THE CANARD PUSHER

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If you are building a RAF design, you must have the following newsletters:
VariViggen (1st Edition), newsletters 1 to 62.
VariViggen (2nd Edition), newsletter 18 to 62.
VariEze (1st Edition), newsletters 10 thru 62.
VariEze (2nd Edition), newsletters 16 thru 62.
Long-EZ, newsletters 24 through 62.
Solitaire, newsletters 37 through 62.
Defiant, newsletters 41 through 62.

A current subscription for future issues is mandatory for builders -- as this is the only formal means to distribute mandatory changes. Reproduction and redistribution of this newsletter is approved and encouraged.

PLEASE NOTE: BUILDER SUPPORT IS ON TUESDAY AND FRIDAY FROM 8:00 AM TO 5:00 PM ONLY. If you have parts that you would like us to see and/or would like to drop in, please make it Tuesdays and Fridays if you can. If you need to come other than those days, please call so we will be sure to be here. When you call on Tuesdays and Fridays for builder assistance, please give you name and serial number. It is required before you can be put through to Mike. This is a company policy and we must adhere to it.

When writing to RAF, send along a stamped, self addressed envelope if you have builder's questions to be answered. Please put your name and address on the back of any photos you send.

DEFIANT FLYERS

John Steichen has just completed the installation of a S-Tec System 50, two axis auto pilot in his Defiant and reports that he is very pleased with it. He did have some problems getting it to work correctly in the Defiant, but thanks to the excellent support he received from S-Tec, and his own ingenuity, he has it working very well now. He has used it in the world of radar vectors and reports that the heading-hold feature is a real joy.

We can verify all he has said about S-Tec. We, at RAF, installed the same System 50 auto pilot in Burt's Catbird and it is a wonderful piece of equipment. John Steichen says he would be willing to help other Defiant flyers who may be having problems installing an auto pilot. John lives at 960 86th Street, Downers Grove, IL 60516. John has filed IFR several times now in his Defiant and says it is a gem. On two occasions, John has encountered very light rime ice and has found that his Defiant requires a verymild change in pitch trim due to the ice accumulation.

Burt has encountered light rime ice on several occasions in N78RA and his recollection was that the trim change was so small that he saw no need to retrim. There are at least 17 Defiants flying as of January 20, 1990.

CENTRAL STATES ASSOCIATION

Please note that the Central States Newsletter/editor has a new address. Arnie Ash has retired and passed on the editorial responsibilities to Terry Schubert.

New members are encouraged to join Central States and receive a quarterly newsletter and attend the annual flyin. Membership is $15.00 -
Contact: Terry Schubert
9283 Linbergh Blvd.
Olmsted Falls, Ohio 44138

CORRECTION

We regret that we incorrectly identified Long-EZ VH-HGS in CP59. The owner/builder of this beautiful Long-EZ is Henry Schultz of Glengowrie, Australia. Henry bases his plane at Murray Bridge. He and his Long-EZ took top honors at the National Sport Aviation Fly-in in Australia in 1988 as well as in 1989. The Concourse D'Elegance Award, the equivalent of Grand Champion, was awarded for Best Amateur Built in 1988 but covered all categories, Warbirds, Ultralites, Amateur Builts, Etc. in 1989. Congratulations, Henry - Sorry we goofed!

OVER-HEATING OF ENGINE ACCESSSORIES

Such as magnetos, voltage regulators mounted on the upper firewall, etc. An EZ's updraft cooling system does indeed cool the engine accessories while in flight. The lower side and accessory case end of the engine are immersed in cold air in flight. When you stop and park nose down after a flight, the air surrounding the engine and accessory case is trapped between the firewall, the accessory case and the top cowling. The temperature of this air, rapidly increases to as high as 350°F or even 400°F - try it yourself - use a "template" stick-on temperature indicator, stick it on a magneto and go fly. Park it for a few hours, then pull the top cowl and read the "template". You may be surprised, even shocked!

The Slick Magneto people have told RAF that the Slick mags will break down and probably have premature failure of the high tension coil if the temperature of the mag gets much over 300°F!

How to fix this problem? You could do what Mike has done on N26MS. He installed his oil cooler on the firewall and exits the cooling air through the oil cooler and out of the top of the cowl. This is not the best spot for an oil cooler, (his oil runs between 190°F and 210°F) but it did achieve something else, it allowed hot air in this area to "chimney" out through the oil cooler and top cowling. Hot air rises, cold air comes in through the intake on the bottom of the fuselage and, presto, you have cool magnetos and anything else you may have mounted in this area. Mike's magnetos have never gone over 175°F during the past 600 hours of flight. We are not necessarily suggesting moving your oil cooler - so what else can be done? A "drop in" door could be installed. While we at RAF have never done this to a Long-EZ, we certainly have on several other airplanes and they work well. A "drop in" door is a door hinged with the hinge running parallel to the aircraft centerline. The door is made like your oil check door, but it opens into the cowling. It must be restricted from opening more than 15° to 20°. It does not have a latch or spring to hold it open or closed. It opens by gravity when parked or taxiing but it will close when you take off and fly due to high air pressure in the cowling. If you have very high temps on your mags, or you have had premature mag failures, you may consider such a door. If nothing else, try opening your oil check door when you park, but PLEASE don't forget to close and latch it before you take off!

