

EAA MILE HIGH CHAPTER



PRESIDENT
KIRBY WHITE
423-5134

VICE PRESIDENT
FRED SEAL
659-1589

SECRETARY
KIRBY WHITE
423-5134

TREASURER
CATHY SHEBON
232-9535

NEWSLETTER
KIRBY WHITE
423-5134

VOLUME 10, ISSUE 12, DECEMBER, 1987

THIS MONTH: This month's meeting will be a banquet held on a different day and at a different place than announced in the November Chapter 43 Newsletter. The banquet will be at Donte's Italian Restaurant, which is on the Northeast corner of 84th and Pecos. The address is 1557 W. 84th Ave. Cocktails will be from 5:00 P.M. to 6:00 P.M. Dinner will start around 6:00 P.M. Served will be spaghetti with a meatball and sausage, soup, salad, bread, and a choice of coffee or tea. The price is \$7.40 including tax and tip, and there will be a cash bar. If you would rather order another item from the menu, feel free to. Guests are welcome, and no reservations are required. Hope to see everyone there!

LAST MONTH: With 50 members and guests in attendance, the meeting of November 14, 1987 was called to order at 7:50 P.M. by President Kirby White at the Denver Air Center. The minutes of the October meeting were approved as published in the Newsletter.

Guests: Guests present were Jim Sutton of Golden, Frank Bocfoeldy of Westminster, Steve Fitzgerald of Boulder, James Fitzgerald of Denver, and John Gattey of Boulder.

Treasurer's Report: There was none given.

Old Business: Kirby brought up the Christmas Banquet which was to be held as Chapter 43's December meeting. Ron Denight said that two of his neighbors own Donte's Italian Restaurant at 84th and Pecos, and they would be happy to host our group. He said that the food is quite good, but the reason we might consider trying the restaurant is that it is much larger than Colacci's and will allow us to easily walk around and visit with each other. The problem would be that the Banquet would have to be on Sunday rather than the normal Saturday, but the restaurant would be closed to the public so only our group would be there. Kirby asked the membership to decide whether to try Donte's or go back to Colacci's as usual. For the extra room at Donte's, the members decided to hold the Banquet there on Sunday, December 13, 1987. Kirby expressed that he hoped there wouldn't be any hard feelings on the part of Willie and Rita Byrd, and he was glad that the tradition of Italian food at our Banquet which was started by Colacci's was going to continue. Kirby reported that he had talked to the people at the Denver Air Center about getting a reduced rate for renting the Club Room for all of 1988 and paying in advance, and thus be guaranteed the use of the room on our meeting night. He was quoted a figure of either \$150.00 or \$175.00 (a final determination had not been made by the Denver Air Center), and the membership voted to approve either amount. It was also voted that at each meeting a kitty would be put out for those interested in contributing to the Club Room Fund to be able to do so.

New Business: Kirby announced that Bob Greeno had been voted into the Colorado Aviation Historical Society Hall of Fame for his many years as a helicopter pilot and the lives that he saved over the years. Everyone congratulated him for his great accomplishment. Kirby had a few information sheets on the Hall of Fame Banquet that was planned at which time Bob and several others would be inducted into the Hall of Fame. Earl Ellis said that a friend of his was in need of some parts for his Piper J-3 Cub. Earl asked that if anyone could help his friend out to talk to him during the break. Ron Denight reported that Tom Pierce had told him earlier in the day that Tri-County Airport had been named as a Stapleton reliever after an FAA study. The new status should allow for many improvements to the airport, including the runways and taxiways. Ron said he would keep us informed as he found out more information on the subject. Ralph Molski brought in a number of full color newspaper articles which were devoted to Oshkosh 1987. A relative of his lives near Oshkosh, and sent them to him. The newspaper dedicated a special section to the Fly-In every day, which covered the events of the day before.

