



# EAA Chapter 21 NEWSLETTER

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## Pre-Certification Inspections

*John Crabtree is both a Technical Advisor and Flight Advisor for Chapter 21. He and Vince Frazier recently gave Steve Eberhart a pre-certification inspection on his just-completed RV-7A. They came up with a 6-page list of items for Steve to attend to before his FAA certification inspection.*

*I drove out to Hepler Field the other day and found John working on his RV-6. I asked him to comment on what he looks for in the pre-certification inspections he and Vince provide for Chapter 21 members, just for the asking. He was more than willing to talk to me.*

What do I look for? Well, I look for things that are obviously against recommended practices. I look for all connections to be tight, and properly supported forward of the firewall. I always have somebody work the throttle and mixture controls, so I can observe the travel, making sure that all the connections are correct and secure, and that you get full travel at the carburetor. Make sure all connections are tight, and that things are well-routed, properly secured, and don't bind anywhere.

On many homebuilts, especially faster ones, a lot of them have problems with engine cooling. So you have to look for issues related to that, and the first areas are inlets from the cowl. Make sure there is good uninterrupted air flow at the air inlet. Then look for real tight baffling, making sure the baffles are tight and placed properly. There are a couple of baffles that some people misinterpret, and I've seen them left out, which leaves one part of the airbox above the engine completely open. The fitting of the baffles is important, because you don't want any of that incoming air to escape. If air goes into the airbox, you want it to cool the engine and not escape cold. That's all firewall forward stuff.

You look at the wheels and brakes, and make sure that those appear to be rigged correctly. Brakes—make sure that they are free and safetied properly. Look at safeties everywhere, and make sure that cotter pins are in place, and nylocks have the correct number of threads showing; that bolts with drilled heads are safetied correctly.

On RVs, I'm very, very familiar with control system layout; with parts that are supposed to be there, and how they

are supposed to be there. Always go through the whole control system. Inspect from the stick, through the push tubes, through the bell cranks, and then to the control surfaces. Make sure that it's rigged correctly, with jamb nuts properly fitted. There's a couple of places that it's possible to misinterpret. For example, when the stick is neutral, there is a specified position for the aileron bell crank that converts side to side motion to fore and aft motion. Always check to make sure that's correct. You're supposed to have a certain number of degrees of travel up and down, and if you don't do that, you don't get the correct aileron travel. Again, look for the correct jamb nuts on the ailerons. When you use rod-end bearings, which RVs use a lot of, at the terminations of push tubes, they're supposed to be captured on both sides of those rod ends. I like to work the controls through max travel, and just listen for any interference. I've seen, particularly in older RVs, it's possible for the aileron push tubes to interfere with flap leading edge skin, so you've got to look for that.

Going backwards, again you're looking at push tubes, you go into a bell crank that's behind the baggage compartment, and check for proper jamb nuts and travel, proper safeties, then back to the elevators, the same thing.

Go through all controls, through all their travel, making sure you've got everything, including the travel you're supposed to have. For each control surface there is a recommended up and down travel. There is a nominal, and then there's a minimum specified travel.

At the rudder pedals, look for full de-

*(Continued on page 2)*



flection with no interference, and that they are properly secured at the hinge points. The front of RV rudder cables connect to the pedals via a link that the builder makes up, and you have to make sure to use the correct hardware, correctly tighten it, and then put cotter pins in. There are a bunch of places where cotter pins belong.

If the builder is far enough along, I'll check fuel flow from each fuel tank, and just make sure there is a correct amount of flow, enough to support running the engine at maximum power.

Electrically, unless I've done the wiring, I'll just do a cursory look over, to make sure all the wiring is secured and bundled and supported the way it should be. I look for isolation of the positive pole of the battery. If it isn't shielded, it could be grounded by anything that touches it.

I always learn something when I look over an aircraft, because there are so many different ways to configure things.

I was just troubleshooting my autopilot, and that's another area to look at. Frequently, the autopilot servo for side-by-side aircraft is out in one of the wings, and has to connect to that bell crank somehow. It's always important to look at that and make sure it gets the full range of motion, and not bind or lock up anywhere.

It's important, too, you really have to look carefully, because sometimes you'll see builders put something together; put a jamb

nut in place, and put some torque seal or inspection lacquer on it. That makes it look official. But you've got to do a double-take. I've seen cases where that jamb nut was tightened against the incorrect end, and it wasn't doing anything.

