

DRAGONFLY BUILDERS AND FLYERS NEWSLETTER

AirVenture 2005

by Jeffrey A. LeTemp

I had only been to the big show in Wisconsin once, and it was just called Oshkosh back then (1981). This year was going to be maybe the best event yet with Space Ship 1, Global Flyer, the Glacier Girl, and many other truly incredible aircraft. I wanted to go so bad that I could almost taste it (not sure what that really means), but I did not think I could make it happen.

At our July EAA Chapter meeting I mentioned in passing that I might be interested in tagging along if someone had an empty seat and was only planning on staying a few days. One of our members with a Comanche had an empty seat and it looked like it might work out, but last minute annual maintenance made it look like he was not going to be able to go.

About 10 days before AirVenture I decided that I was going to fly my Dragonfly to the event....WOW!!! This ought to be fun. I had the NOTAM and access to the EAA web site, seems like a lot of information....I know I can do this. Everyone has heard stories about how congested the airspace is around Oshkosh during AirVenture, so I wanted to make sure I was prepared since I would be single pilot.

I printed out the EAA AirVenture arrival and departure guide and

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started marking up my sectional and putting waypoints in my GPS. I highlighted the really important information in the arrival/departure guide and then tabbed the document for quick reference. I printed out my homebuilt camping and VFR signs to post in the canopy and planned my route to Oshkosh.

My dad turned 70 this year and we had a birthday party for him on Saturday July 23rd. I would fly my Dragonfly from Cuba, MO to Sparta, IL and depart for Oshkosh early on the 24th so I would arrive before lunch. The only problem was the weather in Southern IL was very poor, overcast with ½ mile visibility. The forecast for later in the day was for very strong winds.....it looked like my trip was scrubbed.

I flew back to Cuba on Sunday trying to come up with an alternate plan. There were a few forums and key events that I really wanted to see early in the week, so I was a little disappointed. I came up with a plan to fly to Oshkosh on Thursday and come home on Sunday. I departed Cuba early on Thursday and landed at Galesburg, IL for a planned fuel stop. I could have made it without stopping for fuel, but when I see things in the NOTAM about possibly holding for extended periods and to expect ground delays up to 45 minutes. About the last thing that I wanted to happen was to run out of gas.



A quick stop to stretch my legs and organize the cockpit for my arrival was a good idea. When I was about 25 miles from Ripon (the first check point) I listened to ATIS and opened my tabbed arrival/departure guide to the anticipated runway 27 arrival. As I approached Ripon it seemed like there were aircraft at several different aircraft coming from all directions. I elected to stay at the 1,800 MSL altitude for the 90 knot aircraft.



I picked out an airplane in front of me and lined up in single file behind him and as I approached Fisk I heard Fisk Approach call for the white Dragonfly to rock your wings. They told me to follow the railroad tracks and expect runway 27. One problem....the airplane in front of me is an old military L4 or L5 and I am sure he was giving her all she had, but that is

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about 75 MPH. The nose of my airplane was way above the horizon and I was doing all I could to keep from passing him. I was able to do some small S turns and managed to get a little separation.

We entered the downwind and I extended a little to get some additional separation. They cleared the old war bird to land on the green dot (midfield) and cleared me to for an approach to the orange dot (approach end), but was told not to land. I think they were hoping the old war bird would clear the runway and they would have me land on the green dot, and that is exactly what happened.



As soon as I could, I pulled off into the grass and was directed by an EAA volunteer to the homebuilt camping area. It was actually quite cool. I followed the directions from a handful of volunteers in orange vests and was eventually escorted by a gentleman on a moped. More EAA volunteers blocked off the pedestrian crosswalks to the war bird area so I could taxi my little Dragonfly safely through the area.

The volunteer on the moped took me all the way to my parking spot and asked if he could be of any assistance with securing the airplane. About 5 minutes later a very nice elderly husband and wife came up in the Gator to offer assistance and gave me the general layout of the camping area. About 5 minutes after they left a pair of gentlemen came up in another Gator to see if I needed help with anything. The EAA volunteers were really great!!!