Gene's Corner: Gene Horsman talked about the pictures of some early Boeing aircraft that he brought in for everyone to look at. They were quite interesting. He reported that the AD on Cherokee wing spars is going to be cancelled. The AD on Bellanca Scouts to check for compression failure of the main wing spars has been issued, however. The Cessna ARC line of radios has been purchased by Sigma-Tek from Honeywell. Roy Lopresti has resigned as Chief Engineer at Beech Aircraft. Zenith Aviation Books is now marketing a book on the Voyager. It is 256 pages and contains 48 pages of photographs. It sells for \$16.95. Beech Aircraft has warned against the use of Auto Gas in all of their aircraft. Mooney Aircraft will soon be unveiling the first production Porsche powered M20L. The company expects to begin deliveries in January. The new aircraft has a 217 HP engine with electronic ignition and a single-lever power control. A spokesman said the price probably will be between \$175,000 and \$180,000 for a fully IFR equipped model. The mid-continent Loran gap is being bridged, at last. Four new transmitters will be built to create two new chains, which should be on line by 1990. Each chain will be linked with existing stations to cover a vast tract of geography from Northern Mexico well up into Canada. Owners of a whopping 145,000 Cessna airplanes have received an AD requiring inspections and maintenance of their seat tracks and latching mechanisms. According to the FAA, compliance with the directive is going to cost owners in the area of \$13 million a year, collectively. This works out to \$90 per airplane per year. The AD is intended to stop Cessna seats from slipping. A general discussion was held on STC'd seat stops that are on the market. Gene read an article from the Luscombe Association Newsletter which addressed questions about the possibility of fire when refueling. Gene read an interesting letter which was written by a person who crashed his Quickie I. Kirby said that he would publish it in the December Chapter 43 Newsletter.

Progress Reports: Jim Thompson said that he had sent the cylinders from his Continental O-300 out to be reworked, and was looking forward to getting them back so he could fly his Cessna 170-A once again. Ron Denight reported that his Toyota starter was still working well in his Denight Special.

A&P: The business portion of the meeting adjourned for coffee at 8:25 P.M. After the break, Bill Amos gave a presentation on sheet metal fastening. Even though it was raining pretty heavily, Bill brought a workbench with vise, compressor, riveting tools, and many of the tools he uses when working with sheet metal. He also brought a videotape on the new electronic flight instrument systems that are being used in airliners for those with sheet metal experience to watch. Many thanks to Bill for the fine program.

MARKETPLACE: For Sale: 1/3 share in 1940 Luscombe 8A, \$2,500. Contact Dean Cochran 466-3472

