

DRAGONFLY BUILDERS AND FLYERS NEWSLETTER

THE OFFICIAL VOICE OF DRAGONFLY BUILDERS ALL OVER THE WORLD

Volume 88

November/December 2000

Editors Corner

Hello Everyone,

This is my last issue of DBFN....BUT I'm excited about the future of the newsletter. I think the injection of this new blood to the editors seat is going to be very positive! Pat Panzera has some excellent plans to take DBFN to the next level. We need to support him in every way! So get in those renewals and your articles.

I've spent the last 3 or 4 months pondering (read that as heavy research & head scratching)...At this time of change of bowing out of doing the newsletter chores, should I be making a change in what I would like to build and fly as a aircraft. Boy did I do the research; I looked at the RV-6 and RV-8, then the Cozy IV, then the Bearhawk and the Tailwind, Falco, GP-4 and the Dragonfly. Each had their assets and liabilities.

The Dragonfly still seems like the best choice for ME, it is truly the "Best Bang for the Buck" for

a guy that is on a budget!

I am really looking forward to getting back to work on it. I've been getting the shop cleaned up and a fresh load of glass and epoxy has arrived.

Other than working on my DF, I'm also going to be working on a few other projects that are DF related. I'm going to put together a website where I can share some of my Dragonfly photo collection (I have well over a 800++ photo's) and keep everyone abreast of my building progress (pressure's on now!!). Also if time permits I am going to try and put all of the DBFN newsletters on CD with some type of search capabilities (I haven't figured out "The how to" yet, but I'll keep everyone posted).

Speaking of the newsletters and related items. Back issues of DBFN #32 thru #88 will always be available in hard copy form or at least until I get a CD put together. The hoop gear plans/drawings will be available also. Hopefully I can talk Pat into keeping this info in the classifieds section of the newsletter.

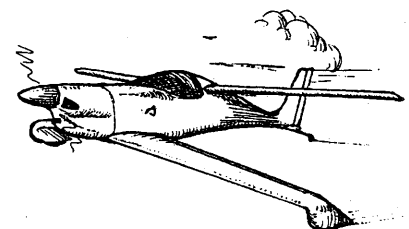
Also if there is an interest I can set up a meeting at Oshkosh at the Homebuilders Headquarters building on Saturday morning and I could set-up a DF dinner at one of the restaurants Thursday or Friday evening. Hey maybe we can get that Mike Puhl to join us! Call me, write me, e-mail, but let me know if there is an interest. I can't make Sun N' Fun this year.

My phone is always open to anyone who wants to talk Dragonfly's (913) 764-5118. Also I have a new e-mail address that you might want to note. It is: bspornitz@home.com

You guys and girl's better get building...I just might beat ya!

Very, Very Best Regards,

Spud Spornitz



Scratch-built tailspring

From: jkunzie@dellepro.com
Subject: [Dragonflylist] Tail spring

Mike, please give us some idea of how you went about building your tail spring? I want to build as much from scratch as I can as I think this is ALMOST as much fun as flying.

Sure - Very easy in fact. I used the plans dimensions of an oval shape, 2"x42".

To do this was rather difficult so plan B was used. I took two pieces of press board, a type of wood made under high pressure and used to make Kitchen cupboards etc, and laminated them together. Size was about 6"x90" - This will produce two tail springs when cut in half. I then took a router bit from the dremel kit, the ball type and fitted it to a standard router. Then simply cut the groove the full length of the mould to be, leaving the ends open. The lower portion had nice round edges due to this process. Once the groove was cut I varnished it once. When the varnish had cured I lined the groove with the cellophane tape used to seal cartons. You can use duct tape. The varnish allows for better adhesion for the tape. That's all it was used for. Then I used single strands of uni S-glass and wound them around two nails set 100" apart. The nails were 10" long. This allowed for uniform windings 2" wide. I then wet the glass strands while they were still wound around the the nails. This kept everything together. I would four layers at a time.

The next step involved simply laying the whole wet wound glass layers down in the taped 2"x90" groove while still attached to the nails. Then I cut the glass strands at the nails leaving the glass in the groove and the "loom" ready for the next lot. This was repeated until the 0.75" groove was full. Took about an hour to do the wet work. Oh I forgot to mention that peel ply was laid down in the groove first before the first layer of uni-strands. When finished a layer of

peel ply was added on top and a taped flat board was put on top with bricks to add pressure - left to cure. Two days later the spring was removed from the mould and Pell ply removed.

I now cut the product in half and post cured in my wife's kitchen oven at 180deg. Celsius for three hours. I let the parts warm up with the oven from zero.

