THE RVATOR

SECOND ISSUE 2008

THE HOBBS METER

5,702

COMPLETED RVS

Flying to Florida. Scott Risan heads over miles and miles of granite and ice in the RV-9A.

Photo by Ken Krueger

ROLLOUT!

Couldn't get anybody on the phone back on March 11? Now you know why. It's a big deal around here when we unveil a new airplane and everyone, from every department, is welcome

Top: Van sits in the cockpit, trying to get used to the color.

Center left: Just because he can't see doesn't mean that woodshop manager Jim Daggett can't inspect a new airplane. By the time he was done, Jim had a very accurate RV-12 picture in his head.

Bottom left: Chief engineer Ken Krueger positioned himself at the open canopy and answered questions from all comers. Daryl Sahnow peers into the cockpit while machinist John Schrantz asks Ken about some detail.

Above: More explaining. In this case Gus Funnell points out something to webmeister Bob DeVore.

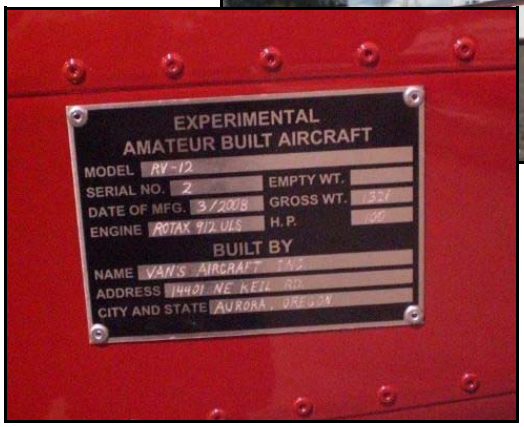
ON THE MARKET!

THE RV-12 GOES ON SALE

KEN SCOTT

The RV-12 program has received two big boosts since the last *RVator.* The first came on March 11, at the company roll-out of N412RV – the kit prototype RV-12. A collective gasp rose from the assembled multitude when Van opened the hangar door and t h e … . r e d … . a i r p l a n e emerged. Red! How daring! Stunning, even.

N412RV finally sees the light of day...one of the few sunny days it's seen in Oregon.



And, actually, it was.

N412RV is an airplane I would cheerfully enter into judging at any airshow. It certainly doesn't have the cut-and-try , let's-tack-this-on-here air that one might expect in a prototype. Everything fits, everything is beautifully finished, everything is expertly built. From the Brancusi duct in the cowling to the slick little tail fairing, it looks more like the end result of hundreds than the first of many.

Let's start at the front and work aft. The little tube sticking out of the spinner is the .20 calibre Rans cannon. (We've found you don't need big guns for the Light Sport category.) Since we didn't make any ammunition trays, we decided to use it as the pitot tube. It projects through the gearbox into the undisturbed airstream and gathers accurate data for the Dynon instrument in the panel. Putting the pitot here means we never have to worry about the connection when the wings are removed.

The cowl has three openings, just like a Lycoming powered airplane, but in this case they serve somewhat different purposes. The two small circular openings on each side of the spinner supply cooling air to the cylinder bases and combustion air to the carburetors. The large oval hole underneath the spinner leads to a sweeping curved duct that takes air to the cooling radiators, plural. The first radiator cools the liquid-cooled cylinder heads. The second cools the oil. Air extracted from the downstream side of the radiators provides cabin heat (oh, boy! There wasn't any cabin heat in N912VA. This will be better!) The cowl itself is one of the few fiberglass pieces in the airplane.

A streamlined step protrudes permanently from the forward side of the fuselage, because, in the RV-12, occupants enter from in front of the wing. Call it our homage to Burt Rutan – a steel mini-canard.

The tip-up canopy hinges on the forward sides of the fuselage in a fashion that's become typical on many LSA airplanes. The protruding pins are part of a quick-release mechanism we installed for flight test and will disappear on the production airplane. The canopy opens very wide and provides plenty of room to slip into the roomy cabin (slightly more room than an RV-6, actually) and slide your twinklers down to the rudder/brake pedals.

Instrument panels hold some strange fascination for a lot of people. The RV-12 panel has everything you need, and then some. The panel mounted fuses make a lot of sense. The pre-punched switch panel includes

Top left: Behind the seats are the overlapping wing spars — one of the big pins is visible just below the orange ELT — and the fuel tank. Top right: Toe brakes and rudder pedals. Bottom left: The recess in the top canopy deck accepts the tongue of the canopy frame, shown bottom right.

circuits and switches for an autopilot, lights, and strobes. Flight and engine instrumentation is handled by the Dynon D-180. The stack includes Garmin 496/ SL-30/GTX327. Powerful stuff for a small airplane.

The color coordinated seat cushions were supplied by Flightline Interiors. Yes, cushion sets will be available for RV-12.

Behind the seats, the wing spars slide through and overlap. Really big pins in really accurate holes secure them. An interlock system detects the pins and makes it impossible to start the engine if they are not properly engaged – hence the big red over-ride switch on the instrument panel. The fuel tank resides in the "baggage compartment," protected by the massive aluminum channel that forms the heart of the airplane. The pattern of holes in the side of the tank is actually a sight gauge, used to double-check the reading on the Dynon before the pilot straps in.

The same channel supports the leaf spring gear legs which in turn support Matco wheels and brakes. The baggage room is adequate for overnight trips. The tailcone's a tailcone, the rudder's a rudder. The stabilator is equipped with a large trim tab which also serves as an anti-servo tab to provide stick feel. The pushrod for the tab projects from a small fiberglass cap, so the fuselage is neatly bookended by two fiberglass parts.

HOW DOES IT FLY?

