

SONERAI

Jul-Aug-Sep 88

NEWSLETTER

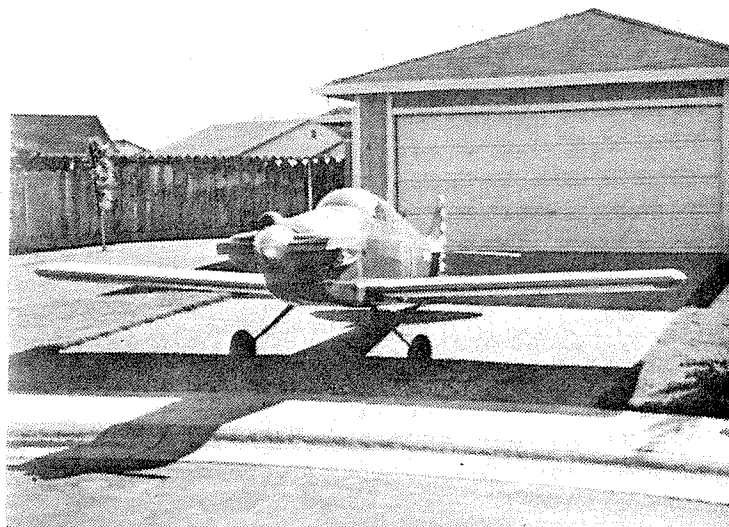
Greetings and welcome to the Summer edition of the Sonerai Newsletter. We've had such a nice warm Spring I can hardly wait for the good hot Summer weather to be upon us. Please watch your density altitude as you motor around the sky and do me a favor personally by checking those propeller bolts for correct torque since the extreme hot dry weather will tend to make the wood shrink and you could lose the bolt torque. (And something else.)

Oshkosh is not that far around the corner so a lot of people are making plans for the big event including us. If you intend to fly your Sonerai in don't forget to try to park it with the rest of us on the flightline. The current plan is to be where we have been in the past but this could change since the EAA is trying to move show center to the South where they have more room. Ask the flight line people since we all intend to stake out our turf by Thursday morning. (I might mention also that most of the local gang tend to go in No-Radio which seems less congested and safer. Please check Sport Aviation for the proper procedure if you elect the method.)

Activities 88

I've set up a time slot on the flight line at the Homebuilders Building for an informal get together for all Sonerai builders and other interested persons. This is at the building just south of the interview circle and/or flight line ops area. Check the schedule but it should be on Saturday at 10 AM. We haven't done this in the past since everyone tends to gather around the Sonerai's but it is worth a try.

Sonerai parts will be on display and for sale during the Convention at the Great Plains Aircraft Supply booth. If you would like to place an order ahead of time and pick up your parts at the Convention please feel free to do so. It will be necessary to pay Wisconsin sales tax on the order if you choose this option, sorry.



Doug Hagerman of 6 St Helens Ln
Chico, CA 95926

Sonerai Dinner at Oshkosh

After a fit of indecision it was decided to go ahead with a limited dinner at the airshow for the Sonerai people. Not knowing how things would turn out we have reserved a room at Butch's Anchor Inn for Tuesday evening August 2nd. The catch to the situation is that we can have a maximum of 40 people for dinner. Otherwise it meant reserving space for a minimum of 100 which we weren't sure could be guaranteed. So we will be taking reservations either through the mail (to me) ahead of time or space available by signing up at the Great Plains Booth in the building at the convention. The meal will be ordered off the menu that evening so there is no need to send money ahead of time. Just let us know if you can make it. It's a start and hopefully by next year we can get a better idea of the numbers involved and get more room.

No Silicon Please

Just a short note here---if you are using any type of cleaner or wax that contains silicon you will find it quite difficult to do any touch up painting or finishing. I've found that out the hard way in my business. Even sanding just seems to rub the stuff into the wood grain on propellers and the new finish won't lay down nice and even. It seems to be there forever.

CAFE Ole'

Our EAA chapter (153 Elgin / Schaumburg) has been running a CAFE 200 for the last few years patterned after the original CAFE 400 run out in California each summer. We run a course of 180 to 200 statute miles since our little Sonerais and other homebuilts tend to run out of fuel a little short of 400 miles, but otherwise we've tried to follow the rules pretty closely. The first few years we would weight the airplanes before and after the race to determine fuel burn, but this seemed to get enough inaccuracy that we've gone to measuring the fuel levels and trusting in the fuel pump gauge.