The last two gentlemen who came up were looking over my airplane and taking notes. They asked me if I wanted to fly in the homebuilt showcase flight on Friday. My response.....what is the homebuilt showcase flight? They went on to tell me that they have a group of homebuilt aircraft pilots who fly their airplanes around the pattern a few times in front of the spectators. It sounded like fun so I agreed to participate as long as the winds were not too strong.

The briefing on Friday was very professional and all questions were answered. I believe there were 21 pilots who were going to participate in the showcase flight that afternoon. We had to be lined up in the staging area along the runway 18-36

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parallel taxiway in the right order (based on speed), I was number 14. In front of me were some of the high dollar glass airplanes, some RV's, a Corvair powered KR2, and Phil Lankford in his Q200 (Phil was number 13).

We lined up on the runway in groups of four. The route was to stay about 200-300' AGL over the runway and turn once you were past the blue dot on 36L and climb to 1,500' MSL. The downwind leg was outside a road between the runway and the lake and base was outside a point perpendicular to the end of the runway. We were supposed to make a low pass at 200-300' AGL in the grass between 36L and 36R (normally a taxiway) and turn inside the blue dot, inside the road, and inside the end of the runway to land on the taxiway. To maintain separation the next aircraft would take-off when the aircraft in front of him made his right turn past the blue dot. We took all visual instructions from a flagman on the runway. It was basically a corkscrew path and it was all done without even one radio transmission. After landing on the taxiway I followed the EAA volunteer's instructions to get back to my parking spot. This was really a lot of fun!!!

The homebuilt camping area was great. The shower facility was about 100 yards from my airplane, as was a line of port-a-potties. I was about 200 yards from the forum buildings and could easily walk to all the major attractions. Camping at the event was really an enjoyable experience and I met some really nice neighbors from Canada and North Dakota.

I think the only other Dragonfly that flew to AirVenture 2005 was Richard Werner from Chesterfield, MO. I did not get to talk to Richard at Oshkosh, but I did see his airplane right in front of the Homebuilt Headquarters looking right at home. I am not sure, but I think Richard told me that he has flown his Dragonfly to the big show every year for the last 16 years.

Saw several familiar Q guys at the fly-in. Sam Hoskins, Paul Fisher, Lynn French, Bruce Crain, David Chalmers, and Phil Lankford all had their Q's there. Several other Q and Dragonfly builders and flyers were there without their airplanes. I really enjoyed the Q Forum on Friday afternoon.

There was just so much to do and see that it was almost incomprehensible. Seeing Spaceship One and the Global Flyer



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was really cool, a once in a life time opportunity. It is what really got my lazy rear end off the sofa and up to Wisconsin. I have had the means and the time to attend AirVenture, but never made it a priority. Of course there have been many years over the last 21 years that military duty overseas or deployments have prevented me from attending, but if I really wanted to I am sure that I could have made it a few times.

I guess what I am trying to say is that this trip was an incredible experience for me and making the journey in my own Dragonfly made it even better. Yes AirVenture is very commercialized, but there are still lots of things for the average guy to look at and dream about. The new Light Sport Aircraft airplanes were really neat, wish they were cheaper. If you take the time and money to make it to AirVenture I do not think you will regret it – JUST DO IT!!

Jeff

Livermore TW Fly-In

by Doug Humble

This article was provided by Q-Talk editor Doug Humble and a few of his Q friends who shared their thoughts on the fly-in. It is a shame that I can not get a couple of Dragonfly guys to report in on the tandem wing fly-in that I am unable to attend.....maybe next year.

