

COZY NEWSLETTER #80 Jan. 2003

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Co-Z Development Corp.

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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)

Following our custom of past years, we are sending out this newsletter a little early so we can wish you:



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. Third Edition plans holders need, newsletters #75 to present. 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 410 Pine St. Highland IL 62249 (800)221-9425	Aircraft Spruce Box 4000 Corona, CA 91718 (909)372-9555	A. Spruce East Box 909 Griffin GA 30224 (800)831-2949
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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

Airplane Plastics Co.
9785 Julie Court
Tipp City, OH 45371
(937) 669-2677

B & C Spec.
PO Box B
Newton KS67114
(316)283-8662

6) Exhaust Systems

Custom Aircraft
14374 Olde Hwy 80
El Cajon CA 92021
(800)561-1901

7) Propellers

Performance Props
Box 486
Patagonia AZ 85624
(520)394-2059

Sensenich Props
2008 Wood Ct.
Plant City FL33567
(813)752-3711

8) Prop Hub Exten.

Saber Mfg.
3601 Nassau Ct.
Granbury TX 76049
(817) 326-6293

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 (772) 664-8953; wlanza@bellsouth.net
- 3) **Switching and breaker panel.** Wayne Lanza (772) 664-8953, www.CompositeDesignInc.com.
- 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.

DESIGN CHANGES/CORRECTIONS

- 1) Chapter 13, page 10, Fig. 43: In the early 90s, the clamp plate MKNG-2 was changed from a flat aluminum plate to a hat-shaped .090 steel plate, so the nose wheel would be able to swivel 360 degrees, but Fig. 43 was never updated to show this change. At a somewhat later date, the MKNG-15A casting was changed to make the ears longer

and stronger, but again Fig. 43 was not revised. A new Fig. 43 showing both of these changes is shown above. Please copy this figure and paste it over the figure on Chap. 13, page 10.

- 2) The optimum angle of incidence for the Roncz canard is the angle that puts the elevators in trail (0 degrees) or slightly reflexed in cruise at a mid c.g. But a number of builders have reported that they have carefully set their canard incidence using template F on M-17, and yet their elevators are 3 or more degrees trailing edge down at cruise with a mid c.g.. Apparently the template F on drawing M-17 does not produce the recommended result, so it has been modified as shown to the right. Please copy this new template and paste it over the old template F on drawing M-17. If you are satisfied with the way your airplane performs, it is not necessary for you to change. But new builders should use this new template.
- 3) The elevator travel checking template G on drawing M-18 has been modified to agree with the new template F described above and is shown on the next page of this newsletter, 80-3. Please copy this new template and paste it over the old template G on drawing M-18.
- 4) Chap. 10, p.2, Fig. 17: Delete W.L. 19.4.

BUILDER HINTS

- 1) **Master switch.** Whenever the master switch is on, the battery solenoid is energized, drawing current. Prior to installing the electric nose lift, I always shut off the master switch when shutting down the engine. With the electric nose lift, however, I leave the master switch on until after I lower the nose for parking, and sometimes, when showing our airplane, I turn the master switch on to demonstrate raising and lowering the nose. On a couple of occasions, I forgot to turn off the master switch and when returning to the airport a couple of days later, the battery was dead—not good. Someone suggested leaving the strobe switch on, so whenever the master switch is on, the strobe would flash. It is hard to forget to turn off the master switch when the strobe flashes in your face as you walk around the wing tip to close the hangar door.
- 2) **Ignition switch.** If you have a keyed ignition switch and mags, and you have wired it properly, the non-impulse mag is shorted out when you push the key in to energize the starter. If you neglect to install this one little shunt, as Marc Zeitlin learned, the non-impulse mag will fire before dead center, the engine will back-fire while the starter is engaged, and you will probably bust the starter and damage the ring gear. This will spoil your day. So pay attention to the wiring instructions for the keyed ignition switch. Maybe the same thing could happen with electronic ignition. We do not have experience in this area.
- 3) **Epoxy quantity.** Larry Capps says the best rule of thumb when estimating how much epoxy (mixed) you will need for any given layup, is to allow 1 oz. of epoxy for every oz. of cloth needed. This rule includes the micro layer. For example, the bottom side of one Cozy MKIV wing will need 12 yds UNI (7 oz/yd. 38" width) or 84 oz. total. Epoxy weighs 9 lbs. (144 oz) per mixed gallon, so you will need 84 oz. mixed epoxy to wet out 12 yds of UNI.

