

SONERAI

NEWSLETTER

Welcome to this 3rd Edition of the Soneria Newsletter. Spring is around the corner and the real flying season is about to get underway for a lot of us. It's time to start looking at the Calender section of the aviation magazines and see to it that any items needing attention get their due. I've got a tire to change, antenna wire to get squared away, one or two cotter pins to get changed, valves to check, oil to change and just a few other minor items. And get the poor bird washed. Sun N Fun is not that far away when this is being written so there isn't that much time too waste. Look for us if you get a chance to go south in April, it's not a bad way to start off the season. Please check the airshow program for the Sonerai Builders program on Tuesday or Wednesday. (So they say)

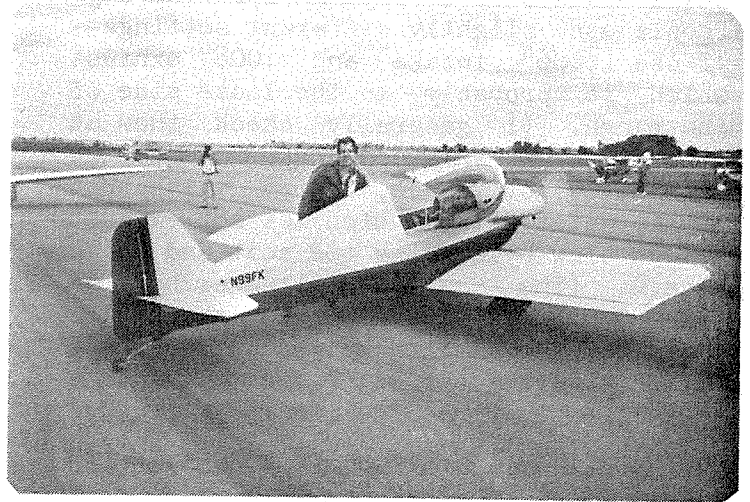
A number of the Sonerai parts that are getting back into production will be available :

Cowlings, Landing gears, Wing ribs, Tail springs, Fuel tanks, Spinners and bulkheads, Tail wheels, Magneto drives and perhaps more. Check at the Great Plains Aircraft booth in the buildings. We won't be able to carry all of it there but we feel good that it is at least available should the need arise.

Mag Drive Inspection

It's that time of year to get back to some serious flying in this part of the country. Which should mean taking a good look at a few parts of the Sonerai that were too cold to look at during the winter. May I highly recommend pulling your magneto off to see how the magneto drive is holding up. It is the sort of part that doesn't get looked at on a preflight, but is absolutely critical to you and your airplanes well being. If

you have an aluminum drive and see metal powder below the alternator area there is a good chance it is quite worn and possibly cracked. A phenolic drive will not tend to show this material since it will just be blown away. Yes, I know this means you will have to retune the mag but you needed the practice anyway. If not once a year, then how about every 50 hours of flying time. From my experience the engine will not quit even if the drive is broken, but that moves it off center and can also change the timing which has proved to be so critical in the past. Phenolic drives are available at this time.



Fred Keip from Franksville, WI at our North Central EAA Fly-in this last fall at Rock Falls, IL. His canopy hinges sure look strong!

Valve Adjusting

When we all get together at a fly-in or Oshkosh and the talk gets around to what has been done to our Sonerai's since last year (it doesn't take long to get to that point usually) there is a pretty good chance someone will talk about doing a valve job or replacing a set of heads. Since most of our engines are bumped up from 1600 cc, the valves seem to take the brunt of the punishment in order to achieve that extra horsepower. Hand in hand with this power increase goes the CHT and EGT readings. Heat destroys valves whether through increased horsepower or improper cooling (horsepower, baffles, mixture, timing, probably in that order). Another major factor in valve life is maintaining the proper clearance on those valves which is where this section comes in.

John Monnett had always said and I've always believed that 25 hours should be your maximum between adjusting. VW valves are checked and adjusted cold, which means before flying for the day. People use slightly different settings--

