



# THE GRAPEVINE



*There is a very fine line between "hobby" and "mental illness."*

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<b>President</b> John Goldsmith	925-447-7362
<b>Vice President</b> Chuck Ray	925-899-5660
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## Meeting And Program

**NOTICE:** Our December meeting will take place at 7:30 P.M. on the 3<sup>rd</sup> of December The meeting will be at the FBO/Main Terminal Building on the grounds at KLVK.

Month	Date	Speaker	Topic
September	3 <sup>rd</sup>	Airmotive Specialties, Inc.	Aircraft Service's and P51 Restoration
November	5 <sup>th</sup>	Renee Robinson	ADS-B: A Pilots Perspective
December	3 <sup>rd</sup>	Denise Watson	VFR (Vocational Flight Resources)

For Our December program: Our speaker is Denise Watson. Denise has created a novel program called VFR, Vocational Flight Resources. VFR provides vocational training opportunities for people with developmental disabilities. Her organization is located in hanger 51 at LVK and she is going to tell us about the capabilities of her program.

## **Aircraft maintenance for Pilots.**

### **Changing a tire on your experimental aircraft**

**By Dave Dent A&PIA Master Mechanic**

A simple thing such as changing a tire on your plane can sometimes become very daunting. There are many unknowns that come up and you wonder why especially if you have never changed a tire on your plane. Here are a few tips that can make a very trying thing become simple and uncomplicated to perform.

First, I have my opinions on the length of time your tires remain installed on your plane. A lot depends on the use and the environment where the plane is stored. The tires are some of the least attended to items on your plane, even though you may look at them most every time you fly. If you have wheel pants on them even be more neglected. Natural rubber tires deteriorate faster than synthetic rubber that is used in the manufacturing of aircraft tires. I mention the environment because; in the drier areas of the country the dryness can cause cracking, especially in a hot desert and low moisture area. If they are in a dark, cool place the time can be extended but soon they start to crack and the rubber starts to break down, not only the tire but the tube as well.

I have told many people in the SFO bay area that if you have had your tires on your plane much longer than eight to nine years they could be past due to be changed. Sometimes the tire you have on your plane came with your plane in a kit or as materials you purchased at the time you started building your plane. Like many, the plane you have been building is now over seven years old but you still have the same tires that came with your plane and you haven't even flown your plane yet. So now you start flying and have another year or so added to the life of the tire and you haven't even given a thought to their condition because in your mind your plane is still new with hardly any time on it. But now the rubber parts are starting to get old and not only the tires but also other items like rubber seals etc. So you must take this into consideration.

Related to the tire mounting to the wheel you may find the longer you have kept the tire on the wheel the more difficult you will have removing it.

Now let's get to the point of changing a tire. Of course there is a need to raise the wheel off the ground. Jacking a plane to a point to remove a tire can be a problem. If your plane has jack points under the wings or the landing gear the question becomes mute, but when you don't have a way to mount a jack under your plane the procedure is to place a support under the wing at the spar. "I must emphasize the importance of the spar of the wing" to do any jacking if you don't have any jack points incorporated into your wings already.

Here is a tip for the present and future. Go to the hardware store or a bike shop and buy a valve cap that has the little notch in the top of it. A number of bicycle tubes have them. Now take the cap and screw it onto a 1/4 -28 bolt and crimp it tight. Keep this in your toolbox for the next twenty years to remove your valve cores out of your tires and like places.

Now that the tire is off the ground let the air out of the tire before you even start to remove it from the axle. Using this new tool you just made. Remove the valve core completely. Now remove your brake caliper from the mount. To do this remove the two or four bolts depending on the size, they should be 1/4" bolts. Use a 7/16" wrench. When you do this, the outer brake pads will fall out and the caliper can move on the floater pins. You can leave the caliper mounted but this may be a good time to remove it and check the condition of your brake pads. I'll get into the brake changing in a future article. Now with the outer pads out of the way the axle nut can be removed. Sometimes just to remove the cotter pin from the nut can be a problem and here I recommend that you bend the two ends of the pin straight and take a pair of wire cutters or dykes to grab the round end of the cotter pin and pry it up using the side of the nut for leverage. This may seem simple but to some fellows this can be a problem. By doing this you can walk the pin out. Do not use the same pin. Get another pin to replace the one you removed. Have it ready even before you start job.

