

EAA Mount Rainier Chapter 326 Newsletter

Thun Field – May 2009

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Meeting Notice

Tuesday, May 12th, 7 PM
Emerald Ridge High School
12405 184th St. E.

Directions: From Meridian at the first stoplight south of the airport (176th St.), go east on Sunrise Blvd. Go 1.4 miles and turn south onto 122nd Ave E. Go 1/2 mile and turn left onto 184th St.

Park in front and enter through the main doors. Students will be waiting to direct you to the classroom / shop.

Program: Emerald Ridge High School Aviation Program
Instructor Jeff Coleman and students.
<http://schools.puvallup.k12.wa.us/high/emerald/index.php>

Refreshments: Rick Glaathaar

Young Eagle Flyers were passed around so that people might take them to their workplace or school to advertise the event.

Norm Pauk gave the Treasurer's report. \$4792 in savings.

Andy added an online forum to our website. Nothing required to read it but you need to register and get your own username and password to post messages to it. It has two sections: for sale and general discussion. It's a good place to advertise all your left over parts you decided not to use.

Marv Scott announced that the first Chapter 326 Board of Directors Planning Meeting will be on Saturday, May 9th, at Bruce Thun's Airport Conference Room at 10 AM. Everyone is invited and encouraged to attend this meeting. The main topic is to look at where we are going as a Chapter. What do our members want? New ideas. New activities. A wide open brainstorming session.

A missing man formation was flown over Spanaway Airport on April 4th in honor of Slim Lawson. Pilots were John Brick, Jeff Liebman, Harold Smith, Jim Triggs.

From the Secretary

Kevin called the meeting to order at 7 PM.

Kevin had keys tonight. No mad scramble to find an alternative room. He now has 5 copies, illegal no doubt, and knows where they hide the emergency spare too.

Visitors:

- Dave Acklam. Yelm. Has Turner T-40 project nearly finished and is looking for a hangar.
- Darryl Sams. Tacoma. Former member. Cherokee for sale. Also has O-360 crank for sale.
- Tedd Goth. Lakewood. Interested in Cubs.
- Wayne Bennett. Puyallup.
- Scott Stansbery. Roy.

Notice of memorial celebration for Slim Lawson on May 3rd at Spanaway Airport, 1 PM.

Jackets and Pullovers were available for pick up.

There was a brief mention of wearing name tags at our meetings. Something to help newcomers get to know you. One idea is to buy a bunch of the plastic name tag holders with spring clips. Inserts with your name and aircraft would be easy to generate on a word processor. They could be kept at the CAP building.

Project Reports:

- Kevin Behrent. RV-9A. Avionics wiring AFS 4500.
- Kim Nicholas. RV-9A. Bad shimmy on new nose fork. Related to preload on bearing.
- Randy Albritton. RV-8. Engine hung. Working on canopy.
- Jeff Bloomquist. RV-7A. Wiring almost done. On Gear.

Rumor about Revchem (off Port of Tacoma Rd) having good deals on fiberglass if you know how to get in. Have to go around the back.

Program for the evening: Excellent presentation on seaplane flying by Bruce Hinds, President Washington Seaplane Pilots Association.

New Twist to Young Eagles

Sporty's Hal Shever has teamed up with EAA to try to motivate Young Eagles to follow through and become a pilot. The incentive is a free online flight training course offered by Sporty's.

Upon completion of a flight with a Young Eagles volunteer pilot - often the youth's first time aboard a general aviation aircraft - the youth will receive a logbook for recording this and subsequent aviation experiences. The youth, dubbed a "Young Eagle," will also receive an access code to the Sporty's Online Complete Pilot Training Course. Both the logbook and the entire flight training course will be free of charge to Young Eagles.

Former Young Eagles are eligible too. Our Chapter can get a supply of logbooks with access codes through the EAA.

As the name implies, this is a complete course, which will prepare students to pass the tests required for a pilot certificate – written, oral and flight tests. The course utilizes streaming video to explain what a pilot does and why, in real world conditions. Using interactive demonstrations and 3-D animation, flight maneuvers are presented in a way that is easy to visualize and understand. The course provides interactive test preparation to make the most of study time and track progress. There are no additional books or software needed to buy.