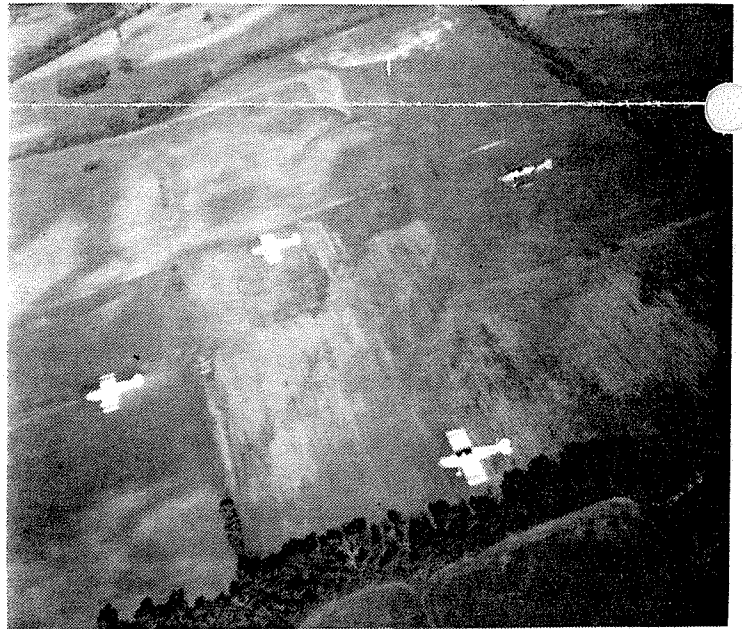
The course we use is a double triangle over nearby airports with each leg about 30 miles in length, this puts us all back over our airport in the middle of the race so the "spectators" can see how it's going. Pylon turns over each airport are highly recommended as long as you are above pattern altitude by several hundred feet. The timing is from a standing start to a flying finish with accuracy in navigation being very important. Those people using Lorans must have them immersed in a bucket of water for 20 minutes to ensure their "liquid alignment". We generally tend to start the slower airplanes first so everyone else has the satisfaction of

blasting by them part way through the course. It's the least we can do for the poor souls.

So this years CAFE race saw absolutely beautiful weather but a substantially reduced field compared to years past. There were a total of 5 Sonerais with the results as follows:

	GS	MPG	GPH	Score
Dave Rawlings	134	31	4.4	796547
Clyde Seager	139	23	6.0	645012
Bob Brown	134	25	5.4	612959
Ed Sterba	130	30	4.3	577297
Jim Wendel	129	23	5.7	508832

Most of us ran the race at a higher than normal cruise of 80% or so. (No one would be foolish enough to go wide open would they?) These numbers correlated pretty well with years gone by with a bit of wind probably bringing them down a little. You all ought to give this sort of thing a try in your own chapter then let us know how you do. It's quite a lot of fun.



FLY-BY'S BY THE SONERAI SEXPISTOLS

This obviously needs a little explanation, but I think I'll save that for another day. To sort of let the anticipation build, till you can't stand it any longer.

Oil Temp

It would be interesting to see how many Sonerai's are flying with and without an oil cooler. The numbers are probably in direct relation to the temperature shown on the oil temp gauge. As the temp goes up, the numbers of coolers follows, so this discussion has to do with the accuracy of the gauge reading. There are several choices for putting the temperature probe in our VWs, the original casting for the oil screen from Monnett had a boss for mounting the probe, so this is where mine is to this day. As such, it rarely reads much over 150 to 160 degrees F. even in the summer at cruise, which I tend to believe is probably 50 F. or so too low a reading. I checked the gauge way back in the beginning in boiling water and found it to be right on the money. (Orville Wright helped check it out.) So the gauge is accurate and yet I say it is probably reading quite low. Why?

