



EAA Technical Counselor News

ASSISTANT EDITORS:
Ann Ruby - Laura Remer

OCTOBER/NOVEMBER 1988

EDITOR: Ben Owen
PRINTING: Times Printing



MALCOLM DARBY'S RESURGAM

This aircraft is an ultralight built in 1983 by EAAer Malcolm Darby of Armidale, New South Wales, Australia. It has almost two hundred hours of flight time, uses a four cylinder Konig radial engine, has a top speed of about 65 mph and 240 pound empty weight. It was designed by Gordon Bedson of that country.

FRANK WOZNIAK'S "DOUBLE EAGLE"

This is a two place, side by side negative Stagger biplane built of wood, fabric, and fiberglass. The engine is a Lycoming O-320 of 150 HP. Wing span is 24 feet, the length is 18 feet 8 inches. The wing area is 157.5 square feet and the weight is 1075 empty, gross weight 1500 pounds. The aircraft was built over a period of 13 years by Frank. The structure has all the provisions for a retractable landing gear; everything is there except the driving mechanism and the doors. He decided to bolt the gears on in the down position in the interest of getting it in the air sooner. Frank hails from La Mesa, California.



DISCLAIMER

The EAA presents the materials and ideas herein only as a clearing house of information and as a forum for the exchange of ideas and opinions. No responsibility or liability is assumed, expressed or implied as to the suitability, accuracy, safety or approval thereof. Any party using the suggestions, ideas or examples expressed herein does so at his own risk and discretion and without recourse against anyone. Any materials published herein may be reprinted without permission. Please credit the original source of the materials, and the TECHNICAL COUNSELOR NEWSLETTER.

Fuel and Fuel Systems

BABY LAKES FUEL SYSTEM

Readers of the newsletter will recall the diagram on the Baby Lakes fuel system in the October/November 1987 Technical Counselor News and it showed plan seller, Harvey Swack's suggested location for the fuel tank vent that bent away from the exhaust stacks about 2 inches below the bottom of the firewall. In the June/July 1988 Technical Counselor News, Robert Thomas said that you should 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. His reasoning was that fuel will surge if the fuel starts to siphon overboard with an absolutely full 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. He was aware of two mishaps that occurred due to this. Harvey Swack then wrote back and took us to task as follows:

Dear Ben,

Now I know that the sharp eyes of the Technical Counselors don't miss much. The gas tank vent system noted in the November issue is the best way to go on the Baby Lakes. Perhaps, we should have mentioned that we did exhaustive testing before adopting this system. We found that at high climb angles the normal fuel vent in the gas cap did not receive any prop blast and fuel starvation might occur. Hence we devised this new method. Perhaps, this system doesn't work in other aircraft but I would be reluctant to advise anyone to countermand a designer's fuel system alert without advising the company that they may have overlooked a problem that caused problems in other aircraft. We welcome suggestions for improving our aircraft. . . We have been around for 22 years and have lots of airplanes out there so please keep us posted and on our toes but let us review and comment on any suggestions sent you before publication. We then would welcome printing both sides of the suggestion.

TESTIMONIAL FROM ROLLIN CALER OF BOULDER CITY, NEVADA

As a pilot since 1936 and an A & P since 1946, I have read and heard many statements that I thought were incorrect. Most of the time, I let it "go in one ear and out the other" so to speak. In this case, I believe that the state-

ments made by Mr. Thomas are incorrect and could lead many builders to change a successful vent system into one that may be less desirable.

First, I'll list the facts of my experience:

1. My Soneral I vents below the fuselage and has done this successfully for 756 flight hours. The vent is a dual 1/4 inch copper tubing extending only 1 inch below the fuselage and is located near the landing gear legs.

2. My new modified Soneral II single place has a Cont. O-200A engine and the fuel vent is a single 1/4 inch copper tubing located below the fuselage behind the pilot's seat. This system has performed satisfactorily for 61 flight hours. I have flown with full fuel tanks and have done aerobatics in both airplanes. According to Mr. Thomas' article, this location would be the extreme NEVER location for the fuel vent.

