KR NEWSLETTER

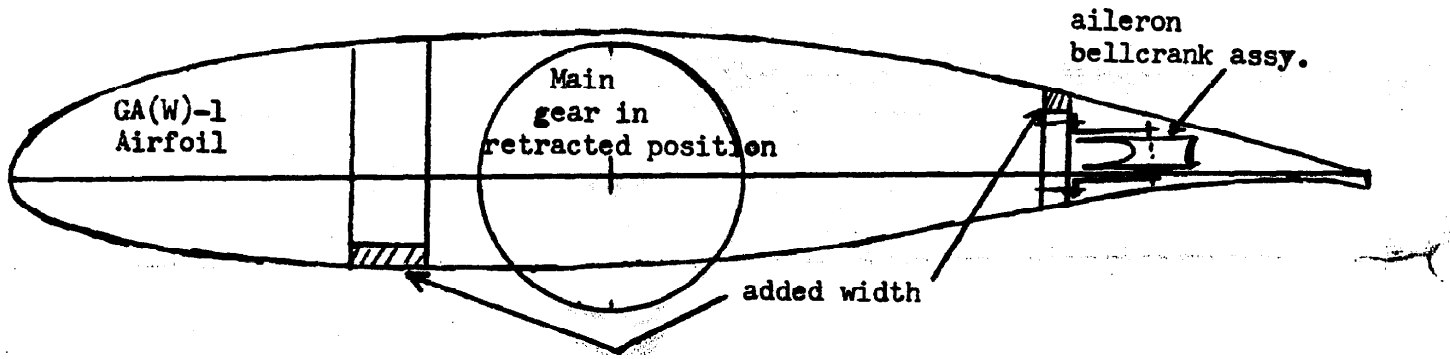
Issue #1 July, 1975

This is the first issue newsletter to keep builders, pilots or anyone else interested, - inf ormed of developments, techniques, and modifications by other builders and pilots to the KR series of aircraft. Featured in each issue will be tips from builders, photos or drawings of projects in various stages of construction and a buy, sell or trade section

Because of the rising cost of fuel, maintenance, tie-downs, etc., the KR type of aircraft is like a light at the end of a long tunnel. Pilots of limited finances (like myself) who would otherwise not be able to enjoy flying their own plane, are getting into the air in numbers.

The ease and speed of construction (as little as 2½ months in the very nice Wicks Organ KR-2) toegether with economical performance has made this type of aircraft the answer to every pilots dream.

There will be a pipeline to the Rand/Robinson "skunkworks" through this Newsletter, Ken Rand and Stu Robinson have always made themselves available to anyone wishing information, however, the number of builders has grown so much, a need for a newsletter or info sheet was fast becoming necessary. So her it is, hope you enjoy sharing thoughts, comments or criticism.



Additional width on front and rear spars to accomodate thicker GA(W)-1 airfoil added after the spars were installed in fuselage also provided more room for gear retraction and aileron bellcrank assy.

PROGRESS REPORT

Since this is Issue #1 and as yet I have not received much correspondence from other builers this report is going to be on my own project.....my project is a KR-1. The wood fuselage is complete and on the gear with the horizontal stab., foamed, covered and installed. The forward fuselage was stressed to support a larger engine. I am going to use the GA(W)-1 airfoil with a 120cm chord center section, tapering to 80cm at the tips. Ken Rand has had excellent results with the R.A.F. airfoil so it is mostly thru curiosity that I am using the GA (W)-1. The stick assy is completed and installed and currently the cables, turnbuckles, etc. are being installed for aileron, rudder and elevator control. I have purchased all materials to complete the plane with the exception of prop and instruments. Also purchased is a 1500 VW engine converted to 1700cc and most accessories to convert to aircraft use; slick magneto, Honda alternator, Barker type prop hub and three inch extension. To date I have invested less than $1300.00 and about 300 hrs. time.

#1

BUY SELL TRADE

Ads in this section will be available to all at a nickel per word with a one dollar minimun per issue

WANTED. ..For KR-2, control stick, heel brake pedals. Contact Bill Townsend, 234 Charles St., South Meriden, Conn. 06450.

FOR SALE . ..New 140 mph Air Speed. Looking for 200 mph Air Speed. Contace Paul Barton, 751 Gradient Dr ., St. Louis, MO 63125.

FOR SALE... 1834cc VW engines with prop hub as in Ken Rand's KR-1. Just $975.00 w/o mag. Ready for airplane KR-1 or-2. Dave Egelhoff, 1747 James Pl., Pomona, CA 91767 or phone 714-624-7482.

***Note in regard to the last ad. Ken is currently rebuilding his KR-1 to use the larger 1834cc engine and other modifications. There will be a report on his plane in the next issue.

QUESTIONS & ANSWERS

In answer to many requests for previous newsletter issues....this is the first one...many more to follow.

Q. Is the Rand parts kit the best way to go?

A. Due to quantities ordered by Rand/Robinson, they get the best price available and do their best to 'pass them on to builders.

Mike Even, R.R. #1, Box 218, Barrington, IL 60010, i&looking for builders in the Chicago area...NW side.

John Dowling is considering modifing his KR-1 to a Formula V racer. He is looking for info on installing a'fixed spring landing gear and a fast back canopy. Contact him at 1326 Stimson Ave., La Puente, CA 91744 if you can help. (Hey, John, let us know how it works out!)

Keep those cards and letter coming!!!

TIPS FROM OTHER BUILDERS

When sanding foam to the desired shape, use care not to over sand. Some builders are making the mistake of removing too much material. This leaves the wood spars or ribs' slightly higher than the surrounding foam surface, which means when covered with dynel and epoxy, there is an uneven surface that cannot be sanded smooth without seriously weakening the bond between the skin (foam, dynel & epoxy) and the load carrying spars.

Use a sanding block or board long enough to span the surface to be sanded and be supported at both ends by spars, ribs or other formers. Use smaller strokes with less pressure as the sanded foam nears desired shape. NOTE..finish sanding can be accomplished using foam itself as a sanding block!

Some things to watch for....1. Do not leave gaps between spars and foam blocks (a good glue joint adds strength and is easier to sand). 2. Do not get adhesive on surface to be sanded (it comes off in chunks and *leaves holes). 3. A clean surface is easiest to apply dynel and epoxy (vacuuming with a wand type vacuum works wonders). With reasonable care your project will not only be stronger but will look better.

Attention all builders....to date, one of the largest benefits to me has been meeting and working with other builders, sharing their thoughts and ideas. If you are building a KR-1 or -2, please write to the Newsletter and share. Send pictures and/or drawings of modifications. All picures will be returned if a self-addressed stamped envelope is included.

Subscription Rates
6 md. @$2.50
1 yr. @$4.50

Ernest Koppe
6141 Choctaw Drive
Westminster, Ca. 92683

KR-1 KR-2

N E W S L E T T E R

Issue #2 August 1975

I just came from Rand-Robinson Engineering in Huntington Beach. Arrangements were being made for the trip of Oshkosh.

The KR-2 was getting a face-lift (din& repaired, paint job, etc.). The KR-1 was being readied for an 1834 cc VW engine and new cowling, 'hoepfully to be completed in time for the trip to Wisconsin. Many other modifications to the KR-1 have already been completed, such as balanced ailerons; wet wings (22' gal. in each wing), new instrument panel, and beefed up fire wall.

Performance expected from the KR-1 is a cruise speed in the 170 to 180 range, with a top speed of 200 + mph. Rate of climb should be approx. 2000 fpm.

Much of this expected increase in performance is due to ground adjustable wood prop like the one Ken is now using on the KR-2. 'The prop is more expensive than a standard VW prop but well worth the 'extra cost because of the increase in performance. For more information on cost and availability of the propeller; contact Bernard J. Warnke P.O. Box 50762 Tucson, Az. 85705,

Ken and Stu are also renovating the KR-1 plans to include these new modifications. These plans will be available this fall but will cost $35.00 rather than the current $25.00.

I was just looking thru my copy of the July issue of Sport Aviation arid noticed a letter from a supplier of Dynel fabric saying the fabric would no longer be in production. I checked and found out that it is true Union Carbide is terminating production of Dyne1 but there are two other manufacturers continuing production so there should be no problem getting as much fabric as needed.

TIPS FROM OTHER BUILDERS

Tired of gummed up sandpaper when sanding epoxy and dynel skin? Well. here' s how to avoid it. Get yourself an Arco Disc-Rasp. This is a 5" disc of thin, hardened, tool steel with holes punched in it, roughside down. The disc-rasp is available at most hardware or discount stores for approx. $2.00. The-first time I used it I was sure it would ruin my stabilizerbut after much money had been wasted in. clogged and gummed up sandpaper, I was ready to try anything. It has only one draw-back that I can see and that is it won't work too well on concave surfaces such as wing root fillets, everything else is outstanding!

OPERATION Flat surfaces-merely the weight of a 1/4 electric drill motor is enough to get the disc to remove most material but don't be afraid to put more pressure to bear for stubborn spots.
Convex surfaces--just be careful not to leave the disc turning in one spot too long. Best results are obtained by moving the disc in over-' lapping strokes 18 inches or so long.

Should the disc clog from improperly cured or mixed epoxy, just hold it over a low flame to clean it, Hope this tool saves you as much time and work as it did me.