The common answer is that the probe is in an area of high cooling air flow caused by my "windage tray". That's the aluminum pan fastened to the bottom of the engine about 1" below the case. Of course it's purpose is to help cool the bottom of the engine and the oil within, but the rational is that it is also cooling the probe and therefore giving a false indication. How much? Well there have been a few people who, in the process of doing some major engine work, relocated the probe to the back and side of the case out of any direct airflow. Zoom! Up to 200 F. on the oil temp gauge. It's funny how you can fly for years looking at 150 F. feeling wonderful and telling everyone how cool "she" runs and the next week spend half your time watching this little gauge knowing full well that the engine is the same as before. Homebuilders are a strange lot.

But there is another way to look at this new high temperature reading. How much of the 200 F. temperature is the result of your probes proximity to the hot aluminum/magnesium engine case? What temperature is the case itself? Especially since the probe is now out of

the airflow area. It seems like a bit of a toss up between the two ideas to me, but I guess I tend to believe the higher number just to be on the safe side.

So who cares what the oil temperature really is? How is this going to effect you personally as a Sonerai driver? Will it effect your sex drive or ability to pick up girls? Probably not much, but we do want the oil to do it's job. Heat makes it wear out sooner so if you think it is being abused the best bet is to use good oil and change it regularly and often. My VW has always run 48 psi at cruise except for two occasions when about 25 hrs. of hard running had accumulated since an oil change. In each case it was quite hot outside and the pressure rather quickly dropped off to 30-35 psi which really caught my attention. The weird thing was that in turning back to home airport the pressure went back over 40 psi only to drop again as I rolled level. It went up each time I turned and down once we were leveled off again. Needless to say the oil was changed immediately and the problem went away. This was with multi-weight automotive oil which apparently tends to gravitate towards the 10 side of the 10-40 or 10-30.

By the way the actual psi is rather irrelevant according to my knowledgeable VW source, with 48 psi being on the high side of the scale. Many VWs are doing quite nicely on 25-35 psi with no problems. It's a matter of your relief valve spring tension and the difference between the single and dual bypass cases. Perhaps more on this at a later date when I get it figured out.

On the Rocks

"a cool story for a hot summer"

I had occasion to be up flying this past winter when we had a solid overcast and slightly above freezing temperatures with the forecast for drizzle in some areas. So it doesn't sound like the best conditions I will agree, but the time was set aside to go to the airport and when was the last time you cancelled out on a chance to go to the airport? The ceiling

was fine although it did look a bit wet to the southwest, so as usual I headed straight for the worst of it to see how bad it could get with the option to turn and head for home if it was necessary. (Sort of like sailing straight into the wind knowing you'll have an easy time of it on the way home.) I don't have an OAT gauge but it was drizzling as I approached the "wet" area and soon the front of the canopy began to go opaque as "the wet something" froze in place. Soon, and I mean very soon, there was a small area that had no forward vision and it became a good idea to head home. So I quickly eased back into the dry air and waited for the ice to melt away but it soon became evident it might take a long time.

I'd never picked up a "load of ice" as the pro's say and since there wasn't any more accumulating I decided to fly around for a few minutes to see how long it might take to ablate away (doing S turns the whole time so I didn't pick up a "load of Cessna"). No way! It stayed there till landing about 20 minutes later and a postflight walk around showed about 1/4" on the wing leading edge and the nose of the spinner. The temperature on the ground was probably 33 to 34 degrees.

Was this a dumb thing to do? It didn't seem very dangerous since the precipitation was quite localized, visibility was very good and there was an easy escape route back to home base. So is the Sonerai now approved for flight into known icing conditions? It may be but I know for sure I'm not. No thanks.

For more information and a chance to support a very worthy cause, may I recommend contacting Jim Vliet at 12 Cooper Blvd in Red Bank, NJ 07701 for his Vee-Gram Newsletter. The cost is \$ 8.00 per year.

