



Skywriter

Monthly Newsletter of the Calgary Ultralight Flying Club

March 2001

From the Cockpit

by Brian Vasseur

If you've looked outside your window you know that winter finally showed up. In spite of the weather though it's been a busy month and a lot has happened.

The first item is that we now have new club hats. Creighton kicked the effort off and Bernie Kespe rounded up some samples and researched the embroidery. This is no small effort, and I want to give my personal thanks for the work that was put in to get this done.

The next big thing to happen was of course our Annual Christmas Dinner. While we were a bit more crowded than last year, the food was excellent and I think everyone had a good time. We did extremely well in the silent auction this year raising \$596.70 for the club. For the first time in known history Louise Nesterenko didn't get top bid on the big ticket item which was snagged by Pam Gunderson, but I'm sure next year she'll be back to her usual form. The top item this year was an oak and cedar hope chest donated by Dale and Cheryl Robinson. It was an extremely attractive piece of furniture which will no doubt make Pam happy for years to come.

Transport Canada has also released the second draft of the passenger carrying

regulations. The most recent update clarified that the instructor rating will now be done to the same standards as the passenger carrying rating, and the flight test examination will need to meet that criteria in addition to the components specific to the instructor rating. This new legislation specifically identifies powered chutes and trikes.

I had a recent string of emails with another person on the passenger carrying legislation and how it will affect the industry. First is the impact on some of the remote schools and the requirement for PAX training in an AULA or better. The work being done by the manufacturers association to find a better way to certify an AULA will, in my opinion, go a long way to minimizing the cost impact of registering what would have been a BULA into the AULA category.

We discussed at the last meeting the inclusion and exclusion of Trikes and Chutes from the PAX regulations. There are many people in the industry that believe Chutes and Trikes aren't safe for passengers, which would obviously exclude them from any passenger carrying activities. While I've never flown either of these, and though I've seen these aircraft flown dangerously, I don't think it will be long before they are treated the same as ultralights now. All of these two types that I've seen have been primarily factory manufactured which makes them an obvious candidate for some form of AULA participation, but

with some specific differences. The second thing is that these aircraft often have two seats so the justification for having Ultralight passengers would seem to apply to these two types as well.

As an ultralight community we can do two things. First, just exclude them and let those groups sort it out for themselves. Or second, recognize that they're viewed as ultralights by the community. If we do this then the best thing we can offer is to find ways to include them with the ultralight community, specifically with clubs and activities. Our club is a big benefit to our members because we get to share information that creates a safer environment for all of us. This is more than just some place for these groups to belong, it sets a shared expectation that we're all expected to maintain high standards and a positive image in the community.

Kim Skulskly brought in his new VW 1835 engine to the last meeting. He had it done by VW guru Dale Sevcik in Calgary and it's an extremely nice piece of hardware for a very attractive price. With dual carbs and electronic ignition it is going to be a very hot performer. Dale can be reached at 236-5619.

Now that the snow is here for awhile, those with Ski's will be out in full force. I look forward to the usual coffee on Chestemere Lake stories at the next meeting. →

For Sale

Renegade Spirit - TT 260, 65hp Rotax 532 60 hrs since rebuild, excellent condition, always hangared, see pictures and details at www.skywalker.ca, \$25,000 OBO. Bob Kirkby 403-569-9541 (3/01)

1984 Chinook WT-2 - 6 hrs on Rotax 377, 10 gal tank, ICOM A4 radio, wheels, skies, floats, & more, \$6500. Don Leonzio 250-427-2046. (3/01)

Rotax 503 - DCSI, "A" box, 228 TTSN by Reg's Engine. 30 STOH. Currently on a Beaver RX 550. Well maintained, strong engine. \$2500. Call Ron at (403) 345-3013 (2/01)