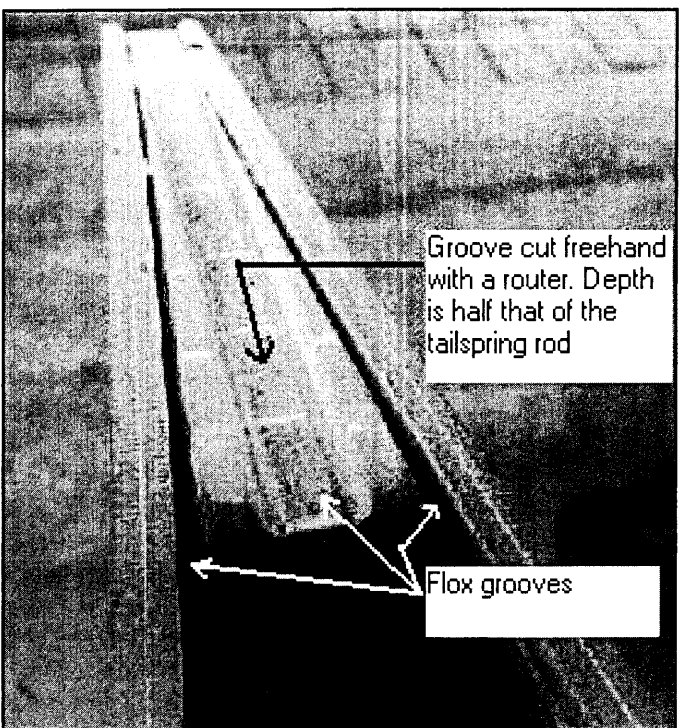
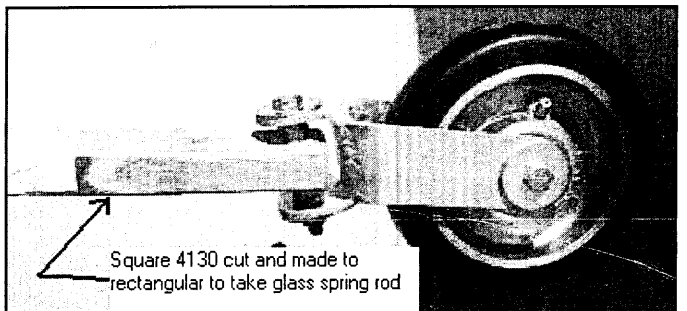
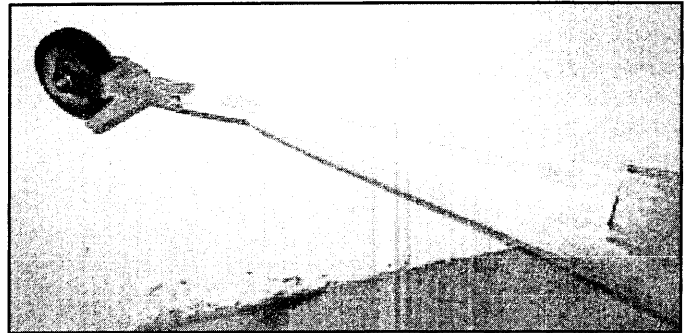
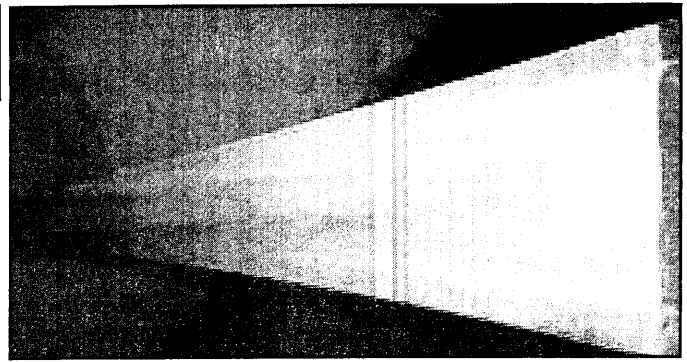
I then took the spare spring made and begun the destruction process - clamped one end to a beam and hung a cable, from the other end. This was then loaded, and I stopped at 75kg, coz I could not keep the weight on.

I then became bullish and set the spring between to bricks and then drove my BMW 316i over it driving from one brick to the other. I still have that spring spare. It failed after two minutes of loading - the failure was delamination of glass strands and not catastrophic.

The other spring was reinforced as per plans with bid at 45. I am happy with the result.

The spring is sanded to the oval shape and I then used 1,5" square 4130 tube to make the tail wheel fitting. Split the tube down the one side so as to keep it 1,25" wide. I welded the two cut sides together to form a tube 2.1" wide

and floxed the spring in place. The result is very good - for me at least.



