

**The Newsletter of the Portland RVators Builder's Group**

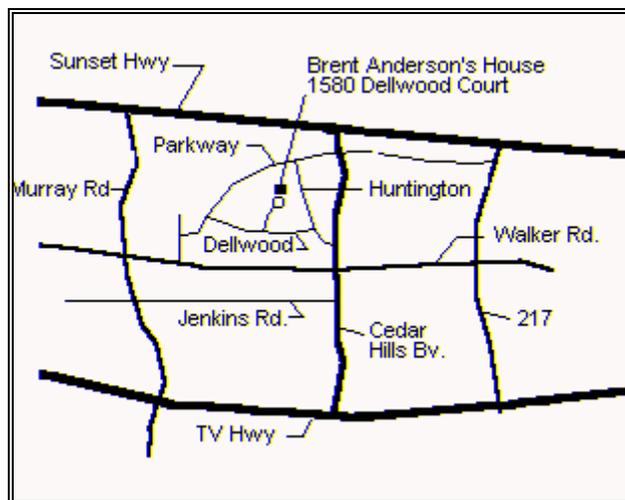


**October Meeting:**

The October meeting was held at Gary Standley's place, the home of the Prototype RV-3 museum restoration project. Around 30 people attended. The main topic was discussion about the project, and Gary updated us all on how the it is progressing and the various difficulties involved in restoring a prototype using plans and parts that later evolved from it. Gary re-emphasized that he is mainly trying to be the coordinator, and is depending on volunteer help to get the project done.

Also discussed was the new pre-punched wing skin option. Some people (myself included) had previously expressed skepticism based on the fact misalignment of the pre-drilled bolt holes in the spar would result in rib alignment problems, but Van assured us that they've worked that out with Phlogiston (who drills the spars), so the required accuracy will be there. He also told us a price that was less than many of us thought.

Everyone took a turn to update the group on their status, and there were some interesting ones, including Blackie's story of how he banged up his RV-4, and the subsequent repair work which is nearly complete.



I need hosts for the next few meetings, preferably in some of the more comfortable (that is, with heat) shops around town during the winter. If you can volunteer, give me (Frank) a call at 629-7808 daytime or 590-3991 in the evenings. The real advantage for the meeting host is that you can get detailed tips on what and how to do the next few months of your project from people who have already been through it.



**General Business:**

**A new ERA is here!**  
Randall Henderson

Hello rivet-heads, I guess it's official (as official as it gets with this group anyhow) -- I'm the new newsletter editor! Seems when Rion and Don were scheming to take over the EAA chapter leadership, they had to find some sucker to take the load off of Don for this newsletter, and since he had already managed to con me into contributing every month with builder's statuses and such, they figured (rightly) that I'd be an easy sell. Boy will HE be sorry! In fact, what better

<b><u>Next Meeting:</u></b>	
<b>Place:</b>	<b>Brent Anderson's place 1580 SW Dellwood Ct.</b>
<b>Date:</b>	<b>November 11, 1994</b>
<b>Time:</b>	<b>7 pm</b>

The next builder's group meeting will be at Brent Anderson's shop where he is well into his RV-6 fuselage. It is located at 1580 Dellwood Court, the yellow house on the end of the street. Call 649-6380 if you get lost.

way to start off my editor-ship than with one of my famously annoying Top Ten Lists? So here they are, my.....

TOP TEN REASON I'LL BE A BETTER NEWSLETTER EDITOR THAN DON WENTZ

- 10. Now that Don's gone and finished his airplane, he's just too good for us "still-building-weenies"
- 9. I would've been Editor a long time ago if it hadn't been for that affair I had with Geniffer Flowers
- 8. Don never quite got the hang of tabloid journalism
- 7. No more editing my top 10 lists for "political correctness"
- 6. Don always had to be careful about what he wrote so he wouldn't jeopardize his lifelong dream of becoming EAA Chapter Vice President
- 5. I'll make him write half the stuff anyway
- 4. Cool logo, huh?
- 3. I'll put POSTAGE on the newsletters before mailing them
- 2. More pictures
- 1. That stupid pink hat!

But seriously folks, I think we all owe Don a BIG thanks for doing such a good job as newsletter editor (and associated duties) for the last couple of years, and for keeping the builder's group alive and fun and helpful for so long. I only hope that I can do as good a job as he did. Thanks, Don!

