COZY NEWSLETTER #78 July 2002

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Web page www.cozyaircraft.com
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Subscription rate: **$16.00/2 yrs., $20.00/2 yrs. OUS**
(2-year renewals save us record keeping)
Cozy Mark IV Owners Manuals - $15
Cozy & Cozy Mark IV decals - $5 ea. (specify color)

Subscribing to the Cozy Newsletter is a requirement for all builders. The Cozy Mark IV plans are obsolete unless updated by all changes or corrections in the newsletter. All builders must subscribe to the newsletter. First Edition plans holders need newsletters #34 to present. Second Edition plans holders need newsletters #52 to present. We have just printed the Third Edition plans, which have been updated through newsletter #75. New plans purchasers will receive an assortment of back newsletters (we no longer have copies of all back newsletters) plus a complimentary one-year subscription to start them off on the right foot. They will need to renew when that has expired. The older copies, which we can no longer supply, are available on the Unofficial Cozy Web Page. The newsletter is the principle means by which we communicate with builders and support their projects. The newsletter contains plans corrections and changes, builder hints, information and updates about our suppliers, shopping info, first flight reports, and other news of interest to builders. We answer telephone calls whenever we are home and personal letters as well, but please enclose a stamped, self-addressed envelope if you expect a reply. We encourage newsletter input from builders (letters and pictures) which would be of interest to other builders.

"Cozy" and "Cozy Mark IV" are trade names of Co-Z Development and are the names given to airplanes built according to the plans and instructions of Co-Z Development. Just because you buy a set of Cozy or Cozy Mark IV plans, does not mean you have to build your airplane exactly according to plans. It is an experimental airplane and you can, in fact, make whatever changes you desire. But then you have a new, untested design, and shouldn't register or insure your airplane as a Cozy or a Cozy Mark IV.

Co-Z Dev. and Aircraft Spruce are the only ones authorized to sell plans and construction manuals, and Co-Z Dev is the only one authorized to provide builder support for the Cozy airplanes.

AUTHORIZED SUPPLIERS

Authorized suppliers are those suppliers we selected because of their excellent reputation in the industry, whose parts and materials we proofed in our plans model and who agreed to supply the same parts and materials to our builders.

1) Basic Materials

Wicks Aircraft	Aircraft Spruce	A. Spruce East
410 Pine St.	Box 4000	Box 909
Highland IL 62249	Corona, CA 91718	Griffin GA 30224
(800)221-9425	(909)372-9555	(800)831-2949

2) Metal Parts
Brock Mfg. Co.
11852 Western Ave.
Stanton CA 90680
(714)898-4366

3) Fiberglass Parts
Feather Lite
1327 S State St,Arpt.
Ukiah, CA 95482
(707)462-2939
(707)462-3424

4) Canopy & Windows	5) Specialties	6) Exhaust Systems
Airplane Plastics Co.	B & C Spec.	Custom Aircraft
9785 Julie Court	PO Box B	14374 Olde Hwy 80
Tipp City, OH 45371	Newton KS67114	El Cajon CA 92021
(937) 669-2677	(316)283-8662	(800)561-1901

7) Propellors		8) Prop Hub Exten.
Performance Props	Sensenich Props	Saber Mfg.
Box 486	2008 Wood Ct.	3601 Nassau Ct.
Patagonia AZ 85624	Plant City FL33567	Granbury TX 76049
(520)394-2059	(813)752-3711	(817) 326-6293

SUPPLIER NEWS

AeroCad announced that they are ceasing manufacturing of parts by the end of July 2002. Their license agreement with Co-Z Development has been terminated. This means that Aerocad is not entitled to use our copyrighted plans and trademarks (Cozy Mark IV) for any commercial purpose.

Plans and builder support for our Cozy Mark IV design will continue to be available from Co-Z Development.

Featherlite continues to be our authorized supplier of fiberglass components. They have moved into their new facilities, have caught up, and can now quote 30 day delivery on most items. Their email is: fthrlite@pacific.net.

FEATHER LITE COZY PRICE LIST

Item	Cozy III	Mark IV
Main Landing Gear Strut	$ 470	$ 699
Nose Gear Strut	83	83
Cowling Set Top and Bottom	445	508
Wheel Pants Set	237	249
Turtleback (vacuum bagged)	449	460
Precut Foam Cores Wings & Winglets	1293	1319
Precut Foam Core Canard	242	242
Nose Wheel Well	28	42
Nose Wheel Strut Cover	28	28
Sump Blisters (two required per aircraft)	28	27
Nose Cone with Door (forward of F-0)	--	91
Fuel Strake Leading Edges, left and right	512	490
Arm Rest Kit, left and right, front and rear	--	303
Rear Keel Cover and Landing Brake Cover	--	66
Carburetor (or TB) Air Filter Box Kit	199	199
Baggage Pod Set	479	479
Nose Bumper Rubber	13	13
Propellors, Urethane Leading Edge	745	745

A check or money order is required to process orders.
Call for other conditions.

OTHER PARTS WE RECOMMEND:

We can recommend the following items:

1) Improved **Rudder pedals** for lay-down brake cylinders, adjustable both sides. Dennis Oelmann (319) 277-5996.
2) **Electric speed brake actuator kit.** Wayne Lanza (561) 664-9239.

3) **Switching and breaker panel**. Wayne Lanza (561) 664-9239.
4) **Fuel sight gages**. Vance Atkinson (817) 354-8064.
5) **Electric nose-lift.** Steve Wright (615) 373-8764.
6) **Electric nose-lift, Spring steel safety catch,** and improved **MKNG-6 and NG-6 Pivots** with tapered roller bearings. Jack Wilhelmson (843) 884-5061.
7) **Electric pitch trim**. Alex Strong (760) 254-3692.
8) **Voice annunciated warning system**. Richard Lewis (423) 376-1450.
9) **Rebuilt flight instruments**. Howard Francis (not a Cozy builder) (480) 820-0405.
10) **T-shirts**, etc. Bill Walsh, nogofsu@sprintmail.com. (407) 696-0942.
11) **Antennas.** RST Jim Weir (530) 272-2203.
12) **Teflon & Stainless Hinge Pins Replacement.** Gary Hall (954)979-9494.
13) **Nosegear crank ratchets.** Bill Theeringer (805) 964-5453.
14) **Embroidered clothing.** With pictures of a Cozy, name, N number, etc. in any color. Trish Vermeylen (609) 693-4819.

PLANS CORRECTIONS/CLARIFICATION

1) Chap. 7, page 2, Step 2, 4th sentence, add after: back to the firewall, "except remove all the foam on the outside of the upper longeron and LWY starting at a point 5.5 inches forward of the firewall, and taper the foam down to where it is removed along the longeron and LWY so the glass will conform (refer to M-7 and M-8)".
2) Chap. 7, page 4, Step 4, para. 2, change last sentence to read: "From this point the curvature gradually transitions to DD just ahead of the centersection spar cut-out".
3) Chap. 14, page 4, Step 10, 4th para., change 2nd sentence to read: "When everything is perfect, lay up a 5 ply BID tape spar to LWY, inside and out, both sides, as shown on M-8, and a 5 ply BID tape spar to longeron, inside and out, both sides as shown on M-7".
4) Chap. 23, page 6, Step 4, after the 1st para. add this: "If the pipes are not tightly supported going through the rear baffle (zero clearance), they can shake, fatigue, break, and go through the prop. For insurance against this, bind together both pipes on each side with a stainless worm hose clamp on the engine side of the baffle".

IMPORTANT NOTICE:

It is stated in the construction manuals and from time to time in the newsletter, that your plans are obsolete unless up-dated with design changes and/or corrections published in the newsletter. It is essential for all builders to have a current subscription and continue to receive the newsletters.