Mike Wright
+27 43 7066083
["http://www.icon.co.za/~marmic"](http://www.icon.co.za/~marmic)
South Africa

Great Builder Tip! - Properly attach those wings and canards

Torque Study

Hello DF group;

I recently started the wing construction stage of my Dragonfly project and needed to determine how much to tighten the AN4-7A bolts that attach the fittings into the wing. The plans don't get too specific except to warn the builder not to strip the threads. That is very subjective since that extra quarter turn "for good measure" could start to strip the aluminum thread, depending on the strength of the individual. I looked in Bingelis' books for bolt torque values but didn't find anything that applied to aluminum nutplates. So I decided to perform an experiment to determine how much to torque the bolts for optimum attachment strength with an ample margin of safety. Here is a write-up:

Purpose

To determine the torque that fully engages the threads of the aluminum inserts, without stripping them.

Materials

- Scraps of 1/4"-thick 2024-T3 Aluminum
- 3 AN-7A bolts
- 3 AN960C-416 washers
- Torque wrench (the less expensive type with the long needle and a torque scale)

Method

Three (3) samples of 1/4" aluminum were drilled and tapped the same as the inserts used in the wing. A spacer was used to represent the lift fitting. The bolts (with washers) were inserted until finger-tight. The torque wrench was positioned at "12-o'clock" and rotated. Every 30-degrees rotation (one o'clock position, two o'clock, etc.) the torque was recorded, until the thread was stripped. Results were plotted.

Results

Figure 1 shows a plot of observed torque versus rotation. The curves have been shifted so that the points of maximum torque coincide. Based on the plot, it was concluded that threads were fully engaged when the slope of the torque-rotation curve

became constant. This was around 100 inch-pounds. The actual wing lift fitting bolts were therefore torqued to 100 inch-pounds.

Discussion

Figure 2 shows a fabricated theoretical curve (for illustrative purposes only) representing the general shape of the actual observed curves. As the curve in figure 2 ramps up from zero (segment A), the threads of the aluminum are coming into contact with the bolt threads. When the bolts are fully engaged, the curve becomes linear (segment

B) and the torque varies more-or-less directly with the rotation. The more you turn it, the greater the tension in the threads and the greater the friction force between the contacting surfaces. At the top of segment B where the curve departs from linearity, the aluminum is beginning to yield. This continues until the threads reach their ultimate stress (point C) and then start to strip. The bumps in segment D are likely momentary resistance caused by stripped treads of aluminum getting "chewed up" between the remaining aluminum walls and the rotating bolt threads. At segment E, everything has been stripped clean

Figure 1: AN4-7A Bolt in 1/4" 2024-T3 Aluminum Tapped Hole - Torque Test

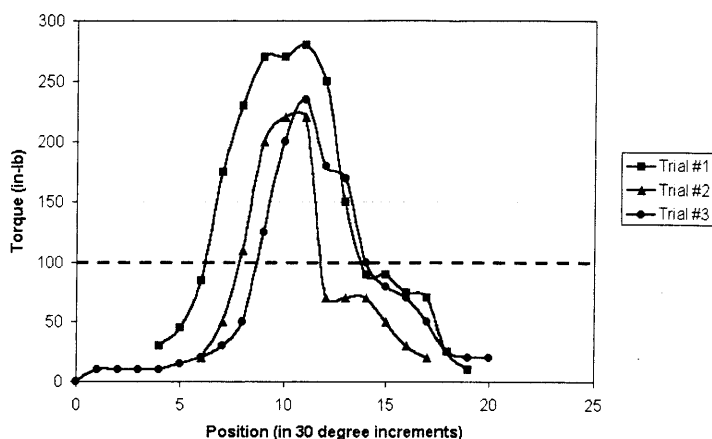
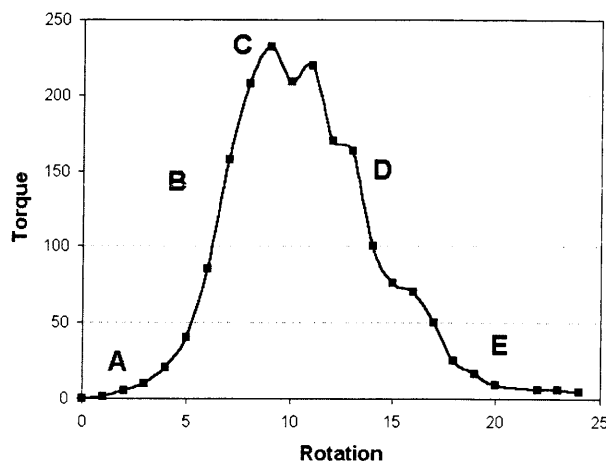


Figure 2: Theoretical Torque versus Rotation



and is free turning as the torque goes to zero.

