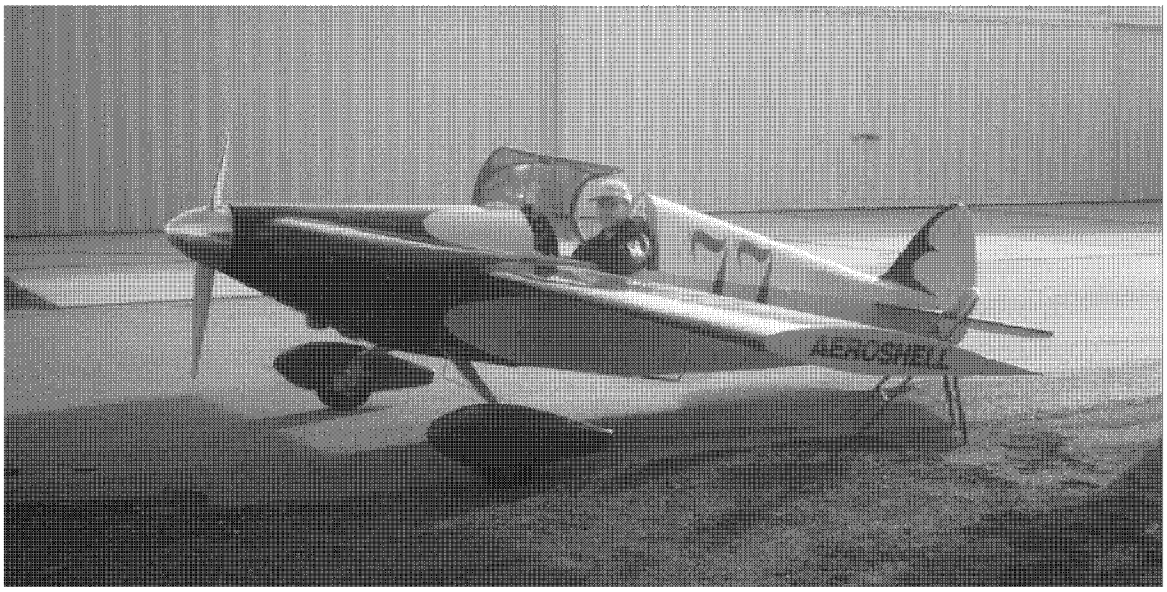
SONERAI NEWSLETTER

APRIL-MAY-JUNE 2003

FRED KEIP, *EDITOR/PUBLISHER*
11428 WEST SIX MILE RD.
FRANKSVILLE, WI 53126

PHONE: 262-835-7714
(AFTER 6PM CDT)
EMAIL: fredkeip@aol.com



ERIC "BART" SIMPSON'S SONERAI I

Mike Hedglin sent me this photo a couple of months ago, asking me to help him sell the airplane. It looked so nice that I had to put it on the cover. It is yellow with black trim, has an 1835 VW with dual ignition and a ForceOne prop hub, Sterba prop, AeroConversions carb, and a Grove landing gear. (As you can see, Mike sold it to Eric, and it's now in Texas.)

AH, SPRINGTIME…

As I write this during the last week in March, I believe (although I'm not absolutely sure yet) that spring is finally on its way. What little bit of snow we got this year is gone, and the ground is pretty much thawed, so hopefully the grass will start turning green again, and I won't have to fly the Sonerai while wearing four layers of clothing.

Another true sign of spring is the start of the Sun-N-Fun Fly-In in Lakeland, FL. It runs from Wednesday, April 2, through Tuesday, April 8, so it should be in full swing by the time you get this. I hope that some you get to go and enjoy it, as this will be the first year in about seven that I won't be there. As I explained earlier, having a new job and very limited vacation time doesn't allow me to come. (The disgusting part is that I had a free ride down in the back of a Decathlon, again, and I could have gotten an airline flight home from Tampa for $92. Arrrgh…)

For those of you who are going, you might want to check out the forum and workshop areas. Steve Bennett will be reprising his VW engine assembly workshop at 1 PM on Thursday through Sunday. Keith Browne will be doing the teardown each day at 9 AM. On Wednesday, April 2, at Noon, Steve will be participating in the "Auto Engines in

Experimental Aircraft" forum, and on Thursday, April 3, he's giving his "VW Engine Conversions" forum. Unfortunately, there won't be a Sonerai Builder's Forum.