3. The fuselage surface behind the vents on both of my airplanes show a washed area and fuel stains from overflow showing that splashed fuel can flow through the vent line without unpressurizing the tank.

There are many causes for engine stoppage and it is not uncommon to place the blame incorrectly. Below, I'll list a few of the things that could stop the engine as pertains to the vent system.

1. The vent can be plugged by a Mud Wasp's nest. A cover should be placed over the vent when in storage. The same for the pilot tube, and for the same reason.

2. Placing the vent in an area of reverse air flow can have the opposite affect of pressurizing the tank.

3. Any bends in the vent line that can collect and hold fuel can block the flow of air.

4. Tanks should be constructed to permit a 10 percent airspace above the bottom of the fuel filler neck. The tank should be vented at the very top of the tank within this airspace.

Conclusion: Many airplanes, including mine, use unvented fuel filler caps to prevent fuel spillage all over the windshield while doing aerobatics. To vent these airplanes above the car-

buretor level in a climb would necessitate venting through the sides of the airplane and I've never seen this done.

FUEL SELECTOR PROBLEM

Service Difficulty for a LongEz aircraft using a fuel selector valve (108-HD) was stuck in the mid position. The aircraft owners handbook recommends overhaul and a special grease if the valve binds. Editor's Note: A special grease is indeed required so that fuel won't wash the grease away. However, it is imperative not to use too much grease because the grease will not dissolve in fuel and if excessive amounts are used, it can block lines also.

MISHAP

A Sea Hawker, very first flight was fatal. Inspection revealed that the engine was not running at the time of impact (no fuel), the carb bowl was about 1/2 full of fuel, and there was fuel in the fuel line, only about 2 inches aft of the carb. No other fuel was found in the tanks, or on the ground at the scene. The fuel lines on the plane were 1/4 inch in diameter, which is an incorrect size (too small). 3/8 inch aluminum is called out in the plans. There were other problems, but the main one was — no fuel.

FLUID LEAK DETECTOR

By Lee Taylor of Roseville, California

Lee uses K2R spot removing compound which is used to remove oil spots from white dress shirts. This is available in supermarkets and it works the same as the DyeCheck developer for detecting oil leaks. You should clean your engine thoroughly with one of the pressurized-can engine solvents. Wash all the solvent off with water and let the engine thoroughly dry. Then spray on a coating of K2R, it will dry to a white powder coating. Run your engine until the oil leak starts. The oil will show up as a dramatic spot against the white powder, very easy to see and shows exactly the leak source.

Wash off the powder coating with another application of engine solvent and you're home free.

Notices

CONGRATULATIONS MARV!

Tom Poberezny, EAA, Wittman Airfield, Oshkosh, Wisconsin 54903.

Dear Tom:

Having recently built and flown a Soneral II homebuilt, I wish to commend EAA on the Technical Counselor program as well as the Technical Counselor himself. Marv Hoppenworth of Cedar Rapids was of tremendous help to me in the last five years in inspecting my airplane, providing advice, and recommending improvements along the way. In fact, by the time the FAA made the final inspection, it was almost an anti-climax.

I'm proud to belong to an organization like EAA and to associate with members like Marv Hoppenworth. He's right at the top of a long list of people that helped make it possible for me to complete a dream of a lifetime.

Sincerely,

John Giordana
6916 Brentwood Drive, NE
Cedar Rapids, Iowa 52402
EAA 203608

FAA INSPECTION PROBLEMS

A California builder who is completing a LongEZ, found his inspector wanted to have his A & P sign off his log books that all AD's are current on his Lycoming O-235 engine. In addition, he wanted to be sure that the instruments installed in the aircraft were all calibrated. Our Washington contacts found these changes a little unusual. There are no rules for amateur built aircraft requiring this. Most inspectors don't even think of these things. We would be interested in hearing at EAA Headquarters if this practice spreads.

AMATEUR BUILT AIRCRAFT INSPECTION GUIDE

EAA Chapter 179 of Albuquerque, New Mexico has developed a homebuilt aircraft annual inspection guide. It is a little too long to reproduce, (8 pages) but we would be happy to send any copies you might need on. This guide is brought to you courtesy of Tom Weeks of Chapter 179.