BABY LAKES FUEL SYSTEM ALERT

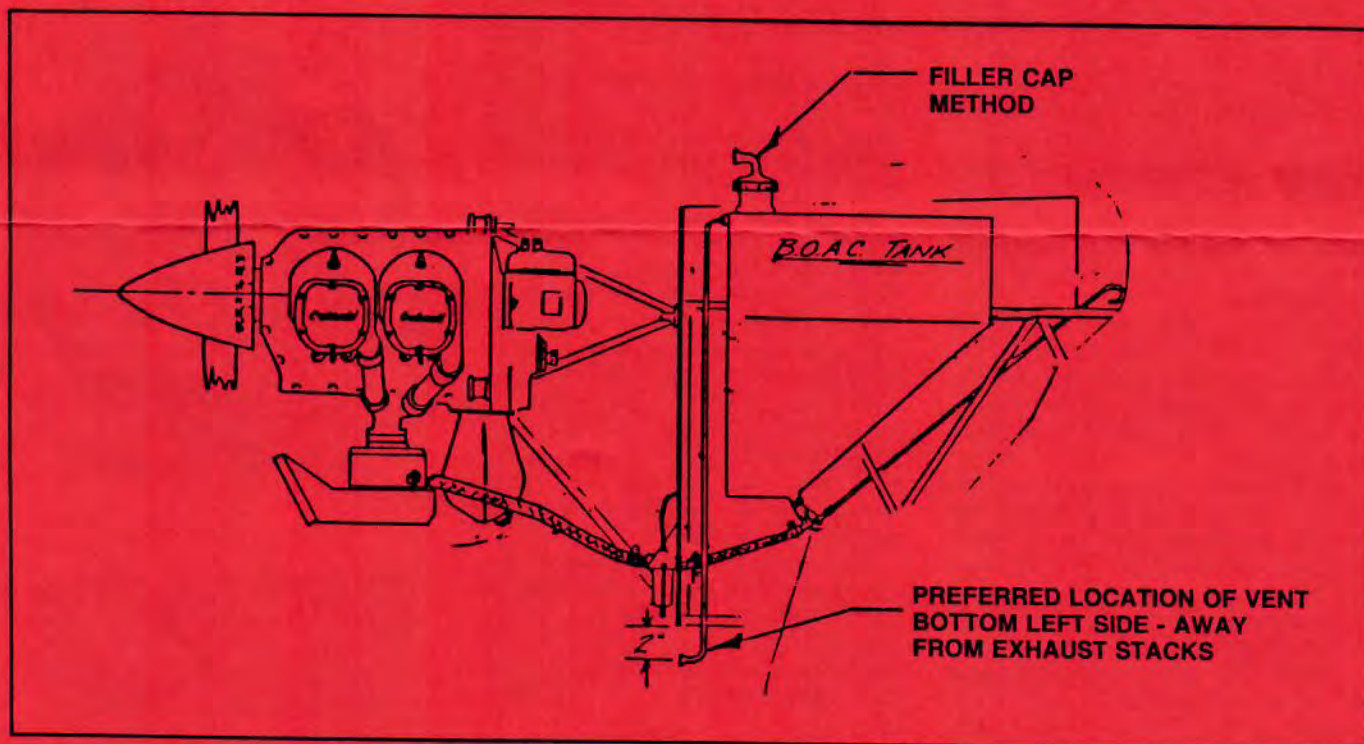
Some Baby Lakes builders reported fuel starvation problems on take off. The Baby Lakes, like other aircraft with rapid takeoff acceleration rates, need fuel system features that will prevent fuel starvation during this acceleration period.

First, be sure that your fuel tank vent is installed so that it takes advantage of the ram air to lightly pressurize your tank, enhancing positive fuel flow to the engine. This is particularly true if you

have a gravity fuel flow system. The sketch below shows two methods for achieving this. One method has the tank vent mounted as an integral part of the filler cap, while the other is a vent line leading from the top front of the tank to two inches below the contour line of the fuselage. Notice that the vent line ends are flared and point forward for maximum ram air pressurizing effect. A small piece of screen mounted in the flare will help ensure that your vent line will not be clogged with bugs etc. This feature is especially important if you have a gravity type fuel system.

GRAVITY FUEL SYSTEM

Fuel systems with fuel pumps seem to have fewer problems in this regard. The first Baby Lakes had an engine mounted fuel pump with a gravity feed type carburetor. That system had a "bleed off" line on the outlet side of the fuel pump that bled the excess fuel back into the fuel system on the other side of the fuel pump. Incorporation of the ram air fuel vent system is still a good idea. Having the fuel tank vent mounted to take ram air below the fuselage is generally preferred over that of being mounted on the tank filler cap.



AVEMCO

FLYING SAFETY UPDATE 84

FLY with a COLD?**NOT ON
YOUR LIFE!**

If you've seen one of the movie adaptations of the H. G. Wells classic, "War of the Worlds," you'll recall that the Martian pilots of the flying saucers devastating the Earth were finally conquered. Not by military firepower or even an atom bomb. But by the common cold.

While the alien intelligence in Wells' book were fatally susceptible to cold germs, we human beings rarely succumb to colds. That's not to say, however, that a cold that's a mere discomfort on the ground can't become a serious menace to a pilot—and his passengers—in the air.

