



EAA. Technical Counselor News

JUNE/JULY, 1988

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Editor: Ben Owen

Sun 'n Fun Airshow - 1988

Sun 'n Fun Museum

Sun'nFun, Inc., has a new foundation, and they are establishing their museum. The rebuilt Navy Sea Dart is the key airplane in that collection. If you would like to contribute to a worthwhile cause, write to Sun'nFun, P.O. Box 6750, Lakeland, FL 33807; or call (813) 644-2431. Donations are tax deductible.



Ray Stits, "Old Reliable", running the fabric forum at Sun'nFun 1988.



Ray Fiset, EAA No. 13114 of Canada, a dedicated volunteer, shows how it is done.

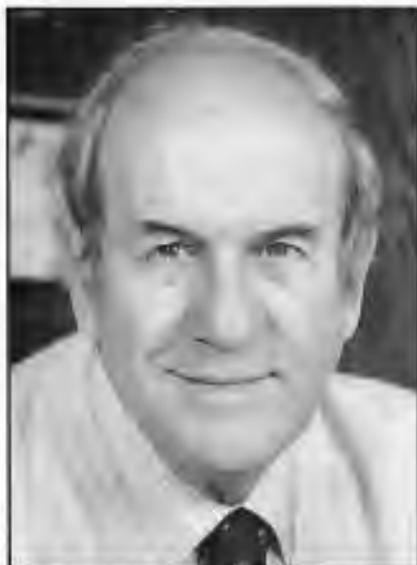


The Sun'nFun welding shop has a new welding gun being tested out.

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Editorial



EAA President and Founder, Paul H. Poberezny

A gentleman and EAA Technical Counselor visited me last week. He brought me pictures of his beautiful 200 HP Great Lakes homebuilt that he had completed some time back (which he had since sold) and he was ready to start on another project — a Curtiss Wright, Jr. In our discussion, he stated that he liked the name "Designee" better than "Technical Counselor". I certainly agree with him, and in fact, most of the time I still refer to the program as the "Designee Program". However, a few short years ago, we became concerned about liability, not only for our Designee Program, but also in all areas of our organization. Due to today's legal system, our attorneys stated that it would be in the best interest of the organization to use the word "Counselor" as in counseling a person in the art of aircraft building, rather than using the title "Designee". We were looking for words that would not tie the organization and the volunteer work together in the eyes of litigation.

It certainly is a sad situation when common words are used against society for remuneration. We here at EAA Headquarters have, in many cases, learned the hard way with the loss of some of our financial resources. This was not as a result of Headquarters' action, but rather of those associated with the Association. At the present time, I know of no legal action that has been taken against our Technical Counselors that would warrant any fears of helping one's fellow enthusiasts or neighbors. I feel the Experimental Amateur Built program is being met with success, and has no immediate problems lying over the horizon. However, as we all know,

with today's liability problems and media (press, TV, papers, radio, etc.), a catastrophic accident involving a homebuilt would certainly have an impact on the free spirit and freedom that we enjoy. Our Technical Counselor Program has been a great contributor to the success of the Amateur Built aircraft program. The FAA is well aware that this self-policing within our own organization has contributed particularly well to our high standards of maintenance and quality. This certainly has freed up many of the FAA people for (in their opinion) more important challenges that they face each day, in particular, the airline industry and the need for supervision of the airlines in the areas of maintenance and pilot ability. We set the stage early in the history of EAA with self-policing, high standards, educational forums at our annual Convention and educational Chapter activities. Many of us might not realize how important these taken-for-granted activities are. They have made a great impact on both past and present FAA employees. Again, I would like to say — you educators — you Technical Counselors — you Designees, have contributed and continue to contribute a lot, lot more than you realize. This year's activities at Oshkosh will again have well over 500 educational forum. At our workshops, hands-on experience will also serve aviation well. It is unfortunate that we are a bit shy on helping hands in our sheet metal, welding, wing rib and airplane building workshops.

If you could spare a day or two, 5-7 hours, while visiting here during the Convention this year, please volunteer a hand. Your expertise, your knowledge and your sincerity can continue to lead the way in aircraft design, building and maintenance, ensuring the quality of education and high standards that our organization is noted for. Give Ben Owen a call at (414) 426-4821, or drop him a note at EAA Headquarters, and he will coordinate with Bob Stagner, our Workshop Chairman, and Daryl Lenz, our Aircraft Maintenance Supervisor.