So far only Ken Krueger and Van have flown the new airplane. There wasn't time to do much before

Sun ‘n Fun. Initial impressions: the wing meets our goals for stall speeds. (I guess that’s obvious because we’re selling wing kits!) Flying qualities are very much like our first RV-12. We’re still working out details of the engine installation.

The airplane is in our prototype shop, being re-assembled for the next round of flight tests. It survived the two-way coast-to-coast trip in good shape (a good omen for trailer-it-home potential builders). We’ll have more details and performance figures to release after flight tests are complete. Right now, we are awaiting better weather – just a minute ago slushy snowflakes were splatting into the office windows. In late April. Geez…

THE FIRST 12 KIT LEAVES OUR SHOP

When Van’s employees pulled into the parking lot, early, early on the morning of April 8, they found Jim and Bev Cone huddled in front of the entrance, struggling to warm themselves with a small fire made from wood scraps gleaned from the parking lot outside the crating door and ignited by a few drips of avgas covertly drained from a nearby Cherokee. After we’d wrapped them in blankets and forced some warm cocoa and brandy down their throats, they managed, through chattering teeth, to convey that they wanted an RV-12 wing kit.

Since they were the first to show up and write the check, they got the first kit. A couple hours later, with the spars poked thru the back window of their Dodge pick-up and the heater turned on ‘max’, they headed home to Sequim, Washington, ready to start a new adventure. As they left, a few wisps of white smoke curled around the front door and blew away in the rain.

It’s a fun story, anyway…

As the day progressed, the fax machine periodically hummed and whirred. At 9:00 a.m., Barb unloaded the hopper and we had seventeen wing kit orders. By 10:00 a.m. there were twenty-five. Difficult weather in Florida made for a slow start at Sun ‘n Fun, so there were probably not as many people looking at the airplane as there could have been…but no doubt our guys in the booth were taking orders as well.

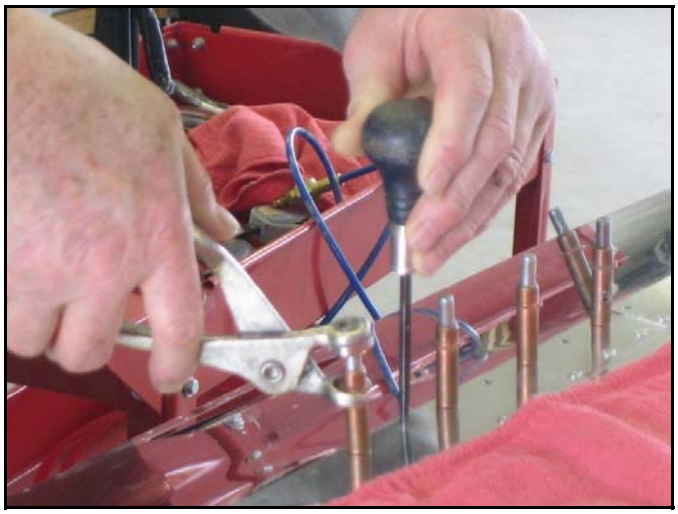
The next afternoon, we had an email from Jim Cone, detailing a few small shortages/overages in his hardware bags and a (single) typo on the plans. Cool! We could correct these before the next kit went out. One-day feedback – a very good thing. (Those who were disappointed they didn’t get the very first kit can console themselves with the thought that by the time their kit arrives, the “beta testing” will already have been done, by a real builder outside the factory.)

Trolling vansairforce.net to see the reaction to the RV-12 was interesting. Most of the posts were encouraging. Those on the ground at Sun 'n Fun were posting photos and descriptions that augmented the ones already on our website.

Top left: How could you not sell an airplane to these folks?

Bottom left: Barb and Jim complete the paperwork on the first RV-12 kit.

Below: Fifteen minutes later, Jim had parts in his truck.



Top: Jim suggests we add an awl to the tool list. He uses it to make fine adjustments to full-size pre-punched holes.

Center: Squaring up wing tip close-out.

Below: Voila! One hundred and two hours later, the wing panels are done. Construction started April 9 and the wings, except for the flaperons, were ready to fly on April 29. So, five hours a day for three weeks and wings are yours.

As Sun 'n Fun progressed, so did Jim and Bev. Jim posted some photos and suggestions as he worked. Twenty days after he drove off, his main wing panels were finished and he was working on the flaperons. That might take him three days on the first one and two on the second...for a grand total of twenty five days, start to finish, to build a set of wings to flight status. Jim reckons 102 hours for both main wing panels.

Q&A

Now that the RV-12 is actually "out there" we've received quite a few questions. Here's a sampling, in hopes that they might head off others.

Q: There's a 'fastener kit' that must be ordered with the first airframe kit. Is Van's charging extra for the rivets now?

A: No. On the RV-12, we use the same basic rivet all the way through the airplane. We found it was cheaper for the customer to buy a box of 10,000 rivets up front, rather than have us separately bag them for each subkit.

Q: In the photos on the web, the spars are not anodized. Why not?

A: They *are* anodized, but in clear rather than gold.

Q: Why can't Van's supply a blank panel and let the builder choose the avionics and instruments?

A: E-LSA certification requires an Operating Handbook from the manufacturer that covers the equipment in the airplane. While it's possible to certificate optional equipment packages, it is not practical to write a POH for every possible piece of equipment. We made choices of the equipment offering the best capability/cost, and contained costs through standardization and volume. We expect our standard package will expand to include lights, strobes, and a 2-axis autopilot.

Q: Why the take-it-or-leave it approach?

A: The Light Sport Category is only feasible if we limit options. This isn't much different than certified airplanes...in fact, LSA *are* certified airplanes. The payoff comes in building speed and ease. When the airplane is standardized, we can supply specific parts and instructions that make construction very fast.