All of us no doubt remember the warning of our instructor: "Don't fly with a cold." But while most of us have heard these words, we may not know why it's sound advice.

If you have a cold, you're likely to feel tired, worn out, drowsy or irritable. You may be in some discomfort and, possibly, pain. All of these conditions, individually or together, work to make you an unsafe pilot in the air.

Colds can cause even greater problems to the pilot. Swollen lymph tissue and mucous membranes are apt to block sinuses, as well as the ears. This can cause disabling pain and pressure vertigo during descent, which in turn may result in loss of control of the aircraft.

Additionally, infection of the inner ear by various cold and flu-like viruses can produce severe vertigo, which could easily make straight-and-level flight impossible.

If you fly an unpressurized aircraft, you are almost sure to encounter the problem of ear discomfort during ascent or descent. The following is a layman's discussion of how pressure affects your

ears and will illustrate the potential danger here.

As your aircraft gains altitude, the atmospheric pressure decreases and so does the pressure in the external ear canal. The middle ear, being a closed cavity, stays at ground-level pressure.

When the pressure in the middle ear exceeds that of the external ear canal, your eardrum starts to bulge out somewhat. The middle ear is sensitive to this change and requires only a slight excess of pressure to open the eustachian tube, so that gas may pass by this route through the nose or mouth.

In this way, pressure is equalized on both sides of the eardrum. You may be aware of this pressure change by alternating sensations of ear fullness or "clearing."

During descent, however, conditions within the ear are reversed. As the surrounding air pressure increases, the middle ear—which has adjusted itself to the reduced pressure at altitude by the process just described—is at a lower pressure than the external ear canal. Consequently, the outside air forces the eardrum to bulge inward.

This condition is more difficult to relieve, since air must be introduced back up the eustachian tube to equalize the pressure. The partial vacuum in the middle ear also tends to collapse, rather than inflate, the walls of the eustachian tube.

If you have a cold, the tissue around the nasal end of the eustachian tube will probably be swollen, and you can expect ear problems to be aggravated in flight. The best advice is to **stay on the ground**.

If you must fly, do so at lower altitudes. This precaution may prevent a

perforated or painful eardrum. A perforated eardrum generally heals rapidly. In some cases hearing is impaired permanently, or the middle ear becomes infected and causes prolonged disability.

Incidentally, don't count on cold remedies and prescriptions to make it safe for you to fly with a cold. They will not. Some medicines specifically state on the label that usage will cause drowsiness. Others caution the user to refrain from operating of any kind of machinery or equipment. Medications such as aspirin, cold tablets, cough mixtures and laxatives can jeopardize safe flight by their subtle or unpredictable effects on the pilot.

Dangers that may accompany pill-taking include drug allergies that could disable the pilot and unexpected side reactions, such as nausea or vertigo, even if the pilot has never before suffered such side effects.

High-altitude flying or "G" forces have been observed to change the effect of some medications. And, two drugs taken at the same time occasionally cancel each other, render each other more potent, or cause a side reaction not experienced with either medication alone.

Remember, too, that the pilot who flies while ill, or while taking disqualifying medication, is in violation of the Federal Aviation Regulations. When in doubt, check with your local FAA medical examiner.



These articles are presented by AVEMCO in the interest of flight safety. The articles may be reproduced with credit to AVEMCO Insurance Company. You can help promote aviation safety by reviewing and implementing this pertinent information.

These articles are purely advisory in nature. Your own certified flight instructor, the FARs, pilot's operating handbook and various updated transmittals from the FAA or your aircraft manufacturer may alter or affect the information published. AVEMCO neither assumes any responsibility for the accuracy of these articles, nor any liability arising out of reliance upon these articles.