This year's Convention Site is going to surprise you! There have been many new improvements — a new main gate, new sales building, a longer runway, and new heavy duty taxiways, just to name a few. Improved roadways leading into the site and frontage roads are planned. This has taken a great deal of effort and political activity on the part of EAA, to gather FAA and financial support and state and county support, for both the airport and the road improvements. All of this has been made a bit easier because of the high standards

and quality of your organization and the respect that it has earned, not only here in Wisconsin, but throughout the United States and world-wide.

For the last several months, much of my time has been spent on the current NPRM 88-2 airspace problem, with trips to Washington and many meetings with top FAA officials throughout the country. If you do note any concerns within the Amateur Built movement, please do let us know. We must always be alert to problem areas so that they can be fixed or warded off. There is one mild concern that has surfaced from time to time, and that is individuals advertising to build completed aircraft from kits or raw materials to be certificated in the Experimental Amateur Built category. Of course, we all know this is not legal, and on several occasions, individuals have been denied their Experimental Certificate as Amateur Built Aircraft by the FAA. After spending a great deal of money, unfortunately they feel disenfranchised with the entire homebuilt movement, especially when their aircraft would then have to be certificated only in the Experimental Exhibition Category with the normal restrictions that apply to that category.

THE OSHKOSH WORKSHOPS

by Ben Owen

Let me share with you a comment from one of our Oshkosh Workshop volunteers, Mr. Orrin Hoopman of Austin, Minnesota. He writes to Paul Poberezny:

"There is a lot of enjoyment in helping people, but this year, we were short handed and it put some pressure on us trying to answer questions and give hands on help. I discussed this with Bob and he said most of the shops were short handed this year. I suggest we should try to get younger people involved, as I am 75 and most of the volunteers in our shop were over 60."



You can see that there is an obvious need, and I think it is quite remarkable that a man of age 75 is working as hard as Orrin did at the workshops. There

are several areas that need the expertise and knowledge that EAA Technical Counselors can provide. First is the workshop areas themselves where the special abilities of people like our Technical Counselors can find a practical application. If you would like to volunteer, you can either contact Daryl Lenz, (414) 426-4843 at the Kermit Weeks Flight Center in Oshkosh, or the workshop chairman, Bob Stagner, at his office in Poplar, Missouri, (314) 785-5651, extension #24.



The Homebuilder's Corner building on the flight line in the Custom Built aircraft area at the Convention is another area that needs assistance, and you can contact myself, Ben Owen, at (414) 426-4821. We had the opportunity to give advice at the Homebuilder's Corner to both homebuilders and potential homebuilders. Quite frankly, the area that needs the most of the volunteer help are the workshops. Give us a call, we would be happy to have you volunteer at either location. Or drop a line and tell us the dates you will be on

hand at the Convention, where and what time you would like to volunteer. We'll be happy to follow up and get back to you.



TECHNICAL COUNSELOR REGIONAL MEETINGS

by Ben Owen, Technical Counselor
Program Administrator, EAA Headquarters,
(414) 426-4821.

Paul Poberezny and I have been discussing the possibility of Technical Counselor regional meetings. In these meetings, technical information would be passed on by those experienced in a particular subject. We are hoping for all day Saturday meetings in several locations, and we will probably have a Saturday meeting at EAA Headquarters in the future. If you are interested in presenting some technical subjects at one of these meetings, or possibly even in considering a regional meeting for your particular area and would be interested

in running or coordinating such an event, please contact me at the telephone number given above, or write EAA Headquarters.

To see what the response might be, we have divided the country up into regions, and found we had, as of March 10, 1988, some 519 U.S. Chapters, and 370 Technical Counselors. We were, quite frankly, a little surprised at the low number of Technical Counselors in the United States, and we did some homework to find out which chapters had Technical Counselors and which didn't. We then wrote to each Chapter that had no Technical Counselors representing them, and are currently trying to encourage those Chapters to appoint Technical Counselors. The number of Technical Counselors due to this is increasing. Anyone who would be interested in hosting a Technical Counselor regional meeting can obtain from Headquarters a listing of the Chapters and Technical Counselors in their state.

It wouldn't be necessary to restrict the regional meetings to Technical Counselors only, and it might be possible that these meetings would also appeal to many builders and potential builders who are interested in technical subjects.

We would appreciate if any of you who are interested in this concept would drop me a line, and we will get going on these Regional Technical Counselor meetings.

Design



ALEX STROJNIK ON COMPOSITE KITS

From Alex Strojnik, TC No. 1180, 2337
E. Manhattan Drive, Tempe, AZ 85282.