Q: What tools and jigs does the RV-12 require?

A: No jigs. Just a couple of benches and sawhorses. The tool list is now up on our website. Our goal was to use as few expensive tools as possible. A blind rivet puller, an aircraft flaring tool, dimple dies and a solid rivet squeezer are about the only specifically "aircraft" tools necessary.

Q: Will the empennage kit be just the tail surfaces or include the tailcone of the fuselage?

A: It will include the tailcone, ala RV-10.

Q: What about QuickBuild Kits?

A: In due time. The very thorough and detailed design, testing, and documentation required for SLSA certification is still consuming most of our developmental

resources. We need to walk (std. kit) before we can run (QB kit). Also, because the basic RV-12 kit can be built quickly, we don't view the lack of a immediate QB option to be a serious limitation.

Q. Can I license a kit-built RV-12 as an Experimental-Amateur Built?

A: Yes, but because of the FAA moratorium on evaluating kits for major portion (51% rule) compliance, individual builders will have the responsibility of verifying 51% compliance to the satisfaction of the airworthiness inspector. This may change as the FAA sorts its way through developing new policy (see p. 10). Van's goal with the RV-12 was to develop an airplane with good performance and which was easy to build and safe. The "easy to build" part is being achieved through blind riveting and the highly detailed components resulting from standardization. The "safe" part is being achieved through complying with the ASTM requirements for S-LSA certification. (Structural integrity, flying qualities, etc.) Assuring that our goals are met requires compliance which can only be achieved through E-LSA licensing of all RV-12s. Deviation from these standards, permitted with the latitude offered by E-AB licensing, detracts from our goals. This is the basis for our emphasis on encouraging E-LSA licensing of RV-12s.

RV-12 BUILDER'S TOOL REQUIREMENTS

	QTY		QTY
6" bench vice	1	1/4-28 tap	1
Small (2") "C" clamps	10	3/8-16 tap	1
Large (3" reach) spring or "pony" clamps	4	3/8-24 tap	1
		6-32 tap	1
#30 clecos	350	T-handle for taps	1
#40 clecos	50		
		Battery powered drill motor	1
3/32 rivet dimple die set (should include a reduced dia. Female die)	1		
1/8 protruding head rivet die (tall, 1/2" thick)	1	Cleco pliers	1
1/8 rivet dimple die set (100 degree)	1		
#8 screw dimple die set	1	Deburring countersink tool with flute cutter	1
1/8" flush rivet die set	2	Multi-burr deburring tool (Royal style)	1
1/2" flush rivet die set	1		
		Combination wrench set (1/4"-3/4")	1
#3 drill bit	1		
#11 drill bit	1	Fish Scale (0-50lbs)	1
#12 drill bits	2		
#16 drill bit	1	Files – assorted	
#19 drill bits	2		
#30 drill bits	3	Fluting Pliers	1
12" extension drill #30	1		
#40 drill bits	4	Hacksaw with fine tooth (32 teeth per inch) blade	1
#52 drill bit	1		
1/4" drill bit	1	Hand blind rivet puller: "POP" Riveter PRP-26A, USM Corp.	1
5/16" drill bit	1	Hand solid rivet squeezer with 3" yoke	1
Q or 11/32nd drill	1		
		Hand Seamer	1
#27 plexi drill	1		
#40 plexi drill	1	Heavy soft faced hammer	1
1/4" to 3/4" x 1/16 step drill (Unibit)	1	Torque wrench (inch pounds scale)	1
¼ inch drive socket set	1	Aviation flairing tool (tube)	1
100 degree Machine countersink cutter with #30 pilot	1	Tubing cutter	1
120 degree Machine countersink cutter with #30 pilot	1		
100 degree #27 countersink cutter	1	Tubing bender	1
100 degree Machine countersink cutter with #40 pilot			
		Left hand offset metal cutting snips	1
Countersink cage	1	Right hand offset metal cutting snips	1
		Wire crimper	1

SUN 'N FUN

KEN SCOTT

Sun 'n Fun is something of a dilemma for us. It's about as far from home as it could be, it's early enough in the year that much of the intervening country is still in winter, and the show itself has been in slow decline for some time. Was it really worth the very considerable time, effort and expense to attend?

After considerable discussion, we sent the usual fleet, with a couple of additions. Both RV-12s went in a Partain trailer and went south by road. Gus Funnell commanded the RV-10 flagship accompanied by Rob Butt and Daryl Sahnow. Ken Krueger took the RV-7A, Scott Risan flew the RV-9A, Joe Blank took his personal RV-6, Mike and Georgianna Seager flew their RV-7. Van and Diane VanGrunsven took a Boeing. Tom, Bruce and I stayed home, snickering at the thought of the tribulations our compatriots would encounter, crossing the country VFR both ways in April.

THE SHOW IN GENERAL

And tribulations there were. Sun 'n Fun got off to one of the roughest starts in years. For a few hours it seemed like a cruel joke. After leaving Oregon in the rain, and fighting weather all the way across the country toward the promise of Florida sunshine, our crew (and everyone else) were greeted by a downpour that turned the entire airport and parking area into an epic quagmire. Finally, over the next two days, it dried out and the weather for the duration was quite pleasant. We stayed pretty busy. Of course, we had some advantages over many vendors – first, we have more airplanes on the ramp than most, and second, we had a brand new airplane to show off. The red RV-12 hauled lookers into the booth in droves.

On opening day, April 8, we plunked the first RV-12 order forms on the counter. By the end of the show there about 60 orders on the books.

Demo ride pilots flew fairly regularly. Unlike previous years, not every slot was taken and sometimes there was actually time to relax between flights.