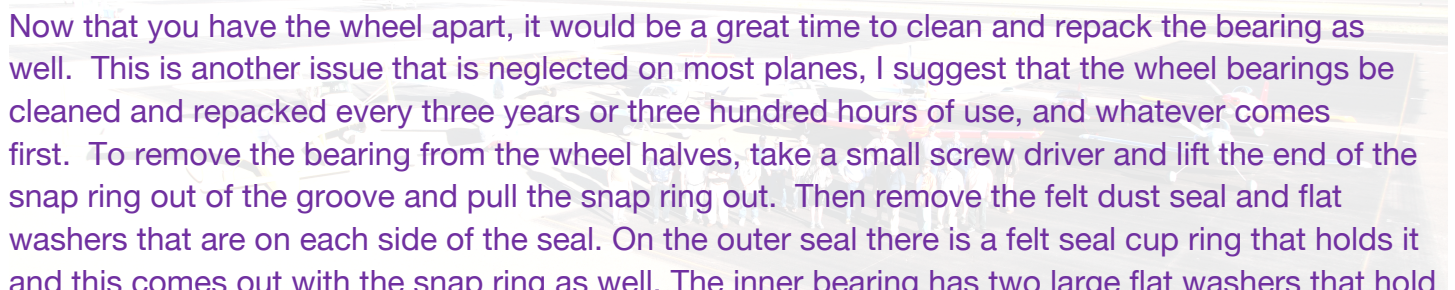
Now with the nut removed, some times there is a spacer behind the nut, be careful not to loose this. Sometimes the spacer is behind the inner bearing and can stay on the axle when pulling the wheel off. Now pull the wheel straight off the axle being careful not to let the inner bearing of the wheel to drag on the axle causing it to gouge the axle. For safety I suggest that you put a block of wood or something solid to something to support the axle while the tire and wheel are off the plane.

Here comes the fun part. How are we ever going to get all this apart? With all the air out of the tire you will find the tire has now become a part of the wheel and you wonder how in the world am I ever going to break this bead on this tire so I can get it off the wheel. Here is a trick I have used for well over 40 years and it has helped a lot. I take a spray can of WD40 and spray it all around the rim of the wheel. This is the only place I suggest that WD40 ever be used on an aircraft PERIOD. Then I

let it sit for a few minutes. If you haven't invested in a small tire bead breaker then this is what I suggest you do. Place the wheel and tire on the floor and take the heel of your shoe perpendicular to the tire and put your force down on it as close to the wheel rim as you can get it. The bead should now break away from the wheel half all the way around using this method. Now flip the wheel over and do the same on the other side.

Now that the bead is broken away from the wheel halves you can now remove the bolts that hold the two halves together. If it's a main tire and not a nose or tail wheel you have to consider the brake disc that is held on to the inner half of the wheel and when you pull the three or four bolts that hold this all together the brake disc will also be removed.

Now with the wheel, tire and disc all apart the tire and tube are now exposed and should be discarded. Yes the tire and tube. The tube should be replaced at the same time the tire is replaced. The tube over the years or hours has now stretched and deteriorated as well so it's a good practice to replace it. It's not worth trying to save it or reuse it.



Now that you have the wheel apart, it would be a great time to clean and repack the bearing as well. This is another issue that is neglected on most planes, I suggest that the wheel bearings be cleaned and repacked every three years or three hundred hours of use, and whatever comes first. To remove the bearing from the wheel halves, take a small screw driver and lift the end of the snap ring out of the groove and pull the snap ring out. Then remove the felt dust seal and flat washers that are on each side of the seal. On the outer seal there is a felt seal cup ring that holds it and this comes out with the snap ring as well. The inner bearing has two large flat washers that hold the felt dust seal.

