



NEWSLETTER

Carb Heat

Hot Air and Flying Rumours

Vol 27 No. 10

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November 1997

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Personalized Renewal Form

Next Meeting:

Thursday November 20, 1997 8:00 PM
Aviation Museum (Bush Theatre)

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Winter is fast approaching, and some members have already placed their aircraft into hibernation. Luc and I continue to fly the RV-6, and plan to take a look see attitude; perhaps El Nino means an extended flying season this year.

October Meeting

The October meeting featured three chapter members discussing the pros, cons, and how to's of joint aircraft ownership partnerships. A special thanks to Barney De Schneider, Wolfgang Weichert, and Luc De Sadeler for sharing their thoughts with us. Everybody seemed to come away with a positive appreciation for the many benefits of a well chosen partnership, both for factory built and home-built aircraft.

November 20th Meeting

The next meeting is being held **Thursday, November 20th at the NAM Bush theatre, 8:00 PM sharp.** Our featured speaker will be **Ken Hitchmough** who will share video clips from his time spent in Nigeria on the RV-6A based *Air Beetle* developed by Vans aircraft for the Nigerian Air Force. This should prove fascinating, and I look forward to seeing you there!

Lars Steps Down

After five years of sterling leadership of our Young Eagles program, Lars Eif has decided to take a well deserved vacation. This provides an excellent opportunity for another keen chapter member to get involved in this most rewarding of EAA activities. Lars, as usual has things organized to the point where they almost run themselves; consequently, it will be easy to follow in his footsteps, big though they may be! I look forward to hearing from

volunteers at the next meeting. On behalf of the executive and hundreds of Young Eagles, I wish to extend hearty congratulations to Lars for a job **superbly** done!

Hanger Builders Unite

It is time for potential new hanger builders to unite, select a leader, and get on with the task of creating our next group of row hangers. While we do not yet have a new signed lease, terms are becoming clearer, and it seems an appropriate time to move from the dreaming, and talking stage on to the planning and execution phases. I will be asking for volunteers for this leadership role at the next meeting. If no one steps forward, nothing is going to happen, the ball is in your court.

TSB Analysis complete

The Canadian TSB labs have completed the failure analysis on my failed NSI CAP propellor. This analysis shows conclusively that the failure was a classic fatigue failure, likely due to the direct drive power impulse from the engine, exacerbated by the loose fit of the outer support Rulon Bearings.

The TSB analysis confirms the earlier analysis by Paul Messenger, an EAA Technical Counselor and retired aeronautical engineer as reported in last month's newsletter. In my case the outer support bearing was at least .006 inches oversize, compared to the .010 inches oversize measured by Paul on his hub. This meant that all power impulse torsional forces were concentrated on the flange and stress relief groove where my cracks started. Interestingly, the bearing on the one blade that had shown no signs of cracking, had .004 inches clearance, which

shows how little wear from the design tolerance of .002 inches is required before fatigue starts to set in this application.

I have received through Paul, a copy of a service advisory that NSI prepared following Paul's presentation of his findings, and checking of NSI's Rulon bearing stock which showed many oversize bearings. What is shocking about this bulletin, is that it makes no mention of checking for oversize bearings. Rather it suggests inspection for cracks in the blade cuff. Given the short time required for this fatigue failure to propagate, I am shocked at this omission of what seems to be critical diagnostic information.

I have included a couple of photographs from the report that show the failed and almost failed blade collars (cuffs), along with the scanning electron microscope image (3600 X magnification) which clearly shows the fatigue striations.

Once I receive the final, approved report, i.e. checked for potentially libelous comments, I will be forwarding copies to NSI, Warp Drive, and other interested parties such as EAA, RAA, PFA, and SAAA.

As I stated before, I thought I had done my homework, but you really have to be exceptionally careful with new products, particularly in critical areas! I only wish I had listened more closely to some of the NSI scuttlebutt, I might have avoided a very costly, dangerous, and potentially life-threatening mistake.

