

DRAGONFLY BUILDERS AND FLYERS NEWSLETTER

THE OFFICIAL VOICE OF DRAGONFLYERS ALL OVER THE WORLD

VOLUME 84 / 85

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Editor's Corner

Gentlemen,

Lets take a moment to talk about newsletter and its mission. The mission is to receive and re-distribute information in regards to the construction, flight testing, flying, the maintenance and the social side of the Dragonfly for 250 + builders, flyers in 21 different countries around world. It is an open forum between builder and builder, Slipstream and the builders to exchange any and all information in regards to the Dragonfly.

So what's the Problem?.....Input?.....THERE ISN'T ANY!!!

This isn't my newsletter, nor is it really Mike Puhl's of Slipstream's newsletter. It's your newsletter GUY'S!!! Sure you pay me \$21.00 a year to assemble and deliver six issues a year disseminating information about the Dragonfly. But, you have to think of me as the cook, unless you folk's rustle up stuff, you are not getting any dinner!

There are all sorts of things to share with the group:

Building progress reports.

Construction techniques, how did you do it?

Engine and prop- service problems and their fixes.

Builders visit reports.

Flight testing report - good and bad.

A new product reports.
Trips flown in Dragonfly's.
Flying techniques.
Technical questions - technical answers.

I take several other experimental newsletters: The RVator (RV series), Central States (Long-EZ, Cozy series), Q-talk (Quickie series), The Bearhawk and Tailwind newsletter, and I must say these guys are running circles around you guys.

Has the Internet made us "Contributing Lazy", I hope not, but I feel it has some. Now there is some superb Dragonfly websites and the "Dragonlist" info exchange is excellent for instant answers to builder questions. Quite a few the regular Internet Dragonfly builders assume that "Everybody is on the net". This is "Big time - Wrong - O". I did a little homework here a few months back and contacted people that I thought were not on the net, most of these where people with flying Dragonfly's or very close to flying. It worked out to about half of the people I contact we're not on the net, at least regularly, some we on but got off for numerous reasons. Hey, maybe some day done the road we will all be electronically hooked, but until then, the newsletter will continue to be in hard copy form. What about if we send half electronically and send half by mail, then the printing cost go sky high, over doubles.

While we are on the subject of newsletters. Let's talk about the back issues. Some have complained about the \$100.00+ dollars for all the back issues, #32 through #80, 48 in all. Everyone is more than welcome to make copies of the Dragonfly newsletter for their personal use. The newsletter has never been copyrighted in any way. In fact, you are not paying a penny for the back issues. What you are actually paying for what the copies cost at Sir Speedy or Kinko's to reproduce and you are paying me for the time to stand there for 3 - 4 hours to make 800+ copies. Those wanting back issues and can get your hands on a set of newsletters for a few days, you are more than welcome to make copies. I just soon spend the time doing just about anything else....

Also effective immediately there is no longer a charge for any classified ads (Non-commercial) for all current subscribers. Non-subscribers will be at my discretion. The ads will automatically run for two issues. No perpetual.

So Gentlemen, The future of the newsletter is up to you! Let's get off our duffs and get some input coming into the newsletter on a regular basis. I am not a magician. Without this ongoing input we have nothing! I will quit publishing the newsletter if we can not get a major improvement very soon. I got plenty other things to do.... Like building airplane parts.

Very Best Regards, Spud Spornitz

Mattoon Canard Wing Fly-In 2000 Coles County Airport (MTO)

**Mattoon - Charleston, Illinois
Friday-Sunday, June 23-25, 2000**

The Coles County Airport likes to have groups use it for flyin's and will give us free use of a big (and I mean "big") hangar. Airport will provide free hangar space and tie downs for our airplanes. You do not need to bring tie-down ropes.

MTO has two wide and long runways. The ramp area can hold a 100 airplanes. Use right hand pattern for 6 and 11. The restaurant on the airport is open 7 am to 8 pm, 7 days a week. Non-controlled field Unicom at 122.7Mhz and AWOS is on the VOR at 109.4Mhz.

This is really a one day event, but plan to fly or drive in on Friday afternoon or Saturday morning for an all day, full throttle, Quickie and Dragonfly fun get-together. There will be dinner Friday and Saturday night at a local restaurant. Plan to depart some time Sunday after a hearty breakfast at the airport restaurant.

Directions:

Located in east-central Illinois, one mile east of I 57 (Mattoon - Charleston exit) and 20 miles north of I 70.

Contact persons:

Shannon Youakim, airport manager, 217-234-7120, "<mailto:dsyouakim@aol.com>"
Steve Laribee, Air Boss, 217-345-2633, "<mailto:cfsfl@eiu.edu>"

Motels:

All of the following are together and are located one mile west of the airport on state highway 16 and I 57. There are several restaurants next to these motels.

1. Super 8 Motel (217-235-8888 or 800-800-8000) price upper \$40s.
2. Fairfield Inn (217-234-2355 or 800-228-2800) indoor pool/spa and free continental breakfast, low \$60s.
3. Hampton Inn (217-234-4267 or 800-426-7866) indoor pool and free continental breakfast, prices start around \$60.

Transportation will be provided to and from the hotels/motels for those who fly in.

Camping:

Camping is allowed at MTO, including camping in the hangar with your plane. The FBO also provides showers.

The FBO has made a huge hangar available for covered overnight parking. Be sure to contact Steve before you arrive if you are going to need hangar space to park.

Airline Service: United Express from Chicago-O'Hare Airport:

Info courtesy of Don Stewarts Dragonfly web site: SI-INC.COM
Thanks Don!!!

DRAGONFLY ERRATA SHEET

Discard page A and substitute with page A-1 and A-2

Discard Chap. 5, page 17, and insert the second half of the construction manual.

Materials list, page A-1 column 1, paragraph 1, Add: Note that the material quantities on this list are the minimum necessary to do the job. Foam, carbon fiber and metal quantities should not vary from the materials list, but first time builders can be expected to use as much as 3 gallons of extra epoxy and up to 10 yards of extra cloth. This is nothing to be concerned about as long as the extra material is waste due to the lack of experience in cutting cloth and mixing the proper amount of epoxy. Do not accept a wet lay up, and resist the temptation to "beef up" any area of the aircraft. Since all materials are easily available, it is best to wait until near the end of the project to see what additional materials, if any, are necessary. **Overseas** builders who may have shipping and customs problems might be wise to order a bit of extra epoxy and cloth just to be on the safe side.

Materials list, page A-1 Change: The 4 1/2 pound urethane quantity should be 2 sheets 3/4" x 3/4" x 96" (not 1 1/2 sheets). The 8 pound urethane may be either 1" x 24" x 12" or 1" x 16 1/2" x 18" or equivalent. The lengths and dimensions of most of the materials are **not !** critical, but must, of course, be of sufficient length or size to serve the intended purpose. All MS rivets are "AD" type. Four MSP-45 pop rivets are required (not 2 MSP-55). The fuel drain is a CAV 110 or equivalent (not CAV10).