1998 Fisher Avenger - 90 TTAF, 200 TTE, Rotax 503 DC, 2-blade wood prop. Many new parts including hardware, fuel system, canopy and more. Canopy converts to open cockpit by pulling one pin. Great handling, great visibility. \$8500 OBO. Call Stu at (403) 255-6998 or e-mail at simpson@cadvison.com (1/01)

Hiperlite - single place, Rotax 447, totally rebuilt in 2000, \$12,500. Chuck Duff 938-6157. (1/01)

VP1 Kit - partially complete. Most materials and hardware to finish. \$2000 invested, \$900 obo. Brian Vasseur 226-5281 (12/00)

Honcho Nomad - no engine, needs rebuild, with custom trailer. This is a high-wing, strut-braced motor glider, \$2000. Call Russ White 250-353-2492. (12/00)

MiniMax - Rotax 447, GSC Ground adjustable prop, full panel, always hangared, only 115 hours since new. \$8,500. OBO. Dale 293-3826. (12/99)

Trade - Western Star Dump Truck for single or 2-place ultralight. Will consider trades up or down from \$10,500. Call Russ at 250-353-2495 or leave msg at 2492. (11/00)

Parting out - Rans S12 Airaile parts and pieces with AULA registration. Call Russ at 250-353-2495 or leave msg at 2492. (11/00)

Rotax 503 - single carb, new single ignition, requires A drive, \$2750.00. Call Glen Munro 403-335-3764 or Paddy Munro 403-638-5067. (10/00)

Beaver RX550 - excellent condition, 400 hrs on air frame, 7 hrs on new Rotax 503, dual carb, single ignition, A drive, always hangared, \$8500.00. Call Wayne Winters 403-936-5767. (10/00)

Forward ads to Bob Kirkby 569-9541.

Ads reprinted from the St. Albert Flying Club Newsletter

1998 Folgore ST - highwing taildragger, side by side 2 place, Rotax 912, 100 hrs TT E&A, Flaps, 38 mph stall, cruises at 85-90, 120 lb gross. Amateur built category but can be flown with UL permit. Heated cockpit, ELT, full instrumentation, radio, nav lights, skis, 17 gals tank (4.5 hrs) 25lb luggage compartment. Red and yellow, \$35,000 OBO. Rob at 780-447-3208 or 780-476-9312.

Bushmaster - Rotax 503 dual carb, 80 hrs on engine after complete rebuild, tundra tires, skis, bench seat, radio, dual headsets, hangared, \$15,000. Dan Pandur 780-452-2491.

Penetration skis - suitable for ultralight or home built, \$500 OBO. Reg Lukasik 780-459-0813.

Floats - with lockers, spray rails, water rudders and rigging. Suitable for ultralight or home built, weight 130lbs, \$3000 OBO. Reg Lukasik 780-459-0813.

Chinook WT II Plus - single seat, upgraded wing & tail, approx. 35 hours on new Rotax 447, endura paint, brakes, flaperons, skis, cabin heat, Icom IC-A4 radio, cruise at approx. 67 mph with 230 lbs. pilot, always hangared, \$8000, call

Dan at 780-906-3472 or e-mail at d_campeau@hotmail.com

1986 Bushmaster II - ultralight, high cabin, side by side seating, dual controls, heater. 130 TTSN. Rotax 503, SCSL, 120 TTE. Complete manuals, drawings, & logs. Never a trainer, only 2 pilots. Very good condition, \$16,500 OBO 780-459-0813 or e-mail tva@compusmart.ab.ca

Hirth F-23 - used 6 hrs, 40 Hp, \$2,800.00 Dan (780) 452-2491

Three bladed GSC prop - 64", almost new, \$500. Contact Viv 460-8753.

REDUCED! 60" x 38" Culver wood prop (left hand) drilled for Rotax. \$250.00 Contact Viv Branson 460-8753.