Fly safely.....*Gary*

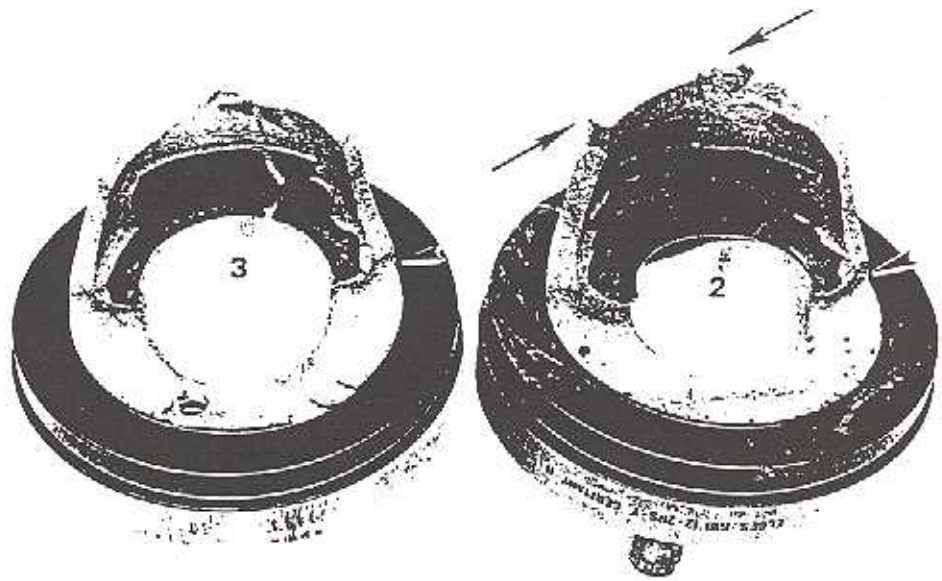


Figure 8 Section between arrows is saw cut required to separate fracture on Blade 2. Note similarity of fractures in the two blades. Arrowheads show location of groove running around circumference of blade shank.

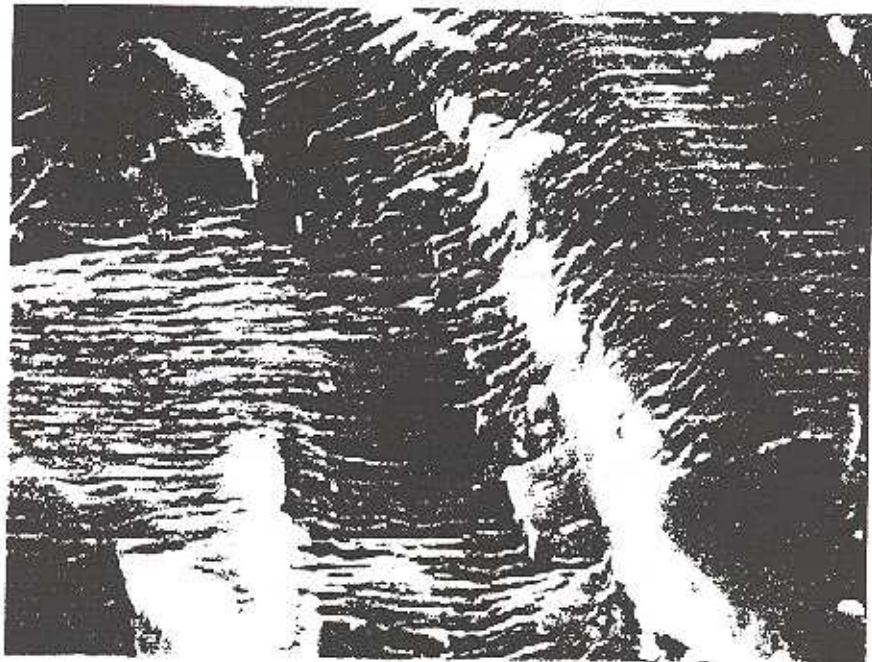


Figure 11 Typical scanning electron micrograph (3600x) showing fatigue striations on fracture surface of Blade 3.

Just Plane Surfin' by Curtis Hillier

The magazine KitPlanes has exclusive rights to the word as shown so we will either have to say Kit Plane or change the name of the column. Being the legally conscious person I am, I will comply. It is awesome what you can learn on the web!

This month I thought I would start off by revisiting a few sites I reported last time to give you an idea how well maintained they are. The Aircraft Spruce site is almost exactly the same - little change, so the presidents promise to maintain and expand must be in first gear. Some additions include "information" on wood and metal but no order info such as size availability. It looks as though they still want us to use their catalog instead of the web site. I'll keep watching.

One of the best maintained sites is the US-Aviator site, and yes the magazine is back in the mail and at the newsstands. These guys gave a day by day blow of the action at Oshkosh; I almost thought that I was there..... yea right!

The Europa site seems to continue to grow, as does the Rotorway and revolution helo sites.