When the FAA Inspector looked over my recent little sport plane (we call it "Laminar Magic" and there is a reason for this name) I wanted to show him inspection reports by a friend of mine, also a Technical Counselor. The Inspector brushed my offer aside. It got me thinking: are we superfluous? Has the situation changed so much after the arrival of those composite kits, which can be put together in a breeze? Are we outdated, and not capable of inspecting modern plastic kits?

I believe, and I want you to pay some thought to it, that the importance of the Technical Counselor has not vanished with the arrival of composite kits. These

kits are highly vulnerable — only they are vulnerable in some different ways. As the builder puts the wings together, he may or may not bond it correctly, cleaning the surfaces before bonding, etc., and he may or may not align the two wing halves correctly, avoiding some unwanted twist (I have observed both deficiencies at one time on a Glasair; after mentioning this to the builder, he never called me again.) He may or may not install hinges on the elevator through fiberglass layers correctly. Of course, the Technical Counselor of the old school can do little when inspecting a modern composite aircraft. There is one thing he can do, however,

and I would like to gain your consent on this. He can suggest to the builder that they — together — with plenty of photographic documentation, proof load the vital structural parts of the aircraft. Sure, we have seen in the SPORT AVIATION magazine how the prototype of, for example, a Lancair had the wing proof loaded. However, this does not mean that every single builder will equally well bond the wing as the designer/builder did. Proof loading at least the wing and the tail/fuselage will not only make the FAA Inspector happy, it will also fill the builder with confidence. I request from the builders of my S-2 motorglider that they proof load their structures, either

in my presence or before a local Technical Counselor, and it may be a good idea if you at the Headquarters think about suggesting this activity to all Technical Counselors. I would be willing to prepare some very simple guidelines for the EAA Technical Counselor News — if I find a wholehearted support from Headquarters.

EDITORS NOTE: Believe me, Alex, you have our wholehearted support. We would certainly welcome an article on wing proof loading for the Technical Counselor News and/or SPORT AVIATION. We'll look forward to it!

SPRING STEEL LANDING GEAR LEGS

From the Corby Starlet Newsletter, issue #46, and friend Vic Boyce, we have the following on Spring Steel Landing Gear Legs:

The Corby Starlet Newsletter has had a request for information on the heat treatment of the spring steel being used for the landing gear legs of the Starlet. It would be outside the scope of this newsletter to supply a course on the heat treatment of steel, however, a brief outline of the process and steel specifications would seem to be appropriate at this time.

The landing gear legs can be made from either SAE 4130 or B.H.P. Steel Co. "Autoflex". Heat treated SAE 4130 Steel is also used for the two piece, main spar root attach fittings.

LANDING KIT MATERIAL

This kit, available at Wicks Aircraft (CSN October/November 1986) consists of SAE 5160 Steel . . . its principal use is for automotive leaf springs. It is a hot, rolled carbon-chromium grade of spring steel, supplied in the soft annealed state so that it can be fabricated. After fabrication, it is put through a heat treatment process to bring it up to the required hardness for the gear legs, as shown on the plans.

S.A.E. 5160 STEEL

Chemical Composition Percentage:
Nominal — 0.56 to 0.64 Carbon, 0.75 to 1.00 Manganese, 0.035 Phos. Max., 0.040 Sul. Max., 0.15 to 0.30 Silicon, 0.70 to 0.90 Chromium.

Ultimate Tensile Strength

125,000 p.s.i.
150,000 p.s.i.
180,000 p.s.i.
200,000 p.s.i.

S.A.E. 4130

HRC 26
HRC 33
HRC 40
HRC 43

Tempering Temp.

1075°F
900°F
700°F
575°F

Aircraft Mechanic's Pocket Manual
Fitzman Publishing Corporation.

Joseph A. Ashkouri, Fifth Edition by

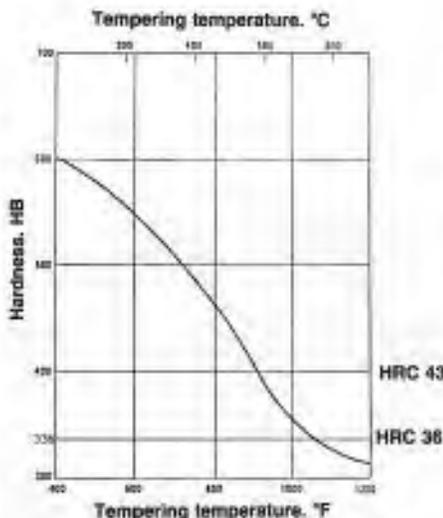
Characteristics: Considered to be a high-carbon alloy steel. As-quenched hardness of 58 to 63 HRC is considered normal. Sometimes values higher than this range are obtained, depending on the precise carbon content. It is used for a variety of spring applications, notably, flat springs.