Skywriter

Skywriter is the official newsletter of the Calgary Ultralight Flying Club and is published 12 times per year. Forward your articles and letters to:

Editor: Bob Kirkby 569-9541
e-mail: kirkby@skywalker.ca

Assistant-editor: Bernie Kespe (see below)

Calgary Ultralight Flying Club

Meetings of the Calgary Ultralight Flying Club are held on the second Thursday of every month, except July and August, at 7:00 pm, at the Northeast Armoury, 1227 - 38 Avenue NE.

President: Brian Vasseur 226-5281
e-mail: vasseurb@cadvision.com

Vice-President: Bob Kooyman 281-2621
e-mail: kooyman-eng@home.com

Secretary: Bernie Kespe 255-7419
e-mail: kespeb@cadvision.com

Treasurer: Carl Forman 283-3855
e-mail: formanc@cadvision.com

Director: Dan Mitchell 238-4254
e-mail: mitchell@cadvision.com

Past President: Wilf Stark 935-4248
e-mail: wstark@compuserve.com

Visit the CUFC web site:
www.cadvision.com/cufc/

Horsepower vs Torque

by Bruce Piepgrass

At the club meeting in Feb, we had an excellent presentation of VW engines given by Dale Sevcik. It was very informative and I really enjoyed it. But whenever the question of horsepower came up, he was reluctant to give an answer, saying that the important thing was torque, not horsepower. From the reaction of the audience, it would seem that they were in agreement with this opinion. I have read the same comment in a number of magazine articles on aircraft engine power, and I find this rather strange. I think that horsepower is the important thing, however it must be available at the RPM that you intend to use. Let me explain.

First, some definitions:

One horsepower is equal to 33000 foot lb per minute. That is the amount of effort or power required to lift 1 LB to a height of 33000 feet in one minute, or to lift 33000 Lbs. to a high of one foot in one minute.

Torque is a force, which causes rotation and is often measured in foot-pounds. For example, if you are tightening a nut with a wrench that is one foot long, and you

apply a force of one pound, that would be one foot-pound of torque. Or if you were using a six-inch wrench, you would need to apply two pounds of force to get the same amount of torque.

To go from torque and RPM to horsepower you have to multiply by 2π . (Pi is about 3.1416) $2 * 3.1416 = 6.2832$. So, horsepower is equal to torque times RPM times 6.2832 divided by 33000. (HP = Torque * RPM * 6.2832/33000 or HP = Torque * RPM / 5252)

If you have a direct drive VW engine that produces 65 horsepower at 3000 RPM the torque would be $65 * 5252 / 3000$ (Torque = HP * 5252 / RPM) or about 113.8 foot-pounds of torque.

Some engines are designed to run at much higher RPMs. However, as we all know, the propeller speed is limited by the diameter of the propeller. (Propeller tip speed must stay well below the speed of sound.) So, a Propeller Speed Reduction Unit (PSRU) of some kind is used to 'gear down' the engine. Let's take the Rotax 582 as an example. It is rated at 65 horsepower at 6500 RPM. The torque at the crankshaft would be $65 * 5252 / 6500$ or about 52.5 foot-pounds. But lets say that you have a 2 to 1 reduction drive, the RPM at the propeller would be 3250. So the torque at the propeller would be $65 * 5252 / 3250$ or about 105 foot-pounds. ($105 / 2 = 52.5$) The RPM is half as much and the torque is twice as much, but the

horsepower stays the same. (I am ignoring friction lose in the PRSU.)

Graphs showing horsepower and torque can be a bit confusing. At higher RPMs, the torque begins to drop off, but the horsepower continues to go up. This can lead to the impression that torque is more important than horsepower. But remember, horsepower is equal to Torque * RPM / 5252. The horsepower keeps going up because the RPM is going up faster than the torque is going down.