Trade-a-Plane is now on the web and is very interesting to browse (splashy ads in the magazines). If you are looking for an airplane you can look but cannot see the phone number without subscribing. Their search engine is fairly lame as well; they ask you to specify certain key words and set a priority of importance to each; say for instance in my case if I were to buy a partially completed kit or finished aircraft I tried to select only Canadian origins. This did not work very well as I got one Canadian hit and twenty USA hits. I also prioritized the type as "601HDS" to see if there was an unfinished kit some one wanted to ditch, nothing in Canada even though I set that priority as high as the name of the design. I was not very impressed but if you were a subscriber it may pay off. I also went to the site several times and got the exact same ads which implies the data base is either not very well maintained or the kits do not sell.

Probably the best change I have seen has been to the www.zenithair.com site. They have taken a picture of the 601 and the new 620 twin. You can navigate the aircraft with your cursor. You can zoom in on the instrument panel (although the quality is not great), spin around and look aft or check out the wing tips, seats etc. etc.. This is a very impressive web site and obviously very well maintained.

Now for some new sites:

Some one asked for a weather site, there are many to visit, this month I checked out "wx.totavia.com". you must subscribe to it to get the data but you can sample the

wares and get METAR reports for a few major cities. They are continually asking you to read their disclaimer so I am not sure just how good the data is. Subscription for a basic recreational pilot is called a tier one and costs \$8.95 per month. This allows you to get data 75 times per month and if you want a radar image it is seventy more cents per image. There is also a 25.00 "set up" (rip off) charge.

General Interest: (www.landings.com)

If you want an excellent general purpose aviation web site to look for something/anything, try it out. A search engine for info, and some buttons to get you to such topics as; flight planning, training, weather, news, other sites etc.. are all there. Their front page is sort of like the US today newspaper. It has headlines such as Cessna's announcement to restart production, info on John Denvers crash, Hadden's crash, scholarships... you get the picture. This is very good site to keep up on the latest news and appears to be kept up by the minute so to speak. It also gives some good techno talk as to navigating web sites, how the colour of text changes means that you have visited the site and no changes have occurred.

I also checked out this sites weather link - Awesome. Although there is a strong disclaimer wrt the data, you can get virtually anything you want from SAT images to reports - around the world. Well maybe not here in Carp, but the hand out the window will still work in that case. This site is worth a browse when the rain is pouring and you want to make sure the rest of the world knows you are not flying.

Finally, try clicking on Homebuilding, it takes you to the site where... yes there it is EAA Chapter 245 Ottawa! A bit out of date wrt who our editor is but never the less we are on the web! 2034 visitors have checked us out.

Suppliers:

Gulf-Coast Aviation (www.gulf-coast-avionics.com) I have their catalog (thanks to Martin Poettcker), but the web site provides up to the minute info on sale stuff, new products, and of course ordering. One thing I was impressed to see was the offering of used Bendix/King KLN-89B and KLN-90B IFR units. They were listed at 3,090 USD and 4,450 respectfully but the fact that they offer this used equipment is good to know for those of us who prefer to save a few bucks when ever we can. Navigating this supplier is a piece of cake and there is some simple automation to watch as you browse. Not quite as splashy as the Aircraft-Spruce site but in my opinion better maintained.

Pacific Coast Avionics (www.pacavionic.com) Basically the same as Gulf Coast Avionics.

ERECT-A-TUBE (www.Erect-A-Tube.com) Anybody want to build a new hanger at Carp? There are a lot of images to down load here and they seem to take quite some time. They give fairly good info as to standard sizes

for compartments but no costs at all. They have an 800 number for quotes.

Sensenich Props (www.sensenich.com) Don't be too shocked, this one talks to you when you get to the site! These people seem to want to make sure you learn everything about their products and the details of props themselves. Plan to spend quite some time here if you want to review Supplemental Type Certificates (STC), general product specs, cross references and the like. I found the service bulletins of use. Their info on corrosion inspection for their props can be applied to any metal prop.

Flyer (www.ganflyer.com) Some of the links here simply send you to the Landings.com site we talked about above. These guys make a statement about how great their magazine is and how it is so eagerly sought after they want to subscribe to it to get the info in their articles. (They are a major sponsor of Landings.com). A fair request to keep the bucks flowing and support their business. So if you have to subscribe why have a web site? To advertise and get the subscribers of course. I found the links worth a visit but prefer the landings.com site over the GANews and flyer site. I was interested to find out that the BD-10 has been sold to someone new and Jim Bede has once again declared bankruptcy! Too bad; his new two place and four place versions of the BD-5 looked great!

Happy Surfing, till next time, See Ya!