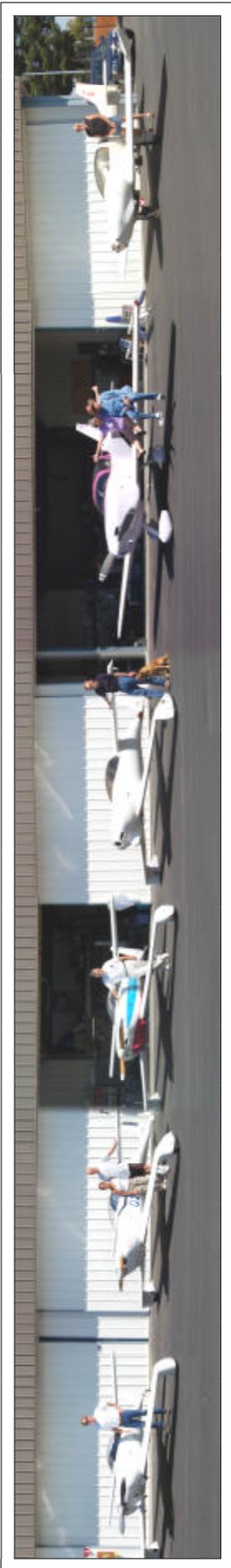
When I took over as Editor (Q-Talk), I want to go to all the Tandem Wing fly-ins if I could. I want to go to Livermore especially to see the largest concentration of Q's at any one airport. Personally it was a great trip as I stayed with my old college roommate. If you get a chance guys, this is a great event to go to. The best thing about going to the Livermore fly-in had nothing to do with the aircraft that were there. The best thing about Livermore was seeing someone I had met at AirVenture not more than 3 weeks earlier. It was great to see Phil Lankford! We came close to losing Phil and his wife Cheri when they had a prop failure while returning from Oshkosh. He had left me a voice mail three days earlier to say he and Cheri would be OK, but to see him in the flesh and shake his hand was the thing I took away from Livermore. He really is OK. His humor is still intact and he has a new perspective of his fine aircraft which is now a pile of foam and fiberglass. All the while he was at AirVenture he worried about the finger print smudges. Those smudges look pretty irrelevant now.

The Fly-In

What a great place the Livermore airport is. Over 500 aircraft are based here. During the daylight hours you can see small aircraft of all kinds either waiting to take off or coming in for a landing. It's true we don't get to do the wide open flying at this event like me do in the midwest, but there are no less than 6 Q-birds at this airport. It is the current mecca for Quickie type aircraft. I personally liked the fact that there was a golf course adjacent to the airport grounds. We had ten tandem wing aircraft and nine were Q's. Rene' and Malinda Robertson in their RevMaster Q2 from Alberta Canada, and Mark Robinson in his Tri-Q and Tim Iverson in a Dragonfly from southern California were the only ones to actually "fly in" to Livermore.

A forum by Paul Lipps, a retired Aerospace electrical engineer was one of the highlights on Saturday. Paul designed the electronics for the Lightspeed electronic ignition for Klaus Savier. He came to Livermore sporting a very unique looking prop. His test aircraft is a Lancair 235. He designed his prop using software of his own based on the idea that the lift distribution on the prop ought to be elliptical, since that is considered to be optimum on a wing. His prop powered the Phantom racing biplane to a convincing win at last year's Reno Air Races. Jim Patilo even tried this prop on his Q200 with less than expected results. I was sworn to secrecy if the results would have been better. Jim said it had something to do with a past performance run involving a "real competitive guy". (Sam Hoskins)

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Another highlight was the deep fried turkey with Jim Patillo's special seasoning. It was cooked on site and it was delicious. I had great time at this event and would highly recommend it to anyone. There are tons of things to do in the area, so why not plan your vacation around it!

Livermore report from Ron Triano

Hi All, I sure am glad I attended the fly-in. It was good to see you all again. Good to see Phil up and around after his mishap. Sorry I did not get to stay and enjoy the great food fest but needed to get to Tahoe so I could at least have Sunday to work on mine. As usual, I did learn plenty and everyone was so kind to open their cowl's for us all to see. I took in excess of 50 pictures. It was a real treat for me to get to look under Paul Lipp's cowl and he was so kind to explain everything he has done. It was good to see someone depart from the norm for something that works better. So many of us just use the same old parts and systems; I really enjoy experimenting with all the new ideas and products.

