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# SONERAI

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APR-MAY-JUN 94  
**NEWSLETTER**

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Quiz Time -- Which of the following is true?

- A. This Sonerai is on fire and going down.
- B. This Sonerai is in bad need of a ring job.
- C. Someone finally installed a Smoke system on one of those little VW powered airplanes.

.....See inside for details .....

Welcome to the April issue of the Sonerai Newsletter. We are putting it out a little early this year since Sun N Fun starts at the first part of the month for 1994. I won't be able to be there in person this year for family reasons, but I hope that one or two of you that do fly in are able to give the rest of us a write up on the adventures and misadventures of your trip. I can't even imagine a completely uneventful flight to that airshow from anywhere in the country.

The Sonerai Forum is still scheduled but you will have to check in Sport Aviation for the exact time and tent. We are planning to have a guest speaker there -- he's a new guy that seems to know a lot more about these airplanes than we do, so it might be worth your while. I'd like to say that we taught him all we know, but that wouldn't quite be true. Check it out.

The last I heard from Dean McGinnis, he was in the process of scheduling the Sonerai Dinner for about Wednesday night. This will be confirmed soon I'm sure, but as always check with the Great Plains booth ahead of time.

Looking ahead to the other big event on the fly-in calendar, we are confirmed for our Sonerai Forum on Thursday July 28th at 11:30 AM, so if you are already planning your time or flight, it is on the first day of the convention. We needed to move it up since we also moved the Sonerai Dinner to Saturday the 30th. The Dinner is not going to be at Butch's Anchor Inn, but instead at John Monnett's hanger on the field. We plan on having several of the Sonerai's there and enjoy the beautiful Oshkosh evening air. Details will be forthcoming. Also, the Sonerai Builder's Club will be meeting on Saturday the 30th on the back porch of Homebuilder's corner just as before.

## A letter from Ed Fisher

One of the topics of the Jan 94 Newsletter was "Landing Gear Directions" and I thought I'd comment since I experimented with this years ago. First of all, I did it with a Sonerai I, "Blueberry", which I built in '78 and during the re-build in 1988, decided to turn the gear around "backwards" to see what would happen. The main reason to do it was to see if lightening the static tailwheel weight would help in ground handling. Well, it did -- very much so. "Blueberry" rolled out straight and easier -- more like a Cassutt racer now than a Pitts or Mong that it felt like before. (Remember, this is a Sonerai I.)

An added benefit was that the relative angle of attack on the ground went up -- which may have resulted in a slower touch down speed. The downside of this is that the forward visibility suffered a bit.

The weight and balance change was nil, and the pitch stability remained the same. Our current Formula V champ, Brian Dempsey, has, I believe, his gear on backwards now too.

On the aircraft that I have designed, the Zippy Sport, Skylite and Micro Mong, my main tire contact point on the ground is at the furthest aft position possible, relative to ground C.G. This provides good straight rollouts even in mild crosswinds. I would rather have an airplane slightly tail light when applying brakes than to have it trying to swap ends at 40 mph on every landing.

Ed Fisher / Raceair  
2331 Dodgeville Rd.  
Rome, OH 44085

Ed's comments -- So there is nothing like trying an idea out rather than sitting at home at the computer. Ed Fisher's comments have to do with the phone calls and subsequent Newsletter article about "which way does the gear go?" and how a Sonerai II had it's weight and balance calculations confused by a backward gear mounting. Yes, you need to take the gear position into your calculations no matter which way you mount it, but according to Ed F. and some other people, it may improve your ground handling. However, Ed F. is an experienced Sonerai I pilot, not a first time builder and test pilot. Proceed with caution if you haven't done this sort of thing before.

## A Letter from Bill Ziegler

Would you believe a high wing Sonerai? Well, maybe. Enclosed please find two photos of an aircraft which I built several years ago, which consists of basically a shortened Sonerai II fuselage and a Smith Termite wing, 27 ft, other Sonerai parts, including complete landing gear, tank, tailwheel, motor mount and spinner. The rudder was slightly increased over plan size. Powered by a 1700 cc Custom Craft VW, top speed in excess of 85 mph and landing at approximately 35 mph, flies like a Cub.

