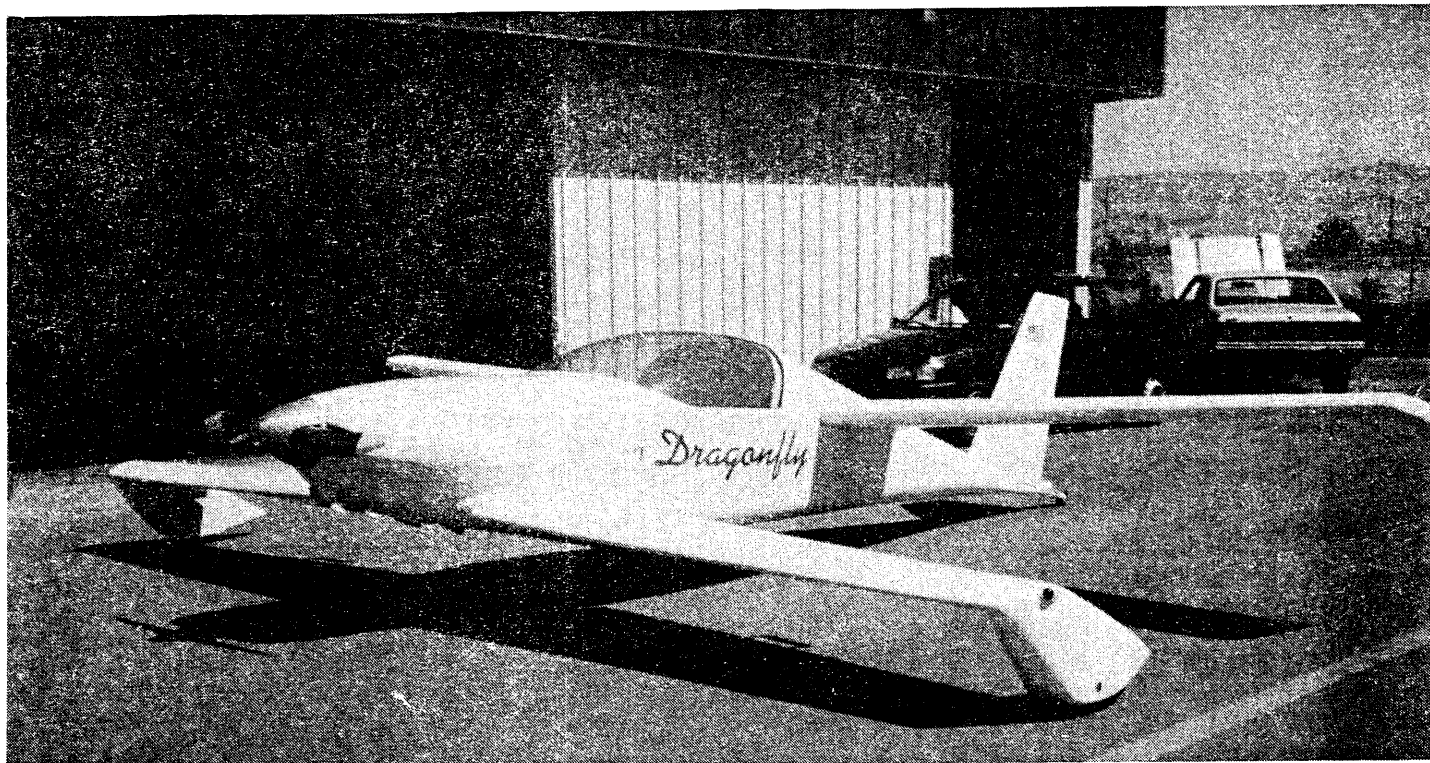


DRAGONFLY BUILDERS AND FLYERS NEWSLETTER

THE OFFICAL VOICE OF DRAGONFLYERS ALL OVER THE WORLD

VOLUME 41

MAY - JUNE 1992



ROBERT SLEDGE'S MARK 1 OF YOLO, CA.

Hello Spud & Fellow Dragonflyers!

Just received the latest issue of DBFN and as always really enjoyed it. I think it is great to hear from so great people and read of their experiences with the Dragonfly.

Much has happened since I last wrote. At that time the airplane only had 1.7 hours flown by the previous owner/builder Billy E. Thomas of Livermore, Ca.. You can tell by the picture that he did a super job! Anyway the test program completed now and the airplane flies great. Here's some info on my plane; N626RS, plans #276, based at

Yolo County airport, Ca. empty weight is 690lbs., MKI, Hapi 1935- 60 HP, Warnke 52X43 prop, Top speed at 1100 MSL in level flight is 155 mph, TAS at 7500 ft MSL is 153 mph, 1st flight was November 7, 1990. total airframe 65 hours. total on engine 118 hours. Current status is undamaged and FLYING GREAT!!!!

I haven't experienced and major problems with my Dragonfly, mostly just the little things that are normal for any experimental during testing. My canard incidence is off slightly, on the down (negative) side but up rigging the ailerons a little corrects this. eventually I will re-set the

incidence to reduce that trim drag. I haven't flown it in the rain yet but have let the bug pile up to see how it behaves and all it seemed to require is a slight retrimming & increase in the takeoff/landing speeds. The stall is still very gentle. My Azusa brake were acting up a little funny & upon inspecting them found that I had to radius the sharp edge of the cam and now they are fine.

There is a total of 3 Dragonflys here at Yolo Co. in the EAA #52 hangar. We have had to do some formation flying (Dan Palmer & I) What a Sight! What a Blast!

Reading DBFN lets me know that I'm in excellent company and look forward to meeting as many of you that I can. And see all those beautiful birds.

Many thanks go to Jack Shafer of Parlier, Ca for giving me an orientation flight in his wonderful and VERY FAST Mark II.

Sincerely

Robert Sledge

Travis AFB, Ca

Builders Tips

Builders tips

From Steve Kemmerly, Penn Grove, Ca.

1. As far as I can tell the rudder, elevator and aileron hinges are all cut from .100 4130. Plan you layout of these parts carefully as the 6" x 12' piece of 4130 from the materials list leaves no room for error.

