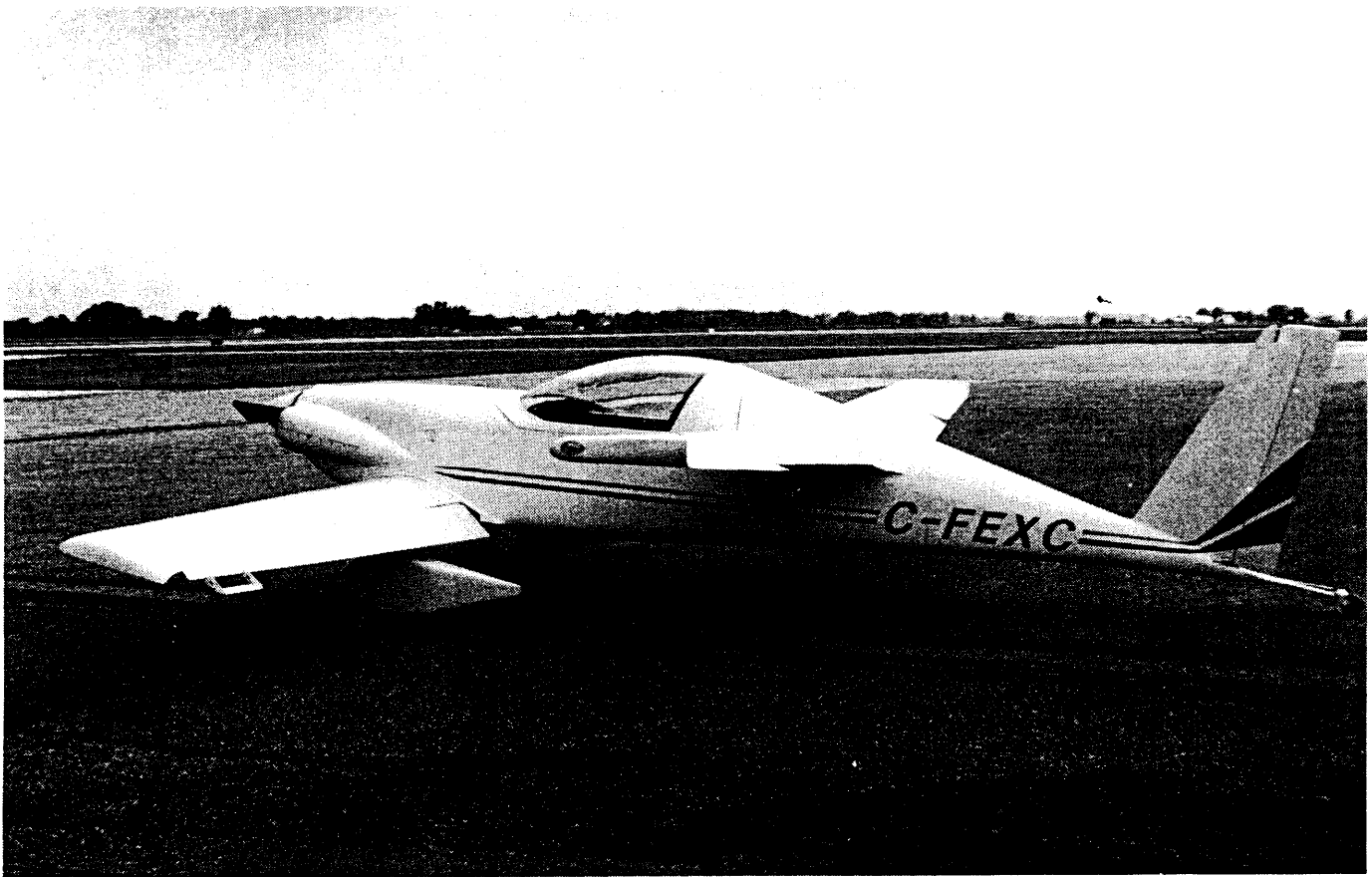


DRAGONFLY BUILDERS AND FLYERS NEWSLETTER

THE OFFICAL VOICE OF DRAGONFLYERS ALL OVER THE WORLD

VOLUME 66

JULY - AUGUST 1996



CHARLES WATSON OF ONATARIO, CANADA MAKES THE FIRST FLIGHT IN HIS MARK II DRAGONFLY

Hi Spud. I look forward to each issue of DBFN and I must commend you for your time and effort put forth on our behalf. It is really great to hear and read about our cohorts ideas and experiences.

I am happy to report that my Dragonfly C-FEXC has slipped the surly bonds of earth and became officially airborne. I am enclosing a picture of my aircraft. I painted it with Imron.

I debated on having someone do the initial flight and in preparation I flew as many taildragger types as I could. After numerous high speed taxi tests I felt really comfortable the way the dragonfly handled, so away I went. There was no surprises and

I was really pleased with the first flight. I have made some minor trim changes since then and am quite pleased with its stability. I am still working on getting used to the sensitivity on the elevator control.

The engine is the Great Plains 1835cc. Before the first flight, the only trouble I had was with high oil pressure. I changed the oil pressure relief spring. Temperatures are operating well within the specifications.

I am hoping to work off my required time and climb tests that are required here in Canada. After that I will travel farther afield and hope to attend your future fly-ins

Best Regards

Charles Watson
969 St Clair Parkway
Mooretown, Ontario
Canada

**THE 1996 FLY-IN
IS JUST AROUND
THE CORNER!

FILL OUT AND
MAIL YOUR
REGISTRATION
TODAY!