CAUTION

Seal your fuel tanks with a generous coat of Saf-T-Poxy before you close them out. (Two coats is even better). Do not neglect to paint at least two coats of epoxy inside the sump blisters before you install them. They will certainly leak if you don't.

FUEL LINE BLOCKAGE

This has been a CP subject before, but we continue to receive reports of fuel line contamination. Listen up, People! A fuel line blockage may, at the least, cause a forced landing and at the worst, kill you. Foam chips, fiberglass shards, pieces of micro falling into your fuel tanks when you install the fuel caps, can work their way into the fuel lines and we have even heard of them getting all the way to the fuel valve and jamming the valve! How about that for a problem! Check your fuel lines for obstructions before first flight. Check them again after 50 hours and thereafter at each annual inspection. A fuel line or valve blockage is a very serious problem.

RE: WHEEL BALANCING ARTICLE IN CP 61

George Lyle sends in the following hints to enhance safety when installing sticky-backed weights in your wheels:

1) Make sure that the mounting location is absolutely clean - use MEK and a paper towel, wipe several times until paper towel is clean. Brake residue makes it difficult for the adhesive to grip, and a lead weight in the brake caliper would not be too neat!

2) Bend the lead weight to match the curvature of the wheel - allows 100% contact for the adhesive.

3) Use lead weights with the thinnest adhesive foam tape for best results.

Thanks, George.

MORE ON SPIN-ON OIL FILTERS FOR CONTINENTAL ENGINES.

Richard Cobean sent in a copy of the paperwork for an STC'ed spin-on oil filter adapter that bolts directly onto the side of the crankcase of Continental engines, C-75, 85, 90 and 0-200. The model TAF oil filter adapter uses a Champion CH-48108 or an Electro Systems ES-48108 filter. This filter adapter comes complete with a comprehensive set of instructions and all applicable gaskets. The filters are commonly available at most FBO's. Richard Cobean obtained his from: El Reno Aviation, Inc.
PO Box 760
El Reno, OK 73036
405-262-2387

LORAN ANTENNA INSTALLATION

Although this subject has been covered in several CPs, RAF continues to receive requests as to what is the best or latest on Loran antennas. Well, this will hopefully be the last word on the subject.

This is a description of my Loran antenna installation on Sally and my Long-EZ, N26MS. There are at least two other Long-EZs flying with exact copies of what we did and all three have excellent Loran reception.

Right or wrong, I firmly believe that a Loran antenna must be outside the fiberglass skin of the airplane to work correctly. Sure, you can point to many installations in winglets, down gear legs, even in canopies that "work". They may work, but believe me, they do not give maximum performance to your Loran. If you intend using your Loran as Sally and I do, a primary means of navigation all over the USA, you should attempt to get the maximum performance available out of the antenna. After trying every antenna suggestion that has been in the CP, I have convinced myself that the antenna needs to be out from under fiberglass/epoxy skins. (Just as transponder antennas do). I believe the glass/epoxy skins attenuate the signal to some degree, thus compromising the performance of the antenna and worse yet, this compromises the performance of your Loran. It does not matter how cheap or how expensive the Loran, a poor antenna will a poor Loran make!

I took a hacksaw blade and cut the rear seat thigh support out flush with the floor of the rear cockpit. Since we have a flush NACA engine cooling inlet centered in the bottom of the fuselage, I decided to offset the antenna from the centerline so as not to compromise the NACA inlet's efficiency.

First things first. I believe to get the best out of a Loran (or a transponder) you should use the antenna supplied and matched by the manufacturer. Anything else will be a compromise. So I used the antenna pre-amp (a small aluminum box of magic that amplifies the incoming signal which in some locations can be very, very weak) as supplied by the manufacturer, in this case Northstar. Incidentally, I have flown ARNAV, Apollo and Micrologic Lorans and none compare to Northstar's M1 for overall performance, user friendliness and features in my opinion.

I cut through the floor of the rear cockpit where the thigh support would cover and protect the antenna and coax cable. (See sketch) Using a Dremel, I kept grinding away until the antenna could be installed from inside the cockpit, through the floor, so that the base of the antenna was perfectly flush with the inside glass skin of the cockpit floor. I then made an aluminum plate to match the base of the antenna. I sandwiched the ground plane (copper screen) between the base of the antenna and this aluminum plate. I applied a generous coat of DC4 grease to the aluminum base and plate prior to tightening the

three bolts. This grease prevents arcing and corrosion of the aluminum and assures long term excellent electrical contact between the copper screen ground plane and the antenna base. I used exactly the same method to install the antenna pre-amp to the ground plane.

The ground plane (without which this type of antenna simply will not work at all!) is a single piece of copper wire cloth 16x16 mesh with .011 copper wire diameter. (I got it from McMaster-Carr, their part number is 9224T22, phone in LA, 213-692-5911, approx. $3.00 per square foot). I cut it to fit the rear cockpit floor from the back of the front seat bulkhead to the forward face of the rear seat bulkhead and from the left side to the right side. The bigger the ground plane, the better.

I simply micro'd the Northstar bent whip antenna into the hole I had made. You could use silicon or you could figure some way to make it removable but I don't think it would be worth the time and effort. If mine ever dies, I will just cut it out and get another one.