BUILDER HINTS

1) **Lead weights.** Some builders make their own lead weights to balance the elevators, and most builders will need lead for nose ballast when flying solo. We don't like to use lead shot, because it isn't as dense as solid lead, and if a bag ever breaks, you will have a major cleanup problem. Many tire stores will let you help yourself to all the used lead tire weights you want. We melted them on our barbeque grill with the help of a torch, but you have to be very careful not to inhale lead fumes or burn yourself. Larry Capps suggested that at large plumbing supply stores you can find lead flashing, caps, pipes, and billets at about a dollar a pound. He also suggests old lead window weights or old lead scuba diving belts. Joe Toop says he bought a bunch of pieces of lead from cast iron pipe caulking from his local scrap dealer for 40 cents a lb and poured up his own inner and outer elevator weights.
2) **Templates.** Paul Kuntz says he used some Formica counter top material for making his airfoil templates. He glued the templates to the backside of the formica with epoxy, cut them slightly oversize and sanded to the line. He said the resulting edge is hard and smooth, and the material was cheap, because he picked through scraps at the local hardware store.
3) **Sanding sticks.** Neil Clayton says the tool (s) he uses the most are sanding sticks he made himself. He says Home Depot paint dept gives away 2 sizes of paint stirrers; a 1"wide stick and a 2" wide version. Both have a nicely formed handle. I always grab a handful as I pass towards the check out. Then at Lowe's I pick up some 12" x 18" sanding sheets (the kind used on those big floor sanders). Several grades are available. I use left over epoxy to glue the stirrers to the sheets and then split them into individual sanding tools with a razor blade when the epoxy has dried. One sheet yields about 10-15 sanding sticks of various sizes so they are cheap and disposable. Try it!
4) **Adhesive remover.** Several people have asked what to use to remove tape adhesive. Colby Farmer says that he had some masking tape that was left on too long and 3M adhesive cleaner 051135-08984 did an excellent job of loosening the stubborn tape and didn't harm his canopy. It is available at auto body supply stores.
5) **Smooth Prime.** It seems builders like Smooth Prime. Cozy builder Larry Capps says he gets the best results if he applies it with a good quality foam roller. He says it forces the Smooth Prime into the "nasty" pin holes, and he sands off any that remains on the surface.
6) **Harmonic vibration dampers.** They add cost and weight to your airplane, but are said to really make your engine run **s m o o t h**. Cozy builder Chris Scida has one installed (516)744-3258 (Cscida@Compuserve.Com).
7) **Throttle cable.** For the thottle on the Ellison throttle body, you will need a push-pull cable from the Tuthill Corp, Cablecraft Div. (206)475-1080. Thank you for the phone number, Vance.

FOR SALE

1) **Mark IV parts for sale:** Want to finish your project quickly for a modest price? Dennis Oelmann, a prize winning builder has the following parts for sale: A Roncz canard with elevators, a set of wings with all control surfaces done, including upper and lower winglets and antennas installed, a centersection spar ready to be match drilled to wings, all for the very attractive price of $11,500, cell (319)231-2635 or tel (319)277-5996. Flycozy@aol.com.

PUBLICITY

Norm Goyer's article on the Cozy Mark IV appeared in the March 2002 edition of Custom Planes, which featured canard airplanes. It was a very nice article with a lot of pictures. Norm said it sold out quickly on the newsstand. We have arranged to have reprints made for our info kit and any of our builders who would like copies.

$50 AWARDS

Our best advertising is enthusiastic builders who invite others to see their projects or take them for a ride in their Cozys. We prefer to spend some of our advertising allowance by rewarding those who influence others to start building, so, to show our appreciation, we still are sending a check for $50 to builders whose referrals result in a new Cozy builder. So we sent an award to Terry Winnett in San Antonio for influencing his brother, Kenneth Winnett, to build a Cozy. If you remember, it was Kevin Funk who influenced Terry to buy plans originally. It is good advertising to have satisfied customers!

$100 AWARDS

Both Sport Aviation and Kitplanes are requesting all designers to have their builders send in pictures of their completed projects, with short write-ups, because that is one of the most interesting features for their readers. We have found that these pictures and write ups are more impressive with prospective builders than an equivalent sized picture ad. **That is why we award each builder $100 for their entry in either or both magazines**, or an Alex Strong pitch trim, which would otherwise sell for **$175**. We haven't seen any entries so far this year, but let us know if we missed any.

Send in your pictures!!!!

FIRST FLIGHTS

Another Cozy Mark IV flies in France! Guy Terren, in Alata, France, wrote that he was very proud to inform everyone that the first flight of his Cozy Mark IV, F-PMGT, was on May 24th. He said that it has an O-360 and that everything (or nearly everything) was right and he is now opening the flight envelope. He said the plane is impressive and he wanted to thank everyone who provided help along the way.

BENOIT LECOQ'S VISIT

Cozy Mark IV builder/flyer Benoit Lecoq lives in the outskirts of Paris, and has been very hospitable to Cozy builders visiting in France, so when we heard that he would be in this country for a few days, we invited him to come here to meet some Arizona Cozy builders. Benoit captains an A-340 Airbus (you know, the one with the side-sticks) from Paris to San Francisco, and had a 3 day layover there.

We put out the word to local builders inviting them to join us for an open-hangar party with our and Gene Davis Cozys on display and then dinner at our house. We picked up Benoit at Sky Harbor. He brought along some good red wine from France and we had a whee of a time! Builders enjoyed his talking about flying Cozys in France. There are 5 Cozys flying there now, and 2 more about ready to fly. We hoped we showed our appreciation for the wonderful way Benoit and other French builders have entertained Cozy builders who have visited them The best reward we have received for sharing our design with others is the wonderful friendships we have made among airplane folk all over the world. We hope you have the same experience!

SUN N FUN 2002

We were watching the weather as the date for Sun n Fun was approaching, and we saw a clear day (well, almost clear anyway) along the coast a week ahead of time so we took off. We stopped at Georgetown, TX for fuel, and then flew to Mobile AL to stay the night. We like to stop at Mobile downtown airport because they are so hospitable. They gave us a $.25/gal. discount on fuel, insisted on putting our airplane in a hangar overnight (no charge), took us into town (and picked us up the next morning) and got us a discount at the Mark Adams hotel. Our room was on the 15th floor, with big picture windows overlooking the bay. We would heartedly recommend that you stop overnight there.

The next morning the flight down to Lakeland was a breeze. We parked N14CZ in our AC2 exhibit space, picked up our rental car, and headed for Orlando, for some vacation prior to the show starting.

The next Saturday was a hubub of activety at Lakeland. Steve Wright brought his tent and noselift exhibit, and we picked up the Wilhelmsons and our credentials and headed for our rented condo at Imperial Lakes.

A lot of builders and prospects stopped by during the week, and we picked up some new builders. The dinner on Sunday night was quite well attended. I think Bill Walsh had at least 70 attendees, with maybe a couple of more late arrivals.

The weather at Lakeland was good all week—not to hot, not to cold, and no rain. There were many complaints about arrival proceedures—one of the problems being inadequate separation between fast and slow airplanes. I helped one of our builders, David Jones, a very experienced and accomplished pilot, register a complaint with Sun n Fun management, in person. There were some accidents, and at least one fatallity. A high and a low-wing collided on approach to landing on runway 9. Apparently one saw the other at the last minute, jerked the controls back, and did a snap-roll into the other one.

We had what I thought was a very informative and productive meeting with Avemco and the EAA, which is reported later.

Toward the end of the week, it looked like there would be continuous bad weather with thunderstorms in northern Florida and along the Gulf coast, so we got permission to leave before the airshow on Saturday, the last day. We picked our way, first through the weather and then over the top, and stopped for fuel at Baton Rouge, LA. We continued on, but bad thunderstorms ahead caused us to land at Georgetown, TX for overnight. The next day the weather was good all the rest of the way home, so we concluded another very successful Sun n Fun.

INSURANCE

The fact that Avemco stopped writing new policies for homebuilts has been much in the news lately. Here is what Ben

Sclair, co-publisher of General Aviation News said recently in an editorial:

"When we heard about Avemco Insurance telling the aviation world it would no longer offer aircraft insurance for homebuilt airplanes, we were stunned.

"Although Avemco clarified its position shortly after its initial announcement to explain that it would issue policies for third-party liability and continue regular coverage for existing policy-holders, the shock had hit the industry pretty hard.

"Perhaps even more disturbing than the posibility that one of the industry's most respected companies was withdrawing from the arena it had been serving so well, was the concern about what had caused such an action.

"Looking at general aviation itself—and the experimental arena especially—we recognized some interesting facts.

