RECREATIONAL FLYER

Spring 2009

Recreational Aircraft Association Canada www.raa.ca
The Voice of Canadian Amateur Aircraft Builders $6.95

Keith Weston's
Barnett Gyro

RAA
RECREATIONAL AIRCRAFT ASSOCIATION
RÉSEAU AÉRONEFS AMATEUR CANADA

from the president's desk

Gary Wolf

COMMUNICATIONS BREAKDOWN

RAA had some problems with communications this winter with both the magazine and the email forums. Dave Evans of our Barrie chapter paid a surprise visit to the hospital for a bypass. Since he heads the crew at Barrie who handle the mailing of every issue of the Rec Flyer we definitely had a problem, but not as serious as Dave's. To give Dave time to recover we decided to combine two issues into the large Spring issue you are now reading. Dave has now recovered, he and the Barrie chapter crew are back in gear, and you are reading the results. In the past week the Barrie chapter made a donation of $2000 to RAA Canada to assist with the costs of publishing of the magazine. All RAA members owe these fellows a large thank-you.

RAA has two email lists for its membership. The National is a forum used by many members to discuss aspects of building aircraft, and for general social purposes. The Announce is a one-way list used by the Board to make announcements of events, changes in Transport Canada policy, and other news items.

For many years member Rob Schieck has been donating internet bandwidth and his time to maintain these lists, but recently his internet provider was bought out by one of the majors. Email forums attract a lot of spam so the new provider was unwilling to let Rob run the forums any longer.

We were dead in the water for awhile – with no magazine and no email to let you know about the problems. Fortunately member Clare Snyder was able to convince his provider to allow him to donate his bandwidth (and time) to host both forums, so we are back on the internet. If you wish to be subscribed to the lists, and we encourage you to do this, please send an email to garywolf@rogers.ca and put "RAA" in the subject line.

CHAPTER STATUS AND INSURANCE

Most chapters have now had their annual elections so it is time to send in your status reports, even if there have been no changes to personnel. The required names are those of the President, Treasurer, and Secretary, plus any two other named members of the chapter. All five must maintain continuous National membership for the status to be valid.

If your chapter is one that does not require National membership as a condition of chapter membership, you must also collect and send in the $15 fee from each non-National member. You may mail the information and cheque to Marina at the office address. Alternatively the status report may be emailed to raa@zing-net.ca. You may pay the fees by credit card by phoning Marina at 1-800-387-1028 or you may mail the cheque to the office address in the Rec Flyer.

Once your status report has been received and fees paid, all chapter events promoted as RAA events will be covered for $5 million premises liability under the RAA blanket insurance coverage that RAA Canada purchases from AIM insurance. Every year there are some chapters that ignore the request for a status report and their membership would have been liable if there were a claim. Make certain that your chapter is not one of these.

406 ELT POSTPONED AGAIN – INDEFINITELY?

They were supposed to have been required on February 1st, but the date was postponed because Parliament was prorogued. 406 ELTs are a hot potato that could alienate voters if there were an election so it is likely that we will not see the document signed for awhile.

In the interim the regs still require that Amateur Built aircraft carry a 121.5 ELT that has had its annual checkup. There will no longer be satellite monitoring of these units, so you will be relying on overflying aircraft to hear the signal. Transport's current buzz on 406 ELTs is that pilots have the option to install the units if they feel that they need the extra security. In areas near the border we might be able to get by, but pilots in the North will not have many

continued on page 36

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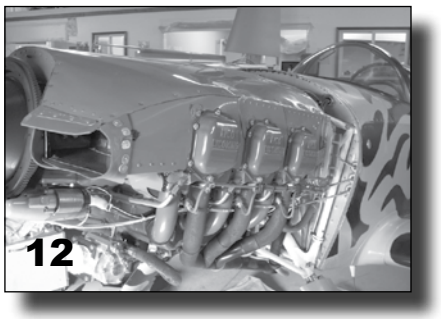
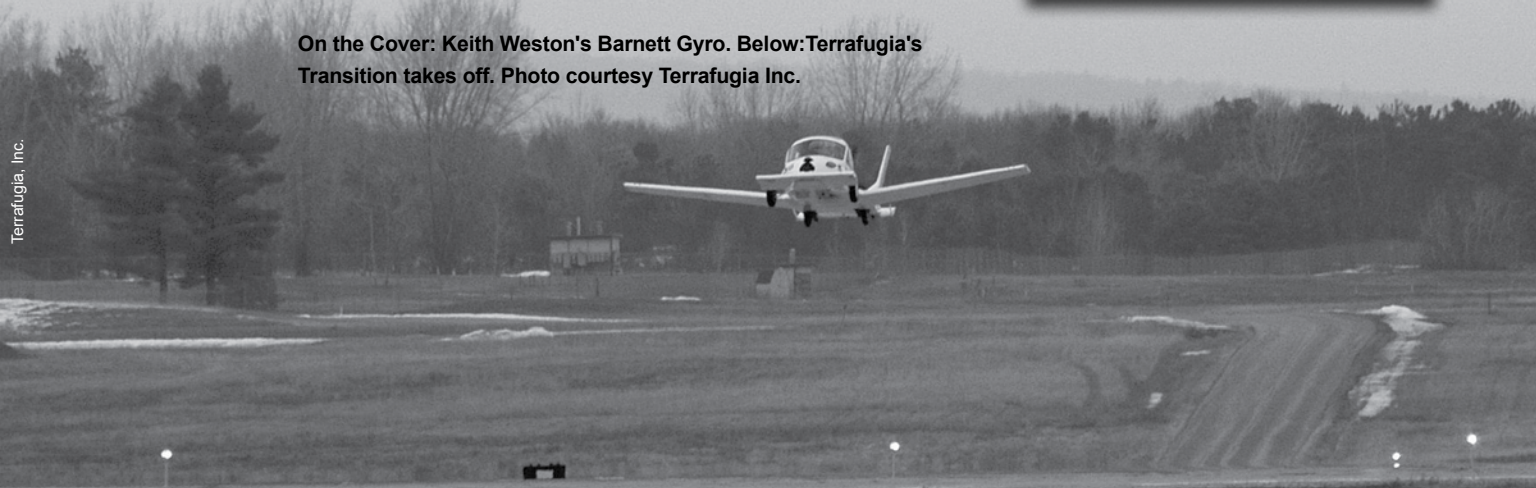
features



On the Cover: Keith Weston's Barnett Gyro. Below:Terrafugia's Transition takes off. Photo courtesy Terrafugia Inc.



Terrafugia, Inc.

Kieth Weston's

Barnett Gyro

By Gary Wolf

We have all seen

the tiny classified ad in Popular Science, the one with the rope launched Bensen gyrocopter, and most of us filed it in the "to do" list, then went on with life. Keith Weston, now president of the Collingwood RAA chapter, was a young country boy back then and his hobbies included jumping old cars over ramps set up on hay bales, and learning to drive cars on two wheels. He was intrigued by the ads and decided to build a gyro. In the early seventies Keith built his first, a Bensen with plywood skinned rotor blades and powered by a McCulloch 2 stroke drone engine.

Keith taxi tested the Bensen but never flew, probably not the worst choice one could make. Later he bought a single place Barnett JB4 from a friend who had lost his medical. The JB4 was powered by a Continental 65, and Keith flew it for several hours over a couple of years. Lest you form the opinion that only daredevils fly gyros, Keith has owned Cessnas and has flown many conventional aircraft. He built and currently flies his own Zenith 300, but his new toy is the Barnett.

Keith's latest gyro is a Subaru powered 2 place Barnett J4B2, an aircraft that is both simple and sophisticated. Keith chose the Barnett because of its inherent stability and good safety record, and because Barnett was able to supply every part if necessary. Keith elected to build most of the parts himself, buying only the gimbal head and the aluminum rotor blades.A gyro is at heart a very simple machine. There is a forward horizontal member to support the crew, a rear horizontal member to support the tail and main gear, and a vertical member to carry the engine and the rotorhead . The Barnett uses small diameter 4130 tubes welded together into a spaceframe. Keith gas welded his own fuselage with all tube joints internally drilled to form one continuous chamber, then pressurized it with nitrogen. A pressure gauge on the panel

verifies that no cracks have developed.

In a gyro the main rotor is not powered, so it is at all times in autorotation. Forward motion is provided by the engine and pusher prop. Because the engine does not power the main rotor, there is no need for a tail rotor to provide yaw control. Yaw control is achieved by a conventional rudder. The main rotor does not have a swash plate, so the blades have a ground adjustable pitch adjustment and are firmly bolted to the center hub. The hub bar pivots on a spindle shaft which passes through the gimbal head, and this gimbal head is attached to the masthead.

The gimbal head allows the spindle shaft to pivot fore-and-aft, laterally, or a combination of both via a mixer similar to the mechanism used for flaperons on conventional aircraft. The mixer is controlled by a conventional stick with conventional inputs, fore-and-aft for pitch, and left-right for roll. Rudder pedals control yaw. There is no elevator but there is a horizontal stab to counter pilot induced pitch oscillation.

Mechanical turbulence is accommodated by the flexing of the main rotor and the result is a very smooth ride

Keith's first flight in this aircraft was in May of 2002, and he has now logged over 135 flight hours. The Barnett is a work in progress and until this year it flew as a bare frame. Engine and re-drive development took many hours. Keith bought the

Below, left:a cushy seat for the pilot. The Barnett can accomodate 2. Right: the simple instrumentation serves just fine for the typical gyro mission: out and out fun. A tach indicates rotor rpm and a pressure guage monitors hydraulic pressure for the prerotator.

The flight was surprisingly smooth, despite the strong crosswind and mechanical turbulence

re-drive from Hans Meyer, but decided to manufacture his own one piece main shaft with the prop flange integral, rather than the original two piece welded assembly. While he was machining up parts he also decided to adjust the tension of the two 50mm HTD belts.

The engine chosen for this project was a Subaru EJ22, an aluminum flat four water cooled SOHC engine that has proven to be very reliable. The only engine modification was to reverse the intake manifold to position the air intake forward. For the intake Keith needed a rubber elbow with a takeoff for the idle speed control circuit, and a part from a dishwasher proved to be a perfect fit. The engine management computer and electric fuel pump are mounted on the floor behind the rear seat, away from any weather, and fuel (autogas) is carried in an aluminum tank mounted inside the mast.

A hydraulic pump is driven from the re-drive prop shaft, and it is engaged by a vacuum diaphragm taken from a Chevrolet Cavalier. This pump drives a hydraulic motor that engages the main rotor shaft through a short driveshaft and sprag clutch to prerotate the rotor. Keith's earlier gyros did not have prerotators, so it was necessary to hand prop the main rotor until it reached 60 rpms. If his takeoff was delayed by a landing plane he would have to get out of the cockpit and hand prop again before buckling up on the takeoff roll. The prerotator makes all of this unnecessary and it greatly shortens the takeoff roll. Rotor rpms and hydraulic pressure are monitored from gauges on the right side of the panel, next to the bypass valve which limits pressure to the prerotator motor.

Keith built his own engine wiring harness using the original plugs, sensors and computer, and the result is a quiet and dependable power unit that fires up within three blades and idles smoothly, even on the minus 15C day of our demo flight. He built his exhaust system with a center transverse muffler, and a long flexpipe and aluminum tube to carry the sound to the rear. In flight the sound level is reasonable and headphones could be removed without discomfort. The main rotor contributes almost nothing to the noise level, emitting only a low whooshing sound.

Until a year ago Keith flew this Barnett without any enclosure, even in winter when he would don his son's ice fishing survival suit for flights. The time finally came to build an enclosed cabin, which Keith designed and fabricated himself. This structure has no wood or metal, and is built entirely of foam ribs with fiberglass both sides. Where internal reinforcement was required he slit foam insulating rope and glassed over it to form a strengthening bead. The resulting structure is strong and light. The canopy is hinged on the right and has a deep left side for ease of entry, and a single handle operates two latches. The windshield is single curvature lexan but the swoopiness of the glasswork makes it look as if it were a blown bubble. Careful work and hours of sanding produced a cockpit that looks as if it were pulled from a mould. The interior is fitted with a light grey cloth that is used for the trunks of automobiles, and the exterior is painted in Tremclad. It is so smooth that anyone who did not know this would assume that it had a polyurethane paint with clear coat.

Getting into the cockpit is easy. The canopy tilts well out of the way and the passenger gets into the rear seat first. The passenger's legs straddle the pilot's seat as they do on most tandem aircraft. Before he gets in, the pilot must remove the leash that keeps the rotor secure fore and aft. Once the pilot is in, the canopy may be latched shut, and there is adequate room to reach and attach the seat belts. Our breath fogged the canopy almost immediately, but within a minute of engine startup the Audi heater core and the 12 volt fan began defogging the canopy. As we taxied to the runway Keith was careful to stick to the centerline, as the main rotor began freewheeling slowly. Before he built the cockpit, Keith could taxi with the leash attached, and on a warm day he still could. However today we wanted to stay inside the warm cockpit, rather than jumping out to remove

the leash before entering the active. By the time we reached the runway the entire shield was clear and we were warm. There is a lot to recommend a watercooled engine with forced air cabin heat.

As we backtracked the Collingwood runway it became apparent that the suspension was absorbing all the snow bumps left by the plow. The nose gear has a rubber puck in compression and the mains have long swing arms compressing automotive valve springs. At the south end of the runway Keith did the normal checks and the runup, and then closed the bypass valve to feed hydraulic pressure to the hydraulic motor for main rotor prerotation. When the blade reached 200 rpms the gyro was ready for its takeoff roll. Keith then pulled the stick backwards, gave the Subaru full throttle, and we were on the roll.

Descent in a gyro may be at any angle, depending on power setting.

The Subaru provided good acceleration and the rear-tilted main rotor quickly gained revs as the airspeed increased. After 200 ft of roll and about 55 mph the rotor reached 400 rpms. The Barnett effortlessly left the ground and began gaining altitude at a substantial rate. What was surprising was that the attitude of the cockpit remained level during climb to circuit height. When the main rotor's speed exceeded the speed of the prerotator, the sprag clutch automatically disengaged, and Keith was able to open the bypass and then disengage the hydraulic pump. Rotor blade rotation was being maintained by airspeed from this point, and the plane was then in autorotation. Had the engine stopped, Keith would have performed a normal landing.

The flight was surprisingly smooth, despite the strong crosswind and mechanical turbulence. A gyro is somewhat affected by crosswinds but these are accommodated with stick and rudder, same as any plane. Mechanical turbulence is accommodated by the flexing of the main rotor and the result is a very smooth ride. Cruise speed is 70 –75 mph, and Keith has occasionally pushed to 90, well under the 115 mph Vne. The large windshield provides an open air clear view, and a tiny glider-type "yaw string" at the nose encourages the pilot to keep the gyro flying straight.

