

EAA 908 HYLITES

MONTHLY NEWSLETTER FOR EAA CHAPTER 908
SAINT LUCIE COUNTY, FLORIDA

Chapter Happenings

Dues notices went out in January. The lock combinations were changed last month. The new combination is on your membership card.

A **donation jar** is at the chapter club house for funds to purchase a memorial plaque at Oshkosh for Tom Shedd. The cast metal plaque cost is \$350.

Aero Acres Fly-In - Some members live in this community and are involved in planning and set-up for this coming event. It is Saturday, 10th April.

Young Eagles - April 24th will be our next day for Young Eagle flights. Eddy Kemper is coordinating this, have kids call him for a time reservation. It will be at the terminal building and we need airplanes, pilots and ground support.



Officers:

| | |
|----------------|--|
| President | Jim Wetzel 878-1973 |
| V. Pres. | Ed Kemper 336-0950 |
| Secretary | Jerry Groendyke 489-9150 |
| Treasurer | Ron Knaggs 429-1241 |
| Past President | Kevin Griffin 489-7776 |
| Directors | Richard Chapman 467-1690 Randy Berry 429-0725 |

WEB Site: www.eaa908.org
webmaster: Romeo Vadnais

Chapter Clubhouse:
3100 Industrial Ave 3
Fort Pierce, FL 34946
Phone - (772) 489-0420

**KFPR, east end use Taxiway
Alpha or Delta to Delta One, or
progressive to "EAA Ramp"
Pancake fly-in pilots eat free**

Mark Your Calendar:

- **April 13-18 - Sun-N-Fun at Lakeland**
- **April 21st - Chapter Meeting - 7pm**
- **April 24th - Pancake Breakfast 8a-11a**
- **April 24th - Young Eagle flights**
- **May 15th - Learn to Fly Day**
- **July 26 - Aug 1, 2010 - AirVenture Oshkosh**
- **Every Wednesday — coffee and donuts at club house**
- **Every Sat. morning — coffee and donuts at club house**
- **Every Sat. Lunch — Burgers and dogs (except on pancake days)**

Airplane Air Conditioner by Richard Chapman

Included with the new Flying Club Archer was an ice bag air conditioner. Dave Subers and I got a quick lesson when we picked up the airplane. The previous owners said that it worked good, and was easy to operate. It takes up to 4 bags of ice and would last about 3 hours. It's a simple concept and requires 12v of power for the fan and pump. As you can see in the picture, it's based on a plastic ice chest.

To start the unit, add the ice bags, put an inch or so of water in the bottom, put in the baggage compartment, adjust the louvers on the air diverter, and plug in the 12v power cord to the airplane outlet. Our Archer had been modified with a 12v receptacle on the left of the panel, so that is the best place to get it operating. It also gives the pilot the best access to the power switches, there is one for the fan and one for the water. The reason to start with some water in the bottom is that the pump circulates fluid to the heat exchanger in the top, which looks similar to a heater core that you would find in a car. The fan then blows air through the exchanger and into the cabin. Rear seat passengers are the closest and have the best cooling.

The best use of this unit is on the ground and at lower altitudes. Higher up, you probably can turn it off and save your ice.



Newsletter Editor: Richard Chapman - email to: rchap21@bellsouth.net

All articles and pictures are the credit of the Editor, Richard Chapman, unless otherwise noted.

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Prop Shopping - by Roger Elowitz

Prop Shopping

There's a good chance, if you own an airplane, that once in your lifetime you will be faced with needing to replace your propeller. This becomes one of those "interesting" and "mind-expanding" (wallet emptying) experiences. The chances are also that when you replace or overhaul your engine you will also consider replacing or overhauling your prop. The problem is... doing both at the same time may just be prohibitively expensive causing the prop overhaul or replacement to be delayed.

I've just been told that prop manufacturers have stopped "recommending" replacement or overhaul at 2000-hours or 12-years in service and now, more or less mandate it. This, of course is a "requirement" only if you are NOT a Part 91 operator- meaning, you are operating the aircraft commercially.

After I replaced my engine I discovered that my prop (which had been previously overhauled) had to be sent to the prop shop to remove a deep nick it suffered in one blade. That's when I received the bad news that although they could "dress-out" the nick... the prop was ineligible for overhaul because it was no longer within "dimensional specifications."