Since I am in the middle of building the plenum on my 0-200, it was perfect timing to see how Paul did his. I just have to add the inserts to direct the air on the top like Paul has his. Also, I will direct air to my Megalight coil, which is mounted on top of the crankcase, in a similar fashion as Paul has. The bottom plenums of the were the best part. I have been racking my pea brain on how to do it. I will proceed with the bottom plenum very similar to what Paul has. Just think, I won't need all that exhaust pipe. And I just had them ceramic coated for \$100.00. Oh well!

Livermore report from Rene Robertson

Melinda and I made it back home last night in CFBWV after a terrific time in the Bay area! Wow, we had a blast at the LVK fly-in. I cannot thank the guys and gals at LVK enough for putting on such a fun event. Special honors go to Bob and Jim for all of their hospitality and hard work. We really enjoyed meeting everyone and putting a lot of faces to names I see often on our list. You guys are a great bunch! I'm still on a high after chatting with everyone on Friday night and all day Saturday. Jim cooked up a Turkey that was just unbelievable. Marinated in his special blend of secret stuff and deep fried in peanut oil. I have never seen so many Quickies and a Dragonfly together in living color.

We left LVK on Sunday for Reid Hillview to visit with relatives in San Jose. On Wednesday morning we took off at 11:00 am for Half Moon Bay for some of the crab Jim had recommended. San Jose Int'l. Tower directed us straight across midfield. As soon as we crossed the little ridge of mountains by the coast we were above a solid layer of overcast marine layer at 2500'. We decided to carry onto Half Moon Bay, but couldn't land due to the cloud cover. In fact, if it wasn't for the GPS, I had no idea where we were. We told San Jose that we would carry on to the Golden Gate Bridge. Once there I could just make out the Bridge below and Alcatraz was clear. So, we slipped down through a hole and flew over the Bridge at 1200', circled Alcatraz a couple of times and

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took lots of pictures of Frisco. What a blast! After that we carried onto Redding and homeward bound.

Thanks again to everyone for making our stay one to remember for a lifetime. I highly recommend that anyone who hasn't yet attended this fly-in to do so next year!

The photo of Tim Iverson and his Dragonfly MK-II was taken by Pat Panzera. The two photos on page 6 were taken by Geoff Rutledge.



LS-1 Canard

by Jeffrey A. LeTempt

If you have been around the Dragonfly community for more than a day or two you have certainly heard about or experienced the loss of lift the canard experiences when it is contaminated with bugs, rain, grass clippings or whatever. The quick easy cheap fix is to simply install some vortex generators (VG's) and go fly. When you install VG's, you have all the low drag high lift characteristics of the GU-25 airfoil, it just has some little aerodynamic fence like devices on the upper surface.



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You may remember my 2 part article on VG's back in DBFN 111 and 112. One of the options I offered to fix the loss of lift due to contamination problem was to build a completely different airfoil that has similar performance specifications that was not adversely impacted with contamination. This sounds easy enough, but this is not something the non-aerodynamic engineer average builder should even think about.

The Quickie Aircraft Corporation changed from the GU-25 airfoil to the LS-1 when they started installing the Continental O-200 engines on their airplanes. Nate Rambo engineered and built a LS-1 canard for his Dragonfly many years ago, but apparently he installed the canard a few degrees off the optimum angle of incidence and the aircraft never performed as well as anticipated. Nate provided all his engineer information to Mike Wright from South Africa and Mike has been building a LS-1 canard for his Dragonfly. Mike recently sent me a few pictures of his Dragonfly with the wing and canard mounted.

You can see that Mike is building a MK-II and he is making good progress. In the picture you can see the canard airfoil is not the GU-25. You can expect to see more information about Mike's Dragonfly in a future DBFN article.