Dealing With Stuck Valves by John Schwaner

If your engine seems rough when first started, it might be giving you an early warning of a stuck valve. Failure to heed this warning and correct the situation promptly could cost you an engine teardown, or even result in a catastrophic engine failure and a forced landing. Here's the lowdown on why valves stick and what to do about it. by John Schwaner (jschwane@avweb.com)

Each cylinder of your piston aircraft engine has two valves--intake and exhaust--that open and close by sliding in and out through a close-tolerance valve guide. A stuck valve is one that no longer slides readily in its guide. A stuck valve may refuse to open, or once open it may refuse to close. Either situation is quite serious.

Stuck valves are usually caused by a build-up of deposits and/or corrosion on the valve stem. Because the fit of the stem in the guide is so snug, it doesn't take much build-up on the valve stem to interfere with free movement of the valve within the guide.

"Morning sickness"

The clearance between the valve stem and its valve guide are at a minimum when the engine is cold. Consequently, the first sign of a stuck valve usually occurs when the engine is first started, and is often identified by an intermittent hesitation, or miss, in engine speed. We call this "morning sickness".

Morning sickness is a warning that should be heeded immediately. Sticky valves never get better by themselves...they always get worse, usually fairly quickly. Flying an airplane whose engine exhibits morning sickness increases the risk of serious engine damage and possibly in-flight engine failure. Hence, the aircraft should be downed for maintenance at the first hint of valve sticking.

What makes valves stick?

Valve sticking is influenced both by the design of the engine and the environment in which it is operated. Lycomings have more valve sticking problem than Continentals. Hot-running engines stick valves more often than cool-running ones. Valves are more likely to stick in hot summer weather than in cold winter months. The use of heavily-leaded fuels and inadequate leaning can lead to valve sticking, as can infrequent oil changes.

Heat is the primary cause of valve sticking. High temperatures in the exhaust valve guide oxidizes oil and forms carbon deposits on the valve guide, and these deposits can cause the valve to stick. The most frequent reason for elevated valve temperatures is valve leakage.

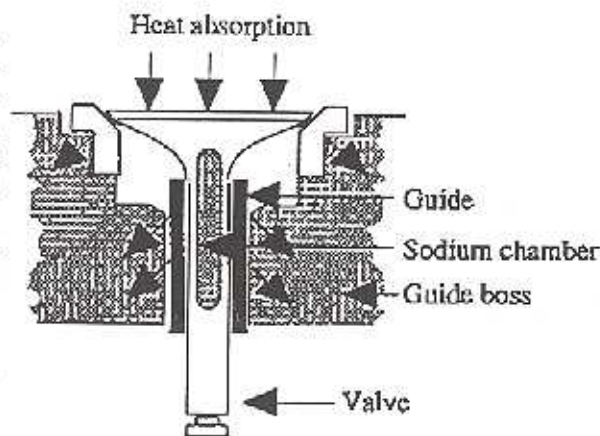
All of the combustion gas must pass around the valve face as it goes out the exhaust port. The large heat-absorbing surface of the exhaust valve face must conduct heat away from its surface. A valve that is not contacting its seat properly (i.e., is leaking) cannot conduct as much heat into the cylinder head as a valve with good seating.

Sticky Lycomings

Lycoming valve stems operate at higher temperatures than Continental valves stems. Continental engines use solid exhaust valves whereas Lycoming engines use sodium-cooled exhaust valves, which have hollow stems filled with metallic elemental sodium. The sodium in the Lycoming valve melts at 97.5°C and conducts heat from the valve head into the valve stem, where it is conducted through the valve guide into the cylinder head. The Lycoming valve stem normally operates 100°F hotter than the Continental valve stem. The higher valve stem temperatures in Lycomings make them more susceptible to valve sticking.

Most of the heat conducted from the head of the Lycoming exhaust valve goes out through the valve stem into the cylinder head fins. In addition, the Lycoming guide boss allows 5% of the guide to extend past the end of the boss and protrude into the exhaust port. The protruding guide absorbs heat from the flow of exhaust gas. Because of the high temperatures and

combustion deposits on the exhaust valve stem, this area of the guide "bell mouths" or gets bigger. This increases the clearance between the guide and the stem and allows combustion products and heat to travel up the valve stem. These combustion products create lead deposits and acids which increase the corrosive environment.



Lycoming valves also stick because of corrosion buildup on the valve stem. Corrosion increases the diameter of the valve, thereby reducing the valve stem-to-guide clearance. The high stem temperatures, combined with a design which allows more combustion products into the guide bore, create a corrosive environment which is seldom seen on Continental engines.