Chapter A, page 1, Change your plans to read **Hexcell #7715, Burlington style #7500, #3733, #1522.**
Do not substitute Burlington 7715 for Hexcell 7715. The only sources for Hexcell 7715 are Wicks Aircraft and Aircraft Spruce.

Change: Make the following changes to the 4130 steel tubing quantities. 7/8 x .083 x 13"....3/4 x .120 x 5"....3/4 x .058 x 22"....5/8 x .120 x 18"....5/8 x .065 x 15"....5/8 x .049 x 120"....1/2 x .058 x 2"....1/2 x .035 x 90" (including hot wire saw parts)....3/8 x .058 x 5"....1/4 x .035 x 2".
All other quantities remain the same.

Page A-2, Change: Delete 4 MS20470 3-7 rivets. Add 2 AN3-13 bolts, 1 AN665-21R clevis terminal, 1 AN315-3 lock nut. Change 10 AN470 AD4-5 rivets to 20 MS20470AD4-5 rivets.

Page A-2 : 14 pcs F-34-14 Rod End Bearing or 14 pcs CW-3B-14 Rod End Bearings. The ball rod ends called for on page A-2 of your plans identified as F-34-14 rod end bearings, made by Heim have become expensive. Wicks has found a substitute which can be sold at the same price that has better tensile strength and greater range of motion than the Heim bearing.

Chapter 1, page 1, column, paragraph 5, add: So as to insure that your construction manual is complete be sure that the page of each chapter is numbered as follows: Chap. 1, page 21; Chap. 2, page 10; Chap. 3, page 13; Chap. 4, page 6; Chap. 5, page 17; Chap. 6, page 13; Chap. 7, page 15; Chap. 8, page 7; Chap. 9, page 8; Chap.10, page 3; Chap. 11, page 3; Chap. 12, page 2; Chap.13 , page 9; Chap. 14, page 5; Chap. 15, page 4.

Chap. 1 page 2, Change: The scale length should be 5 feet (not 4 feet).

Chap. 1, page 6, column 2, paragraph 2, Add: Make sure that the 100% Polyester peel ply is the type of material that is shiny with a hard finish. The type with a soft or fuzzy finish will stick to the lay ups. Always test your peel ply to be sure it will come off a fully cured surface. If you have any doubts about your peel ply, purchase the proper material from one of the aircraft materials suppliers. Under no circumstances use peel ply over large areas simply to obtain a smooth surface. Peel ply should be used only on future bond sites. Peel ply should not be removed from the surface until the surface is cured and should normally be left on the surface until just prior to making the next bond so as to minimize contamination of the bond site.

Chap. 1, page 7, column 1, paragraph 1, Add: Safe-T-Poxy may vary quite a bit in color from batch to batch. This is nothing to worry about. Also, if the epoxy is exposed to ultra violet light during the curing cycle, it may exhibit drastic color changes. The epoxy may change from amber to a rather dark green under some circumstances. As long as the exposure to bright sunlight is kept to a minimum (less than a week), no damage will occur. Of course, the less exposure to UV before the parts are painted, the better.

Chap. 1, page 13, column 2, paragraph 3, Add: Use great care to use the correct type, fiber orientation, and weight of cloth. An error in selecting the type of cloth may cause an expensive part to be rejected.

Chap. 2, page 1, column 1, paragraph 3, Add: Keep in mind that the firewall must be fabricated from 1/4" plywood. Use caution when laying out the re-enforcing inserts.

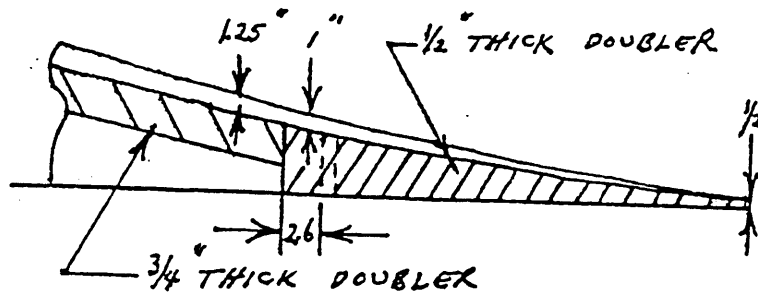
Chap. 2, page 1, column 2, paragraph 4, Add: The layout line for the fuselage side layout is the same as water line +4.2 shown on sheet L-1. Begin the layout 2" aft of the forward edge of the foam sheet. The edge of the foam sheet is not the same as the firewall. The firewall is, in fact, at 90 degrees to the water line. All bulkheads that appear to be at 90 degrees to WL 4.2 are indeed at 90 degrees to the waterline. Carefully follow the layout procedure on sheet L-1 so as to reproduce the fuselage side accurately.

Chap. 2, page 1, column 2, paragraph 5, Add: As a general thumb rule, use medium viscosity micro as glue to join foam parts and use flox as glue to join parts that have been glassed.

Chap. 2, page 3, column 1, paragraph 2, Add: "Naturally the templates will not produce the exact shape of the cutout and should be used only as a guide to the proper contour. Refer to the side view of the fuselage on page L-1. If the cutout is left a little small, it may be enlarged the first time you fit the canard to the fuselage. If it is a bit too large, it may be filled in with dry micro during the finishing stages when you make the final canard (or Wing) fit up. In other words, the cut outs are not critical.

Chap. 2, page 3, column 2, paragraph 2, Add: The cross hatch area of the fuselage doubler layout drawing failed to print correctly in some cases. The entire forward fuselage area forward of the canard drag spar should receive a 3/4" foam doubler. The inboard surface of the foam doubler should be flush with the inboard surface of the wooden stringers. The outboard surface of the wooden stringers should be flush with the inboard face of the basic 1/2" fuselage side. Refer to cross section A-A. Where the 3/4" doublers transition to 1/2" doublers simply sand the 3/4" doubler over a distance of several inches to produce a smooth transition that is easy to glass.

Chap. 2, page 3, Change: The top view drawing of the fuselage bottom shows the .5" thick foam doubler near the tail incorrectly. The corrected drawing is shown below. The .5" doubler should be a total of 1" wide at the edge so that the high density foam insert shown in chapter 5, page 13, will fit correctly.



Chap 2, page 4, column 2, paragraph 3, Add: Where it is necessary to join two pieces of cloth, overlap the at least 2 inches. These overlaps may be made at 45 degrees relative to the water line in order to conserve cloth. Save the triangular pieces of cloth produced where each ply ends and use as much of this cloth as possible in areas such as the tail. Save the remainder for glassing small pieces later on.

Chap. 2, page 5, column 2, Change: The text should read: "notice that these strips are glued to the bottom 1-1/4 inches inboard of the edge".

Chap. 2, page 7, Change: The width of the lower seat back bulkhead should be 43.2" on the bottom edge (not 43"), and 41.4" on the top edge (not 42.2"). The lower edge of the upper seat back bulkhead should be 41.4" wide (not 41.2").

