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# KR-1 KR-2 NEWSLETTER

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The subscription rates for the newsletter were raised to \$3.50 for 6 mo. and \$6.00 for 1 yr. effective Jan. 1st, 1977. I'm still getting subscriptions sent in at the previous rates by builders that didn't get word of the raise. To streamline my files, I am sending a shortened subscription to them rather than a bill for the difference. If you sent in the \$2.50 or \$4.50 rates you will be receiving a 5 or 9 month subscription.

I was looking thru the back issues of the Newsletter last week. Sort of a refresher course you might say. Anyway, there are several items that bear repeating. Some are very important, others are just a reminder.

Issue #1 Don't over sand the foam when shaping! This is one of the more common errors made by first time builders. The foam sands away so easily, the surface is lower than the desired shape before you realize it. Take your time here and you will save much time and "Bondo" later.

Issue #2 Use something besides sandpaper for initial rough sanding of the dynel/epoxy skin. Sandpaper clogs rapidly and is wasted. A paint scraper, Stanly Surform tool or Arco disc-rasp work very well as initial surface leveling tools.

Issue #3 Did you buy the landing gear legs for your KR prior to Aug 1974? Some of these early castings were slightly convex where they attach to the spring bar. Stresses set up by tightening the bolts holding the gear to the spring bar can cause cracks in the gear legs at the attach points. Check your gear if you suspect you have one of these early castings. File the convex surface flat and there will be no problem.

Issue #4 KR-2 plans errors; the 3-piece rib on the back side of drawing #1 is incorrect. Use the airfoil co-ordinates to draw a new airfoil or send a SASE to R/R for a new drawing. The measurement on the fuselage dwg #1 at the aft spar was originally 1.87". This was to be changed to 2.0" but was misprinted as 2.5". 2.0" is the correct measurement and your plans should be marked accordingly. Control surface travel; ailerons, (measured at inboard trailing edge) 1 1/2" up, 3/4" down....elevator, 30° up, 20° down.... rudder, 30° each way.

Issue #5 Some builders are using foam on top of the wing spars. DON'T!! The structural integrity of the wing requires the dynel/epoxy skin be in direct contact to the load carrying spars.

Issue #6 KR-2 plans errors; dwg. #1 shows different firewall stiffener than on page 6 of the plans book. (page six is correct) Dwg #17 shows I sections for gear latches running fore and aft at the middle dwg while bottom dwg shows them crossways. (Fore & aft installation is stronger and should be used.)

Issue #7 Varnish or seal inside of spars before closing. This is required by the FAA and is S.O.P. in any aircraft. It is a good idea to use some sort of bearings in all hinge assemblies. Builders are using several different types, from steel tube to teflon.

Issue #8 Reports of broken landing gear have been traced to improperly placed lightening holes. The negligible weight saved by using these lightening holes are not worth the chance of a broken gear leg. Don't use lightening holes in the gear legs!

Issue #9 One of the most time saving tips of all was in this issue. Fred Richen deserves many thanx for sharing this find with the rest of us. Liquid Urethane foam; this stuff will save you hours of time on the foam work part of your KR. It comes as a 2-part liquid and when mixed it will, within seconds, become a foam that will fill cracks, serve as a glue to bond foam to foam, wood or metal. After 30 to 45 minutes it is completely cured and can be sanded the same as the rest of your foam. Several different type stores carry the liquid foam and it will have several different brand names. Cost also will vary greatly, from as much as \$32.00 to as little as \$8.00 a gallon at boat and installation stores. Despite the variation in price, its all the same stuff, liquid urethane

foam. Try it, you'll like it. Another thing mentioned in Issue #9 is the fact that modifications invariably add weight. They also require careful planning and more building time. Ken Rand and Stu Robinson designed the KR airplanes to be light, strong, and easy to build. Unless you are an experienced builder, it is best to follow the plans. You'll end up with a safe, fun to fly aircraft.

Issue #10 Foam spinners...care is needed here, an out of balance spinner can be dangerous. Use the instructions in this newsletter (#10) to make your spinner or get one of R/R aluminum spinners.