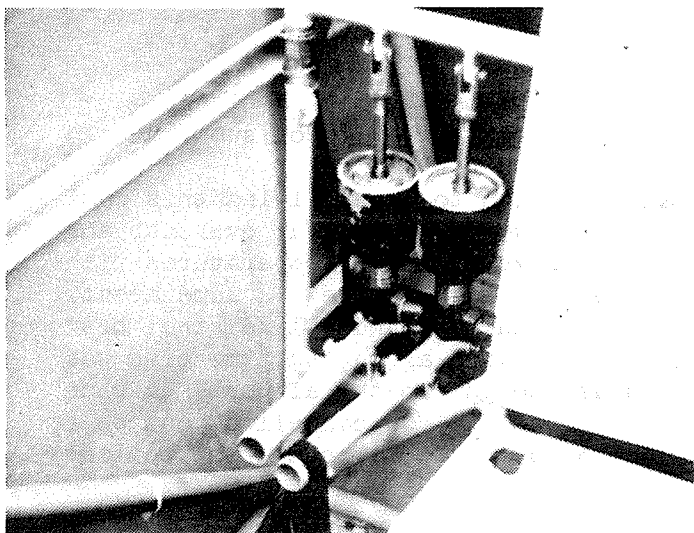
Formula Vee Race Schedule for 1988

June 11-12 Albuquerque, NM
August 12-14 Danville, IL
August 27-28 Sussex, NJ
October 8-9 Palestine, TX

I talked to Rick Leonard about the Albuquerque race to find out how it all went the other day and he said that he won. Upon further interrogation he managed to admit that there were other people at the race and they had a good time too. It seems that Rick has the inside track on these Formula Vee machines for the time being and there are a number of people who would like to change that. They had an all time high of 7 Formula Vee machines in attendance composed of 5 Sonerai's and 2 V-Witts with the following race pilots doing the honors: Tom Walker--Rick Leonard--John Breigar--Charlie Terry--John Inman--Bob King--Brian Dempsey. It was the first race for John Inman and Tom Walker, and they did a good job according to my source.

For those of you contemplating the life in the fast lane it is necessary to demonstrate your flying skills in order to race. Some of the maneuvers required include: 10 laps of the course--an aborted takeoff--maintaining 15 feet of the centerline on a normal takeoff--a 6 G pullup--a dive to 1.3 times normal max. level flight speed (200 mph)--a roll to the left and right--and a half roll and reverse back to level flight. If you are more interested please contact Jim as indicated in the beginning. His V-Gram will also give full details on the racing action that are probably not available anywhere else.

Dual brake handles with Cleveland brake installation, push down to stop with an emergency brake strap. Owned and operated by Greg Sedbrook PO Box 280183 Tampa, FL 77706



Letters Finally

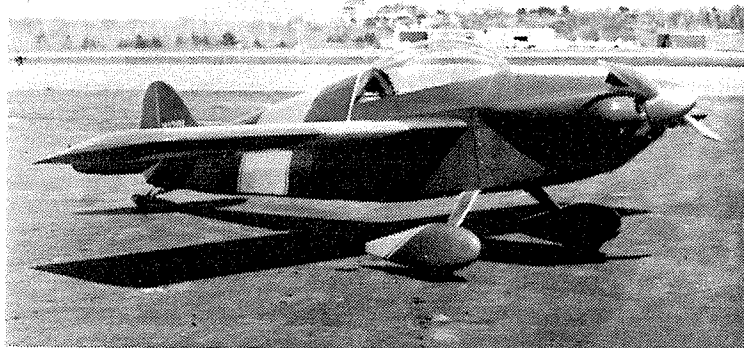
From-- Bruce Lewis
Box 502 RR2
Gorham, ME 04038
207-892-5429

Dear Ed,

I meant to get this info to you several months ago but you know how it is.--

My plane actually has two trim systems. The first, which was designed and installed during the building process consists of a tab on the left elevator and level with the rear cockpit- 16th inch cable connecting them. The tab is roughly 3" X 10", this works fine for takeoff and cruise but is inadequate for landing as I run out of "nose up". Not wanting to "butcherize" the system, I came up with an auxiliary system that makes the approaches much more comfortable.

This second system is derived from the Wittman Tailwind system at the suggestion of a fellow EAA member. As you can see from the photo it attaches to the stick and torque tube without welding. Two hose clamps and a 3/16" bolt do the trick. The lever is 1" by .065" with a 1-1/2" washer brazed on. There is a friction washer between this and the attachment to the torque tube. This is made from a piece cut longitudinally with a cut off 1/4" bolt and another 1-1/2" washer welded to it. The actuating rod is small diameter tube with a short length on the stick end welded at 90 degrees for a 3/16" bolt. The springs are the same as the Wittman plans show (I think 15 winds of about .050 piano wire is what is used, with the end winds flattened to mate well against washers). Between the springs is a piece of 3/8" tube for the 1/4" bolt to slide through welded to a piece of 3/16th I.D. for mounting to the lever. This system is probably adequate for all operations. At any rate I would recommend something like this to anyone who presently doesn't have a trim system, or for that matter to those that prefer not to have the extra work of running cables etc. down the fuselage.