Chap. 2, page 7, Add: Skip ahead to Chapter 9, page 8 and install the canopy restraint strap plywood inserts as instructed in chapter 9.

Chap. 2, page 7, Add: The dimensions of the small plywood brake pulley inserts that go in the canard drag spar are: 1-1/2" x 1-1/2" x 1/2".

Chap. 2, page 7, Add: The width of the upper seatback bulkhead 7" above the lower edge is 40.2".

Chap. 2, page 8, Glass to Glass bonds: The glass to glass bonds along the top edge of the intercostal bulkhead and along the bottom edge of the canopy bulkhead were inadvertently omitted. Add them to the appropriate drawings.

Chap. 2, page 8, Intercostal Bulkhead Length: Add 1/2 inch to the aft edge of the intercostal bulkhead drawing.

Chap. 2, page 9, Fuel Tank Access Ports: The outboard edge of the fuel tank access ports should be 5.6" from the edges of the tank (not the center of the port as shown in the drawing). These glass to glass areas are 5 inches in diameter which allows a 4 inch hole to be cut later on.

Chap. 3, page 1, column 1, paragraph 4, Add: Do not photocopy any scale drawings, especially the airfoil templates, because distortion caused by the copy process may produce unacceptable errors in the drawings.

Chap. 3, page 1, column 1, paragraph 4, Add: Note that the templates used to cut the trailing edges of parts such ailerons, elevators, ect. may at first appear to produce a thicker than expected trailing edge at the "glass-to-glass" bond site; however, because of "burn down" caused by the hot wire, the upper and lower surface skins should meet at just the right angle to produce a nice glass to glass bond of about 1/2" (with

3/8" to 5/8" being acceptable). The exact chordwise bond dimension may vary a bit when matching the trailing edges at such places as the outboard end of aileron. The upper and lower skins at the trailing edge should be a smooth continuation of the airfoil with no intentional reflex or other camber change at the trailing edge. A thin, straight trailing edge is the desired end result.

Chap. 3, page 4, column 1, paragraph 1, Typo: The correct dimension should be 7" x 28" x 64" (not 7" x 14" x 64").

Chap. 3, page 6, column 1 paragraph 2, Add: These lift fittings and all other metal parts that are to be bonded with epoxy must be carefully cleaned and sanded with 220 grit sandpaper. Do not paint any metal surface that is to be bonded; however, exposed metal parts should be painted with zinc chromate primer and enamel paint. Remember that all lift fittings are 1/4" thick while the wing drag fittings are 1/8" thick.

Chap. 3, page 6, column 1, paragraph 3, Add: Note that the sweep of both the wing and canard is zero relative to the shear web face. This is important.

Chap. 3, page 8, column 2, line 4, Change: Change the word "outboard" to "inboard". **Also add:** All foam cores should be glued to each other using micro.

Chap. 3, page 11, column 2, Add: Be careful when cutting the carbon fiber that you don't make each cut an inch too long "just to be safe". One inch added to each end will add up so that you will be about 4 feet short of carbon by the time you get to the fin spar. Be accurate! If you run out, various suppliers will sell you carbon by the foot.

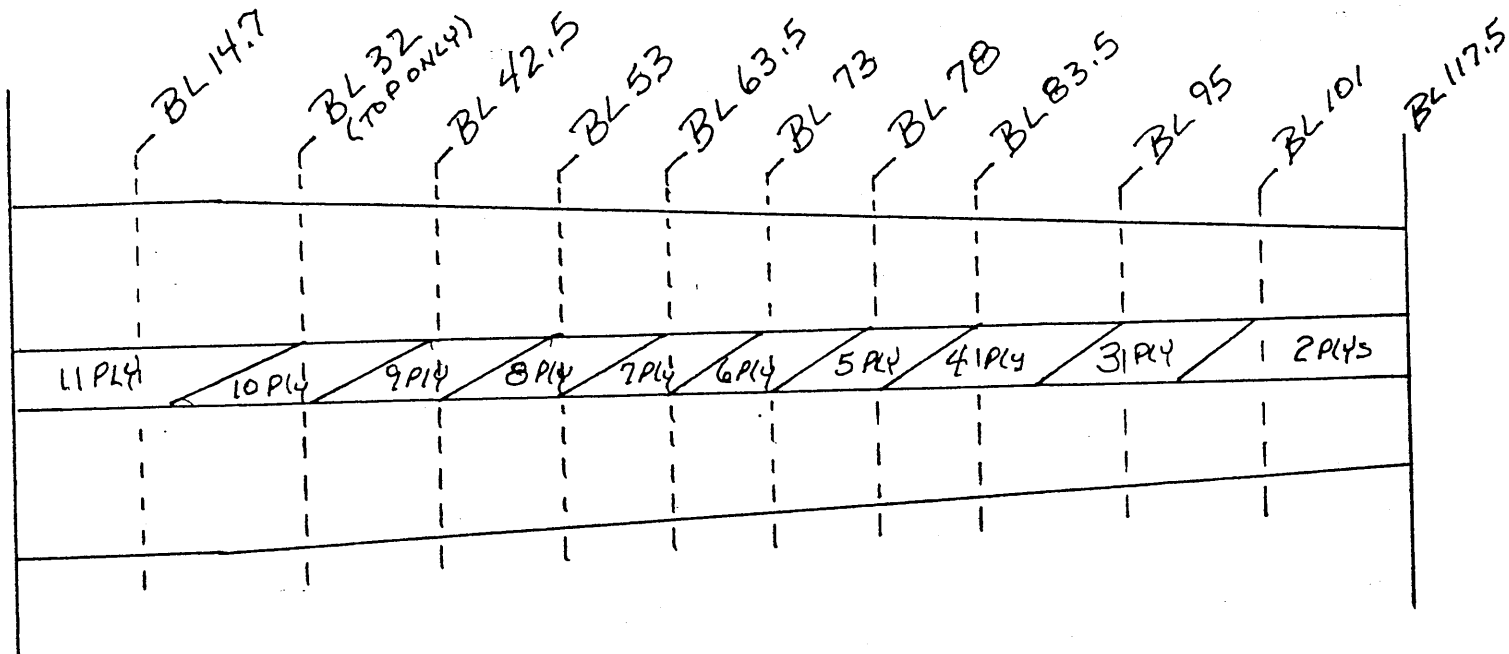
Chap. 3, page 13, column 1, paragraph 1, Add: "After one side of the wing is glassed, use Bondo to glue a light weight straight board to the trailing edge of the wing outboard panels on the fibreglassed side to help keep the trailing edges warp free."

Chap. 3, page 13, column 2, paragraph 2, Add: SHOULDER HARNESS ATTACH POINTS- Cut twenty 4 inch by 4 inch plies of 10oz BI cloth. Fiber orientation is optional. Next cut four 1" x 1" x 1/4" 2024 T-3 or 6061 T-6 aluminum squares. Bond the aluminum squares to the under side of the wing with flax. All four aluminum squares should be 4 inches aft of the wing leading edge. Next glass over each aluminum square with 5 plies of 10oz BI cloth, lapping onto the lower wing skin. Use plenty of plox to eliminate air bubbles. After cure, drill and tap each aluminum square (1/4 x 28) to accept an AN-4 shoulder harness attach bolt.