Lycoming TIO-541 engines installed in the Beechcraft Duke use an oil-cooled exhaust guide. Cooling oil circulates in a groove between the exhaust guide and the guide boss. If this groove cokes up with oxidized oil and becomes blocked, the exhaust guide and valve overheat and stick. If you have a stuck exhaust guide on this engine, be sure to check the oil passage by blowing compressed air through the oil fitting in the cylinder head.

Continental engine design is more resistant to valve sticking. Big-bore Continentals rarely stick valves. We do see a tendency for intake valves to stick on Continental engines in the O-200, O-300 series. A stuck intake valve disrupts the breathing of the entire induction system. The power loss results in a forced landing.

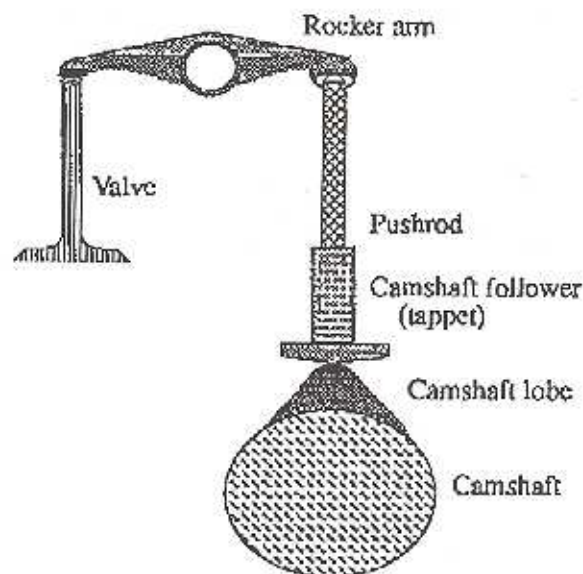
Engine operating environment

Environmental influences that create valve sticking are: high temperatures, dirty oil, high-lead fuels, hot engine shut-downs, and poor engine baffling. Improper leaning can also be a culprit: an engine that is run excessively rich will build up carbon, lead, and other combustion-related deposits on exhaust valve stems more quickly. On the other hand, an engine that is leaned excessively during high-power operation will experience high valve temperatures, and this contributes to valve sticking.

Engine overhaul shops can't do much to prevent valve sticking. They cannot change the engineering of the engine, and have little control over its operating environment. About all they can do is to use the correct parts (valves, guides, seats, rotators, etc.), to dimensionally match the parts carefully, and to control the surface finish of the guide by careful reaming and honing.

Your regular maintenance shop can influence the operating environment by checking the engine's health regularly (via compression checks, oil analysis, filter inspection, etc.), by making sure the cooling baffles are in good shape and the magneto timing is correct, and by changing the oil frequently.

What happens when a valve sticks?



When an engine has a stuck valve, one of five things can happen, each of which is bad news:

1. The pushrod bends.
2. The surface of the camshaft or cam follower fails.
3. The valve opens but won't close.
4. The rocker support breaks.
5. The valve rotator cap falls off the end of the valve stem. (Lycomings only.)

A valve that sticks closed will often result in serious and costly engine damage. Each time the cam-tappet-pushrod-rocker try to open that stuck valve, you risk catastrophic engine damage. With a stuck valve, the valve doesn't want to move. Tremendous valve train forces develop as the camshaft lobe tries to force the valve open. The camshaft follower and lobe are the most highly-stressed components of the engine even under normal conditions...the additional loading caused by a stuck valve may induce catastrophic failure of the rocker support, pushrod, cam follower, or cam lobe.

A damaged camshaft lobe requires complete engine removal and teardown. The same is true of a damaged cam follower if it is the mushroom-head variety used in many Lycoming engines.

Sometimes an exhaust valve that is stuck closed can cause the intake pushrod to bend or the intake rocker support boss to break. How can this happen? If the exhaust valve sticks closed, exhaust gases will not exit from the cylinder. Gas pressure within the cylinder then prevents the intake valve from opening. If this happens, something's gotta give. Either the pushrod bends or the rocker support breaks.

You might think that a valve that sticks open is a much less serious situation, but that's not necessarily so. If the valve is an intake valve, you lose power and will need to make a forced landing. If the valve is an exhaust valve, there will not be any compression on that cylinder.

In either case, if the valve spring can't close the valve, the entire valve train (cam follower, pushrod, and rocker arm) unloads. The end of the pushrod that rests in the socket in the cam follower may come out of the socket and fling around inside the tappet boss. If the pushrod ball does not locate itself back into the socket when the cam lobe comes around, it may jam against the tappet housing, usually causing crankcase damage.