Subscriptions Due:

Look at the date under your address on the cover. **THAT IS THE DATE YOUR \$8 IS DUE.** Mail to me (*Randall*) or give it to me at the next meeting (my address is the return address on the cover).

T-Shirts, Etc.

The latest batch of shirts (Portland RVators graphic only) should be ready by the next meeting. I got a bunch of extras, so if you didn't order one, come to the meeting and get em while they're hot! I got short and long sleeve t-shirts this time, as well as some sweat shirts, in a variety of sizes. Look me up (*Randall*), or call me if you want one.



EVENTS CALENDAR

**Chapter 105 Pancake Breakfast** - Saturday November 5th, Saturday December 3rd (first Saturday of every month) at Twin Oaks Airpark, 8am. This is a fund raiser for Ch105 to help pay the rent. It's a good breakfast with lots of airplanes to look at and talk about too. See you there.

**Oregon Air Fair** - November 11, 12, 13, Oregon Convention Center 777 NE Martin Luther King Jr. Blvd. EAA Chapter 105 will share a booth with the

Troutdale chapter (902), and will be operating "flight simulators" for kids, volunteers wanted, call Bill Benedict.

**EAA Chapter 105 Meeting** Thursday November 17, (third Thursday of every month), 7pm at Twin Oaks Airpark. Good programs, don't miss em.



Another Reason to Come to the EAA Chapter 105 Pancake Breakfasts

*Randall Henderson*

Having let myself get talked in to serving up pancakes at the EAA hangar a few Saturdays ago, I was out there doing my duty and starting to think about eating something myself, when Don Wentz walks by and says "I'm going to go do some formation flying with Gerry and Jim, and I need some ballast." I didn't even pause long enough to make excuses to the rest of the crew, and soon we were up in the calm clear morning air, searching the skies for our companions who were already aloft. It wasn't long before we spotted them, three little squared off crosses in the sky, and as we pulled up alongside, we saw that the third one was Brad Chapman in his T-18. Brad soon peeled off and headed south, and the three of us (Don, Jim Anglin in his RV-4, and Gerry and Linda Springer in their RV-6) made a wide formation turn back to the west.

For a while we flew a loose formation and I snapped pictures while the guys compared airspeeds. I told Don I only had a 50mm lens and could he ask Gerry to get a little closer? Next thing I know there's an RV-6 filling my frame -- gotta be careful what you ask for around these guys!

Eventually someone got tired of what we were doing and said "lets just firewall em!", and the race was on. To be honest, I was too busy gawking at the view out the window to notice who was leading and who was following, but I do remember that Gerry left us pretty quickly once we all turned our noses skyward.

Eventually we separated, and Don treated me to some of the smooth, slow rolls he's been perfecting. I even got some photos of the horizon upside down in relation to the cowl.

We soon returned to Twin Oaks, and I managed to grab the few remaining pancakes. Ok, so maybe I didn't get any work done on my RV that morning, but I sure had a good time!

(Note: the rather fuzzy photo on the cover is of Gerry Springer, foreground, and Jim Anglin, background, on that day.)

RV-4/6/6A Floatplane Update

Eustace Bowhay

At long last we are able to announce the availability of our float kit for the RV series of aircraft. Since our original newsletter dated January 10/94 we are approaching nearly 100 hrs of testing and cross country flying on our float equipped RV-6.

The results of this testing have not significantly changed our original findings. The following changes were made to the original installation.

(1) Redesigned front main fittings. This resulted in a substantial weight saving and improved appearance.

(2) Change in the angle of floats relative to the fuselage. This was done to improve the takeoff performance by allowing a higher angle of attack at a lower rotation speed. The down side of this was a slightly slower cruise but a marked improvement in the take-off handling. We are now seeing 135 MPH indicated as an honest cruise at full gross pulling 23 in. manifold pressure and 2350 RPM.

We have just returned from Oshkosh which gave us a chance to truly test this installation under some very tough conditions. The following is a brief run-down of that flight along with performance highlights.