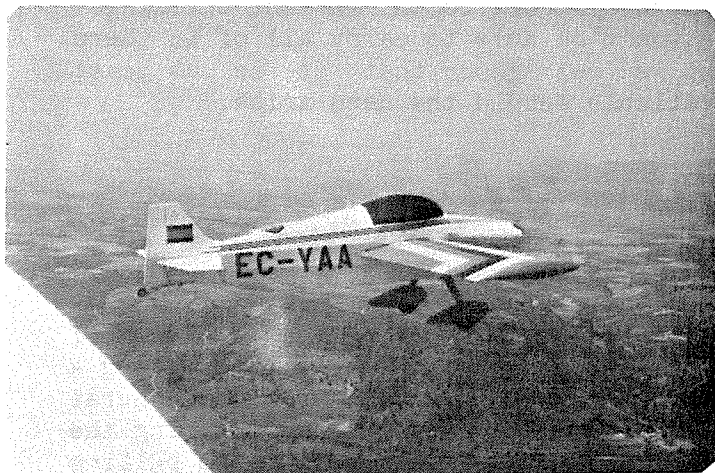
I use .006" intake and .008" exhaust which is probably on the loose side of the range. (I generally check them at less than 25 hrs.) And of course the problem is not loose, noisy valves but tight, quiet valves which let hot exhaust gasses blow by eroding the seat and valve face. (The Shuttle Challenger had the same problem I believe.) When the engine heats up the clearance increases quite a bit, but with a tight valve on a cold engine those first few minutes can cause erosion of mating surfaces.

I want to put a "However" in at this point on adjusting the valves cold. However-- each time the engine shuts down you are going to leave several of the valves off their seats and there is nothing you can do about it. If you are burning 100 LL as most of us are, there is going to be a lot of lead and other minerals on the surfaces involved and when this is exposed to the cold clammy air of our climate, this material can be quite corrosive to metal (our short exhaust stacks let it in and out quite

readily). Over several weeks time of flying inactivity (we call it Winter around here) this can cause an inaccurate reading of valve clearance if you don't burn this material off before checking the valves. In other words if the engine sits for a while and then you decide to do a valve adjust on your cold engine, you may be adjusting from a false inaccurate valve closed position. The clearance is too small and you open it up some more. After running and removing these rotten deposits the valve will seat all the way and be too loose. So you chase it back and forth.

What can you do? My procedure is to adjust the valves cold, but only when the old Sonerai has been active over the last few days. And as some of you may have noticed the last few years I've been plugging the exhaust stacks between flights. It seems to have helped since the temporary loss of compression problem caused by sitting too long has not been a problem. There is a spare set of heads sitting in my shop ready to go when needed, but so far so good.

Two final thoughts-- Steve Bennett at Great Plains Engines recommends keeping track of the valves that need adjusting each time with a limit of .025" maximum adjusting on any valve. And if the CHT stays much over 425 F in cruise you will probably get 50 hours between valve jobs. Probably.



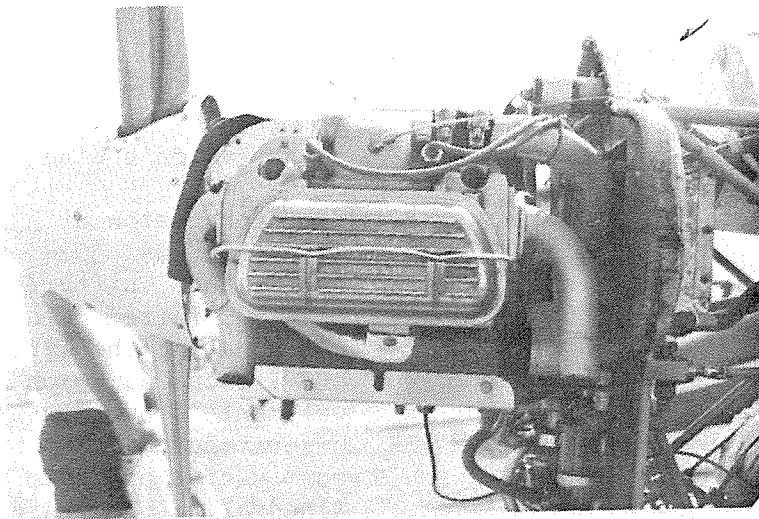
Julio Moro -- Sonerai II flying in Spain

Cold Start -- Hot Start

It's sort of hard to decide which of these two has caused the biggest headache. I know it's a Posa, but the symptoms apply to most carburetor types, after all the engine doesn't know which carb is installed does it? (You bet it does!)

Anyway-- since the Posa doesn't have a venturi to help vaporize the low volatility 100LL it can make for rather difficult starting below freezing. So most of us use a preheat of some sort when it's that cold, preferably directed onto the carb and/or the intake manifold from the bottom rather than hot air aimed onto the cylinders. A 1000 watt hair dryer for 10 to 15 minutes will usually do the job as long as a start attempt is made soon after the heat is removed. With the throttle at idle and the fuel on, you should produce some fire in 10 blades or so. If the engine runs for 2 or 3 seconds and quits -- and does this several times -- you may be wasting your "starter". It can conceivably do this all day so the best bet is a little more heat and another attempt a bit later. I have a primer installed into both intake manifolds but haven't had the occasion to use it on a trip but it is there if ever needed.