Really, more than anything, I really applaud people that ask for other experienced eyes to come and look. That to me is worth a lot. I'd say, especially for any RV in the area, I'd be happy to come look. Vince Frazier and I frequently work together and just swarm over a plane. Some of the things we'll recommend are our opinion, or our personal taste, or practices we see and like, and then there are other things we'll tell you you **MUST** fix or it will kill you. We definitely don't want anybody, anywhere to get hurt. All of our comments are meant in that vein, just to help people have successful flights. If anybody decides they want an independent inspection from a knowledgeable resource; not your neighbor, but somebody else from the Chapter that is experienced in your type of construction, let me know. If it's metal construction I can help, if it's wood or fiberglass, we've got experts in those fields too.

*All this information John gave me off the top of his head, with no notice or preparation. This is just a small sample of the things John and Vince will look for.*

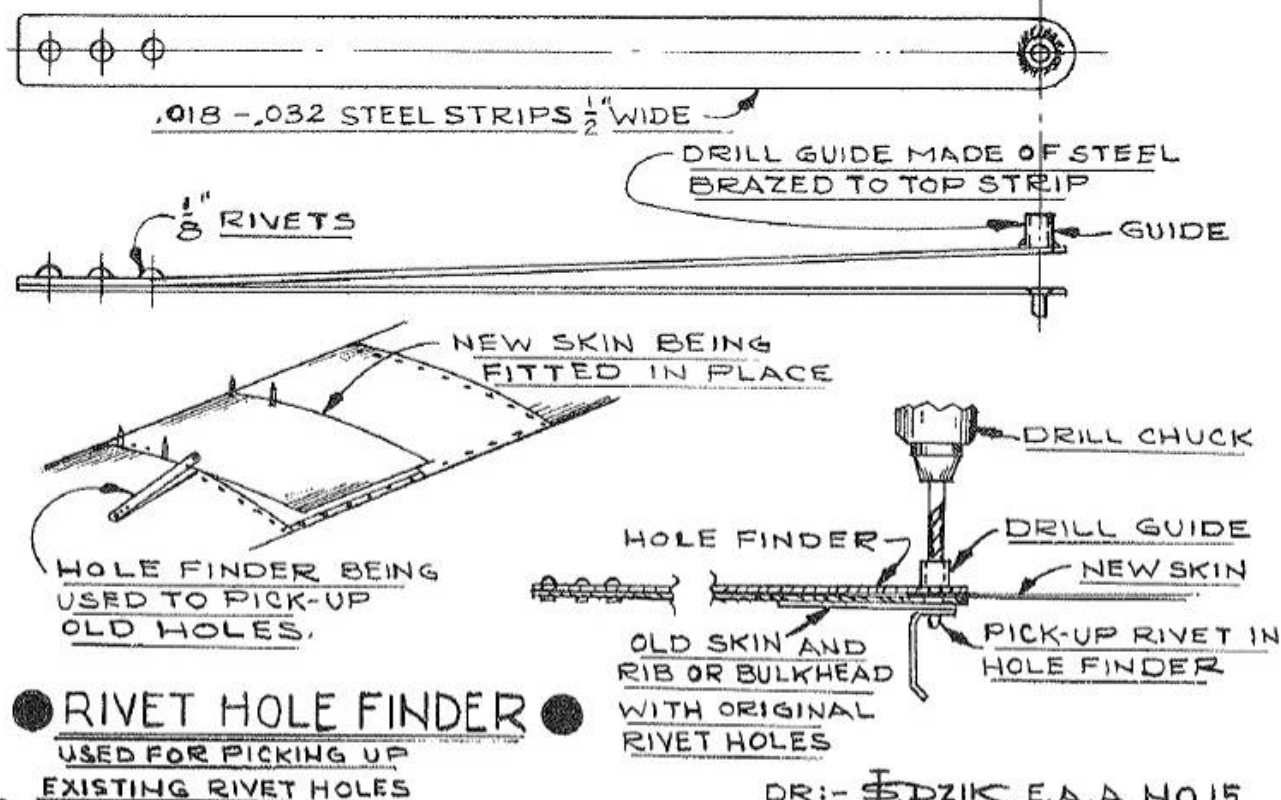
*Submitted by Pete Wiggin*

*The article below I got from **Custom Aircraft Building Tips, Vol 1**, copyrighted 1967 by the EAA Air Museum Foundation, available from the EAA website*

## RIVET HOLE FINDER

By Fred W. Luddeke  
P. O. Box 36, Chickasaw, Ala.