I've gotten some indications that there will be a Sonerai or two there, weather permitting, so search them out, and keep their owners company. I'll be thinking of all of you lucky folks while I'm slaving away.

SONERAI NEWS

- Sonerai Picnic at OSH: We are going to try something a little different this year at Oshkosh. We are going to have our own Sonerai Picnic. Jeff Lange, a Sonerai I builder/owner, who lives in Oshkosh, has graciously offered the use of his hangar on the NE side of Wittman Field (it's right across the taxiway from the Sonex hangar) for a gathering of Sonerai Folk. We've tentatively picked the evening of Thursday, July 31. So, put it on your schedule, and we'll have more info in the next issue.
- Sonerai Wing Construction Manual: It is now available. There are 18 pages of text, 85 photographs, and 12 drawings, as well as a complete materials and a tools list. If you would like your own personal copy, sent me cash, check, or money order for $25.00. Postage is included. (The manual is now included with the plans, so you new plans holders already have it.)
- Back Issues: **Sonerai Newsletter** back issues are available in two forms. A 3-1/2" diskette which contains 210 of the newsletter articles published by Ed Sterba from 1987 through 1995 is available for a mere $10.00. There are also hardcopy back issues for $3.50 each. I have the last two issues from 1994, and all of the issues from 1995, 1996, 1997, 1998, 1999, 2000, 2001 and 2002. If you want any of the above, send me a note requesting the ones you want and a check for the correct amount. The postage is included.

FIRST FLIGHT REPORT By Ivan Martinez

Ivan's been picking my brains for several years to get the information he needed to help him finish his highly-modified IILS. So, I was pleased to get the following report. Congratulations, Ivan.

Fred.....After more than 15 years of building, N567JM has flown for the first time. The first 10 years of building I didn't work very hard on my plane...but the last 5 years work was much more intense. I know this isn't news to you... but design changes cause a domino effect of EXTRA WORK. The magnitude of the extra work is directly proportional to the type of the change. The last 2 years were spent at the "I'm almost finished" phase of the project. I had a severe case of "WHY CAN'T I GET THIS THING DONE ITIS?" this summer. My nerves were in bad shape and I had to have a stern talk with myself, or I would have snapped. I told myself "it will be done when it's done". I had to make a list of what needed to be done, and do it. Lo and behold, one day my list was EMPTY. The sign-off date was Oct 29, '02 and first flight was Jan 3, '03.

Here is some information on my plane. Sonerai IILS / Riblett GA37U-A415 airfoil with a chord of 55" / wing moved forward 2" / 12" wing tips (20' wing span) / Continental A65-8 engine / Cleveland brakes with 5 X 5:00 tires and toe brakes / all dual controls / Skybolt canopy / horizontal stabilizer raised 6" / tail feathers have symmetrical airfoil shape / rear gas tank 6 gal (with electric transfer pump) / 2 RC 8 Amp batteries (removable) / Sterba 58X63" dia prop / 648 lb. empty weight & 638 lb empty weight without batteries. The first flight was uneventful and second flight the same. The plane is very stable in all attitudes and not overly sensitive. The most important thing learned from first flight was I AM NOT AFRAID TO FLY MY SONERAI. I only have 1 hour on it so far...here are some preliminary numbers: 80MPH @ 1400RPM / 120MPH @ 2300RPM / 135MPH @ 2400RPM. Climb numbers have been hard for me to establish (novice Sonerai pilot) but it climbs well. With full stick back the wings bobble right/left but it won't stall...It mushes down. Pictures to follow.

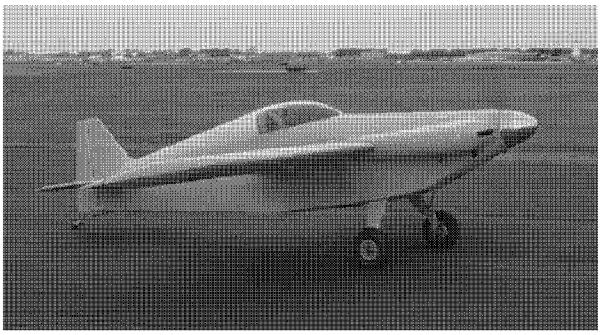
Ivan C. Martinez
Sugarland, TX
mrmarbleman@mindspring.com

JEFF'S FIRST FLIGHT by Jeff Lange

When Jeff flew his Sonerai I for the first time on March 1, he posted the following on the Yahoo Sonerai Group site. He's letting me reprint it here for everyone to read. Congratulations, Jeff.