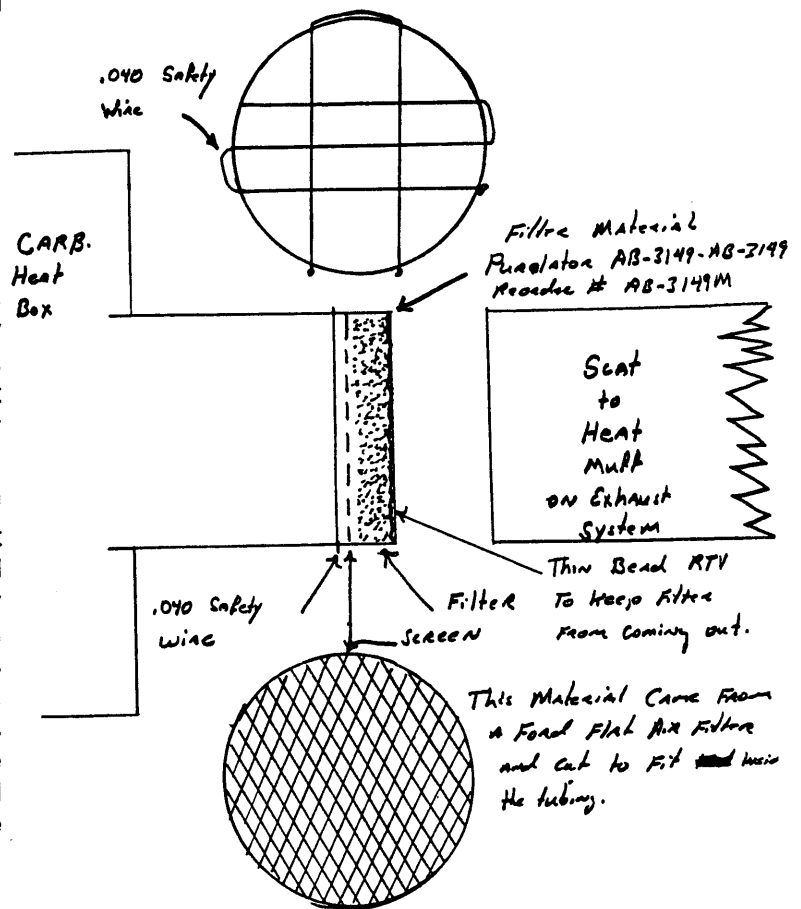
2. Jim Norris and I both layed up cowlings made of 3 layers of Kevlar. While the cowlings themselves are probably bullet-proof, we have'nt found a way to finish the edges. (Kevlar cuts easily enough but leaves fuzzy edges that can't be sanded smooth). We'd love to hear from anybody who has experience with this problem.

3. Those of you who have already drilled your wing lift and drag fittings for the 5/16" bolts already know there is almost no room to do this. I ended up using the angle drill attachment that Aircraft Spruce sells. It is a crummy, poorly built thing that does let you get into very tight areas. I'd suggest drilling 1/8" pilot holes in the wing lift and drag tabs instead of the #10 called out in the plans. Mate and align the wing to the fuselage. Drill from the aft side of the tabs with a 1/8" bit and through the 3/4" inserts in the bulkheads. Remove the wing, now you can drill and enlarge the holes to 5/16" from the forward side of the bulkheads with whatever size drill motor you have.

I hope this helps some of the builders - Steve

"If I were to do it again!" from Bob Williams - Saskatoon, Canada. I would definitely move the lower and upper seat back bulkheads a little further aft to allow a little more legroom at the front. Everything I have read would indicate this can be done without affecting the handling characteristics to any great extent providing it is taken into account when calculating the CG range. - Bob. *Your right Bob, most people are choosing the heavier 75, 85 & 90 horsepower engines, this would actually "help" offset some of these nose heavy planes.* - Spud

From Tim Gibbs - Woodbridge, VA. The old dirt in the muff problem A while back I had the occasion to remove my exhaust system to repaint them and do a routine inspection of the carburetor heat muff. Upon examination of the scatt tubing that runs between the carburetor heat box and the heat muff. I found one heck of a lot of rust, burnt rust. I was a bit appalled..... Hey this can't be, I mean this is my wonder machine. You know, no dirt, no bugs, I mean no dust even. Right here, inside of the scatt tubing that supplies that precious warm air that keeps that nasty ice away, is rust. One of the hardest materials around! This could destroy your engine. I came up with this simple system for the fix. By looking at the drawing you can see what I did. It works great and the filters are cheap. The filter material is used in the PVC system of a late automobile.



Len Griffin - Silver City, NM. Canopy replacement -

If you should be so unfortunate as to break a canopy bubble, don't despair! It can be replaced without bringing the plane home. A simple jig, made to fit the cockpit dimensions will let you do the repair even in your wife's kitchen - if you dare to suggest that! Here's how --

1. Cut a sheet of 1/2" plywood to fit over the longerons from the instrument panel to the rear seat bulkhead. Mark and cut to match the curve of the outer fuselage sides.

2. Fasten 1"X 4" furring strip to the outside edges with wood screws (on bottom) and trim to contour. Also fasten 2"X 2" pieces to plywood base both front and rear as shown.

3. If canopy frame is intact or can be pieced together, fasten frame to base with 1/4"x20 bolts with washers and wing nuts through side rails at four points, taking care to position sides flush with the sides of base. Fit rear knee braces and front support to hold angle of rear bulkhead and height of front cover. If frame is not usable, this method could be used to build a complete canopy but careful measurements will be needed to establish the bulkhead angle and front cover height.

4. Remove canopy frame from jig and cut sides of base 1" in from edge using jig saw. This step is to provide clearance to fit the new bubble since the old canopy is wider by the thickness of the outside fiberglass layup. The width of the kerf will allow for this difference. Refasten the cut strips with countersunk flat head wood screws. (drill pilot holes before cutting)

5. Refasten frame to jig. Make small tabs from 1" aluminum angle and fasten two on each side rail in tight contact with inside of old bubble. Do the same as needed on the rear bulkhead. (I used four on each side) These will be drilled and used with clecos or small screws and nuts to hold the new bubble in place for epoxy bonding to the frame. Also cut and fit diagonal braces from the side rails to rear bulkhead to be sure proper angle is maintained when the assembly is removed from the jig for glassing. (I used 1" aluminum angle)

6. Carefully remove remains of old bubble, cutting plexiglass and outside fiberglass lay-up away on the sides and bulkhead, and inside on the front cover. Inserting a broad blade knife between the plexiglass and the fiberglass lay-up that you want to save and tapping gently with a light hammer worked well for me. Save the piece from the outside of the bulkhead - it can be reused.

7. Now remove the previously cut sides for clearance, insert the new bubble nose down into the frame, and pivot it so that the rear rests on the bulkhead and the front can be wedged up to fit under the edge of the front cover. Drill and cleco the bottom and rear to the tabs installed in step 5 and trim the bubble as needed. Between steps 6 & 7 it may help to sandwich a strip of thin aluminum sheet between the

rails and the jig base, trimmed flush with the outside edge of the rails, This would make a bottom limit to which to trim the new bubble.

