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[Click Here](#) to read the Safety Briefing





PRESIDENT'S PERSPECTIVE

The regular EAA 465 Chapter meeting on Wednesday Sept 12, 7 PM, at the Airport Terminal.



I hope everyone had a great summer. We spent most of the summer at our cabin in Summit County Colorado with no flying, but lots of hiking, motorcycle, and jeep trail riding. But it will be good to get back to Paso and getting our Lancair back in the air!!!! I will be attending the Reno Air Races Sept. 13-16 and hope to have some photos etc. to share with the Chapter at our October meeting,

We have a number of pending Chapter activities to finalize plans for including:

- **Great American Lancair Western Region Rally:** This six site Rally is progressing and planning for the Sept 27-29 stop-over in Paso Robles is well in-hand. We currently have the most popular stop over – probably due to the good activities we have put together. We need to finalize these activities at our meeting on Sept 12. We will all have a chance to look at some of the latest composite experimental aircraft designs on display, and help put KPRB “on the map” as a great place to visit by air and land. Check the details on our web site www.eaa465.org and at <http://rally.lancair.com>.
- **Young Eagles youth and parents day, Saturday November 3:** This pancake breakfast event, similar to the successful event last year, is intended to provide parents and youth with more information about aviation and related careers and is a supplement to the Young Eagles flights we completed this spring.
- **2018-19 Chapter Programs:** These are a key part of our Chapter and need to include “special events” like to those listed above, as well as interesting and informative “programs at our monthly meetings”. I am asking all members to be prepared to make suggestions at our September meeting for “special” as well as “Chapter meeting activities” for the next few months.

Note that the program for our Chapter meeting Sept 12 will be a special presentation by Phil Corman on nearby neat places to fly to – or sometimes referred to as “\$100 Hamburger fly-in sites”.

MEETING MINUTES JULY 11, 2018

Meeting Called to Order – Meeting called to order at 7:06 by David Fretwell

Attendance – 12 In attendance.

Previous Minutes – were approved. I didn't get who made the motion but Dale was 2nd.

Treasurer Report - Dale gave the total as \$1,719.82. The official paid membership stands at 34.

As a side note, the EAA has evidently lost the paperwork for last year's Young Eagles breakfast event so we have not received the reimbursement yet.

Old Business

None

New Business

August Meeting - the meeting will be held the 2nd week Wednesday on the 12th.

New Member – we have a new member, Gordon Bristol who is also an A & P.

September Lancair Rally – Paso will be the 2nd stop on the rally for the west coast group. Starting Thursday the 27th there will be a dinner that evening and on Friday a number of seminars will be held followed by a visit to the museum, winery trips culminating in a dinner at Eberle.

Darrel will be looking into getting some of the custom cars to help take people to the winery and dinner.

Young Eagles Breakfast – the plan is to hold the breakfast on November 3rd.

Christmas – Dave will not be hosting the Christmas party this year, so we need a new place. Any volunteers?

Elections – this year the President and Vice President are up for election. Let us know if you are interested in either position.

Presentation

Steve Ells gave a presentation about understanding the way to manage your engine relative to the temperatures of the cylinder heads and the exhaust gas temps. Some of the highlights were:

- Lean of Peak – the way to keep your engine running longer is to learn as much as possible about your powerplant so that you can run it as close to “lean-of-peak” as you can. This keeps the temperatures in the optimum range to extend the life of the motor.
- Deposits – chemical and heat related reactions to the fuel and the relative amount of water carried in the fuel can build up deposits of lead in your engine. The answer is to keep to a strict leaning regimen while flying. This will help eliminate the water carried in the fuel and the resulting combustion process.

Additives that protect the oil and frequent oil changes also help combat deposits.

- EGT Spread – each cylinder peaks at different moments. Try to set the peak as close as possible to the range of cylinder head temps to keep this as even as possible.