I had originally built and flew a Smith Termite, which I sold to finance the Sonerai II, which proved to be a little too much for me to fly. I'm an old time Cub pilot, I liked the modern lines of the Sonerai and the gentle flying characteristics of the Termite, so combined them both. The results are what I named a "Poodle Pup". See the logo on the side of the fuselage.

The aircraft is presently for sale, having been dismantled, and stored for several years since I lost my medical. This has many useable Sonerai II parts, Priced at \$2500. I can supply further information for interested parties.

William Ziegler 2 Theresa Ann Ct.  
Albany, NY 12205 518-869-0137

Ed's comment -- Well, I had heard that this had been done and who are we to doubt the convertibility of the Sonerai aircraft. Some people will say "the best of both worlds" and others "the worst" but you can't say that this aircraft doesn't bring out the designer in us all. Turboprops anyone ???

## A letter from Dudley Fort

The value of our judgement is something we think about long after the near death incident is over. I examine and re-examine the near accident and try to find one flaw in my thought process that led me into the near disaster so that next time I can avoid the problem altogether. Usually, however, I start with the day of the problem and thus avoid any chance of finding the character flaw that led me into the incident in the first place. So if my reasoning that got me into the situation is bad then I have bad judgement and so on, if enough of my judgement calls are bad then I need to do something that does not require good judgement since I finally can admit to myself that I am incapable of good judgement.

I have always wanted to fly a Bendix racer since I first saw one forty years ago. The people who owned one, though, never offered me a chance until I flew with a friend in his Glasair. After that one flight, I was hooked. So last Fall I started calling around. \$40,000 was the cost of a Glasair. Then at one of our fly-in breakfasts I met someone with a Sonerai I. I really wanted to get into that plane and the price was right, but he assured me that I would not fit, so I started looking for a II L. Chris Russell had one up in Ohio, but someone had made a deposit on it so I kept looking around and calling Mike Killems in Lewisburg, TN. Mike said that he knew of a II L that was a beautiful plane he had seen for sale. The owner was going into the AG business. I called the future AG pilot and learned that the plane had been recovered and painted and was in EXCELLENT mechanical condition, but that someone was coming down to pick it up. However, there was no deposit and the first one with a check won the prize. At \$6400 how could I lose. Mike told me that he would give \$5000 for the new plane if I did not like it so the sticker loss was less than that on a new car and sight unseen I sent off a check. Buying the plane over the phone shows horrible judgement.

We went through quite an ordeal with overnight mail, etc. but the check got there and if the weather did not clear I could always go up there with a trailer and bring the ship home. However, it was

a 6 hour drive and a two hour flight.

Finally, the weather cleared and off we went for the 200 KM trip in a 235 Cherokee. 20 gallons later we arrived and the plane was probably the most beautiful ship I had ever seen. However, Jeff kept fooling with the gas cap. It is one of those rubber expandable things that Aircraft Spruce sell for \$17.00, but this one must have come with the 1985 plane and was as hard as a rock. There was a fold in the seam of the gas cap neck and the rubber would not expand to fill this space on this 25 degree day. Jeff told me that gas would spill out when I accelerated, but I was anxious to get home and didn't really believe him. Then came the hold-harmless paper and it was signed although I had not examined the plane and we both knew it. His parting instructions : takeoff and land 3 point and don't fly over 1.25 hours before refueling.

I had a Trimble GPS which I handed off I went. I have an L-19 so I thought I was used to a taildragger, but not this arrangement. On takeoff the plane veered everywhere until it came off the ground and then gas started pouring down into the front floor board. I was afraid to land knowing that I was going to ground loop when I did. I was going to fly back with my friend and he took off after me and lost sight of me at once and we had some radio contact thereafter but I had punched in M29 thinking it was Lexington which is M52 and when I arrived over M29 which was right on the course line home, I saw that it was the wrong airport and there were no fuel pumps around. Home was only 100 miles away and the fuel showed 1/2 tank so I thought I was in good shape. My friend had landed at Lexington, TN and I kept monitoring unicom and he finally called when I was 20 miles from home. He was much clearer than he had been in Memphis even though he was 100 miles away now. So he started home. Then I looked up and guess what? The fuel gauge was empty. So I punched in the nearest airport. Fayetteville was 10 miles south and home was 20 miles east. I knew that if I landed away from home and ground looped it would take forever to get the wings off and get home and so I opted for home.

