

Newsletter of Van's Air Force—Western Canada Wing



VH-NOJ from the front, showing the MT CS prop. Jon's in the background, talking to some interested spectators.
Tedd McHenry photo

Jon Johanson Visits Abbotsford

Tedd McHenry, Editor

Jon Johanson spent most of August in BC, as part of his latest adventure, an over-the-pole flight. We were very fortunate to have him come to the Abbotsford Airshow.

Jon's visit was made possible by Wing members George McNutt, Bob Baldock and Linda Todd. George hosted Jon at his home on the Thursday and Friday night, while Bob and Linda hosted him on the Saturday night.

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RV-8 Baggage Compartment

Mike Robbins, Van's Air Force Home Wing

[RV-8QB Home Winger Mike Robbins, who lives in Issaquah, WA, wanted to make sure he could carry his folding bicycles in his new RV-8. Following is the story of how he modified his rear baggage compartment to create a greater storage space—Ed.]

Modified Aft Baggage Compartment

For many years I have wanted a low wing, all metal tandem airplane. I learned to fly in a tandem 39 years ago, although it wasn't a low wing nor made of metal. Since I couldn't afford to buy a new one, if one existed, I knew I would have to make one. But I also knew that time would be in short supply. Another desire was to have a baggage compartment with enough room to put a couple of bikes in it. I looked at the RV-4 years ago, but it was just too small. I considered the 6, which has a fairly roomy baggage compartment, but at the time I knew I couldn't finish one, and of course it wasn't tandem. But when the 8 came out I knew I had to have one.

Trouble was, the baggage compartment, as currently designed, still wouldn't accommodate my desired cargo. I really wanted the 8, and I knew I could finish one if I had the QB, so I decided to redesign the aft cargo compartment to meet my needs.

I am going with the O-360 A1A, so can put the battery up front, either on the firewall, or behind it as Randy Lervold is doing. That way I could eliminate that step in the baggage compartment which would just be wasted space.

I started by designing full length side panels which will be pop riveted on the top and have nut plates on the

"After putting all the finished parts in I made a trial fit check of one of my Bike Friday folding bikes. It just barely fit with about an 1/8" clearance."



Looking aft between the F-808 and F-809 bulkheads, RV-8ers will notice the absence of the baggage step and the increased room created by Mike's modification.

bottom flange. The full length floor is secured to the side panels and the F-818 baggage rib by #6 screws. So the entire floor is removable. To get the right dimensions I made templates out of 1/8" rigid foam boards that are car-

ried in the art department of most stationary stores. I just kept cutting them down until I got the correct shape. I wanted a fairly robust cover to protect the elevator bellcrank and push-pull tube. A friend of mine, and fellow RV builder, Larry James of Bellevue, WA, had some .063 5052 sheet. He suggested a design for the cover. I made a mockup of the cover again using the foam boards, and had the cover welded.

