the DF won't stall both front and rear wings. Steve Larabee's test pilot did it... and noted the long recovery... and with the CG within limits.

I keep talking about it because even though it would require a steeper-than-45-degrees entry, or an unusual-attitude-entry, once the wing DOES stall, DFers should know the recovery is going to be slow... and they MUST know what to do to recover.

The NASA guys did AOA up to 90 degrees, and found out that two things were critical, to assure recovery:

1. the power must be OFF, (prop blast holds the canard up, stalled) and
2. The CG must not be too far aft.

When I was shopping for a DF (or a KR) I found several guys who believed their planes flew better with the CG back around the rear limits.

This does give them a better L/D, but it also makes them more pitch-sensitive, and worse, it greatly reduces the pitch recovery moment from a full stall.

If the CG is TOO FAR aft... and that's not been defined for the DF yet by Viking or anyone I know... a tandem-wing plane (or any wing-tail config) will lock into the stall at about 40 degrees... the NASA guys say it 'reaches a trim condition'. All the way to the ground.

The DF is a very good design. Adding an AOA will give the pilot a way to SEE how close he's flying his canard to its stall angle, and avoid it stalling. Anybody can make one. Or get one from me.

Terry O'Neill
Carlyle, Ill.

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For Sale: Mosler 82 HP 2180cc VW conversion. The best of everything, Force One prop, hub,, true dual ignition-one electronic ignition-one magneto, external alternator. Only 7 hours! Complete firewall forward package, engine, manifold, carb, exhaust, DF cowling, etc. Originally invoiced for \$6,600.00 for engine assembly alone, not including cowling, mount, exhaust, etc. First \$4200.00 Contact Spud Spornitz at (913) 764-5118 after 6:00 pm

For sale: Balanced 2180 VW engine package—Not yet removed from aircraft. May be flight tested prior to May 15th. All systems go with the package—intake, Ellison throttle body, alternate air box, cabin heat muff, exhaust system, baffling, 40 amp alternator, geared starter, oil cooler, spin on oil filter, Bendix mag, electronic ignition., aluminum fined barrels, extra heavy heads, force one prop hub, Dragonfly task cowling, engine mount, hydraulic lifters, and a chrome spinner and Great American prop. This is a bolt on and fly program...E-mail Phone—209-

626-4991 Price—\$ 4500.00 Reason for sale is—I am installing a very special Cont. C-85 engine (more power and speed).

For Sale: HAPI 60DM (firewall Forward)Engine Mount included. This engine was new when purchased and I had Great Planes Aircraft tear it down and check it out in 1995. He replaced the crank and gave it his OK. I would like \$3,500.00 for it and it has less than 1 hour on it (taxi tests, etc) E-Mail address is alfitz@computer-concepts.com My phone is 308 389-3569

For Sale: 2180 VW "O" time (X-great Plains) Complete w/ Ellison carb \$6000.00 Contact Dave Bastion (810) 659-7228 (Michigan) (76&77)

For Sale: HEALTH FORCES SALE - Dragonfly MK II project with HAPI 1835, 1 mag & 1 electronic ignition, prop spinner, all instruments, hand held nav/com headset, GPS, custom dolly for fuselage, custom built trailer for highway transportation. All for \$8,500 Phone for more details (509) 935-8461 Rex Barrans, Box 348, Chewlah, WA 99109-0348

For Sale: 2000cc VW Type IV engine. Running when removed from 1978 bus - \$350.00 Jim Delaney (319)-351-2762 East central Iowa

**DRAGONFLY
BUILDERS AND FLYERS
NEWSLETTER**

For Sale: Builder deceased - Dragonfly project 75% complete, wing and canard are glassed HAPI 1835cc engine, Hydraulic disc brake kit, swept tip prop, New style hoop gear and wheel pants, a few instruments, construction videos, project available for inspection. Make reasonable offer - no tire kickers - serious inquires only please - Contact Aileen Rawson at (941) 763-3315 - 8333 NW 189th Ave., Okeechobee, FL 34972-9687

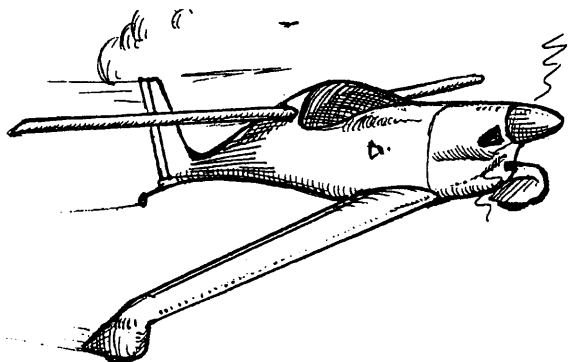
For Sale: Prefab Dragonfly Kit - \$5,500.00. Fuselage assembled with tail fin, rudder, fire wall, motor mount angles, upper-lower seat back, intercostal-tail bulkheads, fuel tank & consoles installed. Pre-cut canard and wing cores, fiberglass cloth, some carbon fiber, engine cowling, Mark I wheel pants, some hardware. Wayne Ulvestad, Volga, SD work (605) 627-9291 home (606) 627-5365

N4422K is still for sale! This well constructed bird has been flown about 69 hours, and needs only fairly minor work to get back in the air. Asking \$8,900 but must sell soon, so all serious offers will be considered. For more information, you can call John at (415) 604 - 5384 or send e-mail to jbunnell@mail.arc.nasa.gov (73)