PROGRESS REPORT #2

Today's mail had a letter in it I would like to pass along as a progress report item, The letter is from G.W. (Bill) Townsend of South Meriden, Conn. EAA #66320. Bill says he started flying in 1937, helped build a Goodyear Cup Racer in the '50s, rebuilt a J-3 Cub and a '41 T-Craft in the '60s. Bill% current project is a KR-2. The following is from his letter:

About my bird. It is a KR-2. Started late last Fall. Have all of the wood fuselage structure completed. Forward and rear center spars are permanently installed as is the retraction unit and the landing gear. Both forward and rear outer spars are complete. Have the horizontal stab. and elevator made, foamed but not covered. Also have the -vertical stab. and rudder made and foamed and also not covered. Have an engine all built up and ready. Bought all new parts. Perhaps I could have bought the unit cheaper but I wanted to build the whole thing. Have had a bit of engine experience, have raced cars in Europe in the late '20s and early '30s, built and raced boats and engines and was with Pratt-Whitney Engine Div. for a number of vears prior to WW II. My engine is 1834 cc using a special cam. prop and nose ext. from John Monnett. H.D. high vol. oil pump and Corvair oil cooler, mag coupling and housing from Barker, Slick mag, shielded harness and plugs, Posa injector carb. and am waiting for a new type intake system from John Monnett. Hope to get 3800 for one minute at take off and cruise it at 3600 to 3650 and will probably go for one of the new ground adjustable props but would like to know a little more about them. My one hooker, however, is the Posa carb. I've been close to engines for a long time but not anyone else I've contacted here in the East knows a darn thing about them. Hope I can get my desired performance from this mill so I've got my fingers crossed and will probably be turning to prayer before I'm thru. I'm trying to build the airplane pretty much to Rand's *plans* although I did increase the size of fuselage gussets slightly, used maple instead of spruce for the landing gear wedges and tail wheel wedge. I am also using a wood seat, set-up very similar to the one used by Wicks as i cursed the canvas seat bottoms used in the T-Craft in the past.

I'm sure with Bill's talents, his bird will rival any trophy class project at any fly-in. I really appreciate him taking time to write, hope to hear from more buiiders soon.

BUY-SELL-TRADE

WANTED---By me and at least two other builders: Control stick and/or brake pedals for KR-2. Contact Bill 'Townsend 234 Charles St. South Xeriden, Conn. 06450

FOR SALE-1834 cc VW engine with prop hub and front thrust bearing just like in Ken's KR-1 Assembled-$950.00 Kit-$800.00 Contact Dave Egelhoff 1747 James Place. Pomona, Ca. 91767 or phone 714-624-7482

FOR SALE-New 140 mph air speed Looking for 200 mph air speed Contact Paul M. Barton 751 Gradient Drive St. Louis, Mo. 63125

I would like to print a list of KR builders by their state or area. If there are no objections, these will be available soon. E. Koppe

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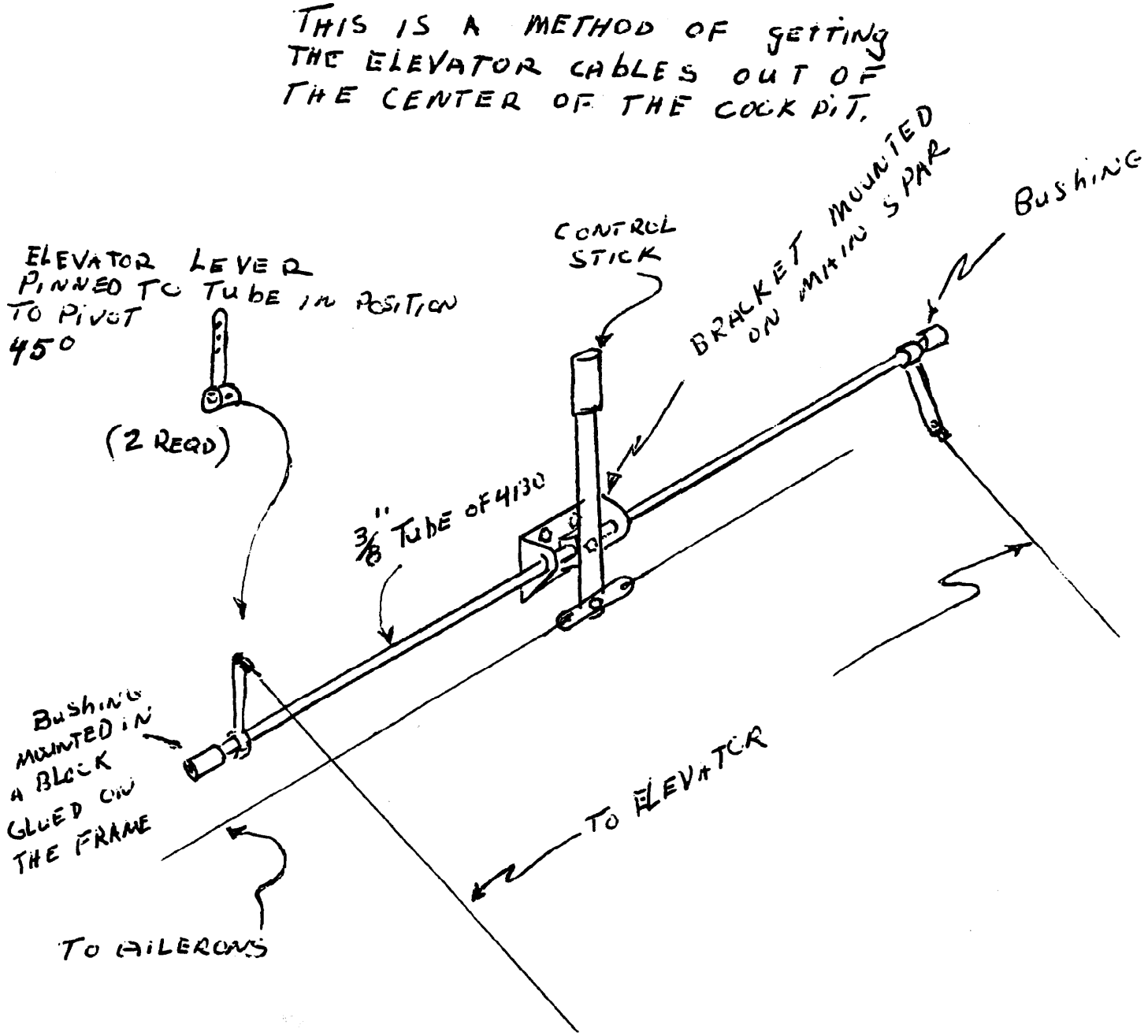
*Any questions on the progress reports should be refered to by progress report number.



The above drawing was sent in by Damon Ralph of Norman, Okla. EAA #93267

He is building a KR-2 that he started in March of this year. The modification he illustrates could also be adapted to the KR-1 for those builders who want to move the control stick to the center.

BUILDER'S INFO

One of the largest benefits to me has been meeting and working with other builders and pilots, sharing their thoughts and ideas. If you are building a KR-1 or KR-2 complete the following questionaire. Feel free to expand on any point. Please share---let's keep informed--from ALL KR builders and pilots.

1. Name _____

2. Address _____ Zip _____

3. What Plane _____

4. What % Done _____

5. Any Modifications _____

6. Coments or Questions _____

Send photos and/or drawings of your project or modifications. If you wish, photos will be returned if a self-addressed stamped envelope is included.

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KR-1 KR-2

N E W S L E T T E R

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Issue #3

September'1975

OSHKOSH '75--Well, I made it! On wheels instead of wings but I wuz there! The opportunity to meet and talk with other designers and builders is worth the cost and then some. Everyone I talked with was enthusiastic about a list of builders, so, in this issue, I'll list all subscribers to the newsletter. Each following newsletter will contain new subscribers. I hope each of you take time to meet other KR builders in your area.

Meanwhile back at Oshkosh--the latest KR-1 to show up at the annual get-together was built by George 'Andy' Anderson of Milwaukee. Andy's KR-1, built to look like a minature P-51, had a few obvious modifications. A 12" spinner, 4-blade prop, a 1500 VW engine built up to 1700cc utilizing a Posa Carb. The two piece sliding canopy, a belly scoop and dorsal fin really brought out that P-51 look. Andy finished it all off with a very nice paint job, the wings and fuselage are acrylic lacquer ('74 Ford silver) and empenage was painted a red and white diagonalchecker-board pattern. Total cost of the foam P-51 was only 1900 dollars. Congrats to Andy on a very nice job!

One thing I would like to see at Oshkosh is more KR-1 and KR-2s. Several people I talked to had finished their birds but for one reason or another didn't get it to the fly-in. My KR-1 is going to fly to Oshkosh next year, how 'bout yours?

IMPORTANT NOTE--While at Oshkosh this year Fred Keller noticed some cracks in his landing gear legs emanating from the bolt attach holes. Upon investigation these proved to be caused by the gear leg castings being slightly convex on top and then being torqued down to the flat spring bar. The resulting stress on the gear legs caused the cracks long before they were discovered. Fred was able to repair the legs and with a few well placed gussets they were rebuilt better than new. If you purchased any of these early castings, check them for a flat surface on top; should you find yours are convex, the fix is simply to grind or file them flat to match the spring bar. These gear legs were sold'prior to Aug. '74. The newer castings are much better, as well as stronger and lighter.

BUY SELL TRADE

FOR SALE: Bosch starters, 12v, 5 lbs. Ideal for KR-1 & Kr-2 electric starter system. $29.95 Contact MARVIN JENSEN R.R.#2 ST. ANSGAR, IA. 50472 or phone 515-737-4637

WANTED: Info on substitute folding gear for KR-2. REX ELLINGTON 1406 CEDAR PASS CT. HOUSTON, TX. 77077

GA(W)-1 AIRFOIL: full scale prints in 36" and 48" chords. ED FRAZIER 503 N.CENTRAL AVE. BROWNSVILLE, TX. 78520

TIPS FROM OTHER BUILDERS---From: George 'Andy' Anderson--for an adjustable brake cable installation, get two front wheel brake cable units from a Honda motorcycle. These cables really make a professional appearing unit that works as good as it looks. Nylon bushings from r/c models landing gear make excellent cable guides.

From: Steve Meltsner--by contacting roofing & building contractors, I was able to purchase foam very cheap.

P. s. Thanks to Larry & Craig for their help at Oshkosh.

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QUESTIONS AND ANSWERS

Q. Have problems matching 3-piece KR-2 ribs to fuselage side. Is template correct? Wm. Lee

A. No, due to a drafting error, the trailing edge section is not wide enough at aft rear spar station. Best fix is to use R A F-48 co-ordinates to draw a full size rib.

Q. According to Rand, I should use a 52-40 prop hp engine, comments please. H. Nietschke

A. Each builder-is going to find his prop requirements different but you have to start somewhere. Ken has suggested this prop because of experiments with his plane. Currently Ken is using an adjustable Warnke prop with very good success.

Q. What is used for gussets in the frame layout on KR-2? . T. McCarrell

A. Most builders are using 5/8 x 5/8 spruce stringers cut diagonally, however, some are using 3/32 plywood. Either is suffcient.