The wind was 210@8. I went out on runway 18 and did two full-length 55mph taxi runs to get warmed up. Funny thing was that the taxi tests were harder than the takeoff or landing. After that I went to runway 22, which is only 3500' long and about 75' wide. I did the same run down that

runway to pick an abort location. There were no more excuses available, other than being scared. Making the radio call to take off was more frightening than the rest of the flight.



Jeff's Sonerai I

I advanced the throttle partially to get the tail up, and went to full after it was headed down the runway nice and straight. When I felt it start to hop around like it had before on the taxi tests, I let it accelerate a bit longer, and then gently pulled a bit on the stick. It lifted off right away so I leveled in ground effect till I reached 110, and started the climb. I was climbing quickly, but the altimeter and VSI were not functioning. The altimeter said 0 and the VSI said I was descending at 1500 fpm. When I reached about 500ft, I reduced the power to 25" and climbed to 3K. CHT was about 300 on the hottest cylinder. Oil temp stabilized at about 190 with the cooler fully blocked off. Oil pressure was generally about 40 psi.

I was expecting the airspeed to read higher than it did with the faulty static system, but it seemed within 10 mph or so. I never did level off since I could not see my GPS without looking down. The GPS said top speed was 139. I never exceeded 3K rpm accept for the takeoff. I generally kept the power around 23" after the initial climb to 3K. The winds aloft were supposed to be 210@12 at both 3 and 6K feet. The top speed was recorded when I was going south I think.

I flew the pattern while climbing, and performed a 360 to the left and right at about 20 degrees of bank. It felt fine, so I did not bother to waste any more time doing turns.

After that I proceeded to 5K feet. It did not take long since I had been climbing the entire time and was already over 4K feet. Upon reaching 5K, I reduced the power and slowed it down to about 45-50mph IAS until it started to show signs of mushing. I regained flying speed, and looked out over my left wing but my workbench had been replaced with about 30 miles of the countryside. What a great feeling.

I descended to pattern altitude, got a clearance to land, and headed for runway 18 to land. I figured if the Concorde could land on it, so could I. I came over the numbers at about 110... too hot, but who cares when you have 8000' to play with. I wanted to carry plenty of speed and altitude just in case. The slight crosswind proved to be no factor. I set it down on its wheels, made sure it was going straight, and pulled the power all of the way out. I coasted till I could not keep the tail up, and then held it on the ground. I was off at alpha 4, which consequently is about 4000' of runway.

Visibility over the nose was never a factor accept in the initial part of the takeoff roll. The wheel landing was planned so I would not have to deal with the nose in my way during landing. It was pleasantly sensitive in all axes with superb harmony between them. Its responsiveness makes me loath the spam cans even more. The trim seemed right on for roll and yaw. It was difficult to tell if the pitch trim was OK since I never got it to a cruise speed straight and level. It required a bit of back-pressure throughout the flight.

It was 23 degrees F with sun and a bit of haze. My left hand got cold because the friction lock on the quad was not tight enough to hold the throttle in place. I had to hold it the whole time. The Aerocarb worked flawlessly but has a tendency to suck the slide closed without the friction lock. My tootsies got a bit cold but other than that I was fine.

The tower here in Oshkosh was very accommodating. I told the controller what I wanted to do, and she approved it. I had called her on the phone prior to the flight and explained my flight plan and intentions. I called her every 5 minutes or so to let her know where I was and that all was going as planned.

It did feel like a hotrod. It handles like I was hoping it would 3 years ago when I decided to build it. I am going to try again on Monday weather permitting.

As a note to those considering the Sonerai, I was just getting used to flying a Cessna 120 when I started to build it. I had about 50 hours of tail wheel time or so. If this is the kind of airplane that you want, go for it. You have plenty of time to get some experience while building it. Today's flight gives me a total of 63 hours of tailwheel time.