Now for Hot starts -- first off they never occur unless there is a crowd around to fully appreciate the phenomenon. 78ES will hot start at Oshkosh when it has sat for 5 days without running. It really does. The hot start characteristics remind me of a fuel injection Continental in some respects. First off a warning -- most of us shut off our engine by closing the fuel valve which gives 3 to 5 seconds of running with a gradual increase in RPM as the fuel mixture leans itself out, then starvation. Since there is no float bowl in the Posa, turning off the fuel valve causes a hydraulic lock so that a very small amount of fuel is burned, you are not emptying the gascolator and the fuel poses. Many times I have walked up to the Sonerai one hour after shut down, turned on the ignition leaving the fuel valve



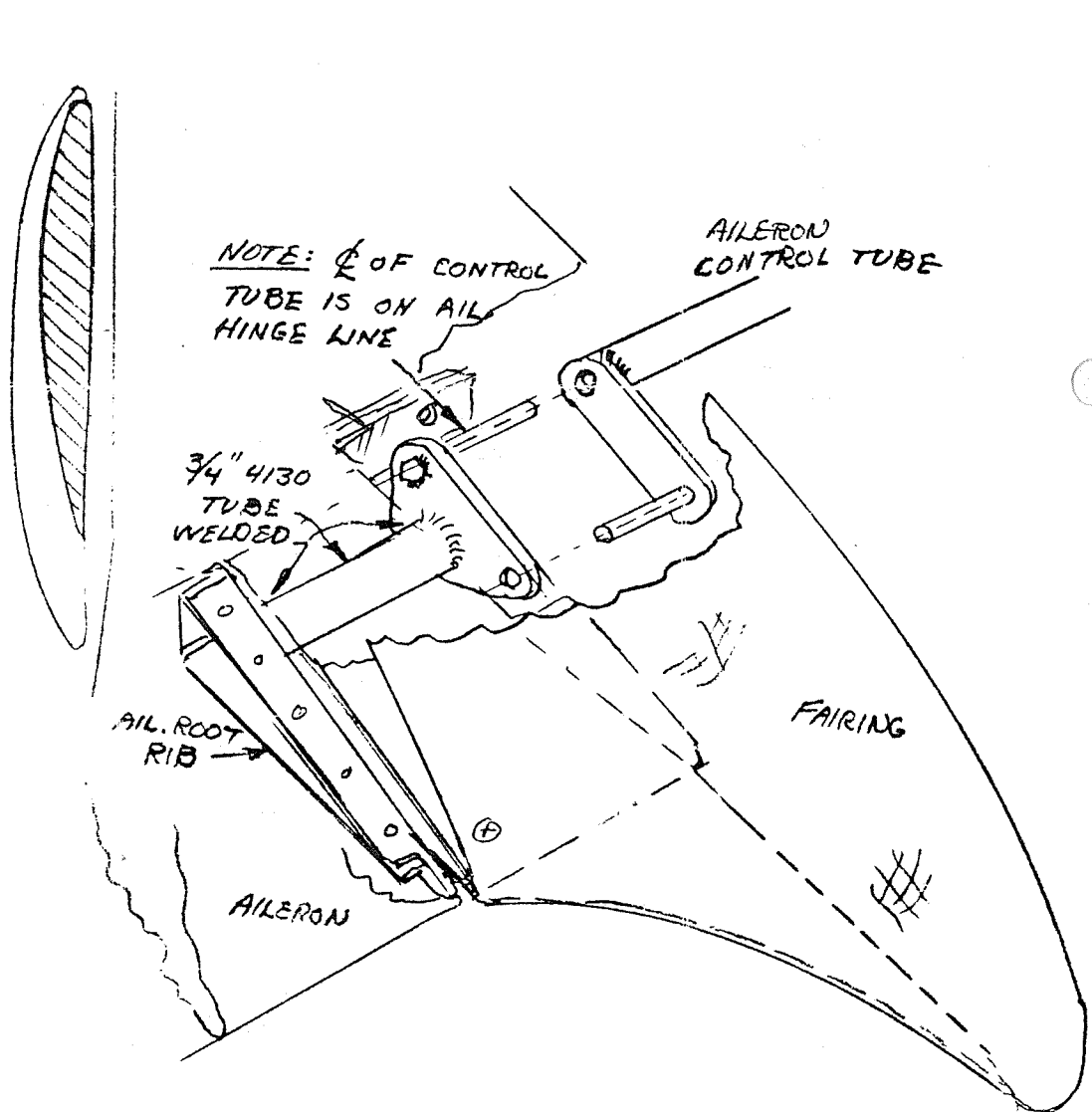
This extremely clean engine installation belongs to a Sonerai II owner in northern Illinois. It's worth a close look anytime the cowl is off. You could learn a lot on an engine like this.

