



Hangar Talk

The “Lightning” Newsletter

Sharing info between builders, flyers, and future customers.

Fourth Quarter 2013 - Volume 6, Issue 4

Published in March 2014



“Lightning of the “Quarter” - The new XS

This issue of the Lightning Newsletter will be the last that I will be writing. Over the years, since February 2008, I think the newsletter has been a big help for the entire Lightning community. It has been a source of information for builders, flyers, and potential customers, as well as a way for the factory and the dealers to keep the Lightning community up-to-date on news. I think everyone agrees that it is worth the effort to continue it. I am happy to report that we now do have a current Lightning owner, builder and flyer who has agreed to grab the stick and take command of the newsletter. More info below.

Blue Skies.

Buz Rich

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Buz' 40th and last Lightning Newsletter

Hello fellow Lightning enthusiast. This is the 40th Lightning Newsletter that I have written over a total of 4 years. As I have reported in the past, this will be my last newsletter for our group. After starting the Lightning Newsletter back in February 2008, it is time for someone new to take the “stick” and continue the “Hangar Talk” tradition. I hope you enjoy this last issue as much as I have enjoyed writing them for all of you.

This issue was delayed until now in hopes of me being able to fly the new Lightning XS and to write a complete flight test report (like I did for the prototype Lightning so many years ago). However, a combination of weather and other factory delays, such as having the correct nose wheel, installing gear leg fairings and wheel pants, etc., have prevented the Lightning XS from being totally ready for a complete flight test report in time to be included in this issue. I don't want to delay my last issue of the newsletter anymore, so when I do fly the XS, I will write up the flight test report and it will be in a latter issue of the Hangar Talk Newsletter.

Also in this issue will be coverage of the Sebring Light Sport Expo as well as the 2013 Lightning Homecoming and Fly-In last October. The remainder of the newsletter will have the standard items like news from the factory and dealers, news from builders and flyers, technical tips, safety items, upcoming events, and other things deemed important at the time. So, read it and enjoy.

See you at Sun-N-Fun.

Blue Skies,
Buz Rich

Good News for the Lightning Newsletter

As I have reported in the past, I feel it is time for someone new to take the “stick” and provide new leadership, interest and ideas for our “Hangar Talk” newsletter. Over the years I enjoyed writing the newsletters because it gave me a chance to meet so many Lightning owners, builders, and flyers, and it helped me to continue my close association with the factory.

Now the good news; Dennis Wilt has agreed to be our new newsletter editor and publisher. Most of you know Dennis as his Lightning, N616DW, was the Lightning of the Quarter in the last newsletter, Issue 6-3. Dennis and his wife Donna built their Lightning at Green Landings during 2011.

Dennis plans to write his first newsletter shortly after May 2014 as he is currently involved in a Master's Degree program that will take most of his spare time until then. Based on that timing, you can expect Dennis' first newsletter to cover both Sebring and Sun N Fun.

I encourage all of you to give Dennis the support that you have given me with lots of input in the way of articles, emails and photos. The newsletter would not be as helpful without your help. Lets all

give Dennis our full support.

His email address is:

dwwilt@AOL.COM



Dennis Wilt's N616DW

Lightning of the Quarter

This Newsletter's Lightning of the Quarter is the Lightning XS, N320XS, which is the new 160 HP Superior XP320 Lycoming powered Lightning that we have been talking about since it was unveiled at Sun N Fun 2013. It's first flight was flown by Nick on 6 February 2014.

Here are Nick's comment after the first flight:

The flight was only about 30min due to overcast skies and snow in the area. What a rocket, a shallow climb at partial power gave in excess of 1000fpm at 110knts IAS, should be a blast at full power and 90knts. Cruising around the pattern at 2150RPM gave slightly better than 130knts IAS. We have no fairings and took a wild guess on the ground adjustable prop. I cant tell you how long the takeoff roll was but it was certainly in the air before i expected!

Big thanks to our crew who helped make this project happen over the last year. From left to right, Ronnie on structures, Moostang Mike, my lovely wife dana, me, and Jason our finish lead.



The Arion Lightning crew that made it happen.
Left to right: Ronnie, "Moostang" Mike, Dana, Nick, and Jason.



After the first flight.



Superior 160 HP O-320 engine.

2014 Sebring Light Sport Aviation Expo

This year's Light Sport Expo in Sebring, FL, was held on January 16-19. Although a few days were colder than normal for Florida, overall it was a great show with lots of very interested potential customers coming by the Lightning booth and taking advantage of demo flights with Nick in the local area. Nick and I both took advantage of the Sebring Fly-By demo pattern to show just how great the Light Sport Lightning LS-1 flies as compared to the other aircraft attending the show. As usual, Greg Hobbs, the Arizona Lightning dealer, was there as well as several Lightning owners. Overall a great show.



N337AL on display in the booth. Lynn Nelsen's Lightning in the back.



N337AL on the flight line with Nick briefing one of the many demo flights.



Lynn Nelsen's Lightning is for sale. Lynn talking to customers. Greg on the right.



Yes, Nick and I had a fun red ride at Sebring.

Nick enjoying a "Light Sport" drink.



2013 Lightning Homecoming and Fly-In

This year's Lightning Homecoming and Fly-In was the 6th one that has been hosted by the Arion guys in Tennessee. Since that very first one in 2008, every year has been a fun and exciting event where current builders and flyers, as well as potential customers, can get the latest information on the Lightning and learn about plans for the future. We always get to do lots of flying and renew and meet new people in the Lightning community.

The weather at Shelbyville for the 2013 event was great, although surrounding weather may have prevented some from points east, west and north from being able to fly to KSYI. As a result, many Lightning owners were forced to drive to Tennessee instead of flying.

One Lightning couple from the northeast that did manage to fly in was Carl and Pat Beatrice. They actually arrived about a week early so that they could have the MK2 stabilizer mod done to their aircraft.



Carl & Pat Beatrice in 767CP. They were first to arrive for this year's homecoming.



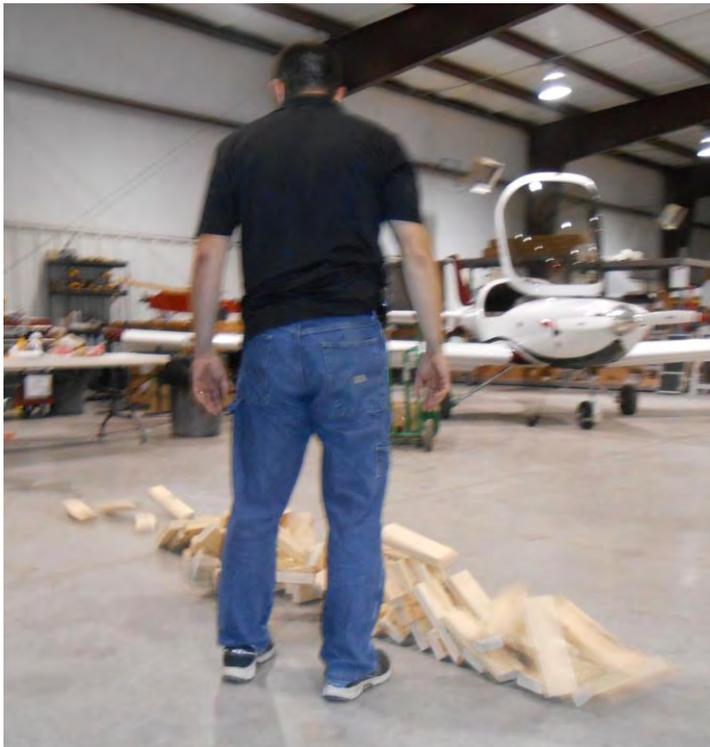
Carl and Pat flew in from New Hampshire, and won the longest distance award for the 2013 Lightning Homecoming and Fly-In.