Now don't get me wrong, I'm not saying that torque is not important, it is. If you "run out of" torque, then giving the engine more throttle won't increase the RPMs. This is what happens in a low powered car when going up a steep hill. You can give it more gas, but it just won't go any faster. You need more torque where the rubber meets the road. If you have a standard transmission, you can go to a lower gear and rev the engine higher. Your engine produces more horsepower at the higher RPM, which is geared down by the transmission to increase torque at the drive shaft. But the only way to get more torque at the crankshaft for a given engine RPM is to increase the horsepower of the engine. To put it another way, you can get as much torque out of an engine as you want, but you have to gear it down to get it. A 65 horsepower Rotax engine can give you 1000 foot-pounds of torque, but only if it is geared down to 341 RPM (19:1 gear reduction). If you want 1000 foot-pounds of torque at 3000 RPM you need 571 horsepower to get it ($1000 * 3000 / 5252$).

There is no way around it. There is simply no substitute for (horse) power.

Of course I am always willing to hear other opinions. →

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Private	Single	Twin
Normal Category	12540	782
Restricted	284	12
Amateur Built	2526	5
Ultralight	3331	519
AULA	617	0
Experimental	12	48
Total	19310	1366

Commercial	Single	Twin
Normal Category	3757	1963
Restricted	347	47
Total	4104	2010

State	Single	Twin
Normal Category	88	131
Restricted	5	25
Amateur	3	0
Experimental	5	4
Total	101	160

Grand Total	23515	3536
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These statistics are included here at the suggestion of member Mac Harrison. After discussions of accident rates at the last meeting Mac felt some hard facts might be of value.

You are cautioned about drawing accident rate comparisons between ultralight and general aviation, or any conclusions for that matter. Keep in mind that there is no effective mechanism in Canada for de-registering ultralights. Therefore the numbers above include all ultralights ever registered and we all know there are many

Canadian Aviation Accidents

Transportation Safety Board of Canada

	2000	1999	1995-1999 Average
Canadian-Registered Aircraft Accidents ¹	321	341	363
Aeroplanes Involved ²	259	287	298
Airliners	9	6	8
Commuters	5	13	14
Air Taxis/Aerial Work Aircraft	65	89	115
Other Commercial Air Services ³	0	8	2
Private/Corporate/State	180	171	159
Helicopters Involved	53	45	56
Other Aircraft Involved ⁴	12	15	13
Hours Flown (thousands) ⁵	4,260	4,100	3,942
Accident Rate (per 100,000 hours)	7.5	8.3	9.2
Fatal Accidents	36	34	39
Aeroplanes Involved	25	28	32
Airliners	1	1	1
Commuters	1	2	1
Air Taxis/Aerial Work Aircraft	5	6	12
Other Commercial Air Services	0	0	0
Private/Corporate/State	18	19	18
Helicopters Involved	10	4	7
Other Aircraft Involved	1	4	2
Fatalities	63	65	81
Serious Injuries	54	42	50
Ultralight Aircraft Accidents	39	35	40
Fatal Accidents	6	12	7
Fatalities	10	19	10
Serious Injuries	10	7	8
Foreign Aircraft Accidents in Canada	18	24	21
Fatal Accidents	7	6	5
Fatalities	18	9	56
Serious Injuries	2	1	3
All Aircraft Incidents	726	705	703
Collision, Risk of Collision, Loss of Separation	170	176	185
Declared Emergency	226	209	205
Engine Failure	162	157	164
Smoke/Fire	84	86	78
Other	84	77	71

¹ Ultralight aircraft excluded.
² As some accidents may involve multiple aircraft, the number of aircraft involved may not sum to the number of accidents.
³ Category broken out from Air Taxis/Aerial Work Aircraft.
⁴ Includes gliders, balloons and gyrocopters.
⁵ Source: Statistics Canada (1996, 1997, 1998, 1999 and 2000 hours flown are estimated.)
 (2000 figures are preliminary as of 12 January 2001 and subject to change.)
 Source: Transportation Safety Board of Canada

Registration statistics are taken from the Transport Canada web site and accident statistics from the Transportation Safety Board of Canada web site.

aircraft from the early 80's that have long since been abandoned. Just look at the number of twin ultralights registered (519). All but 1 or 2 are Lazairs and we know how many of those are still flying! The same goes for Eipers, Weedhoppers, Easyrisers, etc., etc.