JUST DON'T SIT
THERE, WHAT
ARE YOU WAITING
FOR!**

1996 FLY-IN!

Boy she's coming fast! Our annual fly-in is roughly 2 to 2 1/2 weeks after you receive this newsletter!!!

Make those final arrangements now and get the fly-in registration in the mail tomorrow!

Things are shaping up quite nicely. We already have a long distance contender! Beth and Brad Hale from Buena Park, California seems to be the long distance bet in the Dragonfly camp. Reg Clarke in his direct drive turbo Subaru Dragonfly has committed to come (weather permitting). Reg will be a long distance contender. It's a long way from Alberta, Canada to Kansas. At Oshkosh there was a couple of Q-200 boys that were coming from California. We have a new person flying in, in his Quickie (Q-1) Keith Welsh from Marshall, Illinois. Boy, where was Keith last year. I believe if he would of came last year it would of been the largest assembly of Quickies in one place ever!

Another new attendee that has pre-registered that is flying in his Dragonfly (I've been waiting for this one for a long time!). That is Dr. Rich Goldman from Chicago, Ill I think everyone will find this DF interesting in that it is powered by a Norton Rotary.

The Taylor's of Viking Aircraft are working on their Dragonfly forum with up-dates on some new style foams that will be replacing the original Clark Foam. Also there are some new changes in the epoxy. It seems that Hexcel sold their epoxy division to another company and then that company stopped production of our approved version. Patrick will have all the latest on this subject and it looks like the new replacement epoxy will be the best yet in regards to strength and temperature sensitivity

See you there!

WHO'S ON THE INTERNET

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TWO TRI-GEARS

set backs in that I had some major delaminations on the center of the canard the required reskinning 6



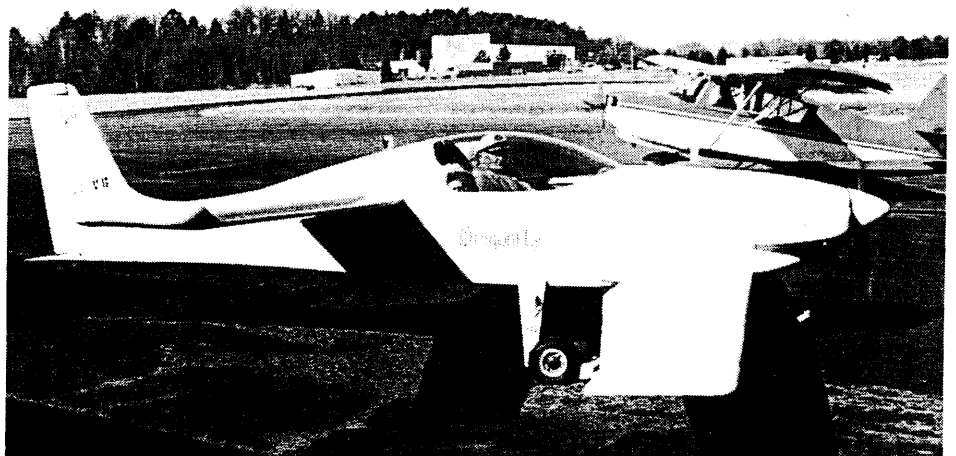
Hi Spud, This is a letter I've been waiting for long time. On the 2nd of June at 9:36 AM Arizona time, my Dragonfly Tri-Gear ceased to become strange form of modern art and took to the air from Phoenix's Deer Valley airport for a 45 minute test flight.

I'm not going to be one of those that says "It flew perfect and I don't need to change a thing." The Tri-Gear came back with 6 squawks of varying importance. The most important is it needed constant back pressure (fwd c.g. or canard alignment problem?) I looked in Don Stewart's Dragonfly Newsletter Index (OK Don, there's your plug, now move away from my delete key) there was a letter in the MultiCom asking about the same thing, but no answers were printed. The other problems were high oil temps, a weak alternator, circuit breaker and some radio noise. The test flying was done by Don Bucklin, and chase piloting duties were performed by Chuck Bivenour in his T-6. Don and Debbie Stewart did the ground stills and video photography while I did the aerial photo and video work.

A little about my Tri-Gear Dragonfly, I have been rebuilding it for three years with a redesigned fuel and electrical system, also a metal instrument panel. I had several major

foot of the upper skin and an engine that when I opened it up I discovered that Jack the Ripper did the clearancing job. The landing gear on my Tri-Gear is a little different in that I have a BD-5 nose and Glasair mains. The nose gear is mounted the same way as Rex was going to do it on the Mark II, i.e. on the firewall and tied to the engine mount, but the mains are what sets it apart. They are installed per Glasair plans, but they are reversed so the gear sweeps forward. In my job as an A & P I get to taxi around a lot of different types of aircraft and the only one that comes close to ease of handling is a T-28 Trojan.

Some of the particulars on my Tri-Gear are: Empty weight of 832 lbs. with a C.G. of 58.3" The VW engine is a 2180cc comprised of HAPI and Great Plains Aircraft parts



and an Ellison throttle body. Some of the other features are a forward hinged canopy, frame mount compass and spotlight, Nav and tail lights mounted on the canard tips and strobes mounted on the top and bottom of the fuselage. Dual throttles, brakes and rudder pedals.

If there are any questions about my Tri-Gear let me know and I'll try to answer them.

Hope to see everyone at Oshkosh.

Matt Gunsch

Phoenix, Arizona

(602) 252-4720



Hi Spud,

Here is a picture of my Tri-Gear Dragonfly. I hope to fly it very soon. I'll keep everyone posted here in the newsletter. I replaced the HAPI dual ignition with a Slick magneto and a single electric ignition. The battery system could not stand the 7+ amp battery drain.