Q. Where can I get the data on the modifications referenced in issue#2, paragraph two? J. Robt. Schumaker

A. Ken & Stu are currently working on a plans revision and if possible, a condensed form will be available to previous plans buyers at a nominal charge.

Q. What size bolts are used to attach the small hinge half to the rudder spars? Are 3/16 bolts too large? Tom Charlton

A. 3/16 bolts are a tight fit but will work. However, some builders are using 3/16 machine screws of aircraft quality.

Q. Has anyone worked out a modification of the Rand motor mount for the KR-2 to take the Revmaster 2100 D with starter? Ronald Chappler

A. Yes, the longest bottom crosspiece can be removed entirely or a curved section welded in place around the starter.

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KR-1 KR-2 NEWSLETTER

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Issue #4

October 1975

Well, it looks like the amphibian project has been delayed a little. Ken and Stu are currently knee-deep in a motor-glider project, Based on the KR-1 fuselage, the major difference will be a 27 ft. wing span, with flaps, and something new. . . Joe Horvath at RevMaster has asked Rand-Robinson to use their airframe to test a new 2 cylinder engine.

If everything works as expected, conversion plans will be made available. I'll keep you informed as more developes. They are already calling it a KR-1B.

In the last newsletter, Wm. Lee asked about an error in the KR-2 plans, namely the 3-piece rib drawing. The first issue plans were sent out with any known mistakes corrected, however, this one got through without being noticed. I'm going to print the R.A.F. 48 co-ordinates as well as a list of other mistakes that have surfaced. If you know of any errors not on this list please let me know and I'll put them in the newsletter, No one has said anything about errors in the KR-1 plans as of yet but I'm sure there must be some, so you guys building KR-ls, let me know about them and I'll list them also.

KR-2 PLANS ERRORS

1. the section of the wing rib behind the aft spar should be widened to line up with the other sections, or if you wish, use the co-ordinates to draw a new airfoil.
2. the measurement on the fuselage drawing #1 at the aft spar was 1.87" on the original plans. This is O.K. but a little tight. Revised plans were to read 2" but somehow was printed as 2.5".
3. weight and balance info show 12 gal, fuel as weighing 60 lbs., should be 72 lbs.

R.A.F. 48 CO-ORDINATES

Chord %	UP	DOWN
1.25	2.60	1.65
2,50	3.68	2.34
5.00	5.20	3.16
7.50	6.39	3.69
10.00	7.30	4.03
15.00	8.63	4.41
20.00	9.53	4.58
30.00	10.40	4.56
40.00	10.20	4.33
50.00	9.38	3.90
60.00	7.94	3.36
70.00	6.05	2.65
75.00	5.03	2.24
80.00	4.02	1.83
90.00	1.95	1.00
95.00	1.05	0.60
	0	0

For those of you who are not sure about, how to draw an airfoil from the co-ordinates, Bill Lee has volunteered to do it for you, Just send him a large self-addressed stamped envelope and he will send you both 48" and 36" full size rib tracings. Address is: William Lee 114 Indian Ave. Tavernier, Fla. 33070 Bill sent pictures of his KR-2 project...looks like he's doing great. Looking forward to hearing from him again. Also Bill is interested in a sliding canopy and wants to hear from anyone with some ideas.

QUESTIONS AND ANSWERS

Q. What is used for control stops and what is the maximum travel on each control surface?

A. No stops are used, maximum travel is: ailerons at inboard tip, 1½° up and 3/4" down. ..elevator 30 degrees up, 20 degrees down...rudder 30 degrees each way.

Q. What are the suggested dimensions for the control stick from fulcrum to cable attach points and rudder cable attach points?

A. Aileron and elevator are 3"...rudder is 4".

Q. What is used as a stop on the landing gear spring bar in the up position?

A. The bar is allowed to swing all the way back to the large hinge and is held there by the gear latches.

Q. What is actual building time on the KR-2?

A. Average on KR-2 is about 800 hrs.

Q. Should the KR-2 fuselage be lengthened a couple of inches in front? I understand some have had weight and balance problems.

A. No. The only weight and balance problems have been caused by weight-adding modifications to the plans.

Q. Could a list be compiled of some of the not so obvious details and problem areas encountered during construction?

A. There are as many different problems as there are builders..as they are encountered and the builder lets me know, I'll list them here.

Q. What are real 'G' and maneuver limits of KR-2?

A. KR-2 is + or -7Gs....KR-1 is 11 Gs

NOTICE--Several builders have written asking for info on different modifications. I am going to list them here. If you have any ideas on the modifications, send them in and I will print them. Drawings should be in black ink or ballpoint, pictures should be sharp, clear, black & white.

INFO REQUESTED ON FOLLOWING ITEMS:

1. retracting gear (toward fuselage)
2. larger engine mods. (A-65-Porsche, etc.)
3. sliding canopy
4. rudder and elevator trim tab systems
5. GA(W)-1 airfoil (see Newsletter #1)
6. KR-2 dual control stick
7. toe or heel brake pedal system, mechanical or hydraulic
8. flap or spoiler systems

If you builders know anyone who has built and flown a KR-1 or KR-2, find out from them how they like their plane and how it flies. Also, Ken Rand is considering heading up a group of KR-1 and KR-2s in a flight to Oshkosh next summer... if anyone is interested and wants to join...either in Calif., along the way, or at Oshkosh...write in to the newsletter or to Ken and let us know. It ought to be a very interesting and enjoyable trip.

BUY-SELL-TRADE

SELL---KR-1, 50% complete. Most materials to finish..$900.00 or offer. BILL SOUZA 16291 Bayshore Ln. Huntington Beach, Ca. 92649 or phone 714-846-2148

SELL---1834cc W engine with prop hub and front thrust bearing. Assembled $950.00. ..kit $800.00 Dave Egelhoff 1747 James Pl. Pomona, Ca. 91767 or phone 714-624-7482

TRADE--Older model Lear Nav-com with omni head and power-pak. Working when removed from Bonanza; will trade for instruments or VW conversion parts or accessories. ERNEST KOPPE 6141 Choctaw Dr. Westminster Ca. 92683 or phone 714-897-2677

PILOT REPORT
KR-1A

Corona, California-----Sept. '75

I can hardly wait. Ken Rand is supposed to meet me here to check me out in his KR-1. Wind is pretty strong-45 to 20 mph. Visibility is good, high clouds about 5000---some haze due to smog, but still 7 to 8 miles visibility. Ken taxis up and shuts down the KR-2; we tie it down arid roll the KR-1 out of the hangar where it had been kept while FAA restrictions on the new engine were flown off.

Pre-flight is S.O.P., fuel, oil, control surfaces, etc., then into the cockpit to try it on for size and go over take-off and landing check lists. "O.K., taxi for a while to get the feel of it on the ground, then you should be ready to go" he said. I expected the small plane to be a little tricky to handle on the ground but at 1100 to 1200 RPM, it was easier to taxi than the other tail-draggers I've flown. I was really starting to feel confident, so I taxied on down to the run-up area. All controls O.K., latches all locked, engine instruments in the green, no carb heat on the Posa injector, single magneto, so there's nothing to check there, nothing in the pattern . ..visibility is fantastic with the bubble canopy. Another glance at the check-list and I'm ready to go.

Alright, throttle in smoothly, little more left rudder, this 1700 really does have a lot of torque. Hey, I'm off the ground already, must have used less than 200 ft. of runway. Let me see now...A/S 80 ind. . ..tach 2700 (Warnke prop set at cruise pitch is holding down the rpm)... R/C 730 FMP ..,not bad for 85 degrees, hot and humid.

Have to hold my wrist steady, getting some porpoising. Resting my arm against my leg to steady my hand solves the problem. Time to put the gear up; right latch, left latch, gear handle down. Going to take a little practice to keep the stick from wandering during gear cycle procedure. Rate of climb picks up another 150 FPM with gear retracted, Stick forces are extremely light, can't be more than a couple of ounces in any direction. Rudder has a little more feel than the stick, the side-stick arrangement is already starting to feel natural. I wish I could really relate the ease of flying this plane, it responds instantly to any movement of the stick. Turns are made with little or no **rudder,** no matter how steep,.,,I never went over 60 degrees. Stalls were gentle and straight forward and I had the feeling I could just nudge the plane into any maneuver at all with just a flick of my wrist. But not having any aerobatic instructions is reason enough not to get too enthused, so after 10 or 15 minutes of just getting the feel of the plane, I headed back to the airport for my first landing in the KR-1.

Straight and level, 3000 RPM and indicating 165, the airport came up in a hurry. I slowed down to 90 and entered the pattern downwind and lowered the wheels. At the end of the runway, I chopped power, turned base and slowed to 80, turned, final lined up the runway, slowed to 70 til the flare.

No problems, right?.....Wrong...everything was fine til the flare, it was alright too . ..except about 3 ft. too high. Yep, I bounced it! I had forgotten how close to the ground the little plane sits. There was some minor damage to the wings caused by the landing gear flexing too far and major damage to my ego, However, I've repaired the wings and Ken wasn't upset, so, at first opportunity I'll fly it again....I can hardly wait!