- 4) **Vacuum lines.** In our Mark IV 14CZ we installed electric gyros rather than vacuum ones. After adding up the cost of vacuum pump, lines, filter and regulator, we decided it wouldn't be much more expensive to go electric, and wouldn't have to worry about life of the vacuum pump. However, if you are going vacuum, you will need to run a vacuum line forward from the engine to the instrument panel. 5/8" I.D. is the recommended size. You can either select a rigid-wall plastic (vinyl?) tubing at your local hardware store, or use 5.8" I.D. soft aluminum. Provide a path for it on the left side of the fuselage, under the armrests, with the brake lines and instrument sensor leads.
- 5) **Prime coat.** It appears that the most popular prime coat material for Cozy builders is Poly Fiber Smooth Prime. They say it is easy to apply with a roller, does a pretty good job of filling pin-holes, and is easy to sand. After the Smooth Prime, follow with a high-build primer such as PPG K-38 (as many coats as are required), and then PPG Concept top coat, for best results.
- 6) **Color schemes.** To see how a color scheme would look, Keith Spreuer says he used Corel Draw. He scanned one of the photos in the infor kit as a .bmp, then edited the trim colors off with a paint program. Then he imported it to Corel. He added his trim colors aided by the drawing tools for curves and other geometric shapes. Ken Brimmer says he scanned the drawing on the back of the plans and then used PC Paint to try different color schemes. He says this worked very well.
- 7) **Stick on color striping.** The old fashioned way to decorate your airplane is to do a lot of masking and then paint the decoration on. The new easy way is to use stick on decals. Eric Westland writes that it seemed very expensive to have custom decals made locally, so he went cruising the internet and found a number of sources. He ended up ordering a kit from one of them, Auto Trim Express. They didn't sell direct, but were happy to mail him a catalog along with some material samples. They suggested a distributor in Portland, OR. He said he told this distributor he was in the airplane manufacturing business, and for \$35, he got a 3" x 120" kit. Applying it was a snap after reading some of the application tips located on some of the internet sites. Using a spray solution of water and isopropyl alcohol allowed him to get it positioned just right. The sites he found are:
www.autotrimexpress.com
www.stripeman.com
www.customautotrim.com/products/graphics.htm
www.phoenixgraphix.com/custom.htm
www.u-p.com/strifmst.html
www.prostripe.com
www.lbgraphics.com
- 8) **Stick on color striping.** Nick Ugolini used the same company as Eric. He says he told them he was an "installer" and he was able to get the dealer's price, which was about 1/3rd the retail price.
- 9) **Topcoat.** Carl Denk says two properties to consider in the choice of a top coat are a) can the paint be touched up easily, and b) is it flexible enough to withstand cracking. He comments that with a composite airframe, damage like scratches and paint rub through will occur. It is not practical to repaint an entire panel like a car door or fender. With PPG Deltron/Concept paint you just sand the blend area with 1200

or 1500 wet paper and paint, feathering it out in the blend area. Misting the blend area with straight reducer will help it to flow out. After cure, you sand the blend area with 1200 or 1500 paper till uniformly dull, and buff out. Because there are many areas that flex considerably, you should have a paint that is fairly flexible and will not crack at the surface. The PPG acrylic urethane paint, Deltron/ Concept has the desired properties. A straight polyurethane paint like DuPont Imron is not easily patched.

10) Cabin heat. Now that cold weather is here, the subject of cabin heat is being discussed on the internet. Those who do not wish to use the heat muff, or consider it to be inadequate, have tried various alternatives, with mixed success. Some have tried electrically heated socks and vests, some have installed electric heaters in the nose, some have installed an engine oil heat exchanger in the nose, Jack Wilhelmson installed an oil heat exchanger and fan in the back seat that he is quite pleased with, etc. But the item that we were most interested in was something that Marc Zeitlin discovered. He lives in Massachusetts, which by all reports can be colddddd! He was not satisfied with the amount of heat from his heat muff, and suspected that maybe the carburetor heat flapper valve was leaking air and pressure into the carburetor. So he applied a bead of silicone at the carb heat air inlet, covered the silicone with saran wrap, closed the flapper valve and let the silicone cure. Voila! A perfect seal! The cabin heat was much improved. He thinks this may be adequate for winter flying.

11) Connector protection. Norm Muzzy suggests that the best way to protect connectors, at the wing/strake junction, for example, is self-fusing rubber tape that you can get at Radio Shack. It is wrapped onto the wire or connector just like electrical tape, except it bonds and fuses to itself. If you ever need to open the connector, you slit the tape with a razor and it peels off nice and clean. It is a far superior seal than electrical tape or RTV.

12) Rain. If you park outside, sooner or later your airplane will get rained on. We don't think it is wise to allow water to collect in the exhaust pipes, so we have 2 sets of 2 rubber balls with red ribbons attached for each side that we plug the pipes with when we park. We also seem to take in a little rain water in the nose, either around the elevator torque tubes or around the inspection cover. Drilling a small hole through the fuselage bottom at the low point prevents it from collecting.