Normalizing: Heat to 1600 degrees F. (830 C) and cool in air.

Hardening: Austenitize at 1525 degrees F (830 C) and quench in oil.

Tempering: After quenching, reheat to the temperature required to provide the desired hardness.

The hardness required for the Starlet legs with SAE 5160 is 160 - 200,000 p.s.i. ultimate (Rockwell Hardness C36-C43) hold as close to C36 as possible.



S.A.E. 4130 STEEL

For those of you using 4130 Steel to make the landing gear legs, remember you will be using the same steel for the two piece Wing Spar Root Attach Fittings — see Reference Chart for Tempering that accompanies this article.

Characteristics: A medium-carbon alloy steel which can be oil quenched to obtain a maximum as-quenched hardness of approximately 48 HRC, 238,000 p.s.i.
Normalizing: Heat to 1650 degrees F (900 C) and cool in air.

Hardening: Austenitize at 1600 degrees F (870 C) and quench in oil.

Tempering: Reheat to the temperature which will result in the required hardness. The hardness required for the Starlet legs with S.A.E. 4130 is 160 - 180,000 p.s.i. ultimate (Rockwell Hardness C36-C40). The hardness required for the wing root attach fittings is 125-145,000 p.s.i. ultimate (Rockwell Hardness C26-C32).



Dave Ott's Hatz CB1, N2750, is reported on by TC No. 1229, James Madewell of 845 S. Miami St., Sidney, OH 45365. The engine is an O-290D of 125 HP. He has done a very fine job. Dave lives at 3495 Versailles Rd., Piqua, OH 45356. He is a veteran model builder, and it shows.

Safety

PERSONAL HAZARDS IN OPERATIONS

By Hal Harle, MD, EAA Chapter 59 in Waco, TX, Grapevine, October 1987

Maybe you have been feeling out of sorts lately for no apparent reason and you've spent some time wondering why. Even though I have carefully avoided wearing my Doctor Hat while I have been President, your Editor has convinced me that I can do it as long as it contributes to both the fun and the safety of flying. Since it is neither safe nor fun to fly when you feel lousy, I will attempt to give you some explanation of why you have felt that way in the last few weeks. To begin with, approximately 40% of all adults in this country are significantly allergic. And by that statement I mean that these people have symptoms of which they are aware - symptoms that are discomforting. That should automatically trigger you into thinking about runny noses, sneezing, bleary itching eyes, asthma, sinus headaches and good, old-fashioned "cedar fever". The catch is that most of those folks that are significantly allergic and are over forty years of age usually have only meager symptoms, such as those mentioned above and therefore really don't know that they are allergic. What they do suffer from is a malady that is only within the past few years being understood. That malady goes by the name of the ALLERGIC FATIGUE SYNDROME. A syndrome is simply a set of symptoms that give rise to discomfort. In the Allergic Fatigue Syndrome, the most pronounced symptom is a *more than usual sense of fatigue*, even though there has been no activity that would produce fatigue. The afflicted also notices that the fatigue progresses in severity throughout the day and further that it will *not get better with rest or sleep*. But to the pilot, the fatigue is not the most important symptom in this syndrome. The fatigue is accompanied to a greater or lesser extent in all the victims of cloudy thinking, or poor judgement, of muscular incoordination, and delayed reaction times. Some victims describe their mental state as being similar to the way they feel when they have a hangover. (Most of us can relate to that!) Now all of us that are pilots know that you can't do a good job of flying an airplane around the crowded skies when you feel lousy and that is the way you are going to feel if you have the ALLERGIC FATIGUE SYNDROME.

There are several things to remember if you want to understand allergy. Aller-

gies are brought on by the intake into the body (usually by inhaling) of substances to which the individual is sensitive. The body reacts by producing in the blood stream small structures called antibodies. The antibodies police the bloodstream and destroy these substances, such as pollen, to which the individual is sensitive. Now that sounds like a pretty good deal, but as is the case in most things, we pay a price for that protection and policing. When the antibodies destroy the offenders, several substances are released into the blood — among them histamine (hence "anti-histamines"), bradkinins (which slow down all muscle activities) and a lot of others that cause the bad feelings that constitute the thing called the ALLERGIC FATIGUE SYNDROME.