The one-way distance was 1700 miles originating at Salmon Arm BC with fuel stops at Brooks Alberta, Regina Beech Saskatchewan, Selkirk Manitoba, Duluth Minnesota and the same stops on return. This was done on the standard fuel tanks. Averaged 154 MPH eastbound and 125 MPH westbound. The first leg Salmon Arm to Brooks required an immediate climb to 10500 ft. This was done in 16 min. after takeoff. Climbing at 110 indicated one cylinder reached 380 with oil reaching 195 and both decreasing as the temperatures dripped with altitude. In cruise the cylinder heads stabilized around 350 and oil at 180. The outside temperatures were above average for the entire trip with surface temps. occasionally in the low 90s. This put any fears of cooling problems to rest. Considerable rough water testing has been done, some in water rougher than one would normally operate from, with no sign of any structural problems. Had a chance to test downwind turning ability at Selkirk on the way home where the wind was blowing 25+ and was able to turn downwind in two foot waves using only 1100 RPM.

All in all we feel the little bird will more than hold its own with the best of the float planes and in most areas outperform them.

This brings us to the hard part. With all the numbers in, the price of the complete kit will be \$7400 US This includes everything from the airframe down including a set of fiberglass nose bumpers and access steps. The streamlined flying wires will still remain an option as they would add nearly a thousand dollars to the kit.

We have had a lot of interest in our kits with some already ordered. From this comes the realization that a lot of you would like to see us build an amphibious model. As of this writing we can say we have made a commitment to do this. Whether it will become a reality is down the road a piece. We are accepting orders for the standard kit now with a 1000.00 deposit with delivery in the order received.

Some have asked if we would build the floats complete. It is not our intention to build them at this time but we may consider a pre-drilled (fast build) kit at a later date. Our priority now is to try and get the amphib gear developed.

Eustace Bowhay (604) 675-4428  
Jim Rowe (604) 675-4264

P.S. We received first place for the best all-metal float plane at Oshkosh. (The head swelling hasn't gone down entirely yet)

(Note: I'll bring some brochures to the meeting for anyone who's interested. rh)



**Builder's Tips:** *Thanks to all who share them with us!*

**Torque values for self-locking nuts**

The question was asked recently on the internet: How do you figure proper torque for self-locking nuts? James Sleight of Sikorsky Aircraft responded with the following:

Here at Sikorsky we have many threaded fasteners that employ friction type locking. Many are installed in applications that are VERY torque sensitive (Main Rotor Blade Retention...).

We actually had a big investigation into the variations of final torque values for individual nuts of the same design. These nuts were torqued to provide a preload in a critical member. It was discovered the actual axial load in the member would vary significantly with different nuts (each torqued to the same ft-lb value).

What we now do is measure the *running torque* of the nut alone (prior to contact with surface) with a dial torque wrench. This number (ft-lbs) is *added* to the desired torque value. This results in the proper axial load every time.

I'd guess this procedure would be gross overkill for common friction- nut applications. Unless the fastener is providing a preload or similar, just increase the Tq value a few in-lbs to cover the drag.

Gil Alexander also followed up with information gleaned from the FAA mechanics bible .... AC43.13-1A *Acceptable Methods, Techniques and Practices - Aircraft Inspection, Repair and Alteration:*

Notes --

1. Torque for clean, dry threads - no lubrication.
2. You can use the manufacture's recommendations (if you can find them!), measure the prevailing torque from the fibre locking ring, and add this torque to the recommended torque... OR ... you can use the figures from the table (quoted below) and just use them as a final torque.
3. Apply a smooth, even pull, if any jerking motion occurs, back off and re-torque.
4. Fibre lock nuts can be re-used any number of times, as long as the nut cannot be turned by finger pressure.
5. Do not use fibre locking nuts on bolts with a drilled cotter pin holes in sizes less than 5/16. At 5/16 and above, make sure no burrs exist around the drilled hole.
6. Self-locking nut/bolt combinations with NO cotter pin ARE OK for control systems as long as they clamp on an inner race of a bearing, and the bolt itself is not used as a pivot. This is the general RV control system arrangement, but there are exceptions.

**SELECTED TORQUE VALUES from AC43.13-1A -- chapter 5**

AN bolt, AN365 nut (the usual RV combination)

- #10 (AN3) 20-25 in.-lbs.
- 1/4 (AN4) 50-70 in.-lbs.

AN bolt, AN364 thin locknut

- #10 (AN3) 12-15 in.-lbs.
- 1/4 (AN4) 30-40 in.-lbs.

High strength bolt (such as NAS1300 series) with AN365 locknut

- #10 (AN3) 25-30 in.-lbs.
- 1/4 (AN4) 80-100 in.-lbs.