Chap. 4, page 1, column 2, paragraph 2, sentence 1, Change: The correct sentence should read: "Find the BL-78.5 elevator template and position it above and ahead of the BL-117.5 canard template."

Chap. 4, page 3, column 2, Change: The dimensions on the drawing of the canard center section foam block are incorrect. The top aft edge should be 30.5" (not 29.5") and the bottom aft edge should be 30" (not 29"). The forward edges are correct. Make the appropriate changes to the verbiage on page 3, column 1, paragraph 5.

Chap. 4, page 5, paragraph 2, Delete & Change: Delete lines 6 thru 12 and change it to read as follows; Mark the locations of the ends of the carbon spar cap toes on the foam adjacent to the spar cap notch. The ends of the spar cap fall at BL 32, BL 42.5, BL 53, BL 63.5, BL 73, BL 83.5, BL 95, BL 101, and BL 117.5. The ply ending at BL 32 is to be placed on canard top side only and is not used on bottom side of canard. Refer to the drawing below which replaces sketch on chapter 4 page 6.



Chap. 4, page 5, column 2, paragraph 1, Add: Because the canard lift fittings will interfere with the BE-14.5 jig blocks, use the following procedure to jig the canard. Position the BE-14.5 blocks on the table at BE-14.5. Position the other jig blocks at their proper location and use a tight string, your eyeball, a straight edge, ect. to make sure that the sweep is zero, the anhedral is correct, and most importantly, that the angle of incidence at each block is correct. When everything is correct break the bondo joint and move the BE-14.5 blocks inboard toward the canard centerline so as to clear the canard lift fittings. Fasten them to the table with bondo and cut slots in your table top to accommodate the lift fittings. Then proceed with fastening the canard to the jig in preparation for glassing.

Chap. 4, page 6, column 2, paragraph 2, Add: Don't forget to attach 2 "level" boards (one is a spare) with bondo to the top skin of the canard before you remove it from the jig. Use the same procedures you used when attaching the level boards to the wing.

Chap. 5, page 4, column 1, paragraph 3, Add: "Join the fuselage sides to the bottom using 4" wide 10oz fiberglass tapes. Use two plys forward of the wing drag bulkhead and one ply aft of the wing drag bulkhead. Do not apply a tape joint inside the fuel tank."

Chap 5, page 5, column 1, paragraph 3, Add: The sheet of foam used for the aft cover will be easier to bend into position if it is trimmed so that it does not extend aft of the smallest former station by more than one inch. If you have trouble with the foam breaking, try warming it with a hair dryer or add several additional score marks using a saw. Some builders have attached the foam to the stringers by "sewing" it in place using strong thread rather than gluing it in place using Bondo. It is acceptable to glass right over the threads. Cut them off flush with the exterior of the foam to remove the part from the mold.

Chap 5, page 8, column 2, Change: The lower forward angle of the fuselage console side should be changed to 87 degrees (not 93 degrees) and the length of the upper edge should be 34.4" (not 34.7").

Chap. 5, page 13, column 1, paragraph 2, Change: Do not trim the cowling to the trim line immediately (as instructed). Because of various tolerances, your cowling may need to be slightly longer than the trim line indicates. It is wise to carefully cut and fit at this point. Note also that the top and bottom cowling halves can be confused. The top is the half with the jogged lip and the bottom is the half with the plain edge.

Chap. 5, page 14, column 1, paragraph 1, Add: Note that the cowling split line is not parallel to the water line and it is not on the center line of the crankshaft. The front face of the cowling may be slightly canted relative to the aft face of the spinner. The important thing is to have the crankshaft center line in the center of the cowling cutout.

Chap. 5, page 14, column 1, paragraph 2, Typo: Measure down the from the top of the firewall 10.9" (not 10.7"). **Add:** When measuring up the seat back, make allowance for the thickness of the seat belt attach pads if you have them installed. The important idea is to establish the crankshaft centerline as accurately as possible.

Chap. 5, page 17, column 2, Add: While the wing is bolted in place, cut and fit the small piece of the aft fuselage cover so that it fits over the wing and matches the rest of the fuselage. Attach it to the wing with one ply of 4" wide 10oz fiberglass tape inside and one ply of 4" wide 6oz tape on the outside. The bare edges of the cut receive flax corners and are glassed with one ply of 10oz cloth. Be sure to leave about 1/16" gap after glassing. The gap is sealed with white vinyl tape after final assembly. Glass the aft fuselage cover to the inside of the fuselage sides with one ply of 4" wide 10oz tape cut at 45 degrees. This glassing may require you to pre-wet the tape and unroll it into position using a roller on the end of a 4ft long stick. Make the roller out of wire and scrap foam. Squeegee the tape using a small squeegee on the end of another stick. Use floc and scrap foam as necessary to provide a suitable transition between the inside of the fuselage sides and aft cover.

Chap. 6, page 3, column 2, paragraph 2, Add: In order to provide a more fair lead for the brake cables as they exit the canard and connect to the pulleys attached to the canard drag spar, the brake cable conduit should gradually angle downwards inboard of BE-34 so as to exit the elevator hinge faring low on the drag spar (not high on the drag spar as instructed). Outboard of BE-34 the conduit should be attached high on the drag spar as shown on the drawing Chapter 6, page 3. Refer to Chapter 8, page 6 and full size drawings L-9 and L-11.

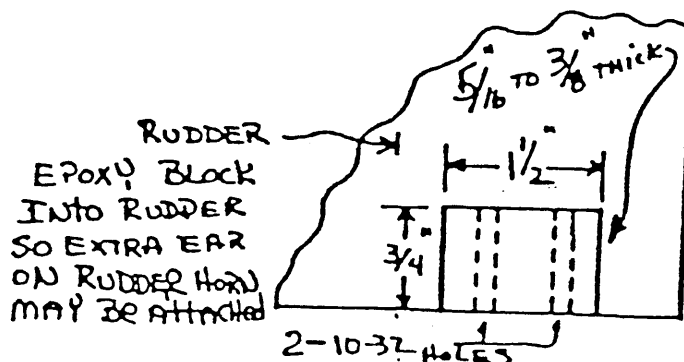
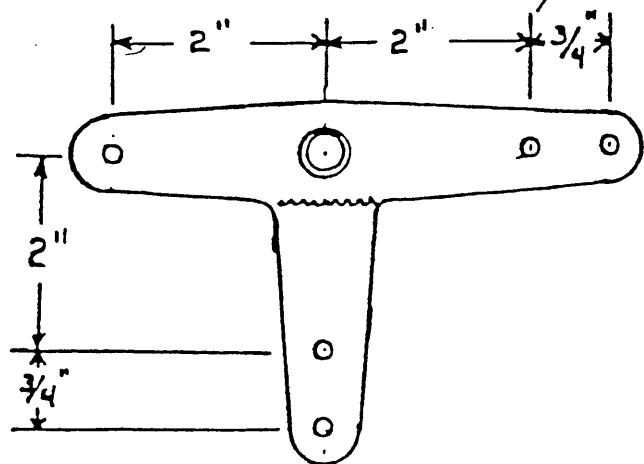
Chap. 6, page 4, Change: The proper radius for the elevator and aileron hinge parts is .25" (not .5").