"The hardest hit segment of the homebuilt movement apparently was the high performance aircraft, such as the Glasairs, Lancairs, Questair Venture and the Swearingen SX300. Bruce Landsberg, executive director of the AOPA Air Safety Foundation, said these hot airplanes with large engines and small wings go fast, but when something goes wrong, the results are often disastrous.

"In the period from 1991 through 2001, those four airplane models were involved in 168 accidents, according to NTSB figures. Of those mishaps, 59 resulted in one or more fatalities. That is a rate of 35.1 percent!

"In a like period, all general aviation recorded 19,751 accidents and of those 3,855 had a fatality. Those figures relate to a 19.5 percent rate of fatal accidents.

"Nineteen percent versus 35 percent! That's a pretty dramatic number when you look at it that way. Looking at more of the NTSB compiled figures will make you feel better about general aviation as a whole, however. In 2000, GA suffered 1,835 accidents of which 341 had fatalities. With GA flying an estimated 30.8 million hours, that amounts to 5.96 accidents per 100,000 hours flown. With minor blips, that's been a downward trend over the last 20 or 30 years.

"We suspect the real reason behind the insurer's move has to be the extent of the payouts that have resulted from the accidents. Let's face it, an individual who can afford to build (or have built) and fly an experimental aircraft worth $500,000 or more, probably has some pretty good assets. The death of someone in that position is often going to result in a lawsuit for a lot of bucks. The reality of the situation is that the insurance firm probably finds it either can't make money on policies it writes for that type of aircraft, or the risk of high losses is more than they want to face."

OUR MEETING WITH AVEMCO & EAA

At Sun and Fun, Tom Poberezney grabbed me and said that Avemco wanted to meet with individual designers to discuss the insurance situation. So we set up an appointment.

Jim Lauerman and Lauretta Godbey of Avemco, and Karen Kryzaniak and Dick Nocenti of EAA met with me. Jim explained that there was a 2-week period where they stopped writing any policies, so they could review their claim history and decide what to do in the future. He said their claim history on renewed policies was 72%. That is, claims were running 72% of premiums. However, on new policies, claims were running 200%. So they decided it would be safe to renew existing policies (including hull coverage), but they wouldn't write any new policies for hull or for passengers. They would write new third-person liability policies, however. In the meantime, they were studying individual designs to see whether they would be willing to undertake the risk of writing new policies. So they were meeting with different designers to review their claim history. He pointed out that the cost to the insurance company was always greater that the amount of the award because of loss adjustment expenses, legal fees, subrogation and salvage recoveries, salvage disposal fees, environmental clean up fees, etc.

For the Cozy, he said there have been 4 claims. One minor one was for the Mark IV, where an exhaust pipe went through the prop (I recognized that one). Another was for a 3-place where the exhaust pipe also went through the prop (I didn't recognize that one). Then there was one where the retractable landing gear collapsed with a cost of over $20K and another where the aircraft was totaled at a cost of over $100K. I told Jim that we didn't have a Cozy Mark IV model with a retractable main gear, and asked him if he could check into these last two claims to make sure that they were actually Cozy claims. He said he would. He said for legal reasons (Privacy Act) they could not provide names or policy numbers, but they could provide almost all other details. Jim said that they were working with the EAA to re-evaluate various designs to see whether they might be willing to offer hull insurance and passenger liability, and that the Cozy was one of those designs.

I asked about risk factors. Jim said he believes that builders who build their own airplanes, follow the plans, and install aircraft engines are the lowest risk (where have you heard that before?).

I asked what happens if a builder falsely identifies the airplane he is insuring. He said that even if a builder misrepresents the airplane he is insuring, if he is issued a policy and pays premiums, they would not be able to deny paying a claim. However, in the case of Glasair, Lancair, and Velocity (before they discontinued issuing policies for those designs) they required that the designer inspect the airplanes and verify that they were built properly.

After this meeting, I was hopeful that Avemco would decide to offer hull insurance for the Cozy 3 and Mark IV. In the meantime, we will continue to encourage our builders to keep their investment as low as possible so that if they have to self-insure their own airplanes, the risk will be bearable.

After returning home from Sun n Fun, we have had several exchanges of correspondence with Avemco. It turns out that the landing gear collapse was falsely attributed to the Cozy, and that has been corrected. The large claim, over $100K was a claim resulting from the crash into a retaining wall in Mexico, which was pilot error. So we are left with two minor claims for exhaust pipes going through the prop. We told Avemco that we would re-emphasize to builders the importance of good support where the exhaust pipes go through the aft engine baffle (so the pipes won't fatigue and break), a tight fit (so they won't go through the baffle if they break), and tying the two pipes on each side together with a hose clamp (see Plans Corrections/Clarification).

The latest figure supplied by Avemco is that Cozy claim costs have amounted to 78% of premiums. Even though this suggests that the Cozy business is profitable, the data base is small enough that one large claim would have a disproportionate affect on profitablility.

The conclusion of all this is that premiums have to cover the anticipated cost of claims plus a reasonable profit, or insurance just won't be available.

MAIN LANDING GEAR STRUT

The FeatherLite main landing gear strut for the Mark IV is halfway between that of the Long EZ and Defiant in span, chord, thickness, weight, cost, and load carrying ability. It is made of S-glass and very dense, with no voids. It has an excellent spring-constant, and will not deform or take a permanent spread after repeated loading to many gs, nor should it be necessary to "set" the gear after parking. In newsletter #64-6 we explained how to measure wheel camber and suggested checking it annually to determine that no permanent spreading of the strut has occurred. We have yet to hear of a FeatherLite Mark IV strut taking a permanent set.

The strut was purposely designed with a return curvature at both ends to reduce local bending loads. This also results in the wheels having a slight camber (bottoms closer together) of about 2.5 degrees when the Mark IV is empty or slightly loaded. As the loading is increased, the strut spreads and the wheels move outboard and become closer to vertical. As the loading is further increased, like in a high-g landing, the strut has been known to spread enough for the inside of the wheel pants to scrape the runway, and in very extreme cases, spread enough for the brake calipers to scrape the runway. But always the strut should return to its original shape after the load is relieved.

Tire wear is always the greatest at the instant the tire touches the runway, because wheel rotation is instantly accelerated from zero to about 70 knots. Because of the camber of the wheels, which is even greater when the airplane is in the air just before touchdown, the outboard tread receives the greatest wear. So when the outboard tread is nearly worn away, it is the accepted and recommended practice to reverse the tires (outboard to inboard) to even out the wear, similar to what you do with your automobiles when you rotate the tires.

Before installation of the strut, you are instructed to wrap it with 8 crossing plies of UNI, to increase the torsional strength. This should eliminate or at least minimize any possibility of wheel shimmey. You should not substitute BID, Bi-Ax, or Tri-Ax cloth.

You are instructed to install the axles with a slight toe-in, about ¼ degrees. This will provide the least rolling resistance in takeoff and landing, and least tire wear. When you think about it, the reason is simple. During takeoff, as the load is relieved from the wheels, the strut tries to come together, and toe-in helps it do that. When you land, the sudden load (unless you "grease it on") spreads the strut and then as the load is relieved, the toe-in helps it come together.

BRAKE OR COAST

There was discussion on the internet about whether to brake or coast in the roll-out after landing. Trying to turn off at the first taxiway can be hard on brakes and tires. On the other hand, if it is a busy airport, coasting on the runway could cause someone landing behind you to go-around, if the spacing is tight. Most airplanes are slower than the Cozy, however, so it is not too likely to be overtaken in the landing pattern.

Several Cozy builders, who are also Air Traffic Controllers, joined in the discussion. Here is what one had to say:

To All, 5/10/02

As an Air Traffic Controller before my life as an Air Force Pilot, I can speak to what a controller expects and what you are legally required to do.

Unless a controller gives you a specific "…and hold short of …" in your landing clearance, you legally have the whole runway to make your landing and roll out. This however is not what a controller expects for his/her planning of sequencing to the runway, so please don't use the whole runway just because you can. For most general aviation single engine aircraft when I worked the tower in the local position, I expected they would use no more that the first 3,000 feet of runway and be off accordingly. If it looks like you need more runway and you want to help the controller out, tell him (or her) what taxiway you "expect" to clear the runway. The key work is "expect", controllers use this word all the time to let you know this is not necessarily what is going to happen or what they are going to do, but it is good for planning purposes. They will understand what you mean if you say it that way. This way you are not bound by it but the controller has an idea of what you plan on doing.