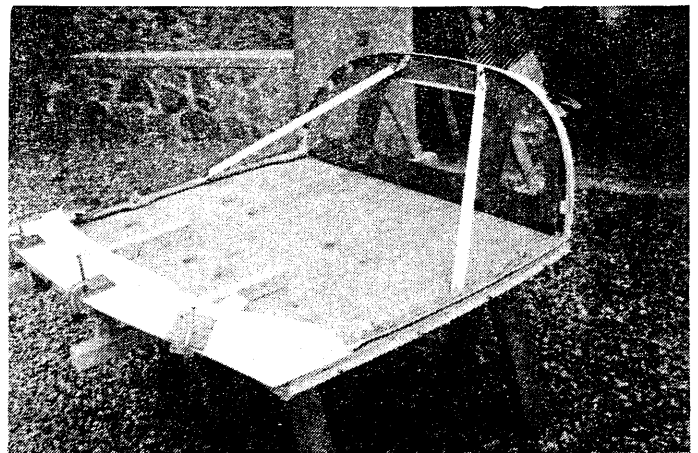
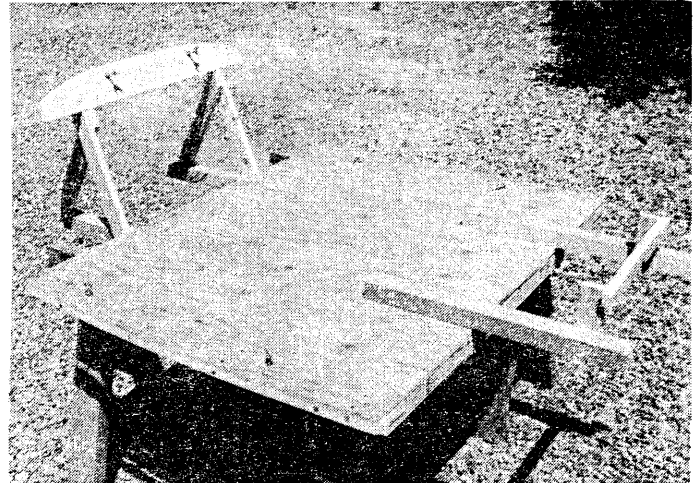
8. Refasten the cut side pieces. Put a layer of duct tape on the sides of the base to prevent epoxy from sticking everything together! Add a 1/4" thick batten to hold the sides of the bubble tight to the frame. May also have to use small wedges. Screw batten on separately from the previously fastened side pieces.

9. Refasten the cut side pieces. Add a 1/4" thick batten to hold the sides of frame rails, rear bulkhead and front cover, refasten all supports, clecos, etc. and let cure.

10. After cure, remove (carefully) bubble and frame from jig and proceed to glass bubble to frame, inside and out as per plans. Glue fiberglass epoxy strip that you saved in step 6 back in place on the outside of the bulkhead using clecos to hold in place.

Note--As an option, you may want to remove the glass on the bottom of the frame rails prior to step 3. If not removed, canopy will be higher and will need some micro added to the top of the turtle deck to make a smooth transition.

Time to build the jig is about 25% of the total repair, but it saves a lot of trips to & from the airport. Best regards, Len Griffin



SUPER LEVEL

Bruce McCallum, Edillilie, South Australia - Super Accurate Economical Level.

Here's an item for the "Builders Tips" in the newsletter. After seeing the Viking construction video tapes I tried to acquire a Vernier inclinometer to use instead of a spirit level or torpedo level. Couldn't locate one at all so I decided to make a tool to do the job with the same precision and accuracy. This is how I built it.

1. Obtain a block of wood, well seasoned and stable dressed with the base especially straight, flat and square to the face.
2. Select a piece of clear plastic tubing with a I.D. bore of 3 mm or less (1 mm is preferred).
3. Route or cut with a saw two grooves perpendicular to the base and exactly centered 573 mm apart so that the plastic tube will just fit very snugly in the groove and can't move.
4. Glue two 6"/ 150mm Machinist/engineers steel rules to the piece of wood with the graduated edge up against the plastic tube and to the end from which the graduation starts is flush with the bottom of the base.
5. Every 1 mm difference "between" the water levels in the tube equals .1 or (1/10) of a degree. use it like a torpedo level.

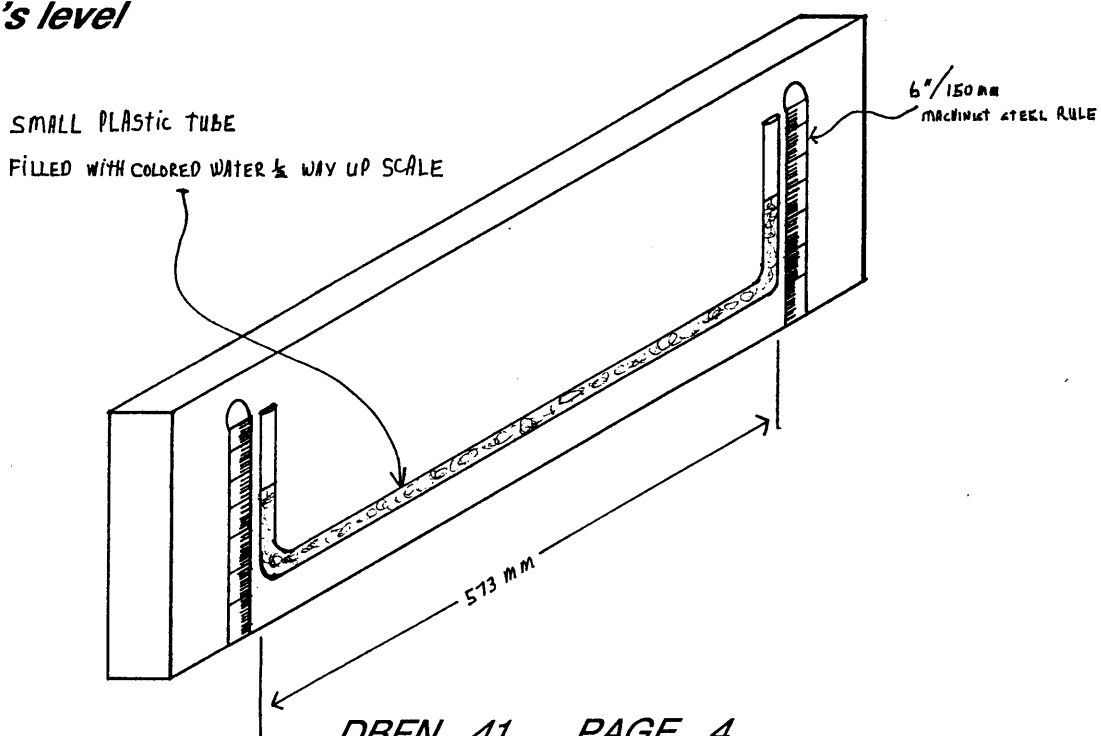
Could use other measurement pieces as long as the ratio of 1:573 (actually is 1:572.957) is adhered to. This is just as accurate as a vernier inclinometer or an electronic "Smart Level" but much cheaper. Hope the above tip can be of use

MORE ON RAIN

Rain Drops-It finally happened....

