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KR-1 KR-2

# NEWSLETTER

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As I am writing this issue of the Newsletter the East Coast and Mid-West are in the middle of one of the coldest, hardest winters ever recorded. There has even been snow in Miami and in the Bahamas! We have been luckier in the L.A. area with daytime temperatures reaching the 80s. Which brings up a question . . . how does the Rand method of construction hold up under temperature extremes? Fred Kellar of Alaska probably has more experience in this area than any other builder. His KR-1 has been flying there since '74. Fred reported some cracks in the wing fillet area when his KR-1 was taken directly from a warm hangar to outside winter temperatures. The skin and spars were cooling at different rates due to the insulation effect of the foam. Remedy to this situation was to either not warm the hangar or to leave the aircraft outside (covered). This allows all parts of the aircraft to cool or warm at the same rate and eliminated Fred's problem.

Recently another KR-1 has had cracks attributed to temperature. These were reported by Ray Ellis (sliding canopy KR-1, Newsletter No. 14). Much more serious than those reported by Fred, the cracks in Ray's plane are in the wings along the ribs. A probable cause of this problem is attributed to the fact that the wings were completely sealed and the trapped air subjected to extreme temperature change expanded until it finally escaped.

This has been the only reported occurrence of this problem to date but one that should be eliminated before it happens. Cure is simple; be sure all wing compartments are vented to each other and to the inboard end. This will allow the interior air to equalize with the exterior. Wing tanks will already be vented & will cause no problems.

\*\*\*KR jacket patches appear to be a much approved item so I'm going ahead with plans to have some made. The final design hasn't been decided yet so ideas are still welcome.

\*\*\*I've been corrected on a question I answered in issue No. 18. The question was "Can aircraft quality sheet aluminum be bent & used for pulley brackets?" I answered, "No, because bending tempered AL causes small stress cracks." Craig Cunningham, an A&P with several years experience sent the following: "2024 T3 can be bent if the proper bend radius is used. The proper bend radius for different thicknesses of aluminum can be found in most machinist handbooks. Elaborate equipment is not necessary, in many cases a vise & a block of wood with a corner rounded to the radius desire are all that is needed."

\*\*\*The article about the Turbo KR-2 in the last Newsletter has been drawing some favorable mail . . . except from the author. Phil Writer says he had a different audience in mind, unfamiliar with the KR-2 and feels it was not suitable for Newsletter readers. From comments I've received, you're wrong, Phil!

\*\*\*Ben Wilson, KR-2 builder in Albany, GA sent this info . . . the Albany, GA EAA Chapter 354 is taking part in the annual Albany All-South Air Show & Georgia State Air Fair at the former Naval Air Station in Albany on March 26th & 27th. This air-show/fly-in is expected to draw in excess of 30,000 people this year.

\*\*\*At Fla-Bob airport in Riverside, CA on Feb. 26th & 27th is an EAA Fly-in and open house.

\*\*\*Do you have a flying KR-1 or KR-2? If not, do you know of one or more in your area? Information is urgently needed by our homebuilding counterparts in Australia. They cannot get their KR's certified as an "Approved to Build" aircraft until proof of at least 500 hours flown is presented. There is no experimental category in Australia.

Basically what is needed is evidence of at least 500 hours flown, one single aircraft or several, and evidence of at least seven (preferably more) similar KR aircraft flying in the world.

Please take time to pass along any information you can provide . . . type of aircraft, name and address of builder or owner, and hours flown. Mail it to me and I will compile the lists and forward them to the builders "Down Under".

## QUESTIONS AND ANSWERS

- Q. I've heard that if a VW powered plane quits running it cannot be restarted by diving. Have you heard any comments from anyone?
- A. Whether or not a VW engine (or any other engine) will air start depends on why it quite to begin with. The smaller props used with VW engines do require higher airspeed to start them windmilling. Both the KR-1 and KR-2 have been re-started by diving.
- Q. Will a real thin coat of epoxy work on the inside of spars instead of varnish or urethane?
- A. Yes, several builders use this method to seal their wood spars & skin.
- Q. How can I stop cold air from entering the fuselage through the spring bar holes?
- A. Some builders plan on using a rubber or naugahyde boot to block the air flow. These boots would extend into the wing root & should be installed before the wing is closed.

- Q. In issue No. 18 R/R has stainless steel for firewalls .005 thick. In issue No. 9 it says FAA recommends .015 ss. What is the correct figure?
- A. Ken says the metal firewall is not a structural part of the KR's & .005 stainless is much more fire resistant than .020" or even thicker aluminum. I watched a test of the .005 ss held in a propane torch flame. Only effect was discoloration. A piece of .020 aluminum held in the same flame melted like solder.
- Q. Are there any specific rules to fitting the spinner & back plate to Rand's 3 blade prop?
- A. There are no specific rules to fitting the spinner, just remove as small amounts of material as possible. If you notch the back plate and turn each of the clamps on the prop hub so they won't interfere with the spinner, it will make the job easier.