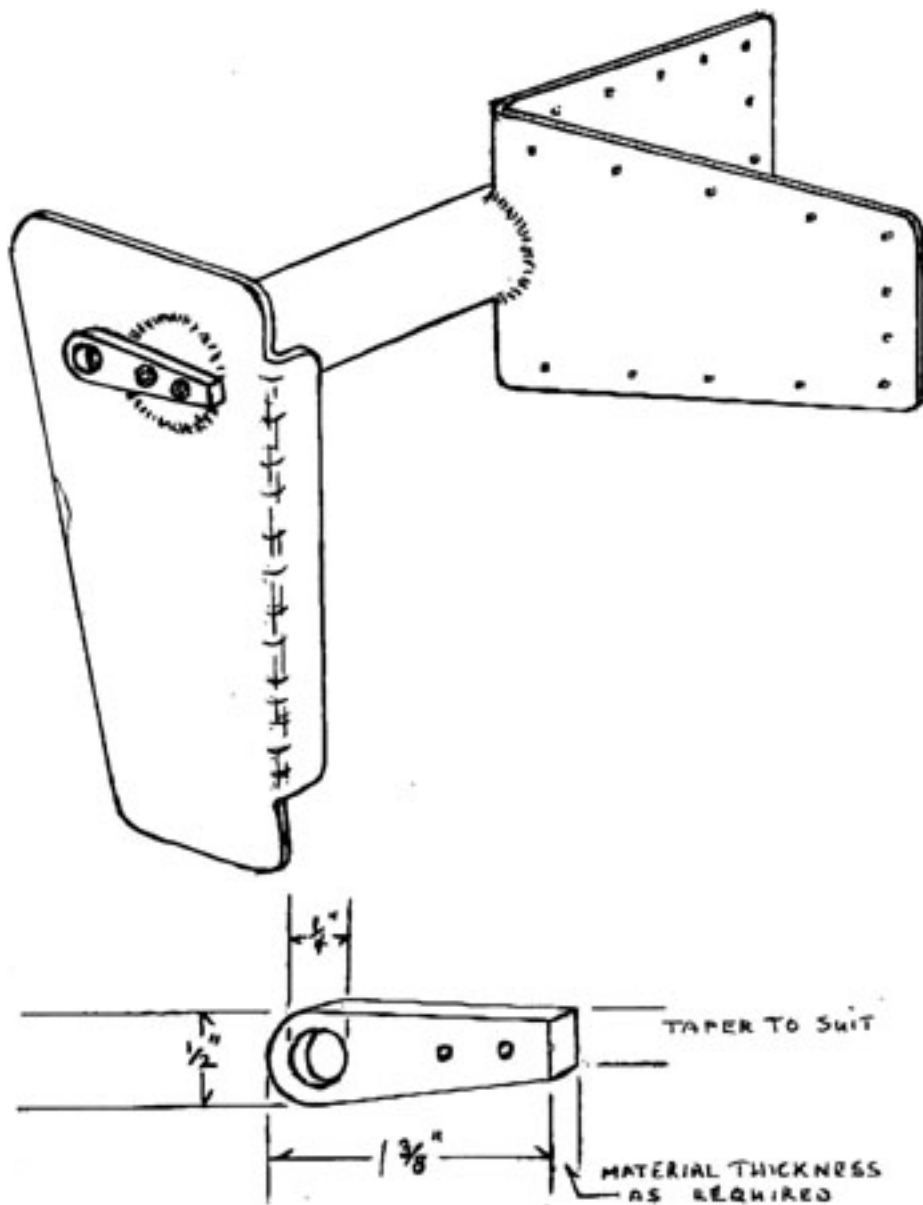
Looks neater that way. The cover is secured to the floor, F-818 bag-gage rib, and aft bulkhead with #8 screws.

I made the aft bulkhead so it fits on the back side of the F-808 bulkhead and is secured with #8 screws. I made a cutout in the bulkhead so I could put long things in the back, like X-C skis or maybe a shotgun if I ever go up to Alaska. There are also some stiffeners on the back side of it. All the parts, except the cover, are made of .032 instead of .025. I felt the .025 is a little flimsy for this application.

After putting all the finished parts in I made a trial fit check of one of my Bike Friday folding bikes. It just barely fit with about an 1/8" clearance. It's really tight, but I met my objective.

Although the parts look rather simple, it took me about two months to design and make that modification. But it was worth it to me.

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Tip**Elevator Horn Spacers***Jim Jewell, Kelowna, BC (RV-6A finish kit)*

Some number of builders have found that their elevator horns are a bit short. The accepted fix is to put washers in to fill the resultant gap at assembly time. This in an area that is known to have very limited access. I Had the same problem with mine. Instead of using washers, I made aluminum spacers.

I made two spacers approximately 1-3/8" x 1/2" from some 1/4" aluminum 6061 stock (2024 would also do). If your fit requires a different thickness, file, grind or use appropriate thickness material. I drilled one end to fit the required 1/4" hole. I tapered the other end to about 1/4" to reduce weight. I then fit the spacer with a 1/4" bolt to it's position. I oriented the tapered end toward the center of the circular weld that holds the horn to it's tubular shaft. Surrounded by welded material, this area should be safe structurally. I drilled two 1/8" holes through the spacer and the horn into the area in the center of the round welded area. Two 1/8" pop rivets hold the spacer in place for assembly, eliminating the need to try to fit washers in a very restricted blind area later on.

Tip**Elevator Skin Dimpling***Chris Sheehan, Mississauga, ON (RV-8 tail)*

Tip 1 Just use the male die in the squeezer without the female (i.e. the squeezer yoke acts as the female). That's actually not my idea; saw it on the web somewhere but it actually works.