They don't mention anything about Chapters being a part of the online training. Seems like some sort of mentoring or assistance as needed could be made available through Chapters. Something to investigate maybe.

Roller Tappets

What are the benefits of roller tappets?

The roller tappet eliminates the sliding motion between the cam and tappet, reducing wear and allowing the introduction of more advanced materials. Adding to its durability, the tappet's body and crankcase are designed to maintain proper alignment assuring the roller tappet cannot loosen or turn during engine use.

How do I get roller tappets in my engine?

Roller tappets were introduced into the Lycoming aftermarket engine product line in July 2005. This was a phased introduction as Lycoming gradually changes over all applicable engine models. Please contact your local distributor for more information.

Can I get rollers in my NEW aircraft?

Lycoming began installing roller tappets in OEM engines in June 2005. Ask your OEM dealer or salesperson if Lycoming roller tappets are in your aircraft of choice.

Are Lycoming roller tappets offered in every engine?

Roller tappets were designed to replace the principle tappet of our four current tappet versions. This makes them available in the vast majority of our engine models. The balance of our engine models, which make up a small percentage of current production, will continue to use their current flat tappets.

Will roller tappets extend my TBO?

The major factors limiting an engine's TBO are the wearing surfaces throughout the engine. While roller tappets make significant improvements in an engine's durability and reliability, they are only one factor in the formula to determine an engine's TBO and therefore will not extend TBO by themselves.

Will roller tappets affect my engines horsepower rating?

No, roller tappets were designed as an enhancement to current engine models. In order to maintain current engine certification, roller tappets were not allowed to increase engine horsepower or performance.

How do I know an engine has roller tappets?

Roller tappet-equipped engines are identified with an "E" suffix after the s/n dash number (Example – L-*****-48E). Furthermore, the ENPLs contain RT in front of the number (Example – ENPL-RT10052).

What parts are affected?

- **Roller Tappet**
- **Crankcase**
- **Pushrod**
- **Shroudtube**
- **Shroudtube Seals**
- **Camshaft**

What materials are the roller tappets made of?

Traditional flat tappets are made of cast iron. The new roller tappets are created from a high carbon, wear-resistant steel that has been proven very successful in power plant applications.

What mechanism is used to prevent improper rotation?

Unlike other roller tappet designs, Lycoming's utilizes a more robust system to "square the case" that entails precisely machining the crankcase to accept the tappet body. This design eliminates improper rotation of the roller tappet.

Are the hydraulics and/or oil mechanism different from traditional tappets systems?

No, the roller tappet system utilizes the same hydraulic and oil system as existing engines.

Can roller tappets be retrofitted into my current engine?

No, large populations of existing engines do not possess a crankcase that has sufficient material in the tappet body area to allow the required machining to accept the new roller tappet. There is currently no Lycoming approved process to retrofit roller tappets in the field.

However, if you purchase a Lycoming Factory Overhaul, engine roller tappets are standard equipment with no additional charge.

What makes Lycoming's roller tappets unique?

Lycoming's roller tappets were the result of many hours of world-class engineering research and design efforts. Lycoming's partnership with a world-renowned roller tappet supplier also provided technical expertise in manufacturing processes.

What type of testing did Lycoming do on the roller tappets?

Lycoming documented over 15,000 hours of test cell time during the FAA certification testing of the roller tappet design. These tests included dynamometer, motoring and extreme condition cold-start tests.

Lycoming was also the leader in introducing roller tappets to the market. In the 2003 Reno Air Races, Jon Sharp's and Mike Jone's engines were equipped with roller tappets.

AEIO / IO-390

The AEIO / IO-390 is Lycoming's largest normally aspirated 4 cylinder engine producing 210 horsepower. This 387 cubic inch engine is horizontally opposed, fuel injected and equipped with a counterweighted crankshaft for optimal performance.

The AEIO engine comes equipped with an aerobatic kit that is required for power aerobatics.

What is the footprint of this engine versus the IO-360 (180hp)?

The AEIO / IO-390 is 19.4" x 34.3" x 31" and weighs approximately 308 lbs. In comparison, an IO-360-B Series engine is 20.3" x 33.4" x 32.8" and weighs approximately 275 lbs.

Different accessories may affect weight and size estimates.

