

HOME WING



Newsletter of the Home Wing of Van's Air Force — Builders and Fliers of Van's RV Series Aircraft



Harmon Lange goes state-of-the-art with his new RV-8A, panel pictured above. Not only has he installed the Blue Mountain Avionics EFIS system, but has an Aerosance FADEC system on his new Aero Sport Power O-360.

Editor's Hangar

As 2001 draws to a close I realize it's been a very active year for the Home Wing. Most significantly, congratulations to those who made their first flights during 2001. The list includes: Randy Lervold (your editor) RV-8 in May, Chris Lund RV-6A

in May, Gary Miller RV-6A in May, Mike Wilson RV-4 in May, Robin Wessel RV-6A in August, Brent Ohlgren RV-6A in September(?), Jerry Vangrunsven RV-8A in August(?), and Ed Schultheiss RV-9A in October. (my apologies to anyone omitted here) That's *eight* new RVs in the Home Wing fleet this year: congratulations to all!

(Continued on page 2)



Meeting coordinator:
Randall Henderson
503-297-5045
randallh@home.com

MONTHLY MEETING:

(2nd Thursday every month, various locations, 7:00 pm)

Place: Amit Dagan's RV-7 project
2975 S. Underwood Drive, Portland, OR
Date: Thursday, December 13th, 2001
Time: 7:00 pm
Phone: 503-292-3780

The December meeting will be at Amit Dagan's RV-7 project. Amit is working on his empennage. This will be a good chance for the "new guys" to see what the early stages of an RV are like. Plus all the old-timers can come and complain about how much easier it is to build a plane now than it was back in the "good old days" (but you know they're just jealous).

DRIVING DIRECTIONS:

From highway 217 take the Walker Road exit, and turn East on Walker. The third left on Walker is Underwood Drive (a no outlet street) - if you got to Canyon Road you've gone too far. Amit's house is 2nd from the last, on the left side.

Future meeting schedule:

Jan: Pat Hammel's RV-6A project
Feb: t.b.d.
Mar: t.b.d.

Subscription Due Dates

Mail subscribers: Your renewal date is in the upper right corner of your mailing label. Use the form at the back of this newsletter if there are any changes, otherwise just mail a check to the editor, or pay at a meeting.

E-mail subscribers: Look for your name and renewal date in the e-mail that the newsletter is attached to.

All subscription data is tracked in an Access database. Data entry errors can happen - if you find an error in your renewal date please contact the editor.

EAA CHAPTER 105 Pancake Breakfast:

First Saturday of every month at Twin Oaks Airpark, 8:00 am, \$5.00 (usually lot's of RVs to look at too!)

This month: 12/1/2001

EAA CHAPTER 105 Monthly Meeting:

Third Thursday of every month at the EAA 105 hangar/clubhouse, Twin Oaks Airpark, 7:00 pm. www.eaa105.org for details

This month: 12/20/2001

EAA CHAPTER 902 Monthly Meeting:

Second Wednesday of every month, Mulino Airport in the OPA building. Info: Bob Boring at 503-661-7627

This month: 12/12/2001

(Continued from page 1)

In addition to these first flights our annual fly-in at Scappoose was a rousing success and set an all time record with 107 RVs making an appearance. Our group also added a set of race car scales and wing jacks to our tool bin, most useful additions I' sure you'd agree.

Randall Henderson stepped up as our Flying Activities Coordinator and organized several events including the Salmon Arm fly-out. Home Wingers made a strong appearance at the Arlington EAA fly-in as well with a couple of awards coming our way.

All of this good news however must be balanced: we also lost two members, Gary Hanson and Mike Johnson, in a very unfortunate accident that should serve to reinforce that all-purpose bit of meaningful advice... "be careful out there".

On balance you'd have to agree that it was a pretty good year. Let's celebrate our successes, learn from our misfortunes, and resolve to have an even better year next year.

Happy Holidays!

...Randy Lervold

Web Site Update

Our webmaster, Randall Henderson, has given our group's web site a makeover. He's also re-done the Home Wing logo which has been incorporated in the newsletter mast as well. Check out the updated site at www.vanshomewings.org. Randall is continually tweaking the site, probably while he's supposed to be working. Also, he has taken the time (and money) to register our unique domain. Thanks to Randall!

...ed

It's only 1 Pound...

In which we explore some ways to **NOT** keep adding weight to your RV during the building process.

By The Duck

Chapter 2 Part 1 – Engine and under the cowl.