Tip 2 Using a 'pop rivet' die is tricky because it's hard to angle the 'mandrel' (nail) through the hole. So I came up with the following: I used a short (2"-3") length of 3/32" piano wire as a mandrel, and a 3/32" 'wheel collar' (both hobby store items). I filed a notch in the wire close to one end, fed it through the male die, rib, female die and wheel

collar (in that order) and tightened the collar set screw in the notch. Now just run the pop rivet puller on the mandrel as usual, and once the dimple is formed undo the wheel collar and take it all apart. Sounds time consuming, but there are only a few dimples to do this way and it takes about 1 minute per.

Tip 3 Regardless of how you manage to make the dimple, if it's not quite right a turn or two by hand with a pilot-ed countersink finishes it off perfectly, barely removing any metal at all.

High-time RV

Terry Jantzi, Ontario Wing

[This article was originally published in the September, 2000 Ontario Wing newsletter. Terry is the editor of the Ontario Wing newsletter, and has set speed and altitude records with his RV-6, in addition to winning an Outstanding Workmanship award at Oshkosh. I had the very great pleasure of flying with Terry last March. Despite the numerous signs of wear he discusses in this article, his RV-6 was one of the finest I've seen, and it was obvious that he takes very good care of it—Ed.]

After three years and far too much flying, I have some observations on how our aircraft age. I currently have about 800 hours on the hobbs meter. That translates to approximately 600 hours of flying time. Flying out of a medium-sized airport, as I do, requires lots of taxiing and hold time. I estimate between 12-18 minutes for every flight terminating back at my home field. That accounts for the wide disparity in "flight time" and "air time."

With all that taxiing, the tires do take a beating. I'm on my fourth set of tires right now. I have tried "cheapies" with mixed results. The second and

third sets were Aero Trainers at about \$48 a tire. I got about 220 hours from the first set, and about 120 hours from the second set. I don't think my landing has deteriorated that much. The second set just didn't last. I'm running on Goodyear Flight Special IIs at the moment. I like the stiffer sidewall, and they appear to have a lot more rubber to grind off. The stiff sidewall seems to keep the RV-style wheel shimmy at bay.

I finally replaced the tail wheel with a sealed-bearing type. The new wheel is lighter, maintenance-free, and doesn't sling grease all over. The old wheel

wore down about an inch and a half since new.

The airframe is holding up well. At the 250-hour mark I had to replace the rudder due to cracks in the skin. About six cracks had started at the ends of the internal stiffeners. Part of the problem was the 0.016" skin, part was due to not installing RTV at the ends, and part was due to construction errors. I didn't get the stiffeners nearly close enough to either the spar or the trailing edge. The skin could flex a little, and the cracks seemed to start where the skin was loosest.

I picked up three cracks in the aft fuselage skin due to another construction error. I had an opportunity to fly with Van in the blue RV-6 many moons ago. Actually, it was at Oshkosh 1990, and I remember being somewhat disappointed at all the sheet metal banging in the back while we were taxiing on the ramp at Fond du Lac. I decid-

ed I was going to stop any oil canning in that area on my own RV. I now realize that stiffeners on big expanses of flat skin need to be fixed to the bulkheads in some way. All the flexing in the skins gets transferred to the ends of a floating stiffener with less-than-desirable results.

The airplane was painted at the 300-hour mark. Any place where there were cracks in the gel coat on the fiberglass parts has eventually worked through the paint. I have fine hairline cracks just behind the spinner and in the corners of the air inlets. I think the gel coat was damaged when the cowl was removed from the mold.



Terry Jantzi's 800-hour RV-6 over southern Ontario. C-GZRV has been to Iqaluit, set numerous point-to-point speed records, a class altitude record, and given Terry an Outstanding Workmanship award at Oshkosh. This photograph is from Terry's web site (<http://www.netrover.com/~tjantzi/terry/>).

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*...baggage compartment (from page***Strobe Power Supply and ELT Bracket**

I also wanted a strong foundation for my strobe power supply and ACK ELT, and I didn't want to mount them in the aft cargo compartment. So I designed brackets for them that are riveted to stringers mounted on the floor behind the F-808 aft baggage compartment bulkhead.

