



## DAVID WILCOX' SON II

David is planning a Continental engine installation in his tri-gear along with hydraulic brakes and a castoring nose gear. The aircraft will be convertible to conventional gear if desired.

Welcome to the July 95 edition of the Sonerai Newsletter. This is always the big month for Sport Aviation. If you are planning your time at Oshkosh, try to make it to the Sonerai happenings. There are three Sonerai events that I am aware of:

The Sonerai Builders Forum in Tent 6 from 1:00 to 2:15 on Thursday July 27th. This is the meeting where the general public gets to see Sonerai pilots, so some of you might want to get cleaned up a little better than normal. Try not to look like you just came out of a biker bar.

The Sonerai Club meets on the back porch of Homebuilder's Corner at Noon on Saturday July 29th. For those of you unfamiliar with the location, Homebuilder's corner is on the flight line just south of the announcer's tower. It can get a bit noisy out there and

difficult to talk, but this is the best place to find out what has happened to Sonerai pilots during the course of the year. You can look like you just stepped out of a biker's bar and no one will think the worse (or better) of you.

Finally, we have the Monnett builder's dinner on Saturday night at John Monnett's hanger after you are worn out with the flight line. Sign up for this at the Great Plains booth. Cost is \$10.00 for Pizza and drinks. Time is approx. 6:30 PM but you can probably start earlier. It isn't a bad place to see the end of the airshow. Last year we were treated to a view of the Concorde taking off in full dark from our end of the runway. Six afterburning engines practically on John's doorstep. John has promised to have this show again this year regardless of the cost. What a guy!!

Roy Adams  
489 Ebenezer Road  
Fayetteville, GA 30214-5103  
Telephone (404) 487-6532

Sonerai Newsletter  
C/O Ed Sterba  
412 S. 5th  
Delavan, WI 53115

Dear Ed,

Finally finished the alternator installation on my Sonerai II, with lots of help from many, many people, including you and Steve Bennett at Great Plains (should be spelled Great Planes!). The hard parts always seem to be straightforward, it's the easy parts that trip me up.

So now I have new top end with dual ignition, and a 20 amp. alternator. She runs great, and I feel better about flying it. Thought I might share some things I learned with you.

As you have said before, the worst thing for these little airplanes is inactivity. I hardly flew for about two years, and everything went bad, Worst was carburetor gumming up, and quitting on takeoff. When it first started missing, I made a hard turn back, and was just about turned around when it quit. Made it back to the airport, landing downwind. Teardown revealed sticking float valve in "Zenith" carb.

A local Sonerai pilot, Clyde Schnars, has the same "Mosler Motors" engine setup I installed, and has been very helpful. He insisted that I re-torque the

heads after 5-10 hours of installation. Sure enough, several bolts were very loose. Clyde feels that this problem caused him a premature valve job because of "blow-by". It's a pain stripping off the rockers & intakes to do this, but I now agree about the importance.

A major problem was the timing changing on the electronic secondary ignition. Primary ignition is "Slick" magneto, backup is a motorcycle style electronic timing unit that mounts in distributor hole, and two coils, each driving two plugs. The timing unit has an aluminum rotor on a steel shaft.

This rotor would expand when heated, and sometimes slip. After cooling, it again fit tight. Steve tried to tell me this, I think, but somehow we failed to communicate over the phone. The unit Steve sells has a knurled portion of the shaft, but the one I bought from Mosler had nothing to prevent this. I had a machine shop drill through this assy., and install a 1/8" roll pin. If you have a Mosler system, you need to check this out.

Not knowing any better, I had used 1 1/2" water hose from the auto parts store on my intake manifold connections. Boy, was that dumb. When I tore down the system, I noticed that these hoses were like sponges. Now I know that you must use fuel & oil hose, MIL-H-6000. Figure about \$10 a foot, and up. This was very hard to find for me, as no

one seems to stock it this large. I ordered mine from Superior Air Parts in Addison (Dallas) TX. They made up new hoses for my oil cooler also, but were not cheap.

The most important thing I learned has nothing to do with airplanes, it has everything to do with airplane people.

