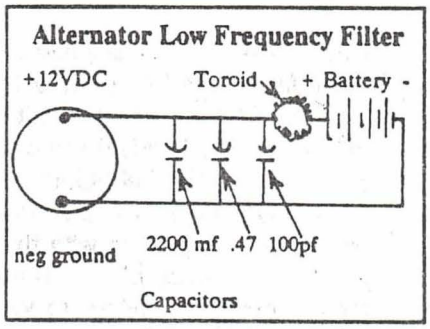
More Loran Fixes

Donald Shupe / IVCHC - After much discussion with Howard Zehetner, our hangar neighbor, I bought a 1 1/2" toroid iron core (donut shaped) and wrapped about thirty turns of #14 teflon wire around it, ran a 2,200 micro farad, a .47 and a 100 pico farad capacitor in parallel to ground off the alternator side of the toroid coil and presto!! The SNR on the 612C Loran went from an average of 120 up to 240 with the engine and alternator running. In the past we would have SNRs of 240 with the engine running and the alternator field off: they would drop to an unreliable signal, when the alternator field was energized.

It turns out that alternators are notorious for putting out a lot of low frequency noise that is right in the range of the Loran; so if your Loran doesn't like your alternator, try this filter. The toroid of iron cost $1.49 and the teflon wire $5.00 for 30'. The capacitors were less than $4.00 for all three. The 2,200 uf was an electrolytic rated at 50 volts. The circuit looks like this:



Remember to do a good job with the connections because this choke goes in your 12 VDC power line from the alternator. Keep all the leads as short as you can; we potted ours in safety poxy and bolted it to the lower rear baffle.

Check your signal to noise ratios in one location with the engine running and alternator field off. Then with alternator field on and then at mag check RPM. Then fly in one small area with the alternator field on and off. You should get a significant improvement in SNRs with this inexpensive choke if you don't already have one of the big expensive marine filters installed. With new filter installed, our SNRs stay above 230 all the time now in our area. That's a change of about 50% to 90% for under $15 and a couple hours work! When you check SNRs, allow 5 - 10 minutes for them to stabilize in each condition.

If your SNRs don't drop when you energize your alternator field then you don't need this filter. *Don suggests you follow the directions in the last CP where a 3300 uf 75 VDC is installed. If that doesn't work you might try his "fix".*

Those of you who are interested in joining the **International Vari-Eze and Composite Hospitality Club** *contact Don & Bernadette Shupe, 2531 College Lane, La Verne, CA 91750 .*

Auto Fuel and Composite Tanks

For several years friends have been operating with auto fuel in their EZ tanks and have lived to tell of it. To my knowledge, there has been no reported case of epoxy tank deterioration. Auto fuel is **MUCH** less expensive and with no lead it should be less harmful to the environment. The good reasons are impressive but I've been afraid to use it as I have been concerned about what it might do to the fuel tank structure.

Yesterday I talked to Norm Howell who reported some people are coating the inside of their tanks with a DOW resin called Derakane. It is, reportedly the same material that Glassair uses and has shown to be impervious to auto fuel. For those of you who are wanting to use auto fuel and haven't closed your tanks this product might be just the ticket.

If any of you have any experience with this resin and auto fuel I'd like to hear of it and report it to the membership.

Roncz Canard Hardware

Letter from: Bill Warner - Since I just received my Roncz canard plans from RAF I took a good look at them and came up with the enclosed new drawings for NC-2. These will be inserted into the torque tubes from the ends similar to the way they do NC-6. I intend to make a drilling jig which would then allow the NC-2s to be made with only the rod having to be turned down from 1" to 0.930".

Editor note: 0.930" just slides down inside the torque tube.

A metal cutting saw blade in a table saw could cut the slots, then the blank NC-2s would be cut off the 0.930" rod and accurately drilled in the jig.

The jig will be made from 1" X 2" X 4" steel. A 0.930" diameter pocket would be milled in first. Then the 3/8" and 3/16" holes would then be drilled in the proper places. Additionally, 2 pins would be mounted outside the pocket in line with the 3/8" hole such that a 1/8" thick piece of material placed in the slot cut in the NC-2 blanks shoved against these pins would align the blank in the pocket.

Editor note: If you don't have a milling machine try making this pocket by pouring flox around a greased blank NC-2. Be sure to grease it or you'll not get the NC-2 out.

To use the jig, chuck a 3/8" drill in your drill press, line up the 3/8" hole in the jig and clamp the jig. Now you can drill the 3/8" hole in as many blanks as you wish. Cut the threads off a 3/8" bolt to use as an alignment pin. Move the jig so the 3/16" holes line up in the drill press. Clamp. Use the 3/8" bolt/pin to align the drilled blanks and drill the 3/16" holes. Ream 3/16" holes to fit the hinge pin. Voila! Round NC-2s. Torque tubes can also be slotted with the metal cutting blade. Slide the NC-2s down the torque tube, and align using NC-7s. Drill and rivet per RAF.

Instrument Static and Pitot Lines

Jim Sardella (CA) - I finally found a reliable combination of lines to use for our static systems. Aircraft Spruce and the other sources say we can use tygon or Nylo-seal nylon tubing. Tygon fittings leak too much and nylo-seal tubing is too stiff to work in small places. At my last static system check the serviceman suggested a combination of fittings and tubing to use. They work great and it wasn't too difficult to re-do.

For the tubing he suggested using **poly-flo polyethylene tubing** part number 44-P. It's very flexible. It is 1/4" OD and has a minimum bend radius of 1".

For the static port to poly-flo tubing junction you should use **neoprene hose** part number 05-00200. 3/16" ID with 1/16" wall. These are Spruce part numbers. This hose stretches a great deal and will go over both the aluminum tube and the ploy-flo. No clamping is required as the hose is a tight fit. I used a 1" piece for the connection on each of my static ports. I have one on each side of my fuselage.

Next, see what kind of fittings your instruments take, like 1/8" pipe. This is usually the case, but you may need 1/4" pipe fittings. If so, use Nylo-Seal fittings and inserts for the tubing. The insert is part number 259-N.

Some other suggestions were **NOT** to use teflon tape or anything on vacuum system fittings. Install these fittings dry. You don't want any bits of teflon or anything else, for that matter, flying around in your instruments.

Use teflon tape on the pipe fittings in a pitot-static system, but be careful to avoid getting loose teflon tape debris in the system. After putting the fittings into your instruments, slightly more than hand tight torque will guarantee a non-leaking seal. My pitot-static system showed no leak after the required one minute test time.

Long-EZ First Flight

I just got a note from Norm Dodge of Angelfire, New Mexico indicating that he has had a first flight on N24ND. His reaction to the January 18 event was, **"Boy is N24ND fun to fly!"**

He promised more information later as he is presently busy moving to Scottsdale, AZ.

Cozy For Sale

It is with much sadness that I report losing my medical, thus forcing the sale of my Cozy.
Cozy 3 place: IFR , King radios, 618 TCA Loran, O-290 GPU 115 SMOH, Prince P-Tip prop, EGT, 115 hours TT on airframe.

Contact:
Bill Teeters
815-399-0390
Northern Illinois area

New Mexico to Connecticut in a Long-EZ

James Peck (NM) - It was August 12 at 05:00 and the density altitude was 7,500 feet. With full fuel, baggage, and tools I used up 3/4 of the 4200' runway. Four uneventful hours later I landed at Baxter County in Mountain Home, Arkansas, and refueled just in time to get caught in the rain. The folks at the FBO were most friendly and gave me a car with which to go exploring until the rain stopped.

I headed for Washington, NC but stopped at Collegedale, TN to get charts and check weather. I called Jeff Rose to say hello and then headed out to beat the rain front moving in. 45 minutes later I ran into rain, the Loran quit, the handheld VOR was flaky and I was fighting the pitch trim changes. Needless to say my heart did skip a few beats.

Knoxville vectored me into a nearby VFR field. I landed at 17:30 and found: the field empty, the office locked up and myself 10 miles from the nearest town.

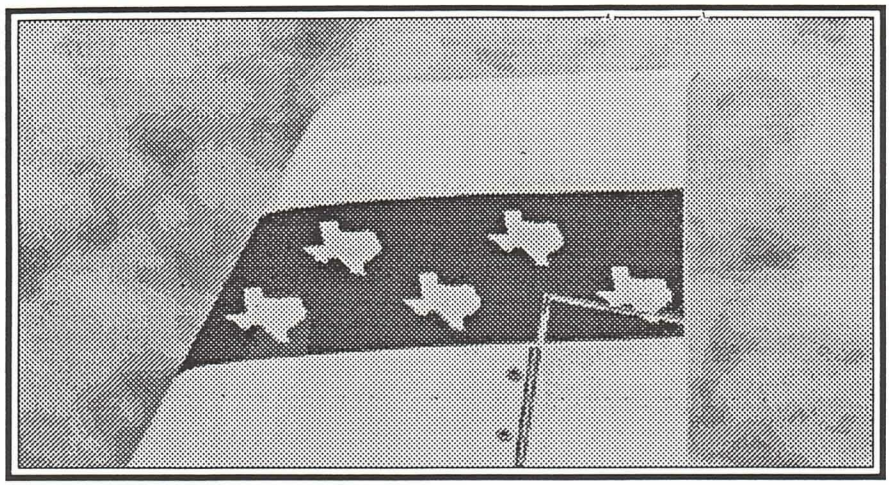
I had almost given up trying to find a place to curl up for the night and had decided I was about to learn to sleep in the Long-EZ, when an older gentleman showed up. He was an ex-Harley Davidson employee who lived nearby and saw me land. He drove me 11 miles out of his way to get me to a motel and was back the next morning at 06:45 to take me back to the airport. The only thing he would accept from me was, for me to wait for him to get his wife to show her the plane and get a picture of it, more great hospitality.