Overall, the show was actually better than we'd anticipated. Here are some first-hand accounts:

GUS'S SHOW

This year, for the first time, not all the Van's airplanes flew to Florida. We decided to take advantage of the relatively easy 'trailerability' of the RV-12 and put both airplanes into one of Tony Partain's trailers. Even so, weather delayed their arrival for a few hours as Bruce the driver negotiated the same thunderstorms that held up Van's flying crew. Even at Lakeland we weren't out of the weather. More rain fell in six hours in Lakeland than fell in Aurora for the entire month of March – and it rained almost every day in March in Aurora. The deluge produced a small creek running through the Van's tent, and left a lot of parked airplanes sinking in the mud. Luckily, we weren't camping.

The RV-12s emerged into the Florida gloom none the worse for their 3000 mile jaunt over potholed Interstates. Daryl and I had been given instruction in the reassembly of the airplanes by the Proto shop experts (right wing first, or is it left?). Luckily, or possibly by design, the airplanes are color-coded red and yellow which helped to avoid the most glaring errors. We were able to provide demos in 912VA, which performed well in the Florida heat and humidity, whilst 412RV lapped up the attention back at the booth. We even provided entertainment for the crowds by removing and reinstalling the wings a few times so prospective builders could see how quick and simple the process is. The RV-12's first appearance at S'nF generated a lot of interest, and we made a good number of sales at the show. There were plenty of people looking at the RV-10, RV-7 and RV-9 as well, especially after seeing some of the customer-built examples in the parking areas.

Friday night was another first. We had a BBQ in a tent on the field, a change from the off-field banquet at the Lakeland center. This formula seems to be popular with attendees, as it eliminates the problem of transportation to an off-field venue. Next year though, (memo to Airshow Czar, Rob Butt) we'll rent a tent with lights to avoid curtailing the festivities at twilight, or at least bring a flashlight to read the raffle tickets.

The trip back was notable mostly for the predictable

AWARDS

Several RVs took home awards:

- Grand Champion Kit: RV-7 N834ST, ***Mark Taylor,*** Dearborn, MI.
- Best Low Wing: RV-6 N216PH, ***Pete Hunt,*** Clearwater, FL.
- Best Metal - Super RV-8 N548JH, ***Jeff Hagg,*** Indianapolis, IN.
- Best Workmanship - RV-8 N26RK, ***Ronald Keilin,*** Port Orange, FL.
- Best Non-Certified Engine - RV-6A N821GL, ***Jason Hutchinson,*** Granbury, TX.
- Outstanding Aircraft - RV-6A N742RV, ***Kye Wehrell,*** Marietta, GA.
- Outstanding Aircraft - RV-8 N812RS, ***Richard Sears,*** Easton, MD.

headwinds and consequent turbulence. After dodging thunderstorms for the first 70% of the trip, we were confronted by snowstorms over the Cascades of Oregon! We had to resort to a low-level, and extremely turbulent, path along the lee side of the mountains to the Columbia Gorge to get back to Aurora. However, even with a slow and bumpy trip we were all back in two days, with a stop midway at Santa Fe. All, that is, except for Joe Blank and Mike Seager, who, by prior shrewd planning, flew south to Key West with their spouses to recover from their exertions prior to returning to Oregon.

The trip back provided an interesting contrast in the performance between the "fast" RV-7A and RV-10 and the "slow" RV-9A. After most 3-hour legs, the 9A would generally show up only about 15 minutes after the 7A and 10 had landed. The greater speed of the airplanes with the larger engines certainly exists, but doesn't make much "real world" difference, and the 9A burned less fuel, an appealing characteristic with $5/gallon Avgas increasingly common. We paid that and more, both ways.

VAN'S SHOW

Along with all of the Van's crew, I was excited to see our new RV-12 on display, and to be able to confirm that we were indeed accepting orders (albeit partial) for the kit. If you build it, will they come? Not to worry, there was always someone, sometimes many people, gathering around to look at it and ask questions. Many were able to climb in and verify our cabin space specs as well as to enjoy the really outstanding view from the bridge. We usually conducted a dog and pony show (aka: wing removal) several times daily. We should've sold tickets; it always drew large crowds. When you think about it, it really is quite amazing. Those of you who have already built airplanes know how long it took to install the wings, hook up controls, install root fairings, etc. Some of you have had the reverse experience of wing removal — even that takes hours. When the equivalent can be done in a couple of minutes, you get a better idea of the design, engineering, and tooling feat we have pulled off. My compliments to our engineering and prototype departments.

A lot of people commented favorably about the removable wings, indicating they could easily see how this feature could benefit their flying circumstances. We hope so. Seeing is believing.

We presented two Forums at Sun 'n Fun this year. These followed a different theme than many we had presented over the years. Usually, we concentrated on specific airplanes or families of airplanes. This time, Scott Risan gave a talk on *Maintenance of RVs,* and Ken Krueger spoke on the *Engineering Design Process,* using the RV-12 as an example. Both were well prepared PowerPoint presentations which held the undivided attention of full-tent audiences. Fortunately, other than for giving a brief introduction to Scott and Ken, and answering a couple of questions at the end, I was able to sit back and enjoy. Is this a definition of success, or what? Life is good.

Top: There are actually two RV-12s in this trailer. Tiedowns are provided in the top of the wing so it can be secured to the trailer wall.

Below: Any airshow where you can hang out with the Weinermobile is a good airshow. Left to right: Rob Butt, Daryl Sahnow, Gus Funnell and Ken Krueger.

THE BEAR MAKES RULES

The Continuing Saga of the 51% Rule.