The all metal locknuts are usually rated the same as the AN365 fibre locknut.

OK .. for all of you who are not convinced by the FAA recommendations, Aircraft Spruce offers a "Belt and Braces" approach. They sell MS17825 self-locking castle nuts. This gives the best of both worlds, fibre locking AND a cotter pin, but at about a \$1.00 each.

Hope this helps .. Gil Alexander RV6A #20701

PS. Get a copy of AC43.13, or borrow one from your friendly FAA Mechanic, it's well worth reading.

And regardless of whether or not it's OK to reuse nylon lock nuts a few times, go out and buy a bunch of 10-32 and 8-32 NON-locking nuts at your local hardware store, to use when temporarily assembling things such as wing spars. I wasted a lot of time using extra washers to keep the nylon lock from engaging while doing this before I listened to Frank and wised up. rh

**Installing Nut Plates**

A common way to install nut-plates is to drill the screw hole, run a screw through the hole and into the nutplate, and back-drill the part through the rivet

holes in the plate. A trick I read about early on was to cut off a screw to use for that so you wouldn't have to run a full length screw through those self-locking nutplates. But after tediously screwing in, drilling, removing, and moving to the next one on a bunch of my fuel tank nutplates, I caught on to the fact that what you really need is a *bunch* of short screws. I found the right kind, 5/16" long 8-32 screws, at Beaver Bolt out on 78th street in Tigard, and while I was at it got a box of 6/32 short screws for doing the wing tips. The heads are 85 degrees instead of 100 like the aviation kind, but that doesn't matter since they're only temporary. After that it was *much* faster to drill the rest of the tank nutplates -- just screw in ALL the nutplates, go down the line drilling one side of each plate, stick a clecoe in each one, then drill the other side of all of them. I also found these screws to be useful in fastening the tank to the wing temporarily, and in fact there's not much reason to use the real ones until it's time to put it together permanently.

Don Wentz also suggested using an old 3/32 dimple die in your Avery tool to dimple the "ears" on nutplates that will be used on thinner material. That way you can dimple the material and not worry about having to machine countersink beyond the thickness of the material.



**The Internet Revisited**

*Randall Henderson*

A while ago I wrote an article in this newsletter about the aviation forums on the internet and specifically the *rv-list*, the global e-mail distribution list for RV builders. For me, this forum has been second only to the builder's group in providing timely help and information about building. Usually if I post a question about some nit-picky way of doing something, I'll get several answers back the same day, (some of them even helpful!). There is also a large motivational factor thanks to people like Don, who frequently posts bits about some disgustingly fun thing he did in his *finished* RV.

Until recently the internet was something people only had access to (or even knew about) if they had an account either through work or a university, but several local companies have spring up who provide reasonably priced service to individuals. One such company that people seem to like is *Teleport Internet Services*. If you have a computer and modem, all it takes is \$12 or so a month to get access. Call 223-4245 for information, or if you already have a modem and communications software, dial 220-1016 (220-0636 if you only have 2400 baud), and log in as "new".

I recently created a distribution list on our server, the *pdxrv-list*, which is used for distributing e-mail to Portland local builders only. I figure this will come in especially handy when I'm in desperate need of news-

letter input! Send e-mail to me (randall@edt.com) to be added to this list. And of course there's still the global distribution list, administered by Matt Dralle. Send a message to rv-list-request@matronics.com to subscribe to that.

And if you still need more incentive, consider this: I've been talking to a representative of a certain kit airplane company we all know, and they're seriously considering getting an internet account.



## Project Status

The **prototype RV-3 restoration** is picking up speed, thanks to ramrod **Gary Standley**, who submitted this report:

Steady progress has been made over the summer, however it is slow progress. We haven't had a lot of turnout volunteer wise, especially on work Saturdays. We have had some on Wednesday work nights however. My motivation is to have someone there to keep me on track too. It is easy to get side tracked with yard work and stuff around home.

I have the new jig made, the firewall built and in the jig and am working on the main spar bulkheads. They are drilled and have been in the jig with the seat ribs clamped to get the scenario of how it is going to be. Rion was over a couple of Sundays ago and we worked on getting some of the old parts drilled off the tailcone as this structure will be retrofitted to the new cockpit construction. Since then we have riveted the main spar bulkhead, and removed or repaired many bad parts on the tailcone. Then we cleoed the tailcone to see what it might look like riveted. It looks pretty good, maybe a little filler here and there to dress up a dent or two.