The valve rotator cap on Lycoming engines is kept on the tip of the exhaust valve stem by the rocker arm. If the valve sticks open, the rocker may move far enough away to allow the rotator cap to fall off the valve stem tip. When this happens, not only is valve clearance excessive, but also the rocker face pounds into the spring seat. The rotator cap is too big to fall down the pushrod tubes. It just lays in the rocker box until you take the rocker box off. It then quietly falls unnoticed onto the hangar floor. If you notice a missing rotator cap, it is likely that the exhaust valve was stuck open in the past. Look in the rocker box or around the hangar floor and you might find it.

Engine damage does not always occur when the valve sticks, but the longer the engine operates in this condition, the greater the chances are that some damage will occur.

Remedial action

Repairing a stuck valve can be done without removing the cylinder from the engine. The procedure is described in Lycoming Service Instruction 1425 and consists of dropping the valve into the combustion chamber, reaming the guide, and then reinstalling the valve.

Another method is to tie dental floss to the end of the exhaust valve and lower it down into the cylinder. Ream the guide and then pull the valve back up into the guide.

If it's necessary to remove the cylinder, we recommend you inspect the condition of the camshaft lobes and the cam follower. You may want to review the operating environment of the engine. Pay particular attention to the oil change intervals, baffle condition, and operating techniques.

The procedure outlined in Lycoming Service Instruction 1425 and described here can also be used on Continental engines.

Do not use Marvel Mystery Oil or other solvents to un-stick a valve. Solvents may un-stick the valve in time but not immediately. Eventually the valve may un-stick, but not before your camshaft lobes have been damaged.

Solvent treatments dissolve the outer deposit layers in the guide boss and temporarily un-stick the valve. The remaining deposits push the valve over to the opposite side of the guide and cause rapid, uneven guide wear. The valve stem may stick or it may cause rapid guide wear where the stem is forced against the guide material opposite of the deposit buildup.

Copyright 1995 by Sacramento Sky Ranch Inc. All rights reserved. John Schwancer is AVweb's powerplant expert. John is a world-class authority on piston aircraft engines, and a specialist in the engineering analysis of engine failures. John runs Sacramento Sky Ranch, Inc., a leading distributor of aircraft and engine parts, and probably the foremost aircraft hose shop and magneto overhaul facility in the U.S. John and his wife live in Sacramento, California. John has also written two superb technical books: Sky Ranch Engineering Manual and The Magneto Ignition System. Both can be previewed in and ordered from the AVweb Online Bookstore.

Classifieds

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I am always interested in receiving submissions for this, your Newsletter. You may bring articles to the monthly meetings or mail information to the post office box or send me an e-mail attachment at:

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07/97



EAA Chapter 245 Membership Application

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Full Member: ___: \$55.00 Newsletter, hangar, workshop, tie-downs

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Note Associate and full members must also be members of EAA's parent body in Oshkosh WI, USA

Make cheque payable to:
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EAA Chapter 245
1997 Membership List