The next morning I got a FSS briefing that didn't agree with reality so I returned to Collegedale and put my airplane in Jeff Rose's hangar. He took me for a brief ride in his Avid Flyer, landing in a friend's front yard!!

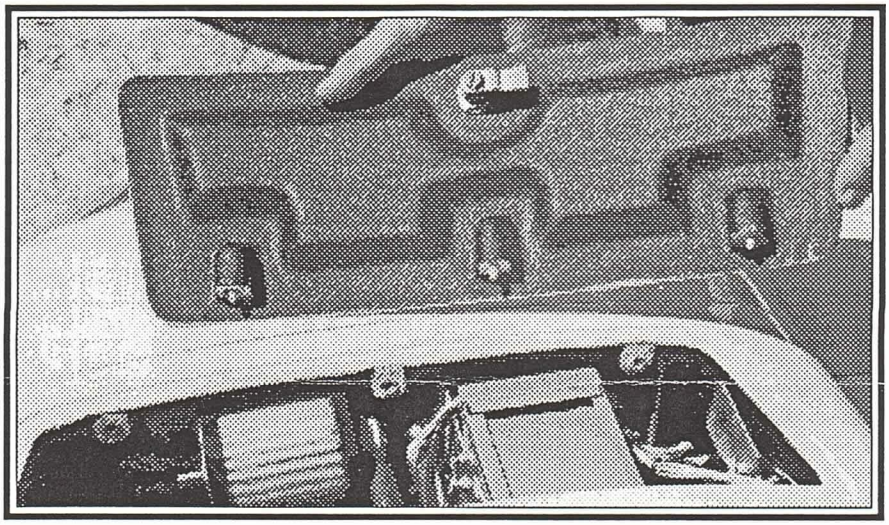
Jeff and his wife, Polly, were kind enough to put me up for the night and gave me the needed parts to correct the errors I had made during the installation of my electronic ignition.

The rest of the trip was uneventful except when the Loran dropped off line in the middle of the Vance MOA. The Long-EZ never missed a beat and the people were more hospitable than I ever expected.

I did get caught in rain on both the east and west bound trips. My wheel pants have 3 slots cut across the top just aft of the highest point for cooling. On my easterly trip it took full up trim **and** holding back stick to maintain level flight, not fun! While in Conn, I took some aluminum tape and covered over the slots. On the westbound trip I ran into rain and was able to deal with the pitch trim changes by using trim only. I guess it's time to clean up the wheel pants!



Skip Barchfeld's Texas tip treatment is made by cutting your state outline out on vinyl and letting the base color show through



Jerry Peck's great workmanship shows on his removable instrument panel cover

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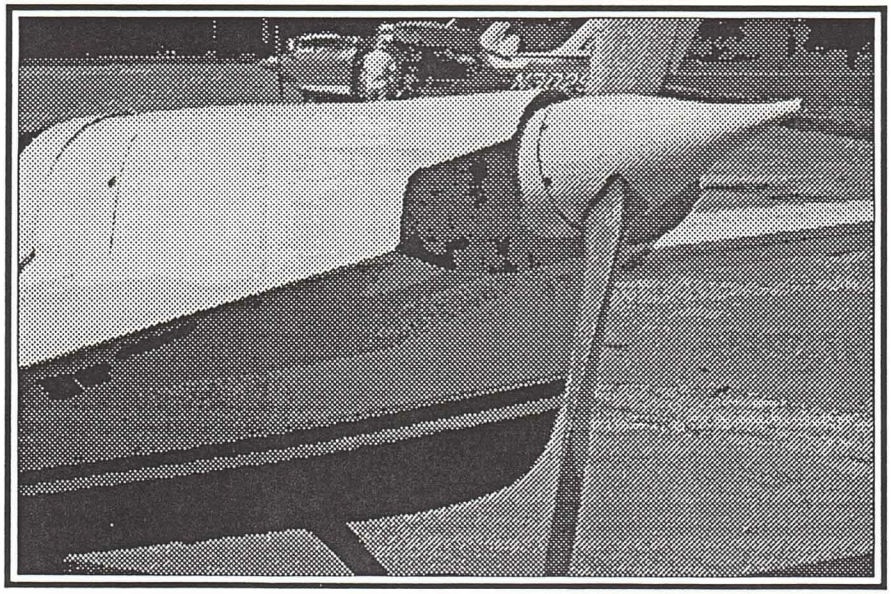
Frank Bibbee's boat tail cowl shows great craftsmanship



For new builders he suggests using a boat tail cowl with NACA inlet for the least drag with the least cooling development problems.

Gary uses the 65025 airfoil shape wheel pants and suggests if you vent the pants, to do it out the back end and not out the top where the air will produce draggy turbulent flow.

Be sure to install the main landing gear strut fairing at a 2 degree up angle as these airplanes fly with the nose up. Do not put on a large radius fairing to the fuselage. The leading edge should have almost no fairing and the trailing edge only a small one. Large fairings give more wetted area and cross section area, thus more overall drag.

Increasing the engine's compression ratio from 7.5 to 9 will produce 4-6% better fuel economy with 10% more power. Install the pistons with Total Seal rings™. Talk to Gary first about the rings.

Terminate the exhaust pipe inside the cowl about 1-1/2" to get an augmenter effect which helps extract the heat. This will also get the low density heated air out into the least efficient part of the prop.

Bob Nuckolls of Aero Electric Connection electrical installation tips: "Use shielded wire sparingly and only where it is called for by the manufacturer." Be sure to ground it on only one end to avoid ground looping which will allow current to flow on the shield. Tefzel wire is better to use than Teflon. Teflon gives off a toxic gas at high temperature.

Use 4130 steel 3/16" thick for alternator brackets. **Never use any aluminum** in the alternator mounting system. It **will** break!

If you have a transponder reply noise in your intercom put the intercom electronics in a grounded metal box.

To rid the intercom of strobe noise get a Radio Shack filter and put it on the input to the intercom. The unit is a black cylinder about 1-1/4" in diameter.

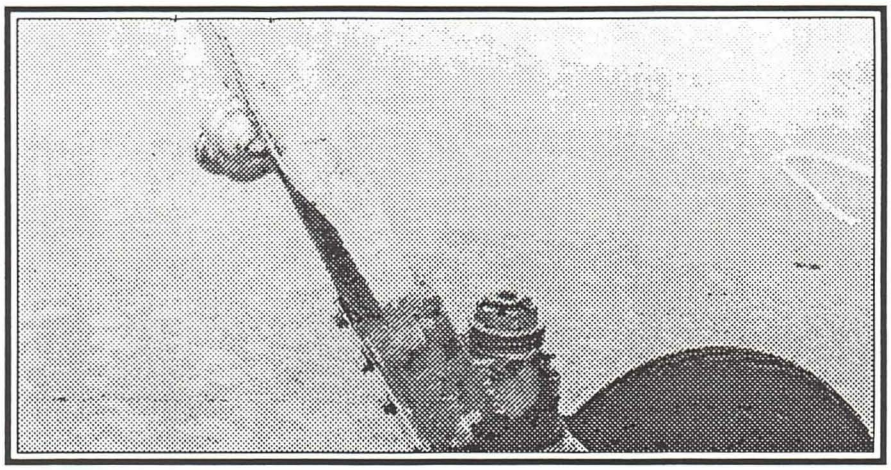
Use 14V instead of 28V systems. With today's light weight starters and modern battery technology there is no reason to pay for 28V systems.

Automotive electronic components are designed for very severe conditions and will probably work OK in aircraft applications.

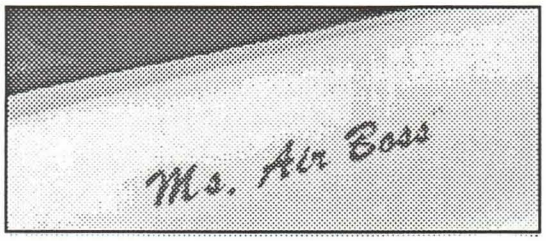
You don't need a separate avionics bus as that is a design throw back to 20 years ago before TSO's called for radios to take all kinds of high and low spike voltage input.

Why put the circuit breakers on the panel? *That is prime real estate.* 95% of the time you can't fix the problem by resetting the breaker. Size wire to 150% of the load and you will get rid of nuisance breaker trips. Then if there is an overload it means something broke and you can't fix it in flight anyway. Use relays to keep the current out of the cockpit. Many people don't like them but have **you** ever heard of one breaking?

Bill Freeman's tips on cooling engine related items: A top mounted oil cooler location is more efficient than a bottom mounted one. To even up CHT's, close the air inlet baffles to the cooler ones and open the hotter ones. Ramps are too hard to control and size. A very precise opening width is easy to make on the cylinder baffling. The cool aft cylinders should have about a 1" opening, while the hot front ones might need to be much bigger.