off, and the engine has started on the first blade. If you don't catch it with the fuel valve it will quit of course, but how do you know if you don't have a hot magneto? Anyone walking by could click it through impulse and there she goes! Think about it at your next Fly-In breakfast. Once in a while you should turn off the ignition while at idle to make sure the engine will stop electrically.

If you are trying a hot start and hear a gasping sound and see the prop blade stop and then jerk backward all by itself, you have a flooded engine. Orange flame may also come out the exhaust if it is quite flooded. My procedure is to turn off the fuel and ignition, open the throttle quite a bit, hold on tight (remember the bit about the hot mag) and turn forward through 4 blades. For safety sake, please don't do this from in front of the prop. Then with the fuel still shut off and the throttle at near idle and the ignition on, there should be some activity in the first few pulls. Some people like to turn the prop backwards with the throttle open which is probably much safer but to me only pushes the fuel back into the intake manifold to be drawn in again. To each his own.

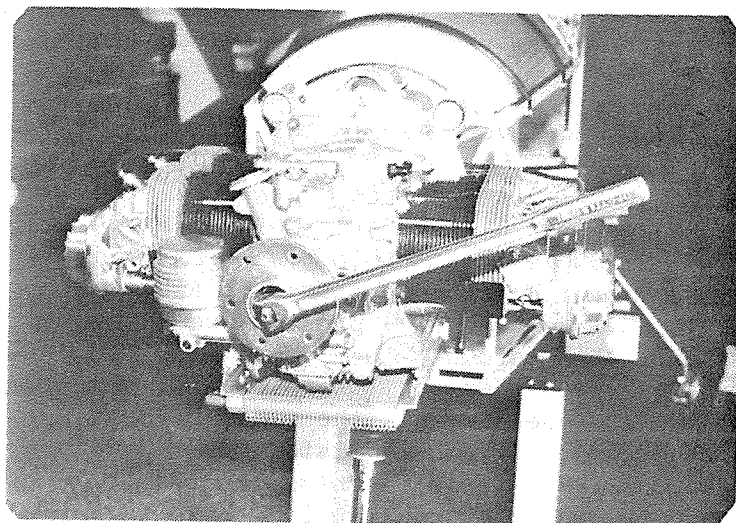
Bob Barton's Wing Root Fairing

Bob Barton at 3333 Hidden Acres Dr. Doraville, GA 30340 sent the drawing of his rather nifty method of having a nicely faired in wing root without complicating the structure. He cut 6" off each aileron and installed the weldment shown in the drawing. My understanding is that such a fairing is most useful on those aircraft having some dihedral. He said in the letter that this aircraft will be at Sun n Fun so the pressure is on.



Water Leveling for Taper Pins

Archie Parsons asked if I could help get his Sonerai II leveled up for the drilling and reaming of his taper pins. I told him that from my experience the best way to do that was to use a water level since it seemed the most accurate method short of using a transit. A piece of 1/4 inch plastic tubing about 20 feet long was filled about 2/3 the way full and then a little dye was added to make the water a bit more visible. We used the leading edge of the wing as our datum point and taped the tubing as shown in the picture. Simply put, if the other end of the tubing was then raised till the water level by the wing root was even with the leading edge of the wing, you can use that "free" end any place on the airplane as your datum. If you are trying to set the dihedral of the low wing Sonerai, just measure up the required amount and you are there. Accuracy is probable less than 1/16" which should be plenty good enough for the kind of builder I know.