Also, pay attention to what controllers say when you land. I bet you'll hear most controllers use the phraseology from the Controller Handbook (FAA Handbood 7110.65) and give you instructions similar to "If able, turn <left/right> next taxiway". This **does not** mean you are required to turn at the next taxiway and again, unless he (or she) gives you a "Cleared to Land and hold short of…"clearance, you have the whole runway to use. Fly/Taxi your aircraft as you need and then try to help out the controllers. Please don't be smoking brakes. Controllers would rather give the guy behind you a "go around" than see your plane burning on the taxiways. If you think the controller is upset because you passed up a taxiway, just tell him (or her) your speed and braking action did not allow you to turn off. The only time you cannot use this reason is if you accepted an "and hold short" clearance, restricting the available runway you are allowed to use. If you accept a land and hold short clearance and go past where you said you would hold short, the controller can file against you.

Please look in the AIM, Para 4-3-11 under "Pilot Responsibilities when Conducting Land and Hold Short Operations". It mirrors the Controller Handbook.

Ken Verbsky,
Cozy Mark IV #928

Another builder/ATController writes:

Gang, 5/10/02

A suggestion: If you are requested to make the first turn-off and you are unable due to operational restrictions, i.e. brakes might heat up too much, simply reply to the request, "Unable, I can make the ____turnoff" and fill in the blank. This gives the controller an idea of how long before you will clear the runway. There may be a faster aircraft just behind you which

might need to go around and the earlier they get the instruction, the better. Joe Turecamo, #909
ATCS ZNY

WHEELPANT INSTALLATION

There are many different wheelpant designs, and many different ways of splitting them for removal, and variations in the way they are secured. After trying several different designs, we found one we liked, adapted it to the Mark IV (500 x 5 wheels), and sent it to FeatherLite to copy and supply. It is the one that we have installed on our Mark IV, and shown in many of the pictures of our airplane. We prefer to split the wheelpant so the seam is roughly the same diameter as the tire, and on the inboard side of the wheelpant, so the hardware is relatively hidden.

We have a bracket that is held to the inboard side of the strut by the 4 axle bolts, and which the inboard side of the wheel pant is fastened to at 3 different spots. Then the outboard side of the wheel pant is secured to the outboard end of the axle. We know of two different methods of securing the wheelpant to the axle. The first is to drill and tap the axle to receive an AN-4 bolt. This hole must be off-center, because the axle castlenut must be held from turning by a cotterpin that goes through the axle centerline. The hole must also be drilled and tapped deep enough so it will engage all of the threads of the AN-4 bolt. And a hardpoint must be built into the wheelpant to mate with the end of the axle.

Alternatively, you can make or purchase from Brock Mfg. a bracket which can be welded to the axle castlenut which has an AN-4 nutplate riveted to the bracket. The nutplate is centered on the bracket, so rotating the castlenut does not change the alignment of the wheelpant hardpoint with the nutplate. This installation is a little more expensive and takes a little more work, but it is the most fool-proof.

Eric Westland reports that Van's (of RV fame) sells an axle nut with the U-shaped bracket and nutplate already attached.

You should not forget to make vents in the top of your wheel pants so that after landing, taxiing, and parking, there will be natural convective airflow past your brake disks to cool them down.

VFR NAVIGATION

In this day of moving maps, there are probably a lot of different ways to navigate VFR on cross country trips, but here is the way we do it. Most of our trips are 1500 to 2500 miles from the southwest to the southeast, or to the mid-west, or to the north west, so we use WAC charts exclusively. We plan our routes as close to straight-line as we can, and look for a good fuel stop somewhere from 4 to 5 hours. I draw our course on the WAC charts with red pencil, and then make tic marks every 30 miles, which would represent every 10 minutes at 180 mph, which we can do easily at 2450 rpm. Of course, we rely on our Garmin 100 CDI to keep us on course. Usually Shirley does the navigating. She marks down our departure time and then the time we pass each tic mark. She also checks features on the ground, like airports, cities, roads, etc. Frequently we will tune in VOR stations along our course, and set the heading indicator at the degrees corresponding to the next tic mark, and record the time when the needle swings. I usually punch in GPS waypoints enroute, rather than trying to set them up ahead of time.

We like to fly at 10,000 to 14,000 ft. to avoid the turbulent air near the ground, so we fly "over the top" (of the clouds) quite a bit. In these cases, it is very useful to confirm our location using VORs as check points when we can't see the ground. Before deciding to go over the top, we make sure our destination is VFR and scattered or less, and it is VFR underneath and hopefully no worse than broken along the way. I am practiced at partial panel, and we do have a wing-leveler, so if we had to let down in an emergency through the clouds (it has never happened), we could do so safely. We very much dislike to fly under a low overcast, even if it is VFR, and avoid it if at all possible.

We haven't filed a VFR flight plan for longer than I can remember. However, we always request ATC "flight following" on our trips. We are hardly ever refused, although Jacksonville ATC, whose coverage we always go through on the way to and the way back from Sun n Fun, usually refuses to take the "hand off". One or two years ago, when there was a very mean front lying west to east across the Florida panhandle, Jacks Center did a very nice job of guiding us around the front using their radar. Thank you, Jacks. On another occasion, Denver Center guided us through the La Vita pass, when it was obscured by clouds (but clear on the other side). There are only a few places in the country, when we are flying GPS direct, where there isn't radar coverage at the altitudes we fly.

One time, when we had to divert from our course and land at an alternate (Pecos, TX), and neglected to inform flight following that the "airport was in sight", they called Pecos on the telephone to make sure we got down safely. Impressive! We really get around pretty well, VFR.

COMPRESSION TESTS

When I did my annual, I got a low reading (80/72) on one of the cylinders. This indicates a leak, and when it happens, you need to determine where the leak is, through the exhaust valve, or the intake valve, or passed the rings, by listening at the exhaust pipe, the carburetor, or the crankcase vent. In my case, it turned out that the leak was passed the rings. Since I have all new cylinders 150 hours or so ago, I was concerned. My mechanic thought it was probably a case of the rings getting aligned with the gaps all in a row, and he thought it would probably go away by the next annual. I did, however, decide to buy some Marvel Mystery Oil and put some in my oil and fuel.

One of our builders, John Gleason, published this on the internet: "When I attended the Continental Engine School last year, they addressed this problem (low compression) very well. Basically, a lot of cylinders get condemned for the wrong reasons. The leakdown check is purely a relative set of numbers. If your compressed air supply is marginal, then you will get funky numbers. If you don't have enough pressure/volume on the supply side to maintain 80 psi, then the cylinder side will be low. Even with a compressor, many people set the regulated supply side to 80 and just open the air line to the cylinder. If the supply side gage drops below 80, you will get a low leak side reading. The supply side regulator

needs to be brought back to 80 with the cylinder valve open. This corrects for line losses, etc. However, working from an air bottle with pressure falling all the time, it is hard to set the reference. All of this is why the "standard Orifice" calibrator came out. What it tells you is the value of an 80/60 leak with YOUR air supply. Just my $2.00 worth (That school was expensive!)". John Gleason

OIL ANALYSIS

When you change oil, it is good practice to take a sample and send it in to AOA (Aviation Oil Analysis, PO Box 29074, Phoenix, AZ 85038) for analysis. They will measure the content of various metals and also that of silicon (dirt). You can buy a quantity of their sampling kits ahead of time, so all you have to do is send the sample in and your analysis will return in a couple of days. You report to them the make of engine, the hours since new or overhaul, the hours on the oil, and the amount of oil added. They will advise whether the impurities are the result of normal wear, or whether you might have a problem. They can even pinpoint where the problem might lie. They advise that the metal content will be high during engine break-in, and then taper off after about 200 hours. One of our builders, Tim Jones, reported that he installed a magnet in his cooler, which removes some of the dispersed iron. He said it cost about $20, but didn't give the source. AOA advised that this isn't a bad idea, but you would need to take this into account when having the oil analyzed. AOA said you could buy magnetized drail plugs to do the same thing, but we haven't seen anything in Wicks or Aircraft Spruce's catalogs. If anyone has information on sources, we would be pleased to publish it.