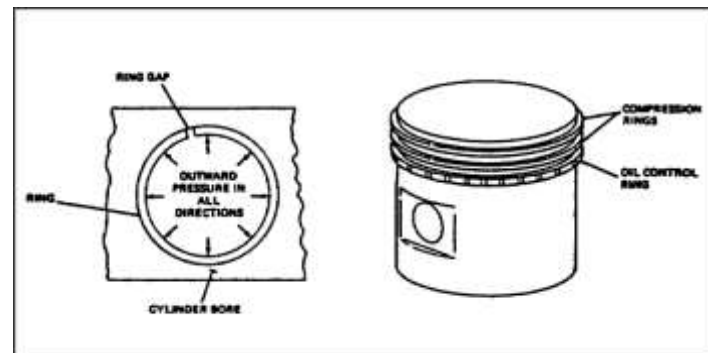
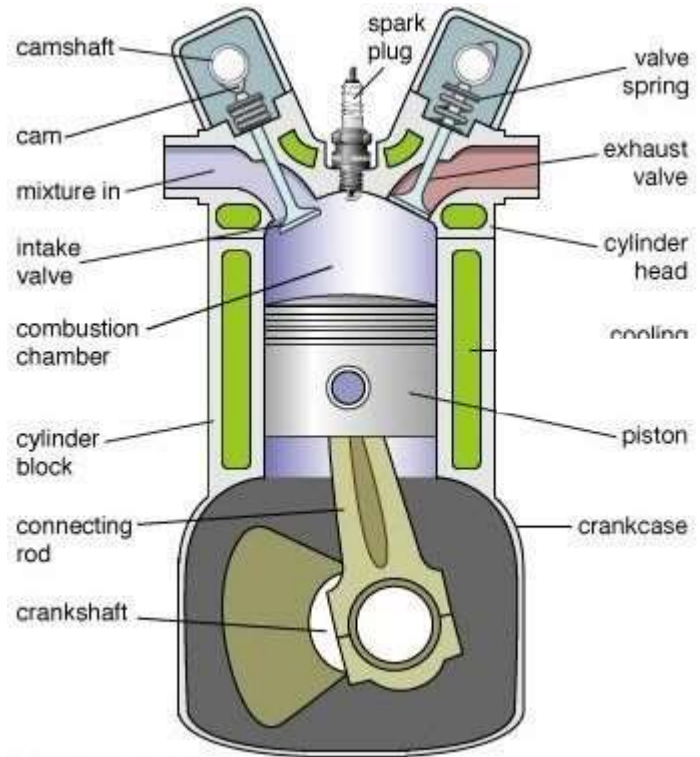


Some Pilots are also A&Ps and understand much more about our engines and the cylinders than the average Mooniac needs to know. In this article, we try to help non-mechanical pilots understand more about their cylinders, and how to detect issues before **they detect you** while enroute to your destination!

Cylinders

In the illustration to the right is a generic cylinder that we will use to explain various components. The illustration does not show a second spark plug, which all our cylinders have. Redundancy is a good thing. Cylinders essentially have two components: 1) The Head, and 2) The Barrel. The head is typically made of Aluminum and the Barrel is made of Steel. These two are joined by an “Interference Fit”. One is cooled while the other is heated. They are then screwed together, and after they cool, the fit is intended to be permanent.

The valves are operated by the Camshaft and the piston is run off the Crankshaft. There are two valves; one for Intake and the other for Exhaust. The Exhaust Valve is always smaller than the Intake valve. The exhaust valve is subject to much higher temperatures and because of this, it will usually fail before an intake valve. The exhaust valve closes against a valve seat. A proper seat is the chief mechanism for keeping the valves cool as heat transfers from the valve to



the seat upon contact. Lycoming also provides sodium filled valves for additional cooling, but the seat provides the main cooling component. If the valve does not seat properly because of a poor installation or abnormal wear, it will eventually burn where there is not a proper seat. This can cause a number of problems, including a fractured valve or a valve, or valve part entering the combustion chamber and causing an almost immediate failure,

accompanied by violent vibrations in the cockpit.

The piston barrel is where all of the compression takes place. In the illustration above, you can see the cylinder rings. The first two are called **compression rings**. These fit in grooves on the piston, have a small slot on them, and expand past the piston to butt up against the cylinder wall. The top compression ring provides the bulk of the compression. When the engine is cool, the rings are generally the only part of the piston touching the wall. As the engine warms up, the rings compress and maintain compression in the combustion chamber. We need oil on

the cylinder walls for friction minimization and wear reduction. The slot in the compression rings allows a small amount of oil to lubricate the piston and cylinder wall. The Oil Control Ring is there to regulate engine oil consumption by scraping oil from the cylinder walls back to the sump. Remember, it is doing this typically at 2500 RPM.