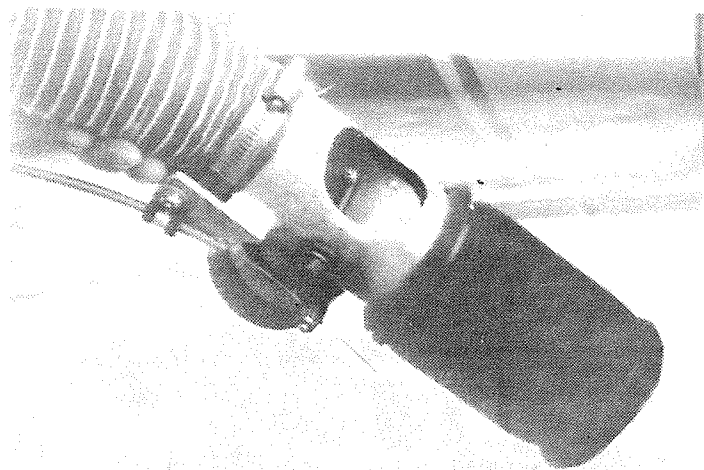


Bruce Lewis Sonerai II

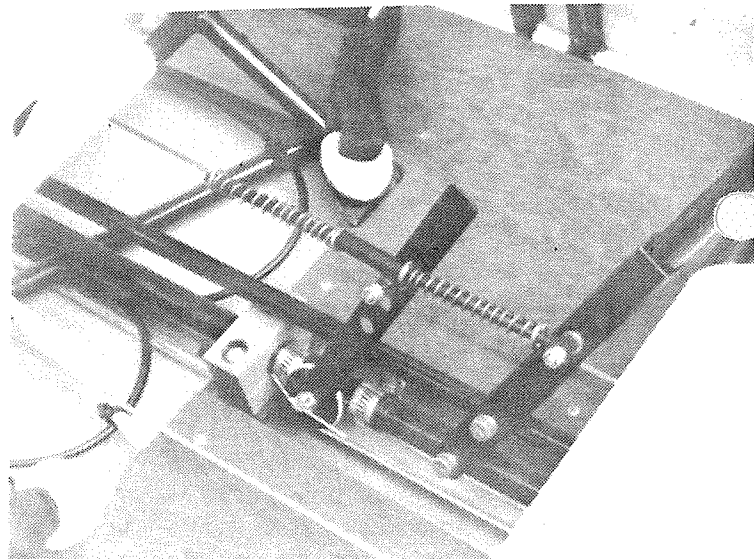
----- I am using the Bosch 009 distributor with a coil mounted on the back top of the accessory case. I bonded a couple of 1" tubes to holes in the back of the rear baffle to provide cooling. To those using this ignition system-- make sure your bump for the distributor has enough clearance for the cap. I had one hit mine and break the cap at one of the retainer clips. She kept chugging away and I wasn't really too concerned until I got the cowling off and discovered what the problem was. Ignorance is bliss! Now that I'm paranoid about this I "safety" my cap in place with a couple of cable ties-- just in case.

I chose not to use the "pressure chamber baffling" called out by Monnett. This gives me easy access but I am having a little problem with keeping the CHT down. Each little thing I do improves it a little (at least that's what I keep telling myself). The latest changes will be painting the stacks a light color and directing the air from the sump baffle toward the exit rather than just letting it ram into the firewall. If anyone has some advice for me on this I'm all ears. I really would like to stay with my present baffles.

Best Regards, Bruce



Bruce's carb air filter and alternate air



Bruce's secondary trim system as explained in the text

Antenna Antics

The navigation portion of my Escort 110 had been acting up for a few months, and with Sun N Fun not too far around the corner it was decided to Do Something. The radio was bench checked up at Mobilair in Burlington, Wis and given a clean bill of health. So it probably had to be the antenna I was told, and sure enough the shielding of the nav coax was loose just behind my seat at a connector. A "fix" was made and the trip south was made although the problem reoccurred along the way. So a "Second fix" to the center wire was made while at the airshow with a piece of safety wire (I know, I know!!) Real quality radio work here. Of course this didn't last much past the Florida-Georgia border and now the Comm was getting very difficult to receive although the transmitter seemed to be operating fine. It was real scratchy and weak they all said.