The only conclusion I care to draw is that there are too many accidents - especially fatal ones.

-Editor

*“Use your best
judgement at all
times”*

Flying Events

The Airport Corporate Center
800, 1601 Airport Road
Calgary, AB T2E 6Z8

12 February 2001

Calgary Ultralight Flying Club

Dear Sir:

The Second Edition of the Flight Testing Requirements Passenger Carrying Rating - Ultra-light Aeroplane has been developed and is enclosed.

Also enclosed is a copy of NPA 99-084 that revises the skill requirement for Flight Instructor Rating - Ultra-light Aeroplane. You will notice the proposed new skill requirement is to have "*successfully completed a flight test to the standard outlined in the Flight Test Standard - Passenger-Carrying Rating - Ultra-light Aeroplane...*". Page two of this standard lists the aircraft that may be used for this flight test. Changes to this Second Edition allow for Basic Ultra-lights, Powered Parachutes and Trikes to be used.

Please send your comments. You may also wish to check the Ultralight Pilots Association of Canada (UPAC) website and/or newsletter.

The success of this initiative depends on your input. Share this material with your colleagues in the Recreational Aviation Community and please send your comments by return mail to 330 Sparks St., 6th Floor, (AARRD), Ottawa, ON, K1A 0N8, by facsimile to (613) 990-6215 or by e-mail to Karen Tarr at TARRK@TC.GC.CA.

Sincerely,

Lenora Crane
Recreational Aviation & Special Flight Operations
General Aviation
Prairie and Northern Region - Calgary

The above letter is addressed to all members from Lenora Crane of Transport Canada. The attachment she refers to will be available at the March meeting. - Editor

March 9-11 - Alberta Aviation Council's Get S.E.T. workshop at the Coast Plaza in Calgary. For info call 888-289-4222.

April 8-14 - Sun 'n Fun, Lakeland, Fl. For info call 941-644-2431.

May 4-6 - Toronto Aviation & Aircraft Show. For info call 877-863-5946.

May 6 - COPA Red Deer Safety Seminar and fly-in breakfast. Seminars start at 10:00am. For info call 403-886-5191.

July 14 - Annual Kirkby fly-in breakfast at Chestermere-Kirkby Field. 8:30am to 12:00noon. For info call 569-9541.

July 11-15 - Northwest EAA fly-in, Arlington, Wa. For info call 360-435-5857.

July 24-31 - Airventure Oshkosh. For info call 920-426-4800, web site www.airventure.org.

August 4-5 - Red Deer Airshow with the Snowbirds.

August 8 - Cranbrook Airshow with the Snowbirds.

August 18-19 - Lethbridge Airshow with the Snowbirds.

Avid - continued from page 7

September but the Propeller never arrived until early January. The engine break in and taxi tests are now complete. I did the taxi testing but since I don't have a lot of recent taildragger time I will not be doing the test flight. I feel confident that I can take off and fly OK but I am not sure about the landings. I used to be good at stall landings, and I don't have any

trouble landing Glen Bishell's Bushmaster. Since I have never done wheel landings I think it will be a lot safer to have someone with Avid or Kitfox experience do the test flight. Jim Corner has done a rigorous inspection and test flight should occur as soon as we get some decent week end weather.

Building an aircraft with a friend was a great experience. For me there was more

satisfaction in the challenge of building than urge to get out there and fly. I am more keen about starting on the Avid Speedwing than looking forward to the coming summer of flying. That is one of the great things about this Hobby/Sport. One can get satisfaction from so many aspects of it --- designing, building, flying or just the camaraderie of fellow enthusiasts at the field, meetings or other functions. →

Kit of the Month

The Skyboy from Interplane U.S.A.