"Pete" Peterson uses a ball bearing on the nose gear strutstrut to keep the strut from dragging on the ground when the electric actuator raises the nose. It just shows you don't have to have that big drag inducing foot mounted on the strut.



Norm Dodge's GIB canopy sign shows how wise he is.

Nose Gear Attach Bolt Upgrade

Bill Freeman (KS) - Several years ago, as I landed in very gusty conditions, the nose was slapped down by a gust and hit **MUCH** harder than any nose wheel touchdown before or since. It was a little scary. I inspected the nose gear and found the 1/8" aluminum plate across the front of the strut was very bent and the whole nose wheel assembly was loose on the strut. The AN3 bolts (upgraded per the CP mod) had their heads bent at a 10 degree angle from the perpendicular!. The 1/4" cross bolt attaching the spring strut to the nose gear strut was also bent.

I drilled out the nosewheel pivot casting to 1/4", straightened the 1/8" aluminum plate and drilled it to 1/4" also. I reassembled it with fresh flox and appropriate length AN4 bolts. Watch out for interference between the bolts and the nose gear strut cover. I had to grind a little off the bolt ends to get the needed clearance for complete gear retraction.

The cross bolt attaching the strut to the nosegear spring strut bends easily when built per plans. I made my own spring strut and, therefore, have the large rod end with the 3/8" ID hole. This was bushed (per plans) to 1/4" and a 1/4" bolt used to attach the spring strut to the nosegear strut. One published fix is to replace the sheet metal inner U bracket with a thick (about 1/4" material) replacement U bracket.

This probably works well but is more difficult for those with the original type large hole rod ends. The problem is there is too much bending load for the 1/4 bolt. The super thick bracket shortens the distance between the supports by making them very thick which reduces the bending load on the bolt and appears to work.

I just removed the 1/4" bolt, drilled the strut wrap around bracket up to 3/8", removed the 3/8" to 1/4" reducing bushing and installed a 3/8" bolt and thin shear nut using red Locktite, since the clearance (to the strut cover, again) is pretty tight. I've had no problems in about 400 hours.

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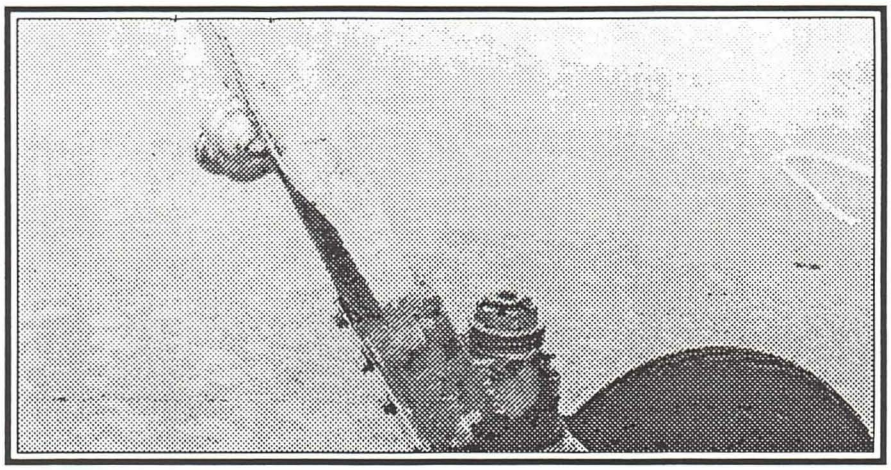

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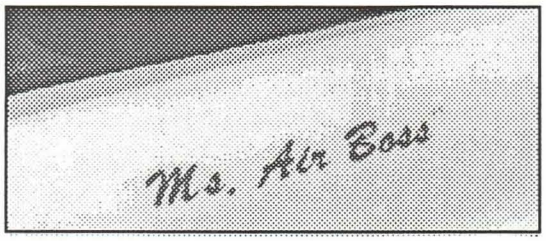

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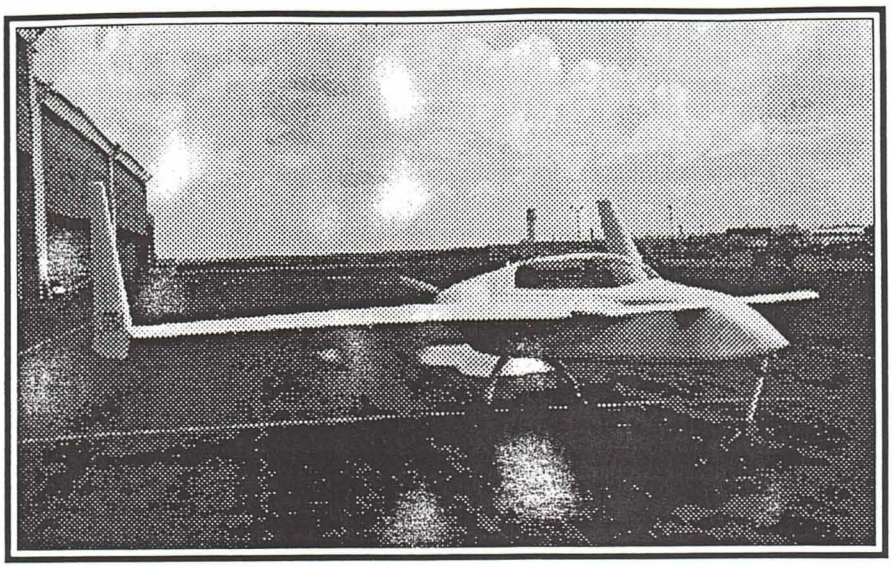


First Flight

C-GPRA (must stand for Canadian - Gee! - Pat Reid's Airplane) first flew on June 19, 1993

Pat made sure he was current in several different airplanes and got valuable advise from an Edmonton CSA member, Bruce Bolton, before conducting his own first flight. He said **"It was a great thrill and I'm so glad I did the first flight myself!"**

Appreciation was indicated to all you contributing CSA members for the modifications that made his Long-EZ better.

Stainless 4 Pipe Exhaust System With Ball Joints or Slip Tubes

Hal Hunt's 4 stack stainless steel exhaust systems are now available with ball joints at $500 or springs and slip tubes. If you wish to have ball joints put on your existing pipes he will do that for $150.

The flanges are 1/4" - 321 stainless while the stainless pipe has a .032" wall thickness. Builders can call or send a SASE for a flyer.

Hal Hunt
6249 Longridge Ave.
Van Nuys, CA 91401-2528
(813) 989-5534

Mazda/Long-EZ Update

Ron Gowan (TX) - I'll give you a quick update on my Mazda conversion. I ran the engine three times! It's a little loud, but smooth and powerful. The prop I have was made for 150-160 hp and my static was 5,500 RPM; which gives 2,540 RPM at the prop.

I wasn't happy with the way the reduction unit attached to the automotive bell housing. I sent everything back to Ross Aero and got their new custom made bell housing. This is their latest mod and is a much better set-up. I hope to be at Lakeland.

O-235 Long-EZ Props and Extension For Sale

Used Great American 62 X 62, SAE #1 hub, 300 hours TT, good condition - $200.

Used Performance Propeller 60 X 63, SAE #1 hub, 200 hours TT, excellent condition (refinished by Performance Propellers) - $300.

Used Brock 6" prop extension and 3/8" crush plate for SAE #1 hub, 500 hours TT, excellent condition, $200.

Contact:
Harlan Hill
115 Cross Parkway
Burlington, VT 05401
802-862-8051

Fuel Injection For Sale

I have a complete Bendix fuel injection set-up for sale that is still running on my Long. There is a Jacobs electric pump that comes with the injector unit. It will fit Lycoming O-320 or O-360 engines. I'm asking $700 for the complete set-up.

Contact:
Bruce Tifft
75872 Mosby Creek Road
Cottage Grove, OR 97424
(503) 942-7068

Strobe Repair

Chuck Busch (CA) - I had the Whelen A413 HF power supply go south one evening on the way home. It didn't go completely dead, but the strobes barely flashed.

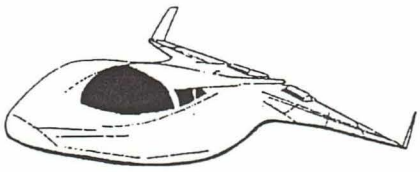
I drilled out the rivets securing the outer case and started looking around inside. (Hey, it's already broke - can't get no broker, right?) I found nothing obvious so I checked the oscillator power transistor and found it had a house part number. I checked it with an ohmmeter and it looked OK.

I went back to the circuit board and checked the obvious parts, diodes and transistors. I found an unsoldered ground which I repaired but still no joy. I discovered heat damage to two wires coming out of the transformer and redressed them. That still offered no solution.

I then remembered that a 2N3055 was a typical part used as an oscillator power transistor. I bought one for $.50 and installed it. Viola! I ran it on the bench for about an hour with no problem. I have had it back in the airplane and in service for a couple months now and it works fine.

A few hours work and $.50 saved me about $300 for a new power supply.