My antenna is about 2-1/2" left of the aircraft centerline and the antenna pre-amp is on the right side. Both are under the rear seat thigh support such that the highest point of the thigh support is directly over the BNC connector on the base of the antenna. This gives the most possible clearance for the RG-58 AU antenna coax cable.

Now, the most important part of all. You must run a separate ground wire (I used 18 gage) from one bolt on the pre-amp to one bolt on the antenna base. Then from there, directly to a bolt installed in the side or end of the mounting tray for the Loran unit. From this bolt, you should run this ground wire directly to the negative terminal of the battery. If you neglect to follow this grounding procedure exactly, you will have a compromised, possibly ineffectual antenna and thus, Loran. This separate ground is the key to a really successful Loran installation in a plastic airplane. There is no need for any other ground plane wires. There is no need for any electrical connections between metal parts on the airplane. It is possible that these two features may not hurt the Loran installation, but I do not have these features on N26MS and I have optimum reception, both signal strength as well as signal-to-noise ratio. A factory installation in a certified metal airplane does not get any higher numbers than I do in the same geographical locations.

I layed up one ply of BID over the copper screen both to protect it and to hold it firmly in place. The best possible way to install this would be to vacuum bag this ply down onto the floor, but I did not do this. I then micro'd the rear seat thigh support back into its original position and taped it down with one BID tape. I finished the rear cockpit floor area with charcoal gray Zolatone to match the rest of my interior.

Obviously, the antenna coax (RG58AU) must be installed per the manufacturers instruction. Be very conscientious about installing the BNC connectors to this coax cable, or better yet, have a competent radio shop do it for you.

I installed my Northstar as high as possible in my instrument panel because I use it as a primary navigation instrument and I believe it should be as visible as possible to the pilot while he is looking out of the canopy (as near as you can get it to a head-up display (HUD)).

Mike Melvill

SHOPPING

Debbie Iwatate's EZ ideas book is still for sale - still costs only $20.00 and you can get one from Debbie at her new address: 1699 April Loop
Richland, WA 99352
509-943-9579

This little book contains plans, done EZ-style, for forward mounted brake master cylinders, a nifty roll trim system, and other neat little ideas that Debbie and Ken came up with while building their excellent example of a Long-EZ.

Hinge Pin Kit - Teflon tubing and high grade stainless steel hinge pin material - enough for ailerons and rudders on any VariEze, Long-EZ or Defiant.
Kits for VariEze or Long-EZ - $21.00 ($25.00 overseas).
Defiant - $23.00 ($27.00 overseas).

Contact: Gray Hall
851 SW 63rd Ave.
North Lauderdale, FL 33068
305-971-9731 (H)
305-974-6610 (W)
Please identify yourself as an Experimental Aircraft builder if calling at work.

We mentioned, in CP 61, Gary Hertzler's spin-on oil filter design. Unfortunately, we called out his old address! OOPs! Please contact Gary at:

Gary Hertzler
2622 S. Iglesia Crescent
Mesa, AZ 85202

High Performance Antistatic Wax.

Appropriately named Zerostatic, this new product was developed by EZ builders for EZ's and it is excellent. You can wax your entire aircraft, including the canopy, and it will greatly reduce dust build up while parked in the hangar. It is a gel that is easily applied and, best of all, it reduces electrostatic buildup - meets mil-B-8170C specifications for static decay. As an example, a Long-EZ fuel strake, treated with Zerostatic gel and polished with a high speed orbital power buffer, will have essentially no static buildup. Try it, then place your forearm in close proximity to the strake. The hairs on your arm will <u>not</u> react with Zerostatic, but will stand up and tingle with any other wax. Should help reduce the risk of static discharge while refueling.
Wicks & Spruce have this new product in stock. Give it a try.

Plans for flush rudder belhorns for Long-EZ (sorry, not applicable to VariEze). As seen on Mike and Sally's N26MS - has been flying for 3 years trouble-free. Clean up the only thing on your Long that just does not look right and enjoy stronger rudder authority for taxiing with no compromise to flight safety. $10.00 per set
Contact: Joan Richey
Rutan Aircraft Factory
Building 13-Airport
Mojave, CA 93501
805-824-2645 (Tues. & Fri. only)

Nose Gear Crank Getting Loose?

Curt Smith may have just the thing for you. He uses the ratchet out of a Craftsman socket drive to hold the gear in the up, as well as in the down, position. Since the little gear inside the Craftsman socket drive must be annealed, machined than reheat treated, he is offering to do this and will sell you one, ready to install for $29.95. This has been an area of concern for several years and many ideas have been tried by many different people. The ratchet holds the gear handle firmly all the way gear up, then, flip the ratchet lever and the same ratchet holds the gear handle firmly in the gear down position - sounds great, wish we had thought of this years ago!

Send $29.95 to : Curt Smith
5114 Canaan Center Rd
Wooster, OH 44691
216-345-6571

Canard Pusher Digest - Stet Elliott's *Canard Pusher Digest for the Long-EZ* is still available. The Canard Pusher Digest is basically a recompilation of information from CP24 - CP61 into chapters that correspond to chapters of the Long-EZ plans. (For a complete description of the Digest, See CP57). Note that the Digest is for builders and flyers of the Long-EZ only! The Digest does not support other RAF designs.