VAN

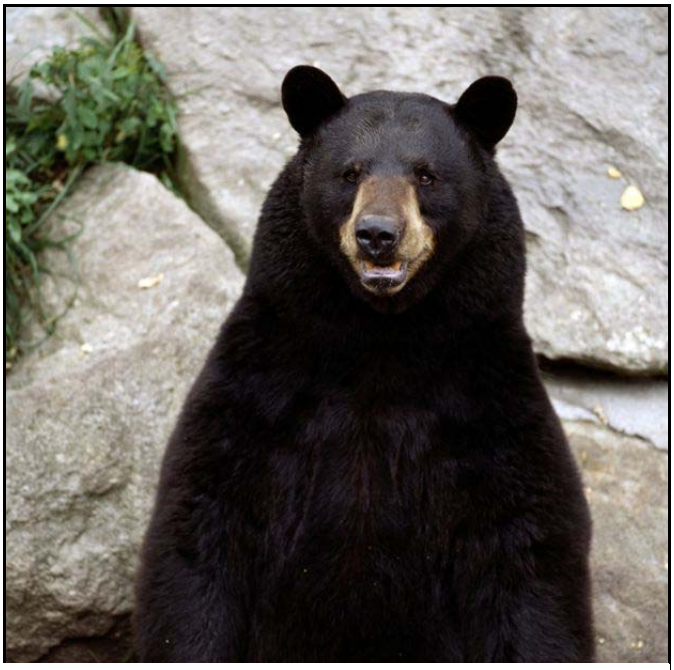
During Sun 'n Fun I participated in a couple of forums and in many lesser discussions on the topic of the 51% rule. No FAA personnel were present during any of these discussions, nor were they scheduled to be. To my latest knowledge, the FAA has gathered the information they wanted from the ARC meetings and more recently from several factory visits. They will use this information to formulate new regulatory policies which they will publish soon in the Federal Register.

Part of this information was gathered in Aurora, where we were recently visited by an FAA team who were testing their proposed new version of the 8000-38 Fabrication/Assembly Operation Checklist. The new list, actually a DRAFT list, was both similar and different from the list which has been used in the past. It is similar in that it still consists of a listing of construction tasks, the Major Portion (the famous 51%) of which must be accomplished by the registered builder of that aircraft. The previous list had two vertical columns which assigned credit for task accomplishment to either the "Manufacturer" (kit-maker) and the "Builder." The practice had been to assign accomplishment credit to one or the other, or to both if it was a "shared" task. If the kit evaluator (FAA) agreed that either party performed a significant amount of the task, though perhaps less than half, each party was given equal credit, with a check in each column. Though this might be seen as having a canceling effect, it did work in the long run.

The new DRAFT list has a greater number of possible tasks, some of which apply to only one form of construction or construction material. There are now three vertical columns, one each for the Manufacturer and Builder as before, and a new column titled "Commercial Assistance." During the initial factory kit evaluation, nothing appears in the Commercial Assistance column. If the Builder receives commercial assistance on any of the line item tasks, he is expected to re-assign the accomplishment credit to the Commercial column, which then is totaled along with the Manufacturer column for the final tally.

Another new feature of this DRAFT list is that the task credit is weighted. If it is determined that the Manufacturer performs 40% of a task, that column is marked .4 X, and the Builder column is marked .6X If the Builder then hires out half of this task to a Commercial Assistance Service, he is expected to change the Builder column to .3X and add a .3X to the Commercial column. Thus, in the final tally, the builder would be debited .3X, and the Commercial Assistance column figure would be added to the Manufacturer column bringing it up from .4X to .7X, a definite disincentive to use excessive commercial assistance.

Does this all sound like fun? It's not intended to be.



"Good morning. I'm here to see your kit and try out our new 8000-38 form…"

On the other hand, its really not too difficult, and is intended to provide the FAA with a better mechanism for determining eligibility for licensing in the Experimental - Amateur Built category. Plus, THIS IS NOT FINAL. IT IS JUST A DRAFT! I mention it here just to keep you up to date and provide an idea of what might be expected in the future.

There was one other very important announcement made by the FAA at Sun 'n Fun. That is: ***All previously evaluated kits will be grandfathered.*** The kits you are now building, or may buy and build in the future which have been previously evaluated and found to be in compliance, will be eligible for licensing using the original evaluation (8000-38) list. This is good news, but not unexpected.

I want to thank all of you who sent letters to the FAA in response to my *"Call to Arms"* article in the last issue. I have heard that those letters were read and favorably received. But there will almost certainly be a need for more letters after the FAA publishes their final proposal. That should happen quite soon.

Our concern all along has been the effect of a new policy on new kits yet to be evaluated. During an interview by Mary Jones of the EAA staff, I mentioned that I had "guarded optimism" about the final outcome. I still hold that position as I wait for the FAA to publish their new rules policy. Keep watching our website, the EAA website, and the vansairforce.net website.

IN THE SHOP

We've learned that the horizontal injection air duct (aka 'the snorkel') and the PlanePower alternator brackets in our Firewall Forward kits can interfere with one another. With a few minutes effort, the combination can be made to work. One method is to heat the offending area of the duct until it is plastic, then form a small depression with a rounded bucking bar or something similar. It doesn't take much to clear the bracket.