We flew only one circuit on this cold day because we could see that snow was coming down over Collingwood harbour, but it was enough to show

(continued on page 41)

Sebring Light Sport Expo 2009

Wayne Bezner Kerr
RAA 9135

ANY CANADIAN PILOT KNOWS that winter can be hell, and maximum creativity may be required to get through it with our spirits intact. This winter has been a real eye-opener, with high winds, drifting snow and sub-zero temperatures starting earlier than we expected. By the end of the Christmas break, the weather was really getting me down.

My family lived in the US for six years while my wife was at school. During that time I became a Designated Pilot Examiner for the FAA's Light Sport Branch in Oklahoma City. Through a deal with Transport Canada, it was arranged that US pilots could come up here to take their checkrides, and go home with a US pilot's certificate. DPEs need to take a checkride every year, to make sure we have not strayed from the straight and narrow. When I found out that my Inspector would be attending the Light Sport Expo in Sebring, Florida at the end of January, an idea was hatched. Why not head to Sebring, get some sun, visit friends and take my checkride in the same weekend? After assuring Rachel that driving to Sebring and borrowing an aircraft for the checkride was much cheaper than a trip to Oklahoma City and renting one, I received my official blessing.

The drive south was remarkable – no rain, no wind and no snow at all. This was a first for me, and I enjoyed it!

I spent Thursday night at the wonderful Wallaby Ranch in Polk, County, Florida. Wallaby is an international hang gliding destination, carved out of an

old cattle farm. They have five purpose-built tow planes called "Dragonflys", which are so ugly they become beautiful. The hang gliders are launched on dollies, with the pilots fully proned out and ready to fly. The Dragonflys hit the power and a few meters later the gliders pop out off the dolly, while the pilots do whatever it takes to stay low and in the proper tow position until the Dragonfly can rotate off the ground. Then it is full power up to 2000 feet, where the tugs wave off the hang glider pilots, then arc over at idle for a near vertical descent back to the field. The tugs are powered by 65 HP Rotax 582 engines, with a gearbox fitted to allow the huge six-blade props to freewheel at idle. The drag from all that prop spinning like a maple-key allows unbelievably steep approaches that would bust jugs off any Supercub. When things are hopping at the Ranch, the sky is thick with gliders and tugs coming and going from all points of the compass. It is a combination of the Nutcracker ballet and the flight deck of an aircraft carrier. For a pilot like me – it is heaven!

I flew 75 miles to Sebring the next morning with Malcolm Jones, the owner of the Ranch, in his SeaMax M22 amphibian. The SeaMax is a slick, composite, Light Sport aircraft with electric retractable tricycle gear, side by side seating, a high wing and a pylon-mounted 100 HP Rotax 912S. We had no problem flying off the big, open, grass field at the Ranch, and climbed out at about 700 feet per minute with the three-blade Warp Drive prop pitched for 5100 RPM in the climb (about 85 HP). The SeaMax is imported from Brazil by World Championship hang glider pilot and tug pilot extraordinaire, Carlos Bessa.

We cruised about 100 mph indicated, and had a great time splashing around on some of Florida's thousands of small lakes. It seemed that everywhere we went, we saw at least one of Florida's Progressive Aerodyne SeaRey homebuilt amphibians, either on the water or cruising past in the air. These are popular in Canada as well, and I saw at least fifteen of them in Florida over 3 days. SeaReys are much more customized than other LSAs, with various combinations of gear and flap actuation, hull materials, engines and propellers, not to mention panels and interiors. There is a new Light Sport version of the SeaRey coming on the market, and I am sure Kerry Richter and his team will enjoy good sales success with the new aircraft.

The show seemed quiet to me, especially considering it was a Friday in Florida, with incredibly good weather to be outdoors. This might be due to the terrible high winds that have plagued the show in recent years, but many vendors felt that the downturn in the economy was keeping people away. Although I met plenty of well-heeled couples thinking of trading their Bonanzas and 210s for a Light Sport Aircraft due to the medical issue (some pilots can operate without a medical), many people seemed to feel the typical cost of over $100,000 US for a Light Sport was the only nail the coffin needed. With the rise in the US dollar, many prices are coming down slightly, but over-stocked distributors who paid for their aircraft in Euros last year look pained at the thought.

Many vendors felt that the downturn in the economy was keeping people away.

There was a new Chris Heinz bushplane flying at the show, the CH-750. It reminds us of the classic 701, but seems little wider and taller. The Zenair / Zenith designs certainly have a loyal following south of the border, and there was always at least a few potential customers lined up with questions. The Heinz family offers their aircraft as kits, as well as factory-built.

Plastic airplanes are the most common in the LSA community, and I started using the term "GLOWPA" to describe them. GLOWPA, of course, stands for

Mark Munzel

Not exactly a GLOWPA: a Q2 based in Abbotsford, BC. Mark Munzel photo.

Generic Low Winged Plastic Airplane. The airplane that had my own attention was the lovely Lambada motorglider distributed by hang glider pilot (hurray for hang gliders!) and airline captain Joe Bostik. The Lambada is a snazzy side-by-side aircraft with the ubiquitous 100 HP 912S, a feathering propellor and a beautiful wing with polyhedral and a cranked back leading edge planform. They reported selling fourteen last year, which is a very good result for a niche product in this market. I want one!

Among the high-wing designs, the Flight Design CT still reigns as sales king, with 70 units sold in 2008. The CT is wide on the inside, comfortable, has good visibility and offers excellent performance to the margins of the LSA speed limits due to its light weight and clean, cantilever wing. Flight Design is promoting a new all-aluminum aircraft called the "MC", and I am sure it will be a strong seller too. Flight Design aircraft are imported by long time ultralight industry veteran (and hang glider pilot!) Tom Peghiny. It is great to see him reap some success for his years of hard work on the Light Sport design standard as chair of the airplane subcommittee.

In the Weight Shift Control arena, Apollo North America and P&M Aviation had their wares on display and flew more than most manufacturers. Apollo's Delta Jet and Monsoon trikes are completely wrapped in swoopy fiberglass bodywork, and are powered by engines from the simple Rotax 582 two stroke to the expensive 912S. As with everything else in aviation, the big, high compression and heavy 100 HP engine is the most popular, despite the high cost and adverse effect on handling. Apollo is a big proponent of the MGL Enigma EFIS/EMS in both their trikes and their fixed wing Fox airplane. The Enigma integrates the functions of a standard EFIS/EMS with an on-board GPS navigator and a lot of customer programmability. Just a few years ago a colour glass cockpit in a homebuilt was a rarity, and unthinkable in a trike. Now they are almost standard equipment!

The large Dynon EFIS display was everywhere. It combines engine monitoring and a primary flight display, with an attitude indicator, skid ball, VSI, ASI, ALT all integrated in full colour. I liked the symbology, but found it hard to read in direct sunlight, and wished it could be brighter. The Dynon is definitely the hardware of choice among the rest of the LSAs we saw at the show, and seems to be fitted to about 70% of all the aircraft we saw in the display area. The Dynon rep assured me that new units are quite a bit brighter, and tells me that the autopilot add-on is selling well. .

England's P&M aviation showed their Quik R and GT 450 model trikes. The Quik R has broken

GLOWPA, of course, stands for Generic Low Winged Plastic Airplane

through several speed barriers for trikes, and is apparently capable at trimming at 100 mph, with a top speed in level flight even higher than that. I did not get a chance to fly it myself, for reasons outlined below. The Quik R is powered by the (you guessed it) 100 HP 912S engine, and is the speed king of the Weight Shift Control LSAs. Believe it or not, P&M's chief designer and lead engineer is a long time hang glider pilot too…

I completed the flight portion of my recurrent checkride on Saturday afternoon in an aircraft loaned to me by Apollo North America. It was a beauti-

ful afternoon to go flying, and I enjoyed the views of the Florida countryside, lakes and fields. Things went smoothly, and the oral was scheduled for the following morning. Since my boss is the only FAA staffer I've ever met who is also an active hang glider pilot (!), I was actually looking forward to my annual verbal beating on regs, rules, procedures and all the things that we do wrong.

Unfortunately, when I arrived for my oral exam the next AM, I found my boss tied up investigating a serious crash. A Remos LSA with two on board crash shortly after takeoff, killing the pilot at the scene. The passenger was airlifted to the hospital minutes later, thanks to medivac services being based right at the Sebring airport. The accident aircraft crashed shortly after takeoff. Like many LSAs, the Remos aircraft has quick folding wings. While the cause of the accident is under investigation and no cause has been attributed, many of us spent extra time checking out our aileron connections after seeing the terrible carnage. On the show circuit we all get to know each other, and losing a fellow demo pilot cast a long, dark shadow on the rest of the proceedings.

I left Florida on Monday, after borrowing a few more fun aircraft to fly. Heading north, I ran smack into the great Ohio Valley Ice Storm of 2009. Although it felt like punishment for all the good weather I'd enjoyed for the previous five days, it did give me plenty of time to reflect on what I'd seen. The industry is in a time of transition, and not all of it is very attractive. The days of greasy-fingernail folks building or re-building simple airplanes for economical and fun flying are largely gone. The industry, and the major organizations that operate around it, have taken up a new orbit around pilots with fewer technical skills but bigger checkbooks. The new aircraft most definitely are fun to fly. They are sporty, climb very well, do a bit of light touring and operate for a few bucks per hour of car gas. But the cost of entry is extraordinarily high!

On the last day of the show I sat looking at a beautiful "Cub-alike" made by a major player in the industry. It was a thing of beauty – as nice as any Cub I have ever seen, anywhere. But as I stared at it, I reflected that I could buy a run out Cub, major the engine to new limits, build new wings with all Univair parts, cover it in modern fabric and finish it into a show winning Sport Plane, and still have $90,000 USD left over compared to the cost of a "new" one. In other words, I could build myself a like-new Cub, and still buy a pretty darned nice 0-360 powered RV8 with constant speed and a bunch of goodies to go with it for the price of the LSA version. Is this progress? You will need to decide for yourself. RAA

Wayne Bezner Kerr is a confirmed aviation junkie and proven hypocrite. Despite the rhetoric of the last paragraph, his wife tells us that he and a partner just bought a SeaMax for registration as an AULA in Canada, and currently operates an Apollo Fox LSA for checkrides. He has owned two RV6As, and currently slobbers over an RV4. He also flies hang gliders.

Engine Cooling for Speed, Economy and Engine Care

Wayne Hadath, Treasurer RAA National

It is my opinion and I think most would agree that heat is the greatest contributor to engine wear. It is important to make sure our engines operate within the manufacturer's recommended temperature ranges. With Homebuilt aircraft we have the option to build systems that can affect cooling and cooling drag. To affect cooling drag we first have to get an understanding of what is occurring before we either make a cooling system or modify an existing one. Fortunately, we live at a time when it is now affordable to purchase and install engine monitors in our homebuilt aircraft. These monitors enable us to see CHTs and EGTs for each cylinder, which allows us to better understand and develop more sophisticated cooling systems. If you read the manual of your particular engine, the manufacture will give you temperature ranges for your engine and hopefully also give you some optimum guidelines. These optimum temperatures are good targets. But as with many things in life there are differences of opinions on what optimum temperatures are and what are expectable highs and lows. I have met people who have little concern for how low or high their CHTs are or even concern over how low or high their oil temps are. I have met racers and aerobatic flyers who seem to have no concern as long as temps are below the manufacturers stated maximums. My personal limits for engine temperatures are, whether cruising or racing: oil temps between 185 and 200 (however on high power climbs I am OK with 225 for short durations). CHTs not above 400. My understanding is that it is not a good idea to run LOP (Lean of Peak) with any CHT above 400. In my opinion if you can keep your temperatures in the optimum range you have the best chance of reaching engine TBO no matter if you are a cruiser, racer or acrohead.

It is no secret that cooling drag can be a large portion of the entire drag of an airplane, but few of us bother to look into ways to reduce it. However if one is so inclined cooling drag can be managed. Once we have decided on the range of

engine temperatures which we are comfortable with, then these can be our targets and we can design or modify a cooling system to accomplish these temperature ranges - the benefits will be a happier engine, a less stressed pilot, more overall speed, better fuel economy and probably a fatter wallet. I race my daily driver so I am one of those who are so inclined. It is my desire to understand what is occurring in the cooling system so I can affect it to get more speed, which has the benefit of fuel economy and therefore an aircraft with a longer range. Crazy isn't it when we can get better fuel economy out of making an airplane a faster racer!

The engine that I run is a stock 260 HP, fuel injected IO 540 with twin Slick Mags and a Bendix Fuel system put together by Bart Lalonde at AeroSport Power in Kamloops BC. The benefit of ordering from Aero Sport Power is the cylinders have been match flowed, which means that fuel flows difference to each cylinder will be less than .5 gals and therefore LOP (Lean of Peak) operation will be possible. LOP operation has the benefit of lower engine temperatures and increased fuel economy but should not be used if any of the CHTs are above 400. I generally cruise at 210 MPH on 10.5 gals per hour which works out to 20 MPG. Full race speed is 250 MPH at 23 gals per hour. It takes a lot more fuel to get that few more MPH.

We now claim the title of "Fastest Rocket in the Known Universe"

Most aircraft cooling systems use baffling round the cylinders to direct the airflow, and use flexible baffle seal to seal the side baffles to the upper cowl. I decided to build a Pressure Plenum when I designed my cooling system and I chose this system for a few reasons. A Pressure Plenum has a solid top so the high pressure air is captured above the engine with no pressure on the top cowl and a Pressure Plenum makes the job of reducing and eliminating air leaks easier. Fit is the key when making a cooling system. Any leaking air that does not go where you intend it to go is wasted and increases

continued on page 30

Opposite: A Plenum looks like a normal air dam...
... until the aluminum lid (pictured here) goes on. Note the rubber seals to the air intakes.

Transport Canada Transports Canada

NAV CANADA

Golden Horseshoe Airspace Changes

This presentation is a co-ordinated initiative between NAV CANADA and Transport Canada. It covers the planned major changes that will come into effect on Mar. 12, 2009 in terms of the airspace restructuring and procedures for pilots operating in the Golden Horseshoe airspace. A number of Civil Aviation Daily Occurrence Reporting System (CADORS) will be reviewed, followed by a detailed review of the airspace changes being implemented. Preferred pilot practices in the context of communication and airmanship will also be discussed. The presentation will run approximately 90 minutes with plenty of time to answer any questions. If you attend this presentation, it will meet the requirements of Canadian Aviation Regulation 401.05 (2) (a) for Recurrent Training.