Conclusions

Applying this to the actual observed curves; I chose a torque of 100 inch-pounds because that is roughly around the lower end of segment B. That is to say, the approximate torque at which the threads would be fully engaged and under some tension, but nowhere near failure (i.e. yielding). Here, the bolts are holding on to the aluminum insert with a comfortable safety margin. Since they get floxed in place and will never be able to loosen, I don't believe they need to be any tighter.

A Walterson update

An update on my Dragonfly

Finally got back! Lots of rain, busy work schedule, and the fact that I had cut up my old cowl kept me out of the air for a while.

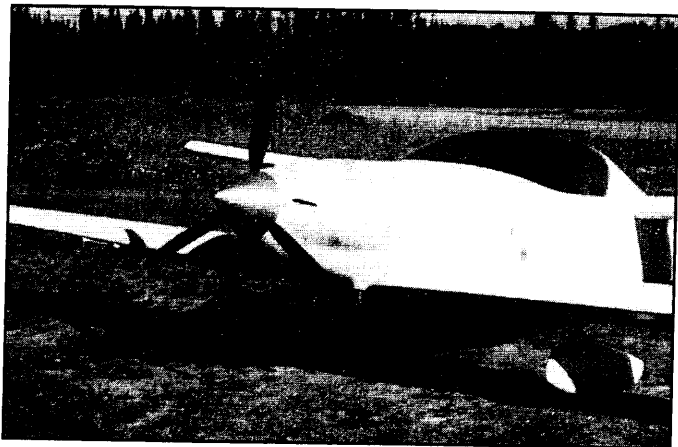
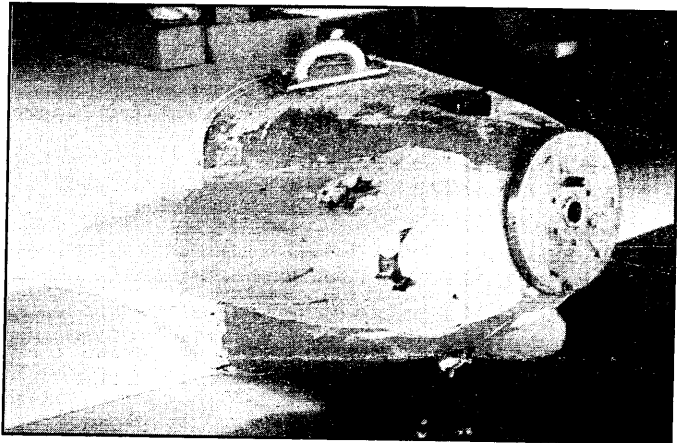
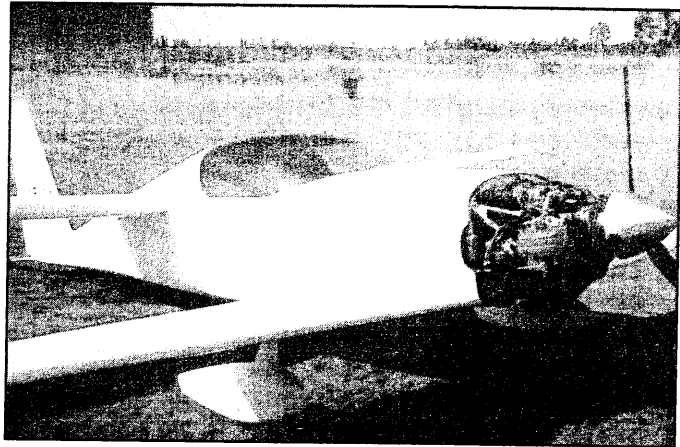
I covered the engine in plastic and used parts of the old cowl riveted into the inside of the fuselage lip and lots of pieces of blue insulating foam to make the plug. After carving the foam into the desired shape I covered it all with drywall compound and smoothed it out some more. A few coats of MUD got the plug the way I wanted it. Covered it all with paste wax and layed up a minimum of three layers of six oz. came back when it was tacky and cut the split line. When it was dry I sanded all the large bumps and then pulled the cowl from the plug and did the back trimming. Attached a split line flange and made a few openings for carb and engine air. Few coats of "Fill and Sand" and a bit of bondo and I'm ready for paint.