Once bitten by the ultralight bug it is very hard to shake. Bill McClung is a long time ultralight enthusiast who started out in ultralights with a proven winner - the Beaver ultralight line from Canada. He has now found a new love - this time from the Czech republic. Bill was at Sun N Fun last year with the new (new to North America) Skyboy a two place ultralight trainer built in the Czech republic and imported into the U.S. They are being produced and built to a certified standard in Europe. This quality control was quite evident in the finish of the two units on display. Both craft can also be supplied as experimental aircraft kits for pilots wanting to fly the planes with their conventional license. According to Bill the Skyboy takes about 500 hours to build. Construction used mates composite fairings etc., with standard aircraft covering materials. The design has been flying since 1984 and Skyboy meets the requirements for a two place ultralight trainer.

Skyboy UL Trainer Kit

Aluminum alloy tubes with riveted beam superstructure includes finished tail skeleton. Composite passenger cabin and fabric rear fuselage fairing.

High-lift P-3 wings with forward 2° sweep, hydroformed ribs, composite wing tips, ready for easy assembly.

PolyFiber fabric wings and tail covering set furnished with kit.

Tubes for wings struts and other parts furnished in a finished condition.

UL main gear with hydro-pneumatic shock absorbers and mechanical nose brake. Steerable nose wheel. Control system set.

Standard dual control with separate joysticks, pedals, and mechanical elevator trim tab set.

Engine mounting hardware for Rotax 582 with recoil starter includes choke, fuel shut off valve, cables, wiring harness, switches and fuel hose kit.

Fuel tank, including installation parts kit. Four point safety belts, upholstered seat rest and cushion-seat back. Plywood



Skyboy 2-place Ultralight from Interplane.

cabin wall kit and aluminum alloy instrument panel blank.

Skyboy UL Pricing

Skyboy UL Airframe kit without engine \$9,900.00 (US). Includes mounting kit for Rotax 582.

Factory Assembled Skyboy UL \$18,900.00 (US) Includes Rotax 582, instruments and white paint.

Skyboy UL specs

Length: 20.90 ft

Height: 6.99 ft

Wing Span: 31.17 ft

Wing Area: 145.32 sq ft

Propeller Diameter: 71 in

Max. TO weight: 1000 lb.

Empty weight (S model): 592 lb.

Never Exceed (Vne): 102 mph

Max. Level Speed: 93 mph

Stall: 39 mph

Max. Rate of Climb: 800 fpm

Take Off Distance: 260 ft

Landing Distance: 260 ft

Range (Economy Cruise): 220 miles

Load Factors (Ultimate): +6 / -3

Skyboy EX Kit

Aluminum alloy tubes with riveted beam superstructure and fuselage. Tail skeleton furnished already assembled.

Composite passenger cabin, and

composite cabin rear fairing.

Wings NACA 4412 with forward 2 degree sweep, hydroformed ribs and composite leading edge support, composite wing tips. Kit designed for easy assembly.

Ceconite fabric kit for wings and tail covering.

Tubular wing struts.

Standard main gear with hydro-pneumatic shock absorbers

Hydraulic main gear brakes with toe pedals.

Steerable nose wheel

Dual control with separate joysticks, pedals, and mechanical elevator trim tab.

Engine mounting kit for Rotax 582 with electric starter, includes engine mounting hardware, choke, fuel shut off valve, wiring harness, including switches, and fuel hoses "kit". Also includes battery bracket & cables.

Fuel tank, including installation "kit".

Four point safety belts, upholstered seat rest and cushion-seat back

Plywood wall kit and aluminum alloy instrument panel.

Includes all the "extras" such as wheel pants, interior "kit" doors, and many other desirable features which otherwise would be "optional".

Engine upgrade option to the Rotax 912.

(continued on page 7)

Skyboy - continued from page 6

Skyboy EX Pricing

Skyboy EX Airframe kit without engine \$14,900.00 (US).