Thinking that I had 3 gallons left I continued on from one big field to the next. Those last 10 miles really took a lot out of me. If you have never

experienced it, then you have good judgement.

I called in low on fuel and the engine never missed a beat, but those few minutes as I neared the airport are still vivid in my mind. As I entered left base I saw the local Taylorcraft, flying off it's break-in hours, on a long final at 40 mph. I had flown home at 110 kts and thought I was on fumes as I circled and watched the Taylorcraft inch its way toward the runway. Full of fuel and with no radio, he touched down on the numbers and then crept the 2000 feet to the turnoff. As he cleared the active I came in hotter than a Banshee Indian. I came over the numbers at 100 and finally touched down at 70 and wheel landed and turned off at the second intersection. I think the brake discs were red when I pulled up to the gas pump. I had 3 1/2 inches of fuel left in the tank and 5 gallons put it at 8 1/2 inches. The top is 11 1/2 inches. So I must have had 3.5 gallons left, right?

So my friend finally arrived and he was still scared to death because I had not met him in Lexington. He had called the home base on his mobile phone and they had not heard from me yet. We put 40 gallons of car gas in his plane and he was off to work. I had burned 8 gallons which cost \$16.00 so there really isn't that much fuel price economy in the Sonerai since car gas is still \$1.00 a gallon. He can haul four people and all the luggage you can put in the plane and still be under gross. The Cherokee 235 is \$24,000 to \$35,000 depending on the radio and engine time, but it is not as much fun to fly as the Sonerai.

So I put the plane in the hanger and used J & B Aluminum weld to seal the crease in the welded filler neck and ordered a gas cap which fixed the fuel leaking problem. The tail wheel had compression springs which were very loose. I put turn buckles on these and suddenly I had tail wheel control. On take-off the engine started backfiring. I should have aborted the flight but was scared of ground looping and pushed it on around the pattern and landed. I called Jeff who said that I had let the Posa foul a plug with prolonged rich idle, so

I leaned it out before takeoff and cleared the engine then full rich and full throttle and it coughed once but smoothed out and I was off and running. Eight miles away over my house the engine coughed again and lost power. By reducing power and flying at 2500 rpm I nursed it from one field to the next back to the airport where someone asked me why I had not landed at the mountain top airport one mile from my house. Answer, I was so scared that I never thought of that airport. It might as well just not have been there. I used to fly out of that airport all the time too!

Mike came over and helped me with folding wings. After we got the wedged in taper pins out the wings pulled out and folded back just like the book said they should. The answer, when you buy a Sonerai, trailer it home and get several hours of taxi time before flying it and then only fly on a clear day with a steady wind.

Dudley Fort 171 Victoria Ln  
Saint Andrews, TN 37372

Ed's comments -- You are certainly not the first one to go through this scenario Dudley. And not the first one to reach the same conclusion. I have only flown three different Sonerai II's and taxied around a few more, but they all felt different than my own. There aren't many certified aircraft (if any) that can prepare you for the thrill of a homebuilt.

As for the backfiring or engine miss, yes, it can be a loaded plug from your rich Posa, but don't forget the fuel siphoning problems we have had from an over full tank on takeoff, and the miss and eventual backfiring a Slick magneto can provide. And then I had my deteriorating spark plugs with their miss on takeoff for a year or two. If there is anything else I can think of, I'll let you know. Welcome to the world of Sonerai flying.



## TAILWHEEL STEERING COMMENTS

*By Fred Keip*

I'd like to add a few comments about the proper set up and use of the tailwheel steering pushrod on the Sonerai. I've used some variation of the push rod since first flight, although I did try tiller cables for a short period of time, but didn't like the loss of steering sensitivity. I also tried compression springs once, but hated them. One trip down the taxiway and back was all the further I went. The airplane just wouldn't go where I wanted when I wanted.