#### BUY-SELL-TRADE

- Dynel Fabric - - 27 2/3 yds, 48" wide. \$35.00 Contact Melvin J. Boggs at 1141 St. Agnes Ave. Columbus, OH 43204.
- FOR SALE - KR-2 project. Fuselage complete except for foam. Spars and tail feathers complete and signed off. All materials to finish except engine. \$1200.00 Thomas R. O'Hara 2836 E. Panamint Ct., Westlake Village, CA 91360 or phone (805) 497-8325. No collect calls please.
- TRADE - EAA bi-plane, Heath parasol, Lacey M-10 plans in good condition for KR-2 planes in like condition. Phone Bill Landers (303) 429-1787. No collect calls please.
- FOR SALE - Rand authorized full size construction drawings of all fittings for KR aircraft. Can be used as templates. (Both right & left hand parts & assy.) \$10.00 Phil Writer P.O. Box 9739 San Diego, CA 92109.
- SELL - KR-1 ready to fly (illness forces sale). Fixed gear, open cockpit, basic instruments, running and landing lights. \$4000. (includes trailer) Frank Baker 1722 Beta St. National City, CA 92050.
- FOR SALE - two VW 1800cc engines assembled from all new parts - \$650.00 each. Leo Davison P.O. Box 463 Spearville, KS 67876 PH. (316) 385-2396.

#### TIPS

Want to carry some luggage in your KR-1 or KR-2 and still keep the c.g. in range? Art Vreeland suggests this method: Use wing tanks as the primary source of fuel and make the space forward of the instrument panel a baggage compartment.

Lots of staples to be removed? Staple over 18 ga. iron wire as you go. Lifting the wire will partially remove the staples and make them easy to remove with pliers . . . Emmett Dignon.

I found a good source of the liquid foam. Try a hobby shop that sells model train supplies and ask for Polyfoam (Instant Mountains) . . . Phillip Writer.

I use those disposable clear plastic cups for mixing epoxy. Scribe lines all the way around the same distance up on two glasses for ease in measuring out equal parts. For smaller amounts, pour out equal strips of epoxy on a pane of glass or cardboard then mix . . . Don LaMoreaux.

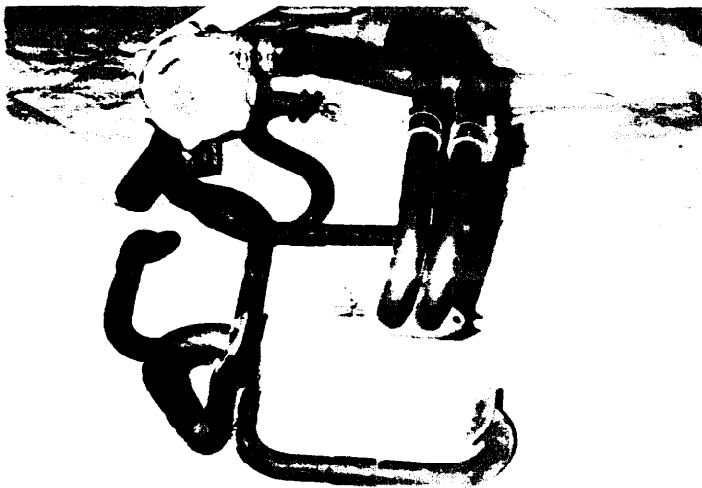
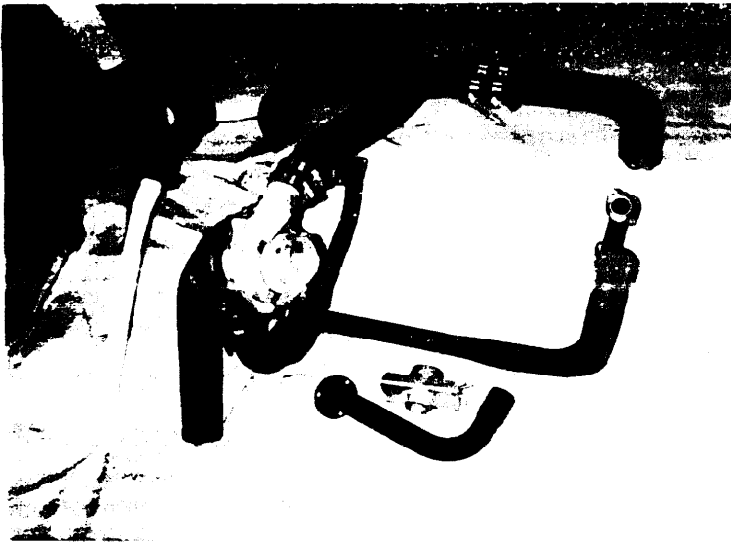
Plans correction - - KR-2 . . . On page 28 of the plan book the dimension on part 'C', bellcrank support bracket, should be 5/8 R instead of 3/8 R. If a hole is drilled using the 3/8 dimension it will not line up with the hole in part 'D' as shown on page 14 . . . Paul Pryor.