Last	Area	Home	Work	Project	Last	First	Area	Home	Work	Project
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Darnley		727-0285	238-6512	C-FKAQ Aerona 11AC	Laurent	C-FKAQ Aerona 11AC		832-0644		
De Sadeleur	613	225-6003	954-0048	CH-701 C-GPIP	Mike	CH-701 C-GPIP		729-3774	894-4180	CH701 C-FMKO
de Schneider		591-0869		Davis DA2B	Bob	Davis DA2B		837-9729	990-5181	Rebel
DePippo		591-7822		Cessna 206F	Paul J.	Cessna 206F		749-9682		Zenair 501 HD
Douma	613	765-1111	765-1111	Cessna 172G CF-UGO; RV-6	George	Cessna 172G CF-UGO; RV-6		487-2614		Pietenpol C-GFCU
Doyle		837-6690	992-9851	C-GVAT Cessna 172	Ted	C-GVAT Cessna 172		489-3231	226-8373	Pietenpol C-GFCU
Elliff		592-8327	598-2825	PA-16 C-FRUS; Tailwind W-10	Irving	PA-16 C-FRUS; Tailwind W-10		722-0359	230-2100X7202	PA-20 CF-GYA
Emmerson	613	332-4531		Skybolt CF-EAA; Cessna 172 C-FAIR	Thomas C	Skybolt CF-EAA; Cessna 172 C-FAIR		835-2792	965-4129	Miranda Fleet Canucks x 2
Fancy		836-2829		HuskyCuby C-FOAG; PA29-140 C-GCDE	Les	HuskyCuby C-FOAG; PA29-140 C-GCDE	613	831-4845	831-3252	Cessna 150 C-GNBI
Fauquier		591-0234	765-2322	Cessna 172G CF-UGO; RV-6	Rodney	Cessna 172G CF-UGO; RV-6		836-1410		Citabria 7GCBC C-FBST
Ficker		936-2292		C-GVAT Cessna 172	Uwe	C-GVAT Cessna 172	613	236-4405	783-8459	Christavia Mk I project
Fogarasi		257-8329		PA-16 C-FRUS; Tailwind W-10	David	PA-16 C-FRUS; Tailwind W-10		226-7869	727-9304	Pietenpol C-GFCU
Fowler		225-6070		Skybolt CF-EAA; Cessna 172 C-FAIR	Eric	Skybolt CF-EAA; Cessna 172 C-FAIR		749-4264	950-3771	Volmer Sportsman
Furnerton	613	257-3566	257-5133	Murphy Rebel	Parr	Murphy Rebel		562-5933	728-0141	Thorp S-18
Gravel		832-4306	592-3260	Cessna 150 C-GEEU	Richard	Cessna 150 C-GEEU		565-8913		Fleet Canuck CF-OPZ
Groigne		828-7493	765-2896	Pagazair	John	Pagazair		831-3368		Avid Amphibian C-FPIT
Griese	613	839-3036	839-3036	C177B C-GWIX	W T.	C177B C-GWIX		832-1681		Quickly II C-GTII; Drifair II C-ILMU
Hendriksen		870-6257	592-6060	4P2S	Tom	4P2S		745-2164	963-8938	Michell UZ
Hergel	613	836-6454	996-4027	WW1/F30A/Amphipian	Ed	WW1/F30A/Amphipian		824-2974		Skybolt
Hillier		831-6352	560-6053 ext 2671	Monro-Z C-GNPL	Doug	Monro-Z C-GNPL		513 830-4532	965-6555	EDS - building
Holmes		820-8572		Glasair III C-FKXC	Michael	Glasair III C-FKXC	613	830-4532		Chabria C-GDWK
Hughes		826-3090		Cessna 185 Floetplane C-FHOP	Juergen	Cessna 185 Floetplane C-FHOP		513 836-1318	963-9588	RV-5 C-FVMH
Ironsone		258-2650	283-5207	Christavia	Wolfgang	Christavia		613 224-8133		
Irvine		226-6692	728-5677	Zenair 701; C-FPIL	Don	Zenair 701; C-FPIL				
Johnstone		745-5431	257-8332	Zenith CH 250		Zenith CH 250				
Jones		828-5485	820-2700	Aerona 11BC C-FSGE		Aerona 11BC C-FSGE				
Jones		821-2751	741-0480							
Lave	613	631-7080		Miranda and Cygnet		Miranda and Cygnet				
Laundry	613	954-9981		Rockwell 114 C-GRKT		Rockwell 114 C-GRKT				
LeBlanc	613	625-5282	767-6282	Champ FAC CF-DBK & CF-GIA; Baby Ace		Champ FAC CF-DBK & CF-GIA; Baby Ace				
Légaré	514	830-8272	485-5608	Christavia MK IV		Christavia MK IV				
Legg	613	749-5854	991-5036	C-182 C-FHMK; J3 C-FSVAL; C-140 CF-DMU		C-182 C-FHMK; J3 C-FSVAL; C-140 CF-DMU				
Levin		727-1444	728-2211	Sportsmen 2+2 C-GMTL		Sportsmen 2+2 C-GMTL				
Loretto		675-2301	737-2933	SE-5A Scout C-FVIP		SE-5A Scout C-FVIP				
Lunsden		733-2158	733-5869	Cherokee CF-JYK; Zenith CH250		Cherokee CF-JYK; Zenith CH250				
MacEwen	613	682-4449	960-1027							
Martei		487-3035	991-7222							
Martin		744-5347	757-7821							
McGrath		225-7067								

