EAA Mount Rainier Chapter 326 Newsletter

Thun Field – October 2007 106

Meeting Notice

Tuesday, October 9th, 7 PM
CAP Building, Thun Field

Program: Rotax Engine. Dave Smith
Thunder Mustang Engine: George Gibony

Refreshments: Chris Smith

From the Secretary

EAA Chapter 326 meeting Sept 11, 2007

Jeff called the meeting to order for the evening. Tonight's meeting was a group wide project report to get everyone up to speed with the projects underway.

Next meeting will be a small burger burn to use up the left over burgers

Visitor: Carlos Rodriguez – A&P and a pilot, interested in GA

The burger burn was a big success with the move to Sunday this year. There was lots of time for visiting and we had a record turn out. Look for it to stay with the new schedule going forward.

Joe Andre and Bob Brooks attended the Thun field advisory council meeting in July to keep an eye on what is going on with the airport and community relations.

$4093 in the treasurer report

Jeff inquired about getting chapter clothing made up. We have new hats, now we need new shirts made up.

Time to start thinking about possible new Young Eagles dates that might give us a better chance to getting a good weather day.

- Andy

Rotax 912S Engine-Care and Feeding Thereof

From Van's Website

The RV-12 is our first experience installing, operating, and servicing the 100 hp Rotax 912 engine. Being a liquid cooled, high RPM, geared engine, it is quite different than the Continental and Lycoming engines.

Installation was more challenging than a Lycoming because the engine has two carburetors, a separate oil tank, and two heat exchangers; the coolant radiator and the oil cooler. On the plus side, with liquid cooled cylinder heads, no baffles other than a shroud for the inner fins of the cylinders are needed.

We mounted the heat exchangers vertically in the lower forward cowl, under the spinner, and fed them air through a single horizontal oval inlet. Mounting them to the cowl isolates them from engine vibration and provides an excellent seal, so no air is lost through duct connections or relative motion between the cowl opening and the coolers. There are also two small round inlets near the spinner which provide air to the carburetors and cool the inboard portion of the cylinders. They have worked very well in keeping the cylinder head temperatures cool.

The oil cooler has worked too well in the cool ambient temperatures we've experienced testing in autumn and winter. Rotax specifies that engine RPM should not exceed 2500 (the Rotax idles at 1200 rpm and red line is 5800 RPM, so 2500 rpm is still low power) until oil temps reach 120 deg. F. This has caused long run-up times before take-off.

Operating the Rotax is a very pleasant experience. The Bing carbs are equipped with chokes for starting rather than primers (older drivers will remember chokes; they were common way back when cars had carburetors.) They also feature automatic mixture compensation for altitude changes, so there is no mixture control in the cockpit. The engine starts easier than either a carbureted or fuel injected Lycoming. It is smooth and quiet, both on ground and in flight.

Fuel consumption is obviously lower than other RVs because of the low power of the engine. However, despite magazine writers like to rhapsodize about how the Rotax "sips" fuel, its consumption (in our experience and from Rotax charts), is consistent with other aircraft engines of similar power. Its Specific Fuel Consumption (bsfc) is similar to Lycoming and Continental engines, so at rated 75% power, it burns about 5.8 GPH. Figures like "3.5 to 4.5 gph" are often quoted in flight reports, but these can only be achieved by using less than 75% power and should be noted as "economy cruise consumption" figures.

Notice from Van's
Sept 6, 2007
Tricycle Gear Aircraft Nose Wheel Torque

Question:
How do I properly install the bearings and torque the axle nut on MATCO mfg wheels with tapered roller bearings that have the integrated rubber grease seal on the bearing cone?