FOR SALE

- 1) Cozy Mark IV 4-place aircraft.** 220 mph cruise on 10gph. 150 TT airframe, 150 TT IO-360 Lycoming. First flight 9/8/98. Always hangared. Exceptionally nice Cozy with full instruments: KX155, Collins transponder, ELT, Stereo CD player, intercom, Audio flight engine monitor system. Electric trim, electric speed brake, electric retract, 3-blade Performance prop. \$99,900. Tel (480) 671-7355 or email cozy42cz@qwest.net for more info or reference.
- 2) 1994 Cozy Mark IV.** 480 TTAFE, Lycoming IO-360, Garmin GNS-430, Bendix/King Com/GPS, Bendix/King IFF, Century 360 slaved HIS, Electric nose lift, Tinted canopy, Catto prop, Cleveland brakes, 160 KTAS cruise, 10.5 gph, interior/exterior 8/8, price reduced to \$93,000 OBO,

bbop16@pobox.com <http://tappix.com/600939>, or call Brian @ (719) 472-9553.

- 3) Cozy Mark IV posters.** Cozy builder Jay Hegemann has printed color posters 24 x 36 of Cozy Mark IVs. One large photo in the center and 10 smaller ones around the border. Very pretty! Just the thing to mount on your shop wall so strangers will know what your "boat" will become. Price of \$38.50 includes packaging and postage. Contact Jay @ CozyCrafter@aol.com or www.hydrabrush.com/jay or 748 S Vinewood St. Ste C-D, Escondido CA 92029.
- 4) Mark IV wings:** Pair of Cozy Mark IV wings with winglets attached, match-drilled to the main spar. Call Dennis for details and prices (319) 231-2635.
- 5) Cozy Mark IV project:** Assembly thru mid Chap. 7 plus materials and hardware thru Chap. 8 & Chap. 10, including MGS epoxy, ratio pump, hotwire saw, jig table, and more. Will sell for less than cost. Keith Barr Utah (801)910-4515.

FIRST FLIGHTS

We haven't received any new first flight reports this last quarter.

Since reporting on Marc Zeitlin's first flight in the last newsletter, we have been following his exploits through his almost daily reports on his flight testing and other adventures during his first 40 hours of flight. Thank you Marc!

\$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 wish to acknowledge the following:

- 1) Mark Beduhn had a 6-page article published in June 2002 Kitplanes, entitled, "Black Hills Adventure", with many pictures. He parked his airplane at the Spearfish SD airport to go fishing with a friend. Returning to the airport they discovered that in their absence, there was a fly-in, and Mark's Cozy Mark IV won the award for the best composite home-built. Congratulations, Mark!
- 2) Stan Magill had a picture of his very nice looking Cozy Mark IV published in October 2002 Sport Aviation. He has already logged 160 hours. Congratulations, Stan!
- 3) Marc Zeitlin had a picture of his very nice looking Cozy Mark IV published in December 2002 Sport Aviation. He is also busy logging a lot of hours. Congratulations, Marc!

ENGINE SELECTION

ECI is on the verge of marketing an 0-360 engine kit for \$14,700, which will include all the new parts required to assemble a new 0-360. ECI has been manufacturing certified aircraft engine parts since WW II for almost all models of Continental and Lycoming engines, and decided the next logical step was to make all the parts and turn out engine kits. ECI is making arrangements with some dealers to assemble these engines for a modest fee. The final cost would be

considerably less than the cost of a new engine from Lycoming. For more information, ECI is located at 9503 Middlex, San Antonio, TX 78217; tel (210) 820-8101; web www.ecitofly.com.

COPPERSTATE 2002

Copperstate 2002 was a great success. After years and years of nomadic existence, it now has a permanent home. In the past, it has been held 2 or more years in Eloy, Casa Grande, Prescott, Peoria, Williams Gateway, and who knows where else, but now it has a 30 year lease at the new Phoenix Regional Airport, formerly Maricopa Grande Valley, A39. This is a private airport that is being converted into an airpark. The 4,000 ft. dirt runway was recently paved, and 25 acres of grass planted on the west side of the field just for the EAA, and building lots are now for sale. The FAA had a temporary tower and the airshows were enjoyable. By Saturday, the grass area was completely covered with airplanes, tents and exhibits. Attendance was larger than expected, considering the new location. There were 4 Cozy Mark IVs—ours, the Davises, the Funks, and the Farmers, all parked at our exhibition tent. A lot of builders stopped by, and yes, we did sell some plans. We all gave rides—Kevin Funk gave the most. His 160 hp Cozy seems to do quite well with 4 people aboard. He flew Friday and Saturday in the showcase with Terry Winnett and his son Tyler doing the announcing work. On Saturday night all the Cozy enthusiasts got together at one large table at the awards banquet in Casa Grande. A good time was had by all. On Sunday morning as he was getting ready to leave, Kevin found his front tire was flat, for some unknown reason. A bicycle shop in Casa Grande helped him to patch a tiny leak in the tube, and then he was off to Texas.