Includes mounting kit for Rotax 582.

Fully Assembled Skyboy EX \$24,900.00 (US) (For delivery outside the U.S. only)

Includes Rotax 582, full instrumentation and custom paint and finish.

Skyboy EX specs

Length: 20.90 ft

Height: 6.99 ft

Wing Span: 31.17 ft

Wing Area: 145.32 sq ft

Propeller Diameter: 71 in

Max. TO weight: 1000 lb.

Empty weight (S model): 592 lb.

Never Exceed (VNE): 102 mph

Max. Level Speed: 93 mph

Stall: 39 mph

Max. Rate of Climb: 800 fpm

Take Off Distance: 260 ft

Landing Distance: 260 ft

Range (Economy Cruise): 220 miles

Load Factors (Ultimate): +6 / -3

For More Information Contact:

Interplane

39440 South Avenue,

Zephyrhills, Florida 33540 USA

Tel: 813-782-7900

FAX: 813-788-6600

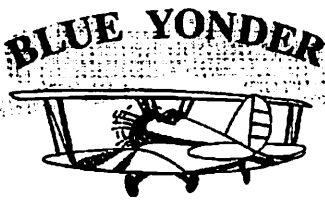
Internet: www.InterplaneAircraft.com

Avid - continued from page 8

Ben's wife Mary phoned the hanger to let us know supper was ready. On the weekends we would drive into Calgary for breakfast then have lunch about 3PM, I would head for home around 5 PM.

I have often heard that when you think an aircraft is complete you are only half finished. I found this to be quite true; it is all of the little things that take time. Things like making sure every moving part moves smoothly but there is no free play, all wires and plumbing is secure, and if by chance something may come free it will not interfere with a vital part.

Originally I had planned on using the Avid streamline cowl with a radiator below the fuselage. I also had the newer



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but damaged Model IV cowl and new Rotax internal mount radiators. Ben thought the Factory Rotax radiator system would work better and I agreed. The bottom of the two piece cowl was badly damaged and looked more like a limp rag than a cowl. A little fabric, fiberglass resin and a lot of effort resulted in a structurally sound cowl that needed much sanding, priming and filling. Things were going well and it looked like we would be able to fly as soon as the cowl was finished. At this time I had to rush off to Edmonton for a week. On my return Ben had completed priming, filling and painting the cowl. I asked Mary if Ben had done a lot of cursing at the cowl and her only response was "I

told him he could leave it until you returned". Ben responded with "I had to work on it, it wouldn't get finished just sitting there on the floor".

Without Ben's ability to get tricky things done correctly and Mary's hospitality I think I would still be working on the little things required to ready the Avid for flight. The best part of rebuilding the Avid was working with Ben. He taught me a lot about patience; he showed me tools, paint, glue and other things that I never even knew existed.

The aircraft was complete by the end of (continued on page 5)

Avid Part 3

by Ed D'Antoni

Photo 1 shows all of the parts ready for assembly. The wings, rudder, cowl, doors and windshield have been on and off several times and everything fits. The only thing not previously installed was the horizontal stabilizer and elevator, therefore final assembly started with installing the horizontal stabilizer. This would be followed with elevator installation and adjustment of elevator throw. Two bolts attach the elevator to the vertical fin and two "A" struts are then fitted below the stabilizer to provide support and keep the stabilizer horizontal.

Installation of the struts resulted in the stabilizer being about 15 degrees askew. Checking the struts against the drawings indicated they were the correct struts.