In the wings, I was able to remove 4-5 lbs of extra wire and equipment that I hadn't been using. I will put a pound of that back in the Navaid Devices Servo, unfortunately, but that is an item that I feel will get *frequent* use, so I feel it's worth it.

Under the cowl, I'm fighting a constant battle to get back the pounds and forward CG that have plagued me since the change from wood to C/S prop. This heavy prop was really the catalyst to get my quest for weight reduction underway.

First, I thought a quick 60 pounds in the cylinders would help a lot (see photo). **JUST KIDDING!!** The photo shows the engine with all the cylinders off. It



one cylinder, from the connecting rods to the exhaust. Notice that I had some parts Ceramic coated. Whether or not this is a good idea will have to be proven over time, but the basic reasoning is that it will keep the heat in the pipes and exhaust it out the ends, with less radiation of the heat into the engine components and cowl.

Back to shifting and saving weight... My original oil cooler was mounted in front of cylinder #2, on the original baffling from the Beech Musketeer that it was salvaged from. That baffling worked OK, but Mike Wilson wouldn't let me put it back on with the pretty new cylinders (it looked pretty sad), so I'm moving the cooler to the back behind cylinder #4 in the 'other' standard location. This will save weight because several feet of oil line will be eliminated, and will shift the weight of the cooler and oil back towards the CG.

The new Van's baffling will have an enclosed plenum, which 'should' reduce the volume of air required to cool the engine. I'm anxious to play with some air inlet sizes to see if a reduction in cooling drag can be achieved. I've always had a 'too small' air *outlet* in my cowl, so this should allow matching of the ins and outs.

I originally used an Oberg oil screen type filter. Some feel this doesn't filter well enough compared to a traditional paper filter. I don't know, but I DO know that with 3 feet of oil lines it weighs over 6 lbs., and the spin-on filter is 1.5 lbs, so off comes the Oberg! There IS about a \$200 additional cost for the spin-on adapter, so the weight savings isn't totally 'free'. Pretty much a wash in weight between the filter mount and the std Lycoming screen and housing that came off. So a pretty good weight saving was realized between the relocated cooler and the change of filter types, and reduced hoses (which might also improve reliability, as I DID have a hose fail at the filter at about 500 hrs). I can't blame anyone but myself, as the recommended life for the cloth-braided Aeroquip hose is 3 years and it WAS my



seems that my early 90s Cermet-Chrome cylinders were installed with too-hard rings which ate the walls of the cylinders prematurely (600 hrs SMOH). Dang! 4 fresh ones from ECN are on there now. I have to say that ECN was great to work with, David Aquino answered many questions for me, and when I was having difficulty measuring the connecting rod journals, he had a machinist quit what he was doing to come show me how on a crank in their shop, and loaned me his personal dial caliper!

\$4000 later, all new cylinders with balanced pistons and connecting rods, and new bearings are ready to be installed. This photo shows all the parts that make up

4th year on the hose. But, fewer hoses equals fewer possible failure points AND less weight, plain and simple.

I realized that I had two small braided oil lines, one for the Hobbs switch and one for the oil pressure sender. I made a common mount for the senders and they now share one hose. Also note that I mounted up and out of



the way, so they will not impede access to the engine accessory area.

I also cleaned-up some wiring, moved the voltage regulator to a better place, and reduced the size of the starter cable (.5 lb!). Wilson also pointed out that I didn't 'need' heat sleeve over the cables that ran to the starter and alternator (duh!).

There are more changes to the Engine Compartment that I will cover in the next installment.

...The Duck

Editor's note:

It should be noted that perhaps the most significant part of The Duck's RV weight reduction program involves the pilot and co-pilot. Both Don and Janet have lost a bunch of weight and are looking pretty lean and mean. Seems to me like this is easier than saving half a pound here and there! So Don, what's the total weight reduction in the cockpit? ;-)



New Superior cylinders staged for installation in RV-8 N558RL.

New Jugs for N558RL

By Randy Lervold

"What, you're installing new cylinders on a brand new engine?" was the question asked by all who heard I was indeed tearing things apart for a complete cylinder replacement. Some background: I bought my O-360 from Bart Lalonde at Aero Sport Power as have many RV builders. Bart's reputation is impeccable, and he's a knowledgeable and friendly resource. My research indicated that he and his crew build a heck of a good engine, and at a good value as well. I took delivery of my engine in April of '99. At that time I opted for first-run rebuilt Lycoming cylinders. I did this to save some money and also figured that I'd have them off at mid-TBO anyway. In the next couple of years as I finished the plane I sort of regretted this decision and wished I had paid the extra money for new cylinders. Oh well, I wouldn't have to worry about for a thousand hours or so anyway.