A new game, Giant Jenga, was introduced at this year's homecoming. Here Carl and Bear try their skill at the game while Tammy and Charlie look on. Oops, looks like Bear won the event and now has a new call sign - Janga Bear.



Carl said it was either the wind or an earthquake.



Danna, who beat Nick in the Creeper Races at last year's homecoming, kept her winning streak going as she "Out Jangaed" Nick this year. They had the tallest stack of Janga blocks (at least 6 to 8 inches taller than Dana) before it finally fell as Nick was removing one of the 2x4s.



On the left is Mya Otterback's experimental flying stroller she built. It was an exhausting job, so she soon needed a nap.



I think Mya got the idea to sleep in the cockpit from another Lightning builder and pilot that was attending.



Charles and Tammy Burke from Indianapolis, Indiana. Cale, Mya, and Dana.



Friday evening's burger and brat "burn" and beer taste testing hangar party. Mark was the cook. He did a great job - no burnt burgers or brats.



Paul "Bear" Bryant, Dana, Cale and Claire in the left photo. Carl and Pat on the right.



Two Florida Lightning builders, Dennis and Bear, check out the spread. I think they like Tennessee food. On the right, Jay Glasgow, tries out Mark's cooking. Jay is a previous EAB turbine "Helicycle" helicopter builder and is going to start his Lightning build soon.



The Lightning hangar is full of Lightnings for the 2013 Homecoming and Fly-In.



Left photo - Charles Gallagher, Charlie Burke, Pat Beatrice and Dennis Wilt relax and share Lightning information. Right photo - Joyce and George enjoy Mark's cooking.



Randy Laboone from southern Illinois and Gregory LeBlanc from Florida (in the cockpit) discuss the Lightning and how much they each enjoyed their demo flights.



Charles and Tammy Burke plan to start building their Lightning in the spring of 2014. Photo on the left shows Nick discussing the builder's assist program with Charlie. Tammy is looking forward to being involved with the build and will start pilot training in their Lightning when it is finished. Beautiful smile, Tammy. I can tell you liked flying the Lightning. She did a super job. Great future pilot.

Check out Charlie Burk's outstanding video of the fly-in at - <http://www.youtube.com/watch?v=y09GilffG4&sns=em=>

It is a great video showing several Lightnings in formation flight.



Ready to head to Winchester, TN, for the Saturday morning EAA breakfast. Mark and Bear were lead, Tammy and Buz were #2, and Charles and Nick were #3.



Lightnings parked together at Winchester.



Olena and 9 month old baby Liz. On the right Olena is also holding Mya, Nick and Dana's 8 month old baby.



Max, Olena and Liz - the Lightning Dealers from Florida. I'm pretty sure this was the first Lightning homecoming to have a topless lady attending.



Max, Olena and Liz make a fly by for the homecoming attendees when they departed for their trip home to Florida. Max says that they took the scenic route home via Georgia and New York City. (Great Circle Route?) He said they covered 2263.4 nm on the way back to Florida.



Dennis, Gregory, John, Bear and Charlie listen as Nick gives an update briefing on recent Lightning changes and plans for the future.



Nick and Mya brief the gathering on the latest Lightning information and future plans. Carl, Pat and Randy in the right photo.



The new Lightning XS (with 160 HP) was actually in the paint shop when the homecoming weekend started, but Nick wanted it in the hangar for the attendees to see. Jay and Nick load it on the trailer for the trip back to the Lightning hangar.



Dennis and John in the left photo and Randy in the right check out the new XS cowling.

John Eynon is from southern Illinois and is about 4 years into his Lightning build. He said he came to this year's Lightning Fly-In for some inspiration to finish up his project. I was lucky to be able to fly a demo flight with him. He did a great job.

Randy Laboone flies RC planes and helicopters with Nick and Jason (Lightning build center) at the local RC club. Randy, also a current pilot, is thinking about building a Lightning and has recently spent some of his days off from work helping in the Lightning shop to see what his building skills are like. Nick says he is a heck of a RC heli pilot, and those are not easy to fly or build, so any Lightning Randy builds would be a “beautiful work of art”.



**Left - Buz and Carl fly Carl's newly modified Lightning with the new MK2 tail.
Right - Buz gets recurrent with holding baby girls since he had a new grand daughter that was just two weeks old at the time of the Homecoming and Fly-In.**

News from the Factory

First Flight of Rodney Friend's Lightning:

Nick made the first flight of Lightning LS-1 N72VR, which belongs to Rodney Friend, on Friday, October 4th, 2012, just before the start of this year's Lightning Homecoming and Fly-In. Buz was airborne flying off required test time on a brand new SLSA LS-1, N339AL, and was able to get this inflight photo of N72VR.



Lightning LS-1, N72VR. First flight on 4 October 2013.



Engine and instrument panel photos.



N72VR back in the Lightning hangar after a successful first flight.

New LS-1 Takes to the Sky:

N339AL is the latest SLSA LS-1 Lightning to be completed by Arion Aircraft. Just prior to the Homecoming and Fly-In weekend, the ASTM required 5 hour test period was flown off and discrepancies corrected. This allowed this Lightning to be used as a demonstration aircraft to take potential customers for demo flights during the fly-in weekend. We also flew it to the monthly EAA breakfast at Winchester, TN. As all Lightnings do, this latest LS-1 flies great.



N339AL is one of the newest Lightning LS-1s to fly. Its test time was flown off just prior to the Homecoming so it became a second demonstration aircraft during the homecoming and fly-in weekend.



N339AL's interior photos. Beautiful aircraft.

Mark 2 Tail Mod:

Carl and Pat Beatrice flew out to Shelbyville a week before the Homecoming and Fly-In started so that they could have the factory guys do the MK2 stabilizer mod on their Lightning. It was actually finished by the time the weekend activities started, so Carl and Pat had it available for the fly-in. Below you can see "Moostang" mike putting the finishing touches on their airplane.



"Moostang" Mike modifying Carl & Pat Beatrice's Lightning with the new MK2 tail.

As reported in the last newsletter, the price for the MKII Horizontal Stabilizers has increased from \$625.00 to \$786.00 each for a new total price of \$1,572.00. There has been plenty of press about the MKII stabilizers covering the reason for the change, flying characteristics, and modifying your

current Lightning. Articles in the Lightning Newsletter (Issue 6-1) and industry magazines such as Kitplanes have detailed the new stabilizer.

For those interested in having the conversion done for you at Arion Aircraft the normal cost is around \$4,000.00 - \$4,500.00 including paint. Turnaround time is usually about two weeks from start to finish. Also, our dealers offer the conversion as well so check with your local dealer for an estimate.