Anyway, back to the steering rod. My initial push rod (actually push rods, since I broke a few) were made from rod stock bent in sort of a stretched "Z" shape. The ends were threaded to accept rod end bearings which were bolted to the rudder horn and tailwheel swivel. This worked fairly well, but had two faults. First, because of the vertical offset between the rudder horn and the swivel, an inherent bending moment was placed on the threads cut on the ends of the rod, and they would eventually fatigue and fail. Secondly, if the rudder was pushed left to the stop and the tailwheel was side loaded to the left, it would pop over center. Part of this was due to the flexibility of the "Z" shaped rod and part was due to the geometry of the rod and swivel arm. In an effort to maximize tailwheel swivel travel, when the rudder was at the left stop, the three pivot points at the rudder horn, the swivel horn, and the swivel pivot were nearly in a straight line. Any side load to the left would force the swivel arm over center.

My solution to these problems is shown in the photo. To eliminate the bending problem, I simply made the push rod straight. It is made from 3/8"x.035" wall 4130 tubing with AN490HT6P threaded rod ends welded in. These rod ends have rolled threads which have much higher fatigue resistance than the cut threads I was using before. To provide proper attachment geometry, a piece of 1/4" bushing stock was welded into the rudder horn at an angle, and the tailwheel swivel arm was twisted so that all were aligned when the rudder was centered. It turned out that the geometry of the system when the rudder was at the left stop was not as close to a straight line, plus the twist in the swivel arm makes it almost impossible to pop over center.

So far I'm pleased with this set up. There have been no rod failures and it won't go over center.



## Sonerai Smoke

Thanks for the inquiry about my smoke system. I wasn't expecting any interest or thought of putting an article in the Newsletter.

I don't believe that a smoke system will be very effective unless a cross-over exhaust is used, ( 4 into 1). I helped a friend build an identical system for his Luscombe which has dual exhaust with the exhaust ports being about 18" apart. The smoke output from the Luscombe is estimated to be the same as the Sonerai but the Luscombe's smoke is dispersed in a much wider path so the visual effect is greatly reduced. But, is still looks good.

I mounted my smoke tank on top of the front seat pan and it holds 3.3 gal. I only fill it to 3 gallons which gives me about 8.5 minutes burn ( .35 gal/min). When deciding on the exterior size of the smoke tank one must remember to take into account the internal dimensions need to hold the desired amount of smoke oil (231 cubic inches per gallon). I built my tank out of composites for simplicity and lightness.

I used an automotive 12 volt fuel pump that is rated at 20 to 30 gal/minute at 5 to 9 psi. The pump is driven off a 12 volt 6 amp-hr battery that is mounted behind the pilot seat on a "hat rack". The toggle switch is mounted in the rear control stick and has an inline fuse to the battery.

Caution should be taken if one decides to use the smoke tank as an alternate fuel tank. When switching back and forth the tank must be clean of fuel or oil. I know of one case where a pilot did not clean all the fuel out of his smoke/ferry tank and burned the fabric off the belly of his airplane. A close friend of mine who saw the incident said "it was an amazing sight!!".

Michael Smith P.O. Box 800  
Starkville, MS 39759

PS -- Ed, this smoke system might tempt some pilots into doing stupid things like untrained aerobatics or dusting their