WEIGHT SAVING

One builder asked if there were many parts that one could vacuum bag, and if it was worth it. Several builders who have tried vacuum bagging replied that it was time consuming and expensive, and didn't save much weight, so they didn't consider it to be worthwhile. It is true that light airplanes fly much better than heavy ones, so if you are concerned about saving weight, here are some of the things you can do (or not do). You can be careful during construction, like in shaping the foam so you don't have to use a lot of fill in the contour stage. Don't use 3 or 4 inch wide tape if the plans call for 2 inch. Don't add extra layers of glass, and don't use excess epoxy. Peel ply everything and use a hair dryer when you squeegee, to remove excess epoxy. Don't use bondo for contouring. Use restraint in what you put in the airplane—no unnecessary avionics, no hi-fi, no loran, no audio panel. Make your own antennas out of copper foil (except for gps and transponders). Locate antennas as close as possible to your avionics to reduce co-ax length. Don't put your battery in the nose—this saves cable length and allows you to use lighter cable. Don't upholster everything including carpet on the floor—just use seat cushions. Don't install fuel flow meters, electric fuel gages, auto pilots. Don't use 600x6 wheels and tires, or fancy retract steps, or front hinged canopies, or copper mesh for lightning protection, or an electric retract system (unless you use the lightest one), or a retractable main gear. Don't use remote oil coolers or two coolers in series. Use a pocket sized ELT. Use all lightweight accessories. Don't install an oxygen system. Make a light weight

engine installation (not an auto engine conversion). And lastly, don't install an air-conditioning system (I'm not kidding).

ENGINE FIRES

Engine fires are an extremely rare occurrence, and to the best of our knowledge, we haven't had any yet. The most likely cause would be from a fuel leak impinging on a hot exhaust pipe. If a fire should occur, you would want to shut off the fuel immediately, and make an emergency landing. But how would you know that a fire has occurred?

Jack Wilhelmson advises that the best way to know if there is an engine fire is to install a sensor that tells you you have a fire. He has one on his airplane (and so do we) and advises that everyone should have one. It consists of a thermocouple installed in the air stream exiting from between the cylinders, hooked up to your engine temperature monitoring system, with the temperature limit set 100 degrees above the normal exit air temperature. If possible have it flash a red light or sound a horn.

LETTERS FROM BUILDERS (some from the net)

Hi Nat,

8/05/02

Three years ago I was at Sun n Fun, looking for an aircraft that will take me from Orlando FL to St. Croix USVI, approximately 1200 miles each way. To my surprise, the choices were very limited and when it came to affordability, there was only one choice. Its taking me three years, but my final choice is your Cozy. Nothing else comes close. Please ship me your plans. I now have work to do.

Isaac Espinosa

Orlando, FL

Dear Nat,

9/26/02

I just received NL#79 yesterday and noticed that it is my last issue, so I thought I would just go ahead and get up to date. The building of the Mark IV has been enjoyable. Your plans are very detailed and easy to understand. I cannot wait until I finish with this plane (#643). I will have to get on the ball, as our Velocity 173RG is up for sale due to partnership dissolution.

Michael D Pollock
Sachse, TX

Builders,

11/14/02

I thought I would give everyone a quick update on our progress. We have the wings back off our plane and the fuselage is back in our local EAA Chapter 836 hangar. We have a great hangar facility located on the Racine WI airport, just across from our t-hangar. We also have a 9,000 sq ft. museum with 6 aircraft including SC Jonson Wax Co's Sikorsky S38 Flying Boat (displayed at Oshkosh 2000).

Our plane is having the "Monday Night Hangar Crew" do a pre-startup engine and systems check. We have a group of guys that get together every Monday night to work on anything aviation related. The main project is a restoration of our local A&P's Pacer. The A&P has been looking things over for me and between him and the gang we should catch any problems. I hope to have the engine ready for startup by Thanksgiving week.

In the meantime, I'm also using the nice heated hangar time for finishing the interior. Kim and I have the armrests in, the panel has been formica'd in a nice burgandy formica. We're sanding away on the interior and hope to paint it over the next few weeks.

No avionics yet. Still looking like a late spring launch.

Daryl Lueck
Racine, WI

Dear Group,

11/13/02

I'd like to repeat a private response I made to Jay Hegemann's marker antenna placement question. Several noted authorities suggest foregoing MB antenna installation in the fuselage, and instead, simply installing a short length of copper wire right off the back of the MB receiver. Don't quote me on the length, but I seem to remember 12-18 inches, simply taping the wire in the forward direction along the inside of the fuselage side. The point was that the marker beacon signal is so strong that a "wet string" will work just as well as burying 70+ inches of copper tape in the fuselage.