MEDICAL EXAMS

Several builders thanked me for bringing up the subject of medical exams, because it gave them an excuse to talk about some of the problems they have had with the FAA.

Builder Marv Bishop writes:

Dear Nat, 3/25/02

Enjoyed your article in Newsletter #77 regarding medical exams. I've had similar experience with the FAA. While still in the AF, I took an annual flight physical. Everything appeared to be normal and was recertified for flight status.

Two months later, the medics called and wanted to give me a stress test. Apparently the results or traces of the EKG had been sent to Brooks AFB, the USAF School of Aerospace Medicine, where for some time they had been doing research on routine flight physicals. I was told they scanned the EKG traces into a computer and compared the results with previous years, and supposedly were able to pick up changes. I had a slight ST depression. The conclusion was to take a stress test, or be grounded.

At the time I was at the Satellite Control Facility in Sunnyvale, CA, so scheduled the stress test at Oakland Naval Hospital. The technician got me wired up, but before starting the test, the cardiologist came in and reviewed my records. Her exact words were, "Why are you here?" I explained as best I understood, and she said, "Well, we've got you wired up, we might as well run the test, but there is nothing wrong with you." Following the stress test, she carefully examined the results, and proclaimed, "You have nothing to worry about."

I let loose a sigh of relief and the results were sent to Brooks AFB. In another couple months they contacted me with the alternative of being grounded, or coming to the School for an evaluation. Of course I went to the school, not because I feared getting grounded, but I was nearing retirement, and I wanted to know the status of my health. On the inbriefing, they said I had to pass three tests or have an angiogram. They also indicated if there was absolutely nothing wrong with me, there was a 40% chance I'd fail at least one of the tests. I failed two. The Dr. said he didn't think I had any problems, but AF Regs required either an angiogram or grounding. I took the angiogram. The results were "some internal roughing of the arteries, not enough to grade as blockage, that he'd be surprised if there were not some in a 47 year old Caucasian male, and I'd probably die of something other than heart disease."

Again I signed with relief. But I, also, reported the cardiac cat to the FAA on my next physical. Disapproved! I asked them to reconsider, and ended up that I'd have to have a stress test every 12 months. The FAA part of the physical for 3rd class was good for 3 years, but the stress test for only 12 months.

Five years later I went back to Brooks for follow up evaluation, to help them with their research. I still have the slight ST depression of the EKG, but this time I passed the echo-cardiogram (Think I got that right).

I, also talked with AOPA, but the end results seems to be all the wisdom in the world is in the FAA center in Oklahoma City. I compare my case to a fire warning light -- that doesn't always mean you have a fire.

Good luck on future exams. I always enjoy your perspective."

Builder Bill Walsh writes:

Dear Nat, 3/26/02

"Several years ago I went to the Dr. because I woke up and could not see more than 4 feet in front of me (yes, I drove there, and am glad I didn't hit anyone). I was diagnosed as diabetic and had a glucose level at about 800 (normal is 65-109). I asked the Dr. what I needed to do.

I was put on a strict diet, and had to inject insulin 5 times a day (not much fun). I decided that this was not for me and asked what I could do to get off the insulin.

After 7 months and a loss of 55 lbs, I was off insulin and never have gone back on. I still have to take medication in pill form but I have it under control. It took me 18 months to secure my medical back again and did get a second class medical. I have to get a physical once a year and have to send in a Dr letter stating all of the numbers for the year and my general condition. In addition, they want to know of any medication changes. Then you can get back to flying again. I have heard of one case where the FAA approved a pilot that was insulin dependent. There is hope, but you have to take control of your situation."

Bill Walsh

In my own case, the FAA gave me a list of all the special tests they wanted me to take (for my 3rd class, even though I have a commercial license), which included a complete blood work-up covering chloresterol and blood sugar, a nuclear stress test to 100% of my maximum predicted heart rate (which is a pulse of 144), a letter from my cardiologist and also opthamologist, and asked me to send them the results 3 months before my previous medical expired. So I scheduled all the tests, successfully passed them again with flying colors, and sent in the results, **25 PAGES!**

Hopefully they will decide I am not a threat to public safety and renew my medical when it is time for us to return from Oshkosh.

ALEX'S DRY LAKE BED RUNWAY

French builder Marc Pichot wanted to know more about Alex's take-offs and landings. Alex wrote to him and copied me:

Marc,

My runway length is 2,500 ft, field elevation is 1,927 ft. With a calm wind, 80F and 20 gal., I am airborne in 1,500 ft. With 10 to 15 kt wind, I am airborne in 1,300 ft. My Cozy is a 3-place with an 0-320 150 hp Lyc. As Nat explained, my runway is a lake bed and like Edwards Air Force Base, is hard packed with some loose gravel, so I do my warming and run up while on the move (I always lean to best max rpm) and when ready for takeoff, I accelerate while making a looping turn to the take-off point. By this time, the trottle is wide open and the stick all the way back. As soon as the canard flys, at 63 kts, I ease up on the stick. On final with landing brake down, I indicate 80 kts. 1500 rpm and a descent of 500 fpm. Once the runway is assured, I close the throttle and touch down at 70 kts. Once the NG is rolling, I brake hard for 3 sec., then back off, then brake moderately from then on. When Nat was with me, we turned off after about a 1,200 ft. roll with about 3 or 4 kts head wind.

The only nick I have on my prop (after many years) was when I was practicing at Daggett's hard surface runway. You see, when I roll on a pebble, the tire will tend to squeeze the pebble against the hard surface of the runway and fly off to hit the prop. But on my runway, the tire will push that pebble into the dirt and keep it from flying off. I hope this helps. Regards,

Alex Strong

CANOPY RESTRAINT

It would be hard to think of anything more disturbing than taxiing along with the canopy open and having a gust of wind catch the open canopy, rip the gas spring from its mounting and slam the canopy on the strake. This actually happened to one of our builders because he had not installed the gas spring as we show in Section II, Chapter 18, page 15, Figure 83. He had installed one end of the spring too close to the canopy hinge. The installation we show has one end of the gas spring attached to the head rest 13.5 in. from the canopy hinge, and the other end attached to bulkhead TB-1 25.5 in. from the canopy hinge. This geometry provides a good mechanical advantage and has been pretty well tested taxiing in all kinds of winds since 1988, and flying with the canopy open in 1994. We like this installation because the gas spring exerts a downward force on the canopy when it is closed, and it slows down travel in either direction so it won't slam open when being opened, or slam down when being closed.

DATA PLATES

Builder John Epplin asked where other builders were locating their data plates? He said that Chicago FSDO said that part 45 does not apply to experimental and the data plate can be located anywhere it is likely to survive a crash, but is not required to be visible from the exterior. He said the DEA requires the make, model and serial number be located on the exterior, and can be a stick-on label.

Builder Robert Bounds volunteered that his local FSDO inspector said placing the data plate on the shoulder support, visible from the outside, was just fine. That location was acceptable for us in both Minnesota and Arizona.

David Domeier said that you should locate your data plate wherever FSDO says is acceptable.

HEAD ROOM

The Mark IV was designed so that the head room in the front seat could easily be increased for tall pilots. This is accomplished by raising the turtleback about 1 inch in the front (filling it in, of course, underneath) before installing the plastic canopy. The canopy is supplied oversize (taller than necessary), so this just means that less has to trimmed off the bottom. If you notice the side silhoutte of the fuselage, there is a little dip where the top of the canopy meets the turtleback, which has to be filled in to make a smooth curve, and there is also a slight break in curvature where the turtleback meets the cowling. Raising the front of the turtleback 1 inch actually improves both of these areas. We suggest that you don't make this change unless necessary, because increasing the cross section of the fuselage increases the parasite drag. This is one situation where short people have an advantage over taller people.

PROPELLOR INSTALLATION

We have heard reports, from time to time, of propellors coming off in flight; fortunately none on Cozys, as far as we know. Vance Atkinson told us about one coming off on a Long EZ in Dallas. When it came off, the engine was ruined from overspeeding, the engine mount was badly bent, and the prop extension was damaged. The builder-pilot was able to make a successful emergency landing without damage to the airframe. The prop was later recovered from a farm field, intact. Vance showed us the prop extension. The bolts were AN7 bolts. Three had failed in shear, and the other 3 had pulled out of the lugs as the prop departed. The suspected cause was insufficient torque.