It all happened like this. It was a little overcast, but I wanted to go flying. In fact it was a normal Virginia Hot day. Haze and more haze. Toasty warm in the cockpit. Don't get me wrong it was a darn nice day to go flying for a 95 degree day and the normal 98 percent humidity. So I decided to go out and look for this little pond my wife and I wanted to go see on the motorcycle. I'm just tooling along drinking my diet Coke and (no hands needless to say because I'm unscrewing the cap). OOPS! the front of my plane takes a little dip. No big deal, just a thermal activity. With our trim system when you have it trimmed to fly hands off, it just goes straight. On the other hand if it is pointed up it goes up. So I'm still looking for this pond and I just reach down and tap the stick a little to level out. I hardly take my eyes off the pond (I had found it and besides I didn't see anything out in front of me, remember haze) so I let go of the stick and try to take another drink of my Coke. Down goes the front end again...Hey what's going on here. Darn it's raining, not hard, just a light shower, you can see it on the canopy now, so let's turn around and go back the way we came. Good time to get an idea of what rain really does in this Dragonfly. I was only 2500 ft. above the ground and I see another rain shower a couple miles away. Hey you're a pilot and you can fly in the rain. I've done it before.... So I bravely head that way with a grin. Strange thing, the plane drops it's nose a little before you even see the rain on the wings or canopy. But this time it's raining hard, I mean hard! (continued on page 11)

McCallum's level



OSHKOSH 1992

Ok gang! Here comes Oshkosh 1992! It's only a few weeks away! I can't wait! We have a Dragonfly group meeting set up for Saturday morning between 10:00 to 12:00 Noon at the Homebuilders Corner Building. This is just a very informal gathering of the group so we can find out what everyone has been up with their planes or projects (Bull Sessions). There is a Dragonfly/Viking seminar scheduled for Tuesday at 10:00 or 10:30 (please confirm the times in your schedules on arrival) Patrick Taylor and myself will be giving this forum. I hope everyone can attend both meetings. "Camp Dragonfly" will be setup again this year and I'll be bringing a couple of my portable "Spudley Hiltons" so you guys that are flying in with two people in the plane and don't have a lot of room for gear, just let me know and I'll save you a slot in one of the big tents, I mean Spudley Hiltons! We had a lot of fun camping together last year and expect to have even a bigger group this year. Bruce Dixon should be there early Thursday morning and myself very early Friday morning. When you get there just ask any of the people in the Dragonfly /Q-2/Q-200 area where I am at or where the camp is, we'll get you there.

1992 FLY-IN

The 1992 Dragonfly/Quickie/Q2/Q-200 Fly-in is only 3 months away. The event is combined this year with our fellow builders and pilots of the Quickies, Q-2's and Q-200's. Hopefully they enjoy themselves and will want to continue this group event. Everything is going to be basically the same as last year. The event will run thru Friday noon thru Sunday noon. Friday evening will start off with a informal bull session/ dinner at the Sirloin Stockade. Saturday rides, forums and aircraft display. The Banquet will be Saturday evening at the College.

We needed to raise the registration from \$7.00 to \$9.00 to help cover the expenses and the Banquet Dinner from \$15.00 to \$15.75 (Last year I fail to figure in the sales tax!).

We really learned a lot from last years Fly-in and I feel we know what everyone wants; 1. The forums, I think this was the most popular part. 2. Get familiarization rides in the planes. 3. Meet the owners, look at their planes and discuss how they did certain mods. The fly-in is going to be mostly setup around the areas. A detailed itinerary of the forums will be in the next newsletter (August) prior to the Fly-in. There will be forums that will be mostly for the Q-birds, there will be forums that will be mostly for the Dragonfly's and there will be forum that will apply to all plane types.

STRUCTURAL

WARNING !

We pulled this warning from "THE CANARD PUSHER" which is the newsletter published by Burt Rutan's group for primarily the Vari-EZ, Long-EZ's and Defiant. Those who were not aware or need to reminded, their materials and construction techniques are almost identical to the Dragonfly, especially in the areas of this warning notice.

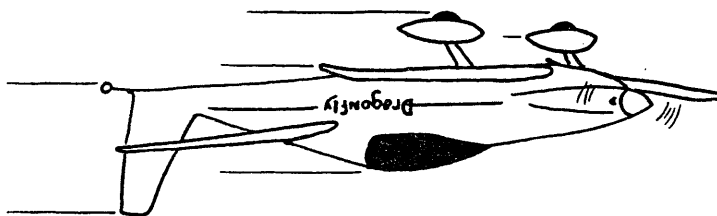
Warning - Structural degradation of foam cores

We have noticed that many of you have not been adequately inspecting your structure and may not be aware of how seriously the structure can be affected by a degradation or defect in the underlying foam core. For example, a 3-inch diameter depression or bulge in the skin due to damage in the foam (void, crush or de-lam) can weaken a wing by as much as 50% or more! A skin dis-bond on an elevator or aileron can result in flutter failure even within the allowable flight envelope.

We have recently found foam damage to several of our own aircraft structures. One was due to the inadvertent intrusion of an agent used to clean a wing before it was to be primed & painted. Another was traced to a stress crack that was in the foam block, a flotation billet, not the proper fabrication billet, Never substitute a different material even if it seems to work okay. We have also had dis-bonds in controls surfaces. These can grow rapidly when exposed to high altitude flight. (The void is trapped and expands at altitude).

The solvent-susceptible and easily-damaged cores we use need constant attention to maintain safety. We know of no accidents due to this problem, however, the potential is high if you are careless with maintenance of your airplane.

The Foam billets that they use for their wing is Identical to the foam that we use for our wing and canard. - Spud



VIKING PRICING UPDATE

Current Viking prices:

Pre-fab kits and components:

The cost of the Pre-fab components kit - \$6500.00

Crating in US - \$250.00, outside US - \$400.00

The parts included are as follows:

1) Precut foam: \$1250.00

Wing - \$590.00

Canard - \$590.00

Vertical Fin - \$90.00

Rudder - \$62.00

2) Molded components: \$3632.00

Fuselage halves (1pr) - \$1950.00

Engine cowling - \$350.00

Forward fuselage cover - \$180.00

Canopy frame outer shell - \$140.00

Fuselage Bow - \$118.00

Aft wing cover - \$173.00 Canard fairings - \$138.00

Wing fillets (1pr) - \$70.00

Wing Tips - \$75.00

Side consoles - \$138.00

Instrument Panel - \$135.00

Fuel cell & baffle - \$175.00

3) Bulkheads: \$1038.00

Firewall 1/4" plywood/glassed - \$105.00

Canard lift bulkhead - \$105.00

Canard drag bulkheads - \$113.00

Wing lift bulkheads - \$105.00

Wing drag bulkheads - \$105.00

Lower seat back bulkheads - \$84.00

Upper seat back bulkheads - \$84.00

Intercostal - \$75.00

Canopy bulkheads - \$84.00

Tail bulkhead - \$18.00

Forward Panel - \$92.00

Forward fuselage floor - \$68.00

4) **Misc. Parts:** 1 ea. tailspring - \$37.50

Fuel filler ring - \$25.00

Fuel filler molding - \$22.00

Naca Ducts (2) - \$22.00

Mark II gear leg kit (1set) - \$450.00

Pretapped drain plate - \$8.50

The all items may be purchased separately

There is a 60 day delivery schedule on complete kits, less on partial orders.