\*\*Ed. Note . . . this same error is in the new KR-1 plans, pages 14 & 26 of the blue book.

\*\*\*Check your tail wheel spring carefully. Two have been reported having cracks, discovered when the part was being drilled. It is Rand/Robinson's policy to replace any defective parts so contact them if you have a problem.

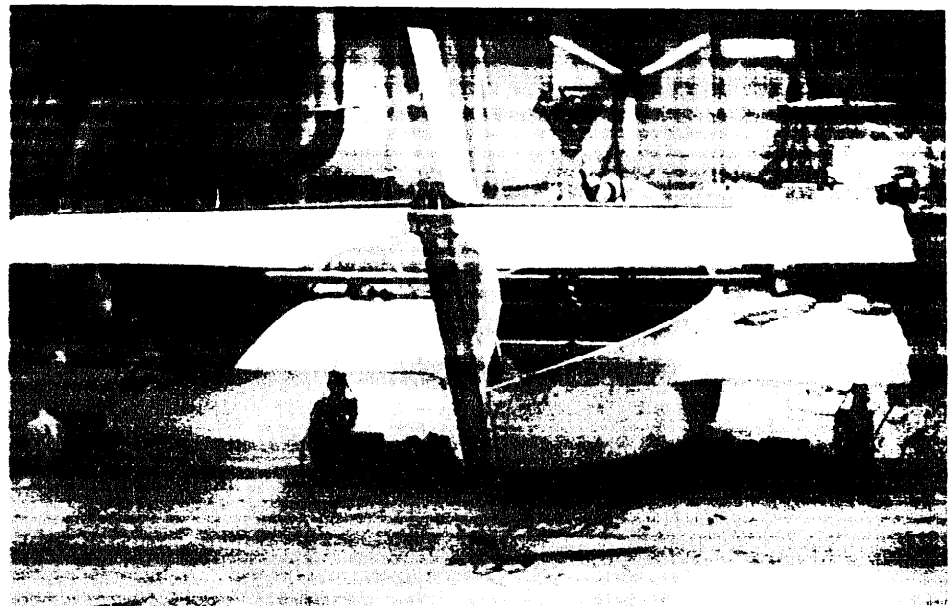
\*\*\*You probably know Ken has experimented with other fabrics to use as an alternative to Dynel with not much success. Polypropylene was one type that was tried. Peel and tensile strength was excellent but appeared to be too flexible to be practical and was set aside. Interest in polypropylene has been revived by Tom Loftin, KR-2 builder in Independence, MO. Tom sent a sample of some work he has been doing with a combination of polypropylene and Dynel. Here is his letter to R/R . . . "I had wanted to pass an idea along to you and if you are in agreement, you might give it a try. In an effort to come up with a good strong skin for the wings & center sections, I had run several test samples of dynel and polypropylene. My findings are as follows. The dynel/epoxy seems quite brittle, and tears easily. It also seems to soak up quite a bit of epoxy adding to the overall weight. The thing that I did like about it is it is hard and rigid. The polypropylene is very light and probably 10 times stronger than the dynel on tensile and sheer strength; and it soaks up probably only about 1/2 the epoxy. The thing I don't like is it is not hard or rigid enough. I ended up with a very good solution to the problem by using polypropylene applied with straight epoxy. This is done by spreading the epoxy on the foam first and laying the cloth over it and letting it soak up what it needs and squeezing. Then let it cure for a couple of days. I then used the same process except used the dynel for the second layer, except after the dynel gets somewhat of a wet look, use a very thick mixture of micro-balloon/epoxy. It gives you a good sanding surface without the problem of sanding through the main layer; it is hard and rigid; it is strong; and it doesn't seem to weight any more than an epoxy soaked dynel layer. I have enclosed samples for your inspection and would appreciate your comments. I have done my wings and center section this way and the FAA is very pleased and suggested the idea passed along to the other builders. If you like it, would you please give it to Ernest for the KR Newsletter? With best regards, Tom Loftin" . . . Soon as Ken & Stu return from the Lakeland, FL Fly-in, more tests on Tom's technique will be carried out.