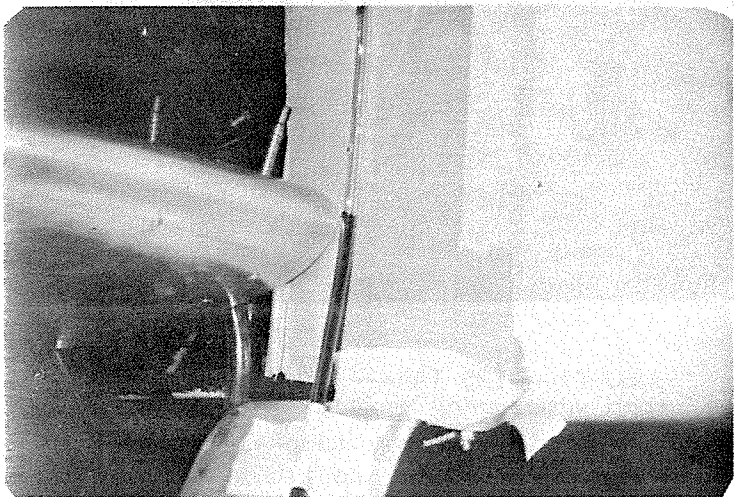
Dick Morrow of East Moline, IL complained about an engine vibration on the initial run-up. When the propeller was removed he discovered that the socket and breaker bar had not been removed. Let's try to be a little more careful about putting our tools away, guys!

Australia Needs You

Neil Stevenson, an Australian Soneria LTS builder, has a special request for you other LTS owners. Since the engineering data is no longer available to present to his Inspectors, it will be necessary for him to receive flight reports from 8 LTS owners who have all flown 100 hrs. or more. That's 8 different owners if possible. Once his is approved then the other Australian LTS builders will be in the clear. They need your N number, number of hours flown and list of any faults found during the 100 hrs. Neil's address is :

RMB 3201 Wisemans Ferry Rd
Central Mangrove
N.S.W. 2251
Australia

Postage on a letter like this is \$.88
Thanks for the help.



30 seconds over Lake in the Hills

Our mission for the weekend was to attend the 1986 MERFI Fly-in at Marion, Ohio. Steve Bennett in his KR-1 would rendezvous with me over Campbell Airport at 7 AM and we would proceed under the O'Hare TCA around the end of Lake Michigan and then get on course. I had loaded up the Sonerai the night before, checked the oil and adjusted the valves (Steve likes to ride hard and fast). Since it was raining lightly at the time I didn't push out to do a run up as usual, but my spring type rocker covers have always been pretty dry in the past. Some of the guys complain my engine is so dry it is corroding, I take it as a compliment although it may not be meant as one.

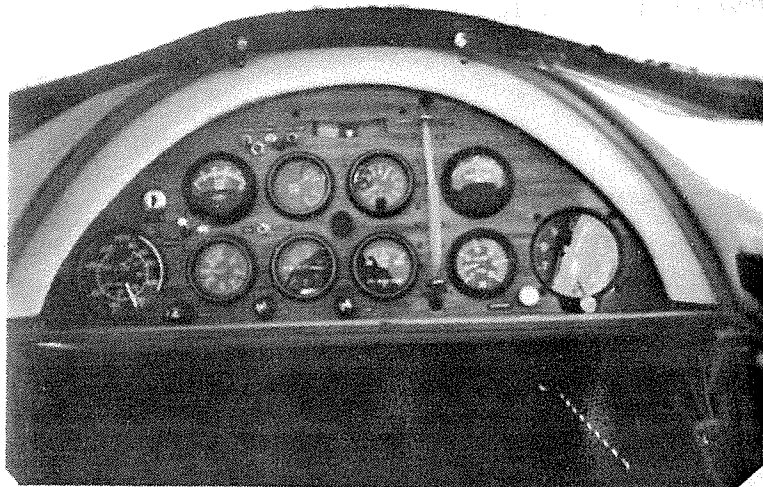
Anyway-- the next morning dawned pretty good for flying so I pushed out and warmed the engine up for a few minutes then headed to the active runway 26. Steve has always been extremely punctual in the past when he met me at my airport so it seemed like a good idea to return that type of favor. I gave Bob the lineman a wave as I got lined up to go, then eased the throttle home. At 60 IAS we lifted off and began accelerating to 90 MPH for climb -- but something smelled wrong! And we were starting to go IFR on the wrong side of the canopy-- oil smoke! I made the turn onto crosswind figuring to make a quick pattern and get down, but as the Sonerai rolled level there were these little flames peeking around the edge of the firewall (so that's why they call it that). This wasn't good, as they say.

By now we made a quick turn downwind and pulled the power back quite a bit deciding that there might not be time for a full pattern at the rate things were progressing. So it was a sharp 180 to the left paralleling the runway and then a wide sweeping 180 to the right to get

lined up for a downwind landing on runway 08. Since full power was still apparently available, it was no problem to keep control and flying speed where they belonged. Fuel and Mags were OFF before touching down and the canopy came open at about 20 mph. We rolled to the end of the runway before abandoning ship but the flames had gone out on the 2nd 180 turn.