Over the last couple of years I've met dozens of airplane people that have offered suggestions, taken time to show me how to do something, searched high and low for a small part I needed, offered encouragement, showed me how to save money, or just tried in some way to help.

No one has told me to "bug off", ripped me off, or sold me junk. All of the vendors I have done business with have treated me great. I just haven't met anyone yet that made me feel like they were just in it for the money.

I just wanted to say thanks.

Roy Adams

Ed's Comments: Thanks for the letter from Roy, he has brought up a few good points worth thinking about. My airplane tended to sit over the winter for it's life here in Wisconsin. When it went back to the airport in March to get ready for the trip to Sun N Fun, it always had that old fuel in it from the winter hibernation. It gave me a bit of uneasiness thinking about

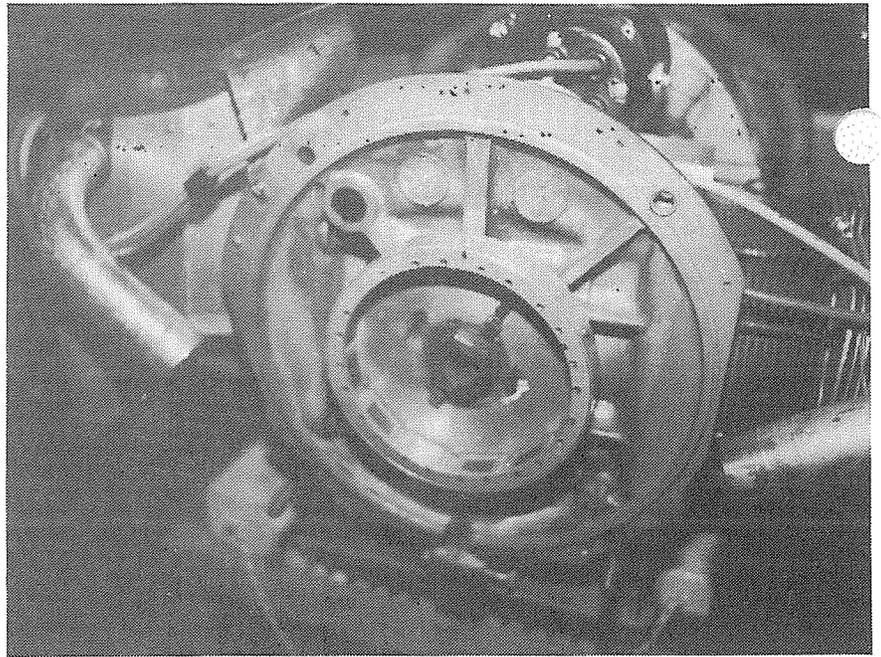
what might have happened to it over that length of time. 100 LL seems to be a pretty stable commodity though and never gave any trouble. I would, however, be very careful about water in the fuel. We are lucky with our Sonerai tanks to not have a point in the tank lower than the outlet, so there isn't much of a place for water to collect other than the fuel lines and gascolater. It was still worth a look with a flashlight (or match) to make sure there was nothing there.

Retorquing the heads after a number of hours is also a good idea since the parts may not have mated properly on installation and need their time to stretch into place. I also found that over time the case through bolts just below the left cylinder bank tended to work loose. I had an oil leak around the cylinder bases on this side and thought incorrectly it was the base itself. Actually the oil was finding it's way past the large nuts from the case half through bolts. These were not only loose, but also had plenty of room around the washers even when tight. I cleaned the area and created a silicone rubber washer under each nut to fill in the space and that seems to have done the trick. Of course, it had only held for about 15 years so it may not be safe to call it a "permanent" fix, but it is close enough for me.