Now take all the parts and place them in a pan and pour gas over them and it seems to clean all the parts with little trouble. Of course it's best to use rubber gloves when you do this. By taking a cheap paintbrush and the gas you can get all the grease out and the dust washers and snap ring all clean. Now the next thing is very important. Do not use your air compressor to blow the bearing out by blasting them and letting them spin. Spinning a dry bearing can destroy it. You can blow it out but don't air spin it. Lay all the parts out and let them dry. Using a rag to dry the dust seals and snap rings. But a good thing to do before you grease the bearing is to inspect them for any defects in the rollers of the bearing. Look for bluing or nicks in the rollers. If any are found the bearing will need replacing. Both parts of the bearing will need to be replaced, the cup and the race. Usually they are both damaged if at all.



Now how do you lube the bearing again? Well the first thing you need is the right type of grease to use. With the type of wheels and brakes on our aircraft the temperatures that our bakes and wheels see it is best that lithium base wheel bearing grease be used. There are many out there but high temperature type lithium type be used. You can buy a very inexpensive type wheel bearing packer at your automotive store that will come in handy for the next ten years so just go get one before you start the job, then you will always have one.

With the bearing packer I place the tapered part of the bearing into the packer first then place the red pusher down into the bearing placing my foot on it and force the grease up into the bearing till I see it coming up through the bearing rollers. No more then this is needed. Any extra grease will only be slung out during use and serves no purpose.

There is another way to pack the bearings. With a smear of grease in the left palm take the bearing in your right hand and pull the bearing through the grease while pressing downwards with the larger part of the bearing facing into the larger area of the rollers keep swiping the bearing till the grease is shown coming through the bearing till it has filled all the cavities of the bearing. Do not over fill the bearing. It serves no purpose for the extra grease. Smear a light coating on the race and install the bearings, dust seals and washers back in place and install the snap rings. The bearings are now installed and the tire is ready to be installed on the wheel.

Now take your tire and put a very light coat of talcum powder on the tube and inner edge of the tire inner race. Take the tube and install it into tire with the stem of the tube aligned with the red dot on the wall of the tire. The red dot on the side of the tire is the lightest spot on the tire so being the best place to put the stem of the tube aligned with. This is the best static balance of the two to be unless you use the true static balancer.

Remove the valve core from the stem with that special tool you made and take your tire inflator and inflate the tube to a point so the tube is now filling the tire. Let it deflate and then install the core back in and re-inflate till the tube is filling the tire to the point where it just starts to fill the sides of the tire to show expansion. Take the tire and tube and bounce them on the floor or bench to seat the tube into the wall of the tire and this should eliminates any pinching of the tube. I find this works very well in the long run. Once again make sure the red dot and the stem are still aligned, if not make sure by letting some of the air out and align the two again.

Now to install the two halves together, take the side of that has the notch in the inner rim and install

the brake disc on bolts together. Having the head of the bolts on the brake disc side. Slide this half into the tire and being careful not to grab the tube as you slip it in. The little bit of air you have in the tube should prevent this. Now slide the outer half into the tire making sure it aligns with the bolts coming from the brake side with the hole in the half aligning with notch in the other.

When together install the washers and nuts and cross torque them to 90 inch pounds. Now inflate the tire tube to no more than half of what the tire normally is inflated too. The tire is now ready to be installed unless you feel further balancing is desired. If so, find someone with a balancer or install it as it. In most cases the static balance should do. After a few hard landings most of the extra balancing is nullified I feel anyway.

Clean the axel off and check that the brake pads are clean and ready to be installed. Do not put any grease on the threads of the axel. It is a dry torque and is meant to be. Install the spacer if it was on the inner side of the tire and install the tire. Install the spacer if it was on the outer side and install the wheel. Then install the nut with clean dry threads and tighten the nut till you feel a drag on the wheel spinning while tightening. I use a pair of water pump pliers for this. The water pump or slip joint pliers seem to do just fine. Now after you feel the drag I back the nut off till free and then retighten till snug, then to the next cotter pin hole tighter. This has worked great over the years with no problems and proven just fine. Install your new cotter pin that you will find a little too long so you have to cut it a bit shorter and to clear the wheel haft and cut just enough to clear the wheel and still have enough to bend over when all the way installed.