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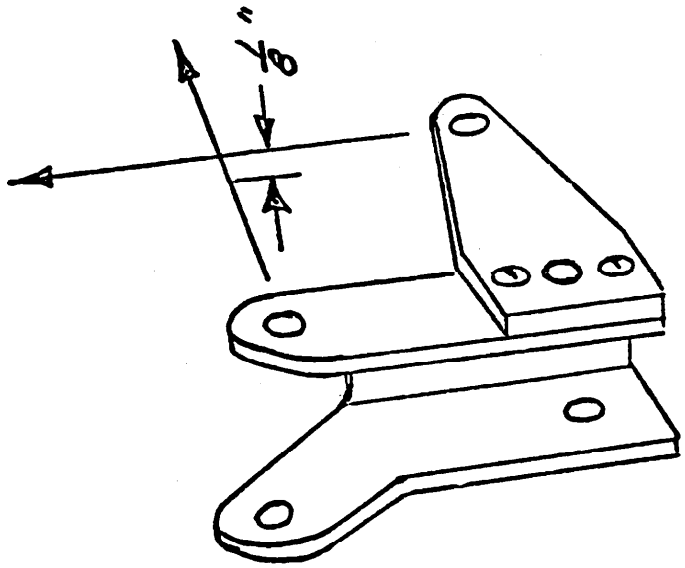
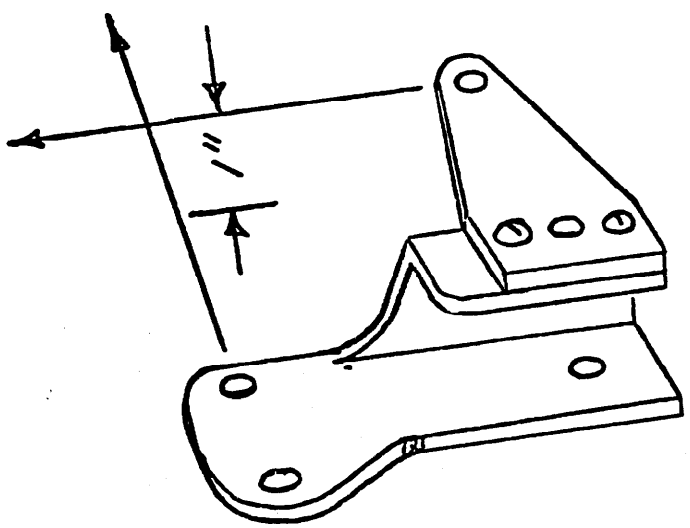


AILERON CRANK

" AS SHOWN IN PLANS "

NOTE HOW MUCH SEPARATION IS ALLOWED BETWEEN CABLES



AILERON CRANK MOD.

BY MODIFING CRANK AS SHOWN ABOUT 1" SEPARATI
ALLOWED

This is one-page from Fred Kellar's modifications and building notes. I'm using it on my plane.....works great. Fred's address is: 1200 W. Diamond #1013 Anchorage, Alaska 99502

BUILDER'S INFO

One of the largest benefits to me has been meeting and working with other builders and pilots, sharing their thoughts and ideas. If you are building a KR-1 or KR-2 complete the following questionaire. Feel free to expand on any point. Please share ...let's keep informed... from all KR builders and pilots.

1. Name _____
2. Address _____ zip _____
3. What plane _____
4. What % done _____
5. Any modifications _____
6. Comments or questions _____

Send photos and/or drawings of your project or modifications. If you wish, photos will be returned if a self-addressed stamped envelope is included.

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CALIF. 92683

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1 yr. @ $4.50

KR-1 KR-2 NEWSLETTER

Ernest Koppe
6141 Choctaw Dr.
Westminster, CA 92683
Ph. 714-897-2677

Issue #5

November 1975

Well, it looks like I left a couple of items off of the "Info Requested" list, namely fuel tanks and wing tanks.

Since I haven't made my own wing tanks yet, I went to the guys at Rand-Robinson to see what they could come up with. One thing... they are all fired up over is an electric fuel transfer pump just being tested on the KR-1 & 2 with very good success. The pump is actually a windshield washer pump made by Anco. (stock #2312) cost is approx. $7.00 at most auto parts stores. A few minor modifications are necessary...mostly for sealing against leaks.

For you builders without an electric system, try one of Fred Kellars' ideas. Fred uses a fuel pump from a Kohler gasoline engine mounted on the back side of his instrument panel with the arm thru the panel to be hand operated, not fancy but very dependable.

A few builders plan on using an electric fuel pump from Chevy Vega. I haven't heard yet what kind of results they are getting but it should work O.K.

Another item is auto engine conversion...a lot of builders are looking for information on converting VW and other engines to aircraft use.

BUY-SELL-TRADE

Full scale prints for GA(W)-1 airfoil...48" & 36"...$3.00 per set. ED FRAZIER **503** N. Central Ave. Brownsville, TX 78520

VW engines... need rebuilding... one 1500cc @ $150.00..two 1300cc @ $100.00 each ROY DUNN 1009 S. Kansas Liberal, KS 67901

FOR SALE.. .Revmaster 2100D engine, 14 hrs TT, 1½" prop extension, top mounted carb...$1,350.00 RICH FRIEDMAN 2922 Bonn Wichita, KS 67217 or PH. 316-942-8729

FOR SALE...Lowest price anywhere..canopies..KR-1 **$56.00** KR-2 **$67.00** Epoxy resin $17.50 gal. Kit Aircraft slip indicators $18.00 Order from THE AIRPLANE FACTORY 7111 Brandt Vista Ave. Dayton, OH 45424

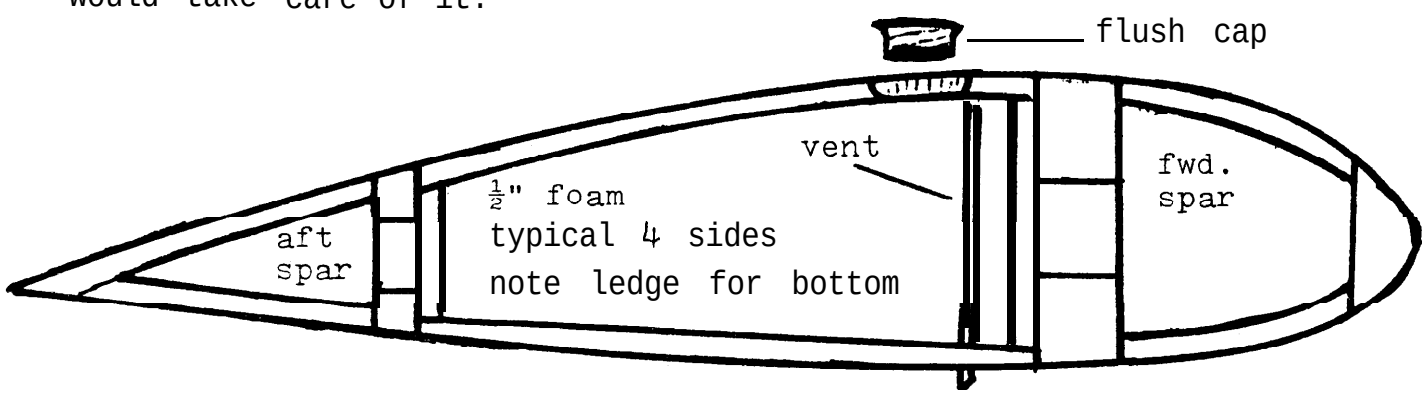
EXPEDITE BUILDING...Plans for constructing a foam shaper for $5.00 One step shaping of wings, horizontal and vertical tail surfaces. No sanding of foam required. Send $1.25 to L. PRINCE 4460 Dayton Rd. Lot 26 Springfield, OH 45502

BITS & PIECES.....the plane everyone is looking at in the uncaptioned photo on page 44 of Oct. Sport Aviation is George Andrews' sharp KR-1... ...Rand-Robinson is going to open a new 'skunk works' soon. First assignment is to be the KR-3 Amphibian, Hopefully in time for Oshkosh..... apologies tendered to all who tried to call and didn't get through. My correct phone number is 714-897-2677....Ken reports several people interested in flying to Oshkosh '76 as a group..going to firm up planned route shortly....Sept. issue of Sport Aviation should be required reading for all builders, a very informative issue.

IMPORTANT NOTICE!! It has been pointed out some builders are using foam on top of their spars. The structural integrity of the wing requires that the dynel/epoxy skin contacts the spars directly.

SO YOU WANT WING TANKS..... .if you have already completed your wings there's no problem....if you haven't finished them you can save a step by leaving the space between two inboard foam ribs open on the bottom of the outer wing panel.

1. Remove square section of foam/dyne1 skin on underside of outer wing panel between forward and aft spar and first two foam ribs.
2. Coat all four sides of opening with epoxy and line with ½" foam. Foam liner should form ledge for tank bottom later. Use plenty of epoxy, especially in corners.
3. Cut hole for filler cap at highest possible location and epoxy cap in place. A flush cap can easily be made from a quart size plastic bottle.
4. Epoxy 2" wide strips of dyne1 in all corners and around filler cap on inside of tank and allow to cure.
5. Cut a piece of 1" foam for tank bottom. Cover <u>one side</u> with two layers of dynel/epoxy.
6. Line inside of tank with two layers of dynel/epoxy. Make sure there are no air bubbles or pockets. Allow to cure.
7. Use ¼" aluminum tubing for fuel line and install inside tank so pick-up will be at lowest point in tank and exit line will be readily accessible for hook-up when wings are attached,
8. Trim tank bottom to fit and epoxy in place..make sure there are no gaps where leaks can occur, Use plenty of epoxy and weight around edges to assure proper sealing. Allow to cure.
9. Sand and shape bottom of tank to airfoil contour.
10. Drill ¼" hole and epoxy vent in place. Vent should extend thru bottom of tank to ½" from highest point inside of tank...near center as possible to 3/4" outside bottom of tank.
11. Apply one layer dynel/epoxy to outside tank bottom...overlay four inches. Allow to cure and then fair in with rest of wing. File or bend a slight angle on forward side of vent tube to provide positive pressure to tank when flying.
12. Your wing tank is now ready to check for leaks. There shouldn't be any leaks but if you find a minor one a neoprene slushing compound would take care of it.



You're going to need a flush cap.... a simple inexpensive one can be made from a plastic refrigerator bottle. The bottle is cut off ½" below the cap, then the small section of bottle with cap in place is turned upside down and filled with epoxy. After epoxy has cured, remove cap. Cut a circle the same size as the cap in the top of your wing at the uppermost point (about 2" from the outer rib). Use a rasp or very coarse sandpaper to rough up the outside of the cap. This will allow a better bond when the cap is epoxied in place, upside down, in the hole you cut in the wing. Bottom of cap should be at least 1/8" below top of wing. The cap now becomes the filler neck by cutting a hole thru to tank... the small bottle neck is filed to contour and is now the cap. Cut a slot in this cap for easy removal.