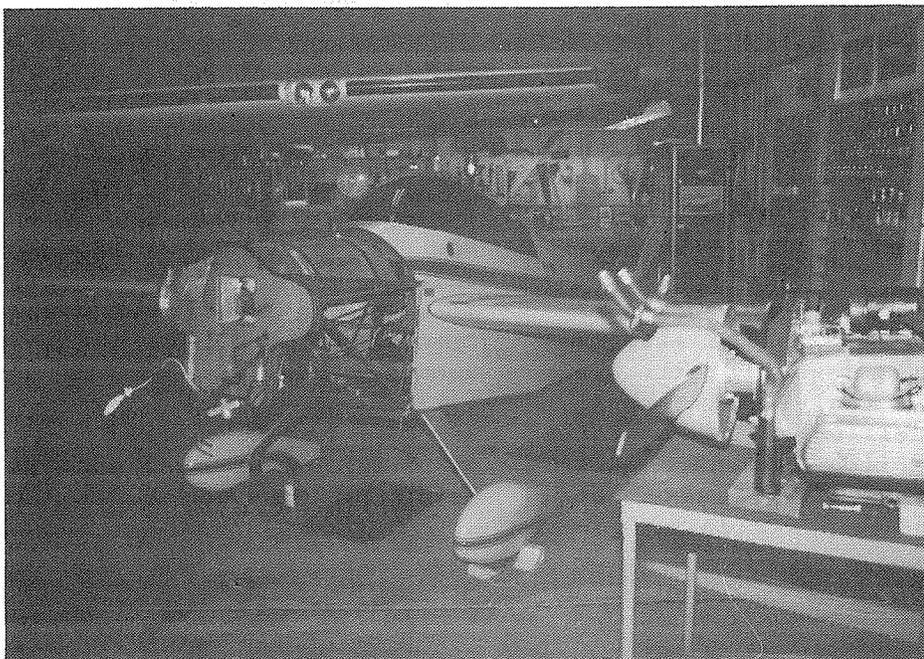
I hadn't heard of the problem with the distributor rotor moving around, but it is

one of those frustrating things that can be exceedingly difficult to track down without someone else's help. Keep on talking to the other Sonerai (or VW) people.

My understanding on the intake manifold tubing is that you can also get a similar product through the automotive market where it is used on cars to attach the filler neck to the fuel tank. Mine have never been replaced although after all this time it probably would be a good idea.



Mel Lamb's letter is on the next page but his pictures fit here. Mel, as some of you know, has old S.N. 1 the first plans built Sonerai II. He still has the same old 1700 cc engine and still tools around the Indiana countryside terrorizing pancake breakfasts. His engine won't spend much time on the bench.



A letter from Mel Lamb

Dear Ed,

Just a note on John's alternator. As you know, mine quit. I found the magnets were not turning around the stator coils because they had come unglued. I called Synchro and asked if I could drill and tap the magnet ring in between the magnets. They said "no problem". I drilled 6 ea. 1/8" holes and tapped for #6 brass screws 1/4" long and screwed them in. I haven't had time to test yet, but we hope it will work. Others may wish to secure their magnet ring the same way. I think the glue gets hot and lets go. That is probably why you lost your magnet ring. I'm sending pictures to show you what I did. Do what you wish with them. It's just a little info and I hope it works.

Mel Lamb 7338 Taft St.  
Merrillville, IN 46410

Ed's comments: This has been a common problem with the Synchro alternators. There are still many of them out there in service so the problem will not be fading away any time soon. If you are one of the Synchro owners, it is probably better to secure the magnet ring now rather than wait for a larger problem. As stated before in past Newsletters, should the rotor and stator come in contact, they wouldn't cause an engine stoppage unless you are at lower power settings, like gliding in to land. Of course, we always have enough altitude on final to make the runway if the engine quit, don't we?

Formula V Racing Practice Weekend

I received a call from Elliot Willoughby this past week about a Formula V practice session coming up at Seymour, IN. Freeman Municipal Airport will be hosting the event on July 19-20-21. This will be an opportunity to not only get in some race practice for those qualified pilots, but they will also be qualifying pilots and aircraft there. If you are in the vicinity, it might be an interesting weekend. Bring your helmet.

Dear Ed,

I just thought that I would send you a letter to give you a status report on what must be the world's slowest Sonerai project and renew my subscription to your magazine. I don't know if you still have the issues for this year that I have missed by renewing this late but I sure would like them if they are still around.