At this point, you should be asking why this terrible thing has come along to make me feel so lousy. Well, nature doesn't always give us a choice about the way she does things, and this year is no exception. This, folks, is the ragweed pollen season, and the daily count for the past several weeks has broken all records. I have not in the past 35 years seen the count as high as it is now. This is made worse by a somewhat wetter late summer and early fall than usual, which has also elevated the mold content of the air to record levels. Now, unfortunately, virtually all allergic individuals are allergic to both of those substances, and you can conclude that you are getting a double barreled load of trouble. The next obvious and logical question to ask is, "what can be done about it?" If the symptoms are incapacitating, one should seriously consider seeing an allergist (a doctor who specializes in treating allergies). This is a procedure where periodic injections of the known offending allergens are given which produce substances called blocking antibodies. These blocking antibodies tend to prevent the reaction that occurs when the previously described policing antibodies meet the pollen and release all those symptom producing substances such as histamine and bradykinin. Some individuals feel better from the intake of mild anti-histamines accompanied by mild stimulants, such as Ephedrine (found in the medicine called Actifed). Others feel better by taking medicines such as Neo-Synephrine (a vasoconstrictor) having a stimulant effect as well as a drying effect upon the eyes, nose and lungs. There are many good antihistamine and drying (vasoconstrictor) combinations that can be prescribed by your Physician that will serve to eliminate or, at

least, lessen your symptoms. Finally, you can go to bed and pull the covers up over your head, an act which keeps you from flying. And if you feel lousy enough, you really shouldn't be out there subjecting yourself, as well as others, to a compromised piloting skill that comes about with THE ALLERGIC FATIGUE SYNDROME. Finally, *remember that allergies tend to get worse as one grows older* because of the continuing exposure to the offending allergens in the air and in some cases, in our foods. Therefore, those of us that are allergic and want to continue to fly safely and continue to enjoy it need to do something about our affliction if we suffer from the ALLERGIC FATIGUE SYNDROME.

THERMOS HAZARDS

Be extra careful when opening Thermos bottles in flight. The bottle is probably filled with very hot coffee, and there you are cruising at 8,000 feet when it is time for coffee. The reduced air pressure can cause the bottle to literally explode when opened quickly, spraying the people in the plane with hot coffee.



This Breezy belongs to Charlie Shivers, EAA No. 49289, 816 S. 82nd St., Birmingham, AL 35206.



Charlie took a picture of Fred Weick, aged 89, taking his first Breezy ride. Fred, of course, is designer of the Er-coupe and many other fine aircraft, and an avid EAA member, No. 7882, 2 Dolphin Drive, Vero Beach, FL 32960.

Fuel Systems

FUEL TANK VENT LOCATION VERY IMPORTANT

A correction, submitted by J. Robert Thomas, TC No. 1943, A&P No. 214327986, 16116 Julie Lane, Laurel, MD.

Ben, I was just looking through the October/November 1987 issue of the Technical Counselor News, and I took a moment to study the fuel system diagram at the bottom of page 7.

The location of a fuel tank vent on a gravity system is far more important than the diagram in the picture portrays. I am fully aware of two members learning this at great personal expense. One is now permanently disabled (Sonerai I) and the other met his demise (certificated aircraft).

In the absence of a fuel pump and/or secondary source of atmospheric vent in a gravity system, **NEVER, NEVER, NEVER** permit the fuel vent to be lower than the carburetor float chamber needle and seat valve when the aircraft is in its maximum angle of climb attitude.

Fuel will surge, if the fuel starts to siphon overboard with an absolutely full tank, it WILL pull a vacuum in the tank and when the float valve opens, the tank WILL vent through the carburetor, stopping the flow of fuel and very quickly thereafter, the engine. This usually happens just after lift off with little or no runway remaining.

Good fuel venting at the proper location

and strict attention to the "Gremlin" of fuel siphoning in a gravity system is a very serious matter. Would you pass this on to those who might be unaware?

MODERN FUEL PROBLEMS

From Marshall Field, EAA Member No. 39821, P.O. Box 3092, Sells, AZ 85634.

My understanding is that Denver and other cities, including Phoenix and Tucson, are feeling pressure to go to alcohol-laced gas during the winter months.