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QUESTIONS & ANSWERS

Q. The aileron actuating rod, how is it made?
A. The rod is ¼" steel threaded at each end for standard rod ends. Length of the rod is governed by distance between aileron control horn and bellcrank.
Q. Are there any improvements in fixed pitch props? Surely Hegy, Smith and the rest of the wood carvers won't sit back and let Warnke's ground adjustable win all the marble.
A. If improvements have been made, I haven't heard about them. I did hear someone was working on using synthetics for props.
Q. Has anyone worked out a system for putting landing lights on the gear legs?
A. Not that I know of, but it should be fairly simple to do. Just install and wire up....then fair in with foam/dynel/epoxy.
Q. How did Rand arrive at the 11g limit for the KR-1?
A. Thru stress analysis of airframe components . . ..the wings were sand bagged to 9g with no problems.

Several drawings and letters have been coming in and I intend to get as many as possible in Issue #6. Also due to space requirements, I, am considering leaving out the names and addresses of new subscribers and use the space for tips,drawings, etc. I'll leave it up to you, so lets hear some pro & con.
A lot of letters have mentioned KR builders should form a club and arrange fly-ins, etc. I intend to look into the possibilities.

E.K.

Ernest E. Koppe
6141 Choctaw Drive
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Issue #5

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1 yr. @ $4.50

KR-1 KR-2 NEWSLETTER

Ernest Koppe
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Ph. 714-897-2677

Issue #6 December 1975

Well, I'm sure all of you are keeping busy over the holidays. I hope you all find time to get something done on your planes..every little bit helps. Been getting more and more letters each day.....new friends, old friends, and lots of new ideas.

Bill Lee of Tavernier, FL wrote me a letter that must have listed all the mistakes in the KR-2 plans I didn't have in Issue # 4. You'll find them below.

Also received a letter from Jim Snyder of Kansas. Jim is building a KR-1 but his ideas will work equally well on the KR-2. You will find two pages of drawings on his modifications in this newsletter. He also sells foam kits for the KR planes, styrene and urethane. You can write to him about his mods or the foam at..P.O. Box 696 Hess-ton, KS 67062.

KR-2 Plans errors **with thanks to Bill Lee**

1. On drawing #1 the dotted line representing the rib is shown as being flush with the bottom of the fuselage. This isn't correct if the bottom of the spars rest on top of the longerons.
2. On page six of the plans book, the plywood stiffeners extending 4½" back from the top upper firewall are ¼" plywood, in the profile drawing #1, the stiffeners on top are given as 3/32", the bottom stiffener is not shown.
   page six is correct
3. Also on page 6 the height of the filler block above the longerons is 3/4". On profile drawing #1 you have your choice of 5/8" or 1", depending on which way you lay the block.
   **Since the filler blocks should contact as much of the double longerons as possible, optimum sizs would be 3/4" x 1¼". **
4. In drawing #9 the rudder pedals are mounted on a right angle. What is the angle mounted to?
   This is left to the builder. I used 3/4" x 1½" spruce.
5. Drawing #17 shows 'I' sections for gear latches running fore and aft at the middle drawing while bottom drawing is crossways.
   Fore and aft installation is stronger.

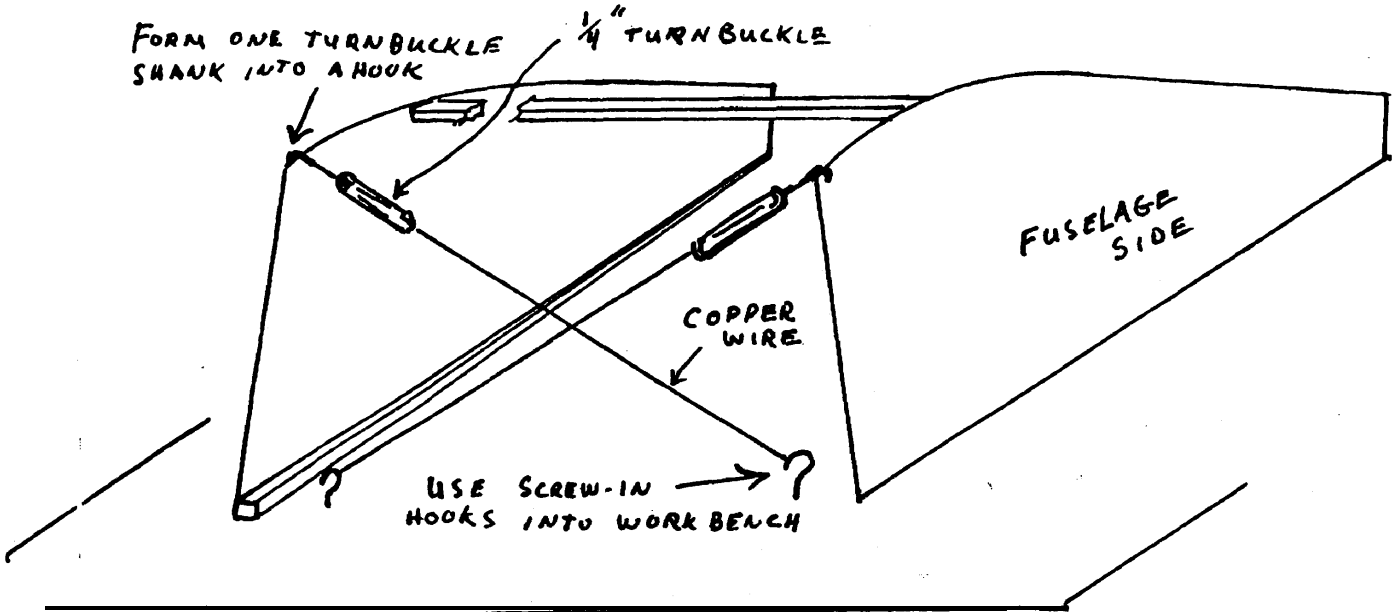
BITS & PIECES . . . .I see the KR-2 from Wicks made Popular Mechanics, Dec. issue. They call it a Foambuilt Homebuilt . . ..Jim Snyder's drawings were accompanied by a list of materials. I'll forward copies to interested builders, just send me a S.S.A.E..... new KR skunkworks almost complete, might have a KR-3 report soon . ..Marty Balk of New Jersey is using a 6 cyl. Porshe in a much modified KR-1....

BUY-SELL-TRADE

KR-1 PARTS . ..engine-36 HP VW, Slick mag, Rand mount w/shock mounts, Barker exhaust, 50 x 36 wood prop, 4 gauges, throttle, on test stand, overhauled, run approx. ½ hr. Need carb & intake..$450.00..Altimeter, overhauled & certified..$30.00....Airspeed, w/pitot, overhauled..$20.00 2" venturi, hoses, plus regulator (t&b not inc.)..$7.50...Rand gear castings complete with wheels, axles, tires & brakes. Drilled for attachment to spring bar..$80.00....Outer wing spars, front and rear w/attach fittings, untapered, FAA inspected O.K.....$30.00....Aircraft Spruce and Spec. foam kit, still in boxes..$20.00....Or ALL for $595.00...Todd W. Bramen 200 Hollis Ave. #36 Campbell,CA 95008

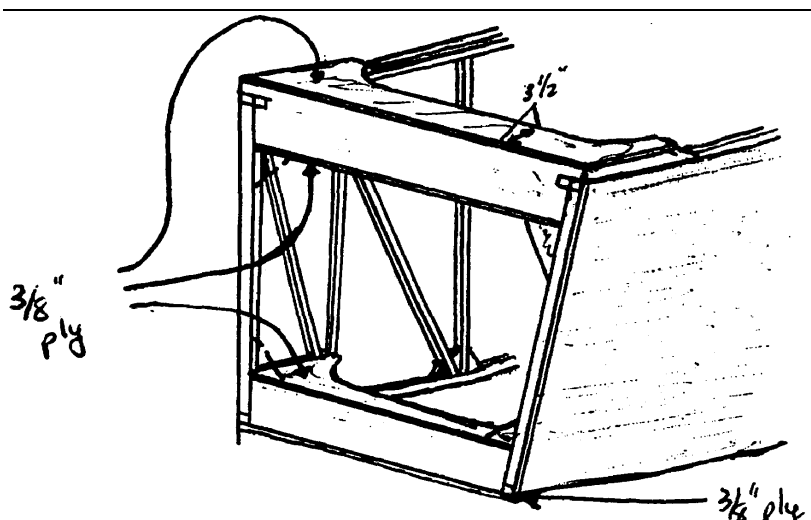
WANTED..... ..KR-1 or KR-2, complete or project...Write to Paul Sellers 105 Dogwood Dr. Richardson, TX 75080

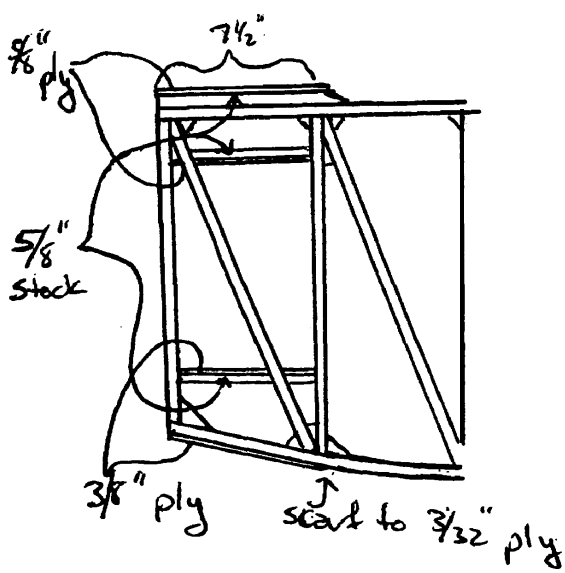
These drawings & notes are from Bill Gidden of Santa Clara, Ca.



Squaring up the fuselage sides prior to installing the belly crossmembers is easy if you use wire & turnbuckles as shown above, Clamp the top edges of the fuselage sides to the workbench surface after the sides have been bent to the proper contour. (Since the sides are tilted from the vertical as well as being curved, the top edges of the fuselage will not make contact along their full length with the workbench surface. Be sure to allow for this & don't try to force them down when you clamp.)

Four or five turnbuckles are all that are needed. Hardware **store** price is about 55¢ each, When adjusting turnbuckles to square up fuselage, adjust for diagonals of equal lengths at several points along fuselage. This is probably more accurate than the plumb-bob & centerline recommended by Rand.