I looked at the flywheel while the engine was down. And did a dye penetrant around the mounting bolt holes with no anomalies, this flywheel has about 50 hours, I will keep an eye on it. I'll take some photo's of the landing gear a little later for a future issue.

Frank Hillard

1457 Ridgecrest

Slidell, LA 70458 ↓

TWO GREAT TESTING IDEAS!

I have several suggestions that I would like to pass along onto the other builders and flyers.

Some have suggested making elevator shorter to make them less sensitive, I think this would be a mistake. That would increase the landing and takeoff speed and make a longer runway necessary. As the trailing edge of the elevators are moved down lift is increased until reaching a certain point. Then suddenly the laminar air flow over the canard separates and it stalls. At this point the elevator act like a spoiler, killing lift instead of increasing it!

My first experience with this was when I was setting the elevator stops on my Dragonfly. When I bought my Dragonfly project it had been flown, but didn't have the control stops set and installed. On the early test flights the test pilot found that under 80 knots, if the stick was pulled all the way back, the canard stalled abruptly with a sudden nose down pitch. Not the gentle porpoising that should of occurred. To make a long story short, when the elevator stops were installed and set everything was fine. On my Dragonfly, at solo, the stall is 50 knots and at gross 55 knots.

When you begin flight testing the elevator stops, you should bring the engine to an idle and pull back on the control stick and wait for the plane to slow down to the airspeed for that pitch setting, then apply more up elevator and wait for the air-speed to stabilize again. Repeat this until the canard fully stalls. This will give you the position to set the elevator stops and will show you the minimum airspeed at the current weight of the plane.

This is where the enclosed drawing come into use. Forget the temporary degree plate shown in the drawing which was originally published in the "Dragonflyer". There is an easier, quicker and cheaper way! All it takes is a little masking tape (use the good stuff, it is much easier to remove) and a pencil. Place two or three strips of tape cord wise on the left elevator starting on the front rounded edge to about half way back to the trailing edge. It should be where the pilot can easily see it while flying. Set the

tape is the maximum elevator travel that allows for the gentle porpoising stall, not a full stall.

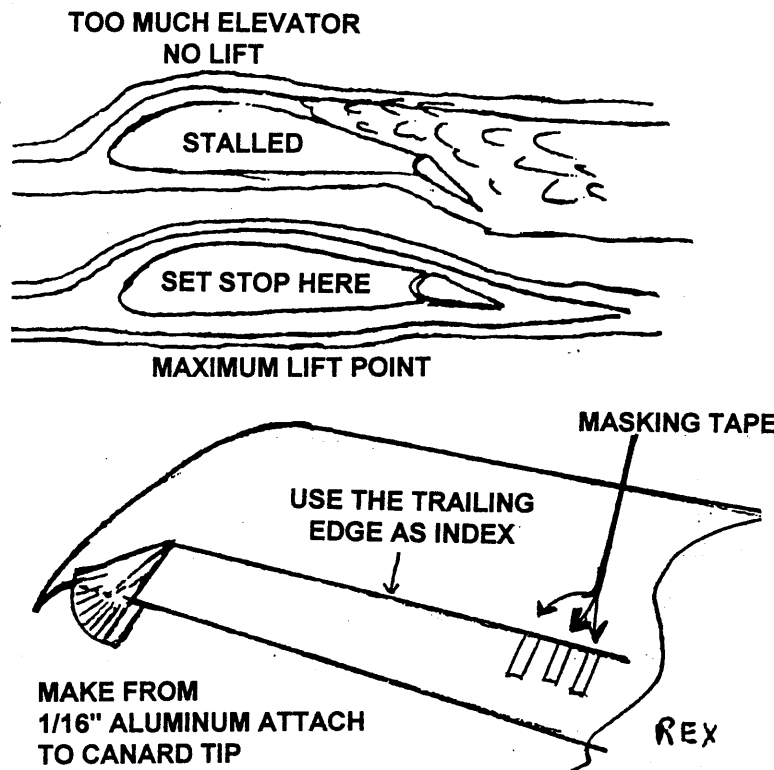
You have heard it before and I can tell you its true, early test flights after any major change should be over the airport. I can also tell you from experience that a power failure usually occurs at the first power reduction. It has happened to me twice! I am hoping a new carburetor will fix the problem. I am trying a Revflow carburetor next and will not fly with an ULtra Carb again. While working on the carburetor, I also found a small intake manifold leak. If you want to check the intake manifold hoses and flanges for leaks, set the idle mixture about 50 to 100 rpm on the lean size. Then with the engine idling spray WD-40 on each hose or flanges area (watch that prop!), if there is a leak the engine will speed up as the vacuum draws the WD-40 into the engine.

I am now building a mold for the hoop style gear. I purchased the plans about two years ago from Gene Divincento and am just now getting started.

I would like to know if anyone has worked out a way to bolt a fiberglass bow style gear to the fuselage of a Dragonfly. I don't like the thought of glassing a gear to the fuselage. If the gear was damaged it would be hard to remove. No use in reinventing the wheel if someone else has it figured out. If I can be of any help to anyone please feel free to call

or write and if anyone has already bolted a gear on their Dragonfly I would like to hear them.