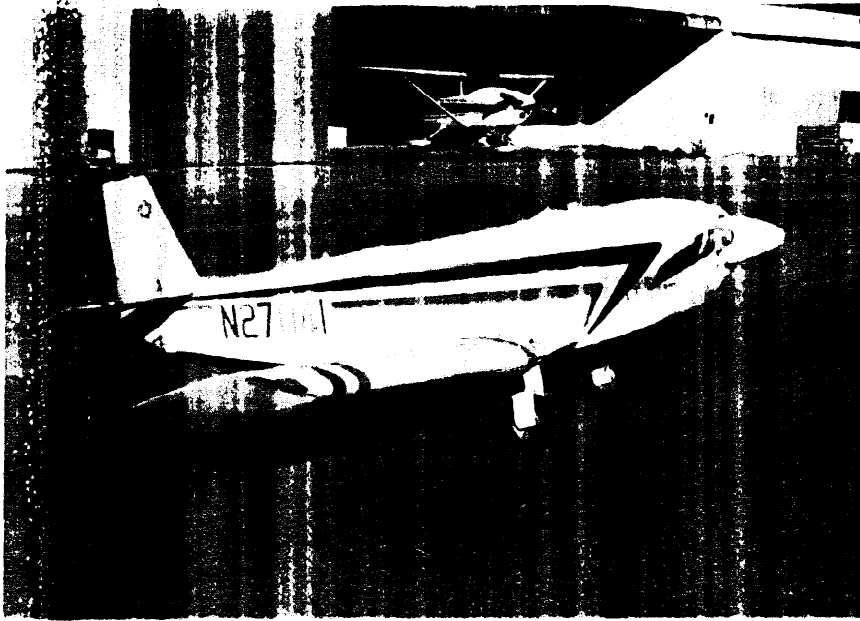
**FOR YOUR INFORMATION** . . . I have a letter here from Garth Hess, a KR-2 builder in Upland, CA. What he has to say could save you some problems later, so read on . . . "I have made some test of possible gasoline tank cap materials and would like to pass the results on to you. The lids of recommended freezer bottles, when immersed in either 100 octane LL or auto gas for a few weeks or months, swell sometimes so large that the threads on the bottle no longer engage the cap threads. I have tried three different types of plastic plumbing fittings and found that PVC material is unaffected by either of the above fuels after six months immersion. ABS fittings swell and so does the other, which I have been unable to identify. I have also found a test to identify the three materials if it is not molded or stamped on the part . . . ABS - a sliver cut off with a knife will burn readily with a black, sooty smoke and also melts the, as yet, unburned plastic. PVC-a sliver of this good material will not support flame but will burn black smoke if a match is continually held under it. The unburnt plastic does not melt and if the match is removed, the flame goes out leaving a black, unburnt, solid tail . . . Garth Hess".



\*\*\*The KR-3 amphib is nearing completion. As of this date all mechanical & hydraulic systems have been installed. Empty weight will be approx. 560 lbs, power will be a Revmaster 2100. Latest pictures are here in the Newsletter. Wings are complete but not shown. The KR-3 will be at Oshkosh this year. If the 75 hrs restriction has not been flown off in time, the craft will be trailed.

\*\*\*R/R now has the intake and exhaust systems for the Rajay turbo-charger. As you see in the pictures it is set up for the late model dual port heads. Price on the system is as follows: Rajay turbo - - \$210.00 ... intake and exhaust manifolds & pipes - - \$125.00 ... Posa injector - - \$47.00. Each component is available separately, just be sure to state engine size, i.e. 1600, 1834, etc. Newsletter subscribers may purchase the Pos injector for \$44.00 so if you order one be sure to let them know you subscribe.





Just received this in time for this issue of the newsletter. Picture of the aircraft accompanied this report to make it that much better. You guys are doing great out there!

**FLIGHT REPORT – KR-1 . . . . .** “Here is a flight report on my KR-1. Empty weight is 375 lbs including an electrical system with alternator, battery, lights, even a home-built strobe. Engine is a little ole 36 hp I built. Started construction in mid '74, first flight - - 10 Nov. 76. Ground handling is extremely sensitive but airborne it flies like a jewel. Takeoff is about 400', R/C about 500'/min at a gross of 615 lbs, field elev. 900' and OAT 45F. It cruises at 120 inciated at 3500', approx. 75% power, max level about 135. Landings are fine (about 700 to 1000' easy) except visibility is really restricted when landing into a setting sun! Cross wind landings can get really hairy! Over 10 to 15 mph at 90 degrees and I can't hold it on the runway without adding power to increase my rudder effectiveness, so I have to watch the winds very carefully. I only have about 15 hours on it to date due to oil heating problems. Engine is very tightly cowled but loosely baffled, so I will be hauling it in for re-baffling soon (still having too much fun playing with it right now) . . . . . Sincerely, John J. Shippey”.

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