Other items:

Dragonfly Plans - \$259.00

Canopies; Clear - \$370.00

Light gray - \$420.00

Dark gray - \$422.00

Green - \$370.00

Please include a \$15.00 canopy packaging fee.

Control system components:

DFCS-3 - \$25.00

DFCS-4-1 \$20.00

DFCS-4-2 \$20.00

DFCS-6-1 \$27.00

DFCS-7 \$20.00

DFCS-8 \$8.00

DF-112 \$20.00

DF-115A \$30.00

"New Style" elevator control system assembly - \$120.00

Videos:

How to build a "Reliable" VW aero engine - \$39.50 Run time approx. 2 hrs.

Dragonfly construction tapes - \$89.50 Run time approx. 6 hrs. Posa Carburetor - \$29.50 run time 1.5 hrs

Please add \$4.00 US, \$8.00 Canada & Mexico, \$12.50 for all others. Also specify VHS or BETA

Viking Aircraft

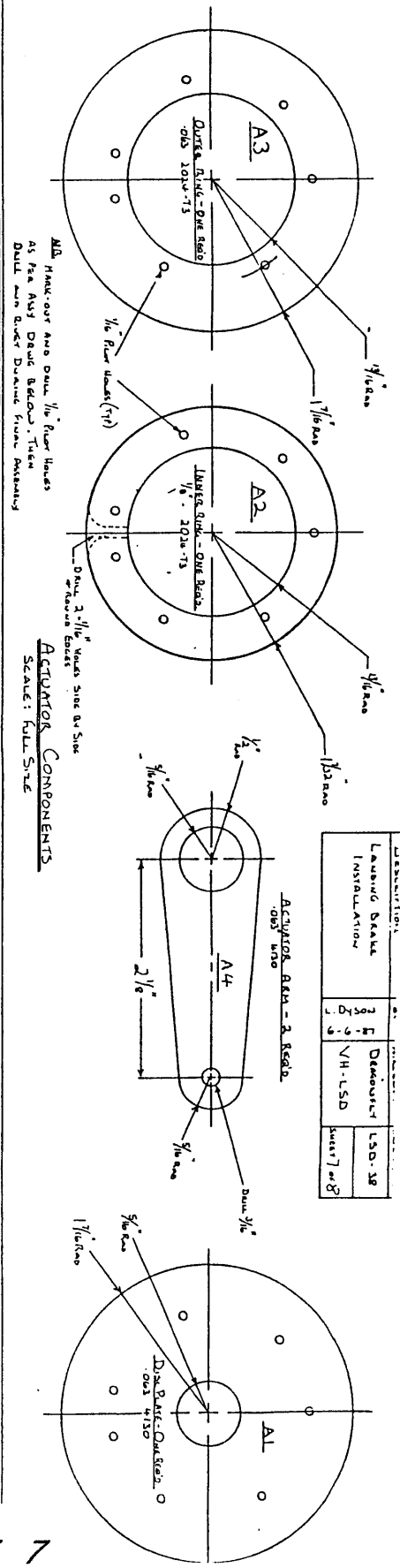
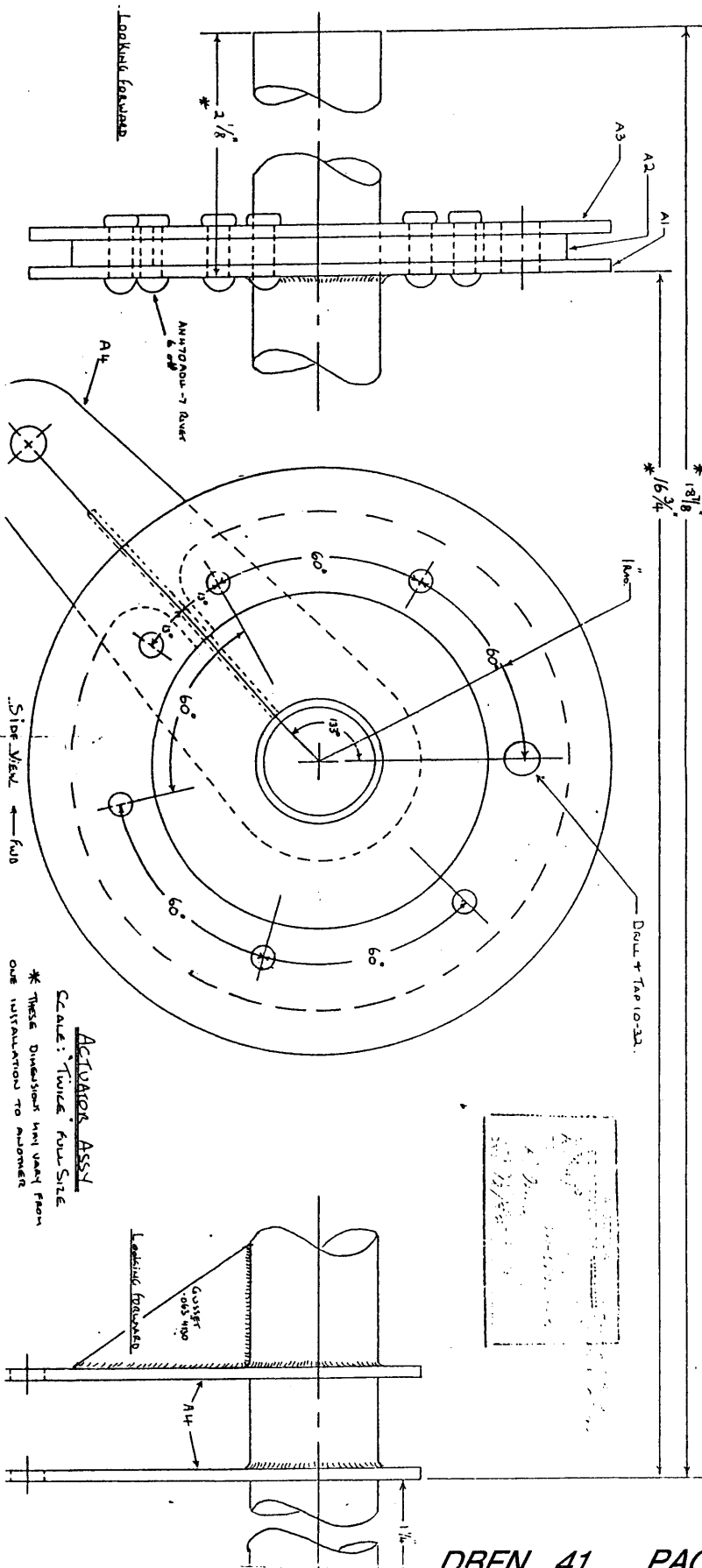
P.O. Box 4463

