



NORTHERN YOSEMITE EAA CHAPTER 1337

On Line @ www.eaa1337.org

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From The Left Seat

Chapter 1337 President's Message: By Dick Collier

Can You Believe This Weather?

I'm sure everyone is asking the question, "When is this rain going to stop?" It seems that it is impacting our flying, our gardening, our boating, and every other springtime activity. Only the skiing fanatics are having a great springtime. Everyone knows that we postponed our April Poker Run due to weather. It is now scheduled for May 14th and from the long range forecasts it looks like we may have some good weather. Maybe spring will finally arrive. Unfortunately, the TCAA folks are going to be on their May outing on the 14th and will not be able to participate in our event. We will have to make due without the barbecue at the end of the run.

New Newsletter Continuation

Our last several issues of the newsletter included Walter Leineke's story about his dad's unfortunate crash in the Feather River Canyon. Now we have a new contributor, Chris Zavaston, who lives in the Sacramento area and who built and flies a Lancair 360. Chris has spent quite a bit of time working on the induction and cooling systems of his airplane and he has provided us with a copy of two articles he has written on his efforts to improve both. This month's contribution is about the modifications he made to the induction system. A copy of his article with color photos and performance graph will be available at our website.

Please Fly Responsibly

Father's Day Fly-In

We are a little more than a month away from the Father's Day Fly-In. Soon we will be having our weekly planning meetings. Every Chapter 1337 member should have June 18 & 19 marked on their calendars. We need volunteers to work our booth and to help with other areas of the Fly-In.

Those of you who have helped with our booth in the past should consider helping at the booth again this year. It is

always nice to have experienced help. As everyone knows, this is the biggest money maker for our Chapter. Our booth has always done a great job at selling food and promoting the Young Eagles Program. We will need volunteers to work the booth both Saturday and Sunday. Also, we are looking for a person to head up the booth. If you are interested in taking on this responsibility, please contact Dick Collier, Don Denhard, Paul Girard or Jim Thomas.

The Father's Day Fly-In needs many volunteers to make it successful. Please plan on helping out one day or both days. There are airplanes to park, airplanes to judge, a registration booth to staff, cars to park, set-up, take-down, and more. You don't have to be a local pilot to help. You can fly in and help. Ask your friends to participate. The more help we have the easier it is and the more fun we have. I can guarantee that you will feel good having helped make the Father's Day Fly-In a success.



Next Chapter Meeting

Foothills Fun Poker Run

After a two week delay we will finally have our annual springtime poker run on Saturday May 14th. It is still spring and the hills are still green and covered with wild flowers so our delay has not change the scenery in any way. We will start the Poker Run at Columbia Airport at 10:00 AM in front of the Bald Eagle fuel tanks where you can purchase your poker hands for \$5 each and also pick up your first card. From there we will fly to Oakdale, then to Turlock, and on to Pine Mountain Lake where you will pick up an additional card at each airport. Finally we will return to Columbia where the final card will be selected. After all have participants have completed the run we will turn in our hands and prizes will be awarded.

Several businesses have donated some great prizes mostly geared toward the pilot/aircraft owner, but also some for the passenger as well. The following is a partial list of the prizes.

<u>Prize</u>	<u>Donor</u>
Aircraft Oil Change	Aero Resources
15 Gallons of Avgas	Bald Eagle Aviation
15 Gallons of Avgas	Mother Lode Aviation
15 Gallons of Avgas	Mother Lode Aviation
15 Gallons of Avgas Helicopters	Inter-Mountain
1 Hour Stearman Lesson or 20 Minute Aerobatic Ride	Springfield Flng Service
1 Case of Aviation Engine Oil	Mountain Aire Aviation
Kitlog Pro Software	Aeroware Enterprises
Airplane Wash & Wax	Courtney Aviation
\$25 Gift Certificate	Charlotte Hotel

This is sure to be a really fun and beautiful day. Invite your pilot friends to participate since this event is open to all pilots. It is a great chance to polish your flying skills with four short cross countries and lots of pattern work. Who can pass up the chance to fly over our green foothills covered with wildflowers and have a chance to win fun prizes.