Iowa State University's
Stealth Cozy



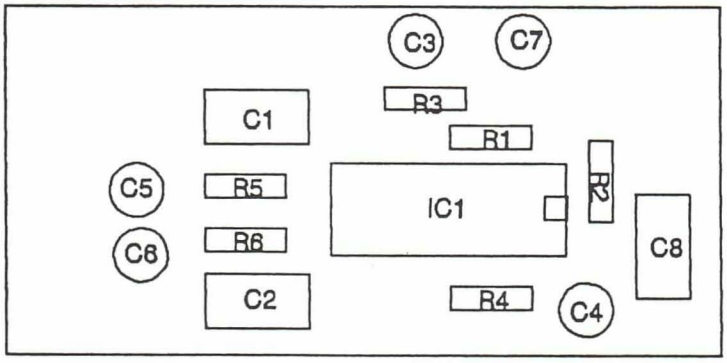
N.G.C.

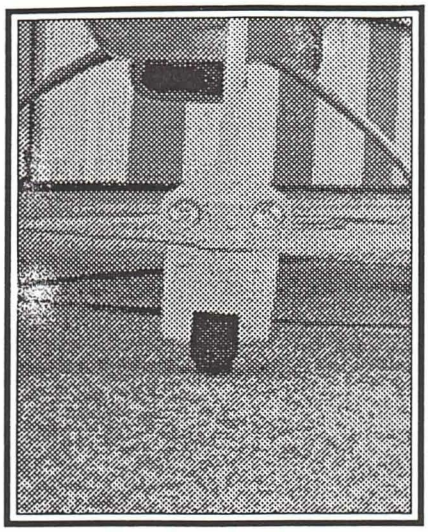
Next Generation Cozy?

Walkman Booster Amp

IC1: LM377
LM1877
ECG990
SK9012

NOTES:
1) All Resistors 1/4 to 1/8 watt, 10%
2) All electrolytic caps must have working voltage of 16V or greater





Night Lights

Bill Boldenow (IL) - After flying my Vari-Eze, N203DB, for 1,100 hours I took it home and made some mods. Among other things, I added landing lights mounted on the nose gear. They are made out of halogen bulbs which are enclosed in glass reflector housings. I put tail lights on the winglet tops. They are made from a piece of wood turned to 1" diameter and bullet shaped to fit the winglet. I used automotive sockets with 1" test tubes to cover the assembly. It worked really well.

Our Deepest Sympathy is Extended to the McMullens

I regret to report the death of Long-EZ builder, Tom McMullen, of Lake Worth, Florida. Tom succumbed to pancreatic cancer on October 15, 1993.

Tom was a good friend of Ken Miller and built his Long-EZ with the same modifications as were built into Ken's.

We shall surely miss Tom and his talents. We have all lost by his passing away. His wife, Eleanor, would no doubt appreciate your notes of support in this time of tragedy.

Mrs. Tom McMullen
4109 Waterway Drive
Lake Worth, Florida 33461

For Sale

Terra Nav-Com TXN 960 new in the box - $1,200, Alternator - Ward Aero, 60 amp, Ford type, new - $200.

Call Curtis Clark at (909) 585-7010.

Walkman Stereo Amplifier

Dave Nelson (MI) - These days, an entire stereo system, with AM/FM, cassette, or even CD can be had fairly cheaply - in the form of a Walkman type personal stereo. There is one drawback, though, these personal stereos are designed to drive a single pair of low power head phones and generally, will not prove satisfactory driving your aircraft intercom.

Thanks to integrated circuits, it doesn't take a rocket scientist to build a cheap stereo booster amplifier at low cost and in a small size.

The adjacent circuit uses an IC to boost the Walkman's output to drive your intercom. This chip can provide up to 2 watts of power output, but we'll use a fraction of it to keep things simple. The stereo inputs are fed into our little wonder via capacitors C1 and C2, which block any DC in the input. The output capacitors C3 and C4 block any output DC. The R1, R2, C7 network limits the popping noise typical upon turn on and off. The R3/R5 and R4/R6 resistors set the gain of the system, and the associated C5 and C6 capacitors provide an AC bypass for the feedback system. C8 provides the amplifier with some isolation from power supply noise.

Circuit layout is not critical, although it makes sense to route the input and output lines away from each other where possible. I built my amp on a 1.5"X3" circuit board, and used small audio plugs and jacks to connect the input, output, and power supply. I'd recommend putting the IC in a socket unless you are good with a soldering iron. Use 1/8 W resistors and for capacitors C3 - C7 use electrolytic capacitors with at least 16 working volts capability. All components except IC1 are available from Radio Shack. IC1 is available from DigiKey (1-800-DigiKey), and is also usually available from local TV/Radio repair shops (it's commonly used in small stereos). You can use LM377, LM1877, ECG990, or SK9012 - they are all pin compatable parts.

The gain of this circuit is set by the ratio of the R3/R5 and R4/R6 capacitors, as Av = (1+R3/R5) (or Av = (1+R4/R6). I have selected values to limit the gain to a very small fraction of the useable output. For those that need more gain, increase the value of R3 and R4 - but don't go for gains over 50 since the amplifier may become unstable and begin to oscillate.

The whole works can be built for well under $20 if you are a scrounger. Adding a workable stereo to your cross country aircraft may seem like an unbelieveable luxury until you fly it. Then it will become an absolute requirement. Give it a try. You're sure to be pleased you did!

State Representatives

Steve Beert 319-359-6781	Iowa	Buzz Talbot 312-759-1124	Illinois
"Sandy"Mondary 317-852-2890	Indiana	Terry Yake 913-451-8904	Kansas
Rex Rexin 313-349-8877	Michigan	Lynn Butters 314-837-2607	Missouri
Ken Pickel 216-235-1242	Ohio	Fred Warden 713-492-2078	Texas
Jim Evans 804-898-1231	Virginia	Mike Bem 215-647-5137	Pennsylvania
Gene Zabler 414-886-5315	Wisconnsin	Steve Wright 615-373-9707	Tennessee
Rob Martinson 303-670-0799	Colorado	Dave Williams 201-938-5830	New Jersey
Paul Adrien 508-682-5656	Massachusetts	Mike Delaney 502-491-6851	Kentucky
Mike Stolle 505-821-3778	New Mexico	Norm Howell 805-256-1643	California
Phil Cornelius 918-247-3123	Oklahoma	Jack Fehling 407-744-1309	Florida
Alfred Coha 602-546-6646	Arizona	Dave & Ali Nelson 507-281-0469	Minnesota
Bob Sudderth 205-668-4900	Washington	Bob Iuliano 518-798-5915	New York
Perry Mick 503-689-1801	Oregon	Arleigh Hughes 808-572-8864	Hawaii

Jet-Hot High Temp Coatings

Both Barrett Bailey's Bailey's Comet (AZ) and Herb Sanders (TN) have called my attention to this new process that should reduce the under cowl temperatures by 35 degrees. The exhaust system coating keeps heat inside the exhaust pipe thus allowing cooler air to hit the cylinders. Tests show a 325 degree reduction in radiated temperature 1" from an exhaust pipe that has been coated. The general price is about $10 per running foot of pipe. Barrett had his O-320 pipes done for $69.

I think one could make his own mild steel exhaust system and have it coated for near stainless performance at a lower price. Jet-Hot claims the coating forms a non-brittle, metallic-ceramic composite which provides a nearly impenetrable defense against corrosion, erosion, abrasion, discoloration, oxidation, and thermal fatigue. Call 800-432-3379 for sales information.

Engines Wanted

Lycoming O-320 and O-360 for Long-EZ / O-235 and RV6 project - call -617-662-6216
Rolland Sturtevant

Used Prop Wanted

SAE # 1 or 2 pattern off 135-150 hp Long-EZ installation. Want to use for an engine break in period that will keep engine RPM to 2700 at 2000MSL.. Beg, borrow, rent, or buy.
Jim Sprowl (KY)
(502)-223-4608

Long-EZ Project For Sale

Fuselage on gear, engine mount, strakes, pants, etc. $3000.
Don Hunthrop
615-366-8962 evenings

Home-Built Instrument Post Lights

Macey White (OH) - Directions:
1. Dremel 1/4 x 3/8 rectangular hole in black rubber table leg cap.

2. Remove nut and washer from lamp assembly.

3. Solder 22 gage wire leads on to lamp base and wrap with electrical tape or heat shrink tubing.

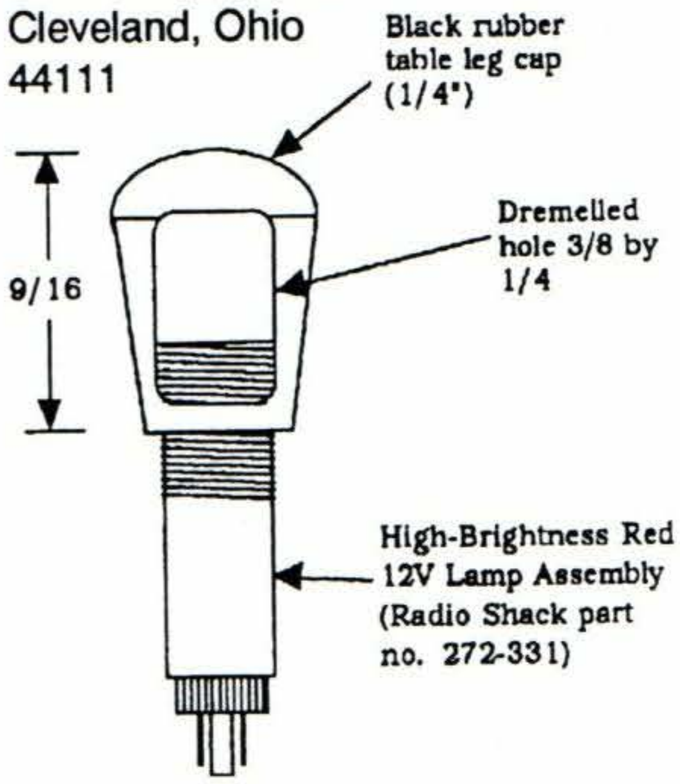
4. Insert assembly into rubber cap.