Mike's email address is: mike.wright@sanlam4u.co.za

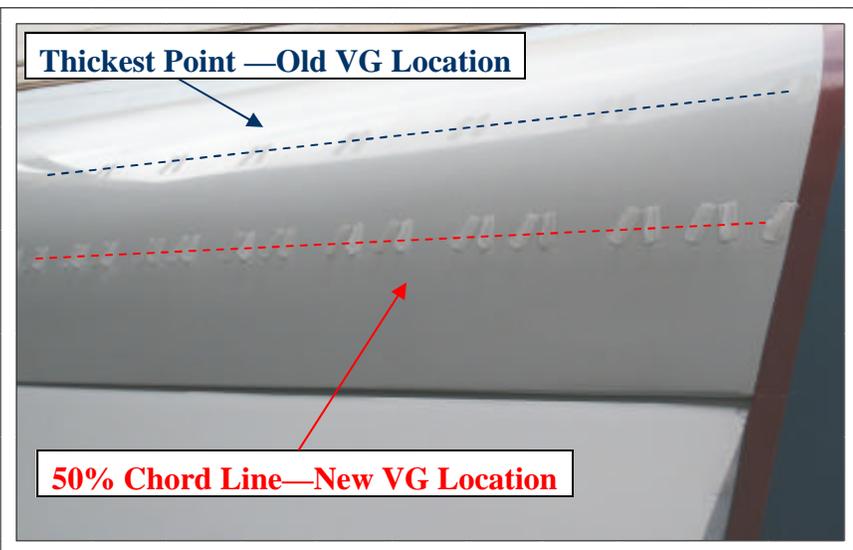
I have also heard through the grapevine that there is Jabiru 3300 powered Dragonfly MK-I being built in South Dakota with a LS-1 canard. I sure would like to hear more about this project.

Jeff

Vortex Generator Follow-Up

by Justin Mace

Vortex Generators or as some call them turbulators have been the subject of a great deal of controversy for the Dragonfly group. I have, in the past added my thoughts on the subject. I even wrote about adding CCI VG's to my Dragonfly's canard. At that time I was truly amazed at the amount of lift that was being lost due to contamination by rain or bugs or whatever. The addition of VG's at the thickest part of the wing made a huge difference in regaining the lost lift when contaminated. I didn't do a real life speed test & my feeling at that time was that the speed loss was negligible. Well, it wasn't!

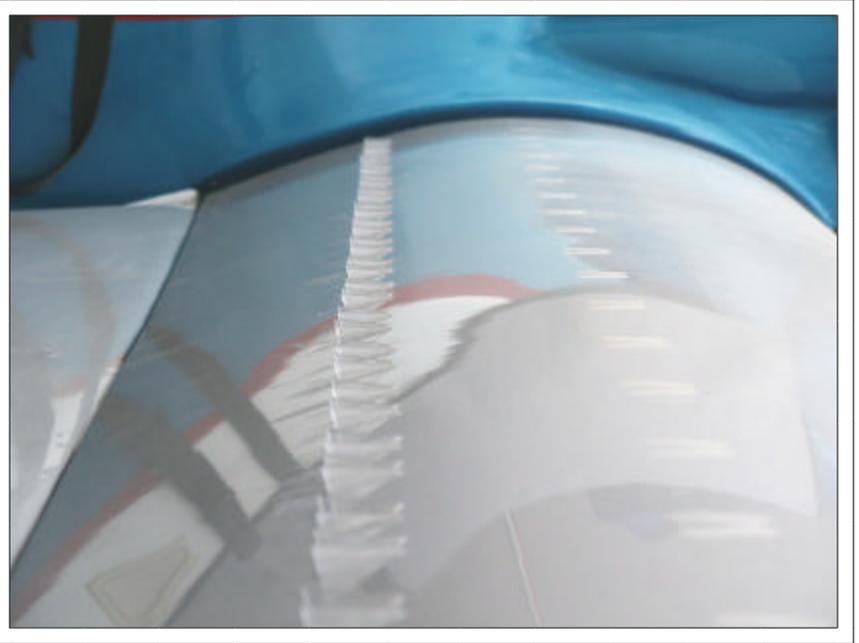


I had done some testing of the VG's by modifying the placement and amount but always on a line at the thickest part of the canard. This is what the accepted thinking was at the time. The directions that came with the VG's said to place them on a line at the 50% cord. Well this is about 5" to 6" behind the thickest part line. These VG's were being sold to the EZ- crowd, they are using such a tiny little canard I felt that the accepted thickest part line was correct for our huge canard/wing. Since I had documented some testing with the CCI VG's, Art Bianconi sent me another set to play with. Well, it has taken some time but I finally got around to doing some more testing.

