



CHAPTER 42 NEWSLETTER

April, 2005

Anchorage, Alaska

Monthly newsletter from Chapter 42 of the Experimental Aircraft Association

FROM THE LEFT SEAT

This month the general membership meeting will be a visit to the kind folks at Merrill Field Instruments. Ted and Brian have told me that they have some new information on the products that they displayed earlier this year and some exciting new products. More information concerning time and place will be in this issue of the newsletter.

Volunteers are still needed for our booth at the Trade Show this year. Please contact Jim Moss and sign up. It is very rewarding and interesting to spend some time in the booth talking to folks about EAA.

The Sport Pilot movement in aviation continues to evolve and the Chapter just received a DVD presentation from National EAA and we hope to be able to present to our members. This DVD should answer all sorts of questions concerning the Sport pilot regulation. If you are interested in seeing it, please let us know.

Is the future of General Aviation the experimental and homebuilt aircraft? Imagine a youngster who dreams of flying, who looks to the sky and sees an airplane fly by and thinks, "I want to do that, I want to fly" only then to go to an airport and find out a new Cessna costs as much as a house or more than 5 big pick up trucks or 10 motorcycles.

Why do airplanes cost so much? There are lots of reasons, and I am sure the thought of liability insurance and malpractice insurance is a large part of the equation. But there are other reasons, the many layers of legislation heaped on every component that goes into an airplane, the limited product runs for a company to recoup its costs for R&D, all of this adds to the bottom line.

Something needs to change to bring down the costs of flying and perhaps the sport plane movement will provide that. I hope so.

Progress on my RV-9 continues. I am working on the fuel tanks at the moment. Building fuel tanks is an interesting experience. The dreaded sealant used to leak proof the tanks is not

nearly as bad as I had been led to believe. It isn't all that good, but I believe I will survive it.

Here is a short primer on tank theory. The sealant is supposed to be impervious to almost any solvent, and especially gasoline, once it cures. The sealant never really hardens, it just turns into a pliable synthetic rubber.

The sealant is placed on the inside of the tank, between the parts and then riveted. It is also placed the outside of the tank, all at the same time. The sealant on the inside will be doing more than the sealant on the outside because of pressure. The pressure from the gas trying to push its way out of the tank pushes on the sealant and tries to force it through the gap in the tank, which is hopefully sealed, thus giving reinforcement to the sealant. If the tank were just sealed on the outside, then the fuel would just be pushing against the sealant, which would then only be backed up by air.

I am sure that was just enough to either bore you or confuse you so don't be bashful, ask questions or drop by some time and join in the fun.

It appears that spring is finally here to stay. The days are getting longer and the temperatures are staying above freezing at night and it feels warm and great outside.

I have been spending a lot more time outside, and as I do I can't help but notice that the sky is full of airplanes and birds all doing what I long to. I want to go flying and this is encouraging me to work harder on the RV-9.

But, if anyone has an airplane that needs some exercise and you can't find the time, please contact me. Or, if you need or want someone to share the expenses in return for flight time, please let me know.

Mike

NEXT MEETING

Our next meeting will be Tuesday, April 26th at 7pm. We will be back at Merrill Field again, but this time our rendezvous will be with Ted and Brian Marcinek at Merrill Field Instruments. If you are building an airplane, I can't imagine you would want to miss this opportunity to get an up close look at the future of panels. We will see some of the standard stuff plus an introduction to the latest innovations.

The address is 900C Merrill Field Dr. The building is just down the road, west of the UAA Aviation Complex. See you there.

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Shielding The purpose of the shielding is to cause HF voltages to be induced in the shield rather than in nearby, or adjacent, units where they would cause electrical interference... like noise in your radios.

A shielded cable is one whose entire length is encased in a metal braid.

Some folks believe only one end of a shielded cable needs to be grounded but just as many, if not more, believe both ends should be grounded for maximum effectiveness. Who's right?

Well, it could be that both factions are right, sometimes.

The shielding on your magneto wires should be terminated (grounded) at both ends to keep cables from emitting radio frequency noise.

On the other hand, the shielded interconnecting cable used between a strobe light unit and its power supply normally

is terminated (grounded) at one end only to reduce to a minimum potential radio noise due to RF radiation. Usually, it is more practical to ground or terminate the shield at the power supply end. However, do not terminate both ends. At least, that is the advice offered by the manufacturer of Whelen strobe light equipment.

In home-

builts, when we speak of shielding, we are, more than likely, referring to the metal mesh encasing the P-leads (wires) connecting the magnetos.

The wires used to connect the magneto should be shielded type cables. (I hate to use the word "cable" because in my mind it conjures the image of the heavy stranded cables used in cranes or to support structures like the Golden Gate Bridge.)

At any rate, the ignition cables can be very small as they will be carrying very little current. For the most part, #18 or #20 shielded wire is all you need to use.

The magneto P-lead cables and most of the other wiring in a homebuilt are seldom more than 5 feet in length so voltage drop in a cable is not usually a factor to worry about. Actually, most homebuilders are prone to using larger cables than necessary in their electrical system. For that matter, they try to get by with a minimum of different wire sizes.

It would simplify future maintenance and trouble shooting if you could install cables with black colored insulation for all the ground wires.

About Those Electrical Wiring Diagrams They do serve an important purpose for most of us.

Without a good wiring diagram the average builder would have difficulty in deciding where to begin or how to go about wiring his airplane.

Unfortunately, most aircraft wiring diagrams fail to show some rather important details, apparently on the assumption that everybody is familiar with certain basic electrical essentials.

The biggest fault I find with some electrical diagrams is that all essential ground connections are not always depicted.

For example:

1. The voltage regulator and overvoltage relay must be grounded but the schematics often fail to show the ground. Without a good ground neither the voltage regulator nor the relay can work.