April of this year brought the first start of the engine followed soon by the first flight and everything that brings with it. During the critical first few flight hours I did my best to follow proper engine break-in procedure: try to hold high power settings and high manifold pressures and watch CHTs and oil temps. That is easier said than done. I had probably the normal array of new airplane bugs to deal with, as well as trying to get familiar with the flight characteristics of a new airplane, and gather test data as well. To those who haven't flown yet: there is an almost overwhelming number of things to try to accomplish in your first few flight hours. So did I break the engine in properly during this critical period?

As the summer wore on and the flight hours accumulated I changed oil as Bart recommended and tracked oil consumption carefully. Toward the end of the summer I had accumulated 130 Hobbs hours and was still noting oil consumption of a quart every six hours. So as

to eliminate the possibility of a miscalibrated dipstick, and of blowing excess oil off the top, I ran it down to 4 quarts indicated, same consumption. Hmm.

Next step was to discuss this with Bart. I faxed him my Excel tracking table, this is the e-mail response I received from him...

Hi Randy,

I reviewed the oil consumption record you sent in. I don't think it is going to get any better. I suggest that we prep up 4 more cylinder kits and we replace the existing cylinders. If the engine is running good right now we could wait till your good flying weather is over. Think about this and let me know what works for you.

Regards,

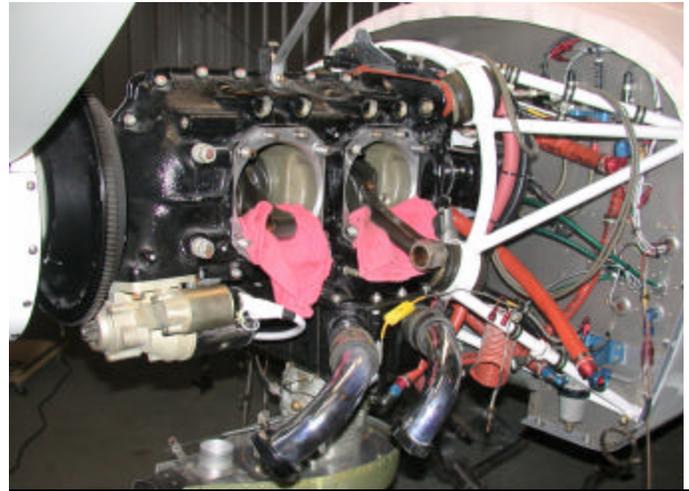
Bart Lalonde

I then phoned Bart to fess up that I may well have not followed the break-in procedure perfectly with everything else I was trying to accomplish during those early flight hours. Didn't matter, Bart was quite willing to swap cylinders out regardless. Wow, now that's support!

Since we were swapping cylinders on warranty I asked Bart if I could upgrade and just pay the difference, "sure, no problem". After some consultation I decided on brand new Superior sand cast cylinder assemblies, which he promptly shipped after checking port flow and the piston balance as he does with all his engines. He included all gaskets and an assortment of pushrods so I could set the valve lash properly. Total cost was \$300 per cylinder, the difference in price originally, plus shipping. One note: if I had been willing to fly the plane up there he would have done the cylinder swap for me. But due to the weather, not wanting to get stuck in Kamloops, and wanting to learn this procedure for myself and at my own pace, I opted to do it myself.

I checked the compression before removing the old jugs: 79/79/78/79, no problem there. On removing the old pistons I did notice blowby staining on two of the piston skirts while the other two were completely unstained below the bottom ring. I inspected the cylinder walls for glazing but couldn't draw any conclusions since I'm not that familiar with what abnormal glazing would look like in an aircraft engine.

The month of October was consumed with the cylinder replacement, and of course I took the opportunity to make some other minor f/w changes include a cabin heat system re-design. I followed the cylinder replacement procedure in the Lycoming Operators Manual, Section 5-7 thru 5-12, which I found to be clear and well



Old cylinders removed. Getting all the peripherals off takes much more time than the actual cylinders.

written. Since I had some oil seepage of the cylinder bases on the old jugs I made a point of being very careful when re-installing the cylinder base gaskets. At Bart's instruction I put them in place and then eliminated any twisting, and also packed them in Dow DC-4 to keep them in place and let them slide into place without binding.

What caused the high-oil consumption? I won't know until Bart does his analysis on the old jugs, which should be soon. Did I cause this by not running the engine hard enough during the early hours? I don't know, but I can assure you that that won't happen this time.