Answer:
MATCO mfg wheels using tapered roller bearings are equipped with Timken bearings utilizing integrated grease seals on the bearing cone to ensure the longest possible life. The torqueing procedure for bearings with these type seals is different than for tapered roller bearings without them. A common torqueing technique for bearings *without integrated seals* is to tighten the axle nut until the wheel stops spinning freely and then back off to the nearest locking feature. THIS TECHNIQUE WILL NOT WORK ON A BEARING WITH AN INTEGRATED SEAL. The reason for a different torqueing technique is that the grease seal produces some drag and makes the wheel feel somewhat stiff when rotated. Reducing the axle nut torque until the wheel spins freely will allow the grease seal and the bearing cone to improperly rotate with the wheel (the cone must not rotate relative to the axle). The higher rolling drag is completely normal for this bearing and allows for longer bearing life since the seal will keep most contaminants out. Timken specification state, for example, that the two 1.25 inch tapered roller bearing used on the WE51 will produce between 18-26 inch pounds of torque (drag) when properly installed. A light coating of grease on the seal will help reduce the drag on initial installation. The drag will also reduce after the bearings have been installed and the seal relaxes in the bore. It is important that the axle nut torque be sufficient to keep the seal from rotating with the wheel. With the bearings cleaned, dried, greased, and inserted in the wheel, the axle nut should be tightened until all play is out of the assembly. Rotate the wheel back and forth while tightening the nut to help seat the bearings. When all play is out of the assembly, and the wheel rotates freely, tighten to the next castle slot and insert the cotter pin. The rubber seal on the tapered roller bearing will remain stationary while the wheel rotates around it. If the seal is spinning on the axle, the nut should be tightened further until the seal stops spinning with the wheel. Nose wheels on Van's Aircraft tricycle gear aircraft use Matco wheels and bearings with integrated rubber seals. It has been our determination that the "Minimum" torque that can be used to ensure that the wheel bearing outer cone and seal does not move is 7 ft-lbs. Our "Maximum" torque recommendation is 16 ft-lbs. This value is based on the standard bolt torque for the AN6 bolt used as the nose gear axle on all models.

http://www.vansaircraft.com/pdf/Nose_W_T.pdf

Aerobatic Gross Weight

There has been some confusion about Aerobatic gross weight on the RV-3 ever since the new B wings were introduced in 1998. I spoke with Van himself twice on this issue, he in turn discussed with his staff internally, and have now clarified it. Aerobatic gross weight for the RV-3 (all models, all wings) is 1,050 lbs. (no confusion on this). This figure however does NOT include fuel in WING tanks which is what was not clear. Note that any fuel in a fuselage tank WOULD be included in the Aerobatic gross.

Interestingly, he confirmed that this method applies to any RV model. As an RV-8 builder/pilot I interpreted Van's W&B instructions to mean that fuel WAS included in Aerobatic Category gross weight calculations as well as Utility/Normal Category gross weight operation. In fact that is erroneous -- as long as the fuel is in wing tanks it may be excluded from the Aerobatic calculation and limit. Of course Van's points out that weight has other deleterious effects on aerobatic handling and encourages pilots to use good judgment when loading their aircraft for aerobatics.

Randy Lervold

From section 15 of the preview plans:

MAXIMUM G-LOAD: Plus 6 and minus 3 G's for an RV-4 or RV-6/6A flown at an aerobatic gross weight of 1375 lbs. (1600 lbs. for the RV-7/7A/8/8A* or 1050 lbs. for the RV-3. The RV-9A has a maximum G load of +4.4 and -1.8 at 1600 lbs.). For operational gross weights above this figure, aerobatic maneuvers should not be performed. This also assumes that the RV was built in strict conformity with the plans. Any variation in materials used, dimensions of primary structural parts, or workmanship standards, can cause a loss of strength and cause the actual limit load to be less than the design limit load.
Dan Checkoway.

*The original RV-8 wing only has a 1550 lb aerobatic gross weight. I queried Vans on this, and they replied:

Yours is still 1550 if you have the pre-mid 2000 wing. The dash1 wing common to the 7 and 8 has the 1600 limit, but these were not shipped till mid 2000.
Kevin Horton

I have the original wing. I called Vans to ask about the difference between my original wing and the dash 1. I was told that the difference is the spar. They went to the dash 1 wing spar because it is the same one used in the 7, and it made more sense to use the same spar for both the 7 and the 8. They assured me that there was nothing wrong with the original wing.
Tony Johnson

Therm-X™ by RDD

Heat is the most efficient method of keeping ice from forming. Until now thermoelectric de-ice technology has not been available for general aviation aircraft. Alternative solutions were created to keep wings free from ice. *Therm-X*™ is the heated leading edge solution.

RDD is the exclusive distributor of *Therm-X*™, a proprietary electro-thermal system designed by Kelly Thermal Systems and adapted for the experimental market by RDD. *Therm-X*™ is simple by design insofar as it has no moving parts, requires no maintenance, requires no messy and expensive de-icing solution and best of all—*Therm-X*™ provides an inexhaustible supply of ice protection (and peace of mind for encounters with inadvertent icing conditions).