5. Drill 9/32 hole in instrument panel directly above the instrument. Get as close to the instrument as possible.

6. Insert assembly into the hole and wire into the instrument light circuit. If the assembly is loose in the hole wrap with electrical tape or rubber cement in place.

Bill of Materials:
1. Black rubber table leg cap (1/4")
2. High-brightness Red 12V Lamp assembly Radio Shack # 272-331
3. Eight inches of red and black wire.

Total cost of these is about $1.18 each. Send me $5.00 and a SASE and I will send you a completed assembly to use as a guide.
17308 Oxford Ave.
Cleveland, Ohio
44111



Long-EZ Wanted

O-320 powered Long-EZ with big brakes and rudders. Contact: Ann McMahon days - 504-346-0707, evenings - 504-387-6989.

Intelligent Idiot Lights In The Cockpit

Gary Hertzler (AZ) - I can't take credit for this one, in fact I first came across it on Harry Bawcom's Long-EZ, "Yellowstone Express".

If we have an electrical system, we are required, by regulation, to have an ammeter. If your airplane is like mine, the ammeter is stuck off in the corner somewhere and is not part of my regular instrument scan pattern. It would be possible for me to have a charging system failure and not realize it until the battery dropped off line. Also, I have an electronic ignition which, requiring battery power, would quit if allowed to get too low.

To provide an alert of pending problems, I have employed a $6 Radio Shack LED battery checker, # 22-1635. The unit, which is designed to plug into a cigarette lighter socket, has three LED's, red, yellow, and green, to roughly indicate battery voltage. The red light comes on when voltage drops below 11 volts. The yellow light is on between 11 and 13.6 volts and the green light illuminates between 13.7 volts and 15 volts. Above 15 volts the red light comes on in conjunction with the green to indicate overcharge condition. (All voltages are approximate.)

To adapt it to my panel, I carefully pried apart the plastic case and removed the small circuit board with the 3 lights and drilled 3 holes in my instrument panel to match the position of the lights. With the lights inserting through the panel, a little 5-minute epoxy holds the assembly in place. Wiring is accomplished by simply connecting the plus lead to the switched side of the master and grounding the minus lead. I have a positioned light array high on the panel, just below the line of sight. Now I can keep a constant vigilance on the condition of my charging system and all for just a few dollars.

O-235 Oil Cooler Adapter

Walter Renko (MI) - I got an oil cooler adapter from Aviation Development Corp. 1305 N.W. 200th Court Seattle, WA 98177 for $250. It is the same one Aircraft Spruce has for $350. My Lycoming O-235-C1 doesn't have provision for an oil cooler.

Trade Defiant for Vari-Eze

Wish to trade a Defiant project on the gear, no engines, all flying surfaces built and ready to finish, for a flying Vari-Eze.

Contact:
Noah Peckler
(805) 525-0417

Long-EZ First Flight

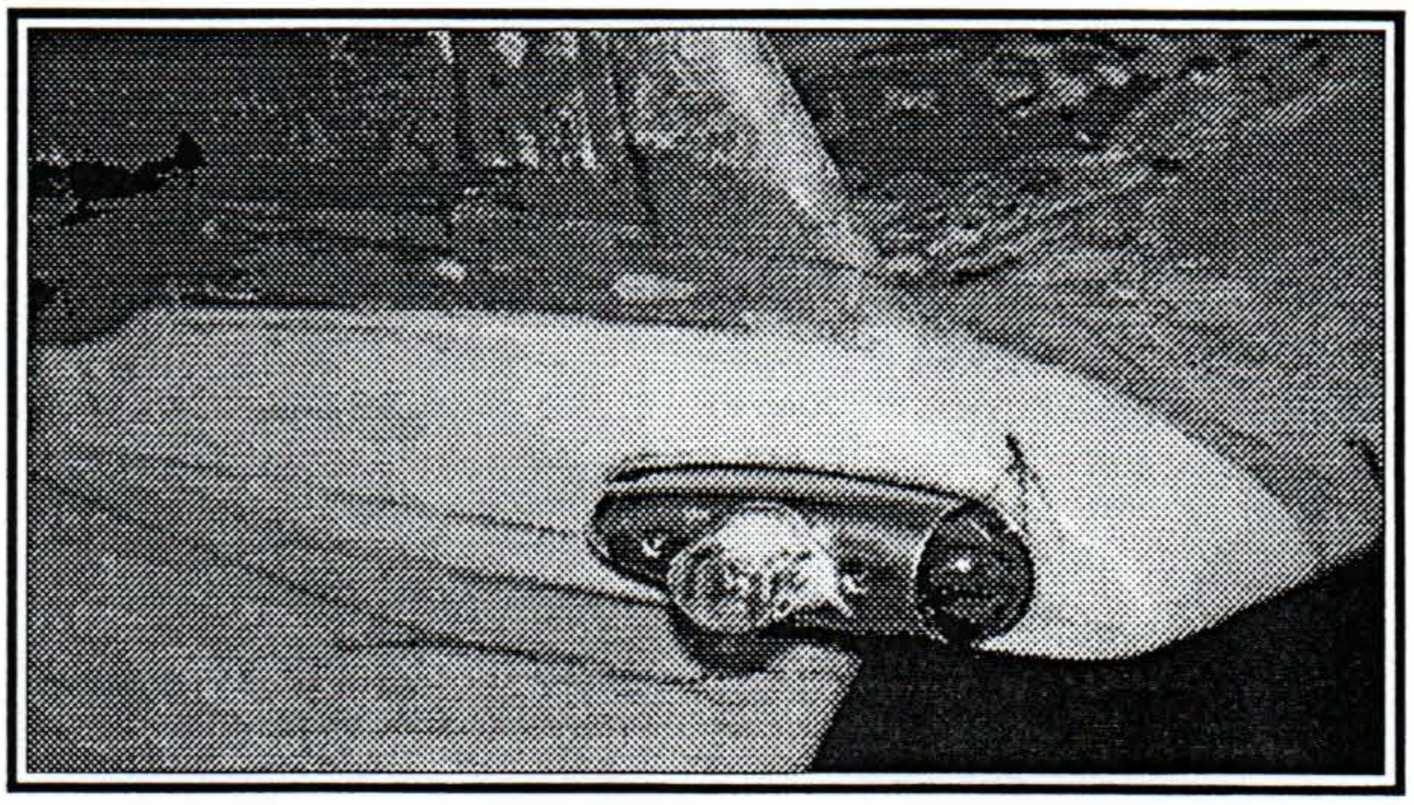
Jim Gomory of Rochester, PA just wrote me with news that his Long-EZ flew on July 11 at Zelienople airport. It has 25 hours on the tach now. Jim said ,"It was a real thrill!"

Nav Light Installation

Sid Lloyd (TX) - While looking at nav light installations at OSH I found many that seemed like after thoughts. They had no flat mounting surface, were partially hidden from the rear, and were canted inward. I thought I could improve on that.

To form the mounting foam, I made a trough with tape around the front of the winglet past the wing leading edge and down the winglet side. I filled it with pour foam. It worked great and was ready to sand in a couple hours. I added about 2" of wing length with the foam, set a level line, then contoured it to match the wing and faired it to the winglet. I ran a string out parallel to the main spar, mounted the wing, and ran another string exactly perpendicular to the first string. I then sanded the foam flat in line with the string. This made the foam and the light perpendicular to the line of flight. When sanded flat, a straight edge was flat against the front and about 3/4" out from the winglet trailing edge.

I traced the strobe base outline and made two aluminum mounting plates with flush riveted nut plates to attach my Whelen strobes. I put the mounting plates on the foam making sure they were parallel to my level line and traced around them. I used the Dremel router attachment to cut a recess in the foam deep enough for the mounting plates plus 1/32" for flox. Next I excavated out a cavity in the foam which led to the wire conduit in the wing. The hole was large enough for the bulb extension and all the wires. Finally I foxed the plates in place and covered the whole thing with two plys of BID.