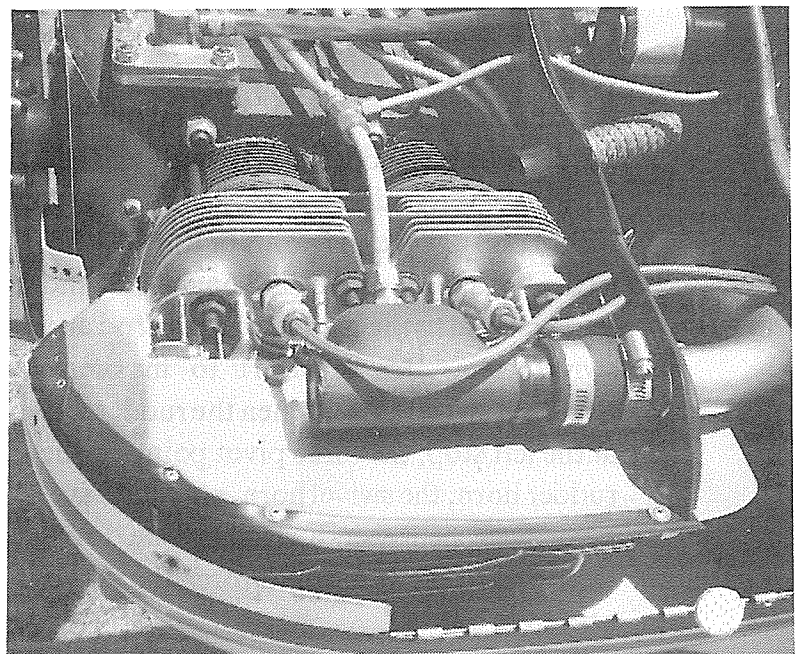
friends. Professionalism MUST be kept in mind. I'm concerned about this and the liability of the installation. Think about it.

Ed's comments -- Mike's PS just above should be heeded, and I think about it most every day in my line of work. There have been many changes to our Sonerai's detailed in the Sonerai Newsletter these past 6 years. This one may be a bit more dramatic than some of the others, and lead the rare individual to foolishness, but I'm afraid that the pure joy of flying one of these little airplanes does that already.

## Formula V for 1994

The Formula V flyers will be in attendance at Sun N Fun this year. As a matter of fact, they have scheduled their Annual Business Meeting for Monday Apr.11 at the Aviation Career Academy (the old Piper building) starting at 9:30 AM. I believe it would be prudent to contact either Jim Vliet or Charlie Terry at the show to get any further details.

The Monday evening program at Sun N Fun will be about air racing and Formula V will be making some announcements about their upcoming schedule for 1994.



## A letter from Elliot Willoughby

Happy New Year! This will be a good year - especially for us Samurai types. I feel sure of it - especially since I'm looking forward to flying mine this Spring. As soon as I get my wings sanded and painted, I'll send some scoop for the "Inquirer". (Trusting, of course, that it won't take another year just to sand the glaze over my rivets.

I had great ambitions for my fuel system to use all AN hardware and 3/8" aluminum tubing. After spending unnecessary funds and time, I suddenly realized that one should follow directions and use the plastic surgical tubing and hardware store fittings ol' John Monnett prescribed. This was after the light went on in the warped crevices of my mind that vibration would certainly be a fatiguing factor in our VW powered planes. I'm using a stainless firewall with right angles for stabilizing it, but even so, it is apparent to those of great acumen than me that flexible tubing is, the overall, a safer bet.

So, true to form, I had to retrace my steps and reinstall what should have been there the first time. (This was an achievement, I've built six Sonerai's so far, just trying to get it right once!)

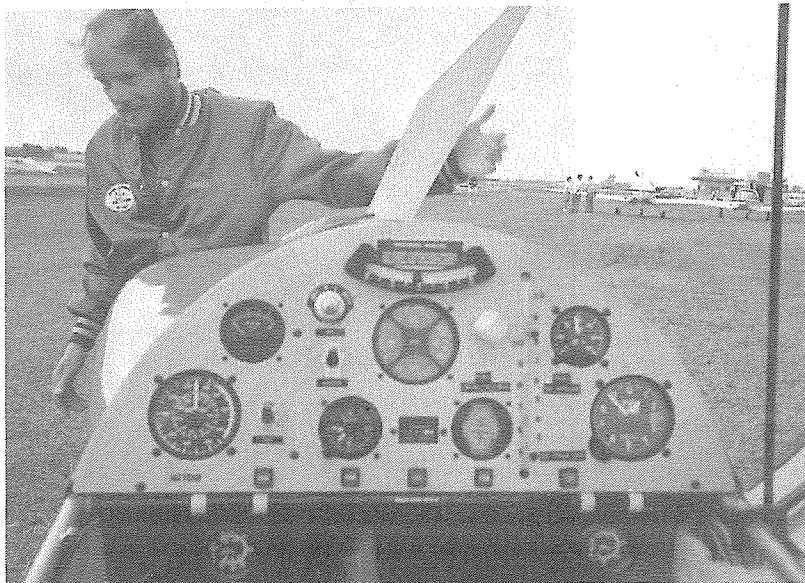
I don't know what other people are using for oil coolers or how or where they are remotely mounted on single place Sonerai's. The space under the cowling is tight. I have a Corvair Spyder oil cooler (12 plate style made by Harrison) mounted on standoffs on the firewall, with a plenum over the top to force air from a 2" hose through it. I think it will do a very good job- it certainly did on the Corvair. If it doesn't work well, I'll probably use the VW oil cooler. Some builders have used automatic transmission oil coolers as advertised in J.C. Whitney, or heater cores from autos. Since oil cooling is so critical to those of us that fly behind VW's in tight cowlings, I think it would be a good thing.