Carrolton, VA

Builders,

11/08/02

My wife met me in the middle of the basement steps as I was carrying up the ice bucket. "Are we having a party?" she asked. "Well, not exactly!" It just so happened that the ice bucket was the exact same diameter as the contour of the fuselage bottom. So out to the shop with the ice bucket in hand, I went. You know all those little pieces of UNI cloth that you have piling up, well anyway, the point of the story is I made a sanding tool that matches the contour of the bottom and I am willing to share it. Just send me an email and pay the shipping to the next user.
<http://home.neo.rr.com/tlumppy/FuselageTool.jpg>.

Timothy Lumpp
Silver Lake, OH

Nat,

10/31/02

I wanted to let you know I have spent every evening since I visited you reading about and researching the Mark IV, the builders, and my decision to build a Cozy. The evidence is pretty overwhelming, and I have made the decision to build my own Cozy Mark IV. After I return from the NYC Marathon, I would like to stop by, see your Mark IV, and purchase plans.

Jeff Morhet
Gilbert, AZ

Nat

9/22/02

I have received the plans and the video. The plans arrived in perfect condition, the video is damaged in some parts, maybe because it was exposed to a surveillance radiation in the customs. Congratulations...The plans are perfectly structured and very precise. My Cozy IV project started yesterday (day 0). The very first thing I will do is to prepare the shop. I like very much to work in an orderly and clean fashion. I am starting to study the information (it is a lot). Thanks for everything.

Otavio Barroeta M.D.
Puebla, Mexico

All New Cozy Pilots,

9/22/02

I find that I really enjoy reading about your first flights and listening to the excitement you are going through. And even though you are facing some of the same problems I faced, I enjoy reading about how you solve them. It reminds me of a great book I read called "Westward the Wind", by Beryl Markham, who flew in the '30's. She wrote of her student days flying Africa with her instructor in the back seat of an open cockpit bi-plane. She was trying to climb over a mountain ridge and was not making it, when at the last minute she had to whip the stick over to keep from hitting the mountain. Later, after landing, she asked her instructor why he did not tell her to circle higher to clear the ridge. He told her he did not have the right to not let her solve her own problems. You guys are doing great!

Ken Brimmer

Bowie, MD

9/22/02

Dear Nat,

I have had a few phone calls from prospective builders which I am very delighted to answer and help. Always the question of cost has risen. It seems that it is a factor because our Australian dollar is 0.55 USD, so it will seem to cost twice as much. I have managed to find some of the material here which will work out cheaper. There is a shop in Sydney at Bankstown airport which supplies lots of the required material to Wicks Aircraft, but not quite so large. Everything is aviation grade, and it supplies to lots of LAME and aircraft workshops here. I have revised the bill of materials and have the following findings for you to pass on to Australian builders:

- 1) All the metal parts: Screws, bolts, washers, nuts, nutplates, rivets, angles, bar stock, sheet stock, tubing, fuel fittings, piano hinges, solenoid valves, Cleveland tires, and more than 50% of the Misc. sections. Aviation Parts and Equipment, Bldg 603 Airport Avenue, Bankstown Airport, New South Wales 2200, Australia, Tel: 61-2-9796-2733. Fax: 61-2-9796-2855.
- 2) Epoxy: The West system is available here in Australia and is manufactured in Queensland, the Urethane foam and Divinycell foam from barracuda is available. It isn't stocked, but is available: Fiber Glass Material services, 12 Abbott Rd., Seven Hills, New South Wales 2147, Australia. Tel 61-2-9624-2511 and Fax: 61-2-9764-2815. Contact: Brian Edward, Technical Manager. For epoxy, there is about a 47% saving, not including the savings in shipping and customs. He will check on the cost of fiberglass.

I hope this will help to encourage Australian builders to purchase as much material as possible to save on shipping and customs.

Khalid Shuwayhat
St.Leonards NSW

Builders,

12/3/02

Contact details for MGS Australia are: Tobi, 12 Old Orchard Crt, Riddels Creek, VIC 3431 tel/fax (03)5428-6992 and email: tobi@useoz.com.

Andrew Winkworth
Melbourne, Australia

Builders,

9/27/02

Today I had to get to 85 mph to get the nose off. After landing I checked the fore/aft level of my Mark IV, and it was nose down.

Chandler, AZ

Brian,

9/27/02

Congrats on flying your Cozy! My airplane sits about 1 deg. nose up on the ramp. It does make a difference on rotation ease. I once did a take off with the nose gear not fully down, and it was quite a different ball game. It was like the canard was keeping the airplane glued to the runway.