Issue #11 Tip....rudder and elevator hinges look much nicer on the finished product if the smaller half is mounted on the stationary spar.

Issue #12 The KR-2, being a low wing aircraft and also very light, has a tendency to float on landing when flown without a passenger aboard. Tom Speakman came up with a speed brake on his KR-2 that is easy to install, inexpensive and effective.

Issue #13 This issue tallied the results of a survey in an earlier Newsletter. One thing was very apparent, optimism abounds.

Issue #14 Just about every other KR builder wants some information on installing a sliding canopy on their KR-1 or KR-2. I haven't received any KR-2 sliding canopy mods as yet, KR-1 builders though can check the construction of Ray Ellis's KR-1 sliding canopy. Pics and tips in this Issue (14).

Issue #15 Oshkosh 76...I had a chance to meet and talk with many KR builders during the EAA Fly-In. Also sat in on a question and answer forum headed up by Stu Robinson. Benefits produced by KR builders being able to compare notes among themselves and with one of the designers of the aircraft are too great to be numbered. I pass along what I can thru the Newsletter but in person experience is invaluable. Attend a fly-in, be it Oshkosh or wherever, it is well worth the time invested.

Issue #16 Ideas generate ideas. Tom Speakman's speed/dive brake idea had barely been in print when Larry Zepp sent in his idea to convert it to hydraulics. Bill DeFreze read about Fred Richen using the liquid foam and came up with an even better way of using the stuff. If you have an idea (or whatever) get it down on paper. Share it with the rest of us. Could be the answer someone was looking for.

Issue #17 An inflight structural failure of a steel tube foam/dynel aircraft resulted in the death of the builder/pilot. Cause of the failure was attributed to the leading edge of one wing separating at the spar. The dynel/epoxy skin had been sanded almost completely thru along the steel tube spar. DO NOT LET THIS HAPPEN TO YOU!!! If you have a lot of sanding along a spar, use "Bondo", microballoons, or "Featherfil" to build up low areas. The skin is a load carrying structure and should not be weakened.

Issue #18 Are you one of the many builders trying the KR type aircraft as a "first time project?" If so, you are just becoming aware of the Experimental Aircraft Association (EAA). Share your enthusiasm for building and flying with people that have the same feelings. Join in...support sport flying as a form of recreation. Write to EAA P.O. Box 229 Hales Corner, WI 53130 for more information.

Issue #19 Looking for a different gear latch system? There is a couple in this issue (19). Both work very well, so take your pick. A new oil pump caused some major repair to Frank Walker's just overhauled engine. About .007" oversize, it scraped metal filings off the oil pump cover and spread them thru the engine oil system. Bye, bye bearings! Replacement parts should be examined carefully. Just because a part is "new" doesn't mean it is good.