I don't know if I gained a bunch more speed with the cowl but it sure looks a lot better than the old one. I now have ten hours on the 1800 cc Direct Drive Turbo conversion and things are going well. Water is at 200, oil 230. All acceptable. Performance is about the same as the 1835 VW on takeoff, until I pull on the boost. Three pounds of boost will get my Warp drive spinning at 3500 and if there is a big tree in front of you, you can pull eight pounds for a while and really climb. I was at 8500 feet yesterday seeing 135 mph indicated with 2 lbs boost and 3500 rpm. I can go up to 3800— 4000 rpm although I'm slowly building up to it. I'm sure my prop is set a little too fine. I'll get to that after awhile. At 8500 I can still easily get 800-fpm climb.

In doing my conversion I chose to follow the path of Reg Clark and

Roger Enns. I have a bed type engine mount, four inch aluminum prop hub, ring gear from an 86 Taurus, starter from a Saturn, alternator from a Suzuki and dual ignition pickups from a Dodge Colt along with an MSD coil selector. Turbo is the water-cooled style from the later Subaru's. Motor mounts are actually sway bar rubbers from a Ford pickup. Along with my Chevy overload leaf springs for my landing gear I've got a witches brew. I am also running a POSA carb—— YES a POSA carb and it works fine. Hope to do some streamlining with my landing gear and wheel pants. I'm sure I have a big drag penalty there, but for now I'm trying to fly the thing.—— Take care and I always enjoy seeing the newsletter arrive.

Chris Walterson - Canada
DDT Dragonfly Mark 11
Super Quickie
Starting soon a Q 200— maybe
with a 2.5 Turbo Soob



DRAGONFLY
BUILDERS & FLYERS
NEWSLETTER

Pat Panzera - The new editor of DBFN

A Special Thanks for a Job Well Done!

I would like to thank Spud for the years of effort and devotion to the newsletter, not to mention the Dragonfly community in general. He's done a wonderful job, and with respect to the newsletter, I hope I can do as well as he has.

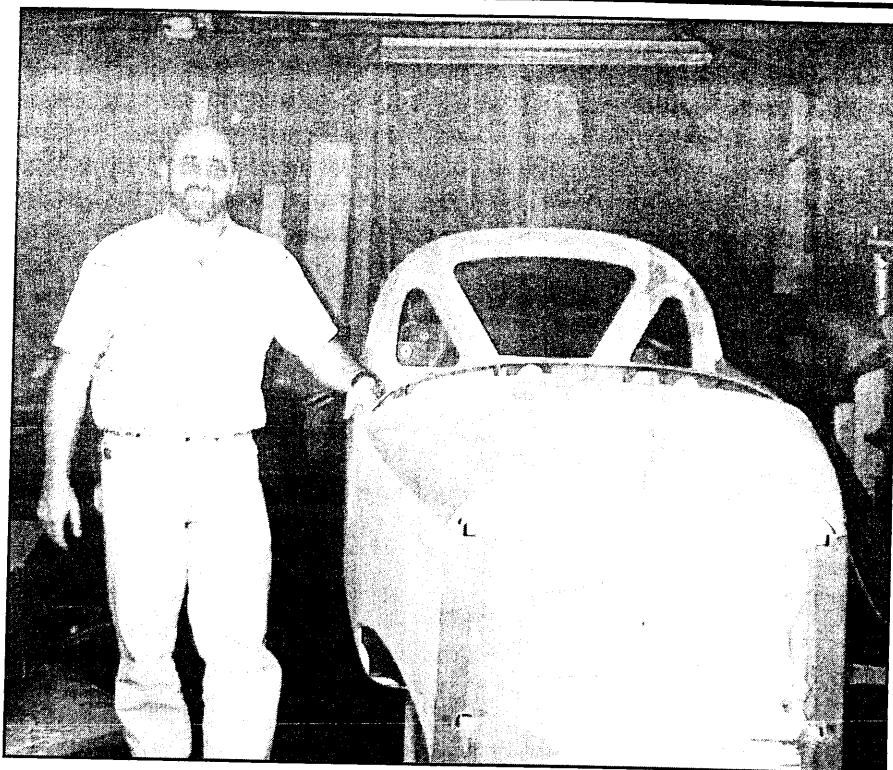
Spud asked me write a letter of introduction. Not knowing really where to start, I turned to my trusty DBFN binder, and opened it to issue # 32, where Spud introduces himself. On page 10 I found his short and to the point introduction, so in like fashion, I'll keep mine short as well.

Who is a Pat?

My name is Patrick Panzera. Yes, I have no middle name. At present I'm 41 years old, and have been married to my wife Veronica for one month shy of 21 years. We have 2 great kids, our son Antonio who is 20, and our 18 year old daughter Angela, who just gave us our first grandson Alex.