Jeff Lange
Oshkosh, WI
jeff@sonic-art.net

ANOTHER OIL STORY by Tommy Warren

The first time I started the engine in my 1835 powered Sonerai I it leaked oil… Grrrr. An oil leak inside of a cowling can be hard to find since it seems to blow around everywhere and a little bit of oil can look like a gusher. At first it seemed to be coming from somewhere around the Force One prop hub or the oil pump cover but that was ruled out by tying thin strips of rag around the parts and after some flying time they were still dry. I finally decided to degrease everything firewall forward and, without cowling, run the engine for about a minute then, after shut down, start looking for oil. Sure enough there was a bit of oil starting to run down the back of the engine case but it was hard to tell if it was from the cam plug or rear main seal since the Monnett X casting was partially blocking my view, even using a mirror. After a few phone calls, it was decided to apply a thin patch over the cam plug using JB Weld…. no help…but now I had the culprit, the rear main seal must be it. I finally completed the Phase I flight tests to my satisfaction and decided it was time to bite the bullet, quit flying, remove the engine and tear into the back of it. Besides, it was wintertime and I wanted to be ready to fly, problem free, in the spring. This time it's Brrrr… but at least I was working in my hanger.

After removing the engine, mag., X casting, and mag. coupling, I realized the gasket that is supposed to fit between the back of the crank and the flywheel/mag coupling was nowhere to be seen! I have found the enemy and it's, er, uh, … ME!!! Since I'm not a VW guru, I decided I'd better do a little homework about why leaving out that gasket would cause the oil to get past the crank, past the rear main seal and all over my engine, firewall, and the belly of N50TW. Inquisitive minds need to know ☺

Note: I understand some stock flywheels are machined to accept an o-ring in lieu of the gasket but mine required the gasket.

This is how the oil system works at the #1 (rear) main bearing: Oil coming from the #1 main bearing is pushed out around the front and rear flanges of the bearing. Oil from the rear of the bearing is returned to the sump via a small 1/16" square hole located just behind the bottom of the oil seal at the seam of the case halves. Be sure not to get any adhesive in that hole when the case halves are assembled or the oil will look for someplace else to go!

It is recommended, but not mandatory, to use a light coat of Permatex or Locktite 518 around the perimeter of the seal before installation. The inner portion of the seal should receive a light film of oil or white lube before final assembly in order to assure a good oil seal against the flywheel. In my case I don't have a flywheel but I do have a mag coupling which is nothing more than a specially machined steel coupling, which bolts to the rear of the crankshaft and has tangs to accept the phenolic mag coupling. Be sure to have a snug fit between coupling outer circumference and the inner surface of the rear seal itself, or oil will leak here.

About the Oil Leak……

I feel the area around the rear of the crank and the front of the flywheel (or mag coupling) is not very well explained in the various texts (maybe because most people insert the gasket the first time) but I find it interesting anyway. Oil from the #1 main bearing accumulates in this area until it can find that hole in the case (mentioned above) to escape back into the sump. However, the flat surfaces where the flywheel bolts to the crank including the dowels are bathed in the escaping oil from this #1 main bearing. In order to seal it off a gasket is required. Two are provided (for the 4 dowel crank) in the gasket set, one paper, the other is metal and both are different thickness. I used the paper gasket. Be sure to apply a light amount of Permatex to both sides of the gasket. This will seal off the area around the dowels that align the crank to the flywheel/mag coupling. Don't forget, using MEK or Acetone to thoroughly clean all the oil from metal surfaces that will come in contact with the Permatex.

I originally set my endplay using the shims provided but neglected to include the paper gasket. So I had to recalculate my endplay to include the thickness of the gasket. I used a dial indicator at the flywheel hub/mag coupling to recheck the endplay. The additional thickness of the new gasket required an adjustment of the endplay shims to retain the .004" - .008" play required. I set mine at .004"

Happiness is a dry engine ☺.

Tommy Warren
Hartwell, GA
mtnest@hartemc.net

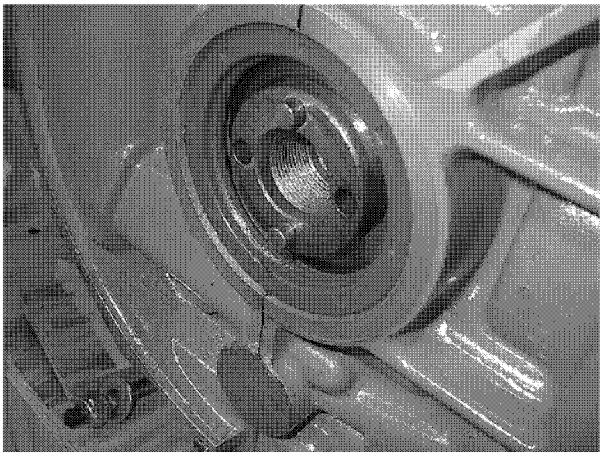


Figure 1 – End of Crankshaft and Rear Main Seal
(Note the JB Weld on the cam plug)