Cylinder Compression Tests (Bah Humbug!)

Compression testing dates back to the early 20th century. During our annual inspection we usually look at our compression readings. The readings consist of a number/80. The 80 is PSI and is an arbitrary setting. You set the cylinder to top dead center, then pump air into the cylinder until you reach 80

PSI. A second valve measures the actual pressure, or compression in the cylinder. It will very rarely read 80, as there will almost surely be some leakage. Lycoming is more strict about actual compression readings than Continental. Note: Continental did a test on their cylinders and kept filing the rings down. They lowered the compression all the way down to about 40/80 and the engine still developed full power.

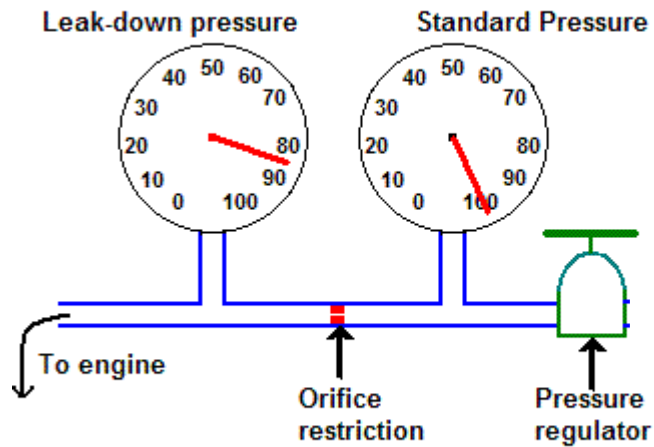
Compression readings are mostly useless. They are a litmus paper test and are very imperfect. The first reason is that although you ran your engine to get it hot for the test, it is not operating at usual cruise temperature and therefore the test isn't measuring the real environment. Remember that the distance between the piston and cylinder wall varies with temperature. So, the compression readings are interesting, but don't tell you enough, except when it's a really low reading, (like a litmus paper test).

Remember that the compression rings have a slot. Well, those rings also rotate slowly during operation, perhaps one revolution every minute. If they line up, your compression reading may read lower, and this may unnecessarily concern you. Also, you just plain don't know the actual compression at cruise.

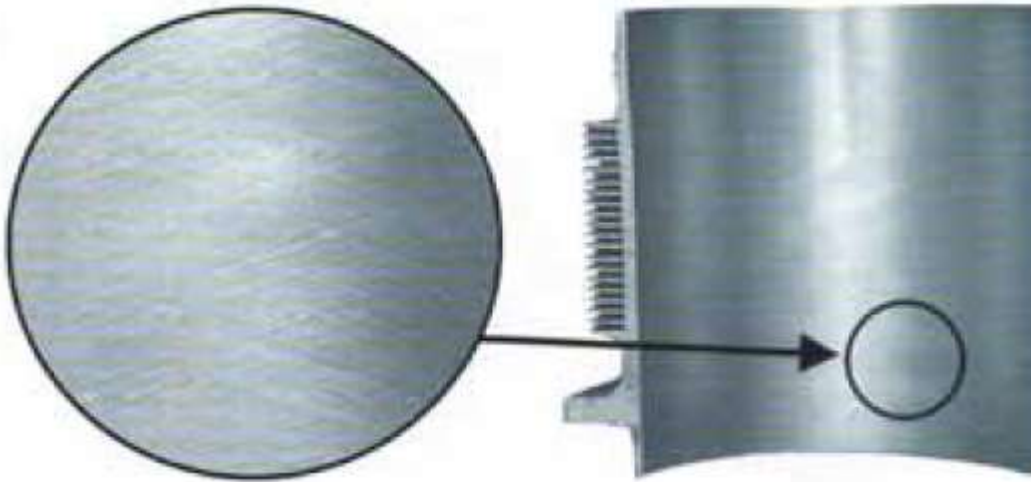
Some useful troubleshooting: If you have a concern over a cylinder compression reading, you can troubleshoot the source relatively easily. Move the cylinder by rotating the prop and listen. If you hear a hiss in the exhaust manifold, it's most likely the exhaust valve. If you hear it in the intake manifold, it's probably your intake valve . . . duh. Hopefully it's a bad valve seat and not a cracked valve. If you hear it in your oil filler, then you have a compression ring issue. The next step is to Borescope your engine