Chap. 6, page 6, Add: The aluminum hinge thimbles should be tapped 10-32 to accept the AN-3 hinge pin.

Chap 6, page 7, Rudder Horn, Note: That the pop rivets that lock the rudder to the lower hinge thimble and those that lock the rudder to the rudder horn are installed after finishing and painting.

Chap. 6, page 10, Rudder Horn, Note: The radii on the ends of the rudder horn should be 3/8" and 11/32" (not 3/4" and 11/16" as shown on the drawing).

Rudder Horn Mandatory Change Notice Chapter 6 page 10



Chap. 6, page 11, Add: The two areas of the aileron motion changer bellcrank (CS-1) are at 45 degrees to one another. The drawing is correct and to scale. Fabricate two bellcranks.

Chap. 6 page 13, Add: The overall dimension of the CS-3 bellcrank arms are 6 3/4" x 1".

Chap. 7, page 2, paragraph 4, Add: It will be necessary to cut a slot in the center of each plywood insert of the wing lift bulkhead in order to install the CS-1 bellcranks. Refer to the drawing Chapter 7, page 4.

Chap. 7, page 7, Brake torque tube bearing, Note: The dimension for the aft edge of the BE-10.9 bearing should be 2 1/8" (not 2 3/4").

Chap. 7, page 7, Add: The overall length of the aluminum brake actuating arm should be 11.2" before bending. The width should be 1".

Chap. 7, page 7, column 1, paragraph 2, Add: Fabricate the brake actuating arm from a piece of aluminum 11 1/4" long. Make the bend as shown 1 1/4" from the rounded end.

Chap. 7 page 8, Add: The brake handle drawing should have the following dimensions. The finished overall length is 22 1/2". The narrow part is 7 1/2" long and 1" wide. The wide part is 1 1/2" wide. The notches are 1/8" wide, 7/16" deep, with 1/2" spacing.

Chap. 7, page 10, column 1, paragraph 2, Add: Two aileron pushrods connect the bellcranks on the inboard ends of the ailerons to the CS-1 motion changer bellcranks. The length of these pushrods will vary from aircraft to aircraft and should be custom fitted. Fabricate the pushrods from 1/2" x .035 2024 T3 and treat the ends as shown in Chap. 7, page 4.

Chap. 7, page 11, column 1, Change: Move the first sentence of paragraph 4 and add it to the last sentence of paragraph 2.

Chap. 7, page 11, Note: The rudder bearings are not fully dimensional, but they are shown full size in these drawings. Simply reproduce them as shown.

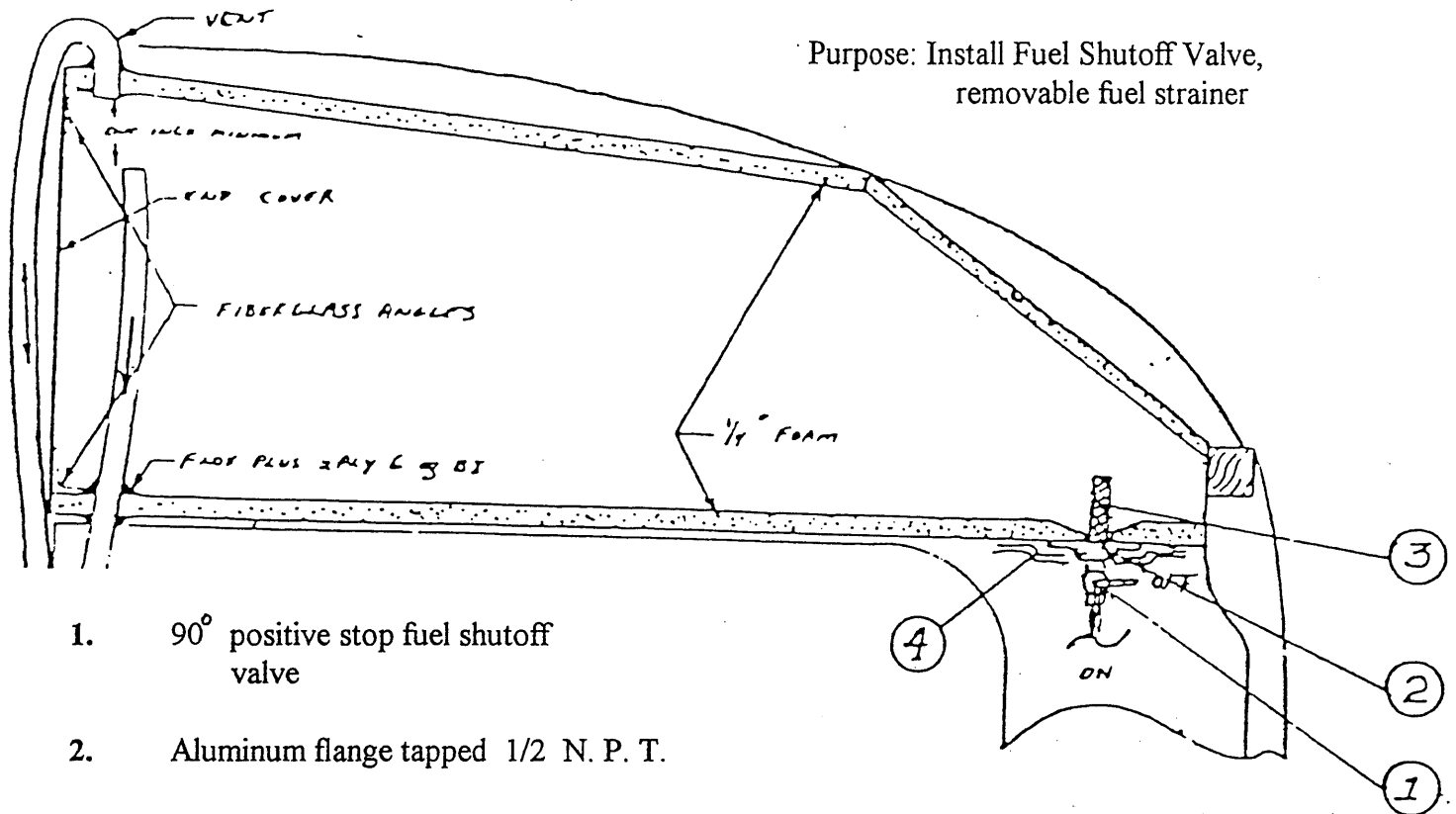
Chap. 7, page 12, Add the following dimensions to the rudder pedal assembly drawing: Fabricate the tubular bellcranks that attach to the rudder cables from tubes 4 1/4" long. Cut a one inch long slot in the top of the tube and weld in a tab fabricate from a piece of 3/4" x 2" x .063 steel. Drill a hole to accept the rudder cable shackle such that the overall length from the pivot point on the rudder pedal cross tube to the attach hole is 5 1/8".