George Childress Jr.
1601 South State Rd 3261
Levelland, Texas 79336
(806)894-5289



TEMPORARY DEGREE PLATE INSTALL FOR STALL STRIPS

trailing outboard edge of the elevator even with the canard and mark the first tape even with the rear edge of the canard. Lower the elevator about 1/4 of an inch and mark the next tape. Continue this until the elevator trailing edge is all the way down. Marking one tape and then the others spanwise make the marks farther apart and make them easier to read in flight. On the test flight, note which mark on which

NATE RAMBO'S LATEST DRAGONFLY IMPROVEMENT!

● INTER BULKHEAD TRAY AND TRANSVERSE HEADER TANK

● GENERAL

These two items are suggested improvements for the Dragonfly aircraft. The tray provides structural strength, benefits in fuel system installation and benefits in electrical system installation. The header tank results in greater panel space for instrumentation, radios and so forth.

The changes described here are best and easiest installed at the time of aircraft fabrication. If necessary they may be retrofitted into a completed aircraft and the original header would then be removed. When installed together the tank and tray function together to provide the many benefits. However either one may be installed alone if desired.

***** WARNING *****

The information provided here may not be appropriate for all Dragonfly aircraft. Drawings, dimensions, descriptions and instructions may not be accurate and must be interpreted with caution and revised as appropriate. Each individual builder must carefully evaluate the ideas presented and relate them to his particular aircraft, that aircraft's configuration, and other requirements. The final design, installation and safety testing is up to the individual. Remember, lack of fuel to the carburetor has been the principle cause of serious Dragonfly crashes.

● DRAWINGS AND MOCK-UP

A series of drawings and sketches

of the tank and tray installation are attached. These supplement the original plans for the old header but do not stand alone. (The builder must first read and understand the functional features of the original header tank.) Described in this supplemental is the way one builder configured his aircraft. As mentioned above each aircraft will be different. Also, dimensions are approximate and must be confirmed or modified by the builder.

Full-size cardboard mock-ups are mandatory. They will allow the builder to think through exactly how he wishes to configure his installation. With the mock-ups in place he will be able to verify overall fit. He can work out the best positioning of fuel tubes coming from the tank; he can lay components such as pumps, filters and electrical terminal boards in place. He can see how hoses will be routed and work out potential interferences between canopy hinges and all the other items which will be in the area. In many cases the cardboard pieces can later serve as templates.

● INTER BULKHEAD TRAY

This tray consists of a horizontal platform running from one side of the airplane to the other. Fore-and-aft wise it extends from the instrument panel forward to the forward bulkhead. In height it is located flush with the cut-outs for the pilot and passenger's legs.

The tray is cut from a piece of 1/4 Clark urethane foam glassed both sides with two layers of 6 ounce BID. It is taped to the airframe along the four edges with 2 layers of 10 ounce BID top and bottom.

The tray may be reinforced with wood inserts as needed for mount-

ing objects such as an on-off fuel valve, pumps, radio components and so forth. Except in the case of the fuel valve most reinforcements can be added at the time of installing the component. This is done by mounting the component to the wood with removable fasteners then epoxy/glassing the wood into place.

Properly placed holes or relieved areas in the tray will allow for wire and fuel pass-through. Relief may also be required in the center area of the tray should a radio component or instrument be placed vertically at the tray level.

● TRANSVERSE HEADER TANK

The transverse tank may be fabricated of composites or aluminum. It will function in a similar manner to the plans-built header and will contain at least 3 gallons of fuel. The vent line should service only the header tank and a separate vent should be installed from the main tank to the outside.

In placing the tank further forward, the boiler-gauge-type sight tube becomes inaccurate and hard to interpret. Capacitive or other types of gauges can be installed if so desired. However, the pilot can ignore a low fuel gauge indication and the lack of recirculating fuel for long periods. A low-fuel sensing switch and pilot warning light are an alternative that works very well alone or in conjunction with a gauge. A pilot will always "Roger up" to a bright red panel light directly in front of him.

A feature of the new tank is that it will bolt to the forward side of the forward bulkhead. This will allow it to be removed in event of leak of other maintenance requisite. Note

that the tank back extends laterally beyond the tank on each side so that the extensions can be used for the mounting bolts.

The tank described in the drawings is made of composites. Instructions for the old header described in the original plans should be read and comprehended before trying to build the new tank. Use the original plan lay-up schedules and adhere to reinforcement procedures discussed there. The construction methods and materials are similar. One quarter (1/4) inch Clark foam is used; two layers of 6 ounce glass are applied to each side of the foam just like the original.

The 3/8 aluminum in and out lines must be placed at the appropriate levels vertically to perform the functions described in the plans. Note also that the new tank, is shown has most of its in-out lines coming through the forward bulkhead. This pays many dividends particularly if the horizontal tray described above is installed. Actual line placement will depend on the builder's exact configuration.

Unlike the original tank, the new unit should have slosh bulkheads. These are located 6 inches to the left and 6 inches to the right of center line. They will impede fuel sloshing and the erratic indications that sloshing would cause.

Fabrication proceeds as follows:

(1) Using the contour of the inside of the forward bulkhead, plus the sketches and templates provided, cut full size back, front, bottom and two slosh bulkheads from cardboard. Assemble them with 5 minute epoxy. Check fit in fuselage. Modify if necessary. Decide where all the tubes will go, etc.

(2) Cut back, front, bottom and two slosh bulkheads from 1/4 Clark

foam.

(3) Glass both sides of the slosh bulkheads and one side of the other parts with 2 layers of 6 ounce BID..

(4) Assemble the above parts with 5 minute epoxy with the glass sides in.

(5) Cut ends to fit. Glass one side.

(6) Attach the ends with 5 minute epoxy.