I started life's adventure rather young. By the time I had turned 17, I had completed high school, spent 2 years as a lineboy at a local soaring site where I had my student certificate (soloed in 3 hours) and had built 14 hours in sailplanes, owned a 54 Chevy truck, and was enlisted in the US Navy, where I turned 18 while in Pattern Maker school.

I met and married my wife while I was in the Navy. We were both stationed on the same ship. Yep, I married a sailor. We were stationed on board the USS San Onofre, the first co-ed navel vessel. After 3 years in the USN, and after being advanced to Pattern Maker Third Class and getting married, my tour was up. We moved back to my home of record, Victorville CA, where I opened a cabinet business. 8 years later I closed it to move to Hanford CA to work for my best friend as a construction superintendent. After a few years of that, and realizing that I really prefer being my own boss, I opened my current business where I work as a residential designer.



I didn't fly much after I left my job as a lineboy. In fact, while starting a home and raising children, I didn't fly at all. 4 years ago, after 16 years of dreaming of once again flying, I decided it was time to finish up my license. Only this time I'd try flying with an engine bolted up front. It's now 400 hours later, I'm instrument rated, and I'm in the process of becoming a CFI. Commercial check ride should be in a few weeks, then it's on to CFI.

I received my private in January of 1997. By July of that same year I bought a partially complete Dragonfly from a local guy who had been sidetracked for 15 years. By the fall of that same year, I attended my first Ottawa fly-in. I'll be writing more about my project in future issues of the newsletter.

Plans and Goals for our Newsletter

Are there changes in store for the newsletter? Not really. I hope to keep the quality up to the standards

Spud has set. I don't plan on changing anything, except to build on what's already in place. I'd like to ensure that every issue has something meaningful for the Dragonfly builder and the Dragonfly flyer.

Referring again to issue #32, I see that there is a column about goals. Some of the goals set were met, some were exceeded, and some didn't do too well. I'd like to keep the spirit of these goals alive, and with your help, I'm sure we can do it.

The Information Age

Your newsletter will be going electronic for those who want it. In the upcoming issues, I'll be converting the newsletter to an electronic version. This will make distribution much easier, and in the future, it will reduce costs. The 2001 series will be produced in a paper version, then converted to electronic. It won't happen all at once, and anyone who doesn't have Internet access, or who just rather receive a paper version, will be able to continue receiving the paper version. Those who prefer the electronic version can elect to receive it

either via e-mail, or by viewing a website. I've not worked out any of the logistics yet. One major advantage the electronic version will have over the paper version is the addition of color photographs.

Contributions

This is YOUR newsletter. Contributions are what keep this newsletter going. Please (this is me begging) contribute what ever you can. Project updates and progress reports are always interesting. Adventure stories are requested as well. As previously stated, I want to make sure that every issue has something for both the Dragonfly builder and flyer. Please help me make the newsletter informational and entertaining.

Communications with DBFN

By far the best way to reach me is via the Internet. My e-mail address is: panzera@cnetech.com You can e-mail your articles, along with digital images. If you don't have a scanner or digital camera, you can still e-mail me your article, and follow up with the photos via snail mail. If you don't have Internet access, but you can write your article using just about any Windows word processor, you can mail me a disk. If you don't have a computer, pen and paper works ok too. I can send your photos back if you request I do so, and include a stamped return envelope. My mailing address is on the subscription form at the back of the newsletter, along with a phone number for you to call should the need arise.

Subscriptions

All subscriptions and renewals should be sent to me. If you already sent it to Spud, don't worry, he will forward subscription fees and the pertinent info. If your subscription has not expired, don't worry either, you will continue to receive the issues due you. If your subscription has expired as most should with this issue, simply fill out the subscription form at the back of this issue, and mail it to me. Please include your e-mail address, even if you wish to continue with the paper version after the elec-

tronic version is under way.

The subscription fee for the year 2001 will be \$21.00 in the United States, \$23.00 in Canada and \$30.00 overseas. Even though this year we will be converting to the electronic version, it won't be completely electronic until the 2002 subscription year. The last issue of 2001 will have a renewal form which will have the electronic version option at a reduced price. Until then, your patience and cooperation will be greatly appreciated.

Pat Panzera
1931 Emma Lee Lane
Hanford, CA 93230

Builders Tips Cont'd

It should be noted that the results of this experiment are valid only for the specific materials used. Changing the size of the bolts & threaded hole, changing the threaded plate material or its thickness, or even using a different grade of aluminum, will produce different results. I strongly suggest that each builder conduct this experiment on his own for each unique type of bolt attachment that will be used on the plane. It's very easy to do. It only takes about a half-hour or so and the materials are cheap. The only expensive tool is the \$30 torque wrench; however, it is something that should be considered essential anyway. This experiment demonstrates the value of the torque wrench in achieving proper bolt attachment.