Unfortunately this weekend conflicts with TCAA's May event so we will not be having the barbeque as was planned two weeks ago. But, there will be two other groups using Columbia Airport this weekend. EAA Chapter 96 out of Torrance will there and so will the Canard Flyers Group. Hopefully we can get several of them to join our Poker Run. It would be great to have lots of aircraft participate. For those of you that do participate, keep your eyes outside the cockpit and your ears tuned to the correct frequencies.

Induction System Improvement on the Lancair 360

By Chris Zavatson

It is rare to get something for nothing. The same holds true when trying to go faster in our already speedy little Lancairs. However, I just recently completed the most significant change to my 360 since it has been flying that has bent this rule just a little. High altitude cruise speed

increased 10 kts and sea level power available at for takeoff increased 16 hp -all this simply by changing the design of the carburetor air box and filter.

N91CZ has been flying for three years and has accumulated 500 hours. Aircraft performance has always been amazing, especially compared with anything I had previously flown, but I knew there was more untapped speed available. I have a carbureted Lycoming O360A1A installed, completely stock as delivered from the factory in Williamsport, PA. As a side note: Keeping the engine stock paid off for us when our first O360 was ruined by Jet-A contamination. Lycoming would not accept modified engines for repair or core credit.

Back to the story: Towards the latter portion of initial construction I wasn't completely satisfied with the induction system but was not feeling up to the task of redesigning the whole thing. I had used the Lancair supplied air box, plumbed in carb-heat and installed a filter. The foam filter was held between wire mesh screens in the air box. I had installed a 3 inch diameter tube section in the cowling for the carburetor air inlet, but found no easy way to seal this to the non round cross section of the air box. I flew with this set-up for nearly three years during which time four events changed my cruise speed. The first three were fairly painless: Painting the plane, reducing the spinner to prop gap and adding AvBlend to the oil each added just over 1 knot. This put us at 199 KTAS, just short of that nice round 200 but still respectable. The fourth event that affected our cruise speed prompted me to get working on a new induction system. When we had to replace our 300 hour factory new O-360 for another factory new O-360 because of Jet fuel contamination, we were disappointed to emerge with a 3 knot drop in cruise speed. We had slipped back to 196 KTAS due to bad luck with contaminated avgas and engine manufacturing tolerances.

From time to time, I had pondered the idea of completely redoing the intake system in order to first replace the foam filter and secondly to seal the induction system to the cowling. Changing the foam filter for something a little better such as a K&N filter would improve filtering and lower the inlet restriction. I had never considered flying without a filter as an option. (After retrieving little pebbles up to 1/16" in diameter out of the filter, I was glad the filter was in place.) The second goal of sealing the induction system would allow me to capture ram pressure, which is significant at our speeds. I couldn't stand going slower than I had before so I took up the air box project in earnest. I searched through a K&N catalog to find the largest size filter I could physically fit in the available volume. The filter area opens to about 5.5 times the inlet area and greatly reduces losses across the filter element. There isn't a lot of space given how tight the cowling hugs the engine. Nevertheless, I was able to squeeze out a larger surface area by significantly canting the filter forward. The total filter area was doubled over the previous design and the filter media improved enormously

in switching from foam to K&N. I built up a plug around the volume of my chosen filter, the intake requirements of the carburetor and carburetor heat access. This plug could be bolted up to the carburetor to check for any interference and to verify alignment with the air intake. The next step was molding the plug. The mold was made in five pieces, which allows me to produce interlocking parts. The air box had to be made up in three pieces given its geometry; otherwise the overlapping sections would not allow disassembly. The large area of the filter necessitated relocating the carburetor heat inlet port. Doing so made the plumbing a bit more difficult. In the previous design a single large hinged flap would open carb heat and block off intake air simultaneously. Now this was no longer possible. A butterfly valve at the back of the air box now controls heated air, while a separate hinged valve behind the filter shuts off ram air. If you don't block the ram air intake, carburetor heat air will be forced to flow backwards from the air box to the heat muff and into the cowling. The two valves are connected with a linkage that actuates both valves in unison.