The new jugs have been run for over four hours now and I've made a point of running it at full throttle the entire time, of course while watching temps carefully. Makes for some pretty interesting scud running this time of year! I will continue this regimen until 10 hours, and even in the next 10 will use higher cruise power settings than I otherwise would. If it's possible, the engine is now even smoother — probably psychological.

In terms of engine break-in, the single best resource I've found is Cessna Pilots Association Tech Note #035. It matches Bart's recommendations very closely, but also provides good background on why they make the recommendations they do. Here are two quotes from that Tech Note that sum it up: "...CPA staff suggests operating at maximum rated continuous power if it can be done without over-tempering, otherwise reducing power only to the extent necessary to keep temps in the green." And later, just to show how important the first few hours are... "My belief is that if the engine isn't broken in at ten hours, it just isn't going to happen."

Needless to say I'll be watching oil consumption carefully.

...Randy, N558RL

EAA Technical Counselors & Flight Advisors

The following Home Wing members have volunteered as technical counselors under the **EAA Technical Counselor program**:

- **Dan Benua** 503-621-3323 danbenua@mail.com (EAA Ch. 105, RV-6A builder, Hillsboro-Scappoose-Portland area)
- **Jerry Darrah** 503-254-9992 (EAA Ch. 902, A&P, Glastar builder, Portland-Troutdale area)
- **Randall Henderson** 503-297-5045 randallh@home.com (EAA Ch. 105, RV-6 builder, Hillsboro-Portland area)
- **Randy Lervold** 360-817-9091, randy@rv-8.com (EAA Ch. 105, RV-8 builder, Vancouver/Portland area)
- **Dave Lewis, Sr.** 503-690-8237 (EA Ch. 105, multiple RV builder, Hillsboro-Portland area)
- **Brian Moentenich** 503-666-7518, Brian.L.Moentenich@usace.army.mil (EAA Ch. 902, RV-6A builder, Portland-TTD area)
- **Mike Robertson** 503-681-5537 mrobert569@hotmail.com (FAA A&P w/IA, RV-8A builder, Hillsboro-Portland area)
- **Bill Truax** 360-582-0558 goonybrd@olympen.com (Sequim-Port Townsend WA area)
- **Don Wentz** 503-543-2298 jwentz@columbia-center.org (EAA Ch. 105, RV-6 builder, Scappoose-Portland area)



The following Home Wing members have volunteered as flight advisors under the **EAA Flight Advisor program**:

- **Dave Lewis, Sr.** 503-690-8237 (EA Ch. 105, multiple RV builder, Hillsboro-Portland area)



1/1/2002



21 Years of the RV-ator \$27.95
 18-21 Year update pages 16.00
 earlier 18 Year book 12.00

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RV-4	49.00	RV-8/8A	54.00
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RV-4 Empennage	41.00	RV-8 Fuselage	48.50
Pre-Punched Emp.	41.00	RV-6/7 Finishing	64.50
RV-4/6 Wings	46.50	RV-8 Finishing	38.50
RV-7/8 Wings	46.50	A/C - Engine Systems	46.50

Airframe Skills

43.13 - Accep. Methods	\$18.95	Aircraft Sheet Metal	\$18.95
Maintenance Handbook	18.95	Corrosion Control	12.95
Sportplane Techniques	24.95	Fiberglass 101 VHS	25.95
Nuts, Bolts, & Fasteners	21.95	Speed With Economy	24.95

Powerplants

Bingelis On Engines	\$24.95	Magneto System	\$10.95
Skyranch Manual	19.95	Props & Controls	14.95
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Lycoming Operation and Overhaul Manuals see web site			

Electrical / Panel / Finishing

Aeroelectric Connection	\$28.80	AC Painting 101 VHS	\$25.95
Instruments & Avionics	24.95	Painting & Finishing	13.95
Avionics Troubleshooting	32.95	Custom Interiors	19.95

CLASSIFIEDS...

Classifieds are free to Home Wing members. Ads will run for three months. Send to editor by e-mail or mail. Renewals ok, just let editor know. Date at end of the ad is last month ad scheduled to run.