We all know what that will do to those of us with Mo-gas STC's. At least, a few people are making it known to the EPA that alcohol-laced fuels are hell on fuel system components and rubber parts. For cars, that is. But is anybody stating to EPA that the same problems exist for airplane owners who use Mo-gas? I certainly hope so! If EAA isn't doing it, who do you think should be doing it? (Yeah, I know. I have written my legislators and state Pilot Association many, many times. All seem to ignore the problem and/or pass the buck.)

I also think it is about time that some "experience" started to appear in the Flying Press (read that SPORT AVIATION) on how to live with Mo-gas in the field. Practical down to earth stuff, instead of the usual vague warnings and legal talking out of the corner of the mouth pap.

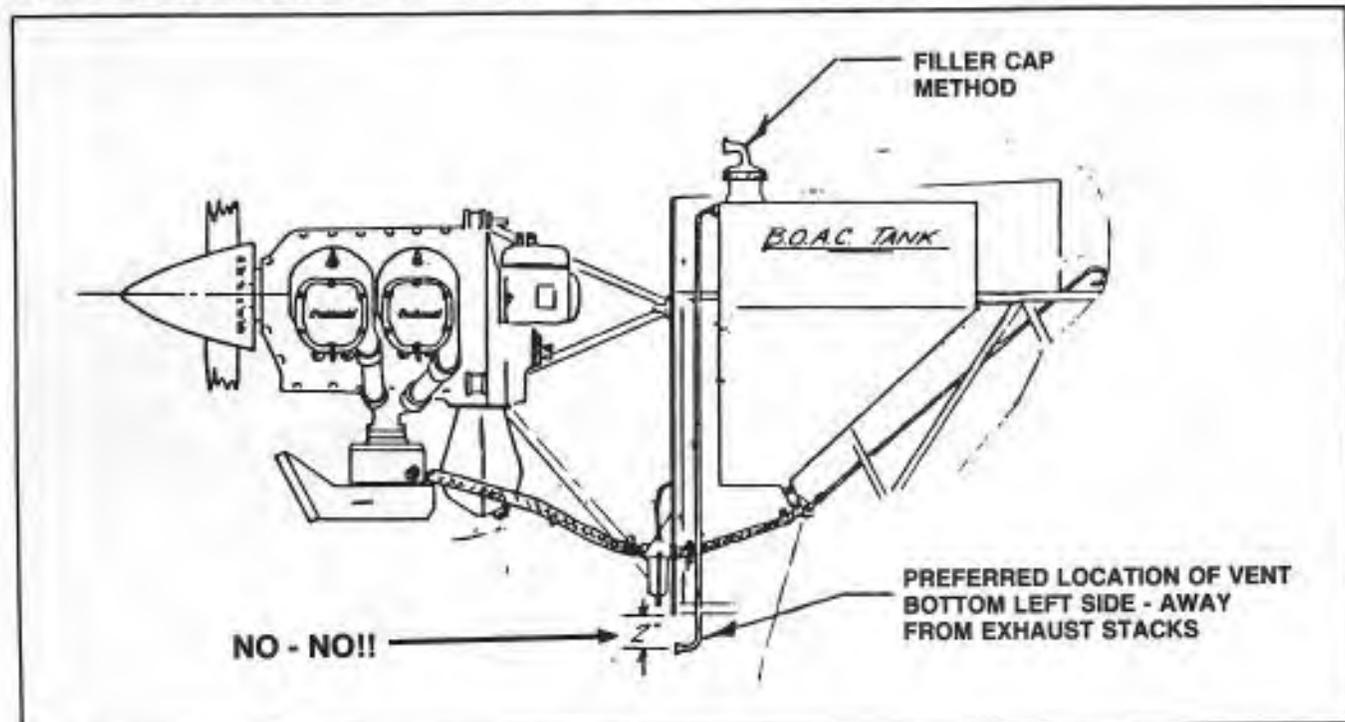
For example, I had a terrible time with

Mo-gas and the famous fancy Cessna fuel strainer. You know the one with the funny handle you have to yank on every pre-flight? I also had the same problem with the O-rings on the fuel tank sump drains. Leaks — lots of leaks! Changing O-rings and seals many times didn't solve the problem. Changing brands of Mo-gas didn't make the problem go away, either. (Maybe it is the famous Arizona heat?) After a period of switching back to Av-gas with no problems at all, I went back to Mo-gas and the leaks came back. I knew then that it had to be the Mo-gas.