TECHNICAL COUNSELOR PATCHES

Technical Counselor patches are automatically sent to new Technical Counselors and the five, ten, fifteen and twenty year chevrons are sent when earned. Technical Counselor renewal forms for 1989 have been mailed, and we would appreciate your prompt response. If you are eligible for a chevron, it will be sent to you. Anyone needing additional patches, or who feels they have earned a chevron and didn't get one, may contact us for these.



REVALIDATION — REVALIDATION!

Technical counselors please note that your revalidation forms are coming. We would appreciate your prompt reply so we can refer people to you. If your name isn't on the listing, we cannot do this. Also, your insurance and your Technical Counselor Newsletter subscription will lapse on December 1 unless your revalidation is in.

IS THAT 337 NECESSARY?

Many of us are also involved with factory aircraft. The bulk of paperwork that many A & P's have to handle is quite heavy. Many times, the 337 forms that are submitted to the FAA are unnecessary. Before submitting a 337, check with those inspectors, particularly those with experience, to see if the 337 on the work you are doing is actually necessary. Even the FAA recognizes this fact. Only "major" alterations need to be put on the 337 and you should familiarize yourself with FAR Part 43. There is no sense in doing unnecessary paperwork.

HOMEBUILT INSPECTION PROBLEMS?

When a homebuilder is building his aircraft with a factory engine, he may later on run into an inspector who will insist upon airworthiness directives on that particular engine being completed on the aircraft before airworthiness certificate is given. There is a simple procedure to avoid having to do type certificated ADs on your engine in your amateur built. First, you must remove the data plate and provide a data plate of your own indicating the engine is a "special" built by you and is in fact, your own "hot rod" engine. By this method, you can eliminate having to do the normal procedures that are done to an aircraft engine. However, there are some ADs that you may want to comply with anyway that are a safety of flight items. It is felt that the majority of AD's fall in this category. If you want to do special work on your engine, this is one way it can be done. You should understand, however, converting the engine back to a type certificated engine in the future may be difficult, if not impossible. As always, we suggest you use separate engine logs for the airframe, engine and propeller. EAA does sell these logs.

AN EDITORIAL — HOW TO KILL AN INDUSTRY

First, overtax the industry because "those guys" with their airplanes are all rich anyway. Then underprotect the industry from its natural liability hazards and don't respond when the industry complains about excessive penalties. Over regulate the industry and make it difficult to create new products. For instance, type certificated aircraft. After the aircraft are completed, make sure they are very carefully regulated so their cost will go up higher. When the number of participants are discouraged, how do we justify so many government (FAA) employees to regulate us? As activity decreases, say something like "We don't know what happened — there must not be an interest anymore." Then as the bureaucracy that over regulated the industry in the first place, has no industry to regulate and those good old government jobs are gone, who do we blame? That could be Sport Aviation's scenario. There are many of us who are very, very determined that it will not be.

Composite Corner

GARY JONES' ORIGINAL PROJECT MOLDED OF FIBERGLASS

Enclosed are some photos of the molds Gary has finished to date. He hopes to be forming parts very shortly. These molds are suitable for Thermoset or High Temperature materials that kick at about 250 degrees F (you know - The Lancair Method). He's been working with a supplier on a resin system which is more practical, "You see — the secret is how to wet-out the gel, keep the weight ratio in balance, keep the Thix up, keep it drapable, extend the pot life, store at B stage, increase the compressive strengths, and add to the toughness — there's nothing to it (ha ha) — I'll keep you posted."



This shows the aircraft with half the wing on.



A nice jig Gary has made which allows the fuselage to be rotated.



This photo shows the molds made from the male mold. The climate of Houston where Gary lives is excellent for fiberglass work.

EPOXY AND GLASS BUBBLES BEST

Technical Counselor Gene Darst of Beaumont, Texas is building a KR-2 and states that epoxy and glass bubbles are 5 to 6 times lighter by volume than the substance known as "ultralight". He also says the glass bubble slurry will go about 2 times more in area than "Cabosil" will. "Feather fill" is about the same by weight as "ultralight."