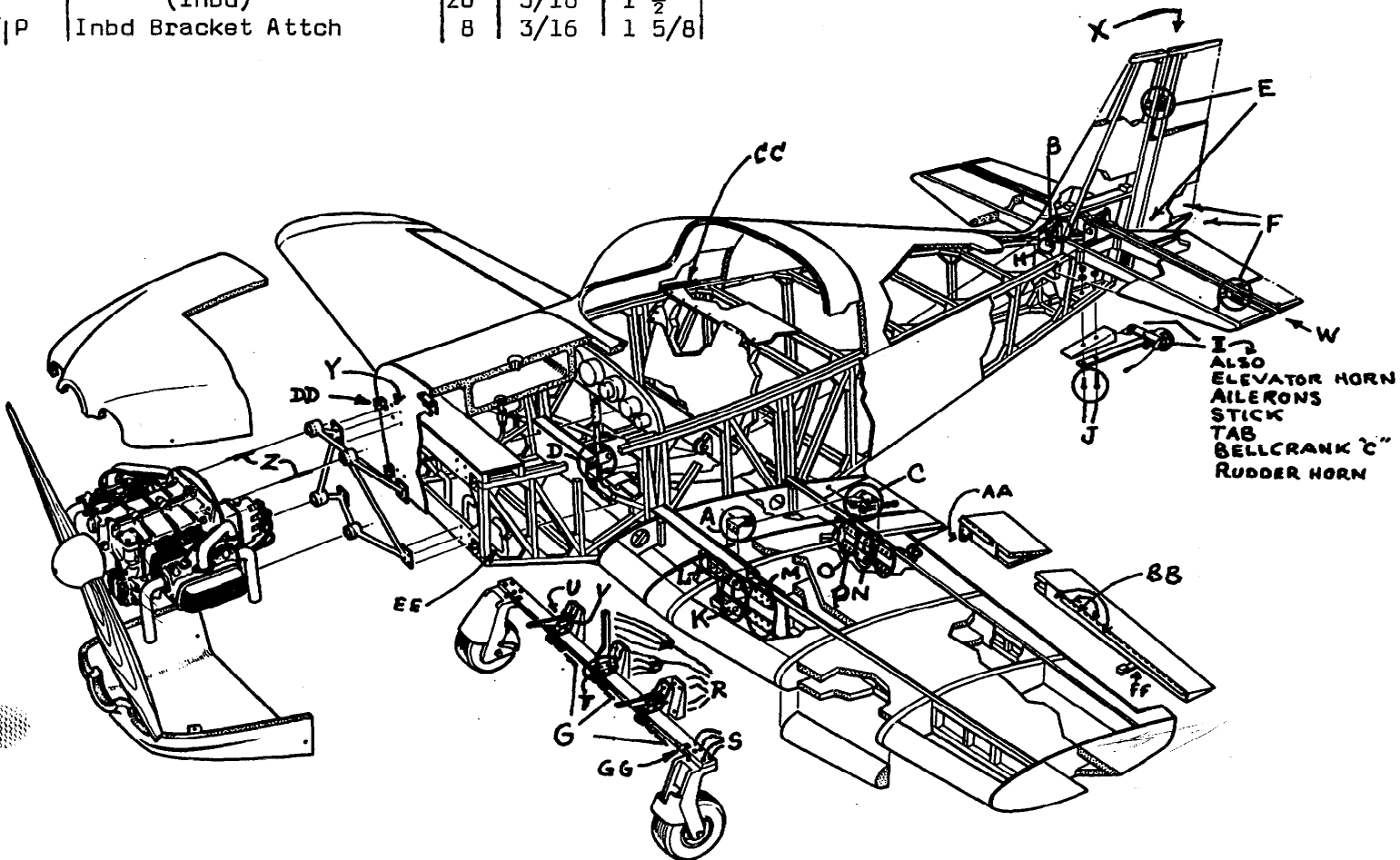
Issue #20 I just realized that with John Shippey's KR-1 flight report, the Newsletter has had four flight reports in a row! Also just noticed I left John's address off. It is Rte 3 Box 270 B, Henager, Alabama 35978. Who's next?

Issue #21 MORE PICTURES !!! Send pictures of your KR (or anybody else's). Color is alright, black & white reproduce better. Doesn't have to be a finished aircraft, a modification or technique is easier to explain with pictures.