We picked up the wings at Van's so we could get them together and drill the main spar section. One wing is an original, the other from another airplane. We had to straighten the odd wing main spar stub before mating the wings together. Rion and Arne worked on this, then we mated the wings, set the dihedral, clamped and drilled them. We opened the holes to 3/8" as the odd wing didn't match well at the original size. Now the wings are bolted together and look pretty good. Next we need to get the fuselage main spar bulkhead aligned to the wings and drilled so we can continue on to the fuselage. Jim Anglin has offered to take the odd wing and re-skin the leading edge and top of the wing. Inspection of this wing shows some internal things needing to be done too, like bell crank brackets missing etc.

Bob Larsell repaired the engine/landing gear mount. That required some welding and straightening of one gear leg which was badly bent. Jack Moritz, who is building a Q2 (plastic airplane/Rutaan design), repaired the upper engine cowling which was damaged in the crash.

The next open shop is 11/12/94 (Saturday).

**Don Wentz** has 118 hours on RV-6 N790DW since his first flight in June. So far no major problems, just major FUN.

**Randall Henderson** has the left wing & fuel tank on his RV-6 finished except for riveting on the bottom skins, and is assembling the right wing in the jig preparatory to fitting skins.



### Local Stuff

**Wacky Willy's** westside store (Aloha) still has hundreds of **brand new rivet sets** (for rivet guns) of all sizes, shapes and head types, for \$5 each (normally \$6.50-\$15 from Avery). Also jeweler's file sets, ten files for \$5, perfect for deburring & relieving small nooks & crannies. rh

**Steel and Metal:** Bob Neuner writes: I found my metal wing jig posts at a place called "Eastside Steel" in Portland. It is about 1/2 block north of Southeast Division St. at about 110th. The guys that work there are very friendly and helpful. Prices are very reasonable especially for scrap. Prices on new steel material are also very good. Last I heard, they were open Saturdays 'til noon as well as weekdays.

Another place you might try is "The Steel Yard" on Northeast Columbia Blvd. They often have a better selection, but their prices are higher. Remember - Scrap material is a "Hit or Miss" proposition!!! However I have seen a lot of stuff that would be great for a jig.

As far as my jig is concerned, I have no problem with lending it out. If someone is interested, I'm sure we can work some kind of arrangement.



**Don't Want Ads**

*Let us know what you got but don't want, or vice-versa. Ads are **FREE**.*

Duckworks Landing Lights. Retro-fittable, light, easy installation. Kits start at \$69 (discount for Ptd RVators). Don Wentz, 503-696-7185 for info.

2 new RMD Wingtip (in the fiberglass tip) landing light kits. Sell for less than new. Brent Anderson 503-646-6380

Std RV-6 elevator trim control knob/cable. Slightly used, sell for \$\$ less than new, Evert Eyres, 503-648-3564.

Bulk purchase of Whelen 3-way nav/strobes at a discount. This is a one-time deal, contact Doug Stenger if you're interested. (503) 324-6993

Standard Gascolator and mount for RV, slightly used. Sell for 60% of new cost. Need, good quality (RC Allen?) Horizontal Gyro, 3000fpm VSI (too much aerobatics). Don Wentz 503-543-2298

Skip Dennis wants to "buy-in" to an RV project. He has 'some' time to help, but has more \$\$ that he is willing to pay into a project to help finish it. If you are to the point you may need a partner to help buy that engine and panel, maybe this could work out. Give him a call at 503-655-7226.

Local EAA Chapter 105 has a large hangar at Twin Oaks Airpark where they hold mtgs. & rent space. Currently an RV is being built there. If you need a place to build, this could be an opportunity to share space & ?? with other builder(s). For details call Rion Bourgeois - 646-8763h

3-month old Ilmorrow 920, GPS-North American Continent database. Wally Anderson 623-2328 work, 342-5240 home

For Sale: RV6 tail kit, just barely started (Eugene). Jim Eggers 342-1939

New Tail section kit for RV6A with plans and manual. Perfect condition, \$850 firm, cash only. Craig or Rosemarie, 206-887-0823

LOST MEMBER - Anyone know what happened to Dale Strawn? He is subscribed thru mid '95, but his address no longer works and I don't have a phone # for him. Let me (Randall) know if you have any ideas.