PLASTIC FOAM CUTTER

A foam cutter set up much like a jigsaw is available from Martin Carbone, 2519 Bath Street, Santa Barbara, California 93105, telephone (805) 682-0465.

Your editor, Ben Owen, built one similar to this that he has used for years. This particular cutter has guides and looks like it is accurately made.



TRANSPONDER ANTENNAS IN COMPOSITE AIRCRAFT

From the Dragonfly Newsletter

A builder has used a piece of .020 aluminum plate 16 inches square sitting in the bottom of the fuselage on the right side, just aft of the wing drag bulk head that becomes the ground plane for the little short stub transponder antenna. The stub antenna is mounted in the exact center of this aluminum plate and projects downward inside the fuselage. At each corner of the aluminum plate is a wood block secured to the plate by wood screws. These legs hold the ground plane up off the inner skin of the aircraft. The aluminum plate is secured to the plate by wood screws and the whole works is secured in the bottom of the fuselage by five globs of flox so it sets and stays where it belongs. It has been that way for over two years and works out very well. When working with approach control, they say our radar signature is very good. It will work with any frequency of transponder. The aluminum ground plane itself is connected to the negative post on the battery.

ULTRAVIOLET BARRIERS

A builder wrote in questioning the use of the carbon black primer under the paint of a composite plane. This is "supposed" to protect the composite material from ultraviolet radiation. He has never heard of this but would like to learn more. The question, "if the plane is painted, won't the paint protect the composite material from ultraviolet damage?" If not then the radiation must go through the paint until stopped by the primer. Most of us will recognize that this is exactly what will happen and most of us are also familiar with the application of silver dope under the color finish on aircraft so that the ultraviolet, after having gone through the outside color will stop at the silver. The black primer happens to work quite well on composite aircraft to not only stop the ultraviolet, but to slow heat transfer from the outside air.

Does anyone have any more thoughts on ultraviolet barriers? I'd be happy to publish them — the editor.

Propellers

LOOSE BOLTS

An EAAer reports an RV-6 prop bolt failure and he is aware of at least 3 other instances of propeller or prop bolt problems occurring on RV's this year. The failures haven't all been the same, making it difficult to establish a definite pattern. One case involved the failure of 4 bolts happening just a few hours after the prop had been installed. The bolts were a high strength industrial grade, and the failure was in the threaded part of the bolt. Presumably, there was a weakness in the threads, perhaps die cut rather than rolled threads.

Another instance involved 5 of the 6 bolts that broke before the pilot landed and shut the engine down. The pilot did notice an engine roughness and suspected a loose prop because the bolts had just been checked a short while before. He had checked the bolts because of a little movement they had noted on the spinner and found the bolts to be a bit loose. They torqued them down without checking further, assuming the looseness had resulted in shrinkage of the wood during the summertime dryness. They now assumed the holes in the prop had started to elongate because of the looseness and the prop continued to move and further enlarge the bolts even though it torqued properly at the time. Failure point of the bolts is about 1/3 of the distance through the prop from the rear face. The bolts probably failed in fatigue caused by bending because the prop lead and lagged the crankshaft during the power cycles of the engine.

Their recommendation: Keep the prop bolts tight! Torque the bolts per the prop manufacturer's recommendations. Before installing a spinner, ground run the engine and re-torque. After 1-2 hours of flight, check the torque again and repeat after 10 more hours of operation. Thereafter, check the torque at 25 hour intervals, every three months, or whenever a change is made from a damp to a dry climate. Seasonal changes in humidity should also be cause for checking prop bolt torque. Regardless of the time span involved or the hours flown, torque should be checked in the late spring or early summer; when the dry season is under way. Also, if the bolts should be found loose, look around the prop hub and spinner for black dust (charcoal) which would indicate where, if so, remove the prop and check for elongation of the lug holes.