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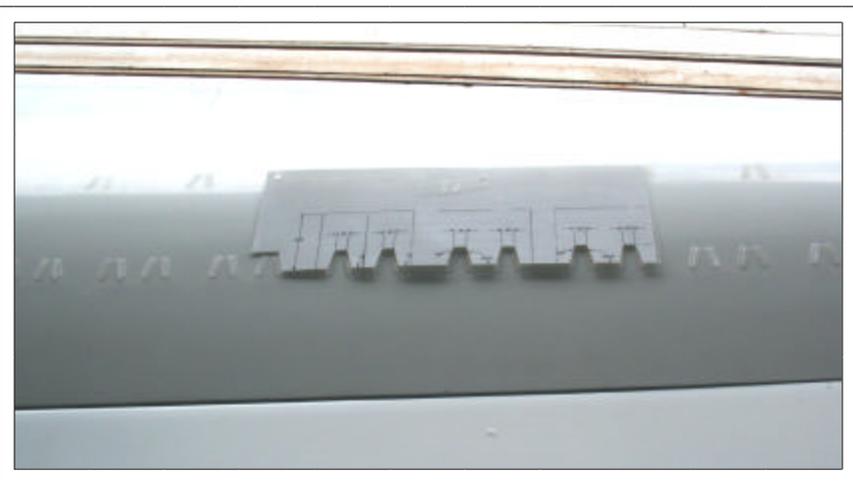
The process started by flying the existing VG installation mounted at the thickest point on the canard. I flew the plane at 4,500' at 2600 rpm & 23" mp. The resulting speed on a couple of runs was 140 to 142 mph true. Since this is a normal easy cruise rpm and manifold setting I was use to seeing these numbers. One morning I took the plane up and did another run just to ensure that the speeds were the same. They were, it was easy to duplicate these numbers. I then landed, taxied to the hangar, removed the VG's and flew again. This time the 4,500' 2600 rpm and 23"mp showed the true air speed to be at 150 to 152, these runs were made within about 15 min of each other. It appears that the VG's mounted at the thickest part of the canard/wing were costing 8 to 10 mph true.



Upon returning to the hangar I started the process to re-install the VG's at the 50% cord line. After installation I waited till the next morning to fly. The temperature and winds were the same as the previous morning. I then flew at the 4,500' level same direction 2600 rpm & 23" mp. The true airspeed I recorded was 150 to 152 mph. It did indeed appear that the VG's mounted at the 50% cord line were *not* affecting the true airspeed. I have flown a couple of times since and the speeds always come out at 150 to 152 mph. true. It appears that the accepted thinking about mounting the VG's at the thickest part is in fact causing more drag than we like to think.

So far I have not flown in heavy rain but in light rain the plane feels the same as the original installation. I have flown double up in light rain and the landing speeds have not changed from the original installation. I can still touch the tail wheel first if I like. I don't normally do three point landings solo but I can at any time.

I modified the original installation of the VG's to remove many from the recommended amount. They were causing way too much lift when mounted at the thickest part line. I added in those removed VG's to the amount when I re-installed at the 50% line. The photos show the differing amounts and placement.



In the photo with the template there are three of the original templates copied and laminated to one large sheet. This makes it very easy to keep the VG's aligned. The amount of VG's installed is about 40 short of the recommended amount. At this point I don't know if the addition of those will produce more lift or add drag but I am very happy with the effects these VG's produce mounted at the 50% cord line. This is the template I made to ensure consistent spacing.

In conclusion, if you are using a GU canard and want to reduce the effects of bugs and rain on the performance of the canard I can highly

recommend the use of VG's mounted at the 50% cord line. There are 81 VG's per side. The distance between the thickest line and the 50%line is evident. With the recommended density well over 100 could be installed per side. At this point in time I don't know if the additional number will recover more lift or not.

I am satisfied with the planes flight characteristics at this time & probably won't do any more experimenting for a while.