Helena, Montana 59601

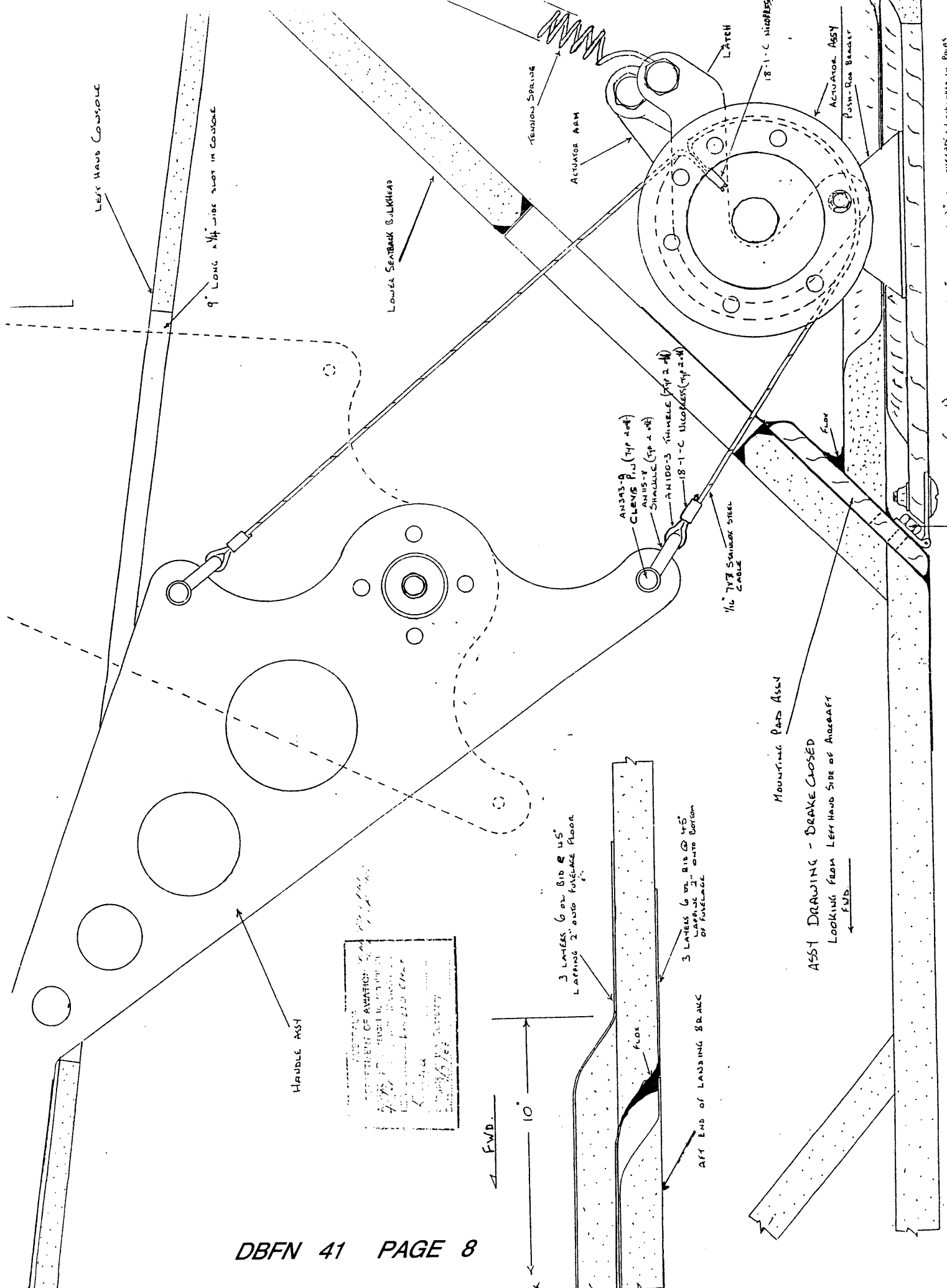
phone; (405) 449-3556 days (405) 227-5575 evenings

Payment is required at time of ordering. Please make checks payable to: Patrick Taylor

LEN DYSON'S AIRBRAKE CONTINUED



DESCRIPTION	QTY	REMARKS
Landing Brake Installation	1	
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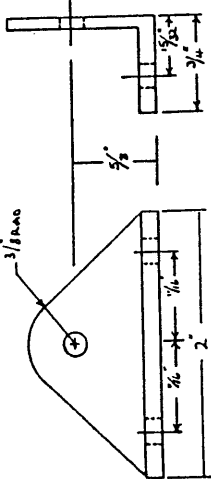


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 AND MATERIALS.
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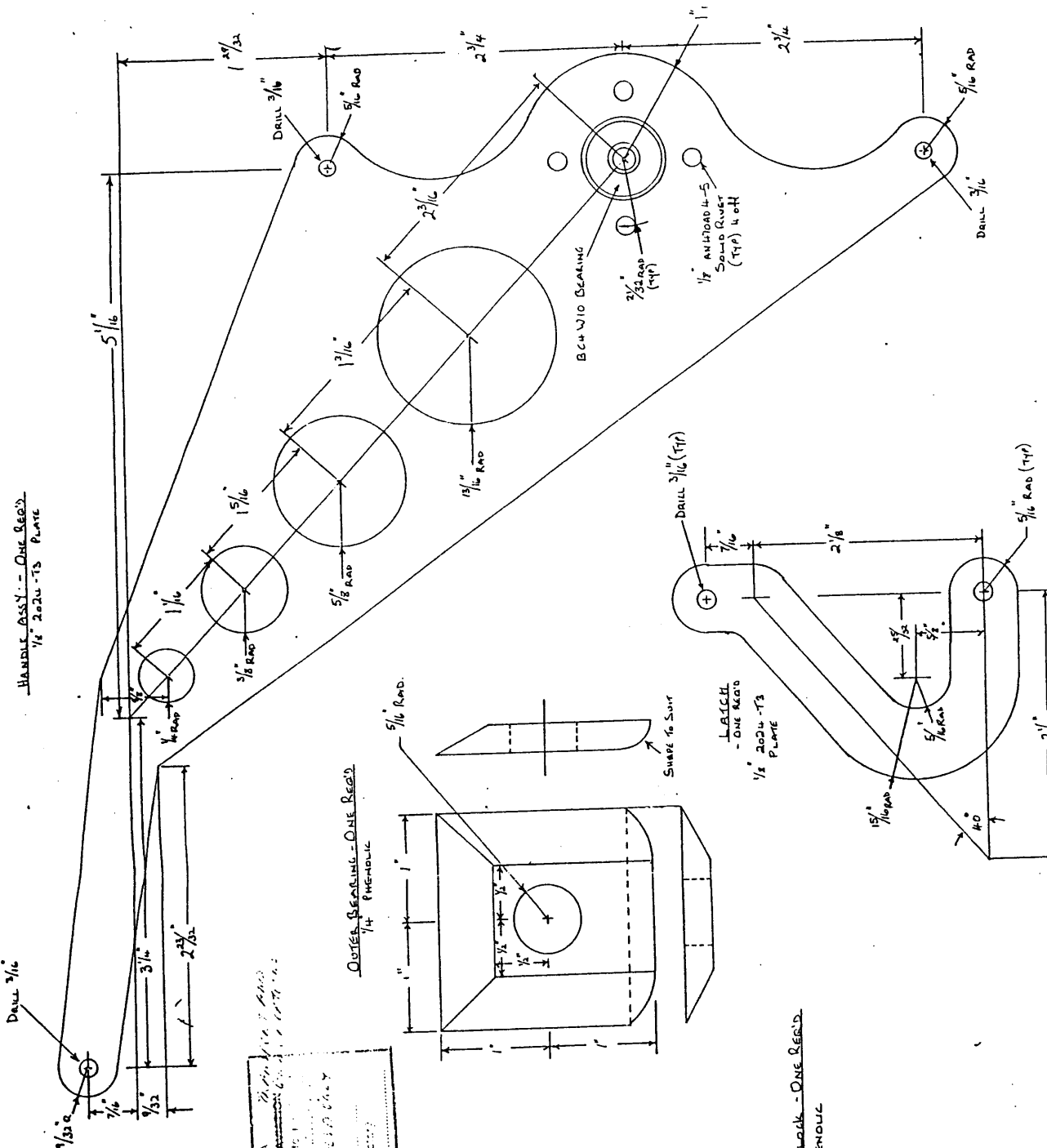
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 10"