KR-2 BOLT LIST

KEY	COMPONENT	#	DIAM.	GRIP	KEY	COMPONENT	#	DIAM.	GRIP
A	Aileron pullies	2	3/16	3/4	Q	Outboard	28	3/16	1 1/4
		2	3/16	1	R	Lndg. gr. casting to spar	6	1/4	3 3/8
	Cable guard	2	3/16	1/4			6	1/4	3 3/4
B	Elevator pullies	4	3/16	3/4	S	Gear leg to spring	8	1/4	1 1/2
		4	3/16	1 1/4	T	Gear retract hndl	4	3/16	1/4
	cable guard	1	3/16	1/4		Handle to spring	4	3/16	1 3/8
C	Aileron Bellcrank Assembly	2	3/16	2 1/4	U	Gear latch bracket	8	3/16	1 1/4
		4	3/16	1/4	V	" " Pivot pin	2	3/16	3 3/8
D	Stick Group	4	3/16	1	W	Elevator pivot pins	3	1/4	1 1/4
	Stick to bracket pin	1	1/4	3 1/8	X	Rudder pivot pins	2	1/4	1 1/4
	Lateral pivot pin	1	3/16	2	Y	Engine mnt to firewall	16	3/16	1 1/8
E	Rudder hinge brackets	7	3/16	7/8	Z	Engine to mount	4	10mm	50mm
F	Elevator hinge brackets	8	3/16	7/8	AA	Aileron contrl horn flat hd 82° csk	4	1/8fh	7/8
		2	3/16	1			2	1/8fh	1/4
		2	3/16	1 1/4	BB	Aileron Piano hinge	152	1/8fh	1/4
G	Spring pin bolts (pivots)	3	5/16	3 3/8	CC	Bubble piano hinge	48	1/8fh	1/4
H	Fin to bulkhd. Atch.	1	3/16	2	DD	Cowl attach clips	27	1/8fh	1 1/8
I	Clevis bolts	8	3/16	3/4	EE	Rudder pdl piano hinge	14	1/8fh	1
		8	3/16	1			14	1/8fh	3/4
J	Tailwheel Spring	1	1/4	2	FF	Aileron counter balance	4	3/16	3/8
		1	1/4	1 1/2	GG	Brake cable clips	2	1/8	1 1/4
K	Main spar pin bolts	4	3/8	2 1/2					
L	Main spar brackets (INB)	32	3/16	2 1/2					
M	" " (outboard)	32	3/16	2 1/4					
N	Rear spar pin bolts	4	3/16	1 1/2					
		4	1/4	1 1/2					
O	Rear spar fitting atch. (inbd)	20	3/16	1 1/2					
P	Inbd Bracket Atch	8	3/16	1 5/8					

Did you ever stop to count how many bolts, nuts, & washers go into your KR-2? Paul Cram, 1735 Gardenaire Ln., Anaheim, CA 92804 did, & then charted them. You can use his chart to select bolts for your KR



## QUESTIONS & ANSWERS

- Q. Can the width of the rudder spar be cut to  $1\frac{1}{2}$ " if the thickness is increased to  $3/4$ "?
- A. Yes, be careful tho. A control surface narrower than the stabilizer it is attached to, is more susceptible to flutter. Balancing should be considered with the smaller spar.
- Q. The KR-2 plans book, paragraphs 3.0 thru 3.21 does not mention top crossmembers except at firewall and above forward spar. When are the rest of them installed?
- A. Install all crossmembers at the same time.
- Q. Would it be alright to use marine epoxy resin on my KR-2?
- A. I don't know the properties of the resin you mention. Best bet would be to make some test samples and compare with an epoxy that is acceptable.
- Q. The R/R wheels in my wheel kit wobble  $1/8$ ". Will this cause trouble?
- A. Completely disassemble the tires & wheels. Re-assemble and check all bolts for equal torque and bearings for proper seating.

**\*\* FIVE MORE KR-2s ARE IN THE AIR \*\***

The 1st KR-2 with the GA(W)-1 airfoil has flown. It belongs to Warren Aiken, 2323 Far-leight rd., Upper Arlington, OH. Warren's KR-2 cruises at 140, stalls at 30!! Jim McCoy has a bright yellow KR-2 called "Tweetie Bird". Look for an article in "Sport Aviation" soon. I don't have any details on the other KR-2s, other than the fact they are flying & the address of the builders. Addresses are...Paul Deeter, Box 117, Cooperstown, PA 16317 Murray Rouse, 12579 Laurel, Lakeside, CA 92040...Paul Mineer, 3204 Cherokee Rd., Muncie, Ind. 47302

FOR SALE: KR-1 Project- basic fuselage completed. Wing spars, hor. stab. and elevator signed off. Steel tube retractable landing gear designed by Bob Ladd for Taylor Mono-plane. Gear design featured in Sport Flying, Summer of 76. Hydraulic brakes. Foam and dynel from Wicks...\$800.00. Philip Harris, Palmyra, IL 62674 Ph. 217-436-2253

FOR SALE: 4 mil Mylar, microspheres, etc. Write for free price list. Harold Middleton Box 26277, San Diego, CA 92126

SEE YOU AT THE EAA REGIONAL FLY-IN AT CHINO, CA ON APRIL 29,30 & MAY 1st!!

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Issue #22