If you have any questions please contact Nick or Mark at Arion Aircraft.

Arion Aircraft, LLC

2842 Highway 231 North

Shelbyville, TN 37160 - Located at Shelbyville Municipal Airport (KSYI)

Phone: 931-680-1781

Email: info@flylightning.net;

nick@flylightning.net

mark@flylightning.net

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New Engine Choices for the Lightning:

Some new photos of Doug and Ronda Guy's UL Power 390iS. Their Lightning will be the first aircraft to fly with this 160 HP engine.



The above four photos show the ignition coils and high pressure pumps mounted on the firewall and the oil cooler mounted on the front of the engine.



Two other projects surrounding Doug and Ronda's Lightning. Left of it you can see a Rans S-7 that the Arion guys are finishing for a customer and to the right of the Lightning is Nick's Pitts S-1 project.

Doug and Ronda Guy's UL Power 390iS, almost ready to fly:



Left- Doug and Ronda's ULpower 390 160hp Lightning just back from the paint shop. Right- UL390 install almost finished.



N958DG up on the scales. UL390is 160hp. 925lbs empty all up, has GRT 10.5" HXR system with AP, GRT back up battery, VP-X pro, dual Aerovoltz 16cell lithium batteries.



Gary our DAR handing over the "pink" copy (AWC) to Doug after inspection. Doug and Ronda spent the last year building the First UL390is powered Lightning. Should fly it very soon

New method to mount center console:

This new method of mounting the center console and seat pan support allows these pieces to be removed for maintenance should you need to get access to the flap motor or any of the flap or pitch control rods. In the past these pieces were glassed in place which could cause a problem or at least a delay if you needed to remove them for whatever reason.

The Lightning factory guys actually started using this method of mounting the center console and seat pan support some time ago, but I just found about it while attending this year's homecoming and fly-in. As you can see in the photos, by using removable pins and piano hinges, these parts can quickly be removed for any required maintenance.



Center console on the left with removal pins. Close up photo on the right.



Left photo with console removed shows pin locations. Right photo shows the pin that holds the right seat pan support in place.

New Prop Option for EAB “Go Fast” Lightnings

Nick is testing a new prop option for the EAB go fast Lightnings. It is an Airmaster constant speed prop for the Jabiru 3300 powered Lightnings. Should see how it does by the end October.



Need for Speed? Brand new Airmaster constant speed prop for the Jabiru 3300 powered Lightning.



Nick provides some early data on the Airmaster VP prop. The blades are the 62" ones from Sensenich EZ pitch prop for the Jabiru. Takeoff weight estimated at 1450lbs. Takeoff roll was right around 600ft pulling 2950rpm with prop set for TO, that RPM came up to 3050 in flight. Set prop to Climb with a safe altitude and prop slowed to 2950rpm and we had a solid 1350FPM climb at 80knts. Once in cruise the prop was selected to "cruise" and settled in at 2650Rpm, I than set 24" manifold pressure and leaned out with the HACman. We had a solid 130knts IAS at 3500'. Previous numbers with this plane at similar weights were, 1000FPM climb at 80knts, and 115knts IAS. Takeoff roll was generally 700-800'. Will continue to fly and gather data on the prop, but so far its been very good.

Recent Safety Alerts and Service Bulletins:

There are no new Safety Alerts or Service Bulletins to report at this time.

Current Lightning Dealers or Representatives



Arion Lightning, LLC, contact Nick Otterback, Shelbyville, TN, 931-680-1781,
www.flylightning.net



Lightning Southwest, Greg Hobbs, 18750 West Avra Valley Rd, Marana, AZ 85635,
520-405-6868 www.lightningaircraftwest.net



Mid Atlantic Region, Green Landings Flight Center, Ryan Gross, 309 Takeoff Dr, Hedgesville WV 25427, 304-754-6010, www.greenlandings.com



Lightning North Central, Tom Hoffman, 3015 Shady Ln, Neenah, WI 54956-9509, (920)-585-9704



Lightning New York - Jabiru Power Solutions, LLC, Dave Jalanti, 136 Millbrook Rd, Hudson NY, 12534, Kline Kill Airport, Ghent NY - Identifier NY1, (518) 929-4307, dave@jabirups.com



Lightning Florida, Moonshine Aviation, LLC, Max Voronin, 917 Biscayne Bay Unit #5, Deland FL, 32724, 386-873-9995, www.moonshineaviation.com



Midwest, Heart of America Aviation LLC, Jack Gonzenbach, 12906 W 122nd St, Overland Park KS, 66213, (913) 890-3052, jgonzenbach@flyhoaa.com



Western Light Sport, Sullivan Equipment and Leasing, Jay Sullivan, Hanger#23, Redlands Municipal Airport (KREI), Redlands CA, Cell 909-362-7294, Office 909-307-5757, FlyLightningLS1@gmail.com



Lightning Representative Australia, Dennis Borchardt, Kingston SE, South Australia 5275, (08) 8767 2145, lightningaustralia@bigpond.com



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South Africa-Flylightning SA, Deon Lombard, Petit Airport, Pretoria, Phone 0834196613 or 0723122717, deonandpamela@yahoo.com

News from the Dealers

Greg Hobbs from Lightning Southwest sent in the following repost.

Tikno Handoko's plane didn't fly off into the horizon when it left the build center. This Lightning was disassembled and loaded into a shipping container with tool and materials needed for final build. The engine was crated separately. Then all was trucked to Long Beach harbor where the shipping container was place aboard a ship to be taken across the Pacific and finally delivered to Jakarta, Indonesia. Tikno, his son, Martin and Ernie Pritchard did final assembly. Ernie did first flight and trained Martin to fly the Lightning. The photo below is our first look at the completed plane.

Next time you're in Jakarta and hear the familiar sound of a lightning; know that Martin is overhead. Greg



News from Builders and Flyers

Hi Buz,

The Copperstate fly-in was held Oct 24-26 2013 in Casa Grande, AZ. A good turnout as usual - with 400-500 airplanes over the three days. Greg Hobbs had his usual booth with a bit of sprucing up. As always attracting a lot of potential builders and buyers.

On Friday there were six Lightnings on the field. Lee Smallsreed's, George Bailey's, Wayne Lennox's, Stan Peternel, Greg Hobbs, and John Drane (me). Also there were Lightning owners Ernie Pritchard, and Dick Cleavenger.

Congratulations to Stan Peternel. His Lightning won best kit composite.

Photos below.

John Drane
Lightning #85
N621WV



Greg's booth at Copperstate.



N621WV is John Drane's Lightning.



N843P is Stan Peternel's Lightning.



N16LS is Lee Smallsreed's and N214DG is Georges Bailey's Lightnings.

Thanks for the Copperstate coverage and photos, John.

Bill Strahan (bill@gdsx.com) sent in the next entry:

I think it was on this forum that I read several years back about an open canopy concentrating enough light to set the dash on fire. I'm so glad I read that!

I was in Salida, CO on a gorgeous and VERY clear sunny day. I parked the plane and popped up the canopy. The sun was just back over my shoulder, and while sitting there for 30 seconds or so, I suddenly noticed the smell of burning chemicals!