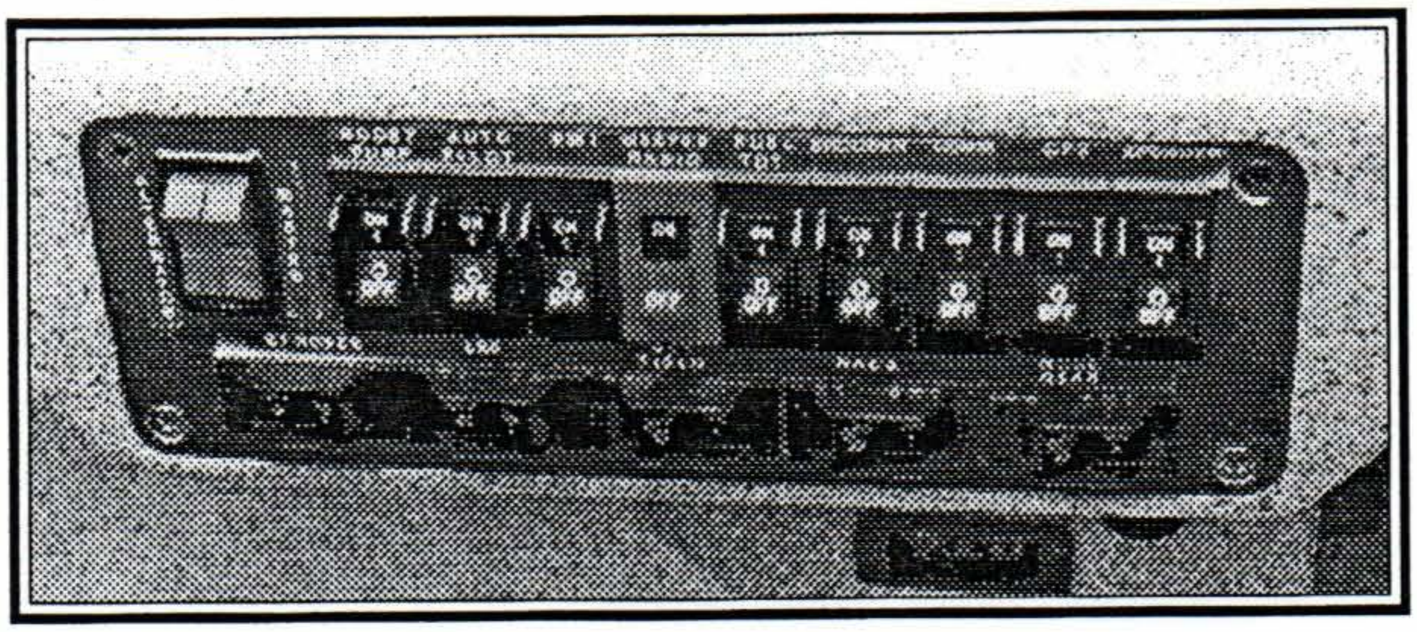


Switch Breakers

While at **KCGIG 94** I saw many great ideas. Norm Dodge's Long-EZ sported a really clean switch panel which was less cluttered than most because the switches were also circuit breakers. Cost was reported to be about $13 each.

He used M-series rocker actuators from Carlingswitch. They are much less expensive than conventional circuit breakers and act as a switch. Their use allows less weight, less wiring, less stuff to make panel space for, and less clutter for the pilot to deal with. They are rated up to 25 amps and 65 VDC. They are available in a choice of colors, circuits, time delays, and actuator styles.

I called for a catalog and found lots of great switch solutions with DC ratings. East US & Canada 800-243-8556, West US, South America 805-527-0202, Europe 011/44-392-364422.



Wes Gardner Accident Report

I recently received a thorough report of the Gardner / E-Racer accident from the author, Harry Bawcom. The accident was investigated by: Tom Mcneilly, Jim Hays, and Harry Bawcom. The engine tear down was performed by Jim Hays, Shirl Dickey, and Jerry Madsen, an A&P.

The fact that this aircraft was an E-Racer appears to have had no bearing on the accident or its survivability. Any of you wishing a copy of this report should just send me a SASE and I'll forward a copy to you.

Go-Fast Vari-Eze O-320 Powered

Wes Gardner's Vari-Eze, baggage pods, electric EZ-Lift nose gear, intercom, Nav lights, Leather upholstery, always hangared, trays installed for KX155 Nav com & K197 mode C transponder, gyros, O-320 engine (800 TT since new!), balanced 160+ hp, Ellison TBI, Klaus Savier's electronic ignition, Contact: Wes Jr. or Maria Gardner (909) 874-8742

WOW, A GREAT IDEA!!

Compute % Power

Edra Parker (IA) - I recently came across an easy way to determine the percent power that one is obtaining from an engine.

You need to know manifold pressure and RPM.

Add the Manifold Pressure to the RPM/100. If the sum = 48 you are producing 75% power. If your sum changes 3 units either way you have made a 10% power change.

i.e. If your sum is 45 you are producing 65% power, if it is 42 you are producing 55% power or going the other way, if your sum is 51 you are producing 85% power.

GPS Interference?

Once upon a time thousands of people trashed their LORANS and ran to the land of GPS thinking that there would be no more interference. After all, the transmitter was high in the sky and if the antenna was exposed to the sky there could be no problem, right? Well maybe not quite right all the time.

It turns out that GPS satellites broadcast on a frequency that is about the 12th or 13th harmonic of several aviation communication frequencies. Normally radio designers don't worry about frequency multiples that are that far removed from the primary frequency because they are so weak. The GPS signal turns out to be a pretty wimpy thing and is easily interfered with.

If your GPS drops off without any good reason (satellites are blocked by a tree or wing or ?) try this and see what happens. Turn your GPS receiver to display signal quality diagnostics. Turn your com radio to 121.15 MHz (the 13th harmonic of the com frequency) and key the mike for about 10 seconds. The GPS will probably display a loss of signal quality.

The fix is to go to the local avionics shop and get a com filter to put in the transmitter antenna lead. This may not cure all the problems, however, as some of the com energy may sneak out of the transmitter's shielded case and penetrate the GPS receiver. You might try to add some shielding between the radios as the only real fix is to put the com radio in an other airplane when you use your GPS. Not too practical; but it does work, I've been told.

You might try the shielding material described in a recent CSA newsletter article (Apr 94 p 23) that described new products by 3M. Let me know how it works. I don't have a GPS but those who do would love to hear.

Limo-EZ Mods

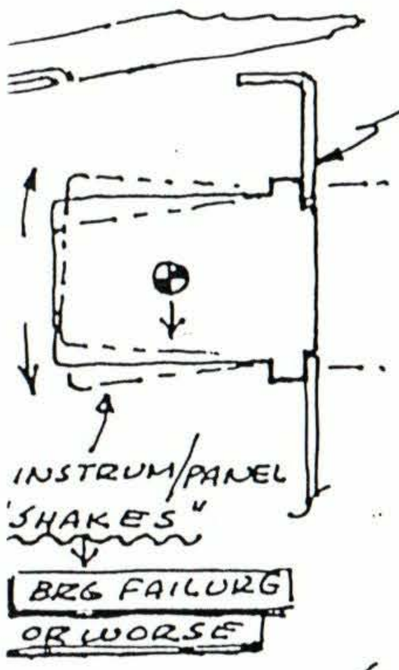
You early EZ builders will undobtedly remember Sam Kreidel's great cartoon ideas in the Squadron One Newsletter. He's back with more neat ideas. Welcome back Sam.

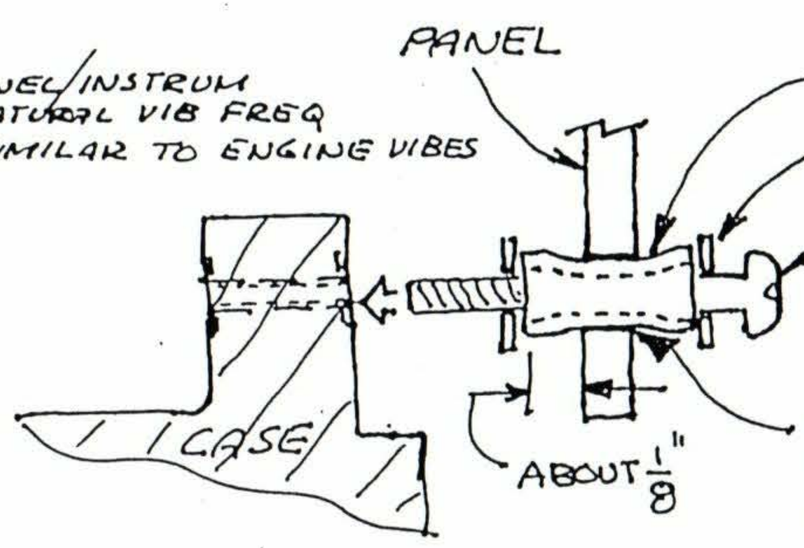
26 EZ INSTRUMENT SHOCK MOUNTING (GYRO'S PARTICULARLY)

BACKGROUND: PROP OUT-OF-BALANCE CONTRIBUTED TO INSTR. FAILURE & JUST PLAIN "ENGINE VIBES.