Bob gave me the usual "short flight" routine and removal of the top cowl showed the left rocker area rather soaked in oil and a few burned spots on the inside of the fiberglass but no other damage. You always run the engine up and check for leaks after doing a valve adjust, dont you? I do. Honest, that's the only time I ever got lazy.

A Lake in the Hills squad car pulled up a few minutes later as the cowl was getting buttoned up and asked if we had seen an airplane crash a short while ago. "It was me." He seemed greatly relieved to hear that. The MERFI was great by the way -- but that is another story.

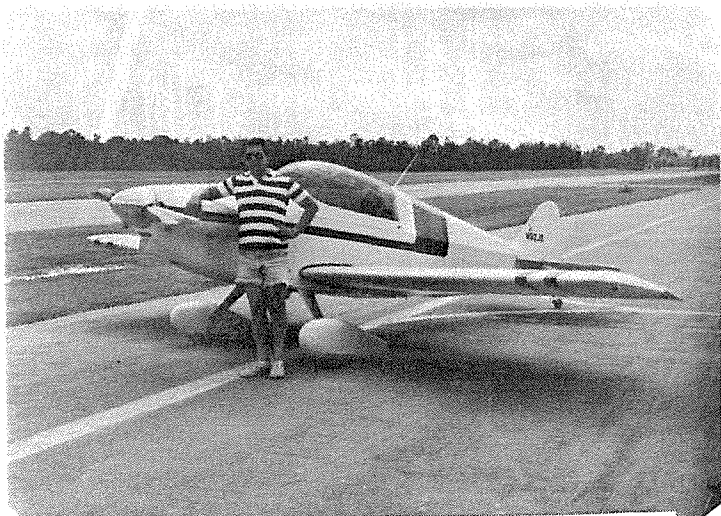


5080 ft---125 IAS--- 6" vacuum---
1000 EGT---3000 RPM--- 250 CHT---
50 psi oil---120 oil temp--132 TAS
4000 ft Den.Alt. about 60% power

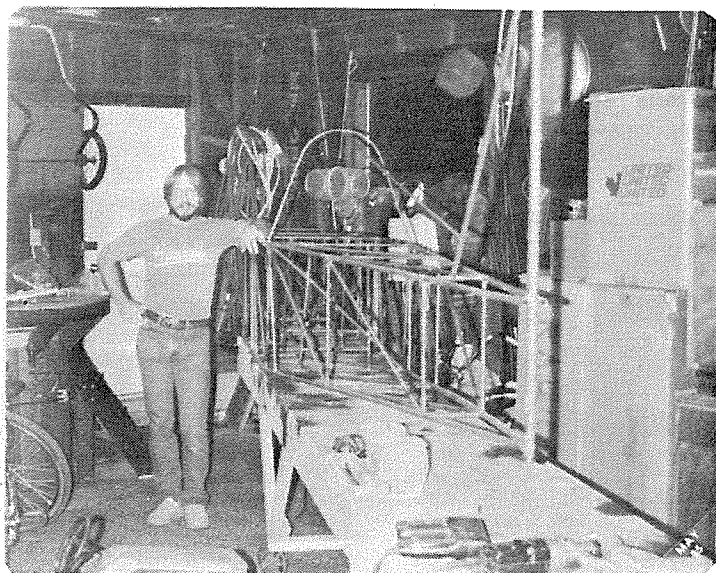
The Posa and Autogas (Not again!!)

I've talked quite a bit about the combination of using the Posa carb and running on autogas with our gravity type fuel systems. There couldn't possibly be anything else to talk about, could there? Well maybe. If you get fuel vapor bubbles in your fuel line with the typical float bowl carburetor as used on "real" airplanes, their final destination is the vented float bowl. Meaning that the vapor has a chance to bubble up in the bowl while the metering jets draw liquid fuel from the bottom of the bowl. If enough bubbles are present they could eventually allow the liquid fuel level in the bowl to draw down resulting in a lean mixture. That's not good of course.

However, in the Posa (or probably any other carb without a float bowl) any and all vapor bubbles have no choice but to go directly through the main metering jet. Instant lean mixture-- you could probably "hear" every bubble as the engine leans out and surges. In my Sonerai II this seems to be happening in summer as I taxi back after a landing. It will go from 1400 RPM to 1600-1700 RPM all by itself. Does this idea make sense? Any comments?



John Santonocito and his Sonerai II from W.Seneca, NY. See you at Oshkosh.