The stringers are made from 3/4 x 3/4 0.063 angle, and are secured both to the fuselage floor with AN426AD3 rivets and tied to the bulkheads at each end with angle brackets and rivets (AN470AD3s). I had to use a pop rivet dimpler to

dimple the holes in the fuselage bottom. I am using the same Whelen power supply and ELT that is in my Kitfox, so I was able to get the dimensions of the mounting holes and carefully duplicated them in the brackets that I riveted to the .063 stringers. I put #10 nutplates in the mounting brackets. I made the eight mounting brackets and the four stabilizing brackets from 3/4 x 2 0.063 angle that I got from Boeing surplus.

It adds a little weight back there, but I figure with a wife that weighs only 100 lbs. (that she will admit to anyway) and my battery forward I should be OK CG wise. Credit must be given to Larry James without whose help this project would never have come to pass.

...High-time RV

These little cracks must be ground out and filled before painting.

The battle of the stone chips never stops. I have extra paint left over, and touch up minor damage as I discover it. The prop takes a regular beating. I have found it's easier to maintain a polished prop than try to keep one painted. The flat black on the back of the blades gets a fresh coat every year. I use 3M leading edge tape on any parts of the tail wheel assembly that face into the prop blast. Periodic replacement keeps that area looking good.

The cabin interior has worn well. I used a minimum of fabric and as many powder-coated panels as possible. I was concerned about the leather seats, as they were fairly thin hides, suitable for the garment industry. They still look almost brand new. Hard to believe with over 250 different sets of cheeks placed on them. [Often at well over 1Gz, if I know Terry—Ed.] I am adamant about not stepping on the seats when boarding, and that has probably helped. The only instrument panel problems encountered so far have been a tach (Mitchell 2.25") that stopped recording hours and an inter-

com (PS II Engineering) that stopping intercomming. The RC Allen vacuum gyros have endured hundreds of rolls and are still functioning perfectly. In fact, the DG doesn't even require a heading reset during a one-hour flight. Due to the design of the tip-up canopy and my lack of waterproofing devices, my Terra radios get a drenching every year during the Oshkosh trek. This year was no exception. I have finally done something about it [see Leaking RVs elsewhere in this issue—Ed]. The Terras, to their credit, get thoroughly dried out and recuperate to live another day.

The engine compartment has fared almost as well as the interior. Except for a persistent oil seep from the split line on the front part of the case, everything shows little wear. I do give the firewall forward a good solvent cleaning every oil change, because of the oil leak, and that gives me a good chance to inspect all the important bits. I have found that even aluminum angle 0.125" thick will fail if used as brackets and bolted to the big noise-maker up front. I have suspended my exhaust system from the case, as conventional legend prescribes, and anywhere aluminum was used, it cracked. I now have stainless steel stuff supporting all exhaust components. The

baffle kit I purchased from Van's has held up perfectly. I even have the original hinge and pin holding the two cowls together behind the spinner. That has been a problem area for many builders. I bent the pins up on the morning of the first test flight, and they've survived there ever since. Go figure!

All the hoses were fire-sleeved at installation, and they are easy to keep clean and looking nice. The fact that I can keep my RV inside out of the weather plays an important part in the longevity of the expensive parts. Since I usually get some airtime a couple of times a week, I keep the engine warm all winter as well. With an old sleeping bag thrown over the cowl (my original bag with cowboy print lining) for the heat retention, and the foam stuffed in the nostrils, the oil stays around 100° F. Makes for easy engine starts and little chance for moisture—read "corrosion"—to get a foothold.

The biggest surprise of all for a high-time RV is the amount of fuel that flows through its veins. I estimate over 6300 U.S. gallons (approximately 24,000 litres) have been turned into noise, heat, and grins. My little RV has given me a reason to continue working. I have to buy more gas!

Product Report: Strip Lighting

Norman Hunger, Delta, BC (RV-6A)
 nbunger@sprint.ca

I bought three of the 24" strip lights from JC Whitney, part number TC-24-W, for a total of \$13.47 USD. I chose the white ones. These are made in the USA by Vista Manufacturing. They call them Tac-Lite Strip Lighting.

I had planned to put them along the edge of my glairsheild behind a yet-to-be-determined edge material, probably stiffer angle material. I should mention that I'm planning to extend the glairsheild further back from the panel than Vans. I would like this to be the primary panel lighting with back up being two map lights on the tip up canopy frame.

These strips have six small bulbs wired together and encased in a flexible plastic strip. The cross section of this strip is shaped in a "P" making for a nice flange to glue it on.