Spring 2009 Presentation Schedule

Toronto (Transport Canada Monthly Aviation Safety Seminar)	Transport Canada – 3rd Floor Auditorium 4900 Yonge St., Toronto	Feb. 18 – 19:00
Barrie	Georgian College, Alumni Hall (K229 – A side) – enter off Duckworth St. and park in Lots 1, 2 or 14	Apr. 1 – 19:00
Belleville	Fairfield Inn & Suites 401 & North Front St.	Mar. 14 – 09:30
Brampton Airport	Brampton Flying Club's Private Classroom Lecture Hall – call to reserve a seat: (905) 838-1400	Mar. 1 – 13:00
Brantford Airport	Brantford Flying Club – lecture hall (downstairs)	Feb. 21 – 09:30
Toronto (Buttonville) Municipal Airport	Leggat Aviation Ltd. facilities – Hangar 12 (east side of airport)	Mar. 11 – 19:00
Burlington Air Park	hangar beside terminal building (check signs)	Mar. 7 – 13:30
Hamilton (John C. Munro International Airport)	Canadian Aviation Expo. at the Canadian Warplane Heritage Museum	May 2 – 13:00 May 3 – 13:00
London International Airport	Royal Canadian Air Force Club 2155 Crumlin Side Road www.427wing.com	Feb. 12 – 19:00
Oshawa Municipal Airport	R.A.A. Rust Remover – Corporate Aircraft Restoration hangar	May 9 – 09:30
Peterborough	Best Western Otonabee Inn, 84 Lansdowne Street, Peterborough	Apr. 4 – 09:30
St. Catharines (Niagara District) Airport	St. Catharines Flying Club – lecture hall	Feb. 21 – 13:30
St. Thomas Municipal Airport	St. Thomas Municipal Airport – main terminal building	Mar. 26 – 18:30
Waterloo Regional Airport	Runways Café – Waterloo-Wellington Flight Centre	Mar. 2 – 19:00
Hanover-Saugeen Municipal Airport	Hanover (C.O.P.A. Flight 54) Rust Remover, Hangar A/B	Apr. 26 – 09:15 and repeated at 13:00

Canada

Windsor – Toronto – Montreal

Airspace & Services Review

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The Gravity of it all

BY JOAN COX / GROUND SCHOOL WAS ALMOST FINISHED and I was looking forward to getting in to the airplane and fly. My first lesson: I'm nervous, excited and then disappointed as a maintenance issue leaves me without a plane that morning and the next slated lesson is scrapped due to bad weather. Finally in the air, my first few flying lessons are on attitudes. I know what you may be thinking, but I'm talking about the airplane's *not mine*, athough my attitude generally needs adjusting about as often as an airplane's does.

It had been several years since I had taken control of an airplane. It was like riding a bicycle. The basic skills are still there, but like an uncut diamond it needs a lot of polishing and I mean *a lot*. The next several lessons are all about slow flight, climbs and descents, turns; gentle, medium and steep turns are practiced as well. I'm either in a diving left turn or a climbing right turn. Incipient spins are explained and demonstrated. We are expected to be able to know how to recognize them and how to recover from one if necessary. They seemed so easy after the stalls that we did the week before. Practicing stalls is not that bad really, but a lesson I will remember for a long, long time.

Rules? We have rules for everything and everywhere. Do this, don't do that. VFR, IFR, SVFR, you learn - Aviate, Navigate, Communicate; From high to low, look out below. But this first rule that you must obey is to never and I mean *NEVER, NEVER, EVER* scare your instructor. Every time I replay the scene as it happened in my head, I can't believe what I did. Imagine if you will, you are about to practice a power off stall. You set the attitude; you watch your airspeed, carb heat on, power off. Keep that attitude, back pressure, more back pressure on the control stick. But the airplane just doesn't want to stall. But just as you check forward on the yoke... the plane stalls. Craaaaaaap! The nose drops and now you're looking straight down at the ground. Honest, you can't tell anyone otherwise, that plane is pointed straight down! Then, in slow motion your notes from your knee board and slowly float up toward your face, obscuring your vision. Cool, you think. You try to retrieve them as the papers hang in suspended animation around you and your instructor. But wait, why are your hands up there, shouldn't you be in control? You hear a 'Whoa' coming from your instructor. Oh my, that can't be a good thing. Your instructor's eyes are wide open now as he takes control. That got his attention! Well, you find that was exciting too as it got your adrenalin going and the heart pumping. You survive. Survive to learn not take hands off the controls: it tends to freak out the instructor. You learn to say "you have control" when you hand over the yoke to someone else, and to make sure they have their hands *firmly* on the controls when you let go.

And so the learning continues. Next, Circuits!

Change to Airspace Classification

NAV CANADA, the country's provider of civil air navigation services, recently completed an aeronautical study of the airspace in the London, Ontario area. The study recommended a change to the airspace classification at the London Airport.

A Control Zone classification change from Class D to Class C (transponder mode C required) will enable more effective and efficient provision of air traffic control (ATC) services at the London Airport. This change will take effect March 12, 2009 at 09:01 Coordinated Time Universal Time (UTC). The appropriate aeronautical publications will be amended. For further information, please contact:

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London, Ontario

AIRCRAFT SPRUCE CANADA GRAND OPENING
SUPER SALE AND FLY-IN

Brantford, Canada – Aircraft Spruce Canada will be hosting their official Grand Opening on Saturday June 6th from 8am-5pm at 150 Aviation Avenue on Brantford Municipal Airport. Fly-in or drive-in for discounts, demonstrations, and an enjoyable day.

Aircraft Spruce will provide free hot dogs and beverages throughout the day to the attendees. Representatives from a number of leading aviation products, including a range of avionics items, will be on hand to demonstrate and discuss the benefits of their products. These representatives will include Aerospace Logic, Drager Safety, Icom Canada, Lamar Technologies, Plane Sights, and more.

During this one-day sale, an assortment of popular aviation products will be specially priced to provide additional savings to those who visit the facility. There will also be a number of raffle prizes given out during the day. For detailed information including promotions and activities/seminars scheduled for this day, please visit www.aircraftspruce.com

"Canadian aircraft builders, owners and pilots have been a big part of our business for years," said Aircraft Spruce President Jim Irwin. "We are pleased to open a facility in a great location such as Brantford. We can ship orders to customers anywhere in Canada at efficient shipping rates and substantially reduced delivery times. Customers in the Greater Toronto Area can visit our store for the building materials, avionics, headsets, pilot supplies and all other aviation products they need."

Aircraft Spruce's complete product line is available at www.aircraftspruce.com as well as through the company's free 800 page catalog. For more information, please contact Aircraft Spruce Canada at 877-477-7823 or 519-759-5017.

Across Canada

RAA Chapters in Action

RAA Scarborough/Markham Chapter

We wish to thank Ted Rankine who spoke to our November meeting about his adventures with Tiger Moths (tedrankine@rogers.com). Of the total of 8,492 built, 1,747 were made in Canada. They were used for military purposes, barnstorming, crop dusting, air racing, ambulance services and as glider tugs; they were operated on wheels, floats and skis. Ted owned Tiger Moths for many years, and led a couple of cross-country flights across Canada. Although tricky to fly, with very sensitive controls, he developed a great love for these aircraft. This affection is very much on display when he talks about them. Thanks for your inspiration, Ted.

We wish to thank Alan Dares, president (416- 418-1415), Tony Cianfarani, AME and Terry Ward of Savage Aircraft Sales Canada Ltd. (www.savageaircraft.ca) for giving us a presentation at our March meeting about the Savage aircraft, an advanced ultralight (1235 lb gross weight) from the Czech Republic manufactured by Zlin Aviation. The Savage is a modern version of the Piper Cub, powered by a Rotax 912 ULS (100 HP) engine, 104 MPH cruise, 41 MPH stall, takeoff 360 feet, landing 270 feet, 4.25 hours duration at cruise. It is a docile tail-wheel aircraft with 3- position flaps and folding wings. It sells for $70K + tax. This would appear to be a beautiful, reliable and affordable aircraft at an attractive price. Thank you, gentlemen, for the detailed introduction.

Bob Stobie

RAA Vancouver (chapter 85)

The April meeting featured Jim Matthews, an alumnus of Avro Canada and one of those privileged to have worked on the original Avro Arrow. A DVD was viewed by chapter members with incredible footage of the assembly and test flying of this remarkable aircraft, along with many personal anecdotes Jim shared with us. Many questions and lively discussion centred on what might have been and the shortsightedness of government in the termination of this wonderful machine.

Members are looking forward to the chapter Fly-in in early July (see Coming Events, on page 41), and the popular pancake breakfasts continue on the second Sunday of each month.

Ottawa/Rideau

The summer fly in date has been set for June 28, 2009 it is expected that the field will be drier this year and create easier access for Vintage and Classic automobiles.

Dave Stroud reported that he will be having his pre-closing inspection on his main spars and the cost will be $385. Inspections for homebuilt aircraft are now about $1800.00 (!)

Bob Moorhead thanked the chapter for the Lifetime achievement award he received at the last meeting. Tom Bennett reported that his Tcraft ll homebuilt is coming along nicely. The fuselage and tail feathers are covered and the wings are ready for cover. It will soon be ready for paint. The engine still needs to be rebuilt and they he and Bob Moorhead still need to find or make an engine mount.

RAA London/St. Thomas

President Angus McKenzie reported in the Slipstream Newsletter of his recent trip to Africa. Working with CEDASS, they brought over a container of equipment for the establishment of a working farm in Southern Sudan.

Gary Wilcox' RV-7 was featured on the recent cover of the chapter newsletter. He's now flying off the required 25 hours and the workmanship is described as first rate. Perhaps we will hear more about this aircraft in later issues of the Recreational Flyer.

Don Hatch then introduced Air Traffic Controller Dave Poston who introduced the guest speakers for the evening, controllers Ray Neill, and Mike Fitzgerald from the London Tower. They were kind enough to spend the evening talking to the club about the finer points of flying in and around London airspace. They made the following points during their talk.

RAA4901 - Saskatchewan

Web master J. Davis has recently revamped the Chapter web site.

The last meeting was held at the PPAC hangar on February 10 at 7:30 pm. Some old business was recapped and new business presented.

The debentures provided by members for the purchase of the hangar were addressed. A plan for

repayment was approved by the membership in attendance. Thank you to all who helped fund the purchase of our club's home.

The library has been inventoried by Harold Fast. Thanks for taking care of the job, Harold. The library is available to all members; an electronic listing of the library is available on line on the RAA 4901 website. PPAC has installed the furnace (we were toasty-warm for this meeting). As well, there may still be space rental opportunities. Contact Brad Hewlett to inquire. Shane Armstrong is looking for old aviation maps for the Aviation Studies program at Walter Murray school. If you have some spares, pass them his way.

Lastly, the fundraising event for the year has been postponed to the fall. The committee needs a bit of planning time. If you're interested in helping out, come to the next meeting on April 14 at the PPAC hangar. The evening activity was a "Name that Airplane" quiz put on by Gary Toffelmire. Congrats to the winners who won books from Gary's private aviation library. If any one has pictures from winter flying, be sure to send them into the newsletter editors! Upcoming Events Next RAA/COPA meeting will be April 14 at the PPAC hangar. Breakfasts are still being held at the Western Development Museum on Sundays at 9:00 am.

Wise Words

-The first thing every pilot does after making a gear up landing is to put the gear handle DOWN.
-A thunderstorm is nature's way of saying "Up yours!"
-A terminal forecast is a horoscope with numbers.

TRANSPORT CANADA CHANGES SEATING AND GROSS WEIGHT RULES IN THE A-B CATEGORY

In Spring 2006 while RAA was attending the Transport Canada meetings to deal with Light Sport and other categories, Transport's reps let it be known that by using the exemption process they proposed to allow one US company to register their seven seat, 7500 pound planes in the Amateur Built category. The American manufacturer had been romancing Alberta with promises of a composites certification facility and a factory to build these aircraft, all of which later proved to be vapourware. In exchange he was being allowed to register seven seat planes at a gross weight approaching 8000 pounds, while Canadian manufacturers would still be limited to four seats and 5000 pounds because no other manufacturers were to be allowed the use of the exemption.

It seemed highly unfair that an import should be granted these marketing privileges, yet that Canadian manufacturers like Murphy, Dream, Bushcaddy, and Zenith should be denied the same privileges, so RAA went into action to change the situation. The Murphy Moose, with its capacity for six seats already in use in the States, would be the immediate beneficiary of an expansion of such privileges. RAA began a series of phone and email exchanges with manufacturers and Transport to bring this about.

The RAA efforts have recently borne fruit, and our regulations have now been amended to remove the restrictions on gross weight and the number of seats in Canadian Amateur Built aircraft. Should you wish to build a replica of the B-36 there is now nothing preventing you, except perhaps that you might singlehandedly create an aluminum shortage. It is more likely that builders of four seat aircraft might wish to have a full rear bench seat with seat belts for three. It will still be necessary for the builder to use reasonable figures for gross weight and for the plane to remain within acceptable CG limits at all loadings. We are not getting an exemption from physics here, just from regulatory restrictions.

CANADIAN AVIATION EXPO MOVES TO HAMILTON

The Canadian Aviation Expo will be held May 1-3 2009 at Hamilton Ontario in the Warplane Museum. For this event the airport has agreed to waive landing fees, so this is a chance to add CYHM to your logbook. RAA Canada will be represented with displays and demonstrations of the many building techniques used in our aircraft. Would you like to display your skills with composites, wood, metal, or other materials? There is still space available - please contact me by April 20 th to reserve a spot or to volunteer for a morning or afternoon on that weekend.

Gary Wolf

garywolf@roger.com 519-648-3030

RAA member Mac Mcculloch recently began finding accumulations of unusual material in the gascolator and filter of his 912 Buzzard that had been running for two years on autofuel containing ethanol. He traced the contamination to the inside surface of the fibreglass wing tanks, which were made long before vinylester epoxy resin became widely available. The inner surface of the tank is chalky and the resin has become brittle and is now spalling off, likely because ethanol can leach the plasticizers from polyester and many other resins.

Jack Shurey's Fleet 80 Canuck

Putting a Classic on Steroids

MY FLEET 80 CANUCK started life as CF-GAW in 1947, Serial Number 209, and as far as I know as a trainer at Central Flying Club in Toronto. I first saw this aircraft in Pitt Meadows at the Aero Club of B.C. as I was completing my Private Pilots License in 1968 (on Fleet 80's) and did have one flight in this aircraft as well as flying CF-DZP, DZA, DZG, EAU, DQE, ENP, DDU, EAS, and DQR, all Fleet 80's

I again located this aircraft, and purchased what was left of it in 1997 after asking around about a project aircraft. Bob Gilmore, a local Fleet legend on the west coast, had taken it out of service for fabric needs Aug. 31, 1978, found some corrosion, and put it in storage.