This may seem like a lot of preventative maintenance effort, and it is. But that seems to be the nature of wood props as used on high HP/Piston engines. Thus far, we have not heard of RVs being damaged as a result of prop bolt failure.

PROPELLER INSTALLATION

By Tom O'Toole

Installing that beautiful new wooden propeller on your homebuilt? Do it carefully and correctly. Rule No. 1: Use a calibrated torque wrench. Don't trust your calibrated arm. Excess torque can crush the wood fibers, and possibly cause bolt failure. Always use a crush plate of sufficient thickness so that there is no plate deflection.

Use particular caution when installing smaller ultralight props using 1/4 inch bolts. An inch-pound torque wrench is recommended for smaller props. Torque values are for clean, dry, non-lubricated threads.

TO INSTALL: First insert the propeller bolts through the front of the propeller crush plate, then through the propeller into the bushings in the crankshaft flange or propeller extension. Be careful not to bottom out the threads in the bushings. Check bolt lengths very carefully. It is best to tighten each bolt a little at a time, being sure to tighten bolts that are diametrically opposite. Torque the bolts using the torque information listed below. The **TO TRACK** torques are the highest torques allowed.

TORQUE: STANDARD WOODEN PROPELLER

1/4 inch Bolts to 5 ft. lbs. (60 in. lbs)
5/16 inch Bolts to 11 ft. lbs. (132 in. lbs)
3/8 inch Bolts to 15 ft. lbs. (180 in. lbs)
7/16 inch Bolts to 18 ft. lbs. (216 in. lbs)
1/2 inch Bolts to 22 ft. lbs. (264 in. lbs)

TO TRACK (MAX TORQUE WITHIN 1/16 INCH)

7 ft. lbs (84 in. lbs)
14 ft. lbs (168 in. lbs)
19 ft. lbs (228 in. lbs)
23 ft. lbs (276 in. lbs)
27 ft. lbs (324 in. lbs)

WARNKE GROUND ADJUSTABLE PROPS

Rex Taylor of HAPI reports that this ground adjustable prop has two clamps around the hub. The prop shank inside the hub can shrink and you may have the two clamp halves clamped as tightly together as possible, but they are not clamping down tight on the prop shank. The solution is to remove the wooden clamps and lightly sand the mating surfaces so that proper pressure can be brought to bear on the prop shank.

PROP NOTICE By Light Aero Inc.

Dean Wilson of Light Aero Inc. states that Light Aero Inc. has never sold nor recommended the use of a 3-blade propeller for the following reasons.

1. A 3-blade propeller is heavier than a 2-blade propeller.
2. A 3-blade propeller is more expensive.
3. A 3-blade propeller gives less performance.
4. We seriously question the integrity of the blade attachments to the hub of a 3-blade propeller when turned at 2520 RPM.

The only advantage we find is that the 3-blade propeller results in a smoother operating engine at idle RPM.

Light Aero Inc. is aware of three Avid Flyers equipped with the 532 Rotax and a 3-blade propeller that have thrown a propeller blade. All three propellers were made by different manufacturers.

Although all three Avid Flyers were landed successfully with the engine still in the airplane, there is a definite possibility that losing a propeller blade could instantly cause the engine to separate from the aircraft. This would render the aircraft uncontrollable due to aft CG.

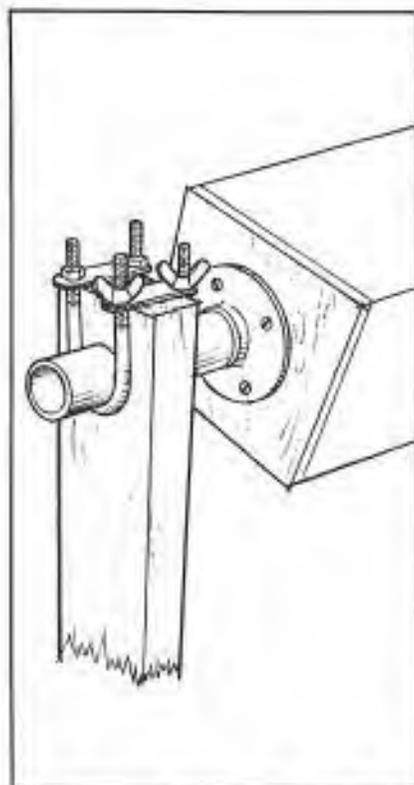
We have also been advised of other airplanes using the 532 Rotax and 3-blade propeller combination that have thrown propeller blades.