Rob Cochran of Milford, MI wasn't in need of a valve job when this picture was taken in May 85. Apparently quite a bit of work has transpired since then.

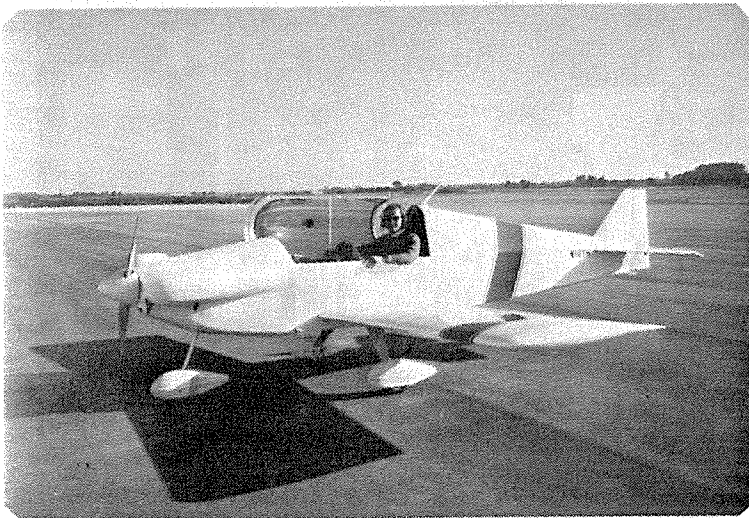
Sticky Azusa's

If you have a brake problem with your Azusa brakes it probably has to do with runways getting shorter and shorter. However, once in a while you will find the brakes locking on when pulled quite hard. This can happen at the worst of times, like having a 747 on short final and you stuck on the active. Happens all the time to those of you based at Kennedy and O'Hare. The cam that operates the shoes appears to be made of hardened steel while the metal in the shoes themselves is quite soft, so the cam wears a groove in the shoe. And soon the brake is sticking. The easiest fix is to switch the shoes from front to back thereby causing the cam to contact a new place on the shoe. It may be necessary to file or grind on the brake lining material a bit, but at least you can move out of the way of all those jets and keep our Nations airports open to important traffic.

Great Plains Aircraft Supply Co. Inc., has the following parts in stock ready to ship.

1. FIBERGLASS WING TIPS \$ 79.95 PR
2. FIBERGLASS WHEEL PANTS \$109.95 PR
3. FIBERGLASS BEAUTY BUMP \$ 19.95 EA
4. WING RIB KITS \$289.95 ST
(WHILE CURRENT SUPPLY LASTS)
5. TAILWHEEL SPRINGS \$ 65.00 EA
(WHILE CURRENT SUPPLY LASTS)
6. TAILWHEELS \$ 19.95 EA
7. COWLINGS (SONERAI II) \$275.00 EA
(PLUS \$15.00 CRATING FEE)
8. 1/2" LANDING GEAR \$279.95 EA
9. SPINNERS 12" \$ 40.64 EA
10. BACKPLATES \$ 18.95 EA
11. FRONT PLATES \$ 26.95 EA
12. 12V ROTARY FUEL TRANSFER PUMP \$ 24.94 EA
13. SHRINK FIT PROP HUBS \$119.95 EA
14. ACCESSORY CASE (LYCOMING MOUNTING HOLES) \$135.00 EA

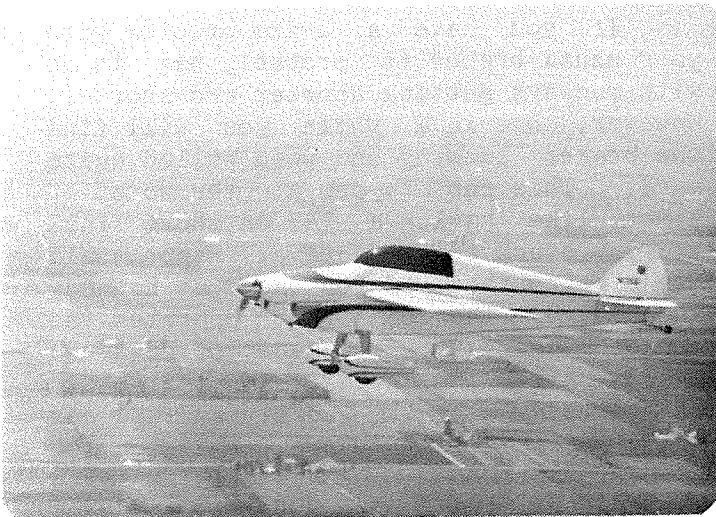
In addition to the above parts, Great Plains Aircraft Supply Co. Inc., can supply on demand Sonerai I cowlings. Great Plains catalog is \$3.00 It has a full listing of VW engine parts and accessories as well as much technical data. Write to Great Plains Aircraft Supply Co. Inc., P.O. Box 1481, Palatine, IL. 60078, or call 312-359-6558. Be sure to look up the Great Plains booth at Sun & Fun 88 in Lakeland, FL to see the full line of VW Aero engine and Sonerai parts in stock.