I'm so glad I read about the canopy and it's potential to focus the sun, because it immediately caused me to look down to the dash. Flames!

I swatted them with one hand and pulled the canopy halfway down with the other. Very little damage

done, but if I had opened the canopy and walked away this would have been a bad one!

It's important to realize it's not the canopy acting like a lens, it's the canopy as a mirror. Sure, perhaps it only reflects 5%, but it's a BIG canopy and the focal point on the burned point is less than a square inch. Call the canopy 6 square feet (conservative) and with just 5% reflectivity you've got 30 watts thrown into a very small area.

Careful with the canopy. My rule now is always: If it's open I'm with it, unless it's in a hanger!

Bill

Tex Mantell's (wb2ssj@rochester.rr.com) input on the same subject:

I was not that lucky. I left it open and went in the FBO to pay for gas. Bad day at Black Rock.
Tex

Gerd Nowack (NowackLinden@gmx.de) sent the next entry:

Hi Buz

My new Lightning, kit # 162, performed flawlessly on Saturday afternoon when we loaded both of her wings with 40 concrete bags, 30kgs each which equals 2643lbs. Thus we simulated a load of 3.8g@720kg or 1586lbs GW. The designed max GW of D-EGFL (which will be her registration) is 700kg (1542lbs). If need be I can increase the MGW without a new test.

The picture shows the golden moment when the forklifts were lowered and the whole weight sat on the unsupported wings. You can see the wing bending! We made the test in a construction materials warehouse, the same place where I tested D-ELIY's wings, so we had bags to spare !



At some in the future the then completely assembled D-EGFL (read : Gerd's Flash!) will have to undergo further load tests of elevator, engine mount, landing gear and fuselage (we do this in one go!) and vertical stab. A static thrust measurement is also mandatory. I look forward to this one: I think the ULPower 390iS and the GT constant speed prop will give me some really good pull!

Gerd

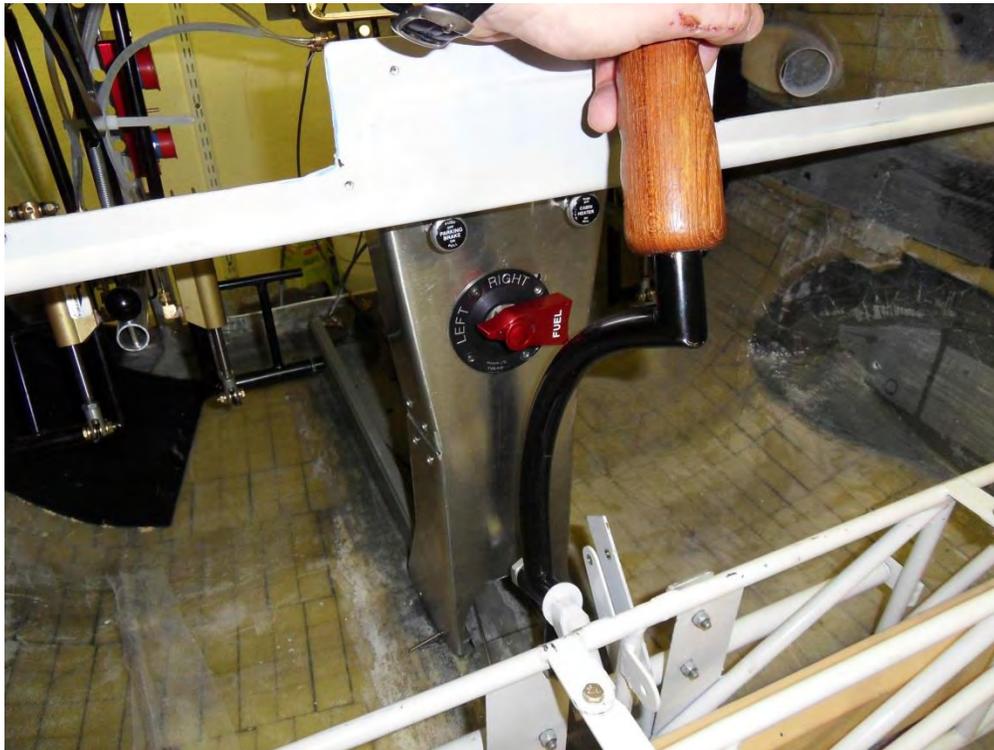
Gerd's second Lightning arrives in Germany.



Gerd Nowack (NowackLinden@gmx.de) latest entry:

Hi Buz,

During wintertime I have been a little lazy with my new Lightning, but with spring in the German air (above 50°F today!) I have resumed the work. As you know I will build the first Lightning with a single central stick, so I couldn't use the normal fuel panel. This is my newest modification: A vertical center panel to hold the fuel selector and, so far, also the parking brake and cabin heat knobs. There is still room for more stuff like indicator lights and maybe a 12V outlet or a USB?



The little center panel where you guys have the throttle sticking out will hold the starter pushbutton, the elevator trim indicator and the ELT panel thing. Only flat stuff there mounted here because of the stick.

In the meantime my baby has got a name: She will carry the call sign D-EGFL which is also some abbreviation for the name "Gerd's Flash", The D-E part being mandatory for German single engine fixed wings under 2 metric tons.

We are now about 550 building hours along, after my spring vacation in mid- April, I plan to go at it full tilt and hope to have her finished sometime in late summer.

I hope you are doing well! Maybe we will meet again in October?

No more grey skies!

Gerd

Lightning flies in Russia:

"Roman111" (aerohobby@mail.ru)

Hi to all!

I glad to report that my Lightning project (sn 144) was finished and began flying at 10.15.2013!

Registration number is RA-2129G

Flying great! :D



Bernard Melendez (n45bm@yahoo.com) sent in the next entry:

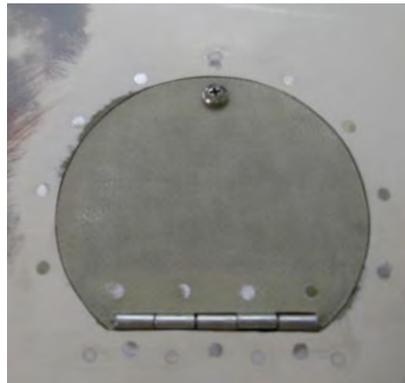
I've often wondered how you guys change the oil on these Lightnings and Esquals, or much work has to be done to do a simple oil change. I guess that most of you are having to remove the cowl, since the oil drain is not easily accessible.

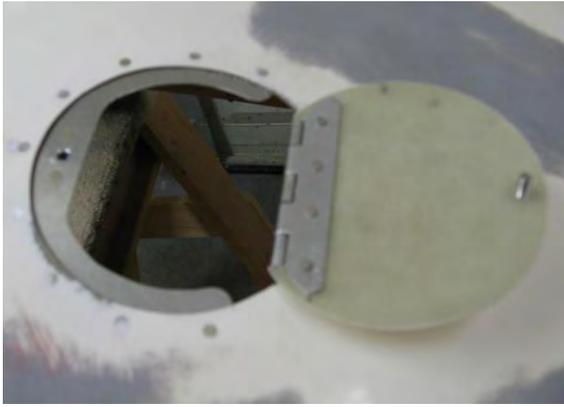
So, I had this epiphany and this brilliance of an idea that I should have an oil drain access door to make this job easier. Yeah, I know, extra work, and the cowl should be removed periodically to inspect things, and that's what I usually do, anyway. But it should make the job easier, since I added a Curtis Quick Drain valve, and I'd also have an additional inspection hatch that I could check the bottom of the engine without having to remove the cowl, if I didn't feel like it. Oh well, it's done now.