There may be 3-blade propellers that are structurally sound for use with the 532 Rotax, but we have not seen one to date. Until we do, we will not recommend the use of a 3-blade propeller with the 532 Rotax engine.

Design

AN ARCHITECT'S DESIGN

Architect Ron Petralito of Baltimore, Maryland sent down this photo of his design for an infinitely adjustable armature for rotating a fuselage during construction. As you can see, it is made out of standard 1 inch I.D. pipe, two 4 inch U-clamps and two wing nuts. With this design, it is possible to tighten the wing nuts by hand to create the desired resistance to rotation, including total immobility. If the pipe is threaded at both ends, a cap can be used to keep it from sliding out of the jig.



This drawing shows the U-bolts and wing nuts at the ends.

HAPI AIRCRAFT NOTES

Most of you are aware that the line of aircraft formerly sold by INAV Ltd. have been purchased by HAPI Inc., RR 1, Box 1000, Eloy, Arizona 85231, phone (602)466-9244.

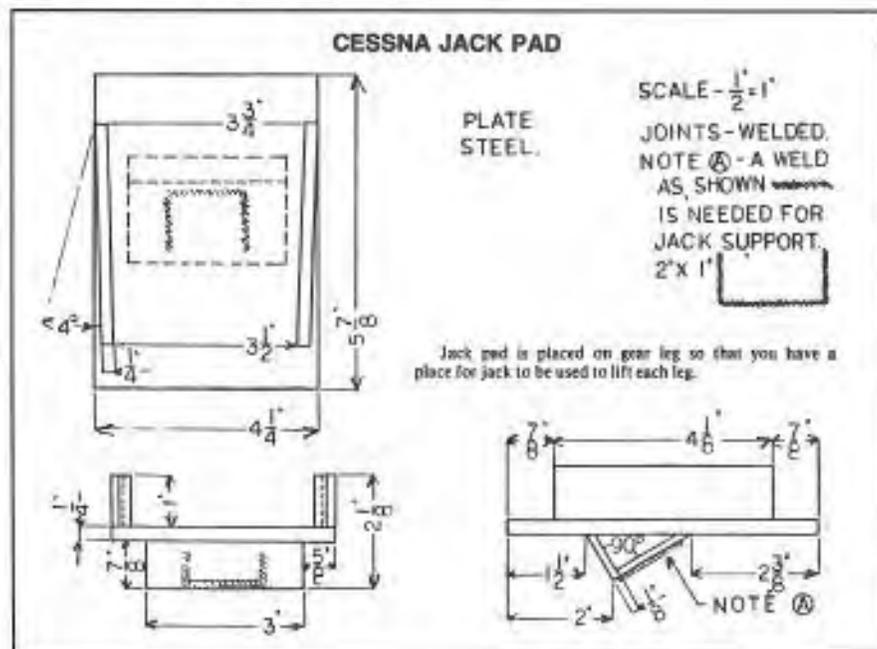
A Monerai was static tested to failure as there had been an aircraft crash due to inflight structural overload. Static tests indicated a failure at 7 Gs right over the lightning hole, the first out away from the root. The top cap buckled in compression inward. The aircraft involved in the accident had failed the spar at the second lightning hole and there was some static bond separation near the limit. The test aircraft was re-riveted and reinforced and a torsion test was done. One of the wings had never been re-riveted as requested by the designer and it was a bond area. There was some oil canning and peel loads in the bond area. This torsion test proceeded to the load limits of a 4.8 G and full rolling pullout mode of 3.3 G both of which were found to be acceptable. As the aircraft approached 6.3 G load on the static test, there was a slight bond separation over the top of the route rib at the rear spar area. They don't feel a necessity for riveting wings and the de-bonding was found to be "not too significant". Tests ended up with the testers feeling good about the aircraft and the limits the designer had originally set out. About the only conclusions they might come to is the question as to whether or not to leave the lightning holes in. If they built another, they