Here are a couple of rough sketches of the modifications 1 made to the firewall of my KR-1 as a beef-up to take a larger VW than Rand used on his prototype. I plan to start out with a 1600cc and later upgrade it to an 1834cc. This mod. is very light and very strong. I thought maybe some of the other KR-1 builders might want to use a similar set up.

Mike **Wray** **Tucson,** AZ

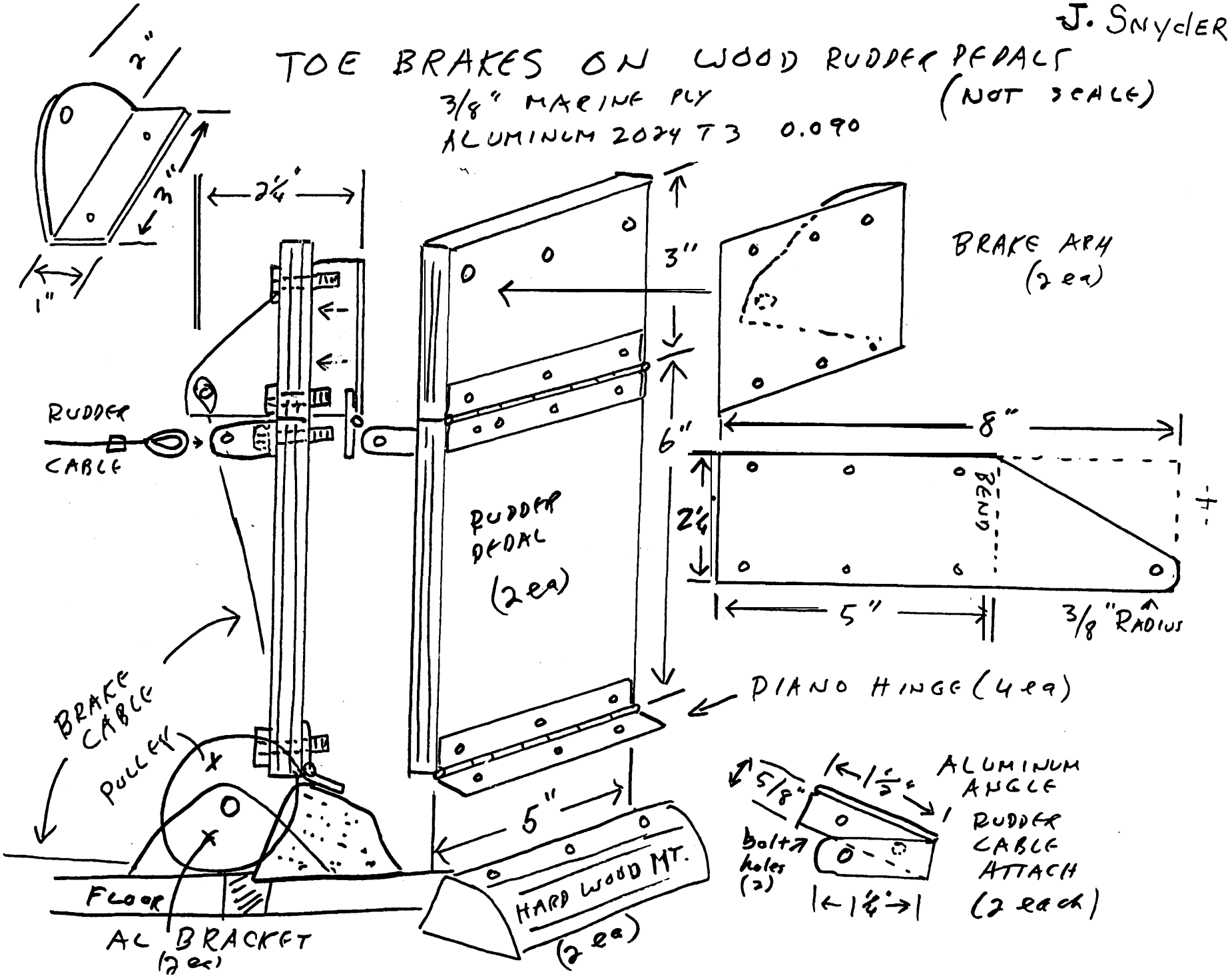
J. Snyder

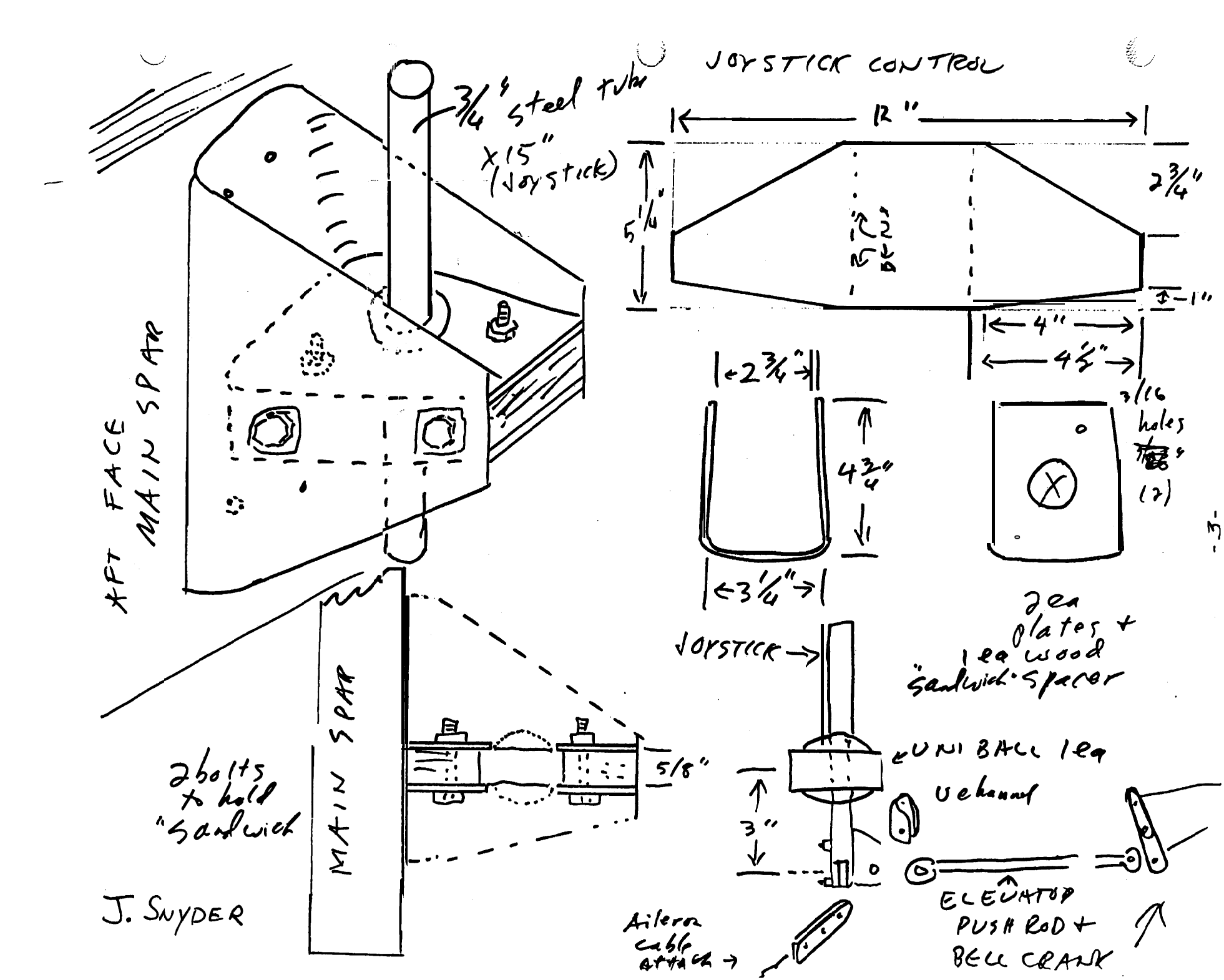
TOE BRAKES ON WOOD RUDDER PEDALS

(NOT TO SCALE)

3/8" MARINE PLY

ALUMINUM 2024 T3 0.090




JOYSTICK CONTROL
3/4" steel tube
X 15" (Joystick)
12"
5 1/4"
2 3/4"
2"
1"
4"
4 1/2"
2 3/4"
4 3/4"
3 1/4"
3/16 holes (2)
FT FACE MAIN SPAR
MAIN SPAR
2 bolts + hold "Sandwich
5/8"
JOYSTICK
2 ea plates + 1 ea wood "Sandwich" spacer
UNI BALL 1 ea
U channel
3"
ELEVATOR PUSH ROD + BELL CRANK
Aileron cable attach
J. SNYDER
-3-

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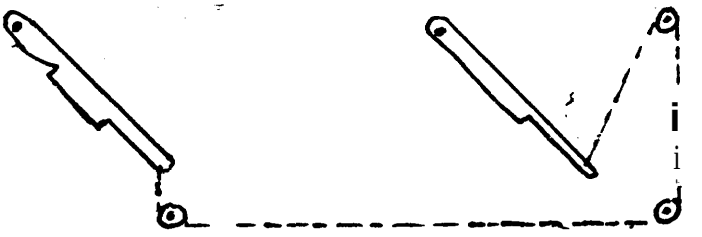
QUESTIONS & ANSWERS

Q. Are the ¼" bolts in the KR-1 Lord mounts strong enough for a 2100cc VW?
A. ¼" bolts (aircraft quality) as well as the mounts themselves are sufficiently strong. (See drawing this issue for strenghening firewall.
Q. What is maximum prop hub length I can use on VW engines & Warnke prop without bearing problems?
A. A standard VW prop hub with 3" ext is maximum without additional bearing support.
Q. How soon are plans for the KR-3 going to be available?
A. Too soon to tell for sure, but probably in about a year.
Q. Does anyone have the spec on the **R.A.F.** 48 airfoil, especially interested in the C_L
A. I checked with Ken and his copies have been misplaced. If anyone else has them, I would like to hear from them.
Q. There must be a better way to release the gear latches. Has anyone come up with something?
A. Yes, Larry Zepp sent in this drawing. Lifting the left latch also raises the right. The system uses model aircraft braided stainless steel cable and three small pulleys.