ASST DRAWING - BRAKE CLOSED
 Looking from Left Hand Side of Aircraft
 ← FWD

POSSIBLE BEARING - TWO BEARD
1/8" 2024-T3 EXTRUDED ANGLE

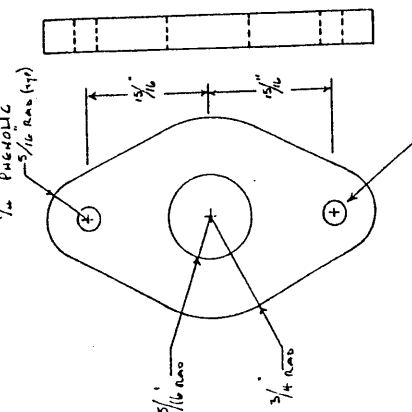


HANDLE ASSY - ONE BEARD
1/8" 2024-T3 PLATE

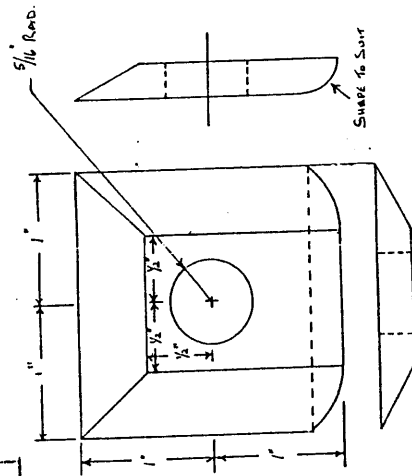


AUSTRALIA
DEPARTMENT OF DEFENSE
RESEARCH AND DEVELOPMENT
RESOURCES
DATE: 3/12/88

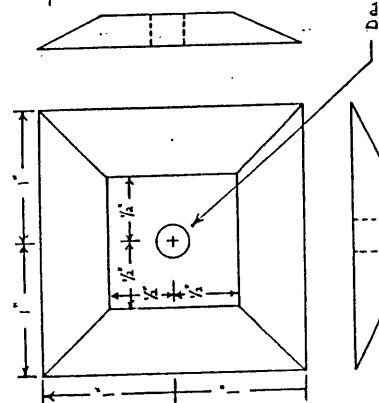
INNER BEARING - ONE BEARD
1/4\"/>



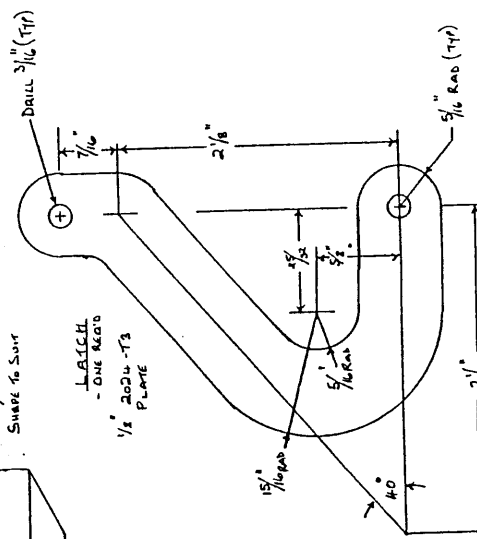
OUTER BEARING - ONE BEARD
1/4\"/>



ANCHOR BUSH - ONE BEARD
1/4\"/>

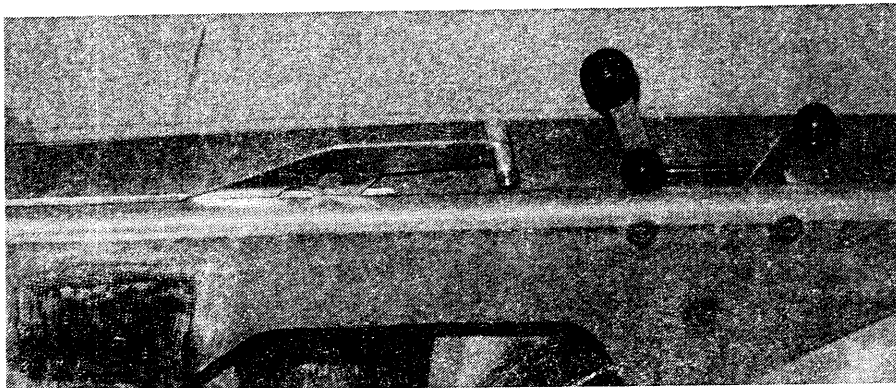
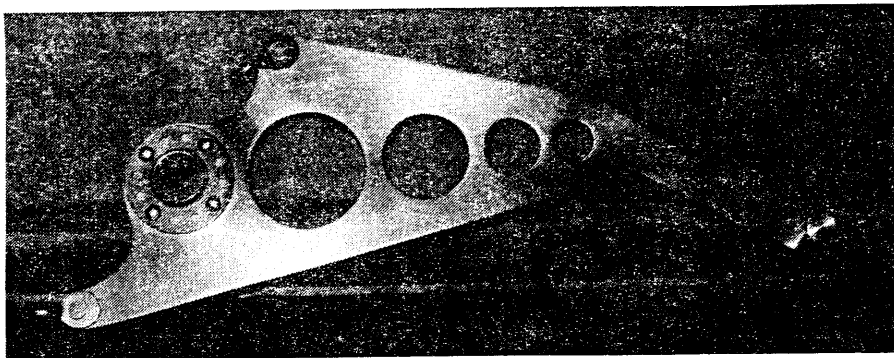


LATCH
- ONE BEARD
1/8\"/>



Kaplan's Airbrake

The pictures to the right are from Chuck Kaplan's of Walpole, MA project. Chuck retooled this do his Dragonfly. He will be supplying us with the story on his installation with tips to watch for during everyone's installation that chooses to install the brake. Also Dr. Richard Goldman out of Chicago has this air brake now installed on his DF and will be supplying an article on his installation. Also the people who originated the airbrake, The Long-EZ gang have come up with a electrical motor device for deployment that's almost as light as the lever sytem. I'm doing the research now on how it's working out and should have the info by the next newsletter. -Spud



92CALENDAR

Get out those 1992 calendars and mark down these dates.