Cozy airplanes all want to turn left because the pilot sits on the left side. Put 200 pounds in the right seat and it won't do it.

David Domeier
Chesterfield, MO

Builders,

10/02/02

Since several people asked, I thought I would reply to the group. I got my engine from America's Aircraft Engines of Tulsa, OK. At Oshkosh, they presented a workshop twice on building an XP-360. I had planned to assemble my own engine from the same kit. I met their two representatives, the lead engine builder, and the president of the company. The professionalism they displayed was great. The introductory deal offered by Superior then was quite a bit off the usual assembled price, about the same as the kit, so I bit.

Planning to use 1 mag and 1 electronic, and an Ellison TBI, I had them subtract carb and 1 mag (\$1500). Net price, assembled and test run, FOB Tulsa, \$17,620. This was based on a discounted price of \$19,120. Their current advertising shows \$19,990, only \$870 more. They build their engine from the XP360 Superior kit, but they name it "Eagle-IV EX".

AAE was nice to work with---friendly people who know engines. They also arranged the shipping of the engine to MN for me, which was \$175 via Yellow. I would heartily recommend AAE for your engine. <http://www.overhaul.com>.

Bob Bittner
Rochester, MN

Builders, 10/03/02

Above and beyond the 'yeah, you should do it' aspect of a builder's log, it's a lot of fun. I have a spreadsheet documenting every day's accomplishments and pictures for almost every day's work too (Get a digital camera if you don't have one, it's much cheaper and more convenient than getting film processed.). Many times when I've been uninspired to work on the plane, reading through my log and looking back through the pictures makes me want to get my fingers sticky again. Doug Shepherd

El Cajon, CA

Builders, 10.04/02

Going through the archives sometimes uncovers interesting perspectives. Just wondering if anyone has made a comparison lately to see how the cost of their Lycoming and it's residual value compares to their 401K? Given a bit of hindsight, I would rather have a garage full of Lycomings now compared to those investments which were supposed to earn on the order of 25%.

Norman Muzzy
Cedar Falls, IA

Bruce Hughes wrote:

I am wondering if I have to stop working until spring.

Wayne Hicks replied: 10/30/02

Heck no! Build a hot box for your epoxy pump. A small wooden box with a light bulb in it keeps my epoxy at 90-110 degrees on the coldest of days (here in Virginia anyway). When working on layups, I use a painter's heat gun on mid setting and continually fan the layups to keep them warm and to keep the epoxy fluid. I occasionally point it into the epoxy cup to keep the epoxy up to temperature. I use heat guns religiously, even in the summer. I use a kerosene jet heater to keep the humans at survival temperature.

To cure the layups, I construct a heat tent over the area to be cured and place an electric heater under the tent. Nothing elaborate, mind you, simply some plastic sheeting or a tarp draped over some left over 2x4s, pipe, angle, whatever I have handy. I set the thermostat on 100 degrees. The layup is cured hard as rock the next day. I also use the tent to pre-heat stuff like wing foam prior to doing the layup. You want foams to be at working temperature prior to glassing.

I NEVER use the kerosene jet heater to cure the layups Bad jujus happen when you do that. If the humans can't be kept at survival temps, then it really is too cold to do layups. ☹

Wayne Hicks,
Carrolton, VA

Builders, 10/07/02

.....I landed at PSF, cracked open the canopy to get some air, and taxied back to the active.I pull out onto the runway, advance the throttle, and at 50 mph realize that the warning horn is screaming at me and there seems to be a LOT of

air coming from somewhere. For the second time in five days, I make an intelligent decision and abort the takeoff, rather than trying to latch the canopy while rotating. What a dope!.....

Marc Zeitlin,
Acton, MA

Builders, 10/16/02

.....So, here's the one incredibly stupid thing that I did. Although I've been flying the COZY now for two and a half months pretty continuously, I've still got 27 years of mostly flying C-172's with a fuel selector gauge that reads "BOTH" 99.9% of the time. You can see what's coming, yes? Even the 3 years of flying Warriors has not totally cured me of the complacency of expecting to NOT have to touch the fuel selector lever. Anyway, while taxxing for takeoff, I set the lever to the right tank, which was almost dry - I wanted it totally empty so that I could finish the calibration of the right tank sender unit. I figured that I'd switch to the left full tank just after the runup. I didn't, even though I was supposedly following the checklist, which called for a "fullest tank" check before pulling onto the runway. I took off on the almost empty tank, marveling at the fact that I was climbing at almost 2,000 fpm, and had reached 1,200 ft. after a 180 deg turn that put me at midfield downwind. Just about that time, the engine burred and started to lose power, I immediately realized what was wrong, lowered the nose, and switched tanks. Within 5 seconds, the engine was back at full power. So, one pint less fuel, the engine croaks at 200 ft., and I've got a pile of splintered fiberglass at best. I was very lucky. I don't think that I'll have THAT problem again. I will have the fuel situation in mind at all times. I know that I had been warned about this a number of times in the past. Hopefully some of you will be better at absorbing lessons learned by other people than I was.....