In 1987 he had the fuselage stripped, sandblasted, and completely rebuilt, then epoxy coated and put back in storage until I purchased it with the condition Bob be involved in my project and have a chance to fly it again (this was his baby).

While still living in Pitt Meadows (CYPK) and close to the airport I had lots of help in deciding what to do with this plane. One of the people that must be named was the late Jean-Mac Ranger, a commercial float driver and AME (he would have been the test pilot).

The decision was made to install a Lycoming TO 320 of 160 HP Turbo-Normalized (this may be the west coast conversion mentioned in a COPA some years ago).

I also wanted amphibious

Top:seat belts NASCAR style; Tri Pacer wing and the Fleet fuselage etc.; Turbo charger as on the TO-320; The Fleet's new panel; Pilot side showing the Cessna brake master cylinders and the rear of the engine.

floats, flaps, a second fuel tank, baggage door, electric rudder and elevator trim, and a 2100 Lb. gross weight. Oh, and also a fishing rod, or gun storage tube back of the baggage area bulkhead. I got it all, but have spent 9 years working on it.

An engineer friend did the design work for the flaps as well as provide the pivot point, I have 4 position flaps push rod controlled about 14" deep and 5' long, and start one rib out from the fuselage and end one rib short of the ailerons. My second fuel tank is belly mounted and holds 26 imperial gallons; I lowered the belly by 6" to accommodate this and have a cutout down the top for the control cables with a filler in the side of the plane. The baggage door is a no brainer - just a couple of tubes welded to the fuselage and build a door. Electric trim is provided by a pair of Mac actuators and push rods; I did enlarge the size of the rudder and added a cutout for the trim tab. I also had help addressing the new gross weight of 2100 lbs. having a set of the original Fleet drawings helped with this.

The amphibs are a Mike Hershfield (another homebuilder) creation and with his help I modified them to fit the Fleet. New hard points were needed and welded to the lower longerons at two main intersection points, as well as a hydraulic power pack installed just back of the baggage compartment.

The best part should be the engine conversion. I started with a very low time O-320 E2D and added a Moony M20 Turbo Kit from an O-360 (just shorten the exhaust cross over pipes by about a ½ " and add a 1 ½" extension to the air box, every thing else is bolt on.

This will provide 160 HP up to about 9000 Ft. (great for high elevation lakes) . The engine mount is from a Lancair I think, and is for an O-360 with a bit of modification to the fuselage end. The nose bowl is from a Grumman A1A cut down to fit the Fleet frame, and an air intake added to the lower portion. I am starting with a McCauley 78" X 44" fixed pitch prop; this should be OK but only time will tell.

I have built a new dash and have it installed c/w radios etc.

As this is a home built or experimental aircraft I had to change the name and call sign, it is now called ***Turbo*-Fleet Master C-GJFP** and with any luck should be in the air some time this year (or is this just wishful thinking ?)

I also have a Piper Tri-Pacer on OM 1953 version O-290-D2, 135 HP C-FJHC. It flies regularly and it makes it hard to work on the project when we get a nice day: and since moving to Vernon in B.C.'s Okanagan we get a *lot* of great days for flying. RAA

Jack Shurey. 250-549-3788 jshurey@telus.net

0-290-D-2 in Jack's faithful Tripacer. The Fleet will have somewhat more punch with 160 ponies under the cowl.

Everything You Didn't Want to Know About Registration Letters

Gary Wolf

THERE IS A LOT OF CONFUSION about how Amateur Builts and UL's must comply with the CARs regarding registration letter size and placement. For reasons of esthetics most builders prefer not to have letters under the wing. The question then becomes how large must the letters on the fuselage or tail become? Here is the CAR that determines this:

CAR 222.01(2)(o) sub-paragraph (ii)

o) the height of the letters in the marks on the side surfaces of a heavier-than-air aircraft that does not display marks under the wing or cabin, shall be 30 cm (11.8 inches), except that, where required by the dimensions of the structure of the aircraft, that height may be reduced to:

(i) the maximum height allowed by the dimensions of the structure of the aircraft or a height of 15 cm (5.9 inches), whichever is greater, or

(ii) in the case of a glider, an **amateur-built aircraft or an ultra-light aeroplane, the maximum height allowed by the dimensions of the structure of the aircraft or a height of 7.5 cm (3 inches), whichever is greater…**

HEIGHT OF LETTERS

Many think that 11.8" inches is required, but in the case of A-B and UL aircraft this may be 5.9" or 3" as determined by the space on your plane.

If you choose to put the letters on the side of the fuselage the question to answer is how much vertical space do you really have? I called Ottawa to get a ruling and found that the turtle deck and the curved underbelly of a plane do not count in the calculation. What matters is the vertical space, essentially the space between the upper and lower longerons.

There is also a requirement for a 50mm buffer zone surrounding the registration, so reduce the vertical distance between the longerons by 100 mm (nearly 4 inches). If you use the remaining vertical dimension as the height of your registration letters, you have met the requirements for A-B and UL aircraft. However if the size left for the letters is less than 3 inches you must look for a more suitable spot. This will probably be the vertical fin and rudder. You are obligated to use the larger of the two locations.

Elsewhere in the CARS the height to width ratio is discussed, and it is 3:2 for most letters except "I", which is 6:1 . Hyphens must have a length of 2/3rds the height of the letters, and the stroke width must be 1/6th the height of the letters.

If you decide to place your letters on the vertical tail how do you decide the size? Draw a rectangle on tape on the tail and then reduce it by 50mm all around. Using the required proportions, determine the appropriate size of the letters. The letters and hyphen must be spaced by a dimension not less than ¼ the width of the letter "C". Remember that 3 inches is the minimum.

Pay particular attention to hyphens. TC inspectors do tend to focus on these. After displaying my plane at a show I once got a call from Enforcement to say that my plane was grounded until I corrected the (serious) hyphen problem. Another pilot had a problem getting released from his 25 hours because his hyphen was incorrectly proportioned. Let's leave the TC inspectors more time for safety issues by paying close attention to our hyphens.

Oh yes, your letters must be plain and simple Roman capitals that are unadorned and are of a solid stroke. The colour must be a contrast to the surrounding area. You may lean them over by up to 35 degrees from the vertical in either direction but probably not both at the same time.

Should it happen that your plane cannot meet any of the space and size requirements, you will need a ruling from Transport. There is also an exception for planes that are painted in military colour schemes, but these too will require a special ruling.

Transition

Let The Revolution Begin

ON MARCH 5, 2009, TERRAFUGIA SUCCESSFULLY FLEW their Transition Roadable Aircraft for the first time. Although its creators have no illusions about an “airplane in every garage” or anything even remotely Jetsonesque, anything that makes airplanes more practical is a welcome development. The general public (who in turn influence regulatory bodies) tend to view personal aircraft as expensive toys: increased practicality may dispel that illusion.

Designed under the FAA's new Light Sport Aircraft rules - a development that was key to the Transition's creation - the aircraft is being promoted simply as a more useful *airplane*. The ability to land enroute and drive through inclement weather is an important safety feature, and door-to-door transportation in one vehicle is a convenience that cannot be overstated.

Test pilot and retired US Air Force Colonel Phil Meteer described the first flight as "unremarkable" in the sense of being conventional and predictable.

by George Gregory / Photos courtesy of Terrafugia, Inc.

The Terrafugia Team, Winter 2008/2009. Clockwise from top-left: Gregor Cadman, Engineer; Andrew Sand, Engineering Technician; Stu Foster, Intern; Marc Stiller, Engineer; Andrew Heafitz, VP Business Development; Ben Zelnick, Engineer; Giora Guth, Chase Plane Pilot; Richard Gersh, VP Business Development; John Telfeyan, Senior Engineering Technician; Col. (ret) Phil Meteer, Test Pilot; Samuel Schweighart, VP Engineering; Anna Dietrich, COO; Carl Dietrich, CEO/CTO

If not the first of its kind, it is arguably the first truly practical example.

Camparisons to earlier efforts are inevitable. The most successful until now was Molt Taylor's Aerocar, which was certified back in the early '60's and very nearly produced. Four examples were eventually hand built, but prospects for mass production failed when Ling-Temco pulled out; a further dalliance with the Ford Motor Company years later went sideways during the early 70's fuel crisis. One of the original examples *was* recently for sale - for about 3 million dollars.

As innovative as Taylor's aircraft was, it was awkward to convert (an entirely manual affair) and the flight portion had to be trailered behind the cabin module. An earlier effort, Robert Fulton's Airphibian, was likewise certified, but the flight portion couldn't even be trailered: it was simply left at the airport, which hampered its cross-country capability.

The Transition, on the other hand, converts in about 30 seconds without the pilot even having to leave the cabin. It is perhaps noteworthy that such a feature could be built into an aircraft that must comply with Light Sport Aircraft

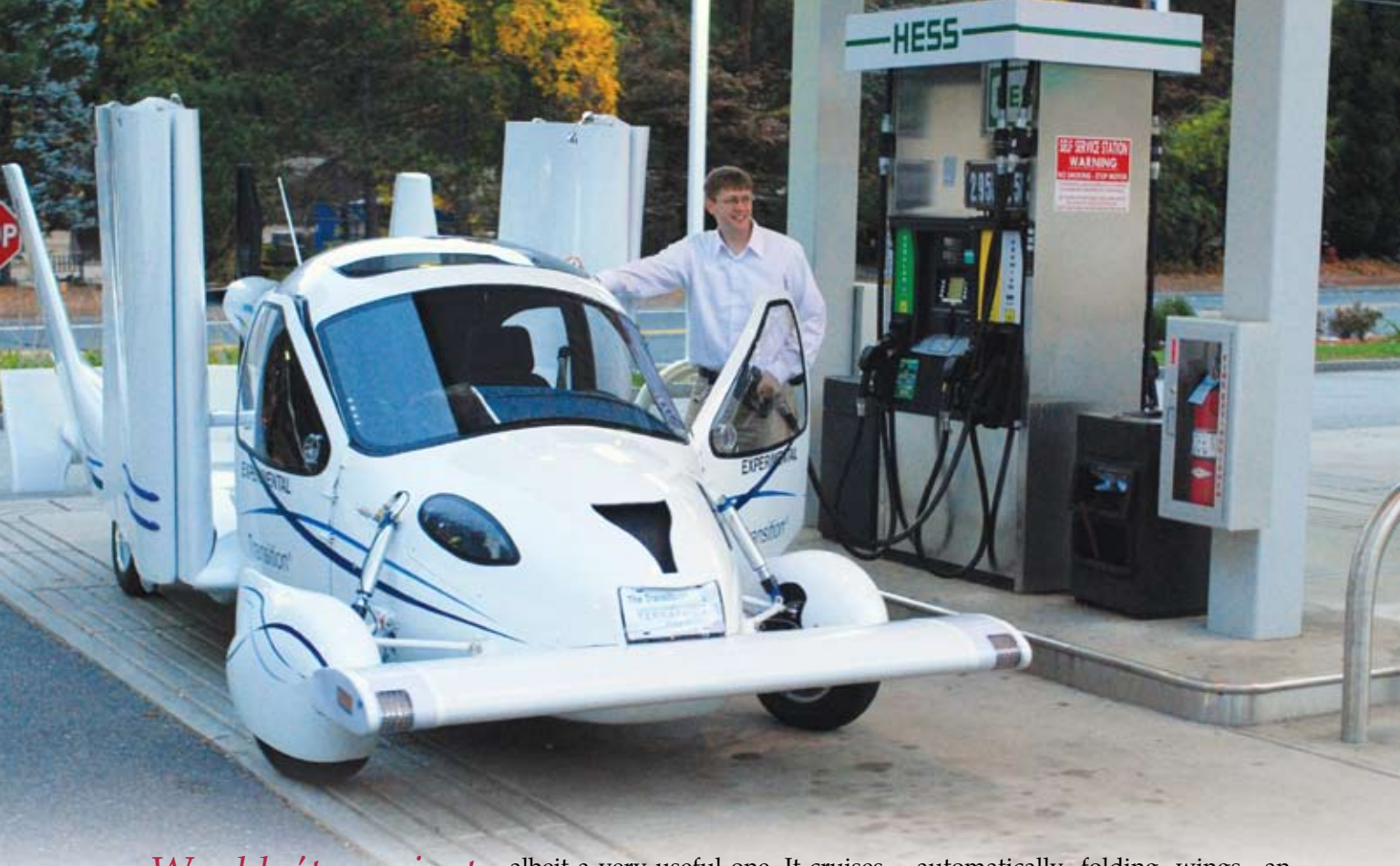
"This breakthrough changes the world of personal mobility. Travel now becomes a hassle-free integrated land-air experience".

-Carl Dietrich

weight rules.

The Transition is a roadworthy vehicle capable of highway speeds (it's been tested to 90 mph) and fits in a standard garage. It burns premium car gas (wouldn't you love to pull into your corner gas station with one of *these*?) and gets 30 miles per US gallon on the road. It features front wheel drive and both drivetrain and propeller are powered by the same engine, a 100 hp Rotax located in the front of the aircraft. There are separate controls for driving and flying.

While it meets federal certification requirements for automobiles, Terrafugia takes pains to explain it is first and foremost an airplane,



Wouldn't you just love to pull into your corner gas station with one of these?

albeit a very useful one. It cruises at 115 mph and boasts a range of 450 miles. Test pilot Meteer reports the aircraft's handling up to this point (flight testing is ongoing) as solid and conventional. It needs a 2500 foot runway (1700 feet to clear a 50 foot obstacle), which means the majority of small airports are accessible. Fuel burn is 5gph, and a ballistic full-vehicle parachute will be an option. The cockpit is 51 inches wide at the shoulders - huge by aircraft standards.

It has a useful load of 430 pounds, and therein lies what I would consider its only significant compromise - perhaps ineveitable in this type of craft. If one allows 120 pounds for fuel, this leaves a scant 310 pounds for people and baggage; though it must be remembered that such considerations are not uncommon in the GA fleet as a whole. There are not many light aircraft that can carry full fuel, fill the seats *and* carry a heavy load of luggage at the same time. And given that this airplane boasts automatically folding wings, an automotive transmission and suspension, its empty weight is a remarkable achievement. By way of added perspective, the Sonex carries only 50 pounds more, and doesn't have any of the automotive accoutrements.At any rate, the baggage space can accomodate longish things like fishing poles, skis and golf clubs (an important consideration for well-heeled boomers).

The aircraft doesn't come cheap, at $194,000 USD; but it must be remembered that even pure ready-to-fly LSA's often cost north of a hundred grand, and it's not uncommon to spend that much on a well equipped kitplane. The Transition, furthermore, is not being offered as a kit. It is a finished, flyable aircraft that purchasers will be able to use right away.