Therm-X™ is a graphite foil laminate applied to the leading edge of the wing and horizontal stabilizer. Electronic heating elements embedded within the laminate are powered by a 75 volt/100 amp alternator. The result is 7,500 watts of digitally controlled energy coursing through two heating zones to keep the wings free of ice. The leading edge "parting zone" receives constant heat while the "shed zone" is managed by a digital controller to receive a heated cycle to disbond ice so it can be aerodynamically whisked away virtually eliminating runback. Click here for more info on *Therm-X*™.

Therm-X™ is used like a heated pitot system. The entire *Therm-X*™ system only weighs approximately 40 pounds.

Click here for an operational demonstration.

By selecting the "Buy Now" button you will be securing your *Therm-X*™ order with a deposit amount of $8,500. The remaining money will be collected two weeks prior to delivery of your *Therm-X*™ system. This product is currently only available for the Lancair IV and ES series aircraft with other models coming soon.

DD also has Therm-X systems in the works for other experimental aircraft... including such popular models as the Velocity, the Lancair Legacy and Vans RV-10

The permanent reduction effectively lowers the price of the complete Therm-X System (prop and airframe) to $18,995 for the Lancair IV series aircraft and $17,995 for the Lancair ES series aircraft.

Reno Race Winners 2007

Pilots tested their skills over the high desert at Reno Stead Field, flying around seven to 10 course pylons—50-foot telephone poles with specially made drums on top. (Judges sit at the base of the poles and look straight up through the drum to catch racers who "cut the pylons." Pylon cuts are figured into the pilot's official race time and standing.)

- Biplane Class Gold: Cris Ferguson in a Pitts LR-1 at 233.470 mph
- Formula One Class Gold: David Hoover in an Arnold AR-6 at 245.669 mph
- Sport Class Gold: Pete Zaccagnino in a Lancair IV at 301.616 mph
- Sport Class Super Sport Gold: Jon Sharp in a Nemesis NXT at 385.650 mph
- T-6 Class Gold Medal: Dennis Buehn in a T-6D at 234.939 mph
- Jet Class Gold: Rich Sugden in a T-2B at 489.454 mph
- Unlimited Class Breitling Gold: John Penney in an F8F-2 Bearcat at 478.394 mph

Night Stuff

The VFR sectional and terminal charts' airport data lines and airport depictions include coded information and symbols that pilots must understand for night flight planning. The solid blue star (after the CT - control tower - frequency) at towered airports indicates that the control tower is not in full-time operation (the hours of operation for each airport depicted on a particular chart can be obtained by unfolding the chart and looking up the frequencies tabulation).

The letter "C" enclosed in a solid blue circle after the CT frequency and solid star means the airport has a common traffic advisory frequency, or CTAF. This frequency is used when the tower is not in operation or where depicted at a nontowered airport (in magenta). The next line below begins with a bolder number denoting the highest point on the runway landing surface. Then comes the runway length (in hundreds of feet - add two zeros) of the longest available landing surface. If a capital letter "L" precedes the runway length information it tells pilots that the runways are lighted during times of darkness.

An "L" preceded by a small asterisk indicates that pilot-controlled lighting is in use at the field - the lights don't come on until the pilot activates them. The pilot keys the radio's microphone, and the approach (if available), runway, taxiway (if available), and ramp (if available) lighting comes on for a period of 15 minutes. Although not generically published as such, the PCL frequency is almost always the same as the CTAF (or unicom). You will still need to confirm the proper frequency in the A/FD, as well as the proper number of "clicks" of the microphone for various levels of approach and runway lighting.

Civil airports are identifiable at night (and during the day if the weather is below basic VFR) by their rotating beacon - one green flash, one white flash (military airports flash two white for each green). Taxiway edge lights are blue (taxiway "lead off" lines - from the runway center line to the taxiway center line - are green and yellow, while taxiway centerline lights are green). Runway edge lights are white (except on instrument runways where they change from white to amber the last 2,000 feet).

Point to Ponder…

There is a story about four people named Everybody, Somebody, Anybody and Nobody. There was an important job to be done and Everybody was sure that Somebody would do it. Anybody could have done it, but Nobody did it. Somebody got angry about that because it was Everybody's job. Everybody thought Anybody could do it, but Nobody realized that Everybody wouldn't do it. It ended up that Everybody blamed Somebody when Nobody did what Anybody could have done.

Alaskaline/January 2, 1987

End

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