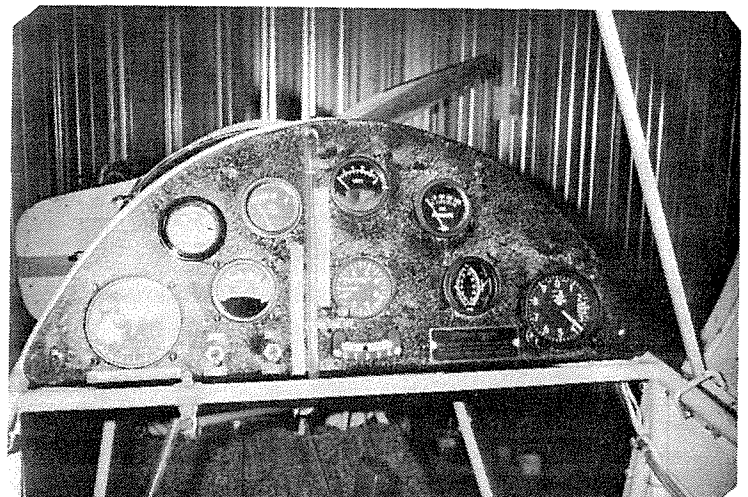
Ed Hasch and his Sonerai II LTS. He had an alternator problem the other day and came up with the following information for us all:

Synchro Corp.
P.O. Box 427
Arab, AL 35016
205-586-6045

Stator Coil PN 21160-94
Rectifier PN 12065-94
Regulator PN 12260-94



Fred Kugel and his Sonerai II 1835 from Celina, OH. Nice paint job.



Instrument panel of the month goes to Dave Rawlings of Palatine, IL.

**** FOR SALE ****

Complete fuselage tubing kit--\$500.00 or trade for wing kit
Paul Biegun 1245 W. Wellington Ave. Chicago, IL 60657 312-477-1607

Narco MK 12A Nav/Com to trade or sell for unit with Glide Slope
Archie Frangoudis 162 Naticook Rd. Merrimack, N.H. 03054
603-883-5800

Sonera I Canopies (2 ea.) -- \$100.00 ea. for regular or stretch
Bob Jaeger 461 Major Dr. Northlake, IL 60164 312-343-9227

Monnett Flat Oil Separator \$20.00 Altimeter (needs repair) make offer
Fred Keip 11428 Six Mile Rd. Franksville, WI 53126 414-835-7714

1835 VW engine w/Posa carb, Slick mag, tuned exh., oil cooler, prop, spinner.
Sonera I motor mount
R.E. Mitchell 8 Harbour Hts. Ln, St. Catharines, Ont. Canada
416-646-2440 L2N 4K3

Sonera I Wheels, Brakes and Axles/ Revmaster Acc. case w/starter, Intake
system Richard Morrow 418-24th Ave. Ct. East Moline, IL 61244
309-755-1495

1800 VW Monnett conv. w/ Super Vee Extension
Ron Reimer 2113 Speed Ave. #1 Louisville, KY 40205

Ultracarb -- John Santonocite 28 Wetherstone Dr. W. Seneca, NY 14224
716-674-7403

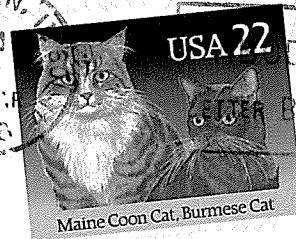
Fiberglass Wheel Pants for Taildragger
Ken Wasielek 29W153 Janet Ct. Naperville, IL 60565 815-436-6791

Supervee Housing and Bearing / 54X46 prop 4th St. Aero 502-458-3127
Eliot Willoughby 2426 Ashwood Dr. Louisville, KY 40205

Sonerai News

SONERAI NEWSLETTER
C/O ED STERBA
3209 S. WOODS
MC HENRY IL 60050
815-455-2575

To: FRED KIEP
11428 SIX MILE RD
FRANKSVILLE WI 53126



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