So the issue became one of finding fuel system parts that would work in Mo-gas without shrinking. Obviously, none exist, and why not? It would seem with all of the thousands of hours of fleet usage on Mo-gas that components of the fuel system that give a problem on Mo-gas would long ago have been identified and tabulated by someone. Not so!

Was I ever frustrated! The answer came in a stroke of dumb luck when I started to coat all fuel system rubber parts with a light coating of Fuel-Lube, a.k.a. gasoline-resistant grease). No problems since then, and almost 300 flying hours have been accumulated.

My point is that my experience was in no way unique. Others must have had the same problem. What did they do? I have never seen anything in print. Why not?



FUEL VALVE SPACE AGE LUBRICANT TO LUBRICATE VALVE MECHANISM

From Guyan Keyser, TC No. 1828 of 823 Homewood Drive, Pittsburgh, PA 15235.

Being a Vari-Eze builder, I try to comply with any improvements recommended by the RAF Co., especially safety related ones. Since the Vari-Eze fuel valve has always had a problem with being difficult to turn, RAF came up with a space age lubricant (name unknown) that is not soluble in gasoline and will remain on the valve mechanism for a long period. They recommended using only a very small amount, enough to barely coat the inner parts of the valve.

About six months after applying this grease and having no problems, I removed the valve during an annual for inspection. Noting a small amount of lubricant remained, I added a small amount of new lubricant.

Several weeks later, on takeoff, the engine started to cut out and then surge, after landing it ran normal. Filters were clean, but in the gascolater I found what looked like a fat worm. This was the excess grease from the valve, mixed with gasoline into a creamy textured blob, that had traveled from the valve, through the 3/8 inch fuel line and then, being heavier than gasoline, into the bottom of the gascolater bowl. The passage through the line had caused

my problem.

The valve must be lubricated and this lubricant will do the job, but heed RAF and don't over-do it!

FUEL TANK PICK UP POINT SAFETY TIP

From Vaughn Barbey, TC No. 547, 622 Engle Drive, McArthur, OH 45651

On a precover inspection on an Avid Flyer, I noted that the gasoline connection lines on the gas tank were on the lower front part of the tank. The odd shape of the tank is so designed that a takeoff with one half or less tank full could cause gas starvation to the engine. The kit manufacturer and the FAA have been notified.

Technical Tips

INHIBITING RUST ON STEEL TUBE FUSELAGE

From Ken Spratley, TC No. 1121 of 3975 Kinsale Road, RR 1, Brooklin, Ontario, Canada L0B 1C0.

Once the fuselage for my Blue Jay (a sort of personalized PA-12 Super Cruiser) was finished, I decided to corrosion proof the interior of the tubing. First, place the fuselage over a gravel driveway or patch of dirt. I did the job in my back yard and the raw linseed oil killed the grass. General practice says that you drill the main longerons at each cluster internally so that when the hot oil is poured into the tailpost, it can snake its way into the cross tubes and diagonals. Apparently, you are supposed to feel the tubes for warmth to ensure that all tubes are coated. This is what I developed for my airplane: All welding should be completed, even putting on a small bracket after treatment will burn off the oil. Longerons were easy — each was drilled, filled to 1/3 capacity and plugged with a PK screw. I then drilled each individual tube twice with a 5/32nd inch fill hole and a 1/8 inch breather about 1/2 inch from the end. For example, on the sides, all tubes were drilled just above the lower longeron for the top to bottom and was to the right side. Using a syringe from the local drug store, each tube was filled about 1/3. After completion of a side, the fuselage was flipped so the next row of holes was at the top and the process was repeated. The fuselage was elevated from end to end and rotated a number of times for about 20 minutes.

Then it was set on two saw horses with one row of screws at the bottom. As the screws were removed, the oil was caught in a can with newspapers spread under it to catch the drips. In the cases where there is an air lock, the oil can be extracted by using the syringe. After all the oil is out, let the thing stand for a couple of hours, rotate every once in a while to ensure good coverage and complete draining. Then the fuselage is wiped down with varsol.

Normally, drive screws or rivets are placed in the holes, but when this is done, their placement becomes important. If a screw or rivet is against, or even close to the fabric, a hole will develop in time. Each of the oil holes should be deburred and the areas around them cleaned with lacquer thinner. Small postage stamp sized pieces of fiberglass cloth are then cut, enough to cover all the holes with a few spares. Each is glued in place with polyester resin and after drying, a couple more coats are put on and all spots are touched up with zinc chromate. It is almost impossible to see where the holes were drilled, and this method ensures that each and every tube is properly coated, yet there is no residue. The entire job took four hours, and I was feeling my way along. One gallon of linseed oil is more than enough. Every one of my tube components was likewise treated. There is no use spending \$15,000 - \$20,000 and then allowing it to wear away from the inside. You get a much better feeling at 3000 feet knowing that the "rusties" can't get a toe hold!