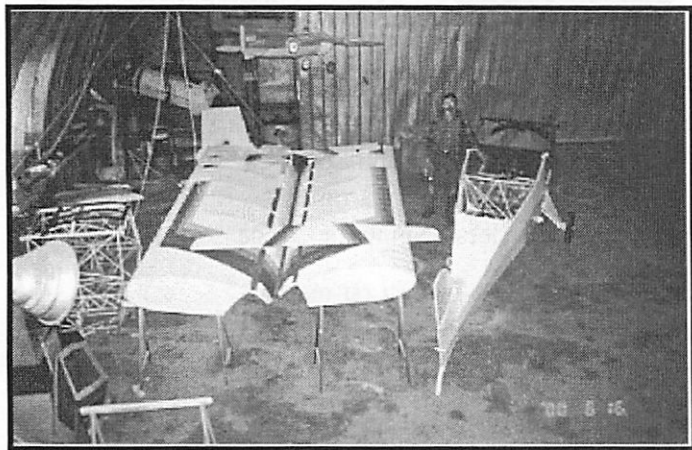


Photo 1

After a quick comparison with my other Avid I discovered the rudder was offset 2 degrees to the left instead of 2 degrees right. The original engine had a belt reduction system; thus propeller rotation was clockwise requiring left stabilizer offset. The use of a Rotax 582 with a gear reduction and a counterclockwise propeller rotation dictated a change in stabilizer offset rather than simply purchasing different "A" struts. In the end I discovered construction of the vertical fin is such that a simple movement of the front attach point of the

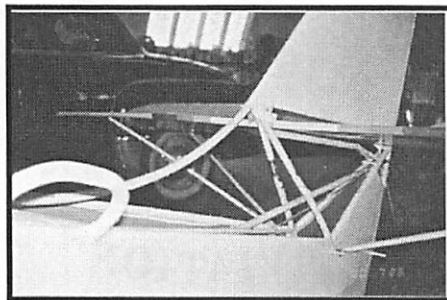


Photo 2

Vertical fin about 3 inches to the right would change the offset to what was required. The difficult part was the trauma of cutting out the most difficult to cover area of my newly covered and painted Avid. At that point I decided the easy solution was to assemble the aircraft set for a clockwise rotation propeller and sell it firewall back to someone that wanted to use something like a Subaru engine. The more I thought about it the more discouraged I became. In fact I stopped working on the aircraft for almost 2 months. That is my excuse, the fact that it was late June, Arlington was coming and I would rather be out flying than working on an aircraft may have been relevant.

Photo 2 shows what the fabric looked like before and after changing the vertical fin offset. Eventually, as Photo 3 shows, I took a knife to the fabric and did the modification. The fabric repair was

done as per the Poly-System manual. The stitching, paint removal and shrinking as per instructions still left a few wrinkles in the final product. The tail section was then assembled and rudder, elevator and Maul tailwheel checked and adjusted for operation and throw as recommended by the manufacturer. It was now September, I ordered the Engine from Blue yonder and received it the very next day. I heard Powerfin propeller deliveries were slow so I ordered the propeller the day I picked up the engine.

Engine installation went as per instructions with no difficulty.

So far, except for the painting, Ben gave me a lot of good advice but didn't get really involved in the project. After the engine was installed Ben asked how I was going to install the throttle. After explaining how it would work Ben looked at me and said, "You can't push on a cable". It was late, I felt he didn't understand, so I took the 40 km. Drive home.

Ben's hanger is T shaped. One part is his workshop, an area capable of holding an aircraft, all of his equipment and a couple of automobiles. At the north end of the shop is a sliding door that opens into the larger part of the hanger. This is where the Avid was located. Arriving at the hanger the evening after discussing the throttle hook up I pushed aside the sliding door to see a table under the engine, the engine compartment and cockpit lit with a floodlight and Ben sitting on a stool his chin in his hands studying the throttle area. He looked up and said, "You caught me!" Without making me look too stupid he finally convinced me my system wouldn't work. I should have known that, two things I



Photo 3

learned in school were Newton's first Law ($F=ma$) and you can't push on a rope. We dug out the throttle parts and began putting them together. When we ran out of parts and time I left saying I would be back with the required parts the next evening. When I returned the next evening the throttle was installed and working. From that time on Ben was hooked. We worked together every evening and week end after that. During the week Ben and I would work until
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