Cylinder Bore Scope

A Borescope is essentially an LCD screen with a cable and a camera at the end. The camera/cable fit through your spark plug hole and allow you to inspect the inside of your cylinder above the piston. It enables you to



observe the condition of your cylinder wall, your piston head, and your Intake and Exhaust valves. This will give you an immense amount of information concerning the health of your cylinders. On the wall should be cross hatch marks, placed there when your cylinder was born.



hatch marks, placed there when your cylinder was born.

If they are gone, that might be a sign that you need new rings or a new cylinder.

Next, take a look at the burn pattern on the Exhaust and Intake valves. The pattern on the left is symmetrical, indicating that the hottest place is in the

center and there is a good seat. The pattern on the right indicates a bad seat, and the green area means it is hot and leaking through the valve seat. That valve could crack or actually break and fall into the combustion chamber and that is NOT A GOOD THING.



Engine Analyzers and Your Cylinders

Between compression tests and Borescopes, you can diagnose cylinder issues like a failing exhaust valve seat, with your nifty Engine Analyzer. Your valves rotate 360° approximately once per minute at cruise. If you have a bad seat, your EGT will vary on a regular pattern within a cycle of one minute or so. Your EGT may only change by 30-50 degrees, but the pattern speaks volumes. To detect this, once you are at cruise, set your Engine Analyzer to Normalize mode. This will show flat settings for all your EGTs which makes any deviation easier to detect. A failed valve could be imminent, so you might want to land. If a cylinder has a higher EGT, you most probably have a leak around the exhaust valve.

FREE BREAKFAST FOR YOUNG EAGLES & PARENTS SATURDAY NOVEMBER 3, 2018

The objective is to provide Young Eagles and their parents, with more information about aviation and related careers. The event is being organized by the Paso Robles Chapter 465 of the Experimental Aircraft Association (EAA)

The Date and Time: the free breakfast event will be on Saturday November 3, 8:30-10:45 AM

Location/Directions: The event is at the Paso Robles Airport, Tina Nelson” hanger. Go to the Airport terminal, turn left (north) on Wing Way for about 150 yards until you see “Del Rio Helicopters”, park on the left outside the gate, then walk thru the gate on the right to Tina’s hanger.



Program:

- 8:30-9:30: pancake breakfast, view a variety of planes, meet the owners (no flights at this event)
- 9:30-10:15: presentations on airline, commercial, military, & recreational flying, & maintenance careers
- 10:15-10:45: presentation of benefits to Young Eagles from the EAA
 - ✓ National membership in EAA. (Your log book provides instructions how to activate your Membership, do this and then watch for electronic Mail (EM) messages from EAA National office – check your junk mail box)
 - ✓ Membership in Paso EAA Chapter 465 & a (Watch for your monthly EM Newsletter from EAA465 Paso Robles)
 - ✓ Electronic copies of the EAA Sport Aviation monthly magazine (Watch for electronic magazines from EAA National office).
 - ✓ Free Access to Sporty's Pilot Shop "Learn to Fly" Course (\$199 value). Each YE will get an EM from Sporty's with a name & password to access the Course. (Watch for EM from Sporty's pilot shop which will give you a name and a password).
 - ✓ A free first flight lesson (\$120 value) after completing several chapters of the Sporty "learn to fly course"
 - ✓ Admission to 300+ science and technology museums,
 - ✓ Student Membership in the Academy of Model Aeronautics,

This invitation is to the over 200 youth who have already taken a Young Eagles (YE) flight, their parents, and all EAA465 Chapter members.

PLEASE RSVP BY CALLING AND LEAVING A MESSAGE WITH BILL SIEGEL 305 962 4027 ON OR BY THURSDAY NOV. 1 TO LET US KNOW IF YOU ARE ATTENDING SO WE KNOW HOW MUCH FOOD TO BUY FOR BREAKFAST!!!!!!!!!!!!!!

Do not lose your EAA log book!!!!!!!!!!!!!!

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Radio, Transponder, ELT, antennae installed.