EAA Chapter 245
1997 Membership List

Last	Area	Home	Work	Project	Last	First	Area	Home	Work	Project
Accorn	613	830-5345	989-9683	Murphy Rebel	Dick	Murphy Rebel	613	935-4554	562-5900	Cessna 150 C-GGCG
Acres		839-5312		Fleet Canuck 80 CF-EAL	Dave	Fleet Canuck 80 CF-EAL		592-8102	569-3061	Chester AASA C-GQIG
Argue		839-5361		Pegazair-100	Rod	Pegazair-100		722-6922		Chester AASA C-GQIG
Bakas	613	744-7631	521-5902	Long-eze	Gary	Long-eze		596-2172	723-4965	Lancaster 235 C-GPLM
Baker	604	987-6924	430-4335	1947 Stampe CF-AVF	Bill	1947 Stampe CF-AVF		745-2843	288-4901	Somerset, Cessna 150
Barnacough		749-6720			Terry			828-3840		Cherokee C-FRXV
Besudoin		832-3828	728-8340	Cessna 172K C-FYCN; Velocity	Olav	Cessna 172K C-FYCN; Velocity		828-3840	952-2443	Cessna 172K C-FODK
Bielinski		839-5542		Davis C-FJCY; Davis C-FJHB	Robert D	Davis C-FJCY; Davis C-FJHB	613	825-7070	765-4862	
Bradley		829-6750	950-7539	C-FTGJ; Murphy Rebel	Marlin	C-FTGJ; Murphy Rebel		592-1403	986-0425	CH601
Butler	613	467-3169			Jon		613	729-1071	724-8024	
Charbonneau		513 592-2578		C-150L C-FBTN	John	C-150L C-FBTN		733-0340		Zenair CH800 C-FKOC
Cooper	613	592-2224	763-2140	Cessna 172N C-GQUO	Jim	Cessna 172N C-GQUO		830-4317		C172 CF-KJC
Cotnam		235-6314	983-8197		Tim			824-5044		Aerona 11BC C-FVXF
Crabbe	613	829-0525	995-4906	RV-5 C-GLUC	Russ	RV-5 C-GLUC	613	831-2485	553-1601	Building Baby Lakes, Taylorcraft C-58B
Darnley		727-0285	238-6512	C-FKAQ Aerona 11AC	Laurent	C-FKAQ Aerona 11AC		832-0644		
De Sadeleur	613	225-6003	954-0048	CH-701 C-GPIP	Mike	CH-701 C-GPIP		729-3774	894-4180	CH701 C-FMKO
de Schneider		591-0869		Davis DA2B	Bob	Davis DA2B		837-9729	990-5181	Rebel
DePippo		591-7822		Cessna 206F	Paul J.	Cessna 206F		749-9682		Zenair 501 HD
Douma	613	765-1111	765-1111	Cessna 172G CF-UGO; RV-6	George	Cessna 172G CF-UGO; RV-6		487-2614		Pietenpol C-GFCU
Doyle		837-6690	992-9851	C-GVAT Cessna 172	Ted	C-GVAT Cessna 172		489-3231	226-8373	Pietenpol C-GFCU
Elliff		592-8327	598-2825	PA-16 C-FRUS; Tailwind W-10	Irving	PA-16 C-FRUS; Tailwind W-10		722-0359	230-2100X7202	PA-20 CF-GYA
Emmerson	613	332-4531		Skybolt CF-EAA; Cessna 172 C-FAIR	Thomas C	Skybolt CF-EAA; Cessna 172 C-FAIR		835-2792	965-4129	Miranda Fleet Canucks x 2
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Gravel		832-4306	592-3260	Cessna 150 C-GEEU	Richard	Cessna 150 C-GEEU		565-8913		Fleet Canuck CF-OPZ
Groigne		828-7493	765-2896	Pagazair	John	Pagazair		831-3368		Avid Amphibian C-FPIT
Griese	613	839-3036	839-3036	C177B C-GWIX	W T.	C177B C-GWIX		832-1681		Quickly II C-GTII; Drifair II C-ILMU
Hendriksen		870-6257	592-6060	4P2S	Tom	4P2S		745-2164	963-8938	Michell UZ
Hergel	613	836-6454	996-4027	WW1/F30A/Amphipian	Ed	WW1/F30A/Amphipian		824-2974		Skybolt
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Jones		828-5485	820-2700	Aerona 11BC C-FSGE		Aerona 11BC C-FSGE				
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Lave	613	631-7080		Miranda and Cygnet		Miranda and Cygnet				
Laundry	613	954-9981		Rockwell 114 C-GRKT		Rockwell 114 C-GRKT				
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Légaré	514	830-8272	485-5608	Christavia MK IV		Christavia MK IV				
Legg	613	749-5854	991-5036	C-182 C-FHMK; J3 C-FSVAL; C-140 CF-DMU		C-182 C-FHMK; J3 C-FSVAL; C-140 CF-DMU				
Levin		727-1444	728-2211	Sportsmen 2+2 C-GMTL		Sportsmen 2+2 C-GMTL				
Loretto		675-2301	737-2933	SE-5A Scout C-FVIP						