2. The alternator and starter are assumed to be grounded by their installation to the engine, yet the schematic may not show them to be grounded.

3. As previously mentioned, electrical sender units for instruments are often grounded by their installation to metal structure. Nevertheless, it is important that the grounding notation is illustrated.

4. Magneto wires often don't show that they are to be shielded type cables with the shield terminating to ground at both ends.

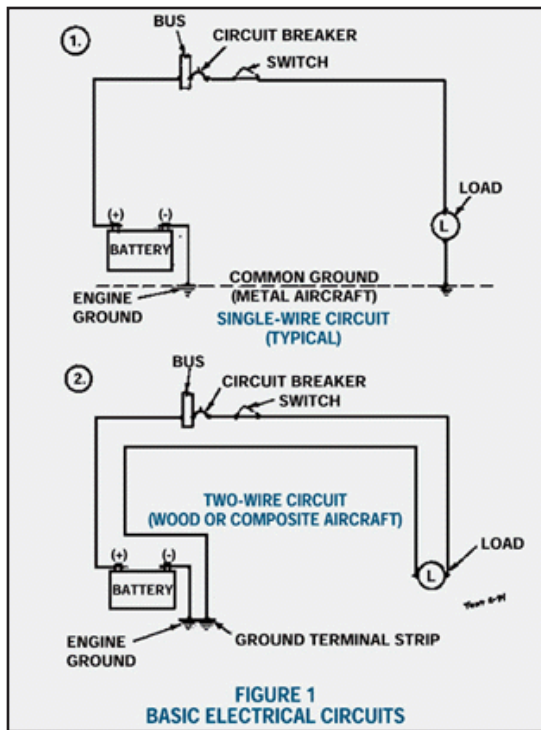
5. The alternator to/from wires should show them as being shielded and grounded.

6. Strobe wiring is seldom shown in most wiring diagrams, and yet, at least one manufacturer (Whelen) emphasizes the importance of grounding the conductor's shielding at one end only.

The foregoing review should serve to stress the importance of a good electrical ground for every device and every circuit.

In some instances a unit simply will not work without being grounded . . . even though there is no terminal for a ground wire connection. Keep that in mind when you are trouble shooting an electrical problem . . . and check the simple and obvious things first.

Just One More Thing... Always disconnect the battery ground cable first and replace it last to avoid causing accidental short circuits and a startling pyrotechnics display.



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FROM OUR TECHNICAL COUNSELOR

I recently stopped in to look at Dave Doerner's Sonex project. Dave has closed up one wing and is getting ready to close the other. Dave has done a nice job of the work. He has chosen to wire the navigation lights and strobe light power leads using a shielded bundle that also returns the ground legs back to a central ground. This system does not use the airframe as a return path for the grounds. Dave's background is avionics with a U.S. Air Force hitch. He says that this method will remove the objectionable noise from the strobe system from the avionics.

The Sonex is a two-seat cantilever low wing monoplane. The designed engine is a converted Volkswagen engine that is available in kit form from the Sonex manufacturer. The plans appear to be very well detailed and are clearly drawn on a CAD program. You can view the website at www.sonex-ltd.com.

~ Cliff Belleau



Dave Doerner's Sonex project

**2005 Alaska State Aviation
Trade Show and Conference
May 14th & 15th, 2005**

CHAPTER 42 OFFICERS

PRESIDENT Mike Ice	344-4401 (hm) aurbo@ak.net
VICE PRESIDENT Gale Partch	345-4554 callme3@gci.net
TREASURER Rob Spoo	384-2021 robspoo@hotmail.com
SECRETARY Mike Luther	278-3222 luther@gci.net
DIRECTOR OF COMMUNICATIONS Tim Rittal	248-2249 tim@timrittal.com
DIRECTOR OF PUBLIC RELATIONS Chris Gill	272-7427
TECHNICAL CONSULTANT Cliff Belleau Tom Lawhorn	333-2215 (hm) 248-7070 (wk) 333-7849 tomlawhorn@hotmail.com
DIRECTORS AT LARGE Jack Brown Jim Moss Chuck May	248-1060 243-5151 345-4703
MONTHLY MEETINGS	4th Tuesday of most months



Dave Doerner's Sonex project

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fax (907) 279-0717

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LAST MONTH'S MEETING

What can I say? The guys at UAA have really gone out of their way to do their part in imparting a bit of aviation knowledge into our little group. Last month it was Paul Herrick's turn with his lecture and slides on fuel systems. Paul did a great job in discussing various aspects of a good system with emphasis on safety considerations. A few notes I scribbled down were: 1) It's a good idea to have a fuel shut-off at the firewall; 2) No high spots in the fuel lines to help prevent vapor lock; 3) Have drain holes in the wings so spilled fuel or even leaks don't accumulate fuel in the wings (naturally, this does not apply to wet wings); and 4) Check your gas vents for protection from icing.

For those of you who were there, you know Paul covered volumes more information. Our thanks to Paul and the rest of the staff for their wonderful support. They are truly a great resource.



Paul Herrick, UAA Aviation School

FLY MART

Free to members. Contact Tim to place an ad: tim@timrittal.com or 907/248-2249.



FOR SALE: Acrosport 1, an acrobatic bi-plane for REAL flying! \$60,000. Herb Williamson, 345-3431.

WANTED TO BUY: Lycoming 0360 engine with CS prop or able to take one. Tim Rittal, 244-4472.

FOR SALE: EDO 1650-88A floats. Rigged for Cessna 150. Good condition. Overhauled from the step forward in 1999 with new bottoms, keels, etc. Paint is fair with the expected dings from floats built in the 60s. Located in Palmer. \$10,000 or trade for something interesting? Keith 907-355-2748

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