APPROACH: "SOFT-MOUNT" INSTR. MOUNT SCREWS & SUPPORT CASE AT CG OF INSTRUM WITH BELLY-STRAP

RESULTS: INSTRUMENT VIBES ALMOST ELIMINATED (TOUCH TEST)



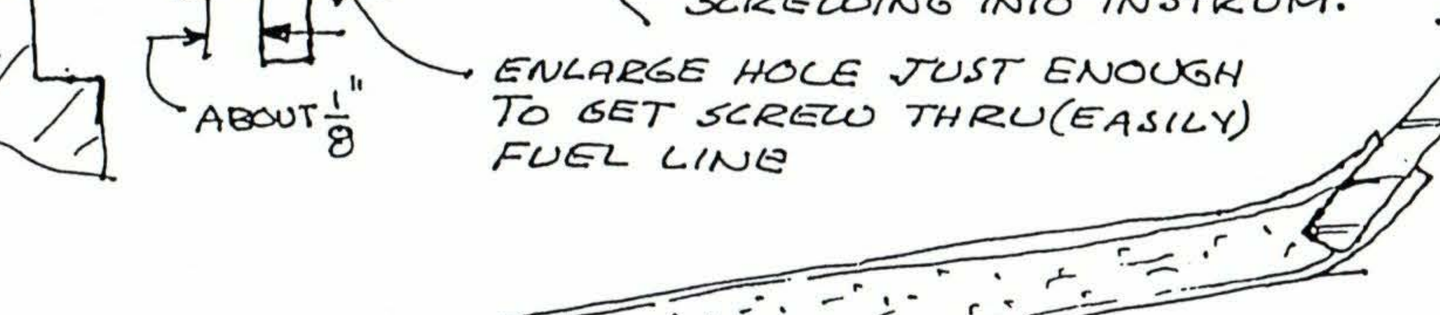


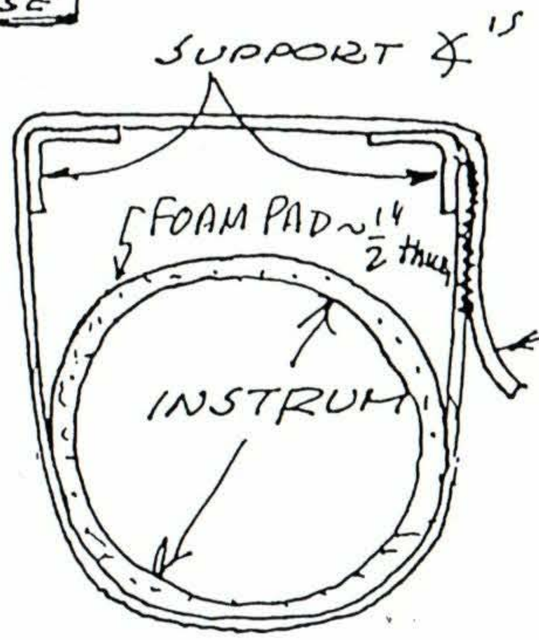
MODEL AIRPLANE FUEL LINE (SILICONE) 4 PLC's

WASHER (BRASS) - TOTAL 8 (SMALL DIA O.D)

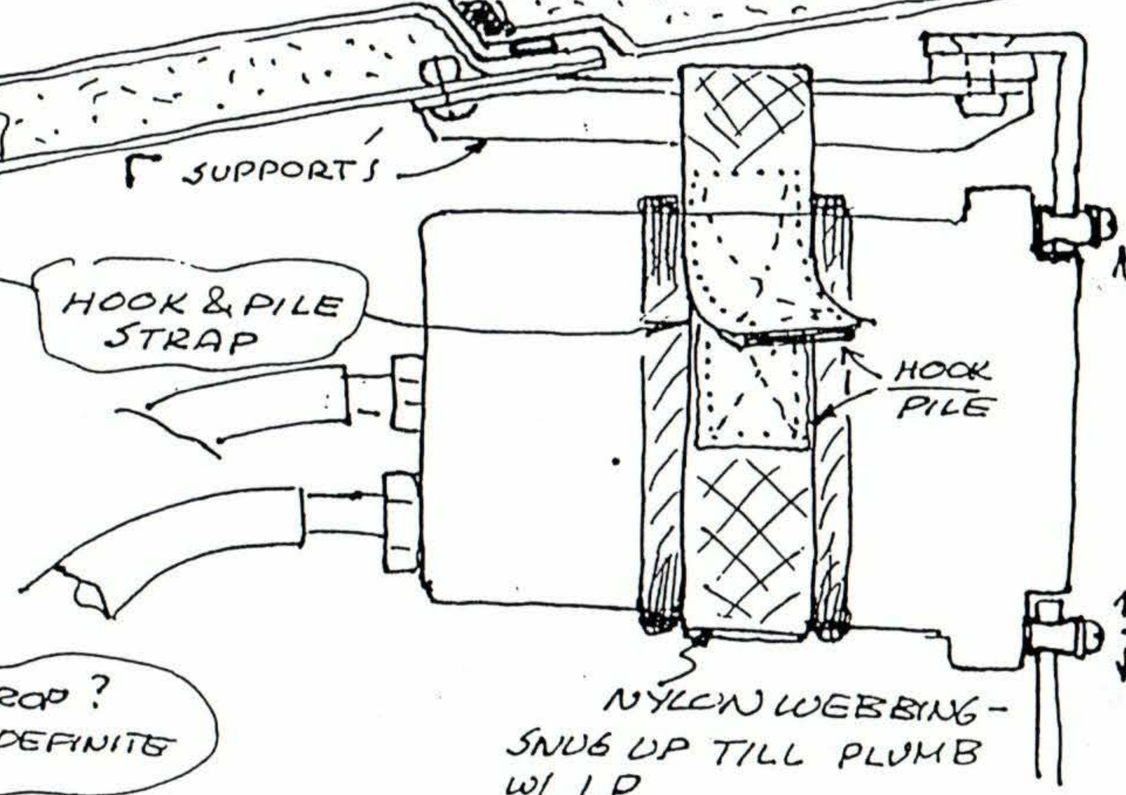
INSTRUMENT ATTACH SCREW (BRASS) - 4.
(JUST SNUG IT DOWN TO BARELY COMPRESS FUEL LINE WHEN SCREWING INTO INSTRUM.

ENLARGE HOLE JUST ENOUGH TO GET SCREW THRU (EASILY) FUEL LINE





HOOK & PILE STRAP



YOU SHOULD BE ABLE TO PUSH ON THE SCREWS & SEE/FEEL INSTRUMENT MOVE FWD & SPRING BACK - & UP/DOWN

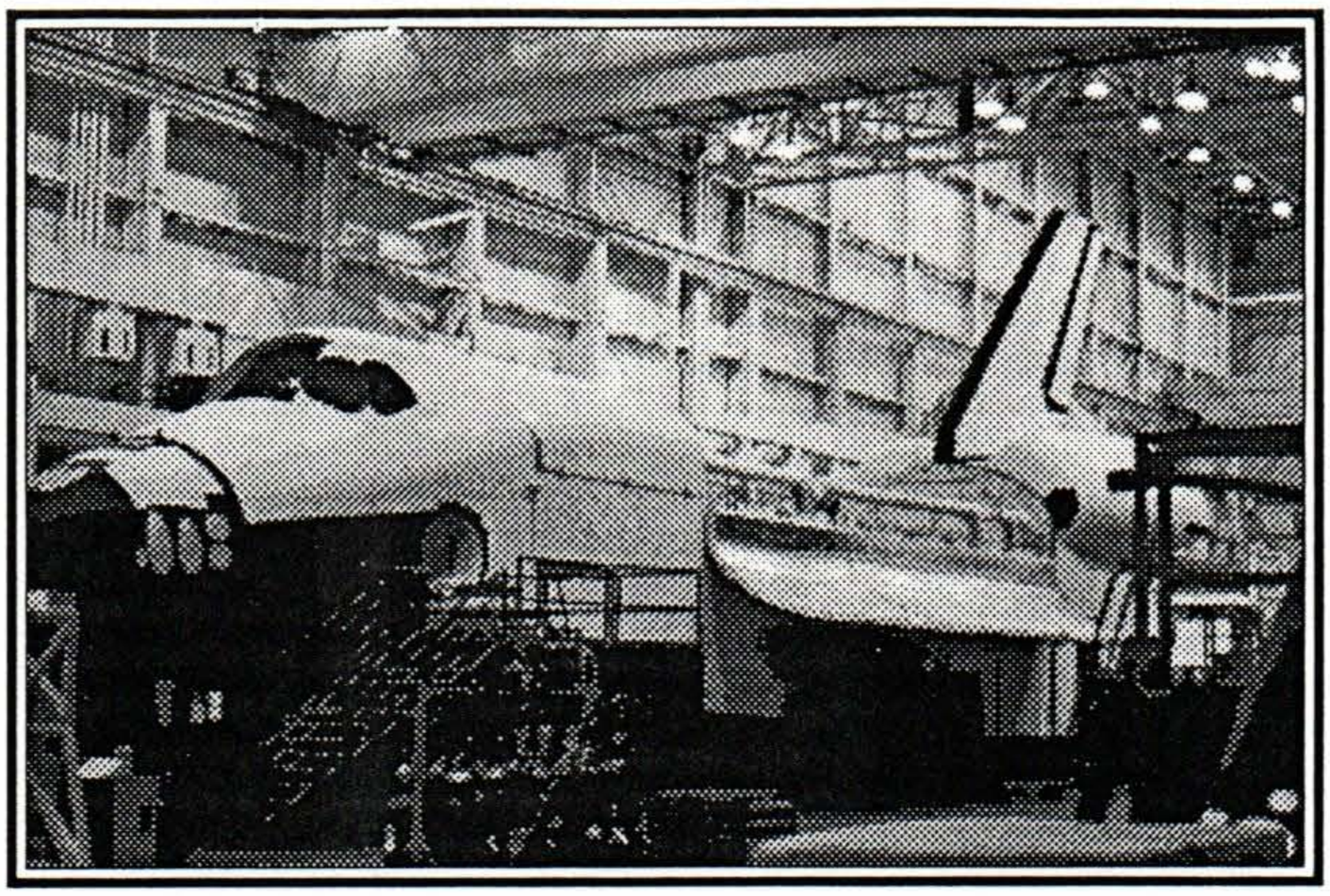
NYLON WEBBING - SNUG UP TILL PLUMB W/ I.P.