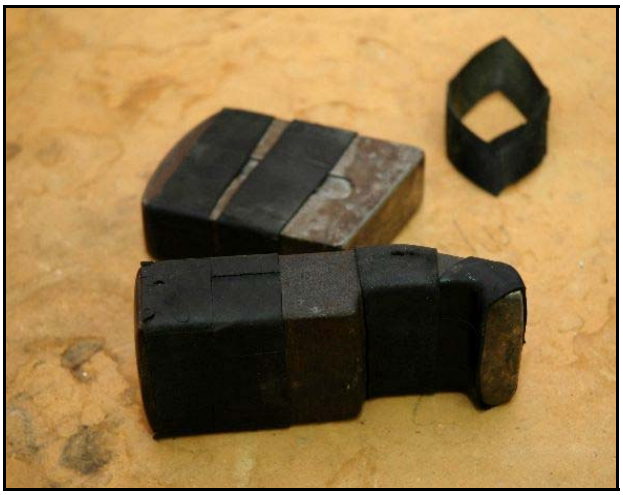
If the alternator is installed first, there is often enough 'wiggle room' in the exact location of the snorkel that modifications may not be necessary.

A small depression in the fiberglass"snorkel" provides clearance for the alternator bracket.

PART PROTECTOR

No one wants to beat their airplane up with a bucking bar when driving rivets. Many people tape their bucking bars with masking or duct tape. RV-8 builder ***Bart Filipiak*** and his father came up with this idea:

Get a cheap bicycle inner tube and cut it into "rings" to stretch and fit over your bucking bar. As you rivet, slide them around to wherever you need them to do their job. The rubber gives a little, and is thinner than the completed shop head should be, so it won't get in the way. It will get beat up, so check it frequently and replace when necessary. In the picture, you can see a ring that was recently retired due to too many holes. Just cut another one and you're ready to go. According to Bart, they have accidentally driven rivets when the rubber was between the rivet and the bucking bar. The shop head had a sort of textured appearance, but it set fine and the inner tube was still in good shape.



Simple part protectors made from old bicycle inner tubes slip onto almost any bucking bar.

FIBERGLASS TIPS

There are several places on the airplane where you must attach hinges to fiberglass – the cowling and gear leg fairings, for example. Proseal works well for this job and we have lots of 1 oz. jars of outdated sealant we'll sell cheap. If you let the sealant cure while the parts are clecoed together, *then* countersink and rivet, you'll get a straighter hinge and better adhesion than if you set the rivets right away. As an added bonus, the aluminum hinge will hold the pilot of the countersink tool straight – something the thin fiberglass can't do.

Of course, fiberglass will destroy those expensive countersink bits. The head of our prototype shop, Scott McDaniels, uses Permagrit countersinking bits (Avery p/n LC1 and LC2) for fiberglass and says they do an excellent job.

In fact, Scott has found several of the Permagrit tools very useful for fiberglass work. One of his favorites the Permagrit sanding block, which has two different grits bonded to a square aluminum tube. You can get them up to 22" long and they make short work of fiberglass edges. The grit stays sharp almost indefinitely, so you don't need to keep re-gluing strips of sandpaper to your carpenter's level or straightedge.

Permagrit countersinking tools won't fit in a microstop cage, but you can countersink fiberglass by eye accurately enough.

THE DAY DARYL BUILT AN AIRPLANE

KEN SCOTT

It's a step up from "car theft!" (For those of you too young or too new to RVs to remember, we ran a story several years ago called "The Day Daryl Stole the Car.") Production Scheduler Daryl Sahnow has graduated – if you can call it that – from car theft – if you can call it that – to aircraft building – if you can call it that.

Just teasing, Daryl...stop throwing things.

A few years ago Daryl was infected with the flying bug. He'd worked for Van's for more than twenty years (in fact, other than Van, Daryl's been here longer than anyone) and for various reasons, had pretty much left the flying to others. Finally, he decided that he was missing out on a lot of fun, so he hied himself off to Twin Oaks Airpark where an old C-152 taught him to fly. That accomplished, he faced the usual: What to do with a pilot's license and no airplane?

Some cross-country in a Cessna, a few company trips and plenty of stick time in the RV-9A convinced him that this was the airplane for him. Here's his story:

This story begins with two guys musing about whether building an airplane was even possible by someone without any experience in aircraft construction. I've worked at Van's for twenty-four years and you'd think this would be a moot point – I've seen hundreds, maybe thousands, of people complete airplanes. Somehow, though, it's different when you're thinking of spending your own time and money.

With this in mind, my potential building partner, Andy Rux, and I made a trip to visit retired Van's employee Art Chard at his home in Stevensville, MT. Art was instrumental in several of Van's prototypes and is an accomplished builder who still keeps busy with various aircraft projects. His advice: "Get to it! I know you can do it!" With these words of encouragement and a sense of pioneering, I put down the money for an RV-9A empennage kit and got in line for the full Quick-Build kit.

I took home the empennage kit in October, 2005, and we threw ourselves into learning the basics. Our construction took place in my 36x48' open shop with plenty of tables and space. We were lucky to have Van's engineer Ken Kreuger stop by and show us the basics of riveting, and we followed his advice throughout the remainder of building. The empennage took us until mid December to complete -- just in time as the QuickBuild kit arrived just before Christmas of 2005. And that's how we came up with our N number: It's an RV-9A started in 2005 by Andy and Daryl, N905AD – Get it? OK, so it's lame, but it works for us!

We had long discussions about the panel: what should be included and how should it be configured. We quickly zeroed in on a VFR-only bird with limited night flying capability. Advanced Flight Systems had just come out with their new combined EFIS/EMS system that really appealed to us. The GPS system was a little tougher to decide and we considered a Garmin 396/496 but decided to go with the AvMap EKP-IV because of its larger display. Its main drawback is the lack of in-flight weather, but AvMap continues to claim that they will offer this option 'soon'. We combined these items with Van's standard electrical package, Garmin's SL-40 comm radio, GTX-327 transponder, PS Engineering intercom, and a Digitrak single axis autopilot. The result is a panel that's clean and efficient and has everything within easy reach. By deciding on our configuration early and staying with these choices, we were able to avoid the delays that always happen if you keep changing things.