Terrafugia is planning further testing for their prototype and a pre-production model will be built and certified before they start selling to the public. Refundable airframe reservations are being

The Transition is dimensioned to fit in a standard garage and drive comfortably on public highways. The robust canard does double duty as a bumper; the chassis even has crumple zones. But does it have cup holders?

accepted now, and they hope to be delivering aircraft to customers in 2011.

Will Terrafugia succeed? I certainly hope so, and they seem to have done their homework. The introduction of the Light Sport Aircraft rules, as well as improvements in navigation capabilities and structural technology give the Transition an edge that Taylor and Fulton never enjoyed. I think we are going to hear a lot more about these folks in the next year or so.

And at a time like this, the aviation world *needs* a game-changer. By introducing a truly practical light aircraft - practical in a whole new way - it may be hoped that this increased utility may entice more into the aviation fold, increasing our political clout at a time it is sorely needed. RAA

FMI:www.terrafugia.com

Cooling / *continued from page 13*

drag. I use black RTV for sealing the baffles to the engine and for making a gasket for the plenum top.

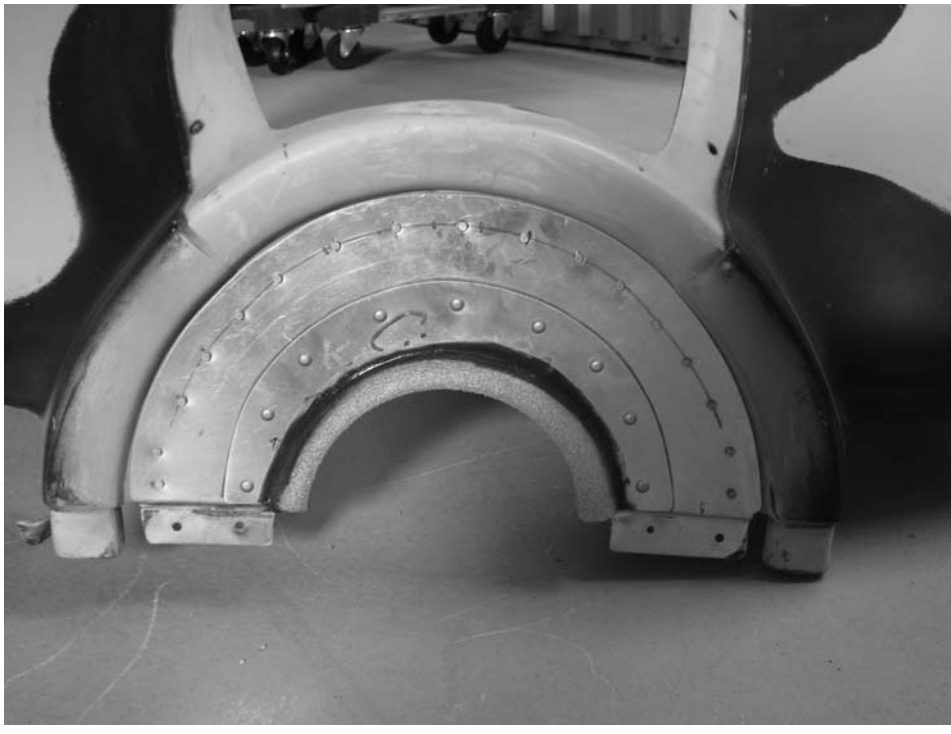
My ultimate goal was to have all of the CHTs within less than 30 degrees of each other. My understanding is that in the certified world, CHT variance of 100 degrees and more are common. A cylinder's individual CHT can be affected by the use of dams and air deflectors. In my testing and experimenting with my cooling system I noticed a couple of odd occurrences., the first being the requirement for a different size dam for #1 cylinder than #2 cylinder. These are the front two with #1 being on the right and #2 being on the left. I found that in order to balance these cylinders it required a larger dam on #1. I also noticed that this was common on many aircraft. I also noticed that the temperature of the different cylinders would change relative to each other depending on speed. At cruise #6 was my hottest cylinder but at race speed #2 was the hottest.

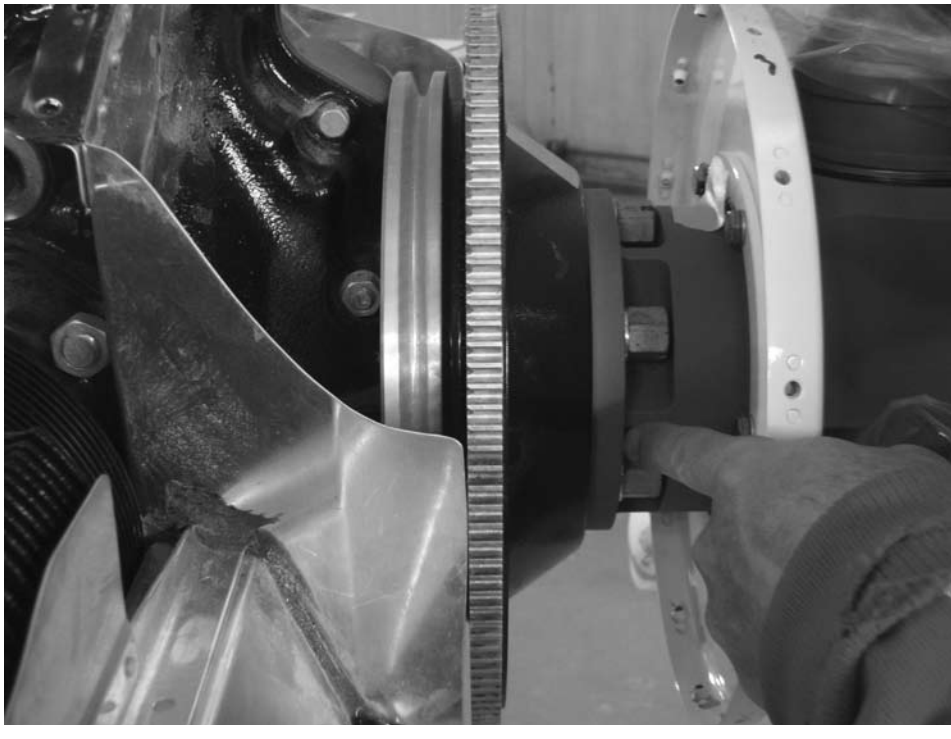
A Pressure Plenum works by having air enter the top or High Pressure Plenum through the front inlets. This high pressure air is blown by the cylinders, thereby cooling them and then the air enters a larger volume area or Lower Plenum which is lower pressure. The air is then blown out of the cowl exit and back into the air stream. There are numerous theories and there is no doubt that the study and understanding of cooling systems and their behavior is complex and I think to some extent still misunderstood. It has become apparent to me that the cooling air is under pressure and under greater pressure than any area surrounding the cowl. Because it is under pressure it will blow out of anywhere there is a hole to a lower pressure area from the Upper Plenum to the Lower Plenum to the outside air. The cooling system I designed was operating differently at different speeds and I theorized that the cause might have been in the way the air in the Lower Plenum was exiting. I wondered if the increasing pressure at increased speeds was blowing air from the Lower Plenum through the front hole in the cowl and past the spinner. I designed a method of sealing this area

against the prop shaft to test this theory.

I was unsure how much the prop shaft moved from the G's of flight and landing and the shake which can occur at shut down. I designed a crude way to measure this movement and was able to determine that the maximum movement was ¼ inch. I was then able to fabricate a plate to fit on the front of the cowl to go within ½ inch of the propeller shaft and then I used a 1 inch diameter weather-stripping material I purchase from the aviation isle of Home Depot to make the seal. I tested the material and found it would not hold a flame. I covered the propeller shaft in anti chafe tape and ran the engine. The seal whistled for about 10 minutes until it abraded itself into shape. I tested the new mod and was able to make the dams for #1 and #2 cylinders exactly the same 7 square inches, and with these mods I found that CHT's did not change with speed. This Cooling/Speed mod allowed me to fully balance my CHTs and drop them about 15 degrees each. Due to the number of changes I made at the same time and the timing of the mods I was unable to do the testing to see if I also accomplished a speed gain. I believe that I have only begun to understand how the cooling system works and I look forward to more experiments to increase my understanding and hopefully this will lead to more Cooling/Speed mods.

In November, we once again flew south to participate in the 2008 Rocket 100. Racer 14 flying in "Little Bit" an F1 Rocket entered in the Sport FX Class and took on all comers to post a time of 246 MPH. This time was fast enough to place first in the 2008 Rocket 100 and we now claim the title of "Fastest Rocket in the Known Universe". We also came home with "First Place Overall for 2008" in the Sport FX Class.

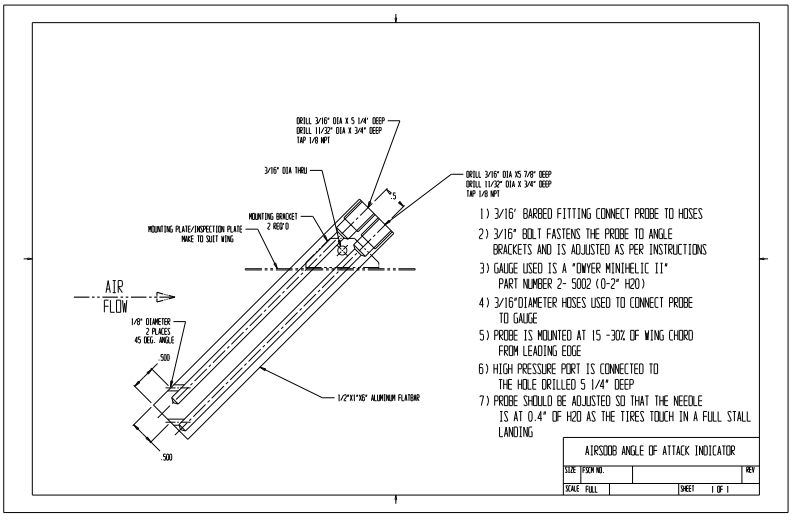




Top: The front gets an aluminum air dam with foam seal
Above: A few turns of tape prevents the foam from abrading the aluminum prop extension

Airsoob Angle of Attack Meter

A Safer Way to Fly



THE "LIFT RESERVE INDICATOR" has been referred to as an angle of attack meter, a lift management system and an air speed system. It is probably all of the above.

The lift reserve indicator we are talking about is similar to the instrument known commercially as the LRI Lift Reserve Indicator. It consists of a rectangular shaped air stream probe and a commercially available differential pressure gauge. There are two air pressure ports, each on separate faces of the probe. The differential pressure between the two ports yields lift reserve readouts. The high pressure port on the gauge is connected to the top surface port.

The gauge used is a "DWYER MINIHELIC II" pressure gauge. Part number 2-5002.This gauge reads 0-2" of water column. The gauge face is removable and is modified by LRI tp have 3 separate zones.(see my version below) The first zone is the "red zone" which is from 0 to .5" of water. The second zone(white or yellow) goes from .5" to 1.0" of water. The third zone is from 1.0" to 2.0" of water column.

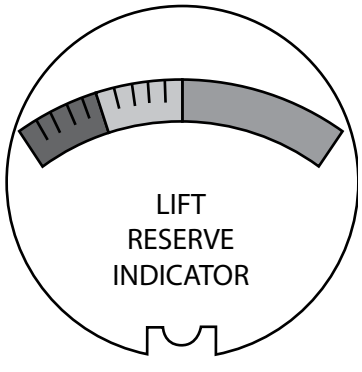
The red zone indicates that the airplane is no longer generating enough lift to sustain level flight The top of the red sector and the bottom of the white or yellow sector is the point that wing is generating "just" enough lift to support the aircraft. During takeoff as the needle clears the red sector and moves into the yellow sector the plane has enough lift for takeoff. On landing the goal is to get the tires to just touch the runway when the needle is one mark from the top of the red sector.(0.4")You will rotate the probe and repeat landings until the needle is at this point. The probe position should be marked in this position so that it will be evident during a preflight if it has moved.

The white or yellow sector is the slow speed region of the aircraft The final approach on landing is flown with the needle centered in the white or yellow zone. The turn to final should be done with the needle no lower than the white/ green zone.

The green zone is the region where there is ample lift and the needle will most probably pegged.(4.0")

The location of the probe should be out of the prop wash and located between 15% and 30% of the wing chord as measured from the leading edge. The angle to start is recommended to be about 50 degrees from the bottom of the wing. A Cessna 172, that was fitted with this device had the probe at 69.5 degrees from the bottom of the wing surface. You will have to determine this on your own plane.

They recommend that the gauge be mounted at the top left portion of the instrument panel so that the eyes don't have to move far from where they look during the landing phase.



Fuselage Longeron Extrusion Forming Jig

Dave Westridge, Hillsborough, NC USA

Initially I did the standard technique of beating it with a V block and wood mallet. I progressed to a more aggressive manner using two lead blocks and putting the extrusion across them and beating it again with the mallet.

I didn't like either method as it lacked finesse and control (not to mention beating it didn't make me comfortable) so I decided to develop an better method to control and manage the bending. There you have it.

The one caution I offer is I noticed that when performing the straightening of the extrusion you must be more careful as the "re bending" seems to be much easier/quicker and you can over bend very easily.

I am using a piece of scrap ¾ x ¾ alum angle for demo. The jig is built of (2) scrap pieces of alum angle 1″ x 1″ screwed to block of scrap 2 x 4 lumber about 12 inches long.

The two spacer blocks are scrap ¾″ x ½″ scrap alum bar stock. The bending radius is 2″ dia. hardwood dowel block about 4 " long with a 1/8″ wide cut about ½ way through the diameter of the dowel and "curved" a bit to make a radius inside cut.

Make a "flat" surface on the opposite side of the dowel from the cut for the Clamp pressure point. You'll need a large C-Clamp.

OK - here we go! (NOTE: This works both ways shrinking and stretching the perpendicular leg.) Set up your bend near the start of the radius area. Install as shown for an interior bend; you are shrinking the horizontal leg to form the radius.

The next picture gives a view looking at the bend being formed from the inside of the extrusion looking to the outside. (Imagine this is the upper longeron of the fuselage).

NOTE: By varying the width of the 2 spacer blocks on the holding angles, you can make a deeper/tighter bend by reducing the distance between the blocks or

(continued next page)

Top: the jig ready to go. Centre, looking at the bend being formed from the inside of the extrusion looking to the outside. Bottom: Another view of the bending action.

Canopy Tips for RV Builders

Terry Elgood, Chapter 85

The slider canopy skirt on Van's RV's can be difficult to get to fit tight especially the lower rear corners. I have shown this method to several builders, the results are terrific.

Follow the manual except for a few refinements along the way that improve the fit:

1/ Be sure you do not have the bubble too far forward on the frame, the bubble curves up at the rear making the skirt follow, it will not lay flat on the rear deck.