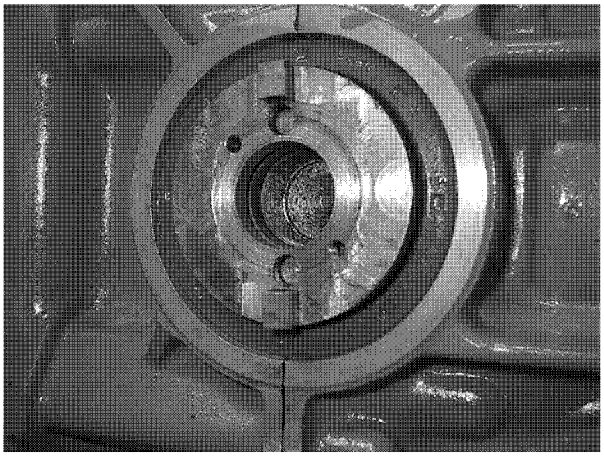


Figure 4 – Magneto Drive Installed

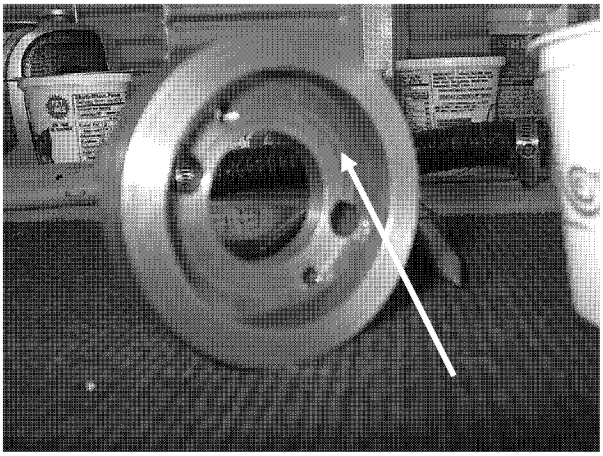


Figure 2 – Magneto Drive Gasket Face

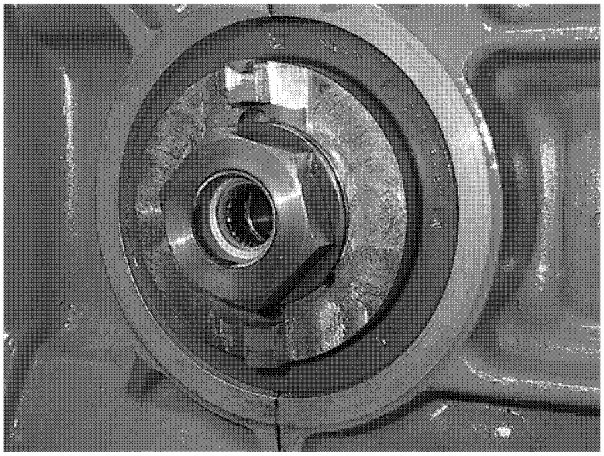


Figure 5 – Gland Nut Installed

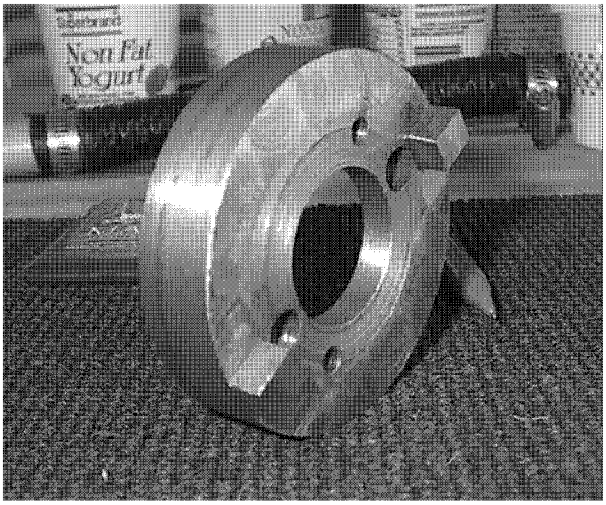


Figure 3 – Magneto Drive Rear Face

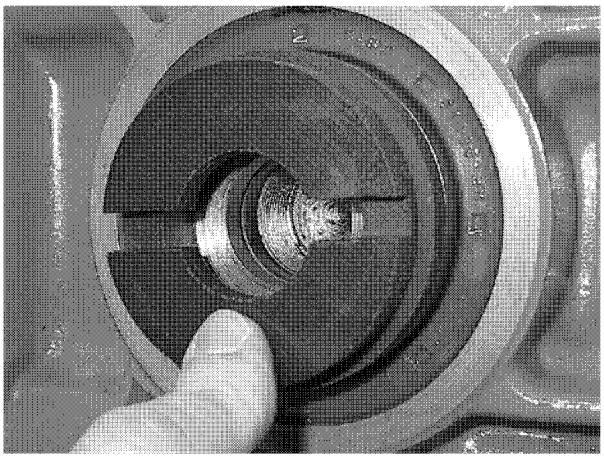


Figure 6 – Magneto Drive Coupling Installed

KEEPING YOUR BELLY CLEAN

Jerry Gore from Hendersonville, NC dropped me a note along with his subscription renewal, and asked: "I talked with you at your airplane at Oshkosh last year, and liked your oil recovery system. Why don't you include a photo and a simple diagram of how you did this? All VW Sonerai people would like the information." OK, Jerry here goes:

One of the things you'll find out about the VW engine is that the little bugger just loves to throw oil out of the breather when you put it on the generator tower mounting pad. (You know, the big hole on the top of the case, just to the right of the engine centerline when you're standing in front of the prop.) As it turns out, this convenient breather point is right over the top of the crank/cam gear assembly, and these gears like to throw a lot of oil around.

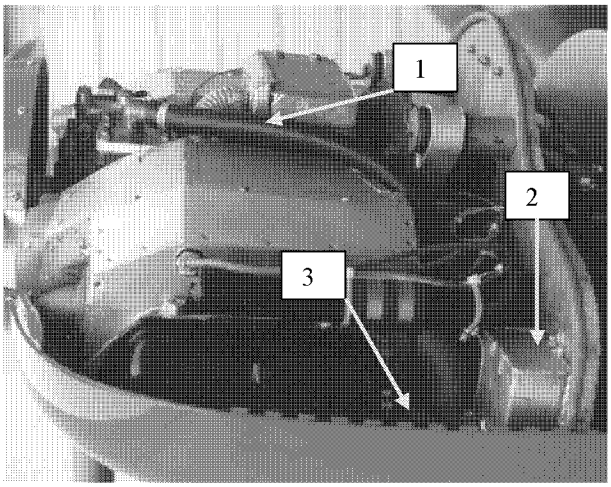
When I first started flying my airplane, it had a simple crankcase breather that consisted of a hose from the engine down to the bottom of the firewall. Needless to say, the belly got oily fairly quickly. This, of course, went against my grain, since I think the oil does a much better job of lubricating and cooling the engine when it stays in the engine. Something had to be done.