Wood propellors have many advantages over metal props. If properly installed and maintained, they should provide a long life of trouble-free service. If not properly installed and maintained, one runs the risk of losing the entire propellor in the air, with possible catastrophic damage to the engine, and possible damage to the aircraft and injury to occupants in the ensuing forced landing.

The principles involved in a proper installation are quite simple. Engine torque is transmitted to the propellor by static friction between the propellor flange and the propellor hub, **NOT** by the lugs in the flange or the bolts. The static friction is obtained by compressing the hub between the crush plate (on the aft face of the propellor in a pusher) and the propellor flange. The only function of the bolts is to provide this compression by torquing (tensioning) them to the proper value. The only difference between a metal prop and a wooden one is that the wooden one can swell or shrink, with changes in the environment, so it is necessary to check bolt torque after the first flight on a new wooden prop, and frequently thereafter, until the torque values stabilize, and occasionally thereafter. The bolts will fail in shear, regardless of the bolt used, if not properly torqued, or can fail in time from fatigue, if either the metallurgy or the threads are not designed for this critical application. A few other important requirements should be mentioned before discussing propellor bolts in greater detail.

1) **Propellor hub extension.** The propellor hub extension is subjected to continuous high frequency vibration which could cause it to fatigue if not of the highest quality metallurgy and machining. The strongest available aluminum alloy is 2024 T3. 6061 T6 is a cheaper alloy, but it is not acceptable. It should have ample radiuses both inside and out where the diameter changes, and should be absolutely devoid of any machining marks. When you purchase an extension, you will be asked to specify the diameter of the propellor flange and the size of the bolts to be used. For 160 to 180 hp, we recommend the largest diameter flange available, i.e. 7 inches, to provide the greatest contact area between the prop and the flange, and the largest diameter bolts, i.e. ½ inch, to provide the greatest margin of safety in torquing the bolts. In our experience, the highest quality extensions with a zero failure rate to date are those made by our authorized supplier, Saber Mfg. Co.
2) **Crush plates.** The function of the crush plate is to distribute the compression force of the bolts uniformly over the greatest area of the hub. It should be the same diameter as the flange, i.e. 7 inches, and it should be ½ inches thick, so it will not deform.
3) **Bolt torque.** The bolt torque should be the maximum amount allowable without crushing the wood or overstressing the bolts. The proper value should be obtained from propellor manufacturer because it is a function of the type of wood used and the number of laminations, as well as the flange, crush plate, and bolt diameters. Recommendations could range from 30 to 42 ft-lbs for 1.2 inch bolts. We prefer the 42 ft-lb number for best margin of safety. The bolts should always be tested for length, to make sure they completely engage the lugs, without bottoming out, with sufficient threads remaining to allow for periodic retorquing. The threads should always be lubricated before each installation, and the bolts should be a good fit through the crush plate and prop hub, to avoid resistance to torquing. They should always be safetied with .041 safety wire, two bolt heads together, preventing each from loosening.
4) **Propellor bolts.** Propellor bolts are one of, if not the most critical applications in an airplane. Less that the best bolts may be okay for awhile if they are strong enough and properly torqued. On the other hand, even the best bolts will fail if not properly torqued. There are potential problems with either AN bolts or industrial bolts, but fortunately, there are special bolts made specifically for propellor installation. **AN bolts** are made in accordance with military specifications for critical aircraft use, using approved alloys, specified head treatment to achieve the right combination of tensile strength and ductility, and have rolled (not cut) threads to avoid stress risers which could lead to fatigue failure at the threads. Unfortunately, AN bolts are difficult to obtain in the lengths required for propellor installation (particularly AN8), and the thread length does not allow much room for error. For example, the lugs for ½ in. bolts have a threaded length of .54 in, and in spite of the "book" value, we have measured the thread length of AN8 bolts to be as short as .62 in. If AN bolt are fully engaged in the lugs at initial installation, there would be very little margin for retorquing, without bottoming out the threads. If the threads bottom out, the bolts will soon fail in shear. **Industrial bolts** are readily available in hardware stores. They come in various grades, the most common being grade 5 and grade 8. They have approximately 1-1/2 in. of thread length, but unfortunately, the threads are cut rather than rolled, which is against standard aircraft practice and more likely to lead to fatigue failure. Grade 8 bolts have a tensile strength of 150,000 psi (compared to 125,000 psi for AN bolts), but because of their high strength, are too brittle. Grade 5 bolts have a tensile strength of 120,000 psi, and are closest to AN bolts in properties, but have cut threads. The most unfortunate thing about industrial bolts is the lack of enforcement on quality. Our local ACE hardware store said their bolts could come from any of 6 different countries, based on price. Are you willing to risk whether they might be made from inferior alloys and not have the properties they are represented to have? Traceability of bolts to a reputable source is the best protection against their being counterfeit. **Sensenich propellor bolts.** Sensenich, the manufacturer of propellors for the last 62 years, has been having one or more reputable US manufacturers of AN bolts make special propellor bolts to their specifications since 1956. These bolts are traceable, made to mil specs similar to AN bolts, have rolled threads (per aircraft practice), and have a longer thread length. These bolts are made from approved AN alloys, are heat treated to RWC-26-32 to obtain a minimum tensile strength of 125,000 psi without sacrificing ductility, are centerless ground to remove surface imperfections, have J-2 threads rolled on to a length of about 1.4 in., are then plated and the heads are drilled for safety wiring. These bolts are stocked by Sensenich in AN6, AN7, and AN8 sizes of various lengths, and sold in kits of 6 with washers. They are slightly more expensive than AN bolts of an equivalent size. We purchased 6 AN8H-57AS bolts from Sensenich for $90 (some time ago). Contact either Ken DeGraph, or Ed Zircer at (800) 462-3412. For reasons explained above, we do not recommend either AN or industrial bolts.

5)

FUELING FIRES

We have discussed this subject before, but it is so important that it is worth reviewing over and over again.

For there to be a fire, three elements must be present: 1) fuel, 2) oxygen, and 3) a source of ignition. When you are fueling your airplane, fuel and oxygen will always be present. If you don't take the necessary precautions, a source of ignition might also be present.

In high-school physics, most people see a demonstration of a Van de Graff electrostatic generator. It uses a moving, insulated belt to generate potentials of millions of volts and sparks which jump across huge gaps. The stream of fuel into your tank is the same as the Van de Graff moving insulated belt. The fuel hose nozzle is connected to ground, so it can move an unlimited number of electrons into your tank. The fuel is non-conductive and the tank is non-conductive, so these electrons collect on the surface of the fuel with nowhere to go. The potential builds up, and when it becomes great enough, a spark will jump from the fuel in the tank back to the hose nozzle. That will be the last of your airplane, and maybe you as well. There is a simple and effective solution.

The ground cable that all fuel trucks have is really worthless, but I don't tell the driver that. I just tell him (or her) to hook it on

the exhaust pipes. This cable grounds the engine, but not the fuel in the tank (my private joke). What I have is a braided cable connected to my gas cap, which is long enough to dangle into the fuel even when the cap is removed and laying on the top of the strake, and of course it also lays on the tank nozzle when the cap is removed. With a short electrical wire with alligator clamps on both ends, which I carry in the side pocket of the front seat, I connect the cable dangling into the tank and laying across the tank nozzle with the fuel hose nozzle. This is called "bonding". It allows the electrons collecting on the surface of the fuel to flow back to the hose nozzle and to ground without generating a spark. The result is that the fuel in the tank and the hose nozzle are at the same electrical potential, so there is no way a spark could be generated. This is probably even safer that fueling a spam can with metal tanks.

Please do not be careless when fueling your airplane, even if you fuel it from cans. Just a little precaution can prevent a huge dissaster!