● Oshkosh 92 - Oshkosh, Wi. - July 31 -

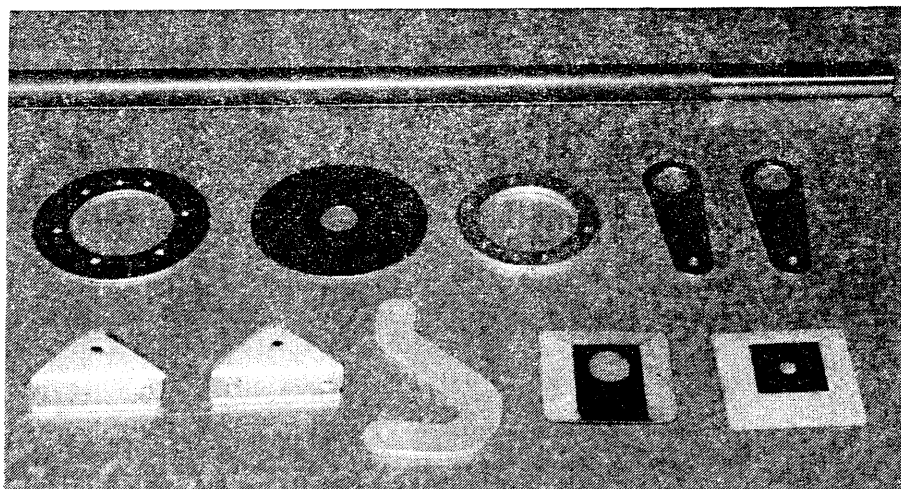
August 6th

Everyone knows this one. Camp Dragonfly will most definitely will be open to all the Dragonflyers, Q-2, Q-200's gang.

● The Dragonfly-Q2-Q200 Annual Fly-in

Ottawa, Ks - Sept. 18-19-20

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



continued from page 4

Absolutely pouring! So I set it up so I can fly along the edge and still see out the side(get my point), escape route for those that just think they are brave. But the bottom line is that it wasn't bad at all. I had enough trim authority to control the airplane and still lots of stick movement to do anything I wanted. Oh, yes it did take off about 1/4" of paint on my prop (I had painted it white to match the plane) but other than that I couldn't see any big deal about flying in the rain. I didn't get around to stalling it, but I did look at the elevators and they were just about the same position (drooping) down as they are when I have a 180 pound passenger on board. So I don't feel there would have been any more problems landing than you would of had when you had that extra weight. In other words you need to come in with a little more speed to compensate for the loss of lift. Yes I know, not very scientific, but very much a real world test. I learned a little more about my Dragonfly and it was no big deal. My buddy's Long-EZ does the same thing, it uses the GU (Glasgow University) airfoil also. He was coming back from Olathe, Kansas from the big nat'l canard fly-in. He ran into some serious rain and couldn't get his plane trimmed out of it. He had to hold his stick back to maintain level flight. So I'm very happy with the way my plane handled the rain. It's just one of the traits of that airfoil. Hey, just remember guys you can't stall and snap it over on it's back like the conventional airplanes. So some where along the way you have to give up something. I don't think you can find any aircraft that is perfect in every way. But after you build and fly this one I'm sure you won't find many that you'll have as much fun in. In the air or on the ground it it always draws lots of attention!

Very Best Regards, Tim Gibbs - Woodbridge, VA

The Classifieds

For Sale: Firewall forward for Dragonfly, "new" 2167cc VW engine, prop. through and including motor mount, No carb. \$4400.00 invested in 1986 dollars, have receipts. \$2900.00 for everything. Call Chuck Kaplan - Walpole, Mass. (508) 668-4784

For Sale: Dragonfly project - Fuselage 65% completed, glassed inside & out, bulkheads, main & header tank installed. Wing completed less control surfaces & weave filling. Most foam for Canard. Get a head start & save 275 hours. First \$1400.00 firm. (913)ask for Dana Watkins

For Sale: Hapi VW 1835 60-2D, 1 Mag, 1 Electronic, Hyd.

lifters, Tillison carb, Heavy duty oil cooler, Hapi oil filter, deep drilled crank. 400 TT. 80 SMOH. Also "included" everything firewall forward new style Hapi mount, DF cowling and baffling, new Sterba prop and spinner. \$2550.00 Ask for Stan Meleski- Days (310)941-9763. Eve(310)402-5023

For Sale: Dragonfly Project, modified for tricycle gear. Can be fitted for Mark II gear easily. Fuselage, wing, rudder, canopy, cowling and control surfaces. No canard. Excellent workmanship can be inspected, not painted. \$1800.00 takes it home. for further info contact Chris Barber, Big Sky Ranch Airport 437 Will Raby Rd. Toney, Al 35773 or (205) 656-7133

Subscribers Information Center

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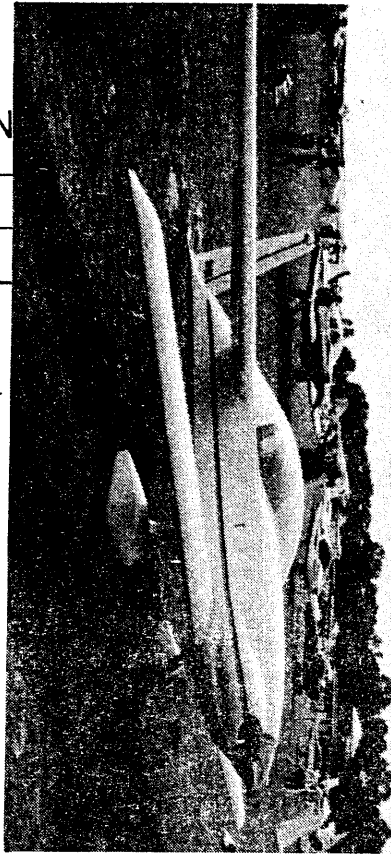
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Guenther Kirschtein of Germany, who bases his Dragonfly out of Boca Raton, FL, who has incorporated Gene Divincenzo's loop style main gear. We will have a full article on this gear and it's installation coming up in DBFN # 43.



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