The end result was that sometimes it pays to have friends if you know what I mean. I know they can be a bother asking for help and all, but once in a while it really pays off. I mentioned the problem to Clyde Seager, Ed Hasch and Jim Wendel while at breakfast at Clow International one morning and was told that the reason my Comm reception was bad was because the Nav antenna wasn't working. Figure that one out! Those Radio guys try to keep things more confusing than propeller makers. Of course it worked out to be entirely correct. Apparently on my type of radio you transmit on the Comm antenna and receive through both Comm and Nav. You figure it out!

Somewhat Hotter Heads

We're in need of help here to answer a rather baffling problem. A couple of the local Sonerai guys have pulled their heads off recently because one exhaust valve was sounding and feeling weak when propping the VW in starting. Adjusting the valves didn't do much good, seating the valves with a mallet didn't either so off they became before the Fly-in season got going in full force. In both cases it was decided that even though a valve job should be done with a 3 angle grind, in reality a light touch-up with lapping compound would probably have been adequate. The amount of lead build-up in 150 hours can be substantial. Don't forget that those deposits are also trying to raise your compression ratio as the combustion chamber area gets filled up with lead.

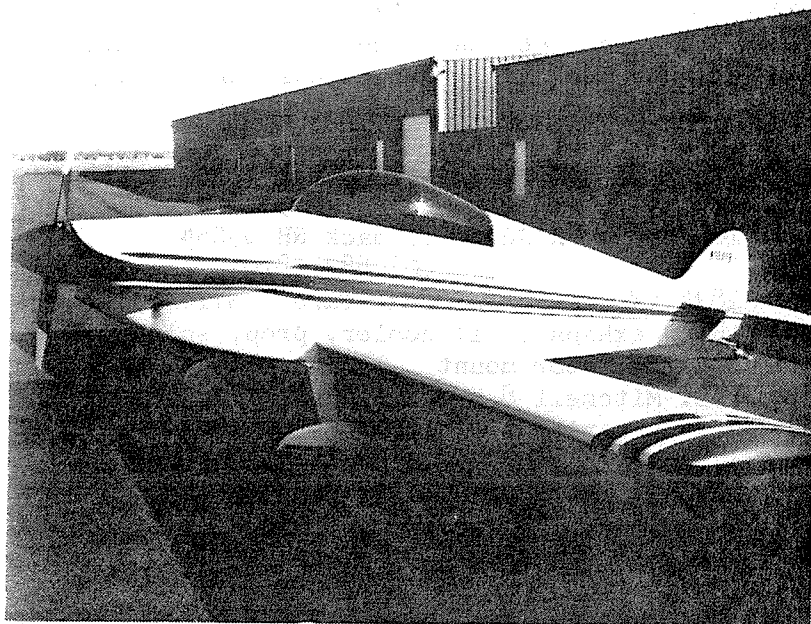
Anyway, the work was done and the heads were reinstalled correctly and the Sonerai's were back in the air. With one catch--- both experienced quite an increase in CHT even though no other work or adjustments were done. Why is that? It's happened before to a few other airplanes. Why should a new valve job cause the engine to run hotter even though the EGT and mixture remain the same? Any bright ideas? Yes the engine is putting out more power, but is that really it? (One suggestion is that the bead blasted aluminum surface is now conducting heat better so the gauge is getting a more accurate reading---?)

Engine Numbers To Go

I sure wish I knew more about our VW engines. Nobody seems to have a good Horsepower--RPM--Torque curve chart that would let us get a good handle on the RPM range and load that we experience in the air. There are a few general rules that have emerged over the years that seem to apply equally well to our little VWs and certified engines. In most Continentals and Lycomings with a fixed pitch prop, a reduction of 10% from maximum RPM will equate to about 75% power at sea level. The O-200 is rated at 2750 RPM max., so reducing this by 10% gives about 2500 RPM which is pretty much 75% cruise for that engine at low altitude.