(7) Check fit the three-sided assembly in the aircraft.

(8) Install the aluminum tubes as required assuring that they are properly located vertically. Reinforce with extra glass on the inside.

(9) Add floc corners all over and reinforce inside corners with 2 inch wide glass tape. Give the entire inside a wet coat of epoxy.

(10) Install the low fuel sensor in such a position that it will turn on the warning light when the fuel is about 3/4 to one gallon down from full. (This switch position will be lower than expected by using an electrical meter to determine the exact angle at which the float switch triggers.) Reinforce around the switch but be sure that it can be screwed out if ever required to be removed.

(11) Round the outside corners of the three-sided tank and glass all over.

(12) Cut a floc channel about 1/4 deep in the upper edges of the front, back, slosh bulkheads and ends.

(13) Cut and glass one side of the foam top piece. If preferred an alternate top can be made without the 1/4 foam core. To make this top laminate 3 layers of 10 ounce BID

on wax paper.

(14) Pile floc into the floc channels prepared in step 12. Use sandpaper to rough the mating surfaces of the top. Tape the top in place until the floc cures.

(15) If a foam core top was used round those corners and cover the exterior of the top. Wrap the glass around the corners so as to extend about 2 inches down the front, back, and ends.

(16) Apply floc and several extra layers of glass around all the in-out tubes where they exit the tank.

● INSTALLATION

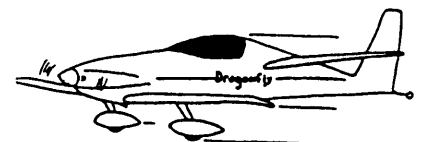
A hole saw is used to make 1 inch holes in the forward bulkhead for the 3/8 alum tubes to pass through. With this done the tank may be held in place while 3/16 holes for the attachment bolt are drilled through the tank ends and forward bulkhead.

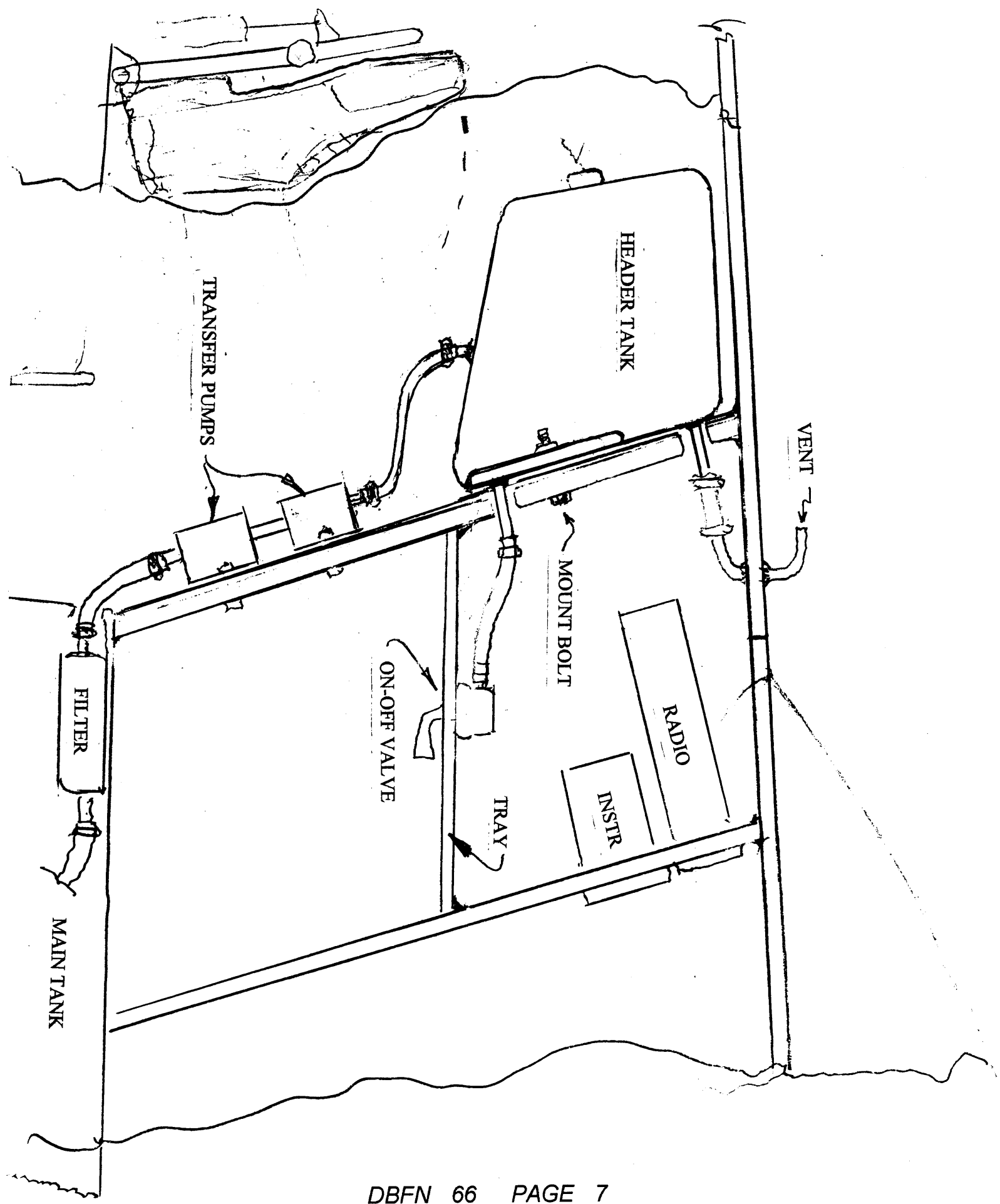
Hardware store "T" nuts are good to act as blind nuts in the end tabs. Run the retention bolts through the forward bulkhead to pull the tank snugly into place. Safety wire if required.