Quarterly updates to the Digest are also available. These updates provide additional information from newly published CPs to bring the Digest current.

CP Digest for the Long-EZ $67.00
Overseas orders add $20.00 for airmail, otherwise, it will be sent via surface vessel.
Annual Update subscription $25.00 (4 updates)
Overseas orders add $5.00 for postage.
Send payment to Stet's new address below:

Stet Elliott
5322 W. Melric Dr.
Santa Ana, CA 92704
714-839-4156

FOR SALE

Lycoming 0-235-L2C, 350 hrs. SMOH. Presently running in my Long-EZ - $6500.00
Contact: Peter Simmons
219 Pendelton Hill Rd
North Stonington, CT 06359
203-535-2040

Lycoming 0-235-L2C, 703 hrs. TTSN, with logs. Zero hub runout, chrome cylinders with new steel rings. New Slick mags and harness. 30 amp alternator with regulator, starter, carb with intake system. Baffles, oil cooler, boost pump, vacuum pump with regulator. 4" prop extension with crushplate and prop bolts, polished spinner for Great American prop. All out of a Long-EZ - $5200.00. Write for a list of miscellaneous instruments and new Terra radios, Apollo 612B Loran, etc. Contact: Richard Dean
777 Bocage Lane
Mandeville, LA 70448
504-845-3648

Lycoming 0-235-L2A, 1188 TTSN, with mags, carb, alternator, fuel pump, starter, oil cooler, etc. $2750.00 or best offer.

Continental 0-200, 100 HP, 248 hrs SMOH, with mags, alternator and carb. $3200.00

Also miscellaneous parts and accessories for EZ's. Call for list: Don Bates
2742 Swansboro Rd.
Placerville, CA 95667
916-622-1886 (H)
408-365-5541 (W)

Attention European CP Subscribers

Lycoming 0-235-C2C, 1482 TTSN, - $3000.00.

Lycoming 0-235-L2C, 362 TTSN, Zero STOH, preserved, no corrosion. $7000.00

Also some 0-235 engine accessories, King KX-175/KI 208 and KT 78.

All above are located in West Germany. Contact:

Norm Howell
Mulchenstrasse 1
5506 Zemmer
Bundes Republik
Deutschland

Lycoming 0-235-L2C with 24 volt starter and alternator, mags but no carb. Run out, $2750.00.
Contact: Dan Kreigh
Hangar 78 - Airport
Mojave, CA 93501
805-824-4541

Carbon Fiber reinforced wood prop for Lycoming 0-235, made by Klaus Savier. 65 hrs. TT. Increase your cruise and climb. Contact:

Dale Martin
602-776-8950

Functional Compu-Cruise. Ready to go - complete. $200.00. Contact: Mel Hinson
512-651-5086 (H)
512-828-0551 (W)

WANTED

One canopy/gear warning system by Ian Ayton.
Contact: D. Lind
619-755-6117

Need at least 8 VariEze wing attachment pins.
Contact: Bruce Wiltse
26952 Messina St.
Highland, CA 92346
714-862-4029

Dear CP,

I need help. My son is trying to build an autopilot for my Long-EZ based on a *Sport Aviation* article by Doug Garner - (1980).

Unfortunately, the thermistors required are only available in large quantities and large cost ($800.00) in Australia. The thermistors are: Fenwall GB 32-L1, may be superseded by Fenwall 112-202-EAJ-H01.

I would like to hear from anyone who may have built Doug Garner's autopilot and from anyone who may be able to sell me 2 to 10 of these thermistors.

Sincerely,
Jim Glindemann
34 Milford Crest
Frankston, Vic, 3199
Australia

TRADE

Run out 0-320-H2AD Lycoming for 0-235-L2C (can be run out).
Contact: Jacque Elliott
512-425-8913

PLEASE NOTE NEW FORMAT

PLANS CHANGES AND OTHER IMPORTANT MAINTENANCE INFORMATION

VARIVIGGEN
VARIEZE MAN/GND
LONG-EZ
DEFIANT

Each time you remove your cowl for routine maintenance, carefully inspect your exhaust system using a bright light. Pay particular attention to the weld at the flanges. Sometimes small cracks develop in this area and they are difficult to see. Exhaust systems should be carefully inspected at least every 50 hours.

Since RAF is no longer active in the development of homebuilts, we are not likely to discover many new errors or omissions in the plans. For this reason, we need your help. Please submit any significant plans changes that you may come across as you go through the building process.

PROPS FOR EZ'S AND DEFIANTS

RAF recommends the following prop manufacturers:

Ted Hendrickson
PO Box 824
Concrete, WA 98237
206-853-8947

Bruce Tifft
B&T Props
3850 Sherrod Rd
Mariposa, CA
209-742-6743

RAF RECOMMENDED SUPPLIERS

Aircraft Spruce
PO Box 424
Fullerton, CA 92632
714-870-7551

Wicks Aircraft
410 Pine Street
Highland, IL 62249
618-654-7447

FeatherLite
PO Box 781
Boonville, CA 95415
707-895-2718

Brock Mfg.
11852 Western Ave.
Stanton, CA 90680
714-898-4366

The above suppliers are still the only authorized RAF dealers for all your various aircraft materials and components.