We evolved an efficient building routine that would last until we completed the project. During the week we would usually put in a couple of hours of work after dinner (from about 7-9 p.m.) and work Friday and Sunday afternoons. Our records show that we averaged about 70-75 hours a month of actual building time and totaled about 1750 hours by the time we completed the project.

Throughout the building we had some great assistance by my fellow employees here at Van's. First we had Ken Krueger who helped us get started with the riveting, then helped with the painting. Scott McDaniels was also a great help with a myriad of issues. He probably got tired of me asking him all sorts of questions about everything! Scott was also instrumental in helping achieve a very nice tip-up canopy. And we can't forget the work of Gus Funnell. He helped us install the wings and make sure the incidence was properly set. With my large shop we were able to put both wings on the airplane inside the shop and still have room to move around. Gus also helped close up the wings and install them permanently when we moved to the airport.

The painful part...

I had decided early on to purchase my no-frills, carbureted, dual magneto O-320 engine from Aerosport Power. After much debate we decided to install a fixed pitch Sensenich 78" pitch cruise prop, but have the engine set up to allow a constant speed prop if I decided to go that route later. I drove up to Canada in October, 2006, to pick up the engine and meet with the experts at Aerosport. When the engine arrived, we started on the baffling and completed the rear baffles with the oil cooler mounted. We ran the baffle seals straight across in front of the oil cooler and added extra bracing to the rear baffling. By the time we mounted the engine the kits for the new baffling were available, so we used those parts for the forward baffling and that gave us a nice baffle system.

By this time we were nearing completion of the basic airframe which led us to discussions about when to paint the airplane. We talked with a great many people and everyone seemed to have their own opinion with no real consensus as to what is the best practice. We finally decided that painting the airplane before we took it to the airfield would be the best decision for us. We were committed to doing the prep work and cleanup work, but neither I nor my partner had any experience at actual painting. I built a paint booth in my shop. Our friends Ken and Frank shared the spraying.

The paint scheme was based around on Van's second RV-10, 220RV. The result is a nice looking aircraft, and although it delayed our first flight, the choice to paint the aircraft before final assembly paid dividends in the long run as we had a 'finished' aircraft at the time of the first flight. A nice paint job and panel, coupled with interior upholstery by Abby of Flightline Interiors resulted in a really nice finished product that gives us the Van's grin every time we fly it!

One of the most time consuming endeavors in the entire build process was the final prep work on the fiberglass components. I had very little experience with fiberglass work (and don't want to get any more!) and wasn't prepared for the amount of hand work needed to fill all the pinholes to get a nice smooth paint surface for the final painting. Of course, we may have done things the hard way, but it sure seemed to take a long time to get the prep work completed. We are still finding pinholes that we missed – and we thought that we were being very careful! I'm sure glad we didn't decide to build an all-fiberglass airplane!

Throughout the two years we spent building, our partnership worked out really well. Having two pairs of eyes looking over the work helped us make as few mistakes as possible. Two plus years is a long time to stick to a project and there were times that it seemed it would never end. But having another enthusiastic partner makes getting by those low times much easier. And we seemed to complement each other in our skill sets so we each felt that we were contributing and weren't 'competing' with each other. This reduced any friction that might have developed and allowed each partner to feel like the project was a true joint effort. With all that said, it was still a long haul and I'm not ready to start on another project any time soon!

"Now that it's finished you better fly the *&%$ out of it!"

Shannon Sahnow.

When the project was finally completed we had a very competent pilot at the controls on its maiden flight. His only comment upon landing was "kinda boring" which we took as being "very good." We now have currently 35 hours on 905AD. Weather permitting we will have our 40 hours flown off very quickly.

It's been quite an odyssey. My thanks go out to all who helped along the way. A special thanks to Andy for being there for the duration. And to my wife Shannon, who, after the first flight, told me "Now that it's finished you better fly the *&%$ out of it!" You gotta love a woman who thinks like that!

CABINET JOB

Dear Mr. VanGrunvsen,

When you first introduced the RV-6, I spoke to you at length at Sun 'n Fun. I'm certain you would never remember me from such a long time, but as for me, I came away wanting an RV, except for the fact that I wanted a four-seater.

The day came and procrastination awarded me with #31. I waited until all the kits arrived before starting. I was far along the way, and with only help from my bride, I was ready to take Sweaty Betty Too to the airport, until the flying support system – money -- was about ready to run out.

Real estate pays for my flying habit. After eight years, I asked the tenants in my last rental unit to leave. They made a mess and cost me dearly, mostly in RV-10 building time.

The project took four months away from Sweaty Betty Too. But all was not such a great financial loss. Here is a photograph of what RV-10 #40031 had contributed, in addition to the pleasure of building, and how it also helped pay for the extensive repairs that took fours months out of her life.

Those kitchen cabinets, save for the hardware and covers, were made from the crates of 40031. It saved me nearly $6000. Total cost of materials and hardware about $175 and lots of time.

My thanks for making my dream of a 4-seat homebuilt come true, and for the fine materials you use in shipping your fine product, as can only be expected from Van's Aircraft.

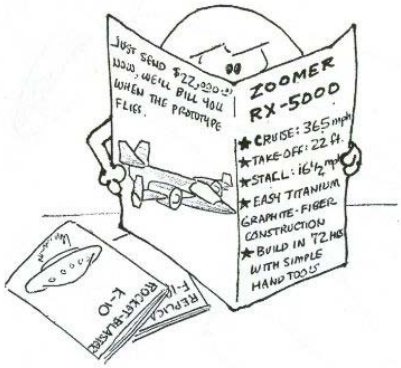
What a deal — one hell of a 4-seat aircraft, and it even helped pay for itself! Hope you approve of the cabinets and my workmanship of another example of your fine aircraft.