Now that the wheel is installed the tire now needs to be inflated to the max amount of pressure in that position on the plane it is required. Install the brake caliper back on and install the outer pads with the 1/4 " bolts. You may have to compress the piston in the caliper some because when it was loose during the tire change it may have come out a little. Tighten the 1/4" bolts to 90" lbs.

Lower the tire back to the floor and let set for a number of hours, if you can over night and check the pressure in the tire again. I can assure you that it is lower and bring it up to the normal pressure for that position on your plane. It should be checked no matter what in the 24 hours. No need using N2 to service the tire unless you fly at very high altitudes.

I hope this has been a help to you and any further question you may have please feel free to call me.  
Dave

MINUTES: GENERAL MEETING EAA CHAPTER 663, 11/5/2015, 7:30 PM, OLD TERMINAL BUILDING, KLVK.

In the absence of John goldsmith, chapter vice president Chuck Ray called the meeting to order.

Several guests introduced themselves.

The minutes of the October meetings were approved as they appeared in “The Grapevine”.

Young Eagles: YE Coordinator Trina Anderson reported that 70 kids were flown out of the Byron Patriots Jet Center on 10/17; 30 potential Young Eagles were turned away. A make up rally is scheduled for Saturday 11/14 at Byron. She requested volunteer pilots.

Business: Newsletter Trystyn Clark mentioned that he is trying some different venues for promoting learning to fly among young people. He quoted sources as saying 40% of general aviation pilots have become inactive in the last three years. A member suggested he contact Ken Wayne at KTVU channel 2 as a possibility.

Treasurer Mark Palajac reported 95 members and \$5,185.56 in chapter funds. Mark is accepting dues for the coming year (\$30). The fee for the annual dinner is yet to be determined, but should be known by end of month.

Announcements: The annual dinner will be January 23<sup>rd</sup>, with Andy Weir, author of the book “The Martin” as our speaker. Autographed copies of the book will be available.

Next board meeting will be November 19<sup>th</sup> at John’s place with the general meeting following on December 3<sup>rd</sup>.

Member’s forum: Ralph Cloud, future member of the Airport Commission, reported that 5 Rivers the

soon to be FBO constructing the new hangars may be in operation by the coming Super Bowl. The new fuel island may be in operation by the end of the month. The current construction is Phase I, planning is already progressing on Phase II, more large hangars located where there is currently a large pile of dirt.

Airport management is planning on parking for a large number of aircraft expected for Super Bowl weekend. It includes closing Runway 25L-07R for parking Jets (?). All local general aviation airports, and ATC are expecting a large volume of itinerate aircraft.

Two companies are interested in pursuing construction of large hangars in the space between American Aircraft and the fire station.

Break and then Program: Chuck Ray introduced Renee Robinson, flier of a Rans Coyote out of Byron, gave us an outstanding presentation on how ADS-B works and the equipment required to be fully compliant. The short form: It's complicated, but a lot of information is transmitted and received by the system. We can hope for lower cost equipment. Thank you Renee.



MINUTES: BOARD OF DIRECTORS MEETING, EAA CHAPTER 663, 11/19/2015, 7:37 PM, JOHN'S PLACE.

John Goldsmith, Trystyn Clark, Ralph Cloud, Bob Farnam, Chuck Ray, Bruce Cruikshank and Mark Palajac (on speakerphone) were present.

Treasurer Mark Palajac reported 95 members and \$5,185.56 in chapter funds. He awaits our decision on the price of the annual dinner.

Young Eagles: Trystyn reported that 6 Young Eagles were flown Saturday 11/25. Due to fog they didn't start until about 11:40. He also mentioned a rally at Lodi on Saturday the 21<sup>st</sup>.