What they were telling me was that I could continue to fly the prop but if I ever asked them to overhaul it... they'd have to red-tag it as "unserviceable." Exactly what made it "unserviceable?" It seems that when the prop is completely disassembled and the blades removed from their hub, each blade is accurately measured from the butt end to the tip. Pencil marks are made at standard points along the blade length (stations) and at these places the blade's width and thickness are measured and compared to values on a factory standard chart.

At the station closest to the tip on one blade of my poor two-blade prop, they measured the width to be 0.110" below specification. End of blade... but not quite. The hub was in good shape and so was the other blade. I now had several choices. I could have asked to purchase a replacement used blade and have a shop rebuild the prop back up and balance it. The problem with that route is my not really knowing how many more times I would be able to overhaul that prop. I don't know if it would have been worth it throwing good money after bad.

I could also have purchased a used and overhauled prop at a substantial savings. Again, the shop would be glad to give me an estimate on how many times I'd be able to overhaul the used one. The question is my believing this number. After all, they do want to sell you a prop. <grin>

One thing to keep in mind here is that my old prop may still have some value as a trade-in or as a wall ornament. It seems that my unserviceable prop could have its undersized tip ground off and it would make a fine used prop on a different engine that uses a shorter blade. This was nice to know especially since the hub wasn't cracked or corroded. That means that the hub had substantial value as well.

If you'd like to try to sell your old prop... Good Luck! There's not much of a market for them on e-Bay or in Trade-a-Plane. Crating and shipping them anywhere is an expensive pain. Somehow, prop dealers know who has used props and their condition so it is possible to buy a used one but selling your old one becomes a big hassle.

Ultimately, I chose to buy a new prop and avoid all the hassles with trying to save some bucks on purchasing an overhauled used one. I had a choice of three propeller companies... Hartzell,

Around the Patch - by Richard Chapman

Effective March 31, 2010, you need one of the new plastic pilot certificates to exercise your airman privileges in the US. Also, if you fly internationally, the certificate should be endorsed with the English competent notation. If you don't have one, they can be obtained by going to FAA.GOV and applying on-line, or printing out the application and mailing. Two dollars for the new certificate in either case, check via US mail or credit card on-line. To do the on-line process, you have to establish an account with FAA.GOV. This is easy, but you need to know your name and certificate number. Hopefully your name is easy, but the number is on your existing certificate. In some cases, it is your social security number, depending on when you first became a pilot. You can get a non SSAN number and new card for free, if that is the case. Also, by establishing an account on FAA.GOV, you can update you address as you move by clicking into the proper screen and making the entry. Otherwise, you have to print a form and mail it in. You are required to update addresses within 30 days of moving for your pilot certificate to be valid.

The Flying Club sold and delivered 71J and bought and picked up Archer 675. Dave Subers and Richard Chapman did the pickup and fly home trip. Great plane, they will keep it if the club doesn't want it. But so far, everyone that's seen or flown it has agreed that it's a nice upgrade. But nothing is perfect in life, so Richard Chapman is getting his list of maintenance 'fixes' and upgrades to discuss and do. There was a greeting party waiting at the hangar for the new arrival. Within 2 hours 675 was back in the air producing revenue and getting member pilots familiar with switches, radios and slightly different flying. One member was at home tracking the IFR delivery flights and commo via web sites of FlightAware and LiveATC.



Picture top left - Flight home at 6,000 feet on V-3. Above - two happy pilots flying home with new bird, Dave Subers and Richard Chapman. Left - Part of the greeting committee at the hangar. Fabian Arroyo had just wash the floor for the new airplane

Prop Shopping - continued

McCauley, and MT. I was told that a “composite” prop would probably be the best... and that MT makes great ones but unfortunately they didn't make an STC'd prop for my engine/plane. Composite props are lighter in weight and very efficient as well as very expensive. Scratch composites.

So, I was down to Hartzell and McCauley. Hartzell props had lots of AD's and required greasing every year. No big deal but... the Hartzell prop on my plane was leaking grease at some seal and that annoyed me. Also, a friend who put a three blade Hartzell prop on his Arrow told me about terrible vibrations he experienced and Hartzell was difficult to deal with to get the problem resolved. Now, to be fair, three blade props on four cylinder engines are problematical because of the mathematics of the numbers of cylinders, prop blades and engine RPM's. Somewhere in there are harmonic vibration issues. Those same issues affect six cylinder engines but at less problematical RPM's.

I was told that McCauley had a “sealed” hub and required no service. That hub had a red dye in it which made it easy to diagnose a crack or leak. I liked that feature but I have since learned that McCauley props are prone to leaking anyway... unless the prop was dynamically balanced... which supposedly cures the leaking. So far, mine hasn't leaked and I've yet to balance it.