I'm out of room for more in this issue, everyone have a happy holiday season.

E.K.



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Issue #6

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KR-1 KR-2
N E W S L E T T E R

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Issue #7 January 1976

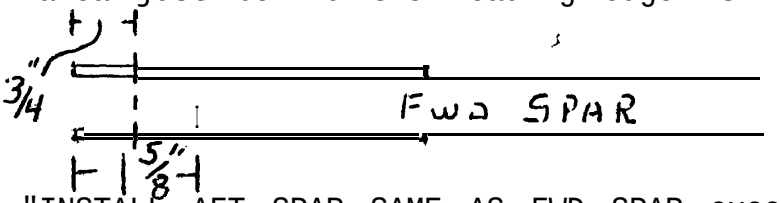
HAPPY NEW YEAR!

Here we go again,a brand new year of fly-ins and fun. 1976 is going to be the year of the Foambuilt Homebuilt so get out and make yourself known. If your KR isn't finished, most fly-ins are happy to see static displays.

The first major fly-in is at Lakeland, FL. Ken Rand and Stu Robinson are making arrangements to be there with the KR-1 and KR-2. All builders in that area will have a chance to talk with them and to compare notes with each other: Wish I could make it, but other commitments are going to keep me home. I hope to see some reports and maybe a couple of pics from you guys in Florida.

MORE KR-2 PLANS ERRORS from Paul Barton in St. Louis (I didn't get these in time for issue #6)

1. The front airfoil section pattern is wrong as well as the rear portion too short. Upper area just behind the leading edge is slightly flattened.
2. Forward spar fitting location on drawing #1 is wrong. Should be as sketched.



3. On page 8 of plans book, "INSTALL AFT SPAR SAME AS FWD SPAR except use Only one web in place of 2," arrow should point to horizontal stab. instead of vertical.

BUY-SELL-TRADE

Ads in this section are free to all subscribers; there is a 25 word limit, Also, no ads for sale of ideas or techniques will be accepted. The reason for this newsletter is a free exchange of information.

FOR SALE . ..40 hp VW crank, turned .010 under, Magna-fluxed. $40.00
Contact LONNIE E. PRINCE 4505 Buddy Blvd Evansville, IN 47711

WANTED . . . ..KR-1 or KR-2 complete or project. Write to PAUL SELLERS 105 Dogwood Dr. Richardson, TX 75080

BR. MICHAEL STOMBER 551 Harwell Rd. NW Atlanta, GA 30318 is using a Cont. 4A084 in his KR-1. It is a 35 hp, 4 cyl. engine and weighs only 135 lbs. ready to go. He has another one if you're interested.

A lot of builders are having difficulty locating the rotary rasp for a ¼" drill described in issue #2. I bought mine at a Sears store, but if you can't get one in your area send me $2.00 and I'll get one to you by return mail, postage paid. I really can't say enough good things about this tool. The money saved in sandpaper will pay for it several times over.

KR CLUB NEWS?????Received many replies from KR builders...all thought a club would be a great idea. Now all we need is a volunteer (or 2 or 3 or. to organize it. I will be happy to use this newsletter for club news, calendar of events or whatever. So let's get it flyin'. E.K.

If you guys that have had one or more inspection would send in a few tips on what your F.A.A. inspector looked for in your KR, it would be helpful to new builders.

QUESTIONS & ANSWERS

Due to the postal increase, I can answer questions by return **mail only if a** self-addressed stamped envelope is included with the inquiry. All other questions will be answered in the following newsletters. E.K.

Q. Do you recommand varnishing or sealing inside of spars before closing?"'
A. Yes, certainly. All wood surfaces should be protected from damage from moisture, mold, insects, & etc. A KR-2 builder in Ohio recommands using a marine wood preservative. He says it is both effective and extremely light. It is..Baltotin Regatta 2381 by Baltimore Cooper Paint Co. NOTE.. .DO NOT USE ANYTHING ON SURFACES YET TO BE GLUED!

Q. What modification is K. Rand making to the KR-1 motor mounts for the higher hp engine he is now using?
A. No modifications are necessary.

Q. What is the "fix" to allow the 180 to 200 mph speeds with the bigger engine?
A. Balanced ailerons are sufficient. I will have a "how to" article in a future issue.

Q. What size brake cable are the KRs using?
A. 1/16" cable. Several builders are using motorcycle brake cable and housing with good success.

Q. Is there a partial web on the outboard aft spars on the KR-2? The plans don't show it but there is a 1/8" gap between the wing attach fittings.
A. The plans are correct, however a short web would not add much weight and would help fill the gap.

Q. What is the new hole locations and assembly procedure for the new type castings?
A. Ken says the assembly procedure in the plans will work on the new castings. The axle bolt should ½" from bottom of the new casting and ½" from fwd. face.

Q. Where can I get the alternator like Ken Rand is using on his KR-2? What is the approximate cost?
A. Ken is using a Wico alternator from Wico..the Prestolite Co.

Rotor... x 12710..$30.00
Stator...X 17797..$31.65

Division of Eltra Corp.
Toledo, OH 43601
Ph. 419-244-2811

Some sort of regulator is needed. A very simple on can be fabricated from a diode and an on/off switch.

Q. What about baffles for wing tanks described in issue #5?
A. The wing tanks as described do not need baffles. However, if you increase the length of the tank, you will need them. (1" foam ribs with epoxy/dyne1 on all exposed surfaces work very well for this purpose.

TIPS FROM OTHER BUILDERS

Fred Richen of Puyallup, WA sent in the following..."I am using Garlock DU self-lubricating bearings in elevator, rudder, & landing gear hinge assemblies. These are lead impregnated teflon bearings and their life is from 1,000 to 10,000 hrs. The weight factor is very small, wear is only .0008 in early stages and this is transferred to mating surface. The 3/16"ID have an outside dia. of ¼" and the ¼" ID are 5/16"OD. They are encased in a steel jacket, temperature range is from -328 F. to +536 B. Being tolerant of dirt and dust, they are ideal for areas you can't get at to lubricate, like the empenage area of the KR series. They do have a brochure out on these bearings with all the spec.....it is #751 Bearing division Garlock....."

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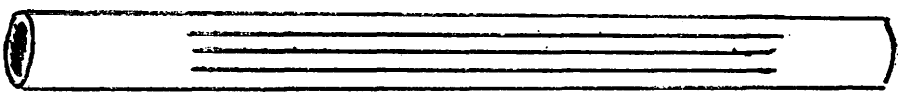
EZ MUFFLER

With the E.P.A. making noises, it's only a matter of time before we're asked (told) to cut down on our noise. Below is a simple muffler any one can fabricate.

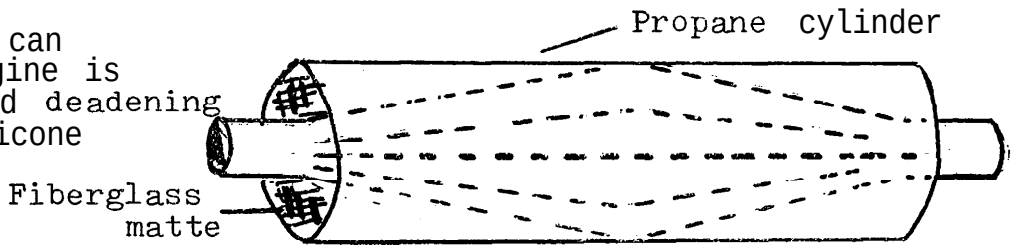
Drawings from Larry Zepp, Bowling Green, OH.

Use propane cylinger or large dia. thinwall tube. Use an abrasive cut-off wheel to grind/cut slots in a length" of exhaust tubing. Then pull out at center of slots to form an expansion in the tube.



Wrap fiberglass matte around the flared tube and then push into a propanecylinder with the top sawed off. (Be careful) Weld exhaust cap onto cylinder and test it.

Make i-t as long as you can (62" from flange on engine is optimumj For more sound deadening coat inside with a silicone rubber compound.



P. s. Future newsletters will have pictures of projects, modifications techniques & ect. as space permits. We can print clear, sharp black & white pics. All pictures will be returned only if you enclose a S.A.S.E. E.K.

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Issue #7

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KR-1 KR-2
N E W S L E T T E R

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Issue #8 February 1976

There are so many things happening this month I don't know where to start. First I guess is the news from Rand/Robinson. A new item is being added to the long list of parts available to KR builders. It is something as new as you would expect from the designers of the KR-1 and KR-2...a THREE BLADE, GROUND ADJUSTABLE PROPELLER FOR VW POWERED AIR CRAFT . ..not new you say? Well, here's the good part. It is composed of one of the new space-age plastics, light and incredibly strong. Injection molded (no long waiting list for delivery) so each blade is identical and interchangeable. A dinged blade doesn't mean replacing the whole prop. Production will begin as soon as testing and analysis is complete. Price for the prop $190.00. Replacement blades are expected to be $40.00 each. First delivery date is March 1976.

As you probably noticed from the last newsletter, the new KR-1 plans are out. The $45.00 price tag is higher than expected, but necessary to help cover rising cost. However, if you purchased an earlier set of KR-1 plans, you can get the new plans for the difference in price. Just send in the serial number of your old plans or the date you purchased them. DO NOT SEND IN THE OLD PLANS, The new plans are of the same format as the KR-2 plans but more complete.

Another item of interest • m.new modifications to the KR-2. Finished just in time for the Lakeland, Florida fly-in was the installation of a Rajay turbo charger. The 1834 engine didn't get the dramatic hp increase a turbo charger gives a stock 1600 but it did give a 5 hp increase and raised the service ceiling to the plus side of 20,000 ft. It hasn't been flown that high yet, but Ken has installed a transponder so I expect it anytime. Oxygen anyone?

The engine article is from Wallace Mynatt Rt. 1 Box 44 Abilene, TX 79601. Wally volunteered the very fine article and with some encourgement I'm sure we could get more. Drop him a note if you have any questions.

Two things to keep in mind when building up your own engine (1) Use first quality parts... (2) Make sure any machine work is done by a reputable shop, preferably experienced with VW engines.