Marc Zeitlin
Acton, MA

Builders, 10/17/02

I played hooky today and went to the airport to work on the heating system. I decided to attempt to seal the carb heat flapper valve against the circular opening in the top of the airbox, as suggested by one of you geniuses. I did this by laying a bead of red RTV around the hole and then closing the flapper valve (with a piece of saran wrap over it). I let this cure for a few hours while I installed an AUX input to the intercom, so that I could plug in a CD/MP3 whatever player into it.

I also installed an interior cloth cover for the cockpit access door, which was leaking air like a proverbial sieve. This cover is about 8.5" square and is sealed around the edges with velcro. I can peel the top rear corner back so that I can get at the latch from the outside, and I can seal it inside to keep out the air. It's about 98% effective - no more breeze, and a LOT less air infiltration.

After letting the silicone RTV cure, I put everything back together and went up for 0.4 hours to test the heat. BINGO - that was the problem. I now have gobs of heat and a lot less air leakage into the cockpit.

Marc Zeitlin,
Acton, MA

Builders, 10/21/02

I would like to publicly express my joy and gratitude at being the first passenger in Marc's beautiful Cozy "Precious Time". That this was done on a 305nm XC flight, to the Canard Aviator flyin, and via the Hudson River Corridor were all bonus treats.

Second my appreciation at all the help we were offered in dealing with Marc's starter problem. Especially to Wayne Wright for his willingness to disassemble his project to not only loan Marc the starter, but also the ring gear if needed. I've read about this

kind of builder fellowship and support, but had never witnessed it first hand.

Third, I'd like to relate to Marc the many favorable comments his engine installation was getting while he was banging his hands up getting the starter off. Most emphasized how clean his installation was.

Lastly, Terry Schubert suggested I tell Marc (after starter ordeal was over) to reroute his vacuum pump discharge. It is currently in the standard configuration, of dumping straight down. Terry suggests it be routed through the baffling and into the low pressure side of the engine. This will increase the efficiency and lifespan of the vacuum pump. John Vance

Hadley, MA

Marc, 10/24/02

Everyone should learn how to hand prop your airplane for emergency starting. It is not as dangerous as you might think if it is done correctly. I started my airplane several times by hand. The first rule is never do it without the throttle set at idle and someone in the airplane to operate the engine controls in the airplane, or tied down securely and chocked (if the airplane moves forward with the wings tied down, it will tip over). Also, make sure that only the retard mag is live. It can be difficult if the prop is not set for a compression stroke at the proper position for pulling downward. I guess this is a lost art in the modern aviation world.

Mt. Pleasant, SC

Builders, 10/23/02

The customary position for the retard mag is left (as viewed from the pilot seat in a tractor installation). There may be a designation on the data plate, but I would personally just pull the mags and look. It is very easy, but be sure you have the appropriate manual that explains how to get them back in proper sync, because they may move when you pull them out. The impulse coupling is external to the mag and mounted right in plain sight on the drive gear. You will see it as soon as you pull the mag out of the hole. It is big and fat, and that mag that has just a plain gear is the non-impulse one. Believe me, it is obvious.

Builders, 10/12/02

(In answer to a question on "pusher" alternators). On my EZ alternator, I took the impeller to a rebuild shop and asked them if they had one that worked the opposite of what I had (would draw air in the back and suck it out the pulley end of the alternator). They did. The guy didn't want to be caught giving something away, so he charged me a buck for it. It had been designed for a unit that turned the opposite way. Bolted it on just like the original. Easiest thing I ever did.

Jim Sower,

Catskill, NY

Builders, 10/16/02

A few days ago I reported that I had a slight roll tendency on my Cozy. It was only first noticed on a dead calm day; had not flown in such calm before with the Cozy. Today I noticed that the ailerons did not want to stay in the neutral position on the ground. I do not have any roll trim installed yet, have a Mac servo to install, but have not yet done so. Checking a bit, I found that my electric pitch trim was causing the roll upset; the actuator was not normal to the bottom of the stick assembly. In other words, it pushes it sideways a little if there is any trim tension. In my AC, there is always a lot of down elevator spring tension. Seems like that is what is going on. I first thought it was the boots I put over the sticks to keep stuff from dropping down alongside them. Found them to be neutral. John Epplin,

Orion, IL

Hi Nat,

10/07/02

The South African Aerospace and Defense Exhibition went very well. They reported about 250,000 members of the public thru the gates. It was in a huge hangar, complete with huge parachutes draped from the very high ceiling to create a ceiling. Our Chapter President reported a lot of interest in the Cozy, maybe because I wrote as much as I could on the fuselage itself and had 4 posters explaining that they could do it themselves and referring readers to your and Marc's websites.