FOR SALE

RV-6A Kit — Complete kit including Finish Kit: tip-up, manual trim. Empennage done, wings done except for one fuel tank, fuselage skeleton completed. Fuse jig included. 1990 vintage, non-prepunch. Must sell, lost job, \$8,000 Mike Graves 503-356-1923, 2/02

RV-6 Empennage - Make an offer, Mike Graves, 503-356-1923, 2/02

1 gallon of SmoothPrime UV— Water-based filler/primer unused. Paid \$126 sell \$95.00 Jeff Jasinsky (360)212-8565 12/01

RV-6 Wing Kit—Must sell ,Rv-6 wing kit with phlogiston spars. \$3600 o.b.o.(\$600 less then van's) Just some clean up work started. Contact Tom Phy @ 503-452-3743 , or E-mail Rozy26@excel.com, 11/01

Mitchell Analog 2 1/4" Aircraft Clock. Has Hours/Mins/Secs plus 2 set-able markers. Works great but needs new adjustment knob - \$10. Don Wentz - jwentz@columbia-center.org - 503-543-2298 12/01

Electric Gyros — RC Allen RCA 26 AK-3 artificial horizon and RCA 15 AK-2 directional gyro, both unlighted. Both purchased new from Pacific Coast Avionics in January of '00 and delivered (due to backorder) in about April '00. They sat in their boxes during the remainder of a/c construction. First flight was May of '01, or a bit over a year since purchase of the gyros. I noticed some problems with them during the first few flight hours and returned them to RC Allen. I was informed that they had been sitting too long which causes damage. Both units were "rebuilt", fully adjusted/tweaked, and returned to me at a cost of \$450. They were reinstalled in the aircraft and have performed flawlessly ever since. The AI is unbelievably sensitive, and the DG hardly drifts at all. There are no cosmetic scratches of any sort on either. The a/c has 140 hrs. on it so the gyros probably have about 110 hours on them since I flew it without them for a couple of months. I have all boxes and the documentation on the work done. Street price on these instruments now is around \$1,750 each (\$3,500/pr.). They are for sale for \$1,350 each (\$2,700/pr.) including the MS3116E8-4S wiring plugs which are sold separately at \$18 each, delivered to your door. Sold as a pair only. See at www.rv-8.com/Pictures/Mvc-524x.jpg. Randy Lervold, 800-886-6659 x14, randy@rv-8.com, 2/01

AComm model AC-4 Intercom - 4-place portable with record in/out, PTT, etc. Don't know if it is stereo or not. Don Wentz - jwentz@columbia-center.org - 503-543-2298, 03/02

UPHOLSTERY HIDE LEATHER.— A DEAL YOU CAN'T PASS-UP! I HAVE 4 HIDES OF [GRAY ONLY] TOP-QUALITY ANDREW MUIRHEAD FINE SCOTTISH LEATHER FOR UPHOLSTERING YOUR RV SEATS. EACH ARE APPROXIMATELY 50 SQUARE FT IN SIZE. ASKING \$250.00 EACH, WHICH IS HALF THE NORMAL RETAIL COST. CALL JUDY VANGRUNSVEN FOR MORE DETAILS, 503-648-3464, 03/02

EAA CHAPTER 902 is selling Air Force A-2 leather jackets to raise money for it's hanger & educational building fund. Sizes range from XS to 3XL in Dark Brown or Black. Only \$90.00 and you help your EAA chapter. Order now for the winter, Christmas, or for a friends gift. Contact Gary Dunfee 503-631-7262 gary-dunfee@earthlink.net or Jim Wasson 503-655-3301. We'll also take donations for the hanger fund and give you a receipt for tax purposes. 2/02



Duckworks Landing Lights - Retro-fittable, light, easy installation. Kits start at \$69, discount for Home Wing-ers. Don Wentz, 503-696-7185

WANTED

Flying RV-6 Wanted—Looking for a well built RV-6 preferably built by an experienced builder. Prefer a slider, tailwheel, 180 horse, with a minimum of night VFR capabilities. Inverted fuel and oil are not necessary. IFR and constant speed prop would be nice. Other engines are acceptable. For those builder/owners who want to ensure their baby gets a good home, we can guarantee it. It will be hangered and pampered...as well as exercised on a regular basis. If anyone has one they might part with, we can be reached at: awaag@gte.net, (805) 985-0349 (home), Rick Smith and Aline Waag 4604 Falkirk Bay, Channel Island Harbor, CA 93035, 11/01

THE TOOL EXCHANGE

The Home Wing owns a selection of tools for use by its members. The Toolmeister is: **Brent Ohlgren, 503-288-8197, obrento@aracnet.com**. Please observe our Tool Policy:

Home Wing Tool Policy

- Everything goes through Brent — do not give the tool to another member.
- Brent will keep an accurate sign-out sheet for each item so he knows where it is at all times.
- Brent will inspect all tools upon their return. If there is any damage he will ask you to pay for the repair (with the threat of public humiliation if you fail to be a grown-up).