Chap. 7, page 14, column 1, paragraph 3, Add: "Braze an AN3-13A bolt into each end of the tail wheel push rod rather than using the fork-end and stud-end and rivets. Use an AN 665-21R clevis terminal and an AN 315-3 lock nut on both ends of the rod. The overall length of the rod assembly will vary slightly depending on the exact distance from the rudder horn to the tail wheel assembly.

Chap. 7, page 13, Add: Bend the sheet metal part that incorporates the steering pushrod connection point in such a way that the pushrod end is below (rather than above) the tail spring centerline. Refer to the photographs on page 14.

Chap. 7, page 15, Fuel shut off Valve Note: Where the fuel system is described in your plans, no fuel shut-off valve is shown between the tank and the gascolator. The fuel shut-off valve is not necessary for engine operation, but should be installed in the system for safety's sake.

PLANS CHANGE !



Purpose: Install Fuel Shutoff Valve,
removable fuel strainer

1. 90° positive stop fuel shutoff valve
2. Aluminum flange tapped 1/2 N. P. T.
3. Removable finger strainer
4. 4 Layers 6% Bi-Directional over flange lips and tank bottom.

Chap. 8, page 4, column 2, paragraph 1, Add: Note that these structural plys are installed with the largest ply applied first, and the narrowest ply last. Make certain that these plys cover the axle hole and wrap up and forward on the side of the wheel pant, up around the corner, and onto the surface of the canard. It will not be possible to make these plys align spanwise as they go onto the canard surface. Expect them to lie at about a 30 degree angle relative to the span. Do the best you can to get as much of these re-enforcing plys on the pant and canard and trim the excess off at the lower edge of the wheel pant and leading edge of canard. The idea is to pick up the loads at the axle and transfer them to the upper (or lower) surface of the canard.

Chap. 8, page 5, column 1, paragraph 2, Add: The azusa wheels and brakes are light and inexpensive; however, they are not manufactured to close tolerances. Expect to fiddle with the brake drums in order to get the drums and wheels to run true. It may be necessary to do some filing and fitting. Non-concentric brake drums will cause unsatisfactory braking action.

Chap. 8, page 6, column 1, after sentence 2, Add: Naturally this hole must be just aft of the aft face of the canard drag spar. In order to make as fair a lead as possible from the inboard end of the brake conduit to the brake pulley it will be necessary to remove some of the foam in the canard hinge faring adjacent to the conduit for a distance of about 5 or 6 inches outboard of the end of the faring that is next to the fuselage. Use a long thin chisel or knife blade to remove the foam. Carefully bend the conduit aft so that the cable will clear the aft face of the canard drag spar. Install a wedge of scrap foam with micro in order to fasten the conduit in position at the proper angle.

Chap. 9, page 6, Note: The drawing calls for an AN960HT-6P rod end. The correct part is AN490HT-6P.

Chap. 10, page 1, column 1, paragraph 3, Change: "canopy" to "cowling".

Chap. 10, page 1, column 2, paragraph 1, Add: If you are using a "universal" engine case rather than a type I case, it will be necessary to grind or saw off the small mounting boss just below the oil pump in order to obtain sufficient clearance between the engine and cowling.

Chap. 10 page 2, column 2, paragraph 3, Add: The aft edge of the cowling receives 20 evenly spaced fasteners. The inboard lip just aft of the spinner, inside the air intake, receives one fastener on each side. Five additional fasteners are used on each side evenly spaced along the horizontal split line. If desired, the Tinnerman washers may be counter sunk using a spade bit.

Chap. 13, page 2, Add: The exhaust system may be either purchased from one of the engine converters or fabricated out of mild steel muffler tubing. Your local muffler shop should be able to supply you with 180 degree bends that can be cut and welded into the proper shape. The pipes should exit the lower edge of the cowling (2 on each side) at an aft facing angle. To reduce exhaust noise simply drill 3 holes each 1/4" in diameter on the under side of each pipe. Start 1/2" from the end of the pipe and space the holes at 1/2" intervals along the length of the pipe. Insert a scratch awl in each hole and bend it aft to produce sort of a louvered effect. This simple modification will greatly reduce exhaust "bark".

Chap. 13, page 3, Note: The aluminum engine mont extrusions in this drawing are shown upside down. Simply ignore this error, but be sure to install the extrusions as directed in the verbiage.

Chap. 13, page 3, Engine Mont Dimension: Add the following dimensions to the side view of the motor mount. The distance from the top of the upper legs (at the firewall) to waterline zero is 6.8". The distance from waterline zero to the bottom of the lower legs (at the firewall) is 7.4". Note that the photographs show a slightly different mont design than the drawings.

Chap. 14, page 1, column 1, paragraph 1, Add: For further information on finishing refer to the February 1982 issue of *SPORT Aviation MAGAZINE*.

Chap. 14, page 1, Post Cure, Add: It is desirable to raise the temperature of the cured parts to a temperature higher than they will see in service before any substantial load is placed on them in order to eliminate any possibility of high temperature creep later on. This is most important for the canard spar. The best method is to leave the parts out in the sun after they are covered with grey primer. A alternate method for those with a lack of strong sunlight is to put the canard and wing in the sun with the black spar caps exposed. The proper temperature is reached when you can no longer hold your hand on the surface for 10 seconds. Be sure that the parts being cured are well supported and not subject to any loads. Do not overheat your parts.

Chap. 14, page 4, column 2, paragraph 4, Add: The overall contour of the airfoils must be perfectly smooth. Bumps caused by paint trim lines are sufficient to degrade performance and are not permitted.

Number the full size plans pages as follows: Label the sheet containing the fuselage layout, L1; the elevator templates, L2; the canard BE-117.5 template, L3; the canard BE-14.5 template, L4; the bulkhead curve layout, L5; the forward fuselage cover former #3 station 18, L6; the forward fuselage cover former #4, station 36, L7; and the aft fuselage cover former #4 station 64, L8.

Full Size Sheet L1, Change: Change the position of the wing drag bulkhead layout on the fuselage bottom to 77.2" (not 77.8").

Page L 10, Change: The numbers on the rudder (not fin) templates used for hot wire cutting are incorrectly printed. Alter the smaller template so that it is basically a scale model of the larger template. In other words, the number 8 on the smaller template should be where the number 7 is printed, and so on.

Elevator Torque Tube Length: Some vendors may supply a 1" diameter tube slightly shorter than the 103" length called out in the plans in order that they may use standard tubing lengths (*and save you money*). This is no problem, since several inches are eventually trimmed off each end of the elevators.