(2)

I WAS DEVELOPING 3100 STATIC RPM AND SAW NO CHANGE IN CHT. I CONCLUDED THAT IT WAS SAFE TO FLY HOME BASED ON NO LOSS OF POWER OR COOLING. I DID NOT CONSIDER THE RISK OF CARBON MONOXIDE POISONING. THE ERROR OF JUDGEMENT WAS ALMOST FATAL. THE POSSIBILITY OF CO POISONING NEVER OCCURED TO ME UNTIL 3 MONTHS AFTER THE ACCIDENT. HERE'S MY LOGIC, YOU DRAW YOUR OWN CONCLUSIONS:

1) I HAD A KNOWN EXHAUST LEAK INSIDE THE COWLING PRIOR TO TAKE OFF.

2) THERE WERE AIR HOLES THRU THE FIREWALL AT THE MOTOR MOUNT LOCATIONS.

3) THE COCKPIT WAS POORLY VENTILATED TO THE OUTSIDE, ONE FRESH AIR VENT IN FRONT BUT NO EXHAUST VENT. MY SECTIONAL CHARTS WERE MOTIONLESS UNFOLDED DURING FLIGHT

4) MY MEMORY WENT BLANK WHILE HEADED SW, 5 MILES FROM MY HOME AIRPORT. THE ACCIDENT OCCURED 10 MILES SW OF THE AIRPORT WITH A NE HEADING. I WAS LOW ON FUEL AND HAD INTENDED TO LAND IMMEDIATELY UPON ARRIVAL AT DEZAND.

5) THE PLANE HIT THE GROUND LEFT WING LOW, AND NOSE FIRST AT 30° ANGLE OF ELEVATION INTO THE GROUND. I CRASHED INTO THE FOREST WITHIN 150 ~~FEET~~^{FEET} OF AN INTERSECTION OF TWO PAVED ROADS ON A 45° DIFFERENT HEADING. AS YOU KNOW, THE NOSE DOES NOT FALL 30° BELOW THE HORIZON

8DEC86
TO QUICKIE BUILDER'S ASSOC.
NEWSLETTER

DOUG STEEN
6801 ROCKLEDGE DR
BETHESDA, MD 20817 (1)
(301) 897-9231

DEAR JIM,

LAST APRIL I CRASHED MY QUICKIE 1, N316Q IN CENTRAL FLORIDA, SUFFERING MULTIPLE FRACTURES IN BOTH ANKLES, SIGNIFICANT LOSS OF FLESH IN LEFT HEEL, AND BROKEN LEFT SHIN BONE. I SPENT 7 WEEKS IN THE HOSPITAL, HAD 7 SURGERIES, AND STILL WALK ON CRUTCHES 8 MONTHS AFTER THE ACCIDENT. I'M VERY LUCKY TO BE ALIVE AND TO HAVE PROSPECTS OF WALKING WITHOUT AIDS IN ABOUT 3 MONTHS OR SO.

I AM RELATING THE CAUSE OF THE CRASH IN HOPES THAT OTHER PILOTS CAN LEARN FROM MY MISTAKES AND AVOID THE SAME MISHAP. SOME MAY ARGUE AGAINST MY HYPOTHESIS FOR MY ACCIDENT, BUT EVEN SO, THE RISK IS THERE FOR ALL QUICKIE PILOTS UNLESS MEASURES ARE TAKEN TO AVOID CARBON MONOXIDE POISONING. MY QUICKIE FLEW WITH THE 20 HP OMAN ENGINE, WITH THE ORIGINAL DUAL EXHAUST PIPE INSTALLATION. EACH PIPE IS CONNECTED TO THE ALUMINUM BLOCK VIA TWO HARDENED STEEL BOLTS THREADED INTO ALUMINUM BOSSES. THE OTHER END OF THE EXHAUST PIPES WAS UNSUPPORTED, AMPLIFYING VIBRATION FORCES AT THE MANIFOLD END, CAUSING ONE OF THE ALUMINUM FEMALE BOSSES TO STRIP. THE DAY OF THE ACCIDENT I NOTICED THAT ONE OF THE EXHAUST MANIFOLD BOLTS COULD ONLY BE TORQUED FINGER TIGHT AND WAS FACED WITH THE DECISION TO FLY OR NOT. I ~~HAD~~ HAD SPENT THE NIGHT IN JACKSONVILLE, FLORIDA AND WAS ON MY WAY HOME TO DELAND.