SO WHY NOT BALANCE THE PROP? I HAVE, BUT THIS SCHEME IS A DEFINITE IMPROVEMENT - FOR ME.

S Kreidel
9-9-94

En route home we stopped in Dallas to see Deleay Plaza, the site of JFK's assassination. An interesting and worthwhile museum has been created on the 6th floor of the Texas School Book Depository. One can view the spot where Oswald allegedly shot Kennedy. The size of the whole area was much smaller than I had imagined from TV and magazine pictures.

In a little over six EZ flying hours we were home in Cleveland facing more Ohio winter. It was hard to believe the Texas 80 degree sunshine was so recent.



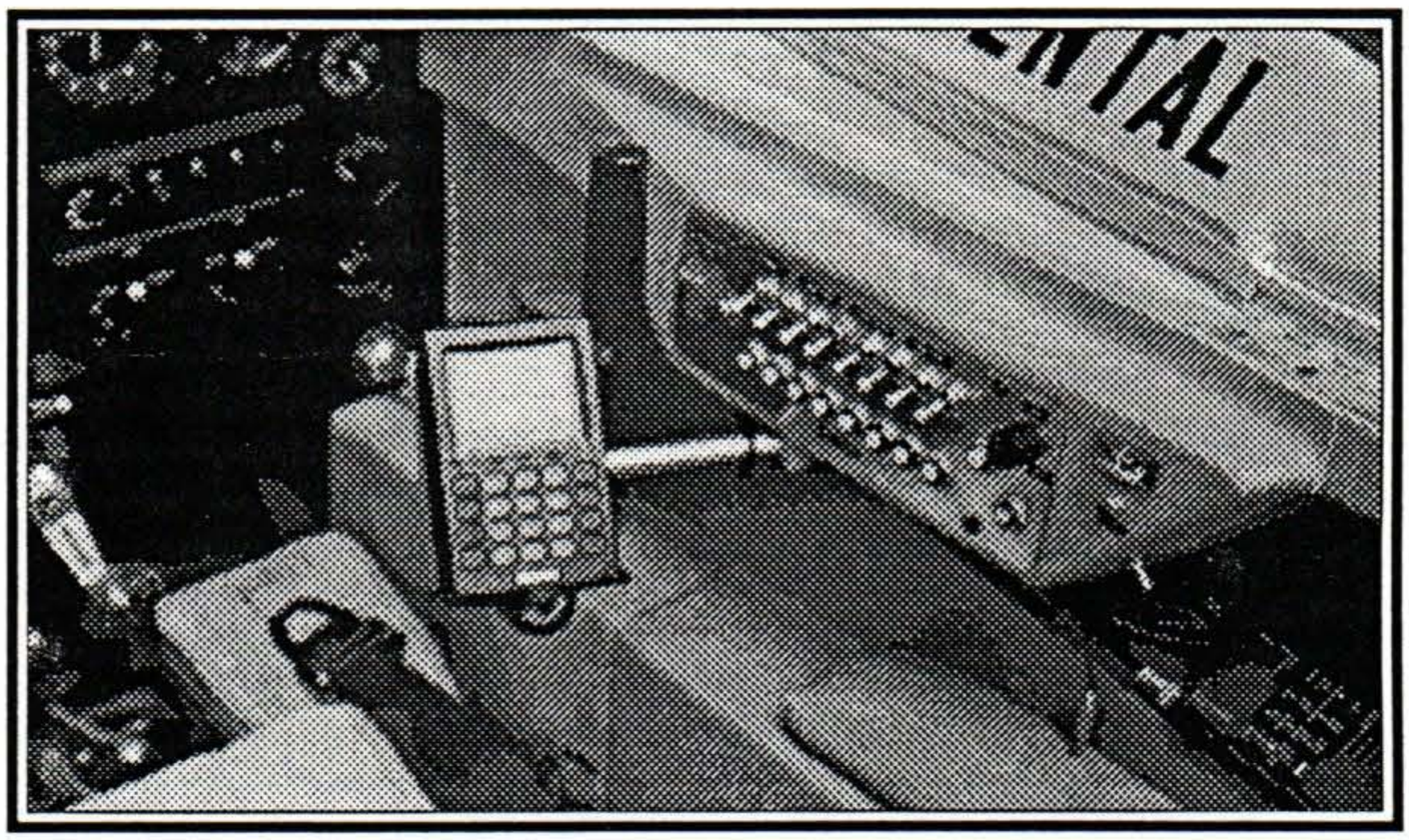
Insider view of Johnson Space Center. You name it and they can simulate it.

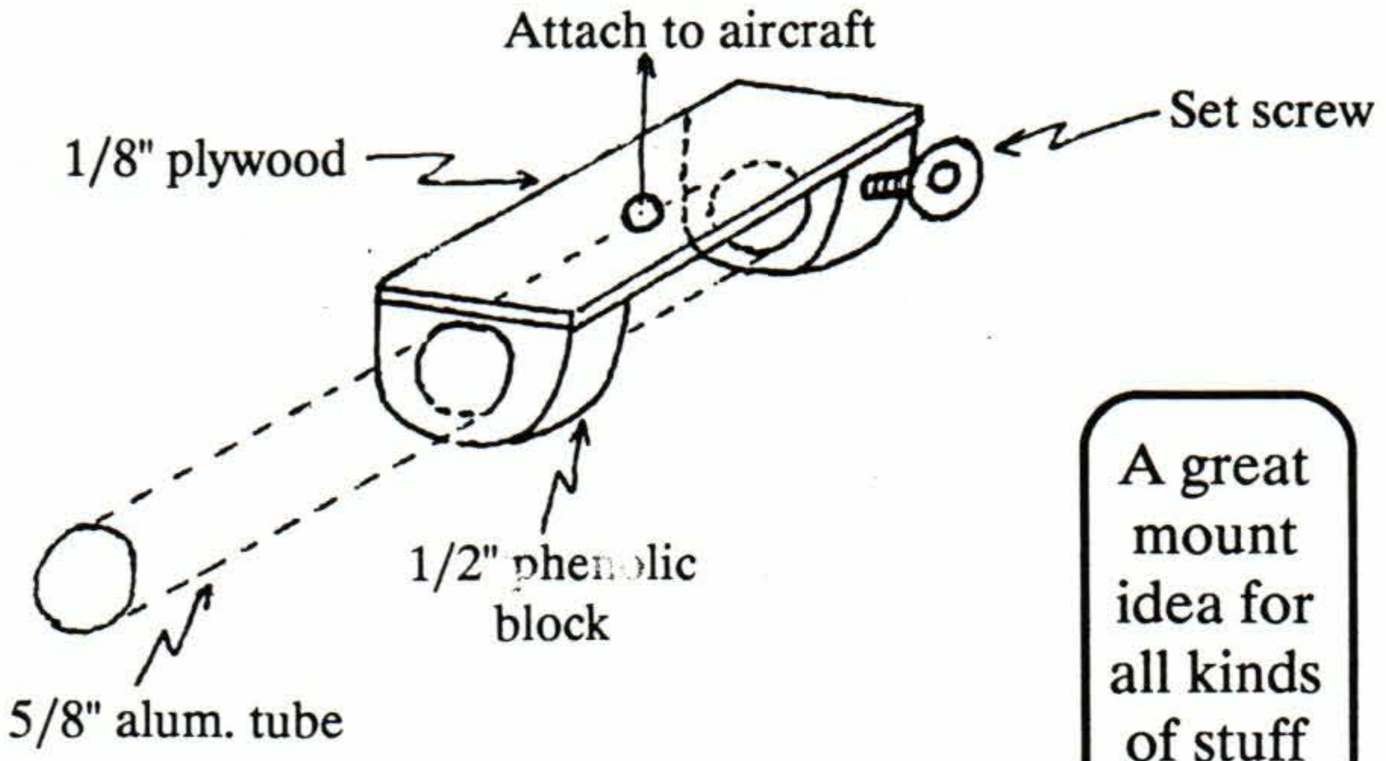
Portable GPS Mount

Mike Stolle (NM) - After buying a Garmin 95 last summer, I found I wanted a way to mount it in the airplane to run off aircraft power, be easily removable, and positioned where it could be viewed continuously without blocking any other instrument.

I mounted the Garmin surface mount to a small piece of plywood that is attached to a 5/8" piece of tubing with a couple plys of BID. The tube is mounted to a small bracket that attaches to the bottom of the switch panel with one screw so that it can pivot out of the way when you get in or out of the airplane. The unit can also rotate in pitch to optimize the viewing angle for the LCD display. A set screw on the bracket holds the tube in place at the set angle

The GPS works great in this position and normally tracks 8 satellites with the antenna mounted on the unit as shown. I have never considered using the remote mounted antenna. Overall, I am very pleased with the Garmin 95.





A great mount idea for all kinds of stuff