ACCIDENTS AND INCIDENTS

A VariEze crashed soon after takeoff in Aspen, Colorado. The pilot and passenger were both killed. Engine failure is suspected. The damage to the prop is such that the engine was not running when it crashed. The FAA has not officially come up with a probable cause for this accident, but their investigation is looking seriously at fuel exhaustion or, at least, a fuel stoppage as being the likely cause. This VariEze had been flown for at least 3-1/2 hours since the last time it was known to be refueled. Depending on the power setting and fuel tank capacity, this is very close to enough to have used a full tank of gas.

At the last known refueling, this VariEze was refueled while parked nose down. Also, the pilot did not supervise the refueling, rather, the line boy was told to fill it up.

First of all, it is not possible to completely fill the fuel tanks of an EZ while parked nose down. If for some reason you require all the fuel you can get, top if off in the 3-point position. Second, we have had it happen to us, that a line boy failed to top off an EZ fuel tank when using a very high rate of fuel flow due to the baffles in the tank

causing the tank to momentarily appear full. Some refueling trucks and pumps have more flow capacity than the baffles in the fuel tank can allow the fuel to drain to all corners of the fuel tank. Don't forget this fact if you absolutely need to have the maximum fuel for a long trip. Most important of all, remember it is the pilots responsibility to check how much fuel he or she has onboard, not the line boy's. On a VariEze, built per plans, you have a 2 gallon-plus emergency reserve fuel tank in the area above the centersection spar forward of the firewall.. Don't forget to check the level in this tank and to fill it if necessary. This is a get-you-home fuel supply, but it will do you no good at all if it has been used or has drained through a leaky fuel valve into the main fuel tanks. Keep this tank full, always - it could save your bacon.

We have just received a telephone report of an engine compartment fire in a Long-EZ just after it landed. The fire was apparently caused by a Sport Flight exhaust system failure. Although exact details are not known at this time, the exhaust header broke for some reason and allowed a hot jet of exhaust gas to impinge on the cowling which caught fire.

Fortunately, this occurred on the ground and a good quality Halon gas fire extinguisher was available to put out the fire - damage was confined mainly to the cowling.

An exhaust system failure in any aircraft is cause for serious concern. Theoretically, if the pipe breaks off in flight it should not cause an immediate fire due to the high speed air being forced through the cowling and "drowning" the fire. However, as you slow down, like on a landing roll, this feature gets to be less and less of a factor and a fire can result.

If you hear a sudden, much louder than normal engine noise, assume you have a problem and that it could be a broken exhaust. Head for the nearest airport but keep your speed up. Land as soon as practical and consider killing the engine as soon as you touch down.

The EZ flyer who called in this report promised us a detailed report on what happened once he has had a chance to really look into it. We will report it to you in a future CP.

A Louisiana Long-EZ crash-landed on its first flight. The pilot was not injured. Although we have very sketchy data on this incident, as is our policy, we are publishing all we do know as we do on all accidents and incidents we hear of.

Apparently the pilot got behind the airplane on final, got too slow and developed a high rate of sink. The airplane hit hard failing the gear, slid along leaving the runway and flipping over. The winglets were broken, one wing was ripped off and the canopy was smashed. The head rest broke off, but incredibly, when the airplane was lifted, the pilot had only minor cuts and bruises.

As with all accidents and incidents reported in the CP, the only reason we print them is to hopefully help someone else and maybe prevent a similar situation by being forewarned. There is no intention of judging a pilot or his or her actions.

What can we learn from the above accident? Although our own records do not show it, the FAA says that a high percentage of accidents in homebuilts occur on the first flight. This is one that did. There is no question that the sight picture out of the front seat of an EZ on final, is not like anything the average low time private pilot may have seen. It is unlikely that he has ever sat on the aircraft centerline before. The EZ must be set up to land a little differently than the "standard" Cessna, Piper, etc. In fact, it is much closer to a modern jet fighter in some respects. There is no prop in front of the pilot, the airplane does not pitch nose down as a Cessna or other single engine certified airplanes do when flaps a lowered, and it does not have to be rounded out or flared when close to the ground as a Cessna does. Rather, the landing attitude is set on 1/2 mile final by simply slowing to 80 or 90 knots. The landing brake creates no lift, no pitching moment as flaps do, all it does is provide drag to steepen the glide slope a little. The nose high attitude necessary to land is strictly a function of airspeed. Slow to approach speed and the airplane will automatically set itself to the correct touchdown attitude. Now, simply fly it

onto the runway. When you have 20 to 50 landings in your log book, you can finesse the touchdown with a tiny flare, but for the new EZ pilot, this is not necessary or desirable.

Because of this "difference" in an EZ, whenever it is possible, always try to get at least a back seat ride in an EZ before you attempt your first flight, particularly if you don't have much flying experience. This can easily make the difference between a successful and unsuccessful first flight.