Engine group, including Tach, Water Temp, Amps,

Elec. Fuel Gauge. Clock, Circuit breakers.

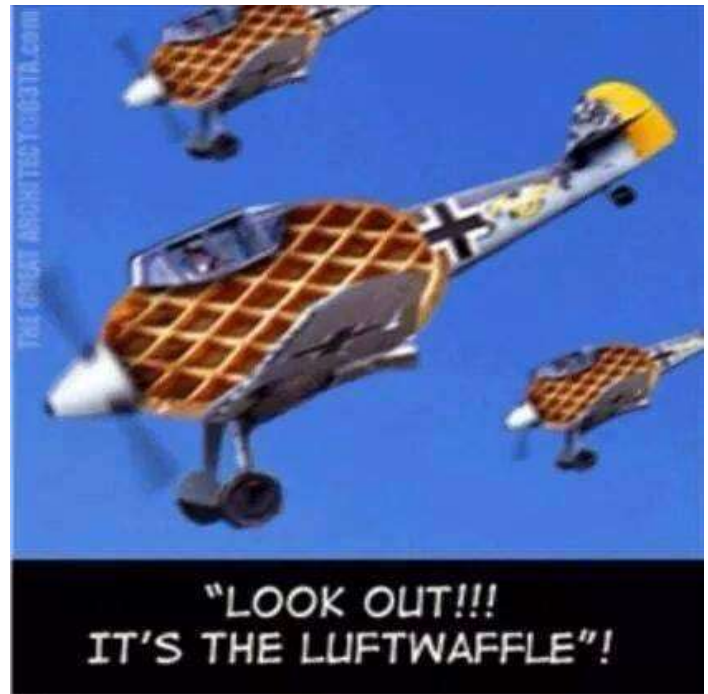
Strobes, Exterior Position lights.

Predicted Performance – 120 MPH

Climb – 13-1500 F/M, Stall 42 MPH.

Hangared – PRB, CA – 805-215-5785

\$30,000



Young Eagle Dreams



EAA MEMBER BENEFITS

- EAA Insurance - Aircraft, Non-Owner, Renters & Personal
- EAA Aircraft Financing
- EAA Flight Planner
- Discounts on FAA written tests at LaserGrade
- EAA credit card 10% savings from Aircraft Spruce
- You can save 'hundreds – even thousands – of dollars' on your next Jaguar or other Ford car
- You can buy your John Deere Tractor for less money
- EAA has discounts for Hertz and Enterprise car rentals

Interesting EAA Chapter Web Sites

EAA Chapter 1 at Flabob www.eaach1.org

EAA Chapter 7 at Long Beach www.eaa7.org

EAA Chapter 14 at San Diego www.eaa14.org

EAA Chapter 1000 at Muroc www.eaa1000.org

EAA Chapter 170 @SLO www.eaa170.blogspot.com

Paso Robles Airport: www.pasoairport.com



EAA CHAPTER 465

MEMBERSHIP APPLICATION/RENEWAL

Chapter membership dues are \$20/yr. Please help us to verify your personal info.
 Members with e-mail will receive the chapter newsletter via e-mail for their review.
 Members without e-mail can receive copies of the newsletter by mail or at the meetings.
Return the completed form to the Chapter Treasurer, or any Chapter Officer.

Name: *(Please Print)*

Address *(Number, Street, City, State, Zip)*

Email

Home Phone

Cell Phone

Work Phone

EAA National Membership #

Expiration Date *(MM/YYYY)*

FAA Ratings	Student <input type="checkbox"/>	Glider <input type="checkbox"/>	Tailwheel <input type="checkbox"/>	CFI <input type="checkbox"/>	A&P <input type="checkbox"/>
	Light Sport <input type="checkbox"/>	ASEL <input type="checkbox"/>	Seaplane <input type="checkbox"/>	CFII <input type="checkbox"/>	IA <input type="checkbox"/>
	Private <input type="checkbox"/>	Multi <input type="checkbox"/>	Instrument <input type="checkbox"/>		Avionics <input type="checkbox"/>
	Commercial <input type="checkbox"/>	Rotocraft <input type="checkbox"/>			Other <input type="checkbox"/>
	ATP <input type="checkbox"/>				

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