Our house was flooded a few months ago and the second slab of my fuselage was in the jiggging table in the garage. The house received 32" of water and the garage got 34" of water. I had built the jiggging table to be 34" tall and covered it with half inch plywood so the second half of my fuselage came within half an inch of going under water, so it was a relief. My Jaguar sports car was sitting next to it and it wasn't so lucky, but then Jaguars are always happier when they are not moving so I guess it doesn't matter (right?...sob, sob).

I did find that your suggestion of using snips to cut the fishmouth joints on the tubing works very well. I have found that buying a couple of files from an industrial hardware store with 1/2" and 5/8" diameter cross section can make the joints fit together beautifully. Can't wait to get the torch fixed so I can start again.

Gene Cook 114 Imperial Ave.  
Friendswood, TX 77546

Ed's comments: The method of cutting your 4130 with aviation snips was first brought to my attention when I bought the plans from Monnett Aircraft. As a new A&P, we had been taught the old hacksaw and grinder method at Embry-Riddle, and it was quite a revelation to see how a tubing cutter and the snips worked.

As for the recommended height of your work table, most EAA construction manuals tell you to consult with the Army Corps of Engineers to find the limits of the flood plain in any particular area.

## Prop Bugs

I received a call from Fred Keip the other day about the events of upcoming Oshkosh 95. At the end of the call, he mentioned that he had been flying from the Burlington, WI airport the last week and found something rather puzzling about his propeller performance. Burlington is where the EAA used to have it's Flight Test Center a number of years ago. Since they were flying the WW II heavy metal there, you can imagine that it has a fairly good runway (if it is good enough for a B-25, it is usually good enough for a heavily loaded Sonerai II).

On this occasion however, Fred decided to use the North-South grass strip since the wind favored it. After takeoff and when established at cruise he was surprised to find his normal RPM and manifold pressure readings didn't correspond as they normally did. (For those of you without either a manifold pressure gauge or a vacuum gauge, you are missing a piece of the engine puzzle.) After flying a Sonerai with this additional gauge, you begin to establish "normal" reading for your engine. I used to always set up 3100 RPM and 6" of vacuum at low altitude. Cruising down to Sun N Fun with Fred a number of years ago, we were able to correlate my vacuum gauge readings to his manifold pressure readings.

At any rate, Fred found things not to be in their proper place. For his normal cruise configuration, he found himself carrying 200 more RPM at the same manifold pressure and airspeed. Had he found the secret to free horsepower? The answer is "Bugs". The propeller was covered with them when he landed. This time of year in Wisconsin every bug know to man is out and about. Fred had done his share to reduce their population on takeoff and in the process, added a surface roughness to his propeller airfoil that probably went off the scale for the aerodynamics people and their wind tunnels. His prop was cavitating it's way through the sky showing more RPM than normal but not being more efficient.

I had another propeller customer who complained that his propeller made a funny

noise when it picked up a load of bugs. People commented on the noise as he taxied in and when he cleaned off the bugs the funny noise went away. He wanted to know what I was going to do about it. I told him to spray "OFF" on it before flight. Maybe he could fix up a prop alcohol de-icing rig to shoot it on in flight. Oh well.

## Oshkosh Sonerai Parking

Oshkosh is getting busier and changing at the same time. Those of you wonderful people flying in with your Sonerai's know that it is getting harder to find parking on the flight line on our old "Sonerai line" at the jog in the fence. The Glasairs and RV's are getting there earlier and earlier and in greater numbers than us. I talked to Glenn Eisenbrandt the other day, he is involved with flight line parking and, as in the past reminded me that there is no reserved parking for anyone. We will try to continue to use our old parking area, but be advised that if you fly in, it isn't getting any easier to hold a place for you. EAA wants to gradually move the whole flight line south and maybe some of those "other" homebuilts will move with it. There is talk of trying to designate an area for VW powered homebuilts, that might be nice, but know one has done it as far as I know. We hope to see you on the line.