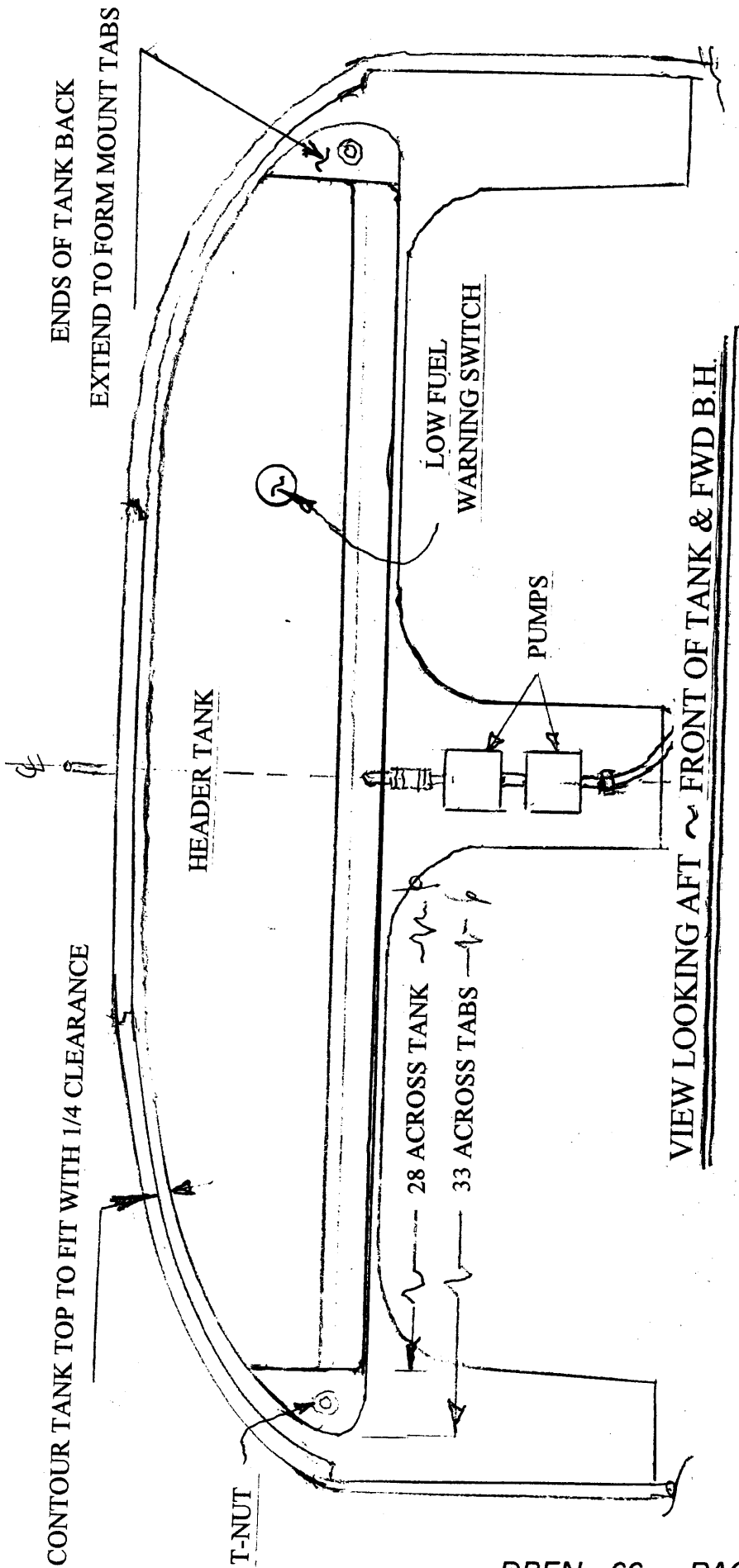
● TESTING

Contact an EAA Technical Counselor or other professional for advice in ground and flight testing your fuel installation.