Kindest regards, ***Torello Tacchi*** (40031 aka N968TP)

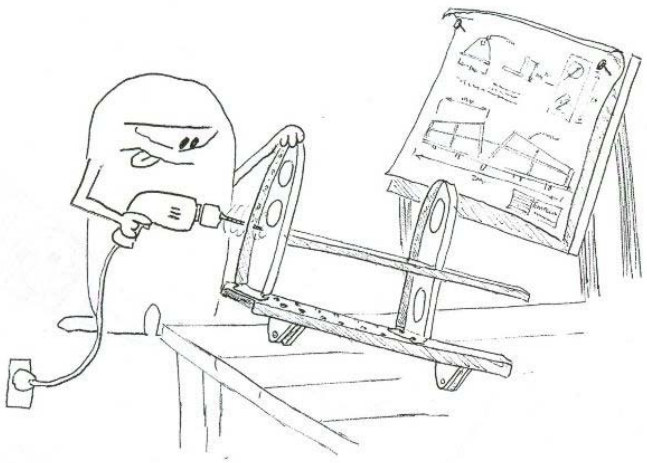
Here's an idea The Violinist would like! A retractable cupholder for the water bottle that goes everywhere with her. We're not sure where these photos came from or whose airplane it might be — but neat idea.

LOOKIN' BACK

1. Once upon a time, there was a pilot who wanted to build his very own Sport plane. He spent a year studying the promotional literature..... some of the numbers looked a little strange....



2. He wanted realistic, total performance. So he ordered an RV-4 and started diligently to work....

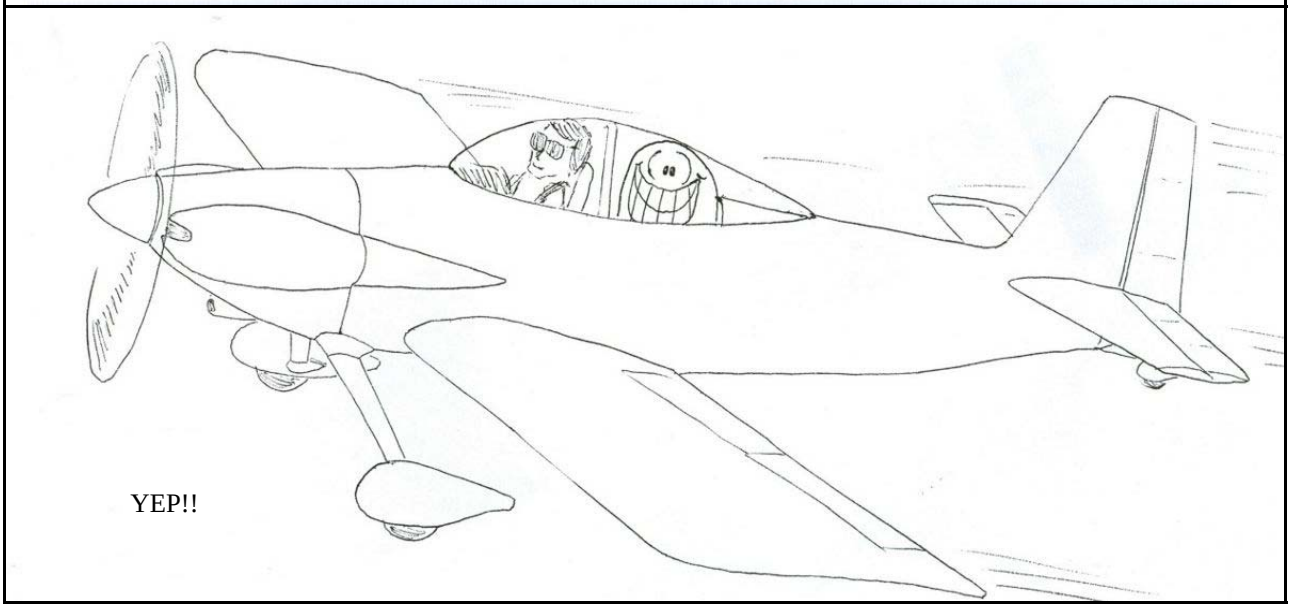


3. Of course, he made a few mistakes... but Dick was very helpful when he made those inevitable calls to Oregon...

4. The remarkable thing is: Although he had looked hard at the RV-4 numbers, talked to builders, and been well pleased with the kits - he never had seen an RV-4 (except in pictures). So he drove out to Oregon with the question running through his mind: "Is it really going to live up to expectations?"

Although Dick was very busy the morning our intrepid builder arrived, he made the time to give him a demo ride.....

Was it going to be worth all the work to build an RV-4?



Back in 1986, RV-4 builder Jim Howell produced one of our favorite all-time RV cartoons. It captures the whole essence of an RV project so well that 22 years later, it still makes us smile. Seemed worth a reprise.

If there are any other cartoonists out there, we'd love to see your (RV related) work.

Some months ago, RV-8 builder Heinrich Klima of Linz, Austria, looked up and saw something unusual in the pattern. VERY unusual...

We had the luck that a Bf109 from the “Messerschmidt Foundation” came to our airfield in Wels (LOLW). The well known pilot Walter Eichhorn gave a transition training to his son Toni, and our grass strip is long enough to do this safely.

I saw some pictures of RVs compared to Mustangs or so, but in this case, a “Mustang styled RV-8” is compared to the Bf109. Being a constructor myself, I looked at all the construction details and found a very interesting detail: the trailing edge on the flaps use the same construction technique with a riveted wedge as we see in the RV-9 and RV-10. So, it’s a “well proven technology”!