IN A STALL. I DON'T BELIEVE I STALLED ON FINAL; I HAD THE WRONG HEADING AND THE WRONG ANGLE OF ATTACK FOR A QUICKIE. BOTH ROADS ARE STRAIGHT AND FLAT.

6) THE CONTROL SYSTEM WAS IN TALT.

7) THE FAA BELIEVES I MAY HAVE RUN OUT OF FUEL. I LAST DEPARTED FLAGLER BEACH WITH 2 GALLONS OF FUEL SHOWING ON MY FLOAT GAGE, 20 MILES FROM DELAND, 30 MILES FROM THE CRASH SITE. THE FUEL TANK WAS DESTROYED IN THE INCIDENT BUT THERE WAS FUEL FOUND IN THE FUEL FILTERS AND LINES. I BELIEVE I HAD FUEL, BUT THIS IS IRRELEVANT. RUNNING OUT OF FUEL DOES NOT EXPLAIN MY IMPACT ATTITUDE OR RETROACTIVE LOSS OF MEMORY. (THE NTSB SAYS MY PROPELLER HAD TO OF BEEN TURNING UNDER POWER AT IMPACT DUE TO THE WAY IT FRACTURED)

8) I DON'T BELIEVE I COULD HAVE BECOME LOST 5 MILES FROM MY HOME AIRPORT NOR CHANGED MY PLANS TO LAND CONSIDERING MY LOW FUEL SITUATION.

THE LESSONS TO BE LEARNED ARE:

1) THERE MAY BE NO PHYSICAL SYMPTOMS PRIOR TO LOSING CONSCIOUSNESS FROM CO POISONING. (NO DIZZINESS, HEADACHE, BLURRED VISION, ODOR)

- 2) INSTALL CARBON MONOXIDE SENSORS IN THE COCK PIT, OBSERVE FREQUENTLY, AND LAND IMMEDIATELY AND GET A BLOOD TEST IF YOU BELIEVE YOU HAVE BEEN EXPOSED. CO STAYS IN THE BLOOD FOR DAYS, POSSIBLY WEEKS; THEREFORE THE EXPOSURE EFFECTS CAN BE CUMULATIVE OVER SEVERAL FLIGHTS. SO DON'T RISK LANDING AND FLY EVEN 10 MINUTES THE NEXT DAY BELIEVING YOUR BODY HAS PURGED ITSELF AND THE EXPOSURE IS SHORT.
- 3) INSTALL KNEE BRACES AT THE FREE END OF YOUR EXHAUST PIPES TO LESSEN VIBRATION AT THE MANIFOLD BOLTS.
- 4) NEVER FLY WITH AN EXHAUST LEAK. CHECK DURING PRE-FLIGHT
- 5) INSURE ADEQUATE FRESH AIR VENTILLATION IN COCK PIT.
- 6) SEAL ALL AIR LEAKS IN FIREWALL.

I'VE NEVER HEARD OF A CO RELATED ACCIDENT IN A QUINQUE. IT FRIGHTENS ME TO REALIZE THAT THERE MAY HAVE BEEN OTHERS WITH NO SURVIVORS OR VERIFIED CAUSE. SOME OF YOU MAY HAVE COME CLOSE TO MAKING THE SAME MISTAKE I DID. PLEASE TAKE MEASURES TO PREVENT CARBON MONOXIDE POISONING!