Attached are some pics for your perusal and consideration - or head scratching. Enjoy.

Best regards,

Bernardo Melendez, Houston, TX





Next, Bernardo sent in some of his latest “Michelangelo” artistic work on his fairings - first the modeling clay, then the glass and epoxy.



Upcoming Events

Sun-N-Fun 2014 will be April 1-6.

**Lightning Forums at SNF:
Thursday, 3 April, 12:00 in Room 7
Saturday, 5 April, 1:00 in Room 3**

Virginia East Coast Regional Festival of Flight, Suffolk, VA, 31 May – 1 June 2014.

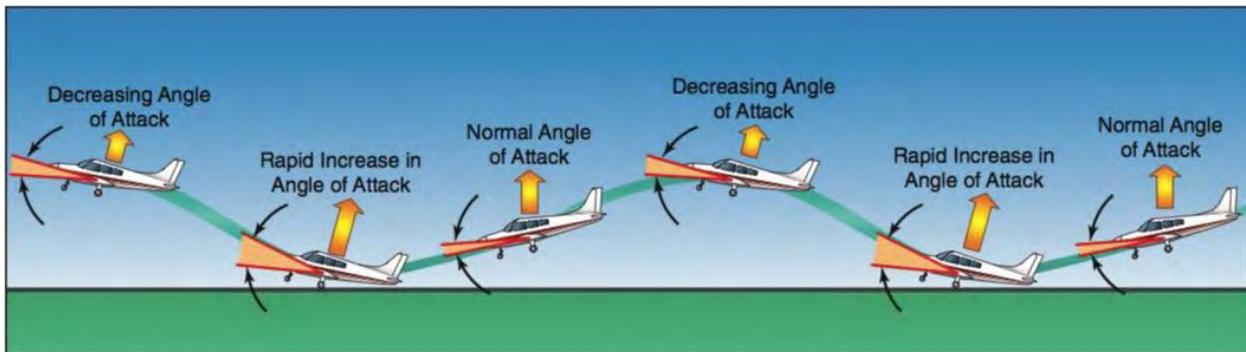
Oshkosh 2014 will be July 28 - August 3.

Flight Safety

Lightning landing incidents continue to be an occasional problem for pilots transitioning to the Lightning if they have not flown “lightly loaded” and somewhat “sporty handling” aircraft in their recent experience. The relatively quick responsiveness of the pitch control in the Lightning, one of the flight characteristics that make the Lightning such a delight to fly (once you get your hand “calibrated”, is something that will easily come with experience and the proper transition training from your instructor. Often the result of pilots flying sporty aircraft before they get the experience and their hands calibrated to the new feel is a Pilot Induced Oscillation, or PIO. I got a lot of the PIO info below from Thomas P. Turner, a good friend from my Bonanza days.

A PIO, usually results when a pilot allows the aircraft to land hard and then, in an attempt to recover from the bounce, he/she lags just enough behind the aircraft’s movements that the pilot’s control inputs add to the severity of a movement up or down.

This in turn prompts the pilot to add additional pitch inputs which, if the pilot continues to “chase” the airplane’s movements, only makes matters worse. A common outcome is a propeller strike (in prop-driven aircraft), or a hard tail strike that then drives the nose downward and causes a propeller strike in the next pitch oscillation. Another common outcome is a hard impact on the airplane’s nose gear, followed by nose gear collapse.



The FAA’s Airplane Flying Handbook calls PIO by the archaic name “porpoising,” a description of the porpoise-like, arching path followed by an airplane in a PIO.

Ground effect decreases elevator control effectiveness and increases the effort required to raise the nose. Not enough elevator or stabilator trim can result in a nose-low contact with the runway and a porpoise develops.

To prevent PIO, pay careful attention to airplane speed during final approach and the flare.

If you bounce and a PIO begins to develop, your best action is to attain and hold a shallow climb pitch attitude as you add power and go around. Once in a PIO event it’s virtually impossible to dampen out the pitch excursions and continue the landing--and history shows it’s not worth trying.

I teach and follow a *one-bounce, two-bounce rule*. If I bounce the landing and cannot establish the correct pitch attitude to re-flare and set the airplane down smoothly, I’ll immediately establish the go-around attitude as I add power. If I think I’ve got the right attitude but bounce the landing a second time, I’ll go around without any further thought.

Remember, a proper checkout and transition training in any “new to you” aircraft is imperative for being a well-trained and safe pilot. Make sure you pick an instructor that has successfully flown the new aircraft.

Technical Tips

Cold Weather Starting Suggestions

It is that time of the year again, so probably good to review the cold weather starting tips for the Jabiru engines. The suggestions are from Nick Otterback of Arion Aircraft.

Check the following items:

-Engine must have a warm idle of around 800-850rpm. This is say after all heads are above 250 and oil is reasonably warm. If it is idling above 900 it probably won't ever start cold.

-Make sure the idle mixture screw is about 1.25 to 1.5 turns out. Its a soft brass needle screw so screw it in gently than back out. The screw is forward of the float bowl on the outside of the bottom of the carb. It is not the silver screw that looks like its plugging a hole. Its actually down in a little cast tube.

-Spark plugs should be gapped 0.020-0.025

-Magnetos should have a coil to flywheel magnet gap of 0.010

-Once this is all set and when you are ready to start.

-Throttle full closed.

-Choke full on.

-Turn fuel pump on to fill float bowl than off.

-Pull prop thru by hand 8-10 blades to prime the manifold.

-Turn pump on and fill bowl than off again.

-Crank.

-Turn off choke when warm.

-Also what helps a lot is to follow Jabiru's engine starter ground service bulletin for ground placement.

Hope this helps

Nick Otterback
Arion Aircraft

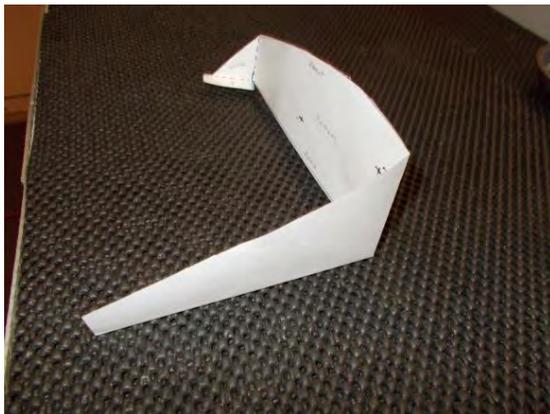
Many Lightning owners help their cold weather starting by keeping a light bulb under the engine oil sump with a blanket over the cowling and plugs in the air intakes. You can keep it on at all times or turn it on several hours before your flight. Other engine preheaters can also work. Also be sure your battery is well charged.