Some time ago, I think you ran an article on making an adaptor to mount the VW oil cooler on top of the engine to fit under single place Sonerai's - I think Fred Keip designed it and had plans available and also was selling units. Perhaps it would be worthwhile to repeat, and ask others what setup they are using.

In this regard, (cooling) in Firewall Forward by Tony Bingelis, he shows a cowl vent control made from a VW temp bellows with a mechanical override. I plan on using this as soon as I can obtain some info from the other Formula V guys who have used controllable vents. Seems like it would be good for oil temp control if going X-C at higher altitudes, and in the Northern Climates. I don't really know if this is a concern to many or not. On the other hand, it may not be a concern as most talk and articles I've encountered concern themselves with 220 F and up oil temps and hot heads.

Well, I've gotten carried away - sorry. I guess I get carried away about the finest little plane design for the bucks.

Elliot Willoughby N 12XC  
3311 Mc Adams Ct. Louisville, KY 40299



Dennis Brannon leaving Oshkosh.  
Nice panel, lots of clocks.

Some time ago, Mark Elya told me about a prop balancer that he had built. With it, you can balance the prop and the spinner together.

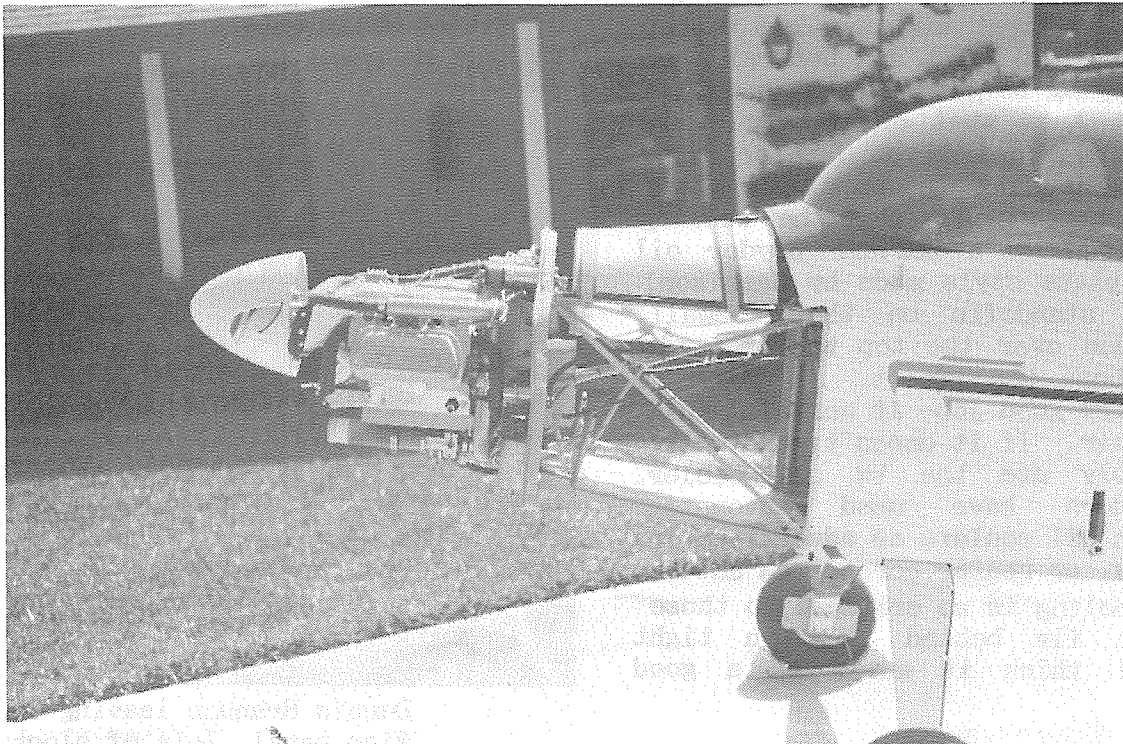
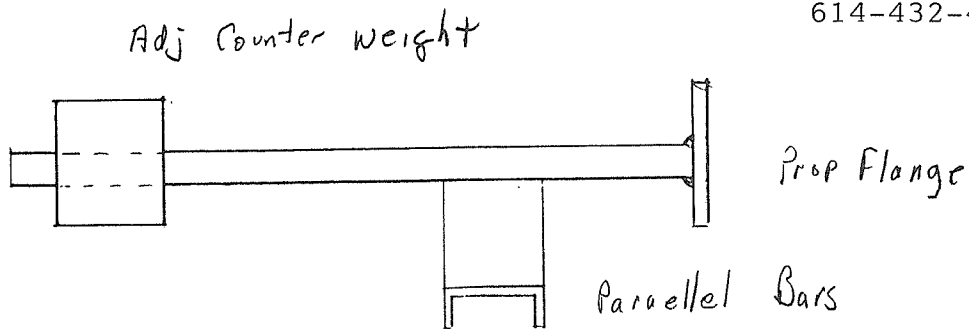
I told Mark he should write an article on it, but he is too shy so I am doing it for him.