And speaking of dynamically balancing the prop... it can definitely make a big difference in total engine vibration since the balancing operation balances all the moving parts in the engine along with the prop. A dynamic balance job runs from \$200 to \$300. It should be a good investment. It may also be worthwhile to replace your engine's rubber shock mounts if they are old, sagging or cracking. I'm told that they should be replaced at 1000-hour intervals. I was also advised to not have the dynamic balancing done until the new prop had about ten hours of service on it.

Finally, comparing the Hartzell and McCauley showed the McCauley to be about four hundred dollars more expensive. But I'm getting ahead of myself. First I had to choose between buying a two or three blade prop. Hands down, a three blade prop definitely has more ramp and sex appeal. It's also a few inches shorter in total diameter so it's not as prone to tip damage from ramp debris. And because the tips describe a shorter circle at the same engine RPM, the three blade tips travel at about .72 of the speed of sound while the longer 2-blade prop tips get up to about .75 of the speed of sound. That means the three blade prop is quieter. Noticeably quieter? Well....

I can tell you from my own measurements with a sound pressure level meter that this equates to one or two decibels quieter reading at cruise RPM. Let's face it... that's about a J.N.D. - a just noticeable difference.

What no one tells you, at 2400-RPM the two blade prop produces a 80-Hz pitch sound and the 3-blade makes a 120-Hz pitch sound. This means the 3-blade prop has a slightly higher pitch. No big deal. To put that in perspective, a humming light fixture hums at 60-Hz... the frequency of the alternating current. Do you hear this over the sound of the exhaust? Probably not but your body surely feels those pressure wave pulses. It's probably why (my theory) you feel “beat up” after an “un-stressful” long trip.

Now, here's a significant difference. There seems to be unanimous agreement that the two blade prop is more efficient, however, the 3-blade prop definitely climbs better and my measurements show it to be about 100 to 200-fpm, if that much. Taxiing, my plane “seems” to want to move faster at lower throttle settings. I would also have fully expected the 3-blade to be more draggy and

Prop Shopping - continued

cause steeper descents but I haven't really done any engine-out tests because I'm trying not to "shock-cool" my engine.

What is totally weird is that one would expect the 2-blade prop to be substantially cheaper than the 3-blade but IT'S JUST THE OPPOSITE! The 3-blade prop is SUBSTANTIALLY CHEAPER...almost \$2500 cheaper. And, on top of that there is NO SALES TAX on the 3-blade prop in Florida if you are doing an "STC'd upgrade." The more expensive 2-blade prop also carries a hefty sales tax penalty. Pretty soon the way to go is clear. They want you to buy the 3-blade prop in the worst way!

And unless you ask... you wouldn't know that the three blade prop is more expensive to overhaul by about \$400. Darn! It was almost too good to be true!

And speaking of prices... just about all the factory authorized dealers will quote you the same list price. By all means, you should ask for their best "FINAL OUT THE DOOR" price... before you close any deal. Remember, you will also be paying for shipping and handling of your prop, as well as the labor for removal and installation of the new one. Oh! And changing your alternator belt with a new one might be a great idea at this time. A recent FAA document may just allow you to substitute a Gates automotive belt for the exact same Piper factory belt that sells for six times the price. Do check this out carefully.

And if you do some very diligent shopping you may find a prop dealer who is "not factory authorized" but to whom the factory will sell and ship to anyway. This dealer can offer you the identical prop for many hundreds of dollars less and be willing to discuss purchasing your old prop up-front... something I found many shops not anxious to do.

The McCauley prop and new spinner I bought came with all the STC paperwork as part of the package but I still had to file a 337 Major Alteration form because this was a "major alteration." Most prop shops that have their own mechanics will charge you a substantial fee for doing this paperwork. I filled out the 337 myself and just had my mechanic sign it off and I mailed it to the FAA at Oklahoma City.

I did not take the cheap route in purchasing a new prop but I saved a bundle by doing my homework and shopping diligently. I also needed to do a new weight and balance on my plane since the new 3-blade prop was about eighteen pounds heavier.

And lastly, I cannot say enough nice things about dealing with The Propeller PartsMarket on our own field. Chris Grothe, the owner, and his partner, Doug Garner, are the nicest guys you'd ever hope to do business with.

I hope all of the above information makes you a more informed and wiser propeller shopper.