2/ I made the skirt out of one piece on each side. Make a pattern out of mylar or heavy tracing paper. The pattern may be slightly different on each side depending on how the frame fits.

3/ Drill the mounting holes through the bubble into the rear arch frame using a # 40 drill sharpened to cut plastic. DRILL RIGHT THROUGH THE FRAME. Be sure you are drilling square to the surface, cleco as you go starting at the center tube, working both ways.

4/ Cut out the skirt metal leaving a half inch extra front and back (wider) on the piece that lays over the rear of the bubble, the sides are cut to final shape.

5/ Place the skirt in position only drill and cleco the sides

6/ Lay the rear skirt panels down on the bubble, tape in place, mark the center line on both, cut to fit edge to edge with a 1/8 " overlap.

7/ Now the magic trick, cut a hose clamp so that it is left with a tab on the drive part and a tab on the moving part, it should be about two inches long, reasonably flat.

8/ Drill the hose clamp tabs so that a pop rivet can be used to mount it to each half of the skirt

9/ Mark the skirt where the little slider cap goes. On the skirt, mark a line side to side on each half, halfway front to back, place the hose clamp in position on the side to side line and mark where to drill the two pop rivet holes they should be covered later by the slider cap. The pop rivet holes should be about an inch ahead of the rear deck skin and behind the plastic bubble.

10/ This is what tightens up the lower rear corners, pop rivet the hose clamp in place, tighten it so that one side skirt pulls gently against the other just snug don't over do it. Now push the hose clamp with the skirt forward about half an inch or so, it will suck in the lower rear corners. Pat the skirt with your hand flat to make it go into a rest position, tighten the clamp if you need to.

11/ Tape the rear skirt in position so it doesn't creep back, go inside through the front windshield hole and back drill #40 through the frame through the skirt, get your helper to install the 3/32" clecos as you go.

12/ On the outside now, drill #30 (plastic cutting drill) through the skirt, bubble and frame (just the near side of the tube) cleco as you go starting at the center and working both ways at the same time towards the bottom.

13/ Carry on with the manual for trimming, riveting etc.

14/ One final note, you will need a good solid handle on the center tube to heave the canopy open. A 1/4" bent rod drawer handle with AN3 bolts through the rear end of the center tube works well.

The results of doing it this way are worth the extra effort. I hope I didn't leave anything out, I built my RV9 a few years ago.

Longerons *(continued)*

make a "shallower"/gentle bend (but there will be more "spring back") by moving the spacers further apart.

I also experimented with longer 2 x 4 blocks but I found that 12 to 14 inches was about the best.

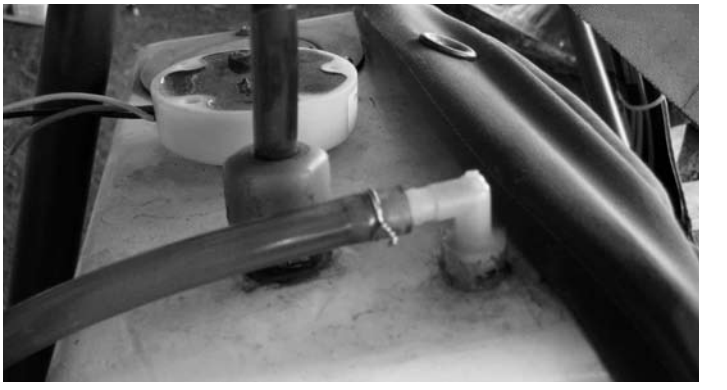
OK, so let's bend the opposite way (or in my case straighten out "too much bend"). This is hard to "see" so I'll try and explain: take the small metal blocks and put them inside the 90 degree angle of the extrusion. Put the extrusion face down on the 2 small angles for holding the piece to be bent.

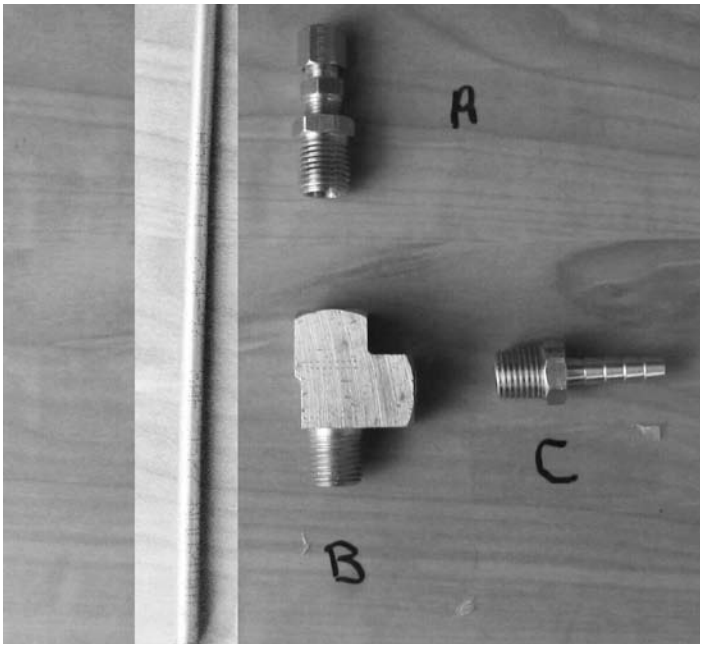
Put 2 spacer "blocks" between the extrusion to be straightened and the 2 x 4 (now the angle should be "solid" where supported. Place the C-clamp centered on the center of the extrusion and SLOWLY apply pressure. (The extrusion bends much faster and deeper in this operation).

There you have it; bend slowly and incrementally until you form the longerons the shape you want. Hope this is helpful!

Fuel Tank Modifications

Richard Suttie, Thompson Valley Sport Aircraft Club





Have you ever needed another hole in your gas tank for a supply line or vent line?? Here is a simple way to achieve that goal. I am installing this so my suction line for my primer is not teed into my main fuel line. The following picture is of the original vent elbow (Right, top).

The parts that are labelled in the picture are as follows. I am working with the 1/4 " NPT (national pipe thread) into the tank that houses the vent line. I remove the vent elbow and install the brass fittings assembled as follows (centre).
"A" is a 1/4 inch NPT to 3/16 inch compression fitting. "B" is a 1/4" NPT Tee (street). A 1/4" nipple can be used with a 1/4" tee instead of a street tee. "C" is a 1/4" NPT to barb fitting to match vent hose sizing. To the left is a piece of 3/16" tubing (brake line purchased from an auto parts supplier).

Steps to make up fittings:
Drill out B or nipple (if not using street tee) to make more room for vent application. The vent from the tank will come up around the tube and exit out through *C*. Drill out several sizes larger than the original hole. I also drilled C to allow maximum vent flow. Cut the tube long enough to reach down into tank as far as necessary. (I am running the tube down to within 6 inches of bottom as I am using this for a primer suction.)

Drill out the inside of *A* so tubing will pass through fitting. Install tube at height needed and tighten compression nut. This is now sealed from port *C*. Install fitting into tank and install hoses. (Bottom)

Special note: Not a good idea if you have a plane that is certified for aerobatics!!!!!

New Products

For those fibreglass or paint jobs it is handy to have a set of coveralls at hand. These are made of a light polypropylene fabric that breathes, so perspiration does not collect inside. The front has a zipper closure, and the arms. ankles, and hood have elastic. One set will last three days in normal usage. The coverall holds in body heat, so working in a cold hangar is a lot more comfortable when wearing a set. Keep a package in the plane too, just in case you have to put down in a snowy remote location.
Princess Auto sells these for $3.99, occasionally on sale for $1.49 .

The Return of TCP

Alcor, Inc. is formally announcing the return of TCP Fuel Treatment to the market. When added to the gas tank of the aircraft, TCP acts as a lead scavenger, reducing spark plug fouling and other harmful effects of low lead aviation gasoline (100LL). For decades, this popular product has been used as a fuel additive by savvy pilots who want to "get the lead out", reducing the likelihood of fouled plugs and sticking valves that can result from lead build-up. TCP has been found to be especially effective in low compression engines. TCP is currently available in both quarts and gallons. A convenient syringe-style dispenser designed specifically for use with Alcor's TCP is also available for purchase.
Available from Aircraft Spruce HYPERLINK "http://www.aircraftspruce.com" www.aircraftspruce.com. 1-877-477-7823.

President's Message / *continued from page 2*

overflying aircraft tuned in to 121.5.

CERTIFIED COMPONENTS IN AMATEUR AIRCRAFT

A year ago we got the hard news that the FAA had squeezed Transport Canada to disallow the reuse of major certified components in Amateur-Built aircraft. RAA worked with intensively with Transport Canada to massage this edict into something less onerous. The document has now been signed and we may still use major components that had previously been certified. We must still meet the 51% requirement and the interpretation of 51% has become somewhat narrowed. Formerly a builder was able to unrivet a wing for inspection, and by reriveting he gained credit for the wing. The new procedure does not credit that work so the wing would not be counted in the 51% evaluation. If he made several replacement

Continued next page

Lynn Thacker of Bow Island, Alberta is now assembling one of the first prepunched Zenith 750 kits in Canada. With assistance from CanZac, Lynn has already completed the fuselage, tail group, and the firewall forward. He reports that the parts fit together very well and that no jigging was necessary, even for the slats which have been in the past somewhat difficult to assemble and align.

ribs and installed them, that work would be evaluated and credited towards 51%.

This new policy will put an end to the deregistrations of certified planes and the fast track reassembly and reregistration as Amateur Built aircraft in Canada. Let us hope that the FAA is now as rigorous when dealing with their own builders. That country is still full of commercial shops advertising to assemble kits in what is effectively an end run around the certification process.

ROTAX NEWS

It is no secret that the 100 hp 912S produces a lot of vibration upon startup, until 2000 rpms has been reached. Rotax dealers are now offering a soft start unit that is plugged into one of the engine's two ignition systems. If the engine is started on that circuit, the ignition will be retarded more than usual, then ramped up to the normal ignition curve over a period of five or six seconds. The second ignition may then be switched on and normal operations may begin. Contact your local Rotax dealer for pricing and installation information.

Rotax has certainly been effective in taking over the 80-100 hp non certified lightplane market. They have set up service and part dealers across the country, to the extent that these engines are now considered to be mainstream aero engine. Rotax has recently announced a trade-in program for non-Rotax engines. If you have a worn out non-Rotax engine and you are considering repowering your plane you should contact your dealer or Rotech Research in Vernon BC at 250-260-6299.

THE SILVER DART

In 2005 amateur builders in the Niagara area began a project to replicate and fly the Silver Dart. Doug Jermyn, Gerald Haddon, and the members of the AEA 2005 group used original plans and original materials wherever possible. Leavens donated the rebuild of a Lycoming 65 engine for the project. The Trillium Foundation provided some of the funding and the much came from the pockets of the members. First flight was at Hamilton Airport with Canadian astronaut Bjarni Trggvason at the controls, then the plane was dismantled and shipped to Baddeck to recreate the original February 23 1909 flight. The weather was spotty but they managed to fly the Silver Dart on the frozen Bras D'Or Lake on the 100th anniversary of McCurdy's first flight in Canada.

You may see videos of the flight online by googling "Silver Dart Project." Congratulations to a determined group of Canadians!

SEAREY AIRCRAFT NO LONGER AULA

The Canadian representative for Searey representative for Searey aircraft has asked that we let our members know that future models of the Searey will not be eligible for registration in the Advanced UL category. Progressive Aerodyne, manufacturer of Searey, has decided to concentrate on the Light Sport category which allows the Searey amphibian to exploit its full payload at a gross of 1370 pounds.

This change has no effect on Seareys that are registered in Canada's 1232 pound AULA category.

Classified Ads

To submit or delete a classified ad, please send to classified@raa.ca and place "RAA ad" in the subject line.

The Recreational Flyer is pleased to offer you colour advertising within the magazine. Previously limited to the back cover, we have added 4 new colour pages which will be available with limited space for your advertising needs. Our rates for both black and white and colour ads remain very competitive and you reach a captive and qualified audience.

Ads can be emailed to : ***classified@raa.ca***

Deadline for submissions is the first of the month preceding date of issue.
Artwork: Rates apply to camera ready artwork. Digital files are preferred and should be sent as email and in .txt format, PDF, JPEG, MS WORD, Photoshop or other common file types. Advertising is payable prior to printing of magazine unless other arrangements have been made. Payment is in Canadian funds. 10% Discount applies to one year (6 issues) insertion paid in advance. Commercial Classified ad rates 1/8 page minimum.

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The Recreational Flyer Publisher reserves the right to refuse any or all advertising for any reason stated or unstated.
The Recreational Aircraft Association Canada does not assume responsibility for advertisements, but does exercise care to restrict advertising to responsible, reliable individuals.
Please note: Ads running more than 3 issues must be renewed to guarantee continued display in the magazine.

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For Sale

Zenith CH-250 Project For Sale. Tricycle configuration First inspection done. Ready for rigging. Have 3 in 1 engine gauge, VSI, ALT, Compass, Tack, and air speed gauges. Have a dinafolcal engine mount for 0320 engine, prop, some pneumatic tools. Plus lots of old news letters for the project and pictures of different configurations. $10,000.00 Ph. 604-859-6884, John.