What is the footprint of this engine versus the IO-360 (200hp)?

The AEIO / IO-390 is 19.4" x 34.3" x 31" and weighs approximately 308 lbs. In comparison, an IO-360-A Series engine is 19.4" x 34.3" x 31" and weighs approximately 308 lbs. When comparing these two engine families, the 390 Series provides an additional 10 horsepower with no additional weight or size.

Different accessories may affect weight and size estimates.

What is the footprint of this engine versus the IO-540 (235hp)

The AEIO / IO-390 is 19.4" x 34.3" x 31" and weighs approximately 308 lbs. In comparison, an IO-540-W Series engine is also 19.4" x 33.4" x 38.9" and weighs approximately 400 lbs.

Different accessories may affect weight and size estimates.

Where do the extra 30 cubic inches in an IO-390 come from versus an IO-360?

The additional 30 cubic inches of displacement are derived from a larger cylinder bore. Several years ago, Lycoming developed the 580 Series engine, which incorporated a new, larger displacement cylinder. The 390 Series engine is a 4 cylinder version of the larger 580 Series.

Why did Lycoming develop this engine family?

The AEIO / IO-390 was developed and introduced into the non-certified market as a kit engine. Aircraft owners and pilots are always on the search for more power with less weight. Lycoming was able to deliver more horsepower with the same weight as the similar 200 horsepower, IO-360 Engines.

The first engine, an AEIO-390, was built and flown in an Extra aircraft with impressive results. The additional horsepower and torque were evident when performing aerobatic maneuvers.

Is this engine certified? If not, what is the certification plan?

Today the AEIO / IO-390 is not a certified engine. Lycoming is working with several interested OEMs on certifying the 390 Series engine for their particular applications. As with any new engine, Lycoming is exploring all options to certify and to promote it.

How many of the engines in the 390-Family are currently flying?

There are a significant number of 390 engines flying or being installed on aircraft that are about to fly. The installed base of

aircraft include Extra, Van's Aircraft, Glasair Aircraft, Lancair Aircraft and other aircraft designs worldwide.

What options come with this engine?

This engine is available with different accessory options. Fuel systems, alternators, starters and ignition systems can be customized to an individual's configuration.

Will this engine be offered with roller tappets?

Yes, as of July 2005 Lycoming will be phasing in roller tappet technology across all applicable engine families. The roller tappet eliminates the sliding motion between the cam and tappet, reducing wear and allowing the introduction of more advanced materials. Adding to its durability, the tappet's body is designed to maintain proper alignment that cannot loosen or turn during engine use. Bottom line, Lycoming's new roller tappet technology improves on the legendary durability of our engines and further enhances their reputation for reliability.

Where can I get this engine?

The 390 Series engine is currently available through Lycoming's Thunderbolt Engines at 570-327-7115. This product is also available through Kit Aircraft OEMs such as Glasair Aviation and Lancair Performance Aircraft. For further options please contact any one of Lycoming's Kit Engine Members. To learn whether the engine is compatible with a particular airframe, contact the airframe manufacturer. Lycoming has not certified this engine for use in any airframe.

Aero Sport Power O / IO-375

It should be noted that Bart sells lots of engines with roller tappets as an option. He also sells the 390 series engines. But here's something only he sells... the O/IO-375.

Here's a blurb from Kitplanes editor Marc Cook written in December 2006. "I had a refreshing discussion recently with Bart LaLonde, owner of Aero Sport Power, an engine shop of high repute. He described his IO-375 project -- a long-stroke, parallel-valve, Lycoming-based O-360 -- that was tested at 204 hp at takeoff fuel settings, but something like 214 at best-power mixture. With a modest 9.0:1 compression ratio, the engine gains power in scale with the increase in displacement, but his ultimate goal was to improve torque in the 2300-2500-rpm range typically used in cruise. By upping the stroke and maintaining the stock O-360 cam timing and valve gear, he managed to increase intake velocity at lower RPM with no loss of top end. (In truth, these engines have pretty flat torque curves.) Admirable goals, but most admirable is that he doesn't tout it as a 214-hp engine."

Well it's no longer a project. These engines are for sale.

You can look up the prices and options on this engine at

<http://www.aerosportpower.com/default.htm>

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