That something is the oil separator that you see in the photo and the attached drawing. The concept is pretty simple: It is a box that is plugged into the breather line to provide a plenum that allows the oil that is entrained in the breather air a place to settle out, then flow back to the engine where it belongs. I have it mounted on the LH side of the firewall. The breather line comes from the engine and connects to the top port of the separator. The bottom port is connected to a tube that extends to the bottom of the firewall. I use ¾" hoses for my connections, but ½" or 5/8" will work, too. A ¼" drain-back hose connects the separator to the LH valve cover. I use stock steel valve covers, and just welded a piece of ¼" OD tubing to the aft end of the cover just above the bail and drill a hole through the cover using the tube as a guide.

A review of the drawing shows the basic concept of the box. It is made from any type of weldable aluminum (3003 or 5052) .040" or .050" thick. The tubing is hardware store aluminum tubing. The breather air enters the box at the top, and must travel down to the bottom of the box to enter the plenum space. Note how the inlet tube goes down to within ¼" of the bottom. The air slows down as it enters the plenum and allows most of the oil to settle out. To exit, the air must move up to the top of the box so that it can enter the exit tube. Again, note how the exit tube goes to within ¼" of the top of the box. To make the box even more effective, I recommend filling the box about half full with a "Chore Boy" scouring pad. This provides a lot more surface area for the oil to wet out on. Of course, the drain-back tube must be at the bottom of the box.