Sun Glare Visor and GPS Display Holder By Bear Bryant

On occasion I would have some difficulty reading my GRT display on the pax side of the cockpit as the bright Florida sunshine would cause some glare. As a result, I decided to build a small visor to block some of the sun glare. The initial visor turned out rather nicely. However when I finished the visor, I realized I could add a holder to the top side and have it hold my *IFLY* GPS unit and a battery case.

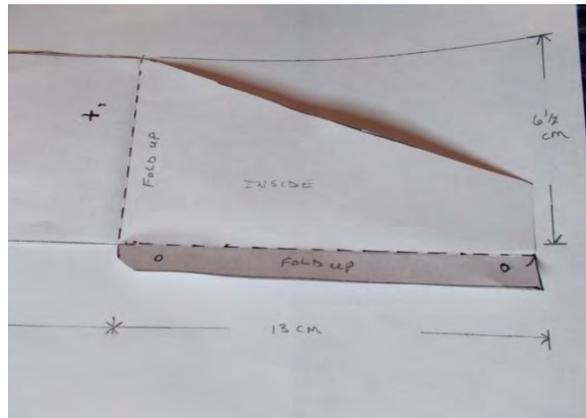
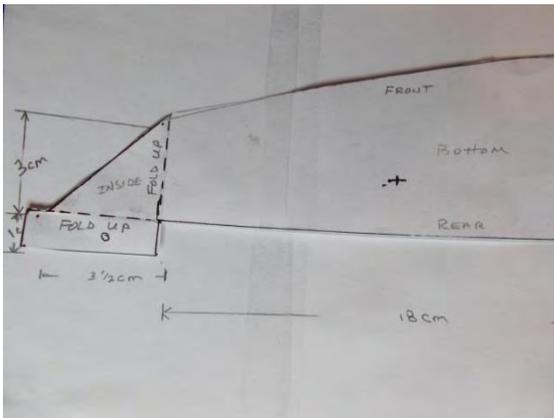


Completed Project Powered Up



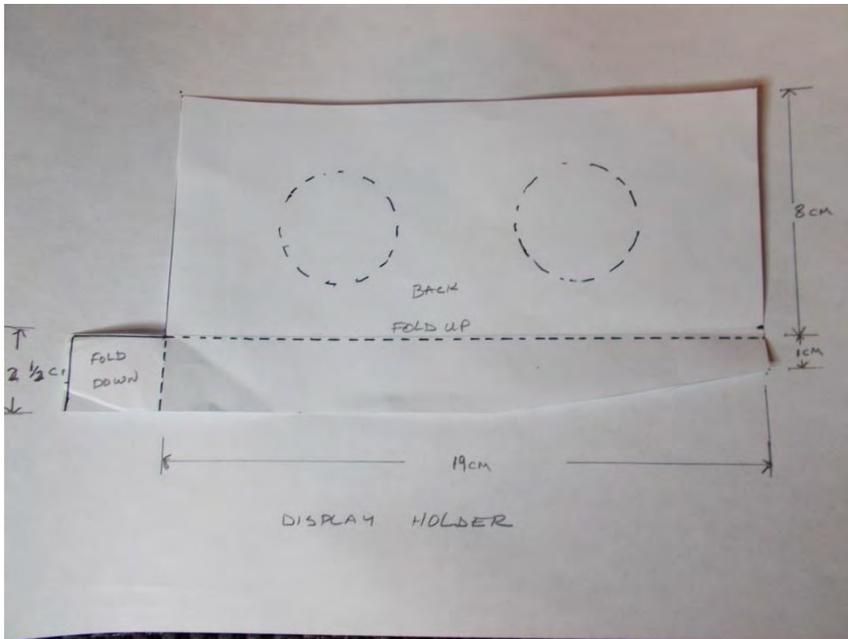
The particulars: I designed the visor to be attached to the GRT and panel using three of the four screws which hold the GRT display into the panel. I first created a paper cut-out template to get my measurements and hole placements. The material used is medium strength aluminum, which is relatively easy to bend. After measuring and cutting out the paper template, I transferred it to the aluminum and traced my cuts and bends. As you can see to the left, one side of the visor is shorter than the other so I would not block the view from the pilot's side.

Below is a “flattened” view with approximate measurements for my particular application. This should give you an idea of how I went about cutting and bending the visor using a single piece of aluminum. There are two small + marks on the template. I used these later to align and secure GPS holder. Replacing longer screws on the right side of the display and inserting a spacer, I was able to angle the GRT display toward the pilot.



--Visor layout--

It worked well in flight and gave me enough “shade” to easily see the display. When I returned to the airport, I realized the visor had a lot of “shelf” and decided to create a holder for my IFLYGPS unit. Since designing the GPS holder was an afterthought, I built it in sections, but it could easily be made with fewer parts. The GPS holder has a main part for the unit itself, two small pieces making the “arms” which hold the unit in place and keep it from falling forward. Then behind the main part, a “U”-shaped battery holder. Here are several pics below of each one to get a better idea of how they were shaped and attached to the visor.

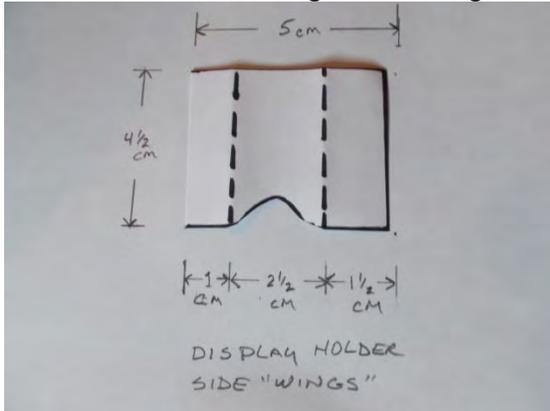


The two circles represent the speaker locations on the IFLY and can be cut out or, as an option, you can easily cut the display at the mid-section of the circles straight across. It would still be capable of holding the IFLY and giving you some speaker sound. (you probably won't hear much in the cockpit anyway...)

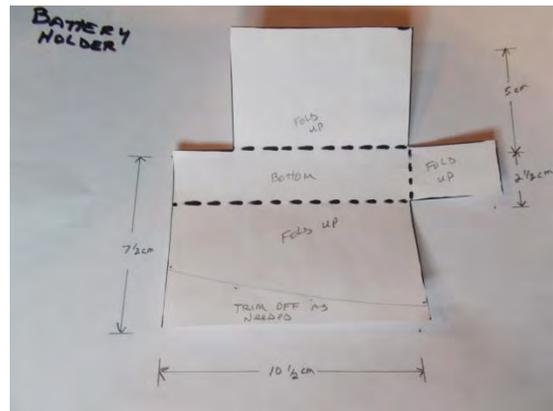
At this point, you could probably incorporate the “arms” in the display holder layout which hold the unit from falling forward, but again as this was a project in process, I designed them as stand-alone pieces as you can see in the next layout.

(Note: you can see a little curve in the lower right part of the display holder. That's just a little trim I did to get the same angle match to the visor.) As seen in some of the pics, I riveted the “arms” to each side of the display holder and on one of them I had to notch out a little area to accept the power cord from the battery. The Holder was then positioned and secured to the visor by riveting it to the top of the visor. Remember the + symbols on the visor layout? That's approximately where I riveted

the display holder to the visor. Additionally, I laid out the battery holder as shown in the pic below and attached it behind the display holder. Rather than rivet this to the visor, I used RTV (it was easier). Finally, I painted the aluminum black and covered it with felt to protect the unit from possible scratches when inserting or removing it from the holder.