I powered one of them up on the bench and darkened my shop. I was very disappointed. They didn't even get close to making enough light.

Just to experiment further, I broke

"I powered one of them up on the bench and darkened my shop. I was very disappointed. They didn't even get close to making enough light."

out a soldering pencil and stripped the bulbs off all three of the strip lights. I twisted their wires together in pairs to make a long chain of 18 bulbs quite close together. I then got a couple of 18 gauge wires and began attaching each end of all the bulbs. I used a wire stripper to cut the insulation and then a knife to peel it away for about 1/4 of an inch for each pair of bulbs to get continuously soldered onto the feed wires. This way the bulbs only carry their own current.

I stuffed the new string into the

white plastic housing and fired it up. It works good but now it is only 22" long. I will order a whole bunch more and continue my strip. I have yet to measure it for current draw. I don't

have to commit to this idea for quite some time. I can test further when the whole panel is together. I like the white plastic encasement strip. The

light is soft yet bright enough once enough bulbs are soldered together. I am hoping for a very even airline look. I have several times already been discouraged by the large cost of high-end alternatives. I am having fun making my own for low dough as I gear myself up to begin the Rocky Mountain Engine Monitor kit I have now got sitting on my bench. BTY, the current cost of this with all of the options to run it that RMI has for sale came to \$1572 + \$25 shipping USD or \$2708.56 Canadian landed.

Leaky RVs

Terry Janzti, Ontario Wing

Tail-dragging RV-6s with the tip-up canopy are notorious for water leakage. Every year on my trek to or from Oshkosh I get to see how my expensive electronics in the panel stand up to moisture.

The problem with the tip-up is the exposed area between the panel and sub-panel. The hinges make this a difficult area to seal. As well, the very nature of the tail dragger is that the forward top fuselage skin slopes back toward the cockpit when parked. And, of course, when you lift the canopy during a downpour, great sheets of water flow off the bubble onto the forward skin. All that water then flows straight back toward your lap.

In my case, the radio trays bridge the gap between the panel and sub-panel. They make a perfect channel for the rain to flow along. My Terra radios have always worked perfectly even when they get doused. First indication of moisture is the plasma display gets scrambled. I turn the unit off

until I feel they have dried out.

Of course, this is not a situation I particularly relish. So I have finally fashioned a fix that seems to work. I took some soft vinyl and sewed a Velcro strip to each end. The vinyl is slightly wider than the gap between the panel and sub-panel. The vinyl must be loose, so the forward canopy frame can still move freely through its range. I glued some more Velcro under the weather strip mount on the sub-panel, and under the main panel reinforcing angle. The vinyl is just long enough to fit between the canopy hinges. The idea is to catch the water and channel it off to the sides. All the electronic gear is under this umbrella. In extreme cases, some of the cheaper (and, hopefully, more robust) instruments might get wet.

I am considering underlapping a piece on each side to complete the protection. From there it would be an easy task to route the water to a drain. I am hopeful that this simple fix will allow my radios to live a long and healthy life.

Push or Pull?

Eustace Bowhay on Fuel Injection vs. Carburetors

Eustace Bowhay

(ebowhay@shuswap.net)

Blind Bay, BC

I'd like to pass on my experience with fuel systems over the years and as related to my RV-6.

All of my flying with horizontally opposed engines since the sixties had been with fuel injection until my RV-6. At the time of building the -6 I didn't think I had a choice, with Van recommending only the O-320 and O-360 Lycomings.

My choice was the O-360. With most of our flying here over hostile terrain and sparsely settled areas, I decided to install the Gem graphic display. This would give me advance warning of any valve problems, as well as mixture and ignition info.

This is when the wide spread in mixture to the four cylinders showed up, and having to lean to the leanest cylinder wasn't the really the most efficient

Carb icing was a bit of a concern, with the difficulty of getting what I felt was adequate hot air for carb heat. Turned out to be a non issue, with the crossover exhaust system located over the alternate air door.

I had my engine overhauled in 1996, and decided to give the Bendix Fuel Injection a try—a system I was familiar with. This is a big change, requiring a change in both the engine driven pump and the boost pump, because of the higher pressure and the extra plumbing required. This was another reason for moving the gascolator into the wing root (so that the gascolator would not be pressurized). I mounted the Weldon pump on the fuselage side of the firewall above the



Eustace Bowhay's RV-6, which is well-known among RVers as the first RV to be put on floats. *Eustace Bowhay photo*

rudder pedals. That wasn't ideal, because of the lift, but didn't want it in the engine compartment because of

“Flying with the fuel injection system is a real treat, to see the EGTs straight across, and the CHTs almost the same.”

the heat and starting problems associated with fuel injection on short turn-arounds. This problem was completely solved with the installation of a AirFlow Performance purge valve this year.