The drawing should be self-explanatory, but I will give a short synopsis:

The unit is a prop flange welded to a shaft. The prop and the spinner are bolted to the flange and then set on parallel bars and the prop is allowed to roll to the heavy side. You can then add strips of metal to the spinner bulk head. You should achieve balance that will let the prop stand in any position.

I borrowed Mark's and balanced my prop. There was a very noticeable difference. Since then, I had a machinist friend build one for me. If you want to borrow it, just give me a call.

Keith Embree  
9250 Cadiz Road  
Cambridge, Ohio 43725  
614-432-4123 / 614-432-2368





\*\*\*\*\* \*\* WANT ADS \*\* \*\*\*\*\*

For Sale -- HAPI 55 hp 70 hr. TT POSA, hyd. lifters, starter, stub exh, dual elec. ign, Sterba prop, oil press & temp tach. \$2600 or best offer.

John Mitchell 402 S. Hickory  
Shannon, IL 61078

Wanted -- Right wing for Son. II L and landing gear for Son II.  
Jerry Van Nort 719-738-1290 day  
719-742-3746 nite

For Sale -- Sonerai II midwing w/ 1700 Monnett conv. needing to be rebuilt. Aircraft partially disassembled. \$6000.  
Tom Freeman 708-526-3180

Wanted -- 5/8" main gear, S-wing kit, taper pins, fabric, canopy, interior kit, wheel pants for 5.00 X 5 and 11.4 x 5 Lamb, rubber donuts for tri-gear, rivets and misc. hardware.  
Darwin Mc Kinney 610 S. 318th Pl.  
Federal Way, WA 98003 206-839-6531

Wanted -- Clecoc and Rib Forms used to build Sonerai wings.  
Walt Augustine 6948 Neptune Ct.  
New Orleans, LA 70126 504-245-8940

For Sale -- Early Monnett engine mount casting w/ bushings and 4016 Slick mag unused \$300.00 O.B.O. Also -- V-Witt extension casting (Larson) machined per Wittman's drawings, Best Offer.  
Bill Spellman 1408 Josephine  
Waukesha, WI 53186 414-544-6252

Wanted -- Sonerai IIL plans. My set #1493 and photo documentation were stolen! Anyone seeing plans or photos of N19JK please contact :  
Joe Koch 23 Robinhood Dr.  
Fallington, PA 19054 215-736-2247