CANARD ATTACH

Vance Atkinson sent us a copy of a letter from a Long EZ builder in which he said that one of his canard attach bolts failed. He discovered this on a preflight inspection. He said he found a minor looseness of the canard, so he pulled the canard and found one of the bolts was sheared off but was still in place. He said the bolt was a drilled bolt and it had sheared where it was drilled through the threads. He didn't say whether the bolt had been installed with the head on the foreward or aft side of the bulkhead.

We do not know about the Long EZ, but we don't believe this could happen to a Cozy built per plans. If you note on drawing M-11, the bolt specified is an AN4-13A, which is **undrilled**, and it is installed with the head on the **forward** side of the bulkhead, so any shear forces would be on the grip portion of the bolt, not on the threads or the reduced cross section where the threads were drilled.

This points up the importance of 1) following the plans, and 2) doing a thorough preflight inspection. Thank you Vance.

BACK SEAT COMFORT

David Domeier writes: 6/01/02

I was reminded of two recent flights (carrying back seat passengers).

About a month ago, a young couple, both professional pilots flying for airlines, wanted a demo ride. I debated taking each up solo, but after running a quick weight and balance, decided why not bother, it is a 4-place airplane. We went out for an hour stopping at another airport to swap seats and both reported the back seat ride was more comfortable than up front.:)

Then yesterday two good friends needed a ride out to west Missouri to pick up an old Citabria they had purchased. One of them is a corporate jet pilot and we had the airplane ready to blast off when he arrived (2 hours late). He jumped in the back seat after changing into blue jeans and had a lot of stuff in bags, some of which was 3 box lunches scrounged from his flight. After leveling off, I plugged in the Navaid and we sat back and enjoyed a box lunch passed up from the rear – what service! It was a fun flight. After landing, the guy in the back said, "I'm not ready to get out yet – it was so comfortable!"

I beat them back to St. Louis by quite a bit, as the Cozy made the trip in 50 minutes and it to the Citabria 1:30.

Anyway, every now and then pilots ask about the back seat. There you have it! Dd

Chesterfield, MO

Tom Brusehaver writes: 6/3/02

When I thought about the Cozy, I thought, yup, there is a back seat if I ever need it, maybe to bring one person, or the dog. During building, it seems I spend an awful lot of time back there. Wiring, putting in the fuel system, landing brake fiddling, control system work, sanding. I never imagined. The time I have spent back there (no cushions, or anything), it doesn't seem too bad. Big people won't fit, but that is fine too. Tom Brusehaver

Bloomington, MN

TALL PILOTS

Are people getting bigger each year, or is it just our imagination? Our teenage grandsons are all over 6 ft, and our oldest grandaughter is no slouch either.

We are occasionally asked if we can accommodate tall pilots, and the answer is "yes". Our tallest builders are 6 ft. 6 in., but we need to coach them on a couple of changes. The nice thing about building from plans is that you can make some simple changes in the fuselage to better fit your body.

The plans model Cozy Mark IV is just a wee bit taller than the Long EZ. The Long EZ was advertised to accommodate pilots up to 6 ft. 4 in., but of course, you sit on the centerline of the fuselage in a Long EZ, whereas you sit on either side in the Cozy. Our plans model Cozy is really too tall for us. I am 5 ft. 7-1/2 in. and Shirley is 5 ft. 4 in. We have to sit on 4-1/2 inches of fairly dense foam with 3 inches of foam behind us. This last time we made our cushions in 4 different pieces, so we could adjust the thickness for different sized pilots. So the first thing that tall pilots need to consider is how thick they want their cushions to be. The seats are well configured, so even 1/2 inch foam (or none at all) would be comfortable. So we think a 6 ft. 2 or 3 inch pilot would fit okay with just a simple adjustment of cushions. As for changes, it depends somewhat on whether the tall guys are tall in the legs, or tall in the torso. The rudder pedals can be moved forward, either at the pivot, or with Dennis Oelmann's adjustable pedals. The seatback can also be moved back, but no more than 1 inch, please. Also the canopy can be mounted higher. The Mark IV was designed so you can do this quite easily. The canopy is supplied taller than required for the plans model, so it is only a matter of trimming off less material around the bottom, and then shimming the turtleback up an inch or so in the front where it meets the plastic canopy. If you notice in the side view, there is a slight break in curvature where the turtleback meets the cowling, and shimming the turtleback up in the front actually improves the curvature of the top. So it is pretty simple for us to accommodate tall pilots. What we have more difficulty with, is accommodating heavy pilots. If someone over 220 lbs is absolutely determined to build a Cozy, we advise them to consider making a bench seat in the front, and sitting on the centerline of the airplane. We have several builders who are doing this. More often, though, they promise to lose weight, which most builders do anyway during the building process.

ARLINGTON 2002

Arlington will be July 10th to the 13th this year. Because Arlington and Osh have been scheduled so close together this year,

we decided to skip Arlington. We were looking forward to seeing both Eric's and Al Wicks' Cozys, and others on the west coast, but maybe they will come to Oshkosh.

Eric Westland writes: 5/12/02

Arlington has a complete website at http//www.nweaa.org/. We have not talked to anyone about a dinner. The O'Grady's did it last year and it was pretty much a collection of locals. The truth is that we really got the big crowds when you folks were here and interested builders could meet with you and other builders. The other thing was that we rarely got an RSVP – people pretty much heard of it by word of mouth at the air show itself.

We'll be there for sure. Al Wick made it up last year and who else arrives always depends on the weather. Paul, David and I have camped out with the plane the first few nights and they tell me they want to do that again. We have a great time, but I'm getting too old to sleep on the ground. We manage to sneak back home in the morning for supplies and a shower.

I hope that is helpful. Let us know how your plans develop and we'll do whatever we can to help accommodate. Eric

AIRVENTURE 2002 (OSHKOSH)

This year Airventure (Oshkosh) is scheduled for Tuesday, July 23rd to Monday, July 29th. We will be exhibiting our Cozy N14CZ at the same spot as in previous years, the South entrance to Exhibit Bldg. A. We have also scheduled a Cozy Builder's Forum for Friday, July 26th. We hope to see as many of you this year as possible.

Builders Daryl and Kim Lueck made arrangements for the Cozy Dinner again this year. It will be at Robbin's. Kim and Daryl went to Osh to confirm the reservation in person with Wally, the owner of Robbins, to avoid hitches. The good news is that it will be on Saturday evening, instead of Friday. Stop by our exhibit in the afternoon to get directions or arrange a ride. This means that those so inclined can go to the EAA Homebuilders Dinner on Thursday, July 26th (tickets must be purchased in advance in the Red Barn) and the CSA Hot Dog roast on Friday, except last we heard, the Hot Dog roast was somewhat in question. There will be a breakfast meeting for Technical Counselors and Flight Advisors (plus one guest each) on Sunday, July 28, at 7:30 AM in the Nature Center. And, there is usually coffee and donuts for homebuilders on Monday morning at the homebuilders building.

GOLDEN WEST 2002

The Golden West EAA Regional Fly-in has a new home at Yuba County Airport, Marysville, CA, near Sacramento. It will be September 6th to the 8th. There should be a fair turn-out of Cozys. We haven't decided whether to try to make it or not. For more info, check www.goldenwestflyin.org/gwaahome.shtml.

COPPERSTATE 2002

Last year there was no Copperstate Regional Fly-in, because Williams Gateway Airport had other ideas, and there wasn't a good alternate location. But now there is. A new airport has been constructed, Phoenix Regional Grande Airport, and it will be the permanent home for the Copperstate Fly-in, which will be held October 10th – 13th. The airport is located about 40 miles south of Phoenix and 5 miles west of Casa Grande. It may not even be on the charts yet. We will be exhibiting there. We can provide lodging and ground transportation for up to 3 couples who fly in (how is that for an incentive?), on a first come, first serve basis.