For Sale: Parting out flying Mark I Dragonfly, wings - fuselage, canard with wheels, engine. Complete aircraft or in parts. Ed Dassow, 233 Butternut St., West Bend, Wisconsin 53095 Phone (414) 334-5912

For Sale: 1991 Dragonfly Mark II, N64TM, VW 2165, 471 HRS TTAf, 014 HRS STOHL, 3 blade Warp drive prop, Terra Com, Mode C, '94 Best Overall Dragonfly. Bill Masons' original DF \$16,500 OBO (or best offer) (512)-749-4230 (73)

Inboard Mark II "Hoop Style" Gear Plans - **Full size hoop gear** template drawings for making the mold and instructions on how to mount to the fuselage. \$14.00 (\$18.00 outside of U.S.) Mail your checks to: Bill Spornitz, 1112 East Layton Drive, Olathe, Kansas 66061-2936



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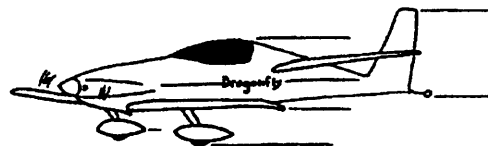
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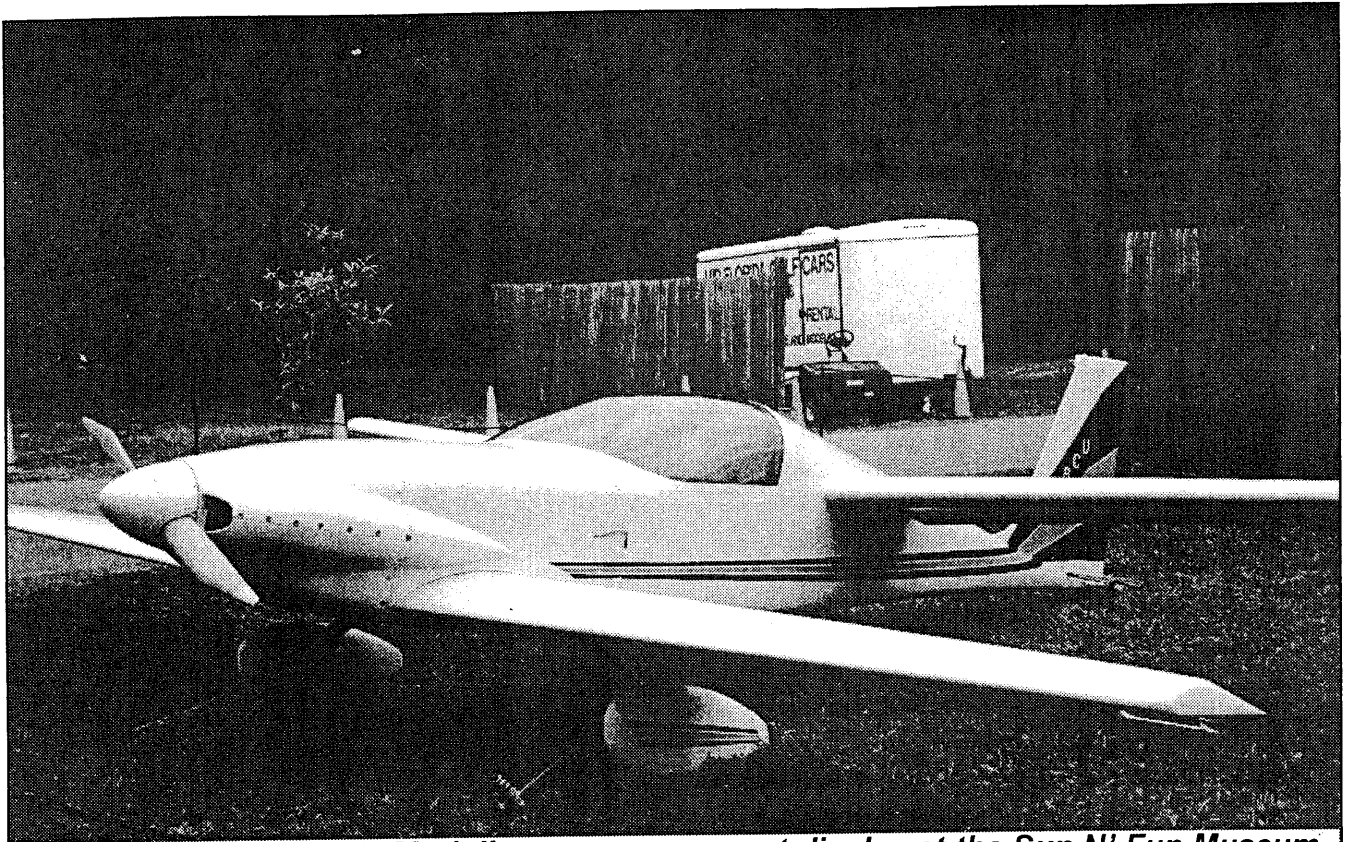
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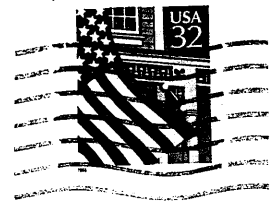
Chuck Ufkes Dragonfly Mark II now on permanent display at the Sun N' Fun Museum

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Bill "Spud" Spornitz - Editor/Publisher

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