Just as you carefully, even meticulously, prepare your airplane for first flight, so must you prepare yourself if you are to be the pilot. Get yourself current and proficient in at least two different aircraft: A Gruman TR-2 and a Cessna 150 would be excellent, or a Champ or Luscombe and a Piper would be fine. The point is to be as sharp as you can be. Then find someone who will give you a ride in their EZ. A VariEze or a Long-EZ, it does not matter. Get a little stick time, maybe even fly an approach, it will make an enormous difference if you have at least flown in an EZ.

That is not to say they are difficult to fly - they are not, they are just a little different. Another thing to keep in mind is this - ANY aircraft will develop a high sink rate if you get it too slow, including canard types. Don't be lulled into a false sense of security by thinking you can pull the stick all the way back on short final and the airplane, because it is a canard, will look after you! A canard airplane is just like a conventional airplane, it must be at or above flying speed to fly. Get it too slow and a canard airplane will sink just as a Cessna or Piper will.

LETTERS

"Dear RAF;

Just a note from one of the silent EZ's. G-Emmy was built to the plans with a Lycoming 0-235, vortilons on the wings and she is used, as designed, for long range touring all over Europe. We're in our eighth year of operation now and I am pleased to report that my daughter, Emma, has recently soloed G-EMMY. (All my own work - HA!).

Many thanks for the great CP builder support over the years.

Sincerely,

Mike Tooze
England

Dear RAF;

This is to inform you of the whereabout of Long-EZ #20, N75DD (formerly N26JD). No, it has not crashed. It still flies very well.

As of December 26, 1989, I donated it to the St. Louis Aviation Museum. Eventually it will reside with many of the old Douglas airplanes as this museum is primarily the creation of McDonnell-Douglas people. (I would have rather mounted the Long on a pedestal in my front yard but zoning laws precluded it.)

I very much appreciate that Burt Rutan shared his genius for about ten years with the grass roots pilots of the world. I, for one, will never forget the day the Long-EZ plans arrived, and the day I first flew the airplane. I was, and an, very proud of that flying machine, none of which would ever have been possible without Burt Rutan.

Thanks to him and each of you at RAF.

Sincerely,

David G. Domeier.

Dear RAF;

My Defiant now has 350 hours on it and I've had a couple of experiences that remind me of why I built the Defiant, i.e. I've had to go single engine twice and it was a piece of cake as far as safety goes and ease of flying the airplane.

The first instance was last Spring when my rear engine broke and exhaust valve that then went thru the exhaust and splintered one blade of the rear prop. I was at gross with 4 aboard at 10,000 feet over hostile Arizona terrain and all of a sudden there was a pitch change and a slow degradation in sirspeed. As I had been

suspicious of #4 cylinder because of a wet spark plug and some "shavings" seen inside of the valve cover I was monitoring the EGT on 4 and it rapidly went from 1450 to 1200 or so and told me which engine lost power. I shut down the rear engine and turned around and flew the 20 miles back to Scottsdale uneventfully. On final, my 12 year old daughter, Sara announced that "her whole life just passed before her eyes". The point is that this was basically a no sweat situation due to the design of the plane and with fixed pitch props and 50% power on the front engine was all that was needed to get us home with a 9.000 foot descent. Now there is a learning point here - I had my cylinder checked out with an A&P professional and was told the shavings were from the exhaust valve springs wearing on a washer and that the wet cylinder was due to the ring slots lining up. What I should have done was to have pulled the cylinder and investigated further. By the way, about 6 weeks before this I'd switched from Aeroshell to Mobile 1A total synthetic oil. Aviation Consumer has an article that cautions that in engines with time on them, you may mobilize sludge and perhaps have problems. Aeroshell is designed to keep particle sin suspension--guess what oil I'm now using.

The second incident occurred this Fall when I was commuting to Santa Maria fro Scottsdale for a few weeks of work in my field of Anesthesia. I was coming home and 100 miles out over Lake Alamo, I started smelling smoke. I was at 11,000 feet and glad I was alone and not too happy, I shut down the front engine and the smoke smell went away. I've had a nuisance oil leak for 300 hours from my front engine and since it is updraft cooling it gets on the windscreen. I'd noticed that lately there had been some black streaks in the oil and figured that it was oil that was being carbonized from cylinder head heat. So I flew the plane on home and was only able to maintain altitude at 90 KIAS without the oil temp going plus 200 with the prop windmilling. So I stopped the prop but there was a strange air sound so I let her windmill and brought her on home and by descending to 7000 feet, maintained 110 KIAS and had adequate cooling. After investigation, I discovered 2 broken prop bolts and an almost-to-fail prop, the hub of which was charcoaled. The black streaks on the windscreen was prop wood. Now I had 40 hours on this prop from Great American and about 10 hours since retorquing to 40 ft. lbs. I almost checked the torque when I was in humid Santa Maria but decided, if anything, the wood would have swelled and therefore any checking could be done in Scottsdale. When I got the prop from Great American, the lug holes were too shallow and I deepened them with a plug cutter and flew all this time with what probably was a prop that may not have compressed all the way to the flange of my 8" extension. The second thing is that I relied on advice that grade 8 hardware bolts my be OK for prop bolts. I now question this and feel personally that the extra expense my be worth it, especially to all of you singe engine pilots out there.

Other than these problems, the Defiant has been a delight to fly and the only advice to you other Defiant builders is that I would do a fixed windscreen for safety like Johnny Murphy did and would do a fixed front gear that would be similar to the Wheeler Express with a wheel pant. The speed penalty might be very small and the gear box could be done away with.