ELIPPSE Propeller Test

by Paul Lipps

This article was provide by Pat Panzera and Contact! magazine. CONTACT! magazine is published and edited by Patrick Panzera (EAA #555743), homebuilder, instrument rated pilot, professional building designer, and certified building inspector. You can count on factual, detailed, and plainly written, quality information. CONTACT! is truly independent, contains no advertising and won't be found on newsstands. For more details and subscription information please visit the Contact! Magazine web site at: www.contactmagazine.com



At the fly-in at Livermore on August 20, Jim Patillo installed the three-blade ELIPPSE prop from my Lancair 235 and did a test flight to determine his speed with it. GPS was used as the speed standard on runs with headings into and with the wind. The winds were also determined by use of a circular course to determine the headings at which the highest and lowest ground-speeds were obtained. The flight was flown without a spinner as the Lancair spinner was too large in diameter. The results were as follows:

Baro alt 2000', PALT 1900', DALT 3007', 2600 rpm, MAP 29"
VHI 171kt, VLO 160kt, VAVG 165.5kt, 190.5mph

Baro alt 4000', PALT 3775', DALT 5303', 2550rpm, MAP 27"
VHI 169kt, VLO 159kt, VAVG 164kt, 188.8mph

Jim was then going to fly his plane with his two-blade prop, also without a spinner, in a similar test to get a performance comparison. Because of other considerations, this was not done.

I have been curious about what the absence of the spinner would be on performance, so yesterday (September 21, 2005), I performed a spinner-on, spinner-off test in my Lancair. The spinner-on test was done at about 11:00 and the spinner-off test at about 1:30. The tests were performed at a baro altitude of 3000', using my Tru-Trak heading AP and altitude-hold. Use of these units resulted in the airplane being flown in such extremely smooth fashion that IAS and GS were steady and rpm never varied more than 10; 10 rpm increments are the smallest resolution of the Rocky Mountain engine monitor. Following are the results:

Baro alt 3000', baro setting 30.04", OAT 22C, DALT 4492', 2885rpm
IAS 194mph=TAS 207.4, Dynon TAS 179kt, 206mph
VHI 220mph, VLO 196mph, VAVG 208mph

Baro alt 3000', baro setting 29.98", OAT 24C, DALT 4716', 2835rpm
IAS 188mph=TAS 201.7
VHI 212mph, VLO 194mph, VAVG 203mph

The Lancair and the Q have somewhat similar drag ratios between the spinner size and the overall size such that it should be possible to use the spinner-on/spinner-off ratio of the Lancair, 208/203, to estimate the numbers Jim might have obtained had a spinner been on his Q with my prop. This would give 169.6kt/195.2mph and 168kt/193.4mph.

Another factor that is useful in evaluation of propeller performance is the effective pitch, the distance in inches the propeller actually moves forward each revolution in flight. This is obtained from: $1056 \times \text{TAS} / \text{rpm}$. For the Q flights, these were 77" and 78", and the Lancair flights gave 76.1" and 75.6". Using an average value of 77.5" for the Q, this would result in 2660rpm and 2635rpm. An ELIPPSE prop designed to turn 3000rpm at 5303' DALT as in Jim's second run might give an estimated $193.4 \times (3000/2635)^{.7}$, 175.5kt, 201.9mph!

Editor Ramblings

I just can not seem to get the newsletter out on time these days. I have the best of intentions, but something always seems to get in the way. The other problem is that I seem to have very few people knocking down my door with article contributions. I certainly do appreciate article contributions.

There will be coverage of the 15th Annual Tandem Wing Field of Dreams Fly-In. It was a great event that was slightly impacted by some nasty rainy weather with low ceilings. Some of the guys were never able to fly-in due to the weather and several had to leave early so they would not be stranded for a few days. There is no better place to learn about Dragonfly's than one of the tandem wing fly-ins. AirVenture and the other major fly-ins are AWESOME, but you might be lucky to see one or two Dragonfly's there and you will almost certainly not have hours to talk to the owner and check out all the details, and you may as well forget about getting a ride. The tandem wing fly-ins are perfect for this kind of stuff.