For Sale -- Sonerai I fuselage complete from seat aft including tail feathers \$200.00 + ship or u-pick-up. TPX Terra handheld w/charger \$250.00 Ray Jeff Loran \$200.00 A/S \$75.00 Alt. \$75.00 ROC \$50 009 Dist. w/ 90 cap \$30.00  
Mike Kellems 341 Ellington Pkwy Apt D214  
Lewisburg, TN 37091

Wanted -- Regulator/rectifier for 20 amp alternator (HAPI 1834) as used with Syncro stator p/n 21800  
Ken Christian 4 Lakewood AC  
Moberly, MO 65270-9783 816-263-7937

Wanted -- Variety of good used or new Sonerai parts: cowl, canopy, 5/8" landing gear, spinner, S wing kit. Also interested in a Son IIL project.  
Mike -- 219-534-2900

For Sale -- Sonerai II LT, Great Plains 2180 (brand new), Sterba prop, hydraulic brakes, all work is complete except minor cosmetics, final rigging & waiting for warm weather to cover & paint. Work began 9/92 Owner actively working on project. Great project for quick finish.  
501-968-2794 or 501-964-5384

Wanted -- Sonerai II Builder looking for Engine and airframe parts  
Martin Roy 1342 Magnolia Ave.  
Escondido, CA 92027 619-743-2144

For Sale -- Sonerai IIL 1700 VW, 1000 TT 100 STOH, new ICOM A21, Intercom, new interior, excellent paint, 110 mph on 3.5 gph \$8000 Runs Flys and looks great!  
Steve 605-336-7791

For Sale -- Sonerai IIL 250 hrs. 2275 VW Sterba prop, Loran Days 708-837-8130  
Ev. 708-639-0246 \$5600.00

Wanted -- Sonerai parts  
John Bauer 14601 SW 272 St.  
Naranja, FL 33032 658-8357 beeper

For Sale -- partially complete Son II LS on gear with hardware. \$ 800.  
Bob Maassel 219-485-8755 Ft. Wayne, IN

For Sale -- Smith Miniplane 40 TT 0-290 40 SMOH Stretched-widened, txp, enc, com elt, room for 6'2" 200+lb pilot \$15,000  
Robert Wray 1806 Kansas Ave.  
San Angelo, TX 76904 915-949-5813

For Sale -- Sonerai I project, airframe professionally welded, wings done w/cowl, bubble, tail, gear, wheels, brakes, tank, engine mount for A-65. \$2000 With 0 time A-65 \$6000.  
Ann Harner 706 N. Green Rd.  
Goshen, IN 219-533-7325

For Sale -- Sonerai II L 2180 Great Plains w/ Force 1 hub. 250 TT 110 eng. Cleveland brakes and wing tanks.  
Bob Brown 720 Woods Creek Ln.  
Algonquin, IL 60102 708-854-3250

Wanted -- set of hydraulic brakes for Sonerai (Energetics ?)  
Bob Baird 509-965-9270

For Sale -- Sonerai IIL w/spar mod. 5/8" gear, hyd. toe brakes, low time Aero-Vee 2020 w/all new cyls, pistons, heads. Ultra-carb, Terra 960 nav/com. A&P built, new annual. \$8900.00  
Also --- Dual Ignition 92 MM heads, 92 MM cyls. and pistons. All have Very Low time for \$195.00  
Russ Larson Box 124 Somers, MT 59932  
406-859-3304

For Sale -- 1991 Sonerai II VW 2074 TTAE 75 hrs \$7000 Call after 7 PM  
404-296-0937 Buying engine for Ercoupe

Wanted -- Son II project or completed aircraft. Preferred to have it 70-80% completed. Dave Valaer 2833 Summit St  
Souix City, IA 51104 712-277-2823

ET (GA)



# Sonerai News

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SONERAI NEWSLETTER

C/O Ed Sterba  
412 S. 5th  
Delavan, WI 53115  
414-728-1367

**To:**

FRED KEIF PD 94  
11428 SIX MILE RD  
FRANKSVILLE WI 53126