Besides providing an optimum torque value, the experiment has demonstrated that the range between under- and over-tightening a bolt is quite narrow. As a result, bolts should be tightened to a *measured* torque instead of relying on feel.

Joe Polenek
Ontario, Canada

The Classifieds

For Sale: Dragonfly Mk II N189SM, with 80-hp Continental A-80, 150-hrs. since complete overhaul by Skeezi Adkisson, with dual Savier electronic ignition and 3-blade WarpDrive prop, w/ Gary Hunter blades; cruises 145-150-mph on 4.9 gph, 21+ gal. capacity; dual throttles, hydr. brakes, ELT, cabin heat, oil cooler and filter, Garmin 195, vortex generators, electric pitch trim; \$25,000., or possibly trade for 2-place side-by-side tri-gear with turbo or bigger engine. See photo in latest Kitplane, with details on electronic ignition. E-mail: troneill@midwest.net tel: 618 594-2681

For Sale: Dragonfly MKII. Excellent workmanship. Complete plane except canard, gauges. Everything to complete canard except gear. Canard on table awaiting final layups. Spar laid up, gear leg boxes in and all cloth/carbon to complete. No gear. Always hangered, Hapi 1835 w/dual elec ign and latest mods. New Props Inc. 52/42 Prop incl spinner. Beautiful Red cloth seats. Fuselage complete w/new hatch cutout but not finished. Wing in excellent condition. Paint in excellent condition. Would entertain splitting up engine and airframe. Priced for quick sale \$4,800. Bill Brutsman 913-888-8942. Lenexa, KS Fax: 913-599-1290 Email: wdbrtsmn@aol.com

For Sale: Dragonfly firewall forward package. Hapi 60 2DM with 6 hrs test stand run time on the engine. Includes motor mount, Warneke prop, exhaust headers, Posa carb. Engine still on the test stand - can see & hear it run. Send your E-mail address and forward pictures of the engine. \$2,500 obo. Terry Bailey, 706-778-2462 (home), or 770-654-1663 (cellular). E-mail: baileyt@hemc.net.



"The Classifieds" continued

For Sale: Dragonfly covers constructed of TYVEK marine fabric made by DU PONT. Superb UV protection, dirt & dust protection easily handling & storage, soft inner lining. Straps are (4) behind and in front over wing & behind canard and around cowl. Very light and compact. \$195.00 U.S. with shipping to the US is \$15.00 / Overseas is \$25.00. Personal checks drawn on a US bank OK.

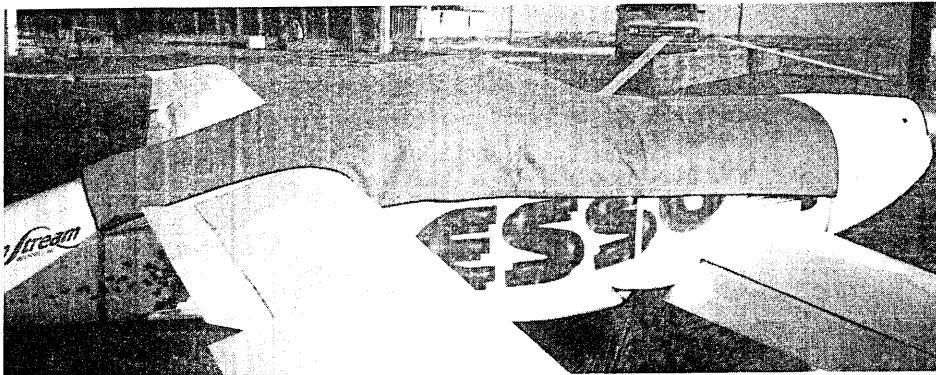
AIRRYDER Aviation & Flight Center

BOX 1990

HANNA, Alberta, CANADA.