Mike, I'll be seeing you at Jackpot.

George (Best)

EDITOR'S NOTE; Grade 8 bolts have no place on an airplane, especially as prop bolts. They are much too hard and therefor boo brittle. Aircraft bolts are ductile, not brittle!

CAN I SLIP MY EZ?

This is question we get here at RAF from time to time and it is a subject that has been discussed at Oshkosh during the "bull sessions".

The reason for the question stems probably from the fact that a lot of your have flown C120's, Luscombes, Champs and the other taildraggers with no flaps. As you know, the best way to loose altitude in one of these airplanes is a forward slip. In a Champ, as an example, a forward slip will cause the airplane to loose altitude dramatically, yet not gain any airspeed. Many taildragger advocates will tell you that a slip in a flapless taildragger is more effective e=when trying to loose altitude than flaps are on a Cessna or Piper.

What about in an EZ, though? Well, a VariEze slips quite well, that is, it will loose altitude

readily in a forward slip. Not anywhere near as much altitude as a Champ or a Pitts. However, the VariEze has been shown to occasionally depart in a sideslip departure. In fact, RAF put out a mandatory change to the rudder travel on all VAriEze's for this reason. For this reason, RAF HAS NOT AND DOES NOT RECOMMEND slipping a VariEze. Actually, a VariEze and a Long-EZ, for that matter, will loose as much altitude as rapidly by deploying the landing brake and stepping on both rudder pedals (deploying both rudders) and slowing to around 70 knots and flying wings level.

We have done considerable testing of this fact, and a Long-EZ with landing brakes and both rudders out, flying wings level, at 70 knots will loose 1200 to 1300 feet per minute. The same Long-EZ, clean (landing brake closed) in a full rudder forward slip will loose only about 1000 feet per minute. A full rudder forward slip with the brake down will generate about 1250 feet per minute rate of sink. All tests were done at 70 knots indicated.

We can therefore conclude that although EZ's can and do slip OK, there is no point in slipping them because you can do just as well with the landing brake, both rudders and the proper airspeed - and it is much safer since there is much less chance of a departure from controlled flight.

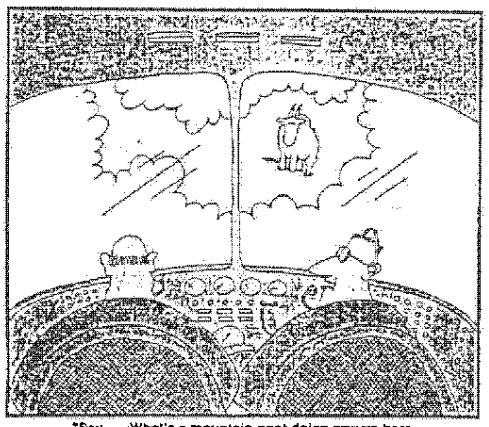
MISCELLANY

Bob Davenport has let us know that he will be getting out of the business of supplying his excellent nose wheel shimmy damper soon.

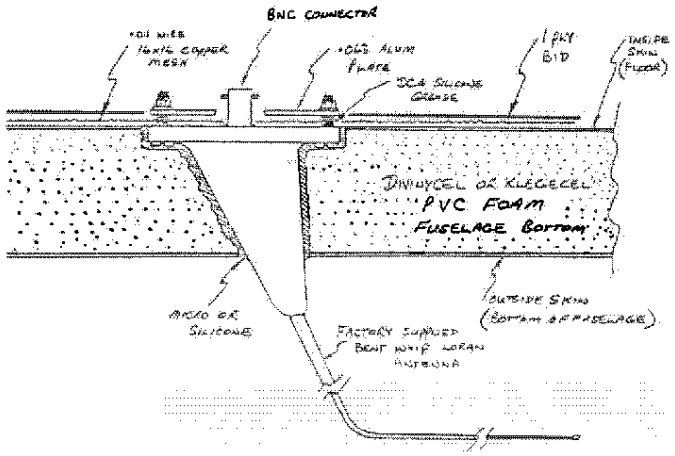
If you don't already have a Davenport shimmy damper, get your order in now before it's too late. As we have said before - Bob's shimmy damper is very effective and remains effective with minimal adjustment or maintenance.

Divinycel PVC foam will be light blue instead of tan in the future. Some sheet sizes will change slightly. If these size changes mean having to piece foam together, that's OK - a micro joint in PVC foam is much stronger than the foam. The new blue foam will be stocked and sold by Aircraft Spruce and Wicks.