For Sale -- Subaru engine 1985 EA82 turbo engine complete with EFI, computer, turbo all access. 5 subaru repair manuals. \$1400 for all. Also, EA82 non-turbo engine TBI injection. Car ran but engine may need work. Bob Stieg 815-397-1533 days  
815-234-2283 eves.

For Sale -- VW 1835 engine. All new. Hd. lifters, SCAT heads, Hapi access case w/ dual alt., elec. igniton, prop hub installed, Zenith carb. Might separate. Apart for inspection. Can assemble.  
Bob Stieg 815-397-1533 days  
815-234-2283 eves.

For Sale -- Sonerai II midwing, Supervee cowling, Sterba prop, 2100 engine w/Revmaster prop ext. Also, 4016 Slick mag w/ 100 hrs, and misc. instruments.  
Eddie Eiland 1350 Thunderbrook  
De Soto, TX ph.214-230-8475

Wanted -- Son II mid-wing preferrably 2180 GPAS. Must be quality constr. and currently flying.

Marty Hammersmith 1777 Oakridge Dr.  
Lawrenceburg, IN 47025 ph.812-637-2122

Wanted -- Son II LTS, LS, or LT w/2180, but will consider a taildragger/ smaller engine. Prefer wing mod already done.  
Bud Aumann 11340 w. 38th Ave. #26  
Wheat Ridge, CO 80033 ph.303-420-6071

## Sonerai Rudder Stability

After assembling the rudder system for the first time, noticed that it did not want to stay centered. With the tension springs installed, the rudder always pegged out on either the right or left stop. Remember the text book definition of static instability? Put a ball on top of a hill, give it a nudge, and it will roll off and never come back to its original position. So what was causing this rudder to act like the ball on the hill?

The reason is in the rudder control horn design. The first diagram shows the situation per plans. You'll notice that the spring tension is being applied to the rudder, by way of the control cables, to a point that is aft of the rudder hinge line. As the rudder is nudged off center the center of the tension force also moves

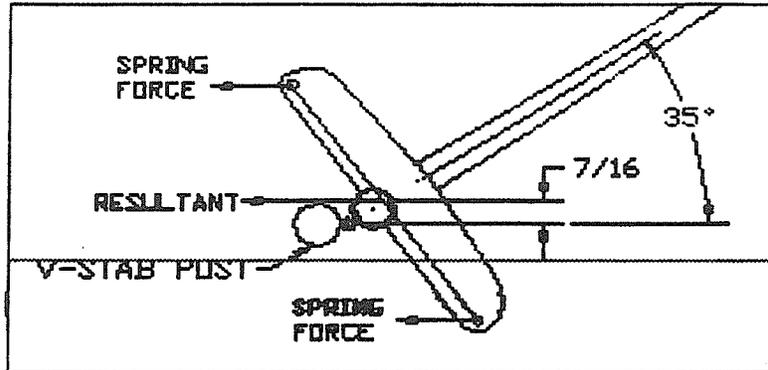


Figure 1 The Sonerai II Rudder control horn per plans.

A lateral force begins to grow with the sine of the rudder angle. The new is a positive reinforcement on the movement, and you have static instability of the rudder position. Maybe all of those comments I heard at the Oshkosh '94 Sonerai forum are not due to a small vertical stabilizer. Actually I don't think it has too much effect unless one has have gotten over zealous with the size of the springs.

The obvious fix is to pull on the rudder at a location even with the rudder hinge line. The next time you get near a C150, or the like, take a look at the horse shoe that Wichita put on that rudder! Putting the control cable attach points on the hinge line with yield neutral stability. You could even go one better by designing the control horn to pull forward of the hinge line. This would allow the springs to actually tend to center the rudder instead of peg it to one side.