PH / FAX (403) 854-4541

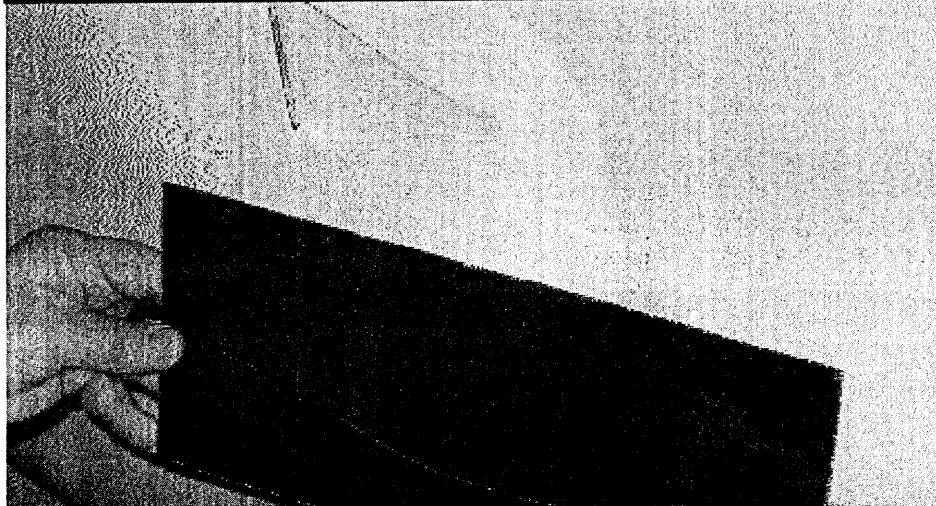
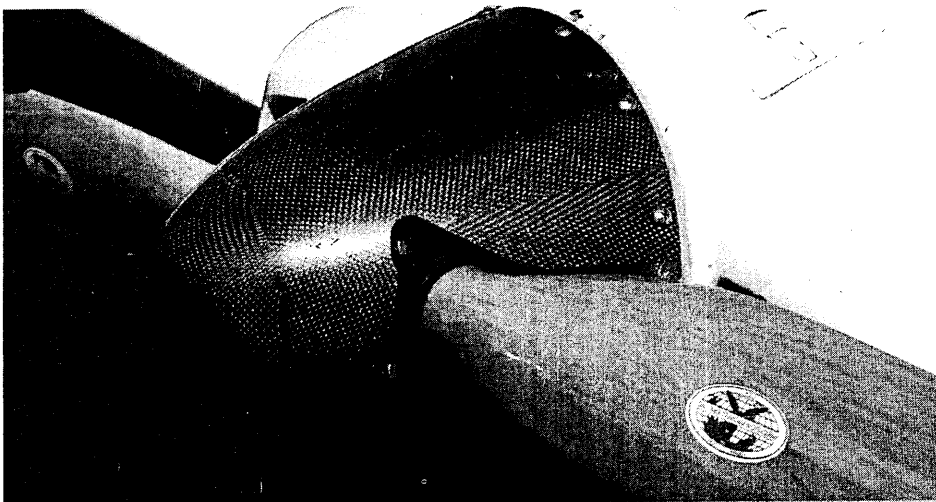
E-mail airryder@telusplanet.net



For Sale: Ducts are \$30.00 per set in glass. Carbon fiber spinners are \$250.00 including back-plate - no front bulkhead.

Charlie Johnson, 2228 East 7875 South, Ogden, Utah 84405

Answering machine 801-479-7446 E-mail: OneSkyDog@aol.com



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Back issues of "Dragonfly Builders & Flyers Newsletter", back issues are available for \$3.00 each.

Classified advertising is free to all current subscribers. All ads must be renewed after 2 issues.

913-764-5118

bspornitz@home.com

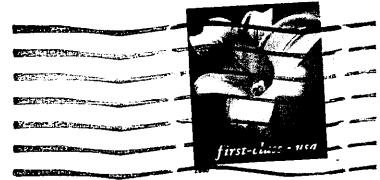
The Grin Department

RULES OF THE AIR..... Continued!

14. Always try to keep the number of landings you make equal to the number of take offs you've made.
15. There are three simple rules for making a smooth landing. Unfortunately no one knows what they are.
16. You start with a bag full of luck and an empty bag of experience. The trick is to fill the bag of experience before you empty the bag of luck.
17. Helicopters can't fly; they're just so ugly the earth repels them.
18. If all you can see out of the window is ground that's going round and round and all you can hear is commotion coming from the passenger compartment, things are not at all as they should be.
19. In the ongoing battle between objects made of aluminum going hundreds of miles per hour and the ground going zero miles per hour, the ground has yet to lose.
20. Good judgment comes from experience. Unfortunately, the experience usually comes from bad judgment.
21. It's always a good idea to keep the pointy end going forward as much as possible.
22. Keep looking around. There's always something you've missed.
23. Remember, gravity is not just a good idea. It's the law. And it's not subject to appeal.
24. The three most useless things to a pilot are the altitude above you, runway behind you, and a tenth of a second ago.



1112 East Layton Drive
Olathe, Kansas 66061



First Class Mail