LETTERS FROM BUILDERS (some from the net)

Nat, 5/11/02

Last Sunday we had our annual carnival at our church. As one of the leaders, I had the responsibility to develop one of the carnival events. This seemed like a great opportunity to introduce aviation to many of the kids. We went to the airport, loaded my Cozy III onto a trailer sideways, with flagmen both front and rear, and headed through town to the church. I had initially asked for permission to land on a portion of the four lane highway which runs in front of our church, but local law enforcement preferred the trailer idea. Sunday we took in excess of 120 pictures of "kids" both young and old sitting in the Cozy. We then developed these into 8 x 10 photos and will hand them out this Sunday. We had lots of fun, and hopefully we will have ignited a small spark which will result in some new future aviators. Yes, we did hear that one would have to be crazy and mad to fly an airplane that small. Oh well, some people just do not appreciate the freedom of flight. God bless. David Jones
Powderly TX

Builders, 6/1/02

I went to the AOPA Fly-in and Open House at FDK, Frederic, MD. What a great day! I wasn't ready for the reception my Cozy was about to get. Ground control asked if I wouldn't mind taxing the Cozy up front to the display area. I ended up parking right in the center. The Cozy got more attention here than at Sun n Fun. Lots of people got educated on composite construction and the joys of flying a Cozy. Almost talked Rod Machado into a Cozy flight. John Vermeylen
Lanoke Harbor NJ

Editor: This reminds me. Remember awhile back one of our builders wrote that he and a friend flew up to Montana on a fishing trip, parked their Cozy on the ramp at the nearest airport, and after returning from fishing discovered there had been a fly-in and their Cozy had one the grand prize?

Builders, 5/12/02

Cozy Mark IV #467, N100EP is resting comfortably in its hangar at MLI, the Quad City airport. Transported the fuselage with engine and prop installed the 9 miles from the garage where it was born to the airport this morning. Weather was marginal, mist and fog, but the traffic was very light, not a problem. Had a vehicle in front and one in rear of the trailer, connected by Motorola. All of the journey was on secondary roads, did not contend with major highways.

Tentative plans call for inspection by the FSDO mid June. Not much left to do, attach wings and data plates, etc. Vortilons need painting and attaching. Just a few minor details to keep me busy for the next month.

I chose MLI for the test flights. That is the closest airport and the hangar price is competitive, very few dollars more than a non-controlled airport in the area. As far as I am concerned, the tower is an asset and the 10,000 ft of concrete is adequate for land-ahead if the need arises. Getting there! John Epplin
Orion, IL

Gang, 5/9/02

After going 2 weeks between building sessions (fixing the boat up for the season), I went to do a layup. Apparently during the

layover, a clog had developed in the hardener side of the exit tube on my pump. When the lever was released, the pressure from the pump expelled the hardener with such force that it hit the cup and splashed back up and hit me right in my UNPROTECTED eyes! (Yes, I'm an idiot).

One long shower with my clothes on to wash out the hardener, 2 doctor visits and four days (two of which were spent lying around the house with my eyes swollen shut) later, I can see good enough to drive. WEAR EYE PROTECTION AT ALL TIMES! Happy building! Joe Turecamo

Bay Shore, NY

Builders, 5/6/02

I was planning my extensive tour of the Western states, when I realized I was getting ahead of myself a bit. So I scaled back and decided to hit the closer locations on "short? trips instead of one big trip. Particularly since I don't have much cross country experience. So Saturday I accomplished a few firsts. I had plane loaded with full tanks for the first time, heaviest load I've ever had. First time I packed along the folding bike…it fits! First time I used the full functions of the moving map…wow!

So I departed Scappoose, OR at 11:30 am. Destination is Crescent City, CA. I always considered California so far away, I keep forgetting how close it is by Cozy. Only 2 hours away.

When I reached 10k ft., I suddenly heard a "WUMP". "Bird strike" was my first impression. Oh, yeah, birds at 10k ft! I glanced at my panel, all green, and reduced throttle. I was already dialed into my nearest airport frequency, so I immediately diverted. No indication of any cause for the noise while I lost altitude to Corvalis, OR. Did I really hear that noise?

Landed at Corvalis and examined plane thoroughly. Removed cowl. Everything perfect. Then I found the problem. A mylar bag of Doritos in the back seat had blown up. Chips all over.

Anyway, the trip went great. Crescent City is beautiful. I can't believe that airport! On final you are over the ocean. What a great place for bicycling. I really enjoyed riding along the coast to town. Never made it to Redwood Forest. I'll do that next time.

Al Wick

Gladstone, OR

Builders, 5/7/02

I had the same thing happen to me a few years ago. There was a large BANG in the cockpit as I was climbing through 8,000 ft. It definitely had my pucker meter pegged. I was just about to put it down at the nearest airport when I realized that the whole airplane smelled like potato chips. Oh, what a relief!

Dewey Davis

Warrenton, VA

Builders, 3/24/02

As with most EZ builders, I have been working on lowering my engine temperatures. During cruise on a warm (not hot) day, my #3 would run at 375 deg F, and during climb would get up to 425 deg F. Since my probes are on the bottom (cold) side, the top side could easily have been getting close to 500 deg F. I was not happy with this especially since the weather had yet to get really warm as it does here in So. CA.

I was going through the Central States newsletters and came across Eric Westland's article on cooling. He wrote about measuring the airspeed in the NACA opening and comparing it with the Cozy's airspeed. The airspeed in the scoop was considerably lower than the plane's airspeed. After numerous attempts, he found that adding two small fences just past the speed brake solved the problem and his temps came down considerably.

I decided to give this a try so I quickly fashioned the fences out of some levtover pieces of aluminum and stuck them on with carpet tape. All I can say is THANK YOU ERIC! I could not get my temps above 356 deg F even on climbout! As soon as I leveled off and backed off the throttle a bit, they were down to about 330 deg F. My oil temp was only 160 deg F, so I may have to block off some of my oil cooler in the cooler months (I changed over to a larger oil cooler earlier to reduce my oil temps).

Eric mentioned his scoop is larger due to the cowling modifications for his engine so he wasn't sure if it would work for the stock built scoop. My scoop is completely stock so I can attest that it does indeed aid in cooling. Thanks again, Eric!

Paul Stowitts

San Dimas, CA

Hi Nat, 12/14/01

My company (which isn't Shell any longer) doesn't make or sell intumescent coatings. There have been several brands available for some time. I really don't know who they all are. I have been consulting a gentleman in his prime, Larry Eskind, Fire and Thermal Protetion Engineers, Petersburg, IA (812)354-8166. They make the same kind of product using my epoxy resins as the binder. Larry believes his material is unique and far superior to the others available today and I believe he has acquired patents accordingly. He has excited a number of major OEMs and Military branches with his products.

I know this sounds like I'm promoting his stuff specifically, but I can assure you, it is not from a business or friendship perspective – purely technology. Gary Hunter

(800)832-3766

Dear Nat, 6/12/02

Thank you for the information. I am approaching 900 hours on my bird now. I've become so spoiled with this high speed form of travel that I just even hate the thought of driving somewhere in a car. Tim Jones

Jefferson, SD

Dear Shirley and Nat, 12/18/01

November in Seattle started with a week without the usual rain, so that the fuselage exterior was finished before the seasons changed with slow cure MGS 285 with standard layup. The cure is never in doubt, as it starts at 68F in the am, finishing the day at around 72F, then launch the propane after-burner for the night, which with the shop's heat loss goes to 90F to guarantee the cure, with thise ambient temperatures. This was what I had scheduled, but you never know around here. The weigh in was 81.4 lbs for the chapter 7 tub. Am working through the winter months doing small assemblies so that only the insulated part of the old shop needs to be heated. Have finished vacuum bagging the sub-assemblies in chapter 8, head rests, seat back, aft heat duct, etc. Now on to NG-30, which is half done the chapter 10 canard sub-assemblies were purchased along with the more normal turtleback, gear legs, cowling and small parts. Have been very satisfied with both quality plus timeliness for parts from Featherlite

Have stored the complete set of vacuum bagging molds to date. They are available to any moderately experienced composite engineer type with Cozy plans in the Seattle area.

Howard Trefethen

Des Moines, WA

Dear Sir, 3/20/02

I really like the looks and specifications of the Cozy Mark IV. I am only 17, but I have had the dream of flying for a long time. I do not have my private license yet, but I do fly radio-control airplanes. I plan to attend the EAA convention in Oshkosh this year, and hope to see you there.

I knew that I had to build a canard style aircraft when I saw one for the first time. When I first saw your aircraft, I knew that yours was the one that I wanted to build. The reason that I want to build your aircraft is because of how the people talk about it on your website. They all made their decisions quite fast and they don't regret it at all. Thank you for your time.

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