Display holder "arms"



Battery Holder



Side View



Top down view



Finished product with unit installed



Side view with unit installed

It works great in flight; I don't have to have it suction mounted on the canopy and I don't have a lot of cords hanging everywhere.

Perhaps this will give others an idea or even a start to "kill two birds with one stone"....Enjoy

– Bear Bryant

Nice, Bear. Good work!

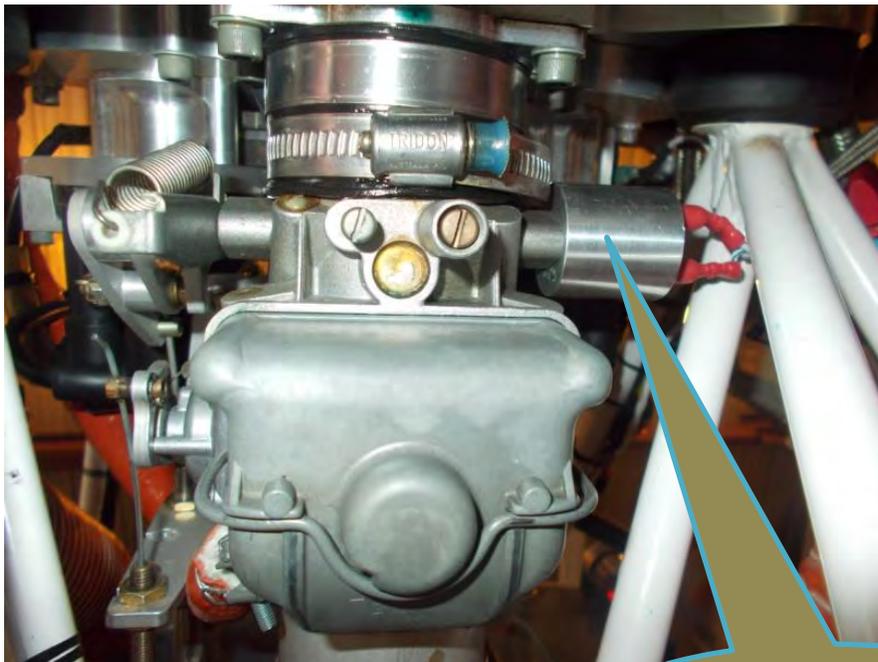
Electric Carburetor Heating Element Installation

By Bear Bryant

During the past couple of summers here in Florida, I have experienced what appeared to be minor carburetor icing while performing touch and go's at my home airport. Because this was happening between the upwind and crosswind legs, my initial thought was it had to be something other than carb icing. So for several months, off I went chasing every possible cause, but it continued. Believing now that it might be carb icing, I applied the mechanical carb heat throughout the *entire* touch and go profile. To my surprise, there was no noticeable "coughing" in the engine as on previous touch and go's. I reviewed the potential carb icing chart and that day's temperature and humidity, although slight, still fell within the window for potential icing. My surprise was that this was happening from the transition of full take-off power on the upwind and the turn toward the crosswind leg.

If my carburetor was icing up during the touch and go's, I really didn't want to lose engine efficiency with the use of my mechanical carb heat. I learned in the Jabiru engine class, taught by Mark and Nick, that you can install an electrical carb heating element to the Bing Carburetor.

So, I recently purchased an Electric Carb Heat Kit and installed it on my Lightning. The kit comes with a heating element (switchable single/dual elements (30/60 watts)), 2 Allen bolts, 2 female bullet terminals, a M4 tap set, and instructions. The install in the Lightning is rather simple as the heating element is designed to be screwed directly onto the Bing carburetor. As stated in the instructions, there are two pilot holes in the carburetor which have to be increased to a depth of 11mm and then tap the holes with the provided tap to accept the Allen bolts.



With my Lightning, I had to first loosen and turn the carb in order to be able to drill and tap the holes because the engine mount bracket prevented easy access to the pilot holes. This was not a difficult process. *You just have to remember to tighten the carburetor back in its original position afterwards.* Once installed, you then just need to wire the supplied bullet terminals and attach them to the heater element. There is enough room between the terminals and the engine mount bracket to slip these on and off, *but it is tight.*

View from Underside
of Carburetor



The heating element should be wired to the electrical system of the aircraft via the main bus bar and protect by a 10 amp fuse and switch.

Heater With Dual Elements

There are a couple of wiring configurations which are depicted on the instruction sheet. I opted to use a 3-way switch allowing me to select low power, high power and off. If you configure the switch this way, selecting the low power heats up only one side of the heater, selecting high heats up both sides of the heater. The electrical draw using the high power is approximately 5 amps.



Three Way Switch

I am pleased with the performance. Using this electrical heater, I have negligible power loss. It heats the carburetor not the air. It is lightweight and also provides me with redundant protection.

Bear Bryant
N82PB
n5pb@aol.com

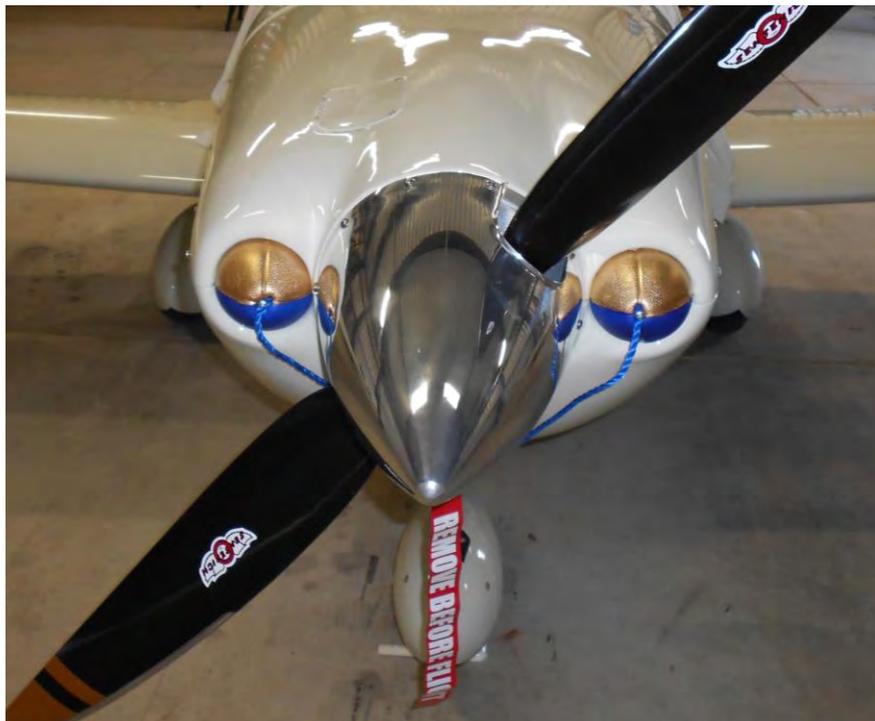
Thanks, Bear. A great solution to a potential safety problem.