Most Dragonfly's will take many years and many thousand dollars to build, but often the builder will not subscribe to the newsletter or spend a few hundred dollars to attend one of the tandem wing fly-ins. Even if there is only 2 or 3 Dragonfly's at the event, you will often have the opportunity to spend several hours checking out each and every last little detail. You can hear from the guys who are flying Dragonfly's what is truth and what is internet fiction. What modifications work and what modifications are really a waste of time and money.

I always try to get the word out about the fly-in early, but no matter how hard I try there is always going to be someone that just kind of shows up or calls at the last minute. On Thursday evening before the fly-in while I was at Sullivan after flying my Dragonfly over and waiting to greet Charlie Johnson, my wife Jill got a call from a gentleman named Valentine from OH. He said that he was going to drive his motorcycle over to the event on Friday and that he wanted to participate in all the events.

As I was walking out of the truck stop after the Friday evening dinner I saw this guy walking up dressed in motorcycle riding gear, it was Valentine. He saw that I had a name tag on and stopped to introduce himself. He told me that he bought a Q2 kit back in 1980 and worked on it for a couple of years and then just stopped working on it. He wanted to come over and see what the current status of the Q was and told me he was either going to finish the airplane or cut it up and throw it in the trash. No I am not a Q expert (or Dragonfly expert as far as that goes), but I have had one very cool flight in a Q200 with Jim Pattilo at the 2003 fly-in. I explained to him that the Q was a really cool aircraft and that I would try to get him a ride....I was certain that a ride would energize him to start working on his project again.

Saturday afternoon Valentine got a flight with Sam Hoskins in his very fast Q200 and after the flight he was nothing but smiles. I was giving Fred Worrell a flight in my Dragonfly when Sam called on the radio asking where I was. We managed to link up for a little formation flying that included a low pass at about 165 MPH down the runway. Sam told me to hold my heading and the next thing I knew Sam and Valentine blew right by me like I was sitting still.

Gene Knapp took this picture of Sam and Valentine immediately after they landed. This photo was not staged at all and I think Valentine had that same expression on his face when he left the awards banquet 6 hours later. This is what the tandem wing fly-ins are all about!!! If you have always considered attending one of the tandem wing fly-ins but did not want to spend a couple hundred dollars, I would suggest that this is a cheap investment.

Jeff
Dragonfly MK-IIIH
N41GK



Classifieds

For Sale: 1836cc engine complete from prop spinner to firewall for a Dragonfly. All new engine with four hours run time. Dual ignition (one slick magneto and one electronic). Exhaust system complete with heat muff and carburetor heat box, Hapi ultra carburetor, Spin on oil filter, hydraulic lifters. The engine cowling also goes with this, so you will have a complete firewall forward for a Dragonfly. A&P built. \$3000.00 OBO. Call Joe Anthony at (636) 398-6211 or email hjoe@acer-access.com for pictures or additional information.

For Sale: Continental PE-90 engine (a rebuilt GPU engine) 0-315. This engine has been started to be converted to aircraft use, dual plugs, oil tank and intake started but not finished welding. One magneto, all continental accessories will fit this engine. \$1500.00 Call Joe Anthony at (636) 398-6211 or email hjoe@acer-access.com for pictures or additional information.

For Sale: NACA Flush Inlets designed for 1/2" sandwich structures. These make a good looking functional inlet to replace the hand carved per plans ones. Inlets are \$40 per pair, plus \$4.00 shipping. Note: Spinners no longer available. Contact Charlie Johnson, 2228 East 7875 South, Ogden UT 84405 (801)-479-7446 or e-mail: OneSkyDog@aol.com

For Sale: Dragonfly Type 1 converted to hoop gear. Porsche 1800 engine (big VW) converted to 2400 with parts from Great Plains. Airframe complete & wings & control surface mounts are finished. Cleveland wheels & brakes. Ed Sterba prop. Very nearly complete. Asking \$10,000. Call 815-397-1533 or email stiegrinding@aol.com



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