CAVALIER 102.5; 700 TTAF (airframe rebuilt/97), AERO Sport, O-320-B2B, 75 TTSN (seeing 1500 ft/m), Sensenich metal prop, 1750 lbs gross weight, 622 useful load, VFR instruments + Garmin-Mode C, kept in heated hangar. Flies fantastic! $32,000. moneypit@uniserve.com or 250-558-5551; ask for Cameron. Oct08

Parts for sale: Low hours Colin Walker wooden prop a 7256 off an O-290D ($600); New ROTAX 9" UHS 2 blade spinner ($80). If you are interested, I can be contacted at: moneypit@uniserve.com or 250-558-5551; ask for Cameron. Oct08

Rotax 912 80 hp, 850 hrs TT. Overhauled gearbox with overload clutch. New reduction gearset. Overhauled carbs, new rings, valves and seats ground. $9500 OBO 519-648-2044 Oct08

RV-6 Wing and Tail Kit. Tail is finished and has passed inspection. Wings are ready for closure. Tanks completed, sealed, and installed. Flight controls are finished. This wing kit has the Phlogoston spars and excellent workmanship throughout. Tail $1500. Wings $4000. Both $5000. 519-648-2044 Oct08

Christavia Mk1, 2 place rag & tube; all major structures & engine mount complete; Subaru auto conversion with

NSI reduction drive and dual electronic ignition; graphite 3 blade prop on gear; elevators, ruder and control table complete; wings and ailerons fitted and complete; pull-up and cables not attached; 100 hours of flight time on proven engine; instruments, fabric, tape, cord, hardware enough to finish; cowling complete; (no chemicals for fabric covering); used instruments fitted to panel. Contact Bill Weir. billweir@lom.imag.net Apr08

Rotax 582 firewall forward with motor mount and rad, GSC 3 blade prop, cowling. oil tank, some engine instruments, exhaust. All were removed from a Zenith 701 being repowered by a 912S. Everything to get flying for $3500 OBO. millfly@sympatico.ca 519-822-6693 Apr08

Geo/Suzuki 1300 firewall forward package including dynafocal engine mount and rad, to fit Zenith 701. Includes cowling, starter, alternator, carb, exhaust, GSC prop, and some instruments. Package was replaced by a 912S. $3500 OBO millfly@sympatico.ca; 519-822-6693 Apr08

Zenith 701 project. All formed parts made, spars riveted, jeep landing gear, Matco wheels and brakes, dash and most of the fuselage components, pedals and some welded assemblies, $6500 millfly@sympatico.ca 519-822-6693 Apr08

HP with Engine Mount, custom 4130 Prop Hub and rolling engine stand to ship.$1750.00 obo. New Colin Walker wooden Prop 6856 with fibreglass L.E. SAE 1 $500.00 G.B. Lewis wooden Prop 7441 metal L.E. very good, no nicks or damage. SAE 1 $500.00 Super Cub 8:00 X 4 wheels, tires, brakes and reservoirs. $500.00 for set. C85 starter and NAS3 carb. $200.00 each, or will trade one for C85 generator. 780- 460- 6841 Aug08

Parts For Sale--- Corvair 110 HP with Engine Mount, custom 4130 Prop Hub and rolling engine stand to ship.$1750 obo. New Colin Walker wooden Prop 6856 with fibreglass L.E. SAE 1 $500.00 G.B. Lewis wooden Prop 7441 metal L.E. very good, no nicks or damage. SAE 1 $500.00 . Super Cub 8:00 X 4 wheels, tires, brakes and reservoirs. $500.00 for set. C85 starter and NAS3 carb. $200.00 each, or will trade one for C85 generator. 780- 460- 6841 Oct 08

O235C LYCOMING ENGINE, Ground crank nitroed new bearings, seals, rings, seats, and guides. Can be seen running PA12 exhaust. metal prop. $4,800 Maxwell Say 519-941-9698 Oct 08

Lost medical. Partially completed (right wing some tail feathers) Murphy Rebel kit $10,000 OBO. Call 250 658 2046 or email breathnach@shaw.ca Oct 08

Christavia IV fuel tank for left wing, per Ron Mason drawing. 14 Imp gals [63 litres] all fittings in place. Peter James 416 282-2186 Oct 08

Avid Catalina amphibian complete kit. factory prewelded powdercoated fuselage and parts,fiberglass hull and all fairings,folding wings constructed and fitted to fuselage,control systems installed,retractable gear fitted, engine mount,hardware packaged and labeled, all Avid construction manuals and newsletters. We moved,no place to build!! Asking $13,500. Call 613-543-0594 Oct 08

1992 MURPHY RENEGADE Professionally built and maintained. Excellent condition, powered by Rotax 618. $23,000. Still flown by retired Air Force pilot Tony Bellos from his own strip in Knutsford, near Kamloops, BC. 250-374-6591 or tbellos@telus.net Aug08

For sale due to health -aircraft engines and an Aeronca Champ project. The three engines are zero-timed: two 0-235, one 0-0-290DQ. Some mags might be missing, but the prices will be very low... The project is a Champ awaiting the MOT final approval. For details, contact George ASAP at 250-768-3585. Oct 08

Aeronca Champ wing hardware [except drag wires], rudder horn, 3 pc tail wheel spring, parking brake handle unit and nose fuel tank all for 7 AC/ Peter James 416 282-2186 Oct 08

Toucan basic ultralight, a rare twin-boom 2-engine Canadian aircraft. Front is a Rotax 377, rear is a Rotax 505. Large disc brakes. Smooth flyer, will cruise at 60mph on rear engine only. $7000 . Call LeRoy at 250-547-6211 Lumby, BC. Oct 08

1943 Luscombe 8C for sale. $15,000. Contact Bruce Prior for details and photos. (604) 437-4219 or email at b.prior@ieee.org. Oct 08

FOR SALE - 2006 CHALLENGER 2. 150 Hrs. TTSN, Rotax 503, 55 H.P., electric start, full enclosure and most options. Dual flight controls and dual engine cyl. instrumentation, intercom, and vernier elevator trim tabs. Priced well below replacement cost at $22,000 Cdn.or B.O. for quick sale. Built by experienced builder (Bob Johnson-Niag. RAA chapter) and well maintained. Also fully enclosed aluminum transport/storage trailer available $1500 Cdn. Call Dave Webb at 905-871-3411, or e-mail dwebb@iaw.on.ca for additional information and pictures. Dec08

Lycoming O-320 H engine, $6000 certified with logs, and pickled. This engine is near 2000 hours but it recently had new a new case and most internal components

replaced. The previous owner bought the plane and immediately repowered it with a new 180 hp for float flying. With not much more than a top overhaul this would be nearly a zero time engine. kinger@bmts.com Dec08

Sonerai 2 project - Wings are built, fuselage is welded. Engine - I have over 100hrs into the new cylinder heads alone! (cc'ing chambers to get the squish clearance and compression ratio right). Between the plane and the engine I have well over $10,000 invested but will take much less than that if anyone is interested. It's the lightest Sonerai that you'll find. contact jill_oakes@umanitoba.ca Dec08

1977 Cessna 150M 10K TT, 2000 SMOH, Icom A200, Garmin 320A, Garmin 296 panel mounted, overhauled prop, air/oil separator, new strobe kit, new panel covers and door posts, new alternator, new mags and wires, spin on oil filter, Auto fuel STC, New tires and brakes, just replaced many gaskets and hoses in last annual, new exhaust. This plane runs and fly's great, low fuel consumption, full winter covers and winter kit, $21,800 or best offer. Call Chris 905-495-2383
Also, have some parts for sale:
Parts from 1976 C150M including damaged wings, main and nose landing gear (Zenith owners often use C150 nose gear), brakes, cowl, newly rebuilt engine mount, seats and rails, intercom, fuel tanks and other misc parts. Call Chris at 905-495-2383 Dec08

For sale, new RV9A parts; conical engine mount, 3 L/G legs, mounting brackets, nose wheel, fairings. All the parts I didn't use when I converted to tailwheel. Contact Terry Elgood for list at TMB_Elgood@shaw.ca or 604-279-2062 Mar 09

For Sale ; Wooden propeller, varnished with red tips. 44" Dia; Pitch approx 56". Centre hole 2" chamferred inside; Bolt circle 4"; 6 bolt holes at 5/16 each. 3 5/16 thick. Made by U.S. Propellers Inc. Code 276 / 17. Ser # AV013 / 22048G. Never used. Similar to those seen on Sonex aircraft. $400. plus shipping. Pictures available; email wjmbd@sympatico.ca. Located at Prescott ON. Phone 613 925 5055. Wilf Mar 09

I have 100 black clecoes (5/32"); 50 have never been used and 50 have only been used to build 2 spars. I would be interested in swapping these for 100 good copper clecoes (1/8"). Anyone interested? Fritz Deininger Sprucedale, Ontario Building Sonex (Phone not supplied) Mar 09

SIDEWINDER: All metal; seats two. Equipped with Lycoming 0-290D (110 hrs STOH), engine log, 3-blade ground adjustable Wrap Drive Prop. Bendix/King KY 97A radio, Icom portable standby radio; intercom, transponder/c. Full cockpit and panel lighting, strobes, L/L, and nav lights. Ready for MDRA final pre-flight inspection. All drawings and building manuals are included. Selling for material cost only ($20,000 cdn.) Call Norm at 519-745-7971 or email at ldservice@rogers.com. Apr09

DO YOU HAVE a 12 ft table taking up valuable space. I need one for my Pegazair project. Toronto area but will travel distance to pick-up. Also need an assortment of clecos. Larry 416 526 2602 or larry@patronproducts.com Feb08

Project Assistance 15 years of aircraft sheetmetal/fabric/ composite construction/mechanical. can help your project. Have helped on RV projects.and other homebuild aircraft. 1-519-777-7084 ask for Robert April09

ZODIAC - CH601 - 8 years - Rotax 912 – 80 HP with warp drive prop. 800 hrs TTAE. Bendix King Radio – 2 headsets. Excellent Condition – asking $ 40,000 – negotiable. Call after 7:00pm - 519-986-2343 April 09

Wanted

WANTED Aeronca Champ. Preferably 85 to 100 hp Continental. Located Ontario or Quebec. Contact <tingle@ionsys.com Feb08

WANTED: Alternator or generator for C90. Must have gear intact. Contact Jeff Deuchar 780-352-4268 or f1rocket@telus.net Aug 08

WANTED Zenith 601 or 701 project. Preferably located in Ontario. Contact Jesse (705)429-6530 jbeauchamp_bell@hotmail.com

Looking for a port side wing for a 1989 Avid Flyer H.H. STOL. if any one has one they can email me @ wcsorell@northwestel.net or phone Wade Sorell 250-500-3775 Fort Nelson B.C. or is there anyone out there who rebuilds AULA

Ads run for a maximum three issues depending on space available and then must be renewed for continued display. Please direct all classified inquiries and ad cancellations to: classified@raa.ca and place "RAA ad" in the subject line.

RAAC has sets of electronic scales that are available to all members for doing the weight and balance calculations on their aircraft. Only $30 for weighing. Contact the RAA office at 1-800-387-1028 to reserve a set.

Classifieds On The Internet:
http://www.ocis.net/tvsac/buyandsell.html -more ads from our Kamloops chapter
http://www.lyncrest.org/sfcclassifieds.html -more ads from our Winnipeg chapter

Gyrocopter (continued from page 7)

what a gyro can do. Turns in the circuit showed that a gyro banks gently and remains level in pitch.

Descent in a gyro may be at any angle, depending on power setting. Keith performed an almost power-off approach that resulted in a near vertical decent of 1400 fpm. Just before touchdown he rounded out and the landing was a greaser, partly due to pilot skill and partly to the compliant landing gear.

Why would anyone want to build a gyro instead of a conventional airplane? There are many reasons.

What is the licensing requirement in Canada for a gyro? Currently a Pilot Permit - Gyroplane is the minimum, essentially a 45 hour Private license specific to gyroplanes, with a Cat 3 medical as minimum. CARS 421.20 gives the current requirements. Private license holders may receive credit for 15 hours but must have 30 hours of training in gyroplanes. When Keith began there was no specific training requirement so he was largely self taught and was grandfathered in. At present it is difficult to find a training facility in Canada so many pilots head to the US for training.

How is a non-certified gyro itself licensed? At present it cannot be a Basic or Advanced ultralight, so Amateur Built is the only way. The normal inspection procedures apply and a firewall is required, but the weight and balance procedure is unusual. The gyro may be weighed on conventional scales or by hanging it from its rotor. While suspended with crew in place, the balance is checked for agreement with the manufacturer's number. On the Barnett the nose must be 8 degrees down. The Barnett is designed to place the passenger as close to the mast as possible to minimize pitch change.

Top: The large opening and low height of the cockpit make access a breeze. Left, the Subaru engine draws cooling air from the hinge side of the nicely faired canopy, out of the way of legs and stuff.

Why would anyone choose to build a gyro instead of a conventional airplane? There are many reasons – they can be parked in a narrow space so hangar costs are low; the builder can make almost everything except the rotor blades, so cost of production is low, just $10K for Keith's Barnett. However the most important reason is the grin the pilot gets while flying. When Keith has a trip to make he will take the Zenith 300. However if all he needs is an hour or two of entertainment, out comes the Barnett and up goes the fun factor!

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Coming Events

April 21-26 Sun 'n Fun at Lakeland Florida. More info at www.sun-n-fun.org

April 25, 2009 Rust Remover session, Ft. St. John North Cariboo Hangar #1 Breakfast from 8:30 to 9:00 Sessions from 9:00 to 15:00 $20/person. Counts towards recurrency requirements. FMI: Heath at 250-785-4758 Jim 250-785-6789 Richard 250-782-2421

Friday, April 24th Dave's 10th annual Sun n Fun BBQ is slated for Friday, April 24th For info email dstroud@storm.ca

April 25th At the St. Thomas airport. Annual COPA St. Thomas Air Rally. Prizes, fun and lunch for $10.00. Wheels up at 9:30 a.m. Rain date May 2nd.

April 25th, Lachute, QC (CSE4):
Salon de l'Aviation Virtuelle du Quebec - simulator exhibits with Red Bull race demos, aircontrolled flights, simulated forest fire bombings, dogfights along with conferences on various sim topics. Radio controlled Model Aircraft demo flights. Fly-in and Drive-in Breakfast served in morning. Located at the Lachute Airport. FMI: www.salonaviationvirtuellequebec.org

April 26th At the Saugeen Municipal Airport, 2009 COPA Rust Remover. FMI: Philip Englishman at (519) 881-3775 or email mickey@wightman.ca

May 2nd - 3rd, Haliburton/Stanhope (CND4), ON: Pancake breakfast/brunch/lunch. Call John Packer at 705-754-2611. Visit our website for information and current weather www.stanhopeairport.com or email airport@halhinet.on.ca.

May 2-3rd, Hamilton (CYHM), ON: Canadian Aviation Expo www.canadianaviationexpo.com, Hosted by the Canadian Warplane Heritage Museum www.warplane.com. Indoor trade show, static display, seminars. Landing fees waived for the show. COPA is a major sponsor and will have a booth there. Further information info@canadianaviationexpo.com 866-309-9537.

May 5th Regular meeting of the London/St. Thomas Chapter of the RAA. Plans are to visit the Medical Helicopter facility at the London airport. Details to follow.

May 10th, Brockville, ON (CNL3): Brockville Flying Club COPA Flight 111, 2nd Annual Mothers Day. From 8 a.m. to 11 a.m.. FMI: Byron Boone 613-345-3788 or email bboone@ripnet.com.
May 12 RAA/COPA Meeting - COPA led Location: PPAC hangar 7:30

May 16th, Stayner, ON: Pre-Season Fly-In. Come celebrate and kick off the start of the flying season. Fly-in or drive-in for a BBQ, kids activities, giveaways and draws. Doors open at 9 a.m. Rain date is May 17. For more information, visit our website at www.edenflight.com or contact Bill Crampton or Julie Thurgood at 705-428-3112 or email julie.thurgood@edenflight.com.