The next tech tip is from J Drane (jdrane1@yahoo.com)

Buz,

I would like to offer a tech tip. This is not an original thought, it was in Kitplanes magazine but maybe not everybody saw it.

Cowl plugs for a Lightning. Go to Wal-Mart get a Poof (trademark) football, slice it with a bread knife to the right size, attach a cord and now you have cowl plugs. I'll attach pictures.



Looks great, "J", thanks.

Bill Browns sent in the next tech tip.

Graphing Engine Monitoring Data (Free)

A couple years ago I submitted a newsletter article that discussed capturing engine data from GRT EFIS systems and converting it to an Excel spreadsheet. I then developed a number of spreadsheets to graph the data (CHT@RPM, FuelFlow@RPM, etc.) but decided I did not want to get into the software support business and kept them to myself.

I was somewhat aware of an online engine data analyses site called SavvyAnalysis.com but back when they did not support GRT. Then I was looking at the GRT site and found the following:

<http://www.grtavionics.com/miscsw.html>

One of the great things about this solution is that SavvyAnalysis will work with data from most engine monitors. From their FAQ section:

- Advanced Flight Systems (AF- series)
- Avidyne (R8/R9/EX5000)
- Chelton EFIS
- E.I. (UBG-16 & MVP-50)
- Dynon (D10/D100-series, SkyView)
- Garmin G-1000 and Cirrus Perspective
- GRT Avionics
- Insight Avionics (GEM 610, GEMINI 1200, G1, G2, G3 and G4)
- J.P. Instruments (700-, 800-, and 900-series)
- MGL Avionics
- Ultra-FEI/Flightline AuRACLE

They provide the ability to upload engine data to their web site and provide graphs that you can modify to compare various metrics (CHT@RPM, EGT@RPM, FF@RPM, etc.). And the nice part about it is the basic graphing is free.

They also provide a Pro service for a fee which provides an analysis service. I have not used that service.

Bill Browns
N716MZ

Thanks Bill. Good information.

Bill Strahan (bill@gdsx.com) sent in the following tech tip.

Yep, sometimes the little things make a difference. First, let me show a picture of my "minimum travel kit".

The ratcheting screwdriver on top has a screw off cap and holds several bits in the handle. Flat head, small Phillips, 1/4" drive for the sockets. It also has a set of screws and washers for the Matco brakes in there as well as the star drive for the screws in case I have to remove a wheel while on a trip and I break one of the little screws.



Below that is my set of sockets, and the 3/8" socket is removed because it relates to the subject of adding air to the tires. More on that later.

Next is my valve stem extension. Originally the end that screws onto the stem was free to turn. Epoxy and flox took care of that, as you can see. The extension normally has a valve stem cap on it, but it's removed and separate in this photo.

Next is my socket extension, and finally in the bottom left corner is a handy 1/4" socket drive that is meant to be used with thumb and fingers. It's tiny, and super useful. My wheel pants sit low and are a tight fit. For the bottom screws I can put a 5/16" socket on that thumb drive, put a Phillips bit in the socket, and I have a very short ratcheting screwdriver for that purpose.

Now, back to the tires: There is a lot written about determining where to put the hole in the wheel pants, so I won't reiterate that here. I'll just add that it is well worth the time to find a way to mark the tire sidewall with a bit of paint so you can tell when the valve stem is lined up with that hole without having to peer into it while moving the plane.

So, get the valve stem lined up with the hole in the wheel pants. Put the 3/8" socket on the socket extension, slide it through the hole and onto the valve stem cap. Unscrew the cap (It should have just been finger tight) and pull it back while trying to keep it in the socket. Set that aside.

Take the valve stem extension and slide it through the hole in the wheel pants and thread it onto the valve stem. You'll have an easy time of it if you try to duplicate the angle at which you were holding the 1/4" drive extension. Once it's finger tight you can check tire pressure and add or remove air. When done, reverse the process.

I keep the valve stem cap on the extension in case I ever lose a cap while doing this away from home.

So, nothing earth shattering here, but having a defined process and plan for the little things makes them go quick and easy.

Bill



Lightning Skunk Works

The below photos will give you an idea of what the Arion guys are working on for the future. Remember this is all proprietary information and classified Above Top Secret, ATAMOL, No Forn, so don't talk about at your local bar. Yes, I have flown them all.



Turbine-Based Combined Cycle Propulsion

Combined cycle means a turbine is combined with a ramjet to enable operation from static to hypersonic speeds (Mach 5+)

Turbine Engine

Thrust is provided by the turbine engine from takeoff up to about Mach 3

Common Inlet

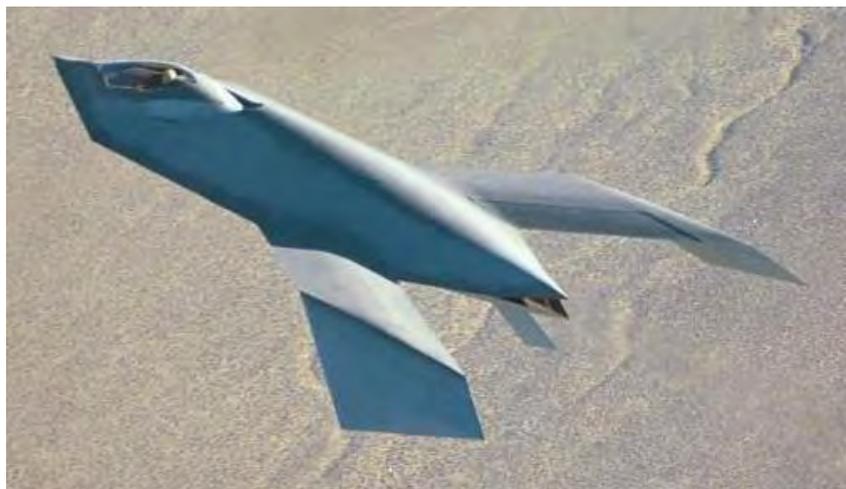
Dual-Mode Ramjet

The Dual Mode Ramjet accelerates the vehicle up to hypersonic speeds

Common Nozzle

The turbine engine and ramjet are fed through a single inlet nozzle to significantly reduce drag

Another model.



Final Thoughts –

The Lightning aircraft remains one of my favorite all time aircraft that I have flown. It is a beautiful aircraft, flies like an airplane should, and has outstanding performance even though it is economical to operate. Super airplane!

Over the years I enjoyed writing the Lightning Newsletters because it gave me a chance to meet so many Lightning owners, builders, flyers, and potential future customers. It also helped me to continue my close association with the factory guys, as well as the dealers, and they are now what I would call close friends; a great group of people.

As I mentioned above, I'm happy to report that Dennis Wilt, Lightning builder and flyer, has decided that the newsletter is important enough to take on the mission of keeping it alive. I ask all of you to give him the support you have given me over the years. It will help him continue to make the Lightning Newsletter one of the very best in that experimental aviation world. Actually we have the best airplane and the best newsletter.

Please contact Dennis at dwwilt@AOL.COM, the factory guys at info@flylightning.net, or you can continue to correspond with me at N1BZRich@AOL.COM. Let us hear from you!

Blue Skies,

Buz Rich

N1BZRich@AOL.COM