Program: Chuck Ray has given up on JR and is having Denise Watson tell about her VFR

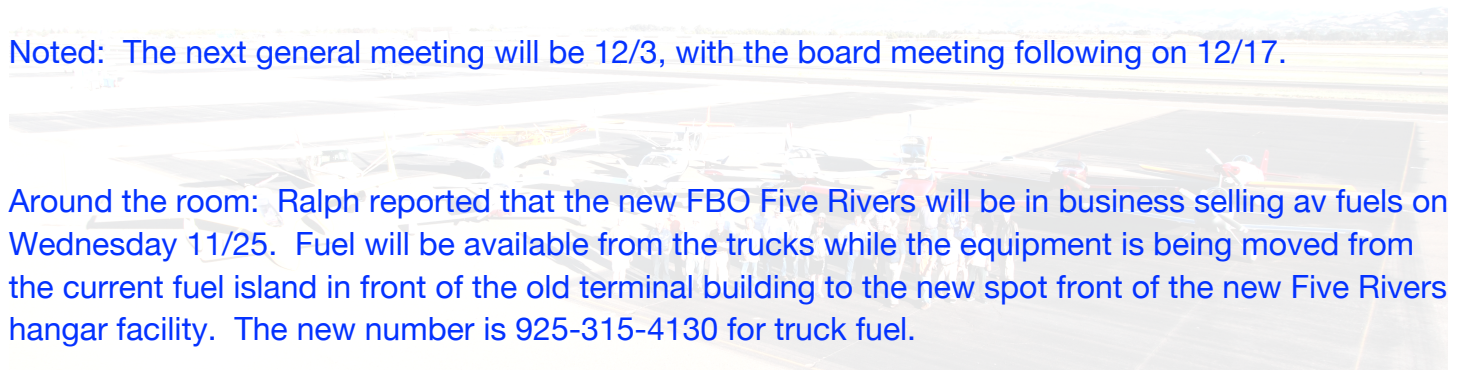


program. Vocational Flight Resources, a program that is exposing young people with developmental issues to aviation. In January Pete Eltgroth will give a FAST presentation on aerobatics.

Holiday Dinner: Due to the popularity of the speaker Andy Weir author of the book “The Martian” it was decided to limit attendance to significant others and guests of members. We are still anticipating a large crowd. John knows people joining the chapter just to attend. Reservations will be prepaid only. The chapter has been stung by persons promising to come and paying at the door. . . .then not showing up and not paying. Cut off for reservations is one week prior the 1/23/16 event.

Eagle Flight: John received a package of stuff from headquarters concerning the Eagle Flight Program. Aimed at introducing older people to flying in a way that may get them hooked on flying, the program may involve multiple flights and introducing the participants to local flight schools. Stay tuned.

Noted: The next general meeting will be 12/3, with the board meeting following on 12/17.



Around the room: Ralph reported that the new FBO Five Rivers will be in business selling av fuels on Wednesday 11/25. Fuel will be available from the trucks while the equipment is being moved from the current fuel island in front of the old terminal building to the new spot front of the new Five Rivers hangar facility. The new number is 925-315-4130 for truck fuel.

Back to the annual dinner: The food: It was decided to limit the menu to a single item chicken parmesan with sides of mixed vegetables, penne pasta and garlic bread catered by String’s Café in Livermore. Ralph will bring the appetizers IKEA meatballs and veggies, and for dessert, a sheet cake. After much discussion it was decided to charge \$30 per person. There was a discussion about how to track the number coming. Books (paper back) will be available for signing, but we need a count.

Meeting adjourned.

Respectfully submitted, Bruce Cruikshank, Secretary.

## Feedback/Questions/Suggestions

Any and all feedback is welcome. Please take a few minutes to send suggestions, tips, corrections or any other feedback to: [Trystyn1271@gmail.com](mailto:Trystyn1271@gmail.com)

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1271 Norwood Place,  
Livermore CA 94550  
[Trystyn1271@gmail.com](mailto:Trystyn1271@gmail.com) or  
[President@eaa663.org](mailto:President@eaa663.org)