May 23rd, Oshawa, ON: 99s Poker Run. Main terminal. Terminus Oshawa. Participating airports- Burlington, Brampton, Buttonville, Collingwood, Lindsay, Peterborough, Toronto City Centre, Simcoe Regional. Everyone welcome! May 24th rain date. FMI: Suzanne 519-758 5672 cell 5672 Akky 416-488-5664 or email s.wiltshire@rogers.com, akkymansikka@ hotmail.com.

May 30th, Westport, ON, (CRL2):
Rideau Lakes Flying Club, Breakfast Fly / Splash in. Breakfast of ham, eggs and baked beans from 8:00 am till 1:00 pm. Transport from the Aerodrome/ Waterfront / downtown

June 6th At Brantford ON. Aircraft Spruce Canada Grand Opening Super Sale. From 8:00 a.m. to 5:00 p.m. Phone (519) 372-9555 or email info@aircraftspruce.com

June 7th At Reece's Corners, COPA fly-in breakfast from 8:30 a.m. until 11:00 a.m. For more info contact Mark Seibutis at (519) 332-6102.

June 27 2009 Langley BC (CYNJ) flyin. This year will have a bi-plane theme. More details to follow.

June 30 - July 1 2009 3rd Annual Corman Airpark Fly N' Fair
Pilots who fly in on either day and leave their aircraft on display for the public will get free breakfast Canada Day, and a chance to win an award in the appropriate category. Gates open to the public both days at noon. Checkout the website: www.cormanairpark.ca for more details or phone 866 882 3380.

July 5, Sunday 2009 Delta Heritage Airpark Fly-in (Chapter 85) all day. Everyone welcome. Breakfast 0900-1100. Food service all day. BBQ Steak Dinner in evening. Antique, Classic and Homebuilt aircraft. Operating antique engines display. Custom cars.

July 7th Annual London/St. Thomas RAA fly-in drive-in picnic at the Rice Ranch. Details to follow.

JULY 10-12, 2009 GLENN CURTISS MUSEUM / GENESEO AIRSHOW www.glenncurtissmuseum dot org AND www.1941hag dot org/ and click on 2008 airshow

Aug 29, 2009, (rain date Aug.30) Fly-In Brunch/Lunch between 8:00 and noon, at the Medicine Hat municipal airport. FMI: Boyne Lewis, (403) 527-9571 balewis@shaw.ca

13TH ANNUAL

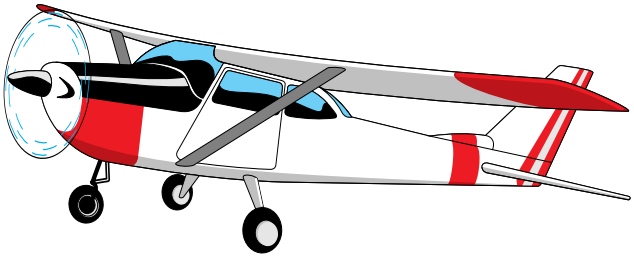
RAA

NORTHERN REGION FLY IN

JULY 11, 12, 2009

Collingwood Regional Airport

(FREQUENCY 122.85)



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Technical Seminars Saturday starting at 1pm
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For more information contact
Keith at 705-444-1422
kcweston@georgian.net

New In Canadian Skies

Peter Pasieka's Zenith 200

On April 30th, 2008, I took our new Zenair CH-300 FRHP (Richard and Halina Pasieka) into the Canadian sky over Brampton Airport. The project was purchased back in September 1999 and was 75% complete. The plans for this aircraft were purchased and work started in the summer of 1975, which makes this a brand new classic! In mean time we fixed up and flew a AMF-S14 Maranda, and another Zenair CH-300 (the original prototype built by Harold Allsop, GQTR). The airplane flies very nice with no abnormalities. My dad did 99% of the work to finish the airplane and get it ready for flight. It has a Lycoming O-320 with a three-blade Warp Drive prop. We would like to thank many people who helped us along the way, too many to mention but here are few: Bill Tee, Marian Novak, my mom and my wife who tolerated our many, many hours at the airport working on the airplane. The 25 hours where flown off rather quickly between the two of us and with a fresh CofA we are starting to enjoy taking RHP on some cross country flights. It still needs some finishing touches, like wheel pants, maybe paint, spinner, etc... In mean time the nick name "The Green Hornet" was already dubbed. Since this is a design from the mid 70's the support network is very small but tight. To learn more about this aircraft type you can go to: http://groups.yahoo.com/group/CH200-300Builders or to see it fly on my YouTube page: http://ca.youtube.com/user/peterp696.

RAA Chapters and Meetings Across Canada

The following is a list of active RAA Chapters. New members and other interested people are encouraged to contact chapter presidents to confirm meetings as places and times may vary.

ATLANTIC REGION

HAVELOCK NB: Weekly Sunday morning get together year round, all aviation enthusiasts welcome. Havelock Flying Club - 25 mi west of Moncton. Contact Sterling Goddard 506-856-2211 sterling_goddard@hotmail.com

QUEBEC REGION

COTE NORD (BAIE COMEAU): Meeting times to be advised. Contact Pres. Gabriel Chouinard, 418-296-6180.

LES AILES FERMONTOISES (FERMONT): First Sunday 7:30 pm at 24 Iberville, Fermont. Contact Pres. Serge Mihelic, 418-287-3340.

MONTREAL (LONGUEUIL): Chapter 415, Meeting in French second Wednesday at 8 pm, at CEGEP Edouard Montpetit 5555 Place de la Savane, St. Hubert, PQ. President Pierre Fournier, pierre.fournier@cmcelectronics.ca (514) 645-4355

OUATOUAIS/GATINEAU: Every Saturday 9:00 am to noon at the restaurant l9Aileron in the airport terminal. Contact Ms N.C. Kroft, Gatineau Airport, 819-669-0164.

ASSOC DES CONSTRUCTUERS D'AVIONS EXPERIMENTAUX DE QUEBEC (QUEBEC): Third Monday 7:30 pm at Les Ailes Quebecoises, Quebec City Airport. Contact Pres. Ray Fiset, 418-871-3781. rayfiset@qc.aira.com

ASSOC AEROSPORTIVE DE RIMOUSKI: First Saturday at 9:00 am, La Cage aux Sports, Rimouski. Contact Pres. Bruno Albert, 418-735-5324.

ASSOC DES PILOTES ET CONSTRUCTEURS DU SAGUENAY-LAC ST JEAN: Third Wednesday 7:00 pm at Exact Air, St Honore Airport, CYRC. Contact Marc Tremblay, 418-548-3660

SHERBROOKE LES FAUCHEURS de MARGUERITES. Contact Real Paquette 819-878-3998 lesfaucheurs@hotmail.com

ONTARIO

BARRIE/ORILLIA: Fourth Monday 7:30 pm, Lake Simcoe Regional Airport. Contact Treas.Gene Bemus 705-325-7585 gene@encode.com

COBDEN: Third Thursday 8:30 pm at Club House, Cobden Airport. Contact Pres. Clare Strutt, 819-647-5651.

COLLINGWOOD AND DISTRICT; The Collingwood and District RAA, Chapter 4904, meets every first Thursday of every. month, at 7:30 PM except July and August, at the Collingwood Airport or at off-site locations as projects dictate. The January meeting is a club banquet held at a local establishment. For more information contact Pres. Keith Weston at 705-444-1422 or e-mail at kcweston@georgian.net

EXETER: Second Monday 7:30 pm at Summers-Sexsmith Airfield, Winters-Exeter Legion. Contact Pres. Ron Helm, ron.helm@sympatico.ca 519 235-2644

FLAMBOROUGH: Second Thursday 8:00 pm at Flamborough Airpark. Contact Editor Frank Ball fdnmeball@teksavvy.com 905 822-5371

HAMILTON: Second Friday 8:00 pm Months of Feb, April, June, Aug, Oct, Dec, at Hamilton Airport. Contact Pres. Brian Kenney, 905-336-5190

KENT FLYING MACHINES: First Tuesday 7:30 pm at various locations. Contact President , Jim Easter 519-676-4019 jim.easter@teksavvy.com.

KITCHENER-WATERLOO: Meets the third Monday of each month in the upstairs meeting room of the cadet building at CYKF, except during the summer months when we have fly-ins instead. Please contact Clare Snyder clare@snyder.on.ca

LONDON-ST. THOMAS: First Tuesday 7:30 pm. At the Air Force Association Building, London Airport. Contact President Angus McKenzie 519-652-2734 dahatch@rogers.com

MIDLAND-HURONIA: First Tuesday 7:30 pm Huronia Airport. Contact Tom Massey 705-526-5304, fax 526-5310

NIAGARA REGION: Second Monday 7:30 pm at Niagara District Airport. Contact Pres. Len Petterson swedishcowboy29@aol.com http://home.cogeco.ca/~raaniagara/

OSHAWA DISTRICT: Last Monday at 7:30 pm at Oshawa Airport, 420 Wing RCAF Assoc. Contact President Chris Gardiner 905-668-5703 cgardn628@rogers.com

OWEN SOUND Contact President Roger Foster 519-923-5183 rpfoster@bmts.com

OTTAWA/RIDEAU: Kars, Ont. 1st Tuesday. Contact: Secretary, Bill Reed 613-831-8762 bill@ncf.ca

SAUGEEN: Third Saturday for breakfast at Hanover Airport. Contact: Ed Melanson 519-665-2161 meled@wightman.ca

YQG AMATEUR AVIATION GROUP (WINDSOR): Forth Monday, 7:30 pm Windsor Flying Club, Airport Road, Contact: Kris Browne e_kris_browne@hotmail.com

SCARBOROUGH/MARKHAM: Third Thursday 7:30 pm Buttonville Airport, Buttonville Flying Clubhouse. Contact Bob Stobie 416-497-2808 bstobie@pathcom.com

TORONTO: First Monday 8 pm at Ch 41 Hangar on north end of Brampton Airport Contact: President, Earl Trimble 905-787-8524 northerntailwind@aol.com

TORONTO ROTORCRAFT CLUB: Meets 3rd. Friday except July, August, December and holiday weekends at 7:30 pm Etobicoke Civic Centre, 399 The West Mall (at Burnhamthorpe), Toronto. Contact Jerry Forest, Pres. 416 244-4122 or gyro_jerry@hotmail.com.

WIARTON: Bruce Peninsula Chapter #51 breakfast meetings start at 8:30am on

the second Saturday of each month in the Gallery of Early CanadianFlight/Roof Top Cafe at Wiarton-Keppel Airport. As there are sometime changes, contact Brian Reis at 519-534-4090 or earlycanflight@symptico.ca

MANITOBA

BRANDON: Brandon Chapter RAA meets on the second Monday of each month at the Commonwealth Air Training Plan Museum at 7:30 PM except in the months of July and August. Contact Pres. John Robinson 204-728-1240.

WINNIPEG: Winnipeg Area Chapter: Third Thursday, 7:30 pm RAA Hangar, Lyncrest Airport or other location as arranged. Contact President Ben Toenders at 204-895-8779 or email raa@mts.net. No meetings June, July & Aug. RAA Winnipeg info also available at Springfield Flying Center website at http://www.lyncrest.org/sfcraac.html.

SASKATCHEWAN

Chapter 4901 North Saskatchewan. Meetings: Second Tuesday of the month 7:30pm Prairie Partners Aero Club Martensville, Sk. info at www.raa4901.com

ALBERTA

CALGARY chapter meets every 4th Monday each month with exception of holiday Mondays and July & August. Meetings from 19:00-22:00 are held at the Southern Alberta Institute of Technologies (SAIT) Training Hangar at the Calgary Airport. Join us for builder discussions, site visits, tech. tips, fly out weekends and more. Contact president Calvin Thorne at 403 932-4325 or email: cbthorne@telus.net

EDMONTON HOMEBUILT AIRCRAFT ASSOC: First Tuesday 7:30 pm EAHS boardroom. Contact President Bill Boyes 780-485-7088

GRANDE PRAIRIE: Third Tuesday, Chandelle Aviation Hangar, contact Jordie Carlson at 780-538-3800 work. or 780-538-3979 evenings. Email: jcarlson@telusplanet.net

MEDICINE HAT: Last Thursday of the month, 7:00PM, RAAC clubrooms, airport. Contact Boyne Lewis at (403) 527-9571or E mail balewis@shaw.ca

BRITISH COLUMBIA

ABBOTSFORD: Third Wednesday 7:30 pm Abbotsford Flying Club, Abbotsford Airport. Contact President, John Vlake 604-820-9088 email javlakeca@yahoo.ca

DUNCAN: Second Tuesday 7 pm members homes (rotating basis). Contact Pres. Howard Rolston, 250-246-3756.

OKANAGAN VALLEY: First Thursday of every month except July and August (no meetings) at the Kelowna Yacht Club. Dinner at 6:00pm, meeting at 7:30pm Contact President, Cameron Bottrill 250-558-5551 moneypit@junction.net

QUESNEL: First Monday/Month 7:00 p.m. at Old Terminal Building, CYQZ Airport. Contact President Jerry Van Halderen 250-249-5151 email: jjwvanhalderen@shaw.ca

SUNCOAST RAA CHAPTER 580: Second Sunday 13:30 pm Sechelt Airport Clubhouse, sometimes members homes. Contact Pres. Gene Hogan, 604-886-7645

CHAPTER 85 RAA (DELTA): First Tuesday 8pm, Delta Heritage Airpark RAA Clubhouse. 4103-104th Street, Delta. Contact President Gerard Van Dijk 604-319-0264, vandijkg@yahoo.ca. Website http://raa85.b4.ca.

VANCOUVER ISLAND AVIATION SOCIETY (VICTORIA): Third Monday 7:30 pm Victoria Flying Club Lounge. Contact Pres. Roger Damico, 250-744-7472.

THOMPSON VALLEY SPORT AIRCRAFT CLUB: Second Thursday of the month 7:30 pm Knutsford Club, contact President - Dick Suttie Phone 250-374-6136 e-mail - richard_suttie@telus.net

ALASKA HIGHWAY: meetings held every third Thursday of every month (except July & August) at the Taylor Fire Hall at 7:30 p.m. For more information call Richard at 782-2421 or Heath at 785-4758.

Chapter executives please advise of changes as they occur. For further information regarding chapter activities contact RAA Canada, 13691 McLaughlin Rd, R R 1, Caledon, ON L7C 2B2 Telephone: 905-838-1357 Fax: 905-838-1359 or call toll free: 1-800-387-1028 email: raa@zing-net.ca www.raa.ca

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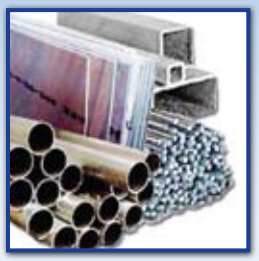
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