The hole finder idea is really very simple, but I have not seen it mentioned previously, so here it is: I have been using this type for over 20 years and have found it to be the most foolproof one that can be used in almost any location except where there is a very tight radius. Even then it can be used by using a smaller size drill bit and pulling the hole to the lower side of the drill guide. Practice will teach you how to do this. Wider strips should be used if the length is to exceed 14 inches as they tend to lose proper alignment when made too long and too thin.



## Young Eagles Rally — June 27<sup>th</sup>

Mark your calendars! We have our annual Young Eagles Rally scheduled for June 27<sup>th</sup> (rain date is June 28<sup>th</sup>)

I'll need everyone's help. I think we're going to have quite the turnout this year! My new connections as a Scout Leader with my son's Cub Scout Pack has really given me a lot of leads! In fact, on May 7<sup>th</sup>, there was a meeting with all of the Boy and Cub Scout leaders in the area, where I gave a short seminar about the Young Eagles Program, and our rally on June 27<sup>th</sup>!

I don't think that it is unreasonable to think we will be getting around 200 kids this year. And, I'm going to try to get us some corporate sponsorships to help out with the costs that we incur. If anyone has any ideas of people I should talk to, please let me know!



The more, the merrier!

To try to get a handle on who will be there this year, I've set up an RSVP form on my website. Please click on the VOL-UNTEER RSVP link at the top of my page. Please have any prospective Young Eagles also RSVP if they can. I am hoping to have a more accurate count before the event starts.

Volunteers, please be at the Henderson Airport around 8AM on Saturday, June 27<sup>th</sup>. Pilot meeting will be around 8:30, and we will be flying starting at 9am. Don't forget to RSVP!

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Experimental  
Aircraft  
Association



# Young Eagles SUMMER 2009

Henderson County Airport

Saturday June 27<sup>th</sup>

9:00am - 2:00pm

Rain Date Sunday June 28<sup>th</sup>

***Do you remember your first flight?***

The Evansville EAA is once again offering the Young Eagles Program!

Bring the family for a day full of fun!

**Free Flights for Children ages 8-17.**

For more information visit us on the web: [www.EAA21.org](http://www.EAA21.org)

# EAA Chapter 21

Send Your Dues Payment To:

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## Upcoming Chapter 21 Events

**EAA21 Chapter Meeting: Wednesday June 10<sup>th</sup>, 7:00 PM, Skylane Airport**

Check the website [www.eaa21.org](http://www.eaa21.org) for program information

*Skylane Airport (3EV) located at 2029 Allen Lane, <sup>3</sup>/<sub>10</sub> mile east of St. Joseph Ave, Evansville, Indiana*

Dates	Event Name	Location	Distance
June 7, 2009	Fly In / Drive In Breakfast	Olney, IL	59 miles
June 12-14, 2009	Annual Frasca Fly-In	Urbana, IL	149 miles
June 13, 2009	Mid Tenn Fly In	Lebanon, TN	142 miles
June 14, 2009	Sinful Sunday	Hanover, IN	121 miles
June 21, 2009	EAA 1315 Fly-In Breakfast	Taylorville, IL	142 miles
July 11, 2009	EAA 419 Fly-In Breakfast	Murfreesboro, TN	129 miles
July 12, 2009	Sinful Sunday	Hanover, IN	121 miles
July 19, 2009	EAA 1315 Fly-In Breakfast	Taylorville, IL	142 miles
<b>Jul 27-Aug 2</b>	<b>EAA AirVenture Oshkosh 2009</b>	<b>Oshkosh, WI</b>	<b>418 miles</b>
Aug 9, 2009	Sinful Sunday	Hanover, IN	125 miles
Aug 15, 2009	EAA Chapter 67 Pancake Fly-in	Noblesville, IN	164 miles
Aug 16, 2009	EAA 1315 Fly-In/Drive-In Breakfast	Taylorville, IL	140 miles
Sep 5, 2009	Fly/In Cruise/In	Marion, IN	205 miles
Sep 26, 2009	Wood, Fabric and Tailwheels Fly-In	Hanover, IN	125 miles
Oct 1-3, 2009	Midwest LSA Expo	Mt. Vernon, IL	72 miles
Oct 3, 2009	Paoli Mun Airport Aviation Day Fly in	Paoli, IN	72 miles
Nov 7, 2009	EAA Sport Air Workshop	Indianapolis, IN	139 miles