Axle Size Change: The proper main wheel assembly is an Azusa wheel and brake with ball bearings (not tapered roller bearings) that utilizes a 5/8" diameter x .0120" wall 4130 steel axle. Various erroneous references in the plans may show either a 3/8" axle or a 1/2" axle. Make appropriate changes throughout the plans to reflect the proper 5/8" axle and 3/4" x .058" axle spacers. Pages that will be affected by this change are L9; L11; Chap. 8, page 1, page 2, page 5 and pages A-1 and A-2. The proper wheel assembly is available from Wicks Aircraft Supply. The tail wheel assembly shown in Chap.7, page 13, requires a piece of steel tubing (or bushing stock) 3/8" x .058" x 1.9" to serve as a bushing between the axle bolt and bearing if the bearing is 3/8" ID. Use a piece of 1/2" x .120" tubing if your bearing is 1/2" ID.

Aft Cockpit Air Exit Vent Omission: Cut an oval shaped hole in the fuselage bottom at about fuselage station 150. Make the air exit hole slant aft and make it about one square inch in cross sectional area. Glass the inside of the hole with one ply of 6oz BI cloth.

DRAGONFLY PRICE LIST*

PRE-FAB COMPONENTS

1. PRECUT FOAM	\$1,796.00
WING	859.00
CANARD	859.00
VERTICAL FIN	138.00
RUDDER	93.00

2. MOLDED COMPONENTS	\$5,435.00
FUSELAGE HALVES (1 PAIR)	3,105.00
ENGINE COWLING	492.00
FORWARD FUSELAGE COVER	297.00
CANOPY FRAME OUTER SHELL	231.00
FUSELAGE BOW	194.00
AFT WING COVER	276.00
CANARD FAIRINGS	228.00
WING FILLETS	114.00
WING TIPS	125.00
SIDE CONSOLES	225.00
INSTRUMENT PANEL	207.00
FUEL CELL AND BAFFEL	290.00

3. BULKHEADS	\$1,521.00
FIREWALL 1/2" PLYWOOD/GLASSED	171.00
CANARD LIFT BULKHEAD	171.00
CANARD DRAG BULKHEAD	186.00
WING LIFT BULKHEAD	171.00
WING DRAG BULKHEAD	171.00
LOWER SEAT BACK BULKHEAD	138.00
UPPER SEAT BACK BULKHEAD	138.00
INTERCOSTAL	120.00
CANOPY BULKHEAD	138.00
TAIL BULKHEAD	33.00
FORWARD PANEL	147.00
FORWARD FUSELAGE FLOOR	111.00

4. PARTS	\$689.00
TAIL SPRING	44.00
FUEL FILLER MOLDING	35.00
FUEL FILLER RING	66.00
NACA DUCTS	62.00
MARK II GEAR LEG KIT	470.00
PRETAPPED DRAIN PLATE	17.00

TOTAL PRE-FAB COMPONENTS	\$9,441.00
U.S. SHIPMENT CRATING	\$500.00
INTERNATIONAL SHIPMENT CRATING	\$670.00

ADDITIONAL ITEMS AVAILABLE

CANOPIES	
CLEAR	\$465.00
GREEN, LIGHT & MEDIUM GRAY	540.00
PLEASE INCLUDE PACKING FEE:	
U.S. & CANADA	15.00
FOREIGN	35.00

CONTROL SYSTEMS PARTS	
BELLCRANK LOWER AILERON DFCS-3, 1 REQ'D	\$25.00 EA
7" BELLCRANK, AILERON CROSSOVER, DFCS-4-1, 1 REQ'D	20.00 EA
8-3/4" BELLCRANK, AILERON CROSSOVER DFCS-4-2, 1 REQ'D	20.00 EA
PILOT STICK, DFCS-6-1, 1 REQ'D	27.00 EA
CO-PILOT STICK, DFCS-6-2, 1 REQ'D	25.00 EA
WELDMENT, DFCS-7, 2 REQ'D	20.00 EA
WELDMENT, DFCS-8, 2 REQ'D	8.00 EA
BELLCRANK AILERON, DF-112, 2 REQ'D	20.00 EA
RUDDER HORN ASSY, DF-115A, 1 REQ'D	30.00 EA
CONTROL SYSTEM HINGE THIMBLES, NO P/N, 12 REQ'D	5.00 EA
NEW ELEVATOR TORQUE TUBE ASSY, NO P/N, 1 REQ'D.	120.00 EA

PLEASE KEEP IN MIND YOUR PRE-FAB ORDER IS A CUSTOM ORDER. MAKE SURE YOU WANT THE PARTS YOU ARE ORDERING. WE ARE UNABLE TO GIVE REFUNDS OR EXCHANGES EXCEPT FOR WORKMANSHIP OR DEFECTS.

*ALL PRICES PLUS PACKAGING AND SHIPPING.

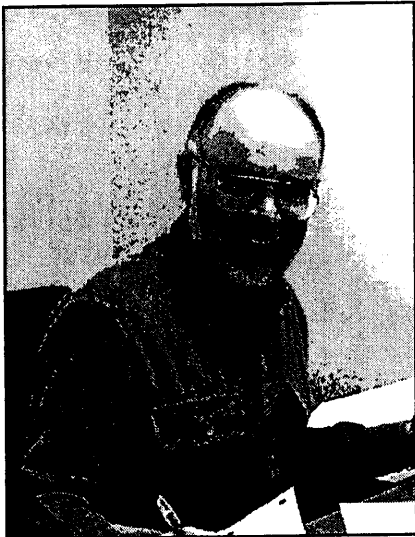
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TOLL FREE (800) 464-3664
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E-MAIL: slipstream@vbe.com



Mike's Corner



Dear Readers:

Spring has finally arrived in the Midwest, and the pace of day-to-day activity has certainly picked up at SlipStream. Just this past month we had the good fortune to have Bob Marso, a young Aeronautical Engineer out of Purdue, join us as a summer intern (though we're really hoping he considers staying on). Bob's focus of study at Purdue was structural engineering and we have quickly filled his dance card with lots of projects that have been needing attention. Among them is the conversion of the Dragonfly drawings to AutoCAD. Bob is also working to incorporate all of the changes to the plans that have been documented over the years, thereby eliminating the errata sheets, and in converting the plans themselves to Word files. All in all, a fairly aggressive challenge in and of itself, though we have set some additional objectives that should help us to get a step or two closer to making a Dragonfly quickbuild, firewall forward kit, a reality. We'll keep these plans under wraps for the moment, at least until we know with a degree of certainty that we can accomplish them in the timeframe that we presently

have contracted with Bob.

We have had several requests from builders to post the latest errata sheets, so that everyone can be made aware of all of the changes that have been added to the original plans. I feel this is a valid request, and incorporated in this issue of the DBFN you will find the complete unabridged up-to-date errata sheets. In the future, we will release accepted changes to the plans www.slipstreamind.com.