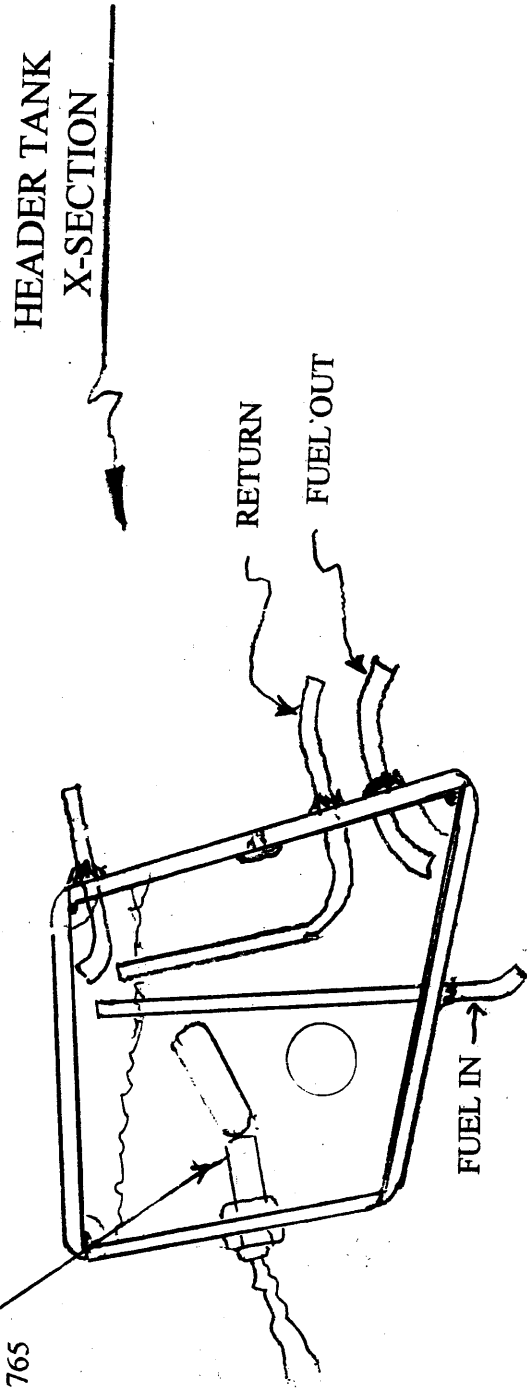
Nate Rambo
Camarillo, California



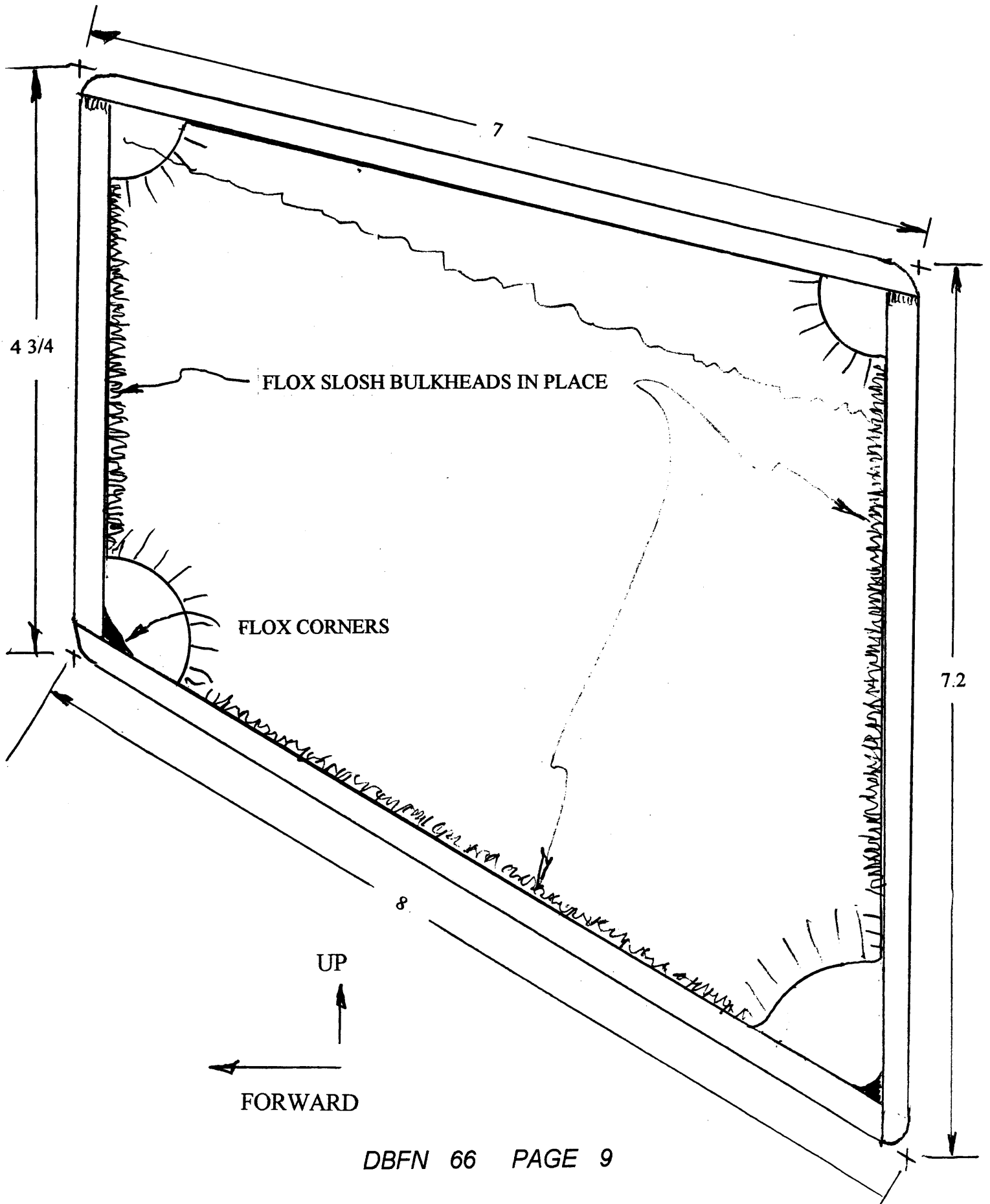




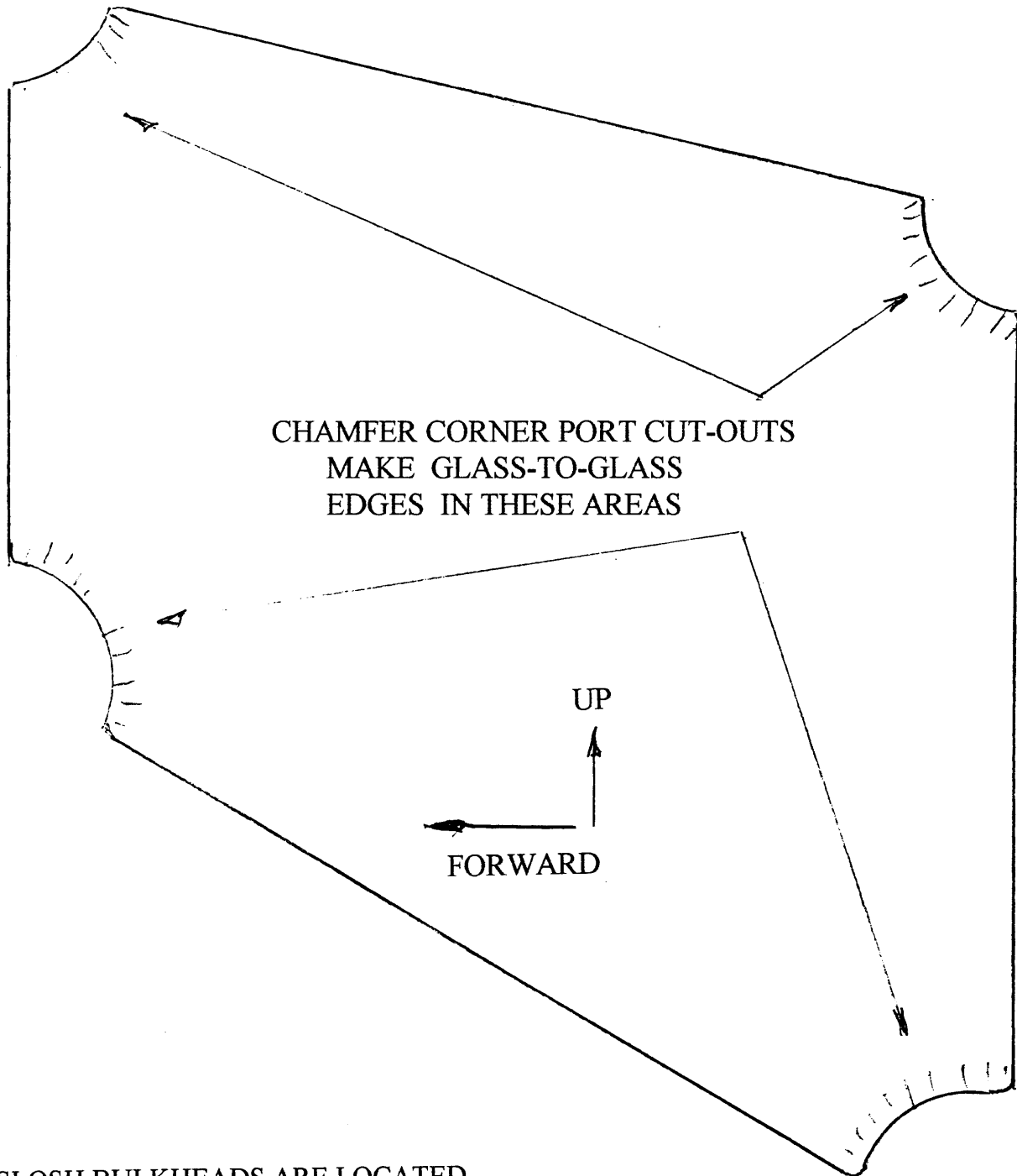
WARNING SWITCH
 SPRUCE P/N 05-1765



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For Sale: Complete engine - 2276cc- ready to be bolted to HAPI motor mounts for Dragonfly. 15 hours since major overhaul w/ new 82mm crankshaft. pistons & cylinders. rod bushings. main, rod and cam bearings. dual port cylinder heads. HAPI accessory case w/ 35 amp external alternator. Ellison throttle body injector, HAPI dual electronic ignition, intake and exhaust manifolds. heat and carb muffs. \$3500.00. Ask for Chuck

(352) 347-0456

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

For Sale: Cleveland brakes from Cessna C-150 w/ axles to fit DF - \$300.00. Prop - 54X50 Ed Sterba wood prop - Almost new \$175.00 Call Chuck (352) 347-0456

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)

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: Dragonfly Project. Almost complete. Fuselage, wing, engine, instruments, wheels, radio and canopy. Needs canard and gear legs. Continental O-470 engine or other trades considered or \$3800.00 Cash. Ask for David (941) 772-3841

Free: For the price of shipping - re-usable mold for the bow style gear leg for the Dragonfly. Call Chuck (352) 347-0456

The 6th Annual Dragonfly/Quickie/Q-2/Q-200 Fly-In is coming up fast! August 30th thru September 1st 1996. Don't miss this once a year event. **Mail the enclosed registration form today!**

Subscribers Information

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1-913-764-5118

DON'T TRY THIS AT HOME!

- Sure it's OK to load test your canard, but not with a Chevy Suburban !.....

Hi Spud, These Dragonfly's are TOUGH! Just to see how tough, I took half of my old broken canard and put the end 2 X 4's. I then ran the left front wheel, of my Suburban, up on the middle of the canard. The rear spar had also been cut out in three places for the removal of the old hinges so I could re-install them in the new canard. As you can see the canard only bowed slightly, but never came close to breaking. I estimate the weight to be around 1500 lbs. Spud these birds are tougher than we give them credit for! Regards, Chuck Ufkes - Ocala, Florida



DRAGONFLY BUILDERS & FLYERS **NEWSLETTER**

1112 LAYTON DRIVE
OLATHE, KANSAS 66061

FIRST CLASS MAIL