To fabricate the separator, I made the sides out of one piece of aluminum having three major bends, and ¼" flanges bent on each edge to support the top and bottom. Only one vertical weld is then required. (I had a friend Heliarc the pieces together.) Holes were cut for the inlet and outlet tubes. The inlet and outlet tubes were cut and beveled. They were welded prior to inserting and welding them into the box. The bottom plate was welded on, and the drain-back tube was then welded on. A 3/16" hole was drilled into the side using the tube as a guide. The "Chore Boy" pad was inserted, and then the top was welded on. Finally, the mounting tabs were fabricated and installed.

All that's left to do is to mount it to the firewall, and hook up the hoses. This is how I did it, and it, of course, is not the only way. You can modify the dimensions to suit your installation, or you can put the inlet and outlet tube on the RH side and mount the unit on the RH side of the firewall. It's up to you.



Oil Separator Location on N99FK

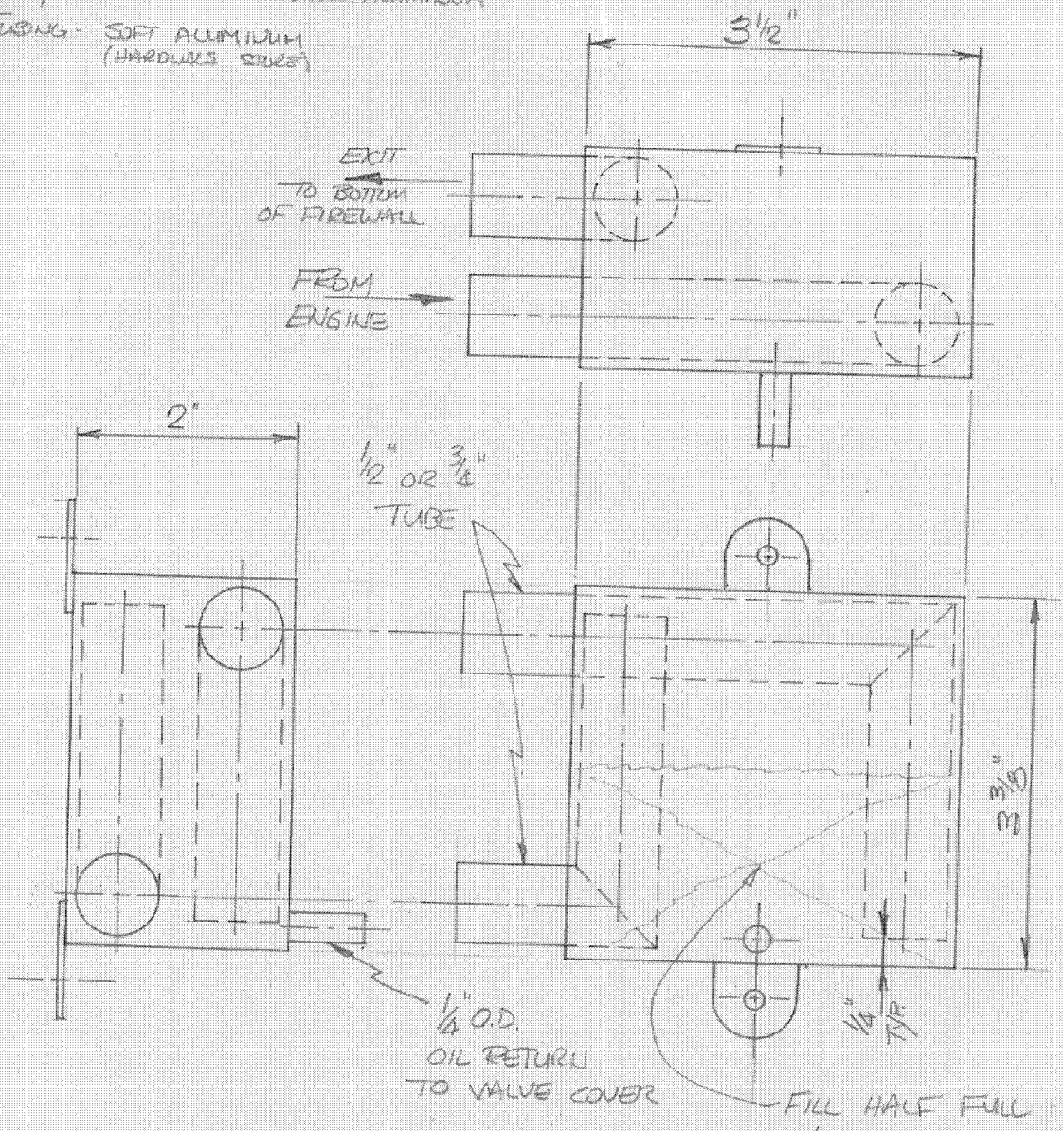
Item 1 – Breather Hose
Item 2 – Oil Separator
Item 3 – Oil Return Hose