Doug Steen
BETHESDA, MD

Fuel Systems

ALCOHOL IN FUEL AND ITS EFFECTS ON FUEL LINES AND POSITIONING OF THE ELECTRIC BOOST PUMP

By Art Bianconi

One of the characteristics of engines used at Bonneville for record attempts was exceptionally high compression. Seventeen to one ratios were typical and made necessary because the "Flats" are almost a mile above sea level. The lower density of the air demands that it be compressed just to compensate for the loss of volumetric efficiency and related power losses. The ability to really squeeze the mixture this much was made possible because of the fuel used which was predominantly methanol alcohol with varying degrees of water plus an oxidizing agent. The latter was usually in the form of nitromethane. The water cooled the valves and the "nitro" provided the extra oxygen that the engine needed to burn the extra fuel.

To give you some idea of how the high compression affected these engines mechanically, the amount of free volume left in the combustion chamber at the Top Dead Center was so small that if the engines were not turned backwards by hand each morning before they were started for the first time, the overnight accumulations of condensation in the cylinders was sufficient to cause hydraulic lockup; the engine would be totally destroyed before it even finished its first complete revolution!

The popular carburetor of the sixties was the Stromberg model 97 and a factor contributing to its popularity was its adaptability to a wide assortment of fuels and mixes by simply changing the main jets. This made it possible to race weekends on a variety of fuels and still operate on gasoline during the week. On racedays you could, in a matter of minutes, re-jet the carburetors with larger main jets and run a methanol mix. Presto! Instant power increase and, with it, a host of other consequences, some of which weren't so nice.

Because alcohol has a high specific heat, it draws off surrounding heat more readily than gasoline thereby helping to prevent detonation in high compression engines. However, alcohol does not produce as much energy by volume as

gasoline. That was why we had to go to the larger main jets when racing: to provide the extra volume of fuel needed to offset the reduced thermal output. This placed a demand on the fuel delivery system since it had to work harder to provide the supply. No problem as there were plenty of ways to get the pump to do its job of drawing fuel from the tank. Right? Wrong! Engines started blowing like mad and I took a mistake in plumbing before one guy discovered that we should be pushing alcohol from the tank, not pulling it. We were getting vapor lock. How ironic: the engines were running lean and experiencing detonation because of the very same fuel characteristic that normally prevented it! Vaporized fuel was forming bubbles in the fuel line and the pump couldn't cope with it. **So, we installed high volume electric pumps right next to the tanks and pushed the stuff through fuel coils wound inside of cans filled with ice just before the race.** Some "stock" car huh?!

About one season of this and we started having engine failures again. The engines were blowing for the same reason as before: detonation. I pulled some spark plugs from other, undamaged cylinders and found tell-tale signs of lean mixtures. Lots of people tried lots of tricks but it wasn't until one guy found particles of rubber in his carburetor float bowl that someone started getting suspicious of the lines. A timed volume test was performed and when the fuel system failed to provide the expected volume, a section of armored rubber fuel line was sacrificed to a hacksaw. The inside of the line was found to be slimy with black goo and the inside diameter had shrunk down to one third of the original size. Other cars were checked and we got the same results. The only common denominator? Methanol fuel mixes. The problem had been found: the fuel line was both swelling and dissolving and in so doing, it was cutting off the fuel supply. Soon thereafter, everyone went to steel lines wherever possible and replaced the short flex lines once a month, just to be sure.

Recently I had occasion to work with some U.S. Coast Guard engineers who had adopted computer aided design (CAD) software. Since my wife Betty and I are sailing enthusiasts too it was inevitable that I would get drawn into a discussion on boats, power plants, etc. What surfaced out of the discussion is worth noting: the Coast Guard and the SAE have issued a new standard (J-

1527) for rubber hoses. This standard replaces J-30 and all boat owners using gasoline engines are cautioned to examine fuel lines for deterioration due to exposure to gasoline containing alcohol! Apparently, the problems I chronicled earlier are now happening to members of the boating community plus one more: hardening and cracking of the rubber fuel lines. I did some more investigating and here's what surfaced:

Gasoline containing a 10% mix of methanol will permeate the walls of rubber lines as much as 400% faster than straight gasoline if the line is constantly exposed to the fuel. Some lines will actually start to sweat fuel through the walls within minutes! The chemists explained that the reason for this is that the alcohol displaces the plasticizers that are part of the rubber compound (I forgot to ask him what the plasticizers do but I suspect that these keep the line flexible through temperature extremes). The line eventually swells up and gets real soft. Aside from the obvious sweating of raw fuel, the ability of such lines to contain any pressure or resist collapsing under suction is lost.