QUESTIONS & ANSWERS

Q. I've been hearing a lot of stories about the landing gear castings. How could they be beefed up?

A. The castings are strong enough to support design gross weight by a safe margin. The problems start when lightening holes are used. If your project is going to gain weight thru modifications, DON'T USE LIGHTENING HOLES!

Q. What kind of glue are other guys using on their spruce?

A. Most popular and easiest to use is R/R epoxy. Weldwood resin, Aerolite and Hughes epoxy are also used.

Q. Has anyone looked into STOL of any type., i.e.Fowler or Kruger flaps with shortened wing span--GA(PC)-1 wing with "flaperons"?

A. The KR plans already have good short field performance so complicated Fowler and Kruger type flaps are not necessary. The GA(PC)-1 might have good possibilities.

Q. Do I have to balance all control surfaces far a 200 mph red line?

A. No, just ailerons.

V .W. ENGINES FOR AIRPLANES

By Wallace Mynatt

In building up the VW engine for use in an airplane you as the home-builder must make the final decision as to size and quality of your engine. With this in mind the following mixture of information is yours to use, pick over, or disregard.

Most of the KR-1 and KR-2 airplanes will use between 1500cc to 2180cc engines. A few Type IVs are being used also. All of these engines should be checked out by the users. Weak points to look for in the VW are the valves . . ..they should be changed along with the valve guides. Stock parts are fine, but sodium filled valves are best if you can locate them.

While we are looking at the heads, check them for cracks. Any cracked head should be replaced. It can't be fixed right. Also you may consider "rocker buttons? These are swivel ball sockets which replace the stock VW valve adjusting screws. These provide constant surface contact through the swivel head and eliminate binding and chewing up of valve stem ends.

A good idea is to change from the stock oil pump to a large volume oil pump. This will help prevent oil starvation to the main and rod bearings. We all know what happens when something stops in this area! If you take the time to open the case, new bearings whould go back regardless of the time on these bearings. This holds true for the rings also. Stock parts are fine in this area too,

Your crankshaft should be magnifluxed at this time, and if you intend to use a tapered shaft you will want to have this done also. If a crank is found to need turning, it would be best to find a new one. If your finances won't allow you to buy one, the VW crank can be turned 10/10 without any loss in reliability. (Don't skip the Magnaflux here.). Also do not buy a crankshaft which has been built up then turned to standard. These built up welds can soften and cause engine failure.

Engine sizes and parts needed

The most reliable engines are probably the stock 1500cc and 1600cc VW. I believe the 1600cc dual port head engine will do a good job in either KR plane. But for you fellows who have to have starters, air-conditioning, and living room sofas in your KRs, then the 1834cc-2180cc might be recommended. Keep your plane light and these larger engines will make you look like Rand himself.

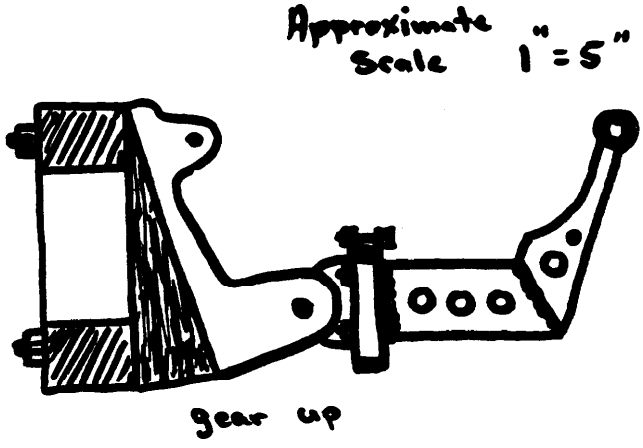
Below is a chart which tells in detail what bore and what stroke is necessary to get the engine you want. (For your reference the stock 1600cc VW has a bore of 85.5mm and a stroke of 69mm).

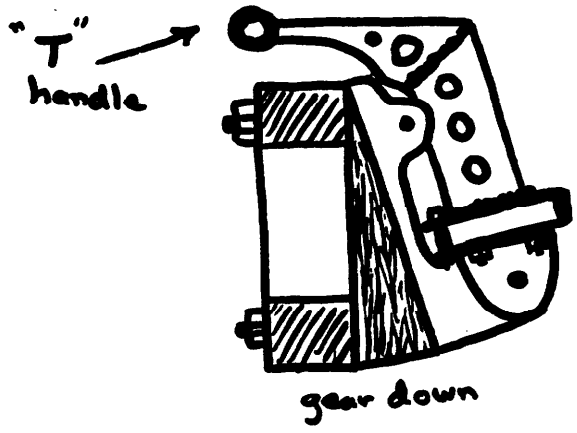
+

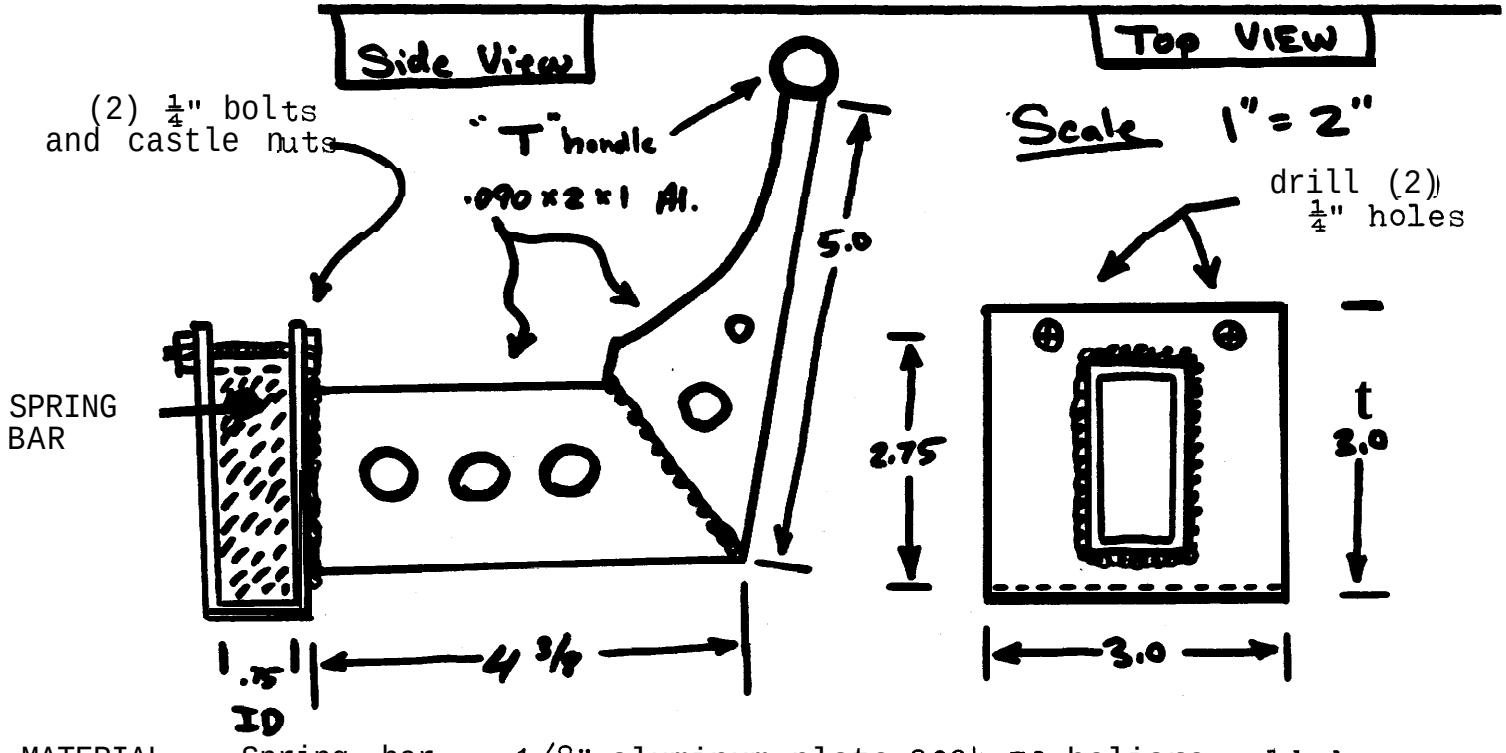
Engine	Bore Size	Stroke	Displacement Increase to	Remarks
40 HP	83mm	64mm	1385cc	No mach. req'd--bolt on
1300	85.5mm	69mm	1585cc	Heads must be bored for cyls.
1500	85.5mm	69mm	1585cc	No mach. req'd--bolt on
1200-40HP	92mm	64mm	1702cc	Heads and cases must be bored
1300-1600	92mm	69mm	1835cc	Heads and cases must be bored
1300	87mm	69mm	1641cc	Heads must be bored for cyls.
1500	87mm	69mm	1641cc	No mach. req'd--bolt on
1300-1600	92mm	74mm	1968cc	Heads and case must be bored
1300-1600	92mm	78mm	2074cc	Heads and case must be bored
1300-1600	92mm	80mm	2127cc	Heads and case must be bored
1300-1600	92mm	82mm	2180cc	Heads and case must be bored

Modified KR-2 Gear Handle
by Larry Zepp and Craig Elvey--Bowling Green, OH

A welded gear handle of 2" x 1" aluminum extrusion (from KR-2 kit) is welded onto a "U" shaped spring bar clamp. This slides onto the spring bar and clamps around it. Ideal position on spring bar is between center and left hinges.







MATERIAL - Spring bar,.. 1/8" aluminum plate 2024-T3 heliarc welded, or.. use aluminum extrusion 2024-T3
Handle..... .090 x 2" x 1" 7075-T6 or 2024-T3 from kit.
NOTE- Lightening holes: (4) 3/4" (1) 1/2", Use aluminum tubing over bolts to protect spring bar.

MAG TIMING PROCEEDURE

1. Remove the spark plug from #1 cyl. and connect the cable from the #1 Mag position. Flip the Mag thru to find the #1 firing position,

2. With an ohmmeter be tween the stud and case move the drive pulley slowly back and forth to find the exact point opening position. Open points is about ¼ ohm. Mark this position permanently on the drive pulley. If the impulse is still on, do not turn back far enough to engage it.