OIL SEPARATOR

MAT'L:

BODY - .040" - .050" WELDABLE ALUMINUM

TUBING - SOFT ALUMINUM (HARDLINE SIZES)



FJK 3/20/03

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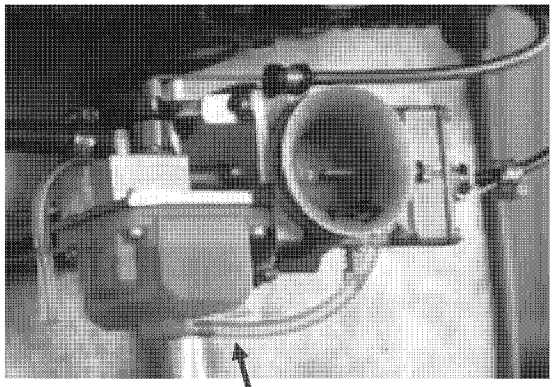
HAPI ULTRACARB CRITICAL MAINTENANCE ISSUE

On Sunday, March 23, 2003, the HAPI UltraCarb mounted on the 1807 cc VW conversion installed in my Sonerai IIL developed a fuel leak at the float bowl connection of the "Power Jet" tube. Fortunately, the leak was discovered on the ground after refueling the airplane. The tubing had cracked at the barb fitting on the bottom of the float bowl. If this tube had separated in flight, I doubt that the gravity-feed fuel system could have kept up with the leak and the engine would have quit. This carb was installed in 1988, and has run for 792 hours with no problems.

I would recommend that anyone using this carb check this tube on a regular basis and replace as a preventive maintenance item every few years. I believe the tubing to be 1/8" ID Tygon F4040A, or equivalent.



CHECK CONDITION OF "POWER JET" PLASTIC TUBE. EXTENDED EXPOSURE TO 100LL AVGAS WILL CAUSE THE TUBE TO DETERIORATE AND CRACK.

WANT ADS

These Ads are provided as a service to you, the subscriber, and are free of charge. I only ask to be informed when the Ad is no longer valid, and needs to be removed. Thanks.

TAPER PIN REAMERS FOR FREE LOAN. Brown & Sharp #3 and #5 for AN386-3 and AN386-5 taper pins. $150 deposit, shipping one way ~ $5. Free loan for 14 days, $2 per day after that. David E. Wilcox, 517 E. Saratoga St., Gilbert AZ 85296.

SPECIALTY WELDING CAN SUPPLY YOUR COMPLETELY WELDED SONERAI FUSELAGE AND OTHER WELDED COMPONENTS. Contact Greg Klemp at *Specialty Welding*, W6461 County YY, Neshkoro, WI 54960, (920)293-8089 or (920)293-8007 (Fax)

For Sale: Sonerai II Stretch fuselage, prebuilt spars, ailerons, Monnett ribs, fiberglass cowling, wing tips, & wheel pants, nosewheel, tailwheel, canopy, Great Plains 2180 w/dual ign., Diehl case, starter, no alt. or intake sys, some instruments. $8000. Call Steve Garn, 336-877-0318 (2/02)

For Sale: Sonerai IILS, fuselage and wings complete, on the gear, cowling, canopy, needs engine and prop. $7500. Don Jester, 417-466-3013 (1/02)

For Sale: Sonerai Parts. Complete instrument panel, Rand-Robinson 3-blade prop, Posa Supercarb, Slick Mag & harness, gascolator, 5-point harness. All new! Gary Harvey, (705)799-7448 (3/02)

For Sale: #68 Zenith Carb, $75; Monnett X-casting, $50; Monnett SuperVee prop extension ass'y, $150; Monnett single-port intake manifold, $50; Aero-Vee valve covers, $25; 2" steel prop hub & plate, $25. Jim Meier, (608)255-6773 between 8am & 5pm, or (608)849-9499 after 5pm (3/02)

For Sale: Sonerai II mid-wing, only needs paint and assembly, 1835 with dual ignition (Slick mag and Bosch 009). $5000 OBO or trade. Greg Buckley, (559)226-5992, **glbflyfun@cs.com** (1/03)