RUST PREVENTATIVE

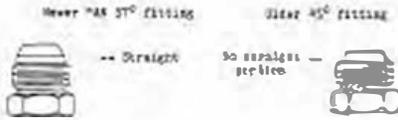
A special product by the name of Ospho, which forms iron phosphate and sulphate on the surface of iron, inhibits oxidation when used before painting. It is water soluble and can be brushed or sprayed on. It is not useable for magnesium, and does have to be degreased before application with mineral spirits. One gallon is \$12.00 plus shipping and handling, and a case of 4 gallons is \$47.00 plus shipping, available from B.J. Associates, 69 Murray St., Norwalk, CT 06851; telephone (203) 847-2911.

SOURCES FOR BENDEX PARTS FOR OLDER MAGNETOS

I got a call the other day from a builder (who didn't call back, so he must have got his information elsewhere) who was looking for Bendex parts for the older Magnetos, such as the SF4RN8. He needed the coils for the magnetos that had the old number IO-19293-1 and IO-16775-1. We checked with Teledyne Continental, as Continental Motors has purchased the rights to the Bendex Cintlilla name and are manufacturing and selling modern magnetos. They do not have the older ones, and they referred us to two sources that might be helpful to builders of aircraft with these older magnetos. The sources are Joe W. Parkinson of Pennsylvania at (215) 769-1455; and Charlie Rossken of Florida, (305) 235-5401.

HOSE FITTING

This note was published in a previous Eastern Cessna 190-195 Association Newsletter, and contributed by Tom Hull; other aircraft types may also have the same potential problem.



Attention owners of older engines that have not been topped or majored recently:

Some of the older engines still have the older 45 degree "AC" hose fittings and not the newer standard 37 degree chamfer on the mating hose end surface. This is likely on a fitting that has not been changed or serviced since the engine was installed. Typical location would be the tee fitting for the propeller governor and the top cylinder oil located on the left side of the engine. It is buried, hard to get to and not likely to have been checked unless there has been a problem. You can tell if you have the older fittings at a glance. Take a look at the accompanying drawing. The "B" nuts will tighten down apparently OK but the fitting may leak. These old fit-

tings are particularly a problem on the firewall with the little -2 hoses for the fuel pressure, manifold pressure, etc. The older fittings are compatible with their own kind, so to speak, but the newer AN 37 degree pieces will not mate well with the older 45 degree AC fittings inside the B nut, even though they may seem to tighten down and look like they are OK.

The newer AN fittings have a short, straight portion just beyond the B nut threads at the base of the flare surface. The older fittings do not have this short, straight portion. See the diagram. Use apples with apples and oranges with oranges, i.e., this is a problem only if the two different types are mixed.

BATTERY ACID — SPECIFIC GRAVITY

If the electrolyte caps are removable, conduct a specific gravity test. The reading should fall between 1.275 to 1.300. This means, for example, that the ratio of water to acid is 2.75 to 1. Water, being one, and 2.75 being the acid. The same fall true for the 1.300. One is water and 3.00 is the acid content ratio.

WOOD FINISH TIP

From Dick Von Berg, TC No. 1113, of 4403 Alvin St., Saginaw, MI 48603.

For the builders of Falco and other plywood aircraft, this is a good tip. Rather than, with much labor, totally fitting the grain, only to have it show through the enamel later, do as the Modelers have recently discovered:

Sand the wood to a really fine finish, cover it with 3/4 oz. glass cloth applied diy with a brushed through mix. Mix is ENVIROTECH LITE, sold by True Value Hardware stores for a bar top finish (it is an epoxy, 2 part) \$17.99 per quart, cut 50% with isopropyl alcohol (drug store). Let diy overnight, do not sand,

Apply your choice of paint system: Urethane primer and enamel (Imron) Epoxy primer and enamel, etc. The primer is sanded. Nice things about this method: the fine glass will contour to any fillet, the weight added is minimal, and the labor added is minimal. The finish will come out like a mirror, real show plane stuff.

K-B sells the cloth through model supply houses at about \$5.50 per yard. One advertiser in Arizona lists .6 oz. cloth, which is the same stuff. Many retailers will cut a discount for quantity buys.

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