How does this apply to our VWs? It really depends on where you get your maximum RPM. My engine will turn at least 3600 straight and level in warm weather if I let it roll long enough and say nice things to it (and give it a carrot when the flight is over). 10% less would be about 3250 RPM for the 75% cruise at low altitude which does seem to be the case. I usually use 3100 to 3200 for my normal operating range. If you are running a Revmaster 2100 series you will find they red line the engine at 3200 (in many cases) which means that your 75% cruise would be at 2900 RPM which is substantially different from my 3200 RPM. That is quite a difference between the two in my book. John Monnett used to advocate a maximum level red line of 4000 RPM with his original airplanes with 1700 cc engines and a cruise as high as 3600, which sounds high these days but works right into the 10% rule. (It also explains the performance claims since the engine was putting out a fair amount of horses at those revs.)

Another way to go about this idea is to use the RPM cubed formula. If your engine turns 3400 RPM max level and you cruise at 3100 --- $3100 \div 3400 = .9118$ $\times .9118 \times .9118 = 75\%$ power. Or $2900 \div 3400 = .8530$ $\times .8530 \times .8530 = 62\%$ power for a lower cruise setting. This method is a bit more flexible and allows for power levels other than 75%.



Floyd Blaine of 1127 Taylor Ave.
Godfrey, IL 62035

Both of these methods are only good for low altitude work as stated earlier. We all know that the manufacturers rate their airplane for cruise speeds at 8000 ft. MSL where the engine can deliver 75% maximum power. In this case the engine would be turning close to it's maximum rated RPM (minus 100 to 200 in a VW), your cruise speed will be close to your maximum top speed and the fuel consumption is down substantially if properly leaned. Of course if the FAA had it's way a lot of us may never see 8000 feet again. But if you are to be fair to our Sonerails we should rate cruise the same way at 8000 feet. If you have nothing to do some beautiful summer day, try going up a little higher than normal to the nice cool air, set up a cruise and send me your numbers. Remember the airspeed will look anemic and need to be corrected to true airspeed.

SONERAI PARTS LIST UPDATE

For Sale

(Please let me know if the items are already sold to keep your phone from ringing)

Narco MK 12A to trade or sell for unit with glideslope -- Archie Frangoudis
162 Naticook Rd. Merrimack NH 03054
603-883-5800

1834 VW engine w/Posa carb, Slick mag, tuned exhaust, oil cooler, prop, spinner, Sonerai motor mount
R.E. Mitchell 8 Harbour Hts. Ln
St. Catharines, Ont. CANADA L2N 4K3
416-646-2440

Sonerai Wheels and brakes and axles/ Revmaster Acc. case w/starter, intake system Dick Morrow 418-24th Ave. Ct.
East Moline, IL 61244 309-755-1495

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

UltraCarb-- John Santonocito
28 Wetherstone Dr. W. Seneca NY 14224
716-674-7403

Sonerai II LT 1834 to part out
Ken Wasielek 29 W 153 Janet Ct
Naperville, IL 60565

Sonerai II 1700 N 13JS total 50 hrs
715-623-5366

Misc Sonerai parts from partially completed kit
Pete Palmi 312-882-0018
(weekends or from 7 to 9 PM)

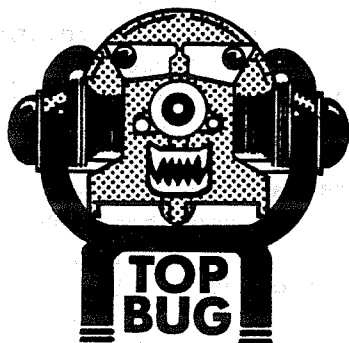
Great Plains Aircraft Supply Co. Inc., has the following parts in stock ready to ship.

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.

TOP BUG

Want the fastest, rompin', stompin' VW powered Sonerai in the county? Check out the new 2.6 Liter engine in the Great Plains booth at the EAA Convention. You will be looking at a pretty honest 90 horsepower at 3200 RPM. Included are hydraulic valve lifters, downward facing exhaust ports, a front mounted oil cooler to keep that cowl nice and low, an oil filter, and a mechanical fuel pump. I know we are not approved for supersonic flight, but it is nice to know you have the capability should the need arise.



GREAT PLAINS
AIRCRAFT SUPPLY CO. INC.
VW ENGINE CONVERSIONS

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