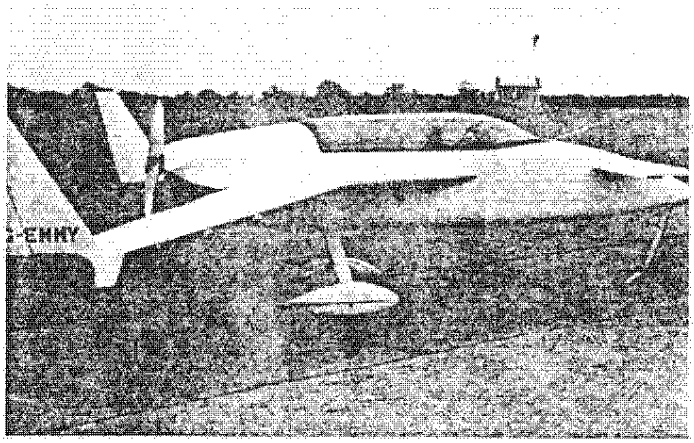
BY GARY LARSON



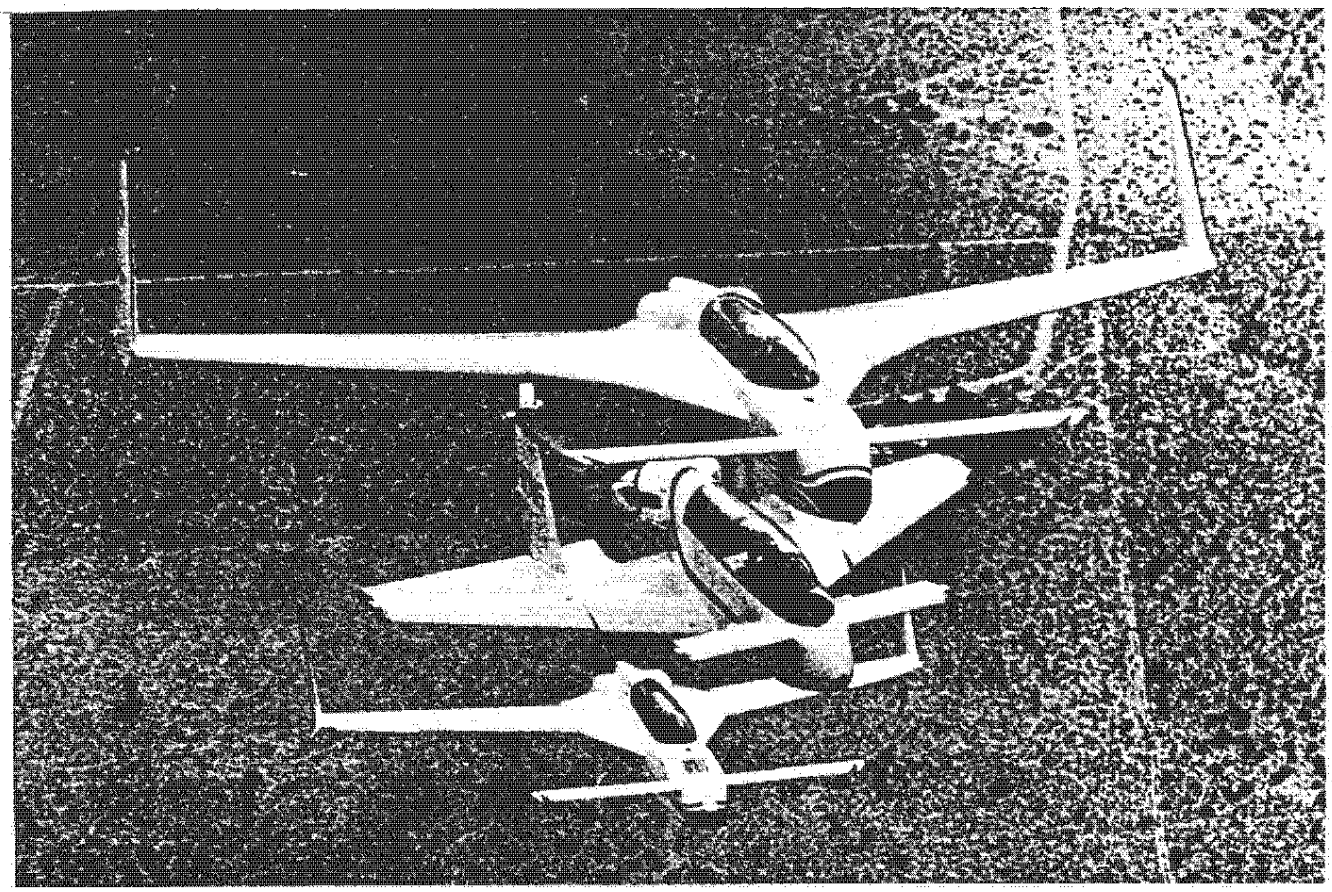
"Say . . . What's a mountain goat doing way up here in a cloud bank?"



Loran antenna installation sketch.



Mike Tooze's daughter, Emma, on her solo flight of G-EMMY in England. GOOD SHOW!



Rutan Aircraft Factory
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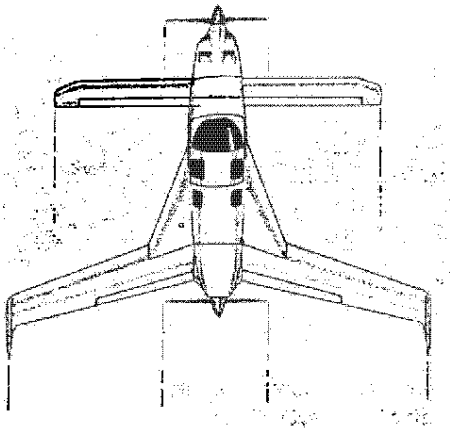
Mojave, CA 93501



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January '90

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CP 62