The ability to have use of these expensive tools is a real membership benefit, let's respect the group's assets.

Home Wing Tools

HVLP paint sprayer, turbine type. Includes gun and air turbine.

Hole template for instrument panel.

Wire crimping tool & die large gauge wires (e.g. battery leads)

Brake lining rivet set.

Tune-up & annual kit (compression checker, mag timing light, timing dial, mag adjustment tool, plug gapper, high voltage cable tester, and plug vibrator cleaner.

Aircraft scales — allows you to accurately weigh your beast and also determine CG.

Oil filter cutter—custom make by Stan V.

Wing Jacks—works for all models except RV-3

In addition to the Home Wing's tools, certain benevolent members have tools they may be willing to loan. Let the editor know if you have jigs, tools, or shop space to loan, exchange, or otherwise provide.

Tools For Loan

<i>Item</i>	<i>Owner/lender</i>	<i>Phone / e-mail</i>
Custom cutting wheel mandrel (for cutting your canopy)	Stan VanGrunsven	
Prop tach (calibrate your tach)	Mike McGee	503-534-1219, jmpcrftr@teleport.com
Engine stand	Don Wentz	503-696-7185
Surveyor's transit level (handy way to level wing and fuselage jigs)	Bill Kenny	503-590-8011
Back riveting contraption (large, counterweighted bucking bar and suspension system and offset back rivet sets)	Bob Neuner	503-771-6361
Lead crucible (for melting lead for elevator counterweights)	Doug Stenger	503-324-6993
Table saw taper jig (for tapering wing spar flange strips)	Carl Weston	503-649-8830
48" pan brake located at hanger PLS D-10 at Troutdale if an RV builder needs some metal bent.	Kevin Lane	503-233-1818, n3773@mciworld.com
Aircraft tire bead breaker, for tire removal	Kevin Lane	503-233-1818, n3773@mciworld.com
Special letter drill used to ream rear spar bolts/straight reamer for rear spar/	Kevin Lane	503-233-1818, n3773@mciworld.com
Lasar T-300 magneto timing tool.	Randy Lervold	360-817-9091, randy@rv-8.com
Precision Steel Fuselage Jig for RV-6/6A	Bill Drake	360-687-1698, rv6134WD@uswest.net,
1) Compound lever action lug crimper for battery wires, 2) engine hoist, 3) metal shrinker.	Gary Dunfee	503-631-7262, gary.dunfee@gte.net

Home Wing info:

A non-profit volunteer organization dedicated to building and flying Van's RV Series Aircraft

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 Home Wing web site www.vanshomewing.org
 Webmaster Randall Henderson randallh@home.com

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Home Wing Membership Sign-up/Renewal

To join or renew, fill out this form and mail to **Randy Lervold, 5228 NW 14th Circle, Camas, WA 98607**, along with \$10 for renewals or new subscriptions. **Please make checks payable to either Randy Lervold or Home Wing.** If you are renewing you only need to give your name, payment method, and any other information that has changed. Please don't forget your e-mail address and newsletter distribution method.

Use this form for address changes too!

Name: _____ Home phone: _____
 Address: _____ Work phone: _____
 City, State, Zip: _____ E-Mail: _____

Project:		Status:		Newsletter		EAA Chapter: _____	
RV-3 <input type="checkbox"/>	RV-4 <input type="checkbox"/>	Not started <input type="checkbox"/>		Distribution:			
RV-6 <input type="checkbox"/>	RV-6A <input type="checkbox"/>	Empennage <input type="checkbox"/>		E-mail (pdf) <input type="checkbox"/>			
RV-7 <input type="checkbox"/>	RV-7A <input type="checkbox"/>	Wings <input type="checkbox"/>		Mail <input type="checkbox"/>		Payment:	
RV-8 <input type="checkbox"/>	RV-8A <input type="checkbox"/>	Fuselage <input type="checkbox"/>		PLEASE check the email box if you have an email address and can possibly accept the N.L. in electronic form. This will ease the burden on the editor and help save money that can be better spent on tools and such.		Check <input type="checkbox"/>	
RV-9A <input type="checkbox"/>	RV-10 <input type="checkbox"/>	Finish kit <input type="checkbox"/>				Cash <input type="checkbox"/>	
	(four place)	Flying <input type="checkbox"/>				Info change only <input type="checkbox"/>	