The other problem is hardening of the hose. Some others report that when the line is only occasionally filled with gas/alcohol blend, the plasticizers don't leach out but instead are broken down at which point the line becomes brittle. Cracking is the most likely possibility here and the result is worse: a fire hazard, and at 15,000 feet, you can hardly jump overboard!

It would be wonderful if the problem could be stopped here by simply changing all your hoses to the new SAE specs. Unfortunately, you can't change the float in your carburetor or the diaphragm in your fuel pump(s) as easily as that. It also doesn't address the vapor-lock problem.

FUEL SAFETY

The cause of a fire recently was due to the composition carburetor float becoming saturated and sinking. This caused the fuel to overflow from the carb, and one thing led to another, and things got really hot for a brief time. So at annual time, or if the fuel pressure becomes low or erratic (which did occur in this aircraft) check the float to be sure it is metal, as now required, and not leaking! It is a pain to pull the carb just to check this out but it is a lot better than being in serious trouble, particularly in the air.

Technical Tips

PIETENPOL PROBLEMS

This is a Pietenpol built by Robert S. Nevin, 2994 S. Perry Way, Denver, Colorado 80236.

Robert has some questions about the angle of incidence of the wing. He states the wing is at 2 degrees and the engine is at -2 degrees and the ship's normal attitude in flight is 2 degrees down tail. As the wing functions best at 4+ degrees. Roberts says that Bernie Pietenpol told him that the ship will fly best with the engine at 0 degrees - no up, no down. He also has an airfoil down between the axles with about 4 square feet of area. They are flying at a field that is 5,280 feet up which has some effect on the angle of attack. Maximum altitude to date has been 1000 feet above the runway and the pilot is the builder's son who didn't feel he could get much higher with it. The elevator is also set at 0 degrees as the original was set up this way back in 1929.

If any of you have extensive Pietenpol experience, possibly you can contact Robert and give him some advice.

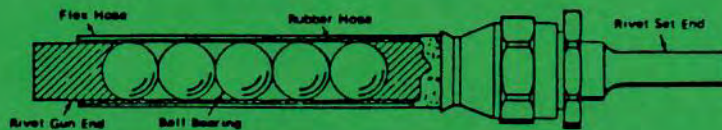


FLEXIBLE RIVET-SET DEVICE

A very simple device can be used to set rivets in confined places where the head of a conventional gun cannot be laid on the rivet. The rivet-set device may interest riveting gun users such as the builders and repairers of aircraft, ships, radios, and tanks. Previously, a special set had to be fabricated for each

different situation, whereas this device suffices for all. A typical device consists of a (4-inch) length of rubber hose, with a (5/8-inch) inner diameter, encased in a similar length of braided metal hose. An anvil for the riveting gun is set in the driven end of the rubber hose which is loaded with five steel ball bearings of 1.58 cm (5/8-inch) diameter; a rivet set is mounted in the other end of the device. When the rivet-set tool is flexed to any degree between the head of the riveting gun (or any impact tool) and a rivet, the loss of impact is negligible. The tool may be made in any of many diameters and lengths, and its principle and use are not restricted to riveting. The ball-to-ball line of contact might be improved by the insertion of spacers. (W.H. Hespenshide of McDonnell Douglas Corp. under contract to Marshall Space Flight Center — MFS-20317).

Taken from the Fabricator Newsletter, EAA Chapter 90



Chapter 43 Newsletter
c/o Kirby White
8780 West 90th Place
Westminster, CO 80020



EUGENE HORSMAN
210 LOOKOUT VIEW CT.
GOLDEN, CO 80401