Flying with the fuel injection system is a real treat, to see the EGTs straight across, and the CHTs almost the same. The leaning is now the same on all four cylinders. Carb ice is a thing of the past.

So which system is the best? Here again I think it is a matter of personal choice. Cost is certainly a major factor with fuel injection. I believe fuel injection is more reliable but can honestly say I haven't had any trouble with either. It's hard to beat the simplicity of the carb system, and in my opinion a carb gives easier all around starting with less wear and tear on the starter and battery. However, fuel injection has to be better for the engine

because of it's even fuel distribution and better leaning, and has the added benefit of no carb icing problems.

I am looking seriously at the Airflow Performance system for the -6A because of the pump (\$300 versus \$1000) and the purge valve. It uses a large capacity inline filter (I believe between the pump and the throttle body) that I would like to know a bit more about. I'll also use the Andair gascolator for it's better quality and easier servicing.

Tail Weight

Chris Sheehan, Mississauga, ON (RV-6)

Here's a thought for you. I ordered the 'old style' tail kit (I'm probably the *last* to do so). They sent me the -8 rudder counterweight by mistake. I weighed it today. It's almost 2 lbs!

So in addition to the -8 rudder and VS being larger (and hence heavier), the rudder's also counterbalanced to the tune of about 2 lbs. So despite all the talk from Van's about weight in the tail (lighting, paint, primer etc) they just slipped in an additional 2-plus pounds! Makes me feel better about using a little more primer!



Van's Air Force Western Canada Wing

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To provide information and entertainment for members of Van's Air Force—Western Canada Wing, builders and flyers of kits made by Van's Aircraft.

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Member's Corner

Tedd McHenry, Editor

New Editor Urgently Needed

I won't be publishing the Western Canada RVator after the end of this year. I've been fishing around for a new editor, but with no luck. If you're interested in taking over the position, please contact me. If I'm not able to find a new editor, early in the new year I'll reimburse members who pre-paid for 2001.

RVers Win COPA Awards

Wing member Rick Mosher (RV-6A), of Saanichton, BC, won a COPA Award of Merit for his years of work as an inspector, and his airplane projects. Terry Jantzi (RV-6), who publishes the Ontario Wing newsletter, won a COPA Literary Award for his article, "Flight of a Lifetime," published in Canadian Flight in August, 1999. The article tells of his flight to Iqaluit with his daughter, in his RV-6.

Wing Web Site

I forgot to mention our web site in the last newsletter. If you haven't visited it yet, please do. It has some features you may find handy.

Naturally, I'm always looking for submissions to the web site, as well as the newsletter. If you have tips, tools, or photos of your project (or plane), send them on in. Email is the easiest for me, but snail-mail is fine, too. The web site address is:

<http://www.vansairforce.org>

Classifieds

Classified ads are free to members. Canadian-built RVs advertise for free.

RV-6 For Sale
119 HR TTAF; 0-320E2D ON CONDITION; VAL
760 COMM AND BASIC VFR PANEL
\$50,000 CANADIAN
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Lycoming (150 hp), day VFR, new King
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CDN\$63,000 or closest offer.
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FOR SALE - RV-6A
Custom Built — Fast — Comfortable —
Economical; 90 hrs TTSN April/00; Lycoming
A4M 0-360 Bendix fuel injected, electronic CD
ignition with automatic advance; too many fea-
tures to list. See the classifieds section on the
Western Canada Wing web page: www.vansairforce.org.

Contact Homer for more detailed information
and pictures at shrogers@cablelan.net

For Sale: RV-4
Locally built, August 89, by George Worden;
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Lycoming O-320-E2D 150 HP, 800 SMOH;
Walker propeller. Avionics: ICOM A20
COMM; Telex intercomm; Terra 250 TXPR
(mode C); Garmin 55 GPS; Attitude gyro
Hangared, but has covers for all surfaces.
US\$35,000
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Reason: Retiring. Excellent aircraft.