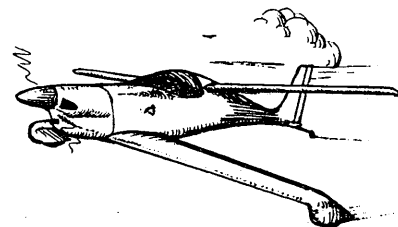
SlipStream has recently inked two deals with vendors that may be of interest to Dragonfly builders, as well as to all aircraft homebuilders. In the first agreement, SlipStream Industries has been named the exclusive North American distributor of the Fuel MiZer, an affordable electronic fuel flow gauge that provides far more accuracy than traditional fuel gauges, while providing other benefits simply not available in standard capacitance applications. The MiZer is menu driven and provides an accurate reading of current consumption (to the tenth of a gph) and remaining supply, as well as total and trip fuel logs, and an audible and visual low fuel alarm that can be preset for your specific application. The transducer turbine features a stainless steel shaft mounted in sapphire bearings and is accurate from 0.5 to 43 gallons per hour of fuel flow. Priced at \$299 plus \$10 shipping and handling, this product has received outstanding acceptance in the experimental aircraft industry worldwide.

In the second agreement, SlipStream has been awarded a dealership to market both the Becker AR-4201 and Microair 760 VHF transceivers. Both of these quality transceivers are extremely compact and lightweight, and are

designed to fit a standard 2 1/4" instrument hole. In addition, both manufactures are expected to introduce compact transponders that will be competitively priced, within the next few months.

May you enjoy a safe and enjoyable flying season!

Mike Puhl



The Classifieds

For Sale: 2276cc HAPI engine just completely freshened, New GPAS "Force One" prop hub, dual electronic ignition, gear reduction starter, Hapi alternator, HAPI/Scat split cylinder heads. Call for more details. \$2000.00 Paul Fischer - Kansas (913) 829-2536 after 6:00 PM CST or e-mail at: patfischer@msn.com

For Sale: Dragonfly Mark II project - 100 TT. Aircraft was purchased approx. two years ago, less FWF. One gear box and steel gear leg damaged. Project includes an EA 81 Subaru Turbo. O time on

"Classifieds" continued

engine and turbo. All appropriate engine parts balanced, also includes the fuel injection and related components. Engine mount, custom radiator, starter, ring gear and alternator mounted. Cleveland wheels and brakes, instruments. First \$5,900.00 takes it. Contact Robert Bircher, PO Box 71, Hinckley, MN 55037-0071 (320) 384-7566 E-mail robertc@pinenet.com

For Sale: "Snap" Dragonfly MKIHH hoop gear project for sale. 75% complete. Fuselage built. All bulkheads in place. Fuel tank in place. Wing, canard, aileron, and elevators completed, ready for primer and alignment to the fuselage completed. Most everything to complete the project: turtle decks, canopy, hoop gear, verticle fin/rudder, tail wheel assembly, tubing, bell-cranks, VW engine mount, etc.. No engine or instruments. \$5800.00 OBO. Located in Omaha NE. Ask for Doug "Hawkeye" Humble Call weekdays 402-558-1211. See photo's at
<http://hometown.aol.com/hawkidoug/myhomepage/sale.html>

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

For Sale: 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

For Sale: Dragonfly Firewal forward package. 1835 HAPI 60 2DM with Great Plains heads, Extra set of heads, mount, matched prop & spinner, exhaust, Super carb, Baffling, Hapi alternator & regulator. Call for more details \$3,000.00 of best offer. Contact Wayne Ulvestad - Volga, SD (605) 627-9291 days or (605)627-5365 evenings & weekends.

Wanted: New or gently used Dragonfly canopy and/or frame. Please contact Mark Jones at (414) 542-9561 (after 6 pm central time) or 2710 Meadowbrook Rd. Waukesha, WI 53188

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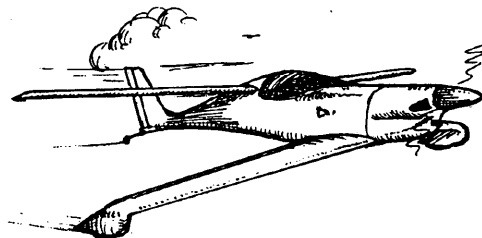
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Bill "Spud" Spornitz
(913) 764-5118
E-mail dbfnspud@aol.com



The Grin Department!

Grin # 1

"Flight 1234," the control tower advised, "turn right 45 degrees for noise abatement."

"Roger," the pilot responded, "but we're at 35,000 feet. How much noise can we make up here?"

"Sir," the radar man replied, "have you ever heard the noise a 727 makes when it hits a 747?"

Grin # 2

Taxing down the tarmac, the jetliner abruptly stopped and returned to the gate. After an hour long wait, it finally took off.

A concerned passenger asked the flight attendant, "What was the problem?"

"The pilot was bothered by a noise he heard in the engine," he explained. "It took us awhile to find a new pilot."

Grin #3

This is the transcript of the ACTUAL radio conversation of a US Naval ship and the Canadians, off the coast of Newfoundland, Oct. 95. -- Radio conversation released by the Chief of Naval operations 10-10-95.

Canadians: Please divert your course 15 degrees to the South, to avoid a collision.

Americans: Recommend you divert your course 15 degrees to the North, to avoid a collision.

Canadians: Negative, You will have to divert your course 15 degrees to the South to avoid a collision.

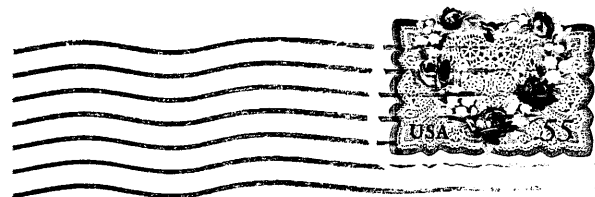
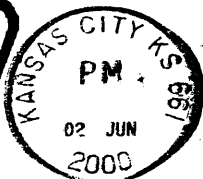
Americans: This is the Captain of the Navy ship. I say again, divert YOUR course.

Canadians: Negative. I say again, You will have to divert your course.

Americans: THIS IS THE AIRCRAFT CARRIER USS LINCOLN, THE SECOND LARGEST SHIP IN THE UNITED STATES ATLANTIC FLEET. WE ARE ACCOMPANIED BY THREE DESTROYERS, THREE CRUISERS, AND NUMEROUS SUPPORT VESSELS. I SAY AGAIN, THAT'S 15 DEGREES NORTH, OR COUNTER MEASURES WILL BE UNDERTAKEN TO ENSURE THE SAFETY OF THIS SHIP

CANADIANS: We are a lighthouse. Your call.....

Remember: I don't write these words of wisdom, I just pass them on down the line - Chuck Kaplan, Walpole, MA



The Official Voice of Dragonflyers All Over the World

Spud Spornitz - Editor/Publisher

1112 East Layton Drive - Olathe, Kansas 66061

FIRST CLASS MAIL

Dragonfly - Quickie Canard Fly-in 2000
Charleston, Illinois - June 23-25
See page 2 for more details