The performance results were as good as I could have hoped for; I gained two inches of MP at the lower altitudes. This tapers down to 1.2 in at 17,500'. My cruise speed increased 5 kts down low and 10 kts up high. The chart compares full throttle manifold pressure readings for the new air box with standard atmospheric pressure, the Lycoming zero ram engine performance (shows induction losses) and the old air box. The difference between the new air box curve and the zero ram performance curve reveals how much ram pressure is being captured. Ram pressure even exceeds induction losses except when IAS is low (take-off and high altitude).

An additional benefit is improved cooling despite the higher power being produced. Any pressure escaping from the inlet to air box transition pressurizes the cowling below the engine. This of course opposes cooling air coming through the cooling fins from above.

I have looked at many induction systems on 235/320/360s and have found this to be one of the most varied installations on our airframes. Many installations start out with some sort of sealed induction system. Some have filters others do not.

I found it quite interesting to be able to compare the before and after data. More speed is always good. More speed for free is even better.

(Chris Zavaston's article appeared in the Lancair Network News in 2000. There will be a follow-up article in next month's issue. Thank you, Chris, for your contribution to our newsletter.)

Support This Newsletter

Thank you Walter and Chris for your contributions to our newsletter. Your stories help make our newsletter interesting and unique. We need more articles like these to include in the newsletter. Please take the time to send me an interesting article you read, a good aviation joke, an interesting airplane picture, a story you wrote, or news from another EAA Chapter. It takes a lot of work to put this newsletter together, but it is much easier if others provide contributions. You don't need to be a member of Chapter 1337 to support our newsletter. Please send your contribution to me at mypa12@yahoo.com.



Fly Mart

Want Ads in our newsletter are for aviation related items and are free. Contact Jim Thomas to place an ad at mypa12@yahoo.com or 962-0910.

1946 7-AC Champ, 85 hp with approximately 360 hours on it. This qualifies as a Light Sport Aircraft. Aircraft is based at Columbia Airport. \$20,000 or offer. Contact Bob Steinbrink at 209-532-0136.

Two Questair Venture Projects; one 90%, other 50% complete. A Venture still holds all the world's FAI speed records for its weight class. It really does cruise at 235 kts, burning just 13 gph. Fly it to Oshkosh in just two, 3:20 hour legs. Only 80 kits were made. It's an exotic and rare design. (The third Venture I built was displayed at Jim Thomas' hangar in August 2003. It was sold and flown away that November.) See at Pine Mt. Lake, 209-962-4253. For details email Wayne Irwin at Irwin@sonnet.com.

Wanted – 90 HP LeBond Radial Engine (7 cylinder) in airworthy condition for restoration project. Contact Rick at 209-533-4374

Vari-eze – Flying condition, stored at Pine Mountain Lake Airport. Contact James Skilling at 661-822-0183.

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Chapter Meeting and Events Schedule

May 14	10:00 AM	EAA 1337 Poker Run Columbia Airport
May 27-29		Chapter Fly-out to Watsonville Watsonville Fly-In No Host Event
June 3-5		Golden West Fly-In Marysville, CA
June 17-19		Father's Day Fly-In Columbia Airport
July		No Chapter Meeting
July 6-10		Northwest EAA Fly-In Arlington, Washington
July 25-31		EAA AirVenture Oshkosh, Wisconsin
August		No Chapter Meeting
Sep 24	10:00 AM	Castle Air Museum Fly-Out
Sept 15-18		National Championship Air Races Reno, Nevada
Oct 22	9:00 AM	Young Eagles Rally - Columbia
Nov 12	9:00 AM	Builder's Workshop Welding Collier's Hangar PML
Dec 10	11:00 AM	Annual Potluck - Columbia

Our Chapter Activities Schedule is available online at
<http://www.eaa1337.org>