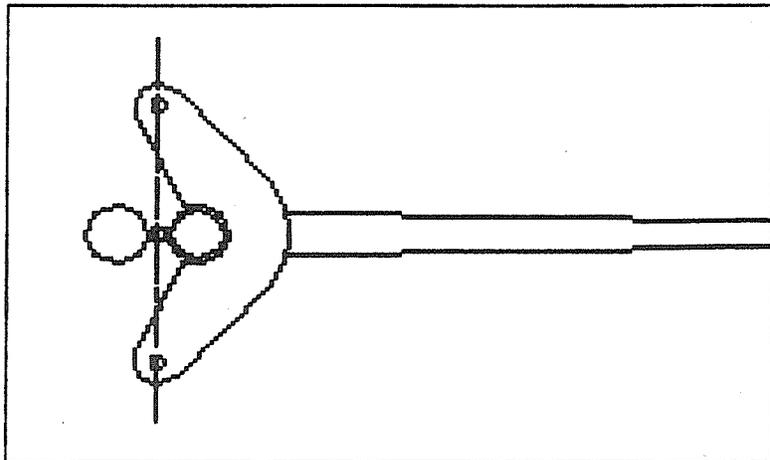


Figure 2 A redesigned control horn that results in neutral stability.

*A. Wilson 5/7/95*

FRED KEIP PD 95  
11428 SIX MILE RD  
FRANKSVILLE WI 53126

C/O Ed Sterba  
412 S. 5th  
DeLavan, WI 53115

SONERAI NEWSLETTER



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

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

Mike -- 219-534-2900

For Sale -- unused fuel tank for Sonerai II, intake manifold for 2180 Engine and Stub Exhaust kit for 2180

Raymond Bergner 1310 Parker Rd.  
Lakeland, FL 33811 813-646-0953

Wanted -- Used, worn out, junk 4000 series Slick magneto. Super Vee prop hub and casting.

Bob Schank 313-697-7057 after 5 P.M.  
35 Clarence St. Belleville, MI 48111

Wanted-- 1850 or larger long block suitable for Sonerai II Super Vee, in good working order.

Nick Fourdraine RR # 1  
New Glasgow, N.S. Canada B2H 5C4

For Sale -- Sonerai II LT (easily conv. back to conventional gear) Wing Mod, VFR instr., Cleveland wheels and toe brakes No engine or prop.

Ivan Haecker 8434 FM 2673  
Canyon Lake, TX 78133

210-438-3354 weekend 210-899-4824 eve.

Wanted -- Sonerai prewelded or tacked fuselage with tail feathers. Also, landing gear kit.

Joe Burr 4098 Eddystone Dr.  
Cincinnati, OH 45251 317-827-7195

For Sale -- 2 Ray Jeff Lorans, Pl-99 w/ self contained battery packs, both w/ new chargers. \$175.00 ea. or both for \$300.00. In cartons w/ manuals.

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 -- Clecos and Rib Forms used to build Sonerai wings.

Walt Augustine 6948 Neptune Ct.  
New Orleans, LA 70126 504-245-8940

For Sale -- Sonerai II LT, Great Plains 2180 (brand new), Sterba prop, hydraulic brakes, fuse, primed, canopy finished, fabric covering, some minor finishing, wings ready to skin. 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

Wanted -- Sonerai II in flyable condition with trailer if possible.

Steve 916-489-5514

For Sale -- Sonerai IIL 1700 VW, 1000 TT 100 STO, 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 -- Porsche 914 2 liter engine project. Motor ran, mostly converted. 9" prop extension. Ellison carb. 650 Honda alt. Aluminum welded manifold. Potentially best VW conversion yet. Very cheap.  
Roger Durham 1370 Thompson Ave.  
Glendale, CA 91201 818-846-9163

Wanted -- Cont. A65 taper shaft prop hub and professionally welded fuselage for Sonerai (set up for Cont.) Also, I have Bendix mag rotors to correct the S-20 AD.  
John Mc Laughlin 25839 Tallwood Dr.  
North Olmsted, OH 44070 216-734-5575

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

For Sale -- Smith Miniplane 40 TT 0-290 10 SMOH Stretched-widened, tnp, enc, com alt, room for 6'2" 200+lb pilot \$15,000  
Robert Wray 1806 Kansas Ave.  
San Angelo, TX 76904 915-949-5813

For Sale -- 1991 Sonerai II VW 2074  
FTAE 75 hrs \$7000 Call after 7 PM  
104-296-0937 Buying engine for Ercoupe