would leave the first bore holes off. The test aircraft had the extensions recommended by the designer and it was tested in that manner or at the longer span. The wing was assembled by a builder and donated to the Massachusetts Institute of Technology and then to the Soaring Museum. They used the loading pattern recommended by Stan Hall which was comprised of a span-wise rounded rectangle. The main load was 47 percent out on the wing from the root rib. The torsion test was done at about the trailing edge several inches ahead of the rear spar. They had previously done a flutter analysis and found the aircraft safe to 250 mph. They feel that the wing is quite stiff enough. One of the things discussed was that a rolling pullout puts about 2/3 of the load on the upgoing wing, centered about 3/4 of the way back on the chord, and that rolling pullouts should never be done any higher than 2/3 of the load which is 4.7 G or precisely at 3.1 G.

In this, the final non-rolling pullup test, there was no creaking or groaning of the wing, just noise, and the wing broke at just over 7 G.

There is a published way to repair small de-bonds of the spar from the other structure and there is a "Coin Tap Test" that can tell you the areas that have de-bonded.

Flight loads have been put on the aircraft of 4 G numerous times by two other flyers of the Monerai with no problems.



Technical Tips

CORRECTION TO FUEL HOSE FITTINGS

Dewey Ballard of Prairie Village, Kansas reports that on the back of the June/July 1988 issue, there was an article on hose fittings that was a bit inaccurate. It was stated that the flare on the old AC fittings was 45 degrees. In fact, "solderless fitting 811-X-X" had a 37 degree flare similar to current AN fittings; however, the tube flaring tool made a longer flare than the ones we use today but still a perfect seal with the AN fittings."

The second error was the statement that leaks may occur even though the B nut appears to tighten down, and that it would be a particular problem with the smaller instrument lines. Actually, you can get a perfect fit with a mix of AN and 811 fittings in the following sizes: -2, -2, -4, -5, -28, -32. The thread pitch of all other sizes is not compatible and the male and female ends must be of the same design, AN or 811. This information can be found in Chapter 5, FAA Advisory Circular 65-9, Airframe & Powerplane Mechanics General Handbook.

VICE PRESIDENT'S CUBY SPORT TRAINER

Technical Counselor Bob Johnson reports that Chapter 680 Vice President's Sport Trainer is an excellent example of good welding. Bob says "this whole project is what I would call near perfect. This is his first try at building anything!"



Particularly look at the one photo of the motor mount — notice the class of welding.



STARTING HOT, FUEL INJECTION ENGINES

What - another trick way to start a hot fuel injection engine? This one is guaranteed to work — most of the time. Put the mixture control to full lean or cut-off, throttle full open and the electric auxiliary fuel pump on. Relax for approximately 20 seconds while the electric fuel pump takes liquid fuel from the tank selected and pumps it through the heat soaked lines of the cowling. In its cut-off position, the mixture control prevents this fuel from reaching the cylinders. Now the fuel takes the alternate path and returns to the tank or header from which it came. During this process, the continual flow of fuel will purge the lines forward of the firewall of vapors. Also the continual flow will reduce the wall temperature of the lines in which it passes. After approximately 20 seconds, the fuel lines will have cooled sufficiently to retain the fuel in a liquid state, after which the pump is turned off. Then you make a normal start with a mixture control in full rich, the throttle cracked or partially open. No priming will be necessary because a small amount of fuel will make its way past the closed mixture control and into the nozzles during the purging operation. Mixture control must be full lean during the pumping process to prevent flooding and to force the circulating fuel to flow back through the return system. The throttle must be full open because some single engine fuel injected aircraft incorporate switches from the throttle linkage to prevent the auxiliary pump from operating in the high position when the throttle is retarded. The auxiliary pump must operate on high position for approximately 20 seconds to provide sufficient time to adequately cool the fuel lines and components inside the cowling.

LIGHT WEIGHT ENGINE STARTER

It seems the Datsun SX300 starter is a hot item for homebuilt aircraft. The starter is very high torque, about 1/2 the weight of the starter issued by Lycoming for their engines, and easy to install. I know of three starters installed on three Lycoming engines, each having a different size ring gear. The SX300 starter will even work on most Lycoming ring gears. The average strain is considerably less than the Lycoming item.

BARRACUDA NOTE

Technical Counselor Don Walter reports that Wicks Aircraft is no longer carrying the landing gear springs for the Barracuda, but they are available from either Danly Machine Corp, 2115 W. 54th, Cicero, Illinois 60650, phone (312) 242-1800 and Danly Die Set Division, 3019 S. Tanager Avenue, Los Angeles, California 90040, phone (213) 685-8151.

ENGINE MANUAL — REPAIR STATION

The Sacramento Sky Ranch at P.O. Box 22610 in Sacramento, California 95822, has an excellent manual they call "The Sky Ranch Service Manual". It describes the process they use in rebuilding engines, but also gives excellent tips and hints on engines themselves and is an excellent manual. You can call them at (916) 421-7672.

PLEXIGLASS REPAIR

The firm of Micro-Surface Finishing Products, Inc., Box 18, Wilton, Iowa 52778 can provide you with a kit for repair of a plexiglass canopy and other supplies to do plexiglass repair. Their phone (319) 732-3240.

"MAGNIFLUXING?"

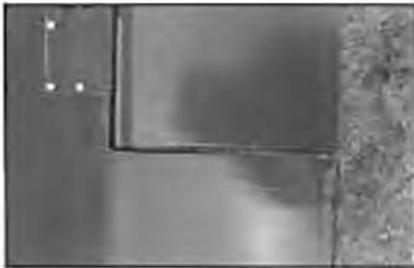
For information on magniflux kits write Magniflux Corporation, 7300 West Lawrence Avenue, Chicago, Illinois 60656, phone (312) 867-8000.

NONDESTRUCTIVE TESTING?

You might check with Reinhart & Associates, Inc., Suite 173, P.O. Box 9802, Austin, Texas 78766, phone (512) 458-2522. They recently did an inspection on a composite propeller on the "Aero Magic" Formula One racing aircraft and can do other similar non-destructive testing.

EAA OSHKOSH '88 NOTES

Builder Bob Upton's Skybolt carried this little quote I'd like to share with you.



A common error often seen on biplane ailerons is that the root ribs are simply not built strong enough to resist the pull of the fabric as it tightens over the years. This inboard rib must be solidly built.



Another common fault on brace wire tabs is not drilling the hole centered in the tab. What is the most common fault seen at EAA Oshkosh '88? The judges got down in back of the airplane to look at the horizontal stabilizer to see if it was straight with the fuselage and if the tips of the horizontal stabilizer appear to touch the wings in the same places. In the majority of the airplanes, they do not. This note is from John Winter, Chief Amateur Bull Judge.



We see a very sanitary engine cowling and one builder's solution for a tail heavy condition — note the long mount.

BLANTON FORD PROGRESS

I would like to commend Technical Counselor Dave Blanton for the research he has done on automotive engines. For further information on these engines, you could write to Javelin Co., Inc., Municipal Airport, Augusta, Kansas 67010. With the cost of aircraft engines what they are, I believe you can build an engine such as Dave's that could be as reliable and as cheap as any aircraft engine might be.

REMOVING RUST

Another unsolicited ad for a substance known as OSPHO. This is a metal treatment that will resist and retard rust and is an excellent cleaner before priming metal surfaces. It sure works for me. It is available from B.J. Associates, 69 Murray Street, Norwalk, Connecticut 06851, telephone (203) 847-2919. One gallon is \$12.00 plus shipping and handling. Apply it with a used spray bottle.

EAA[®] TECHNICAL COUNSELOR NEWS

WITTMAN AIRFIELD

OSHKOSH, WISCONSIN 54903-3086



BULK RATE
U.S. POSTAGE
PAID
PERMIT NO. 1
RANDOM LAKE, WIS.
53075