It transported very easily, with the whole plane strapped to a trailer, which allowed it to be towed to 100 km/h. It did create quite a lot of interest with people slowing down to read all the information written on the fuselage, and at the rear it said, "You are following a Cozy Mark IV aeroplane, you are looking at the engine side of things" of course, all this on a Sunday with all the family traffic.✂

The way home after the show was even more hectic, since the whole area had by now been exposed to the publicity and the noise of the big irons. It was fun participating and showing my project.

Bryanston, S.Africa

Dear Nat,

4/29/02

When I mentioned that I was building a nose strut mounted taxi light, Jack wilhelmson and a number of others wanted to see some pictures. ~~Jack Wilhelmsen~~ in the newsletter, it would save me the trouble of making and distributing copies.

Photo #1 shows the nose strut deployed, with taxi lights, split gear doors, and electric lift installed.

Photo #2 shows the bottom view with the nose strut retracted, It is completely smooth, with only the hockey puck and strut foot sticking out of the boundary layer. That's Jenny, my helper in the foreground.

Photo #3 shows a close up of rear of the taxi light assembly. It mounts to the strut using the single hole already there from the electric nose lift installation.

Photo #4 shows the assembled unit, before mounting to the strut.

Howard Rogers

Photo #5 shows all the parts. The light bulb mounting fixtures displace the lights back about an inch from the front plate to keep the heat from deforming the plexiglas cover. One beam angle is 5 deg down from the horizontal and the other one 10 degrees. I use a GE 12V 50W EXT/CG (narrow spot beam) halogen lamp in the 5 deg side, and an EXZ/CG (narrow flood beam) lamp on the 10 deg side. The combination gives a nicely illuminated field of view for taxiing.

Photo #6 shows the details of how the door close around the "foot".

Dennis Butler

Houston, TX

Chris Byrne wrote:

I have two types of RG58. One is RG58U (solid copper core, copper braid outer) which is what I have installed so far. The other is RG58/C/U (multiple strand core with braided outer). The wire in this one, core and outer, is silver, although upon scratching, it appears to be silver coated copper. Will they work just as well as each other. ?

Wayne Lanza answers:

10/08/02

Either coax will work, but the preferred cable is the stranded center conductor type. The RG58/C/U is the best, the stranded center is less likely to fatigue, work harden and break with age and vibration. The base conductor material in all cables is copper, plated with either silver or tin depending on cable type (tin is most common). These cable types are all 50 ohm impedance. Television

cable (75 ohm) is not acceptable. When assembling connectors on coax cables, get a little advice from someone who has experience with the fine art of working with these connectors. Always do a continuity check after your work to assure that there are no shorts in the connectors. If you have any in-line connectors like at the wing/strake junction, protect them with either shrink wrap or electrical tape to prevent moisture intrusion. Some of the newer transponders are sensitive to cable length, namely the UPS AT SL70. The cable run from the end of the strake is almost 20 ft, and the SL 70 doesn't like that too much. You can mount the transponder antenna in the belly just forward of the firewall. Aircraft Spruce sells a short antenna that you can mount to a 5 inch square piece of aluminum ground plane. Glue the ground plane down and poke the antenna thru the belly. In the Cozy, this will be in the NACA scoop.

Wayne Lanza

William Swears writes:

I've had the vanes in a vacuum pump break. I used to turn the prop backwards on occasion. Never fast, always while adjusting something. How would I know if turning it backwards causes the vanes to break?

Nick Ugolini writes:

10/26/02

My vacuum pump repair man told me that over the course of time, the carbon dust mixed with moisture causes a sticky residue to build up inside the housing. Over time or after about 600 hours the residue will cause enough drag on the vanes to break them, or the pump seizes up and breaks the shear coupling. He told me if you take the pump apart, being VERY careful about disassembly, as the rotor housing can be reversed, and clean the pump and vanes with mineral spirits about every 400 hours, he said the pumps would last virtually forever. He has 1300 hrs on his pump in his plane.

If you fly IFR, you should have a spare vacuum pump available just in case. I have had quite a few friends get ready for a cross country and found their vacuum system dead—trip ruined. Or if your pump dies and you send it in for overhaul, it usually takes a few weeks to get it back, so you are down unless you have a cover plate for the vacuum pad to prevent oil from squirting out of the wet vacuum pad hole. I learned that the hard way.

When I get my spare pump overhauled, I tell the repair shop to double bag (heat seal with desiccant) the pump for long term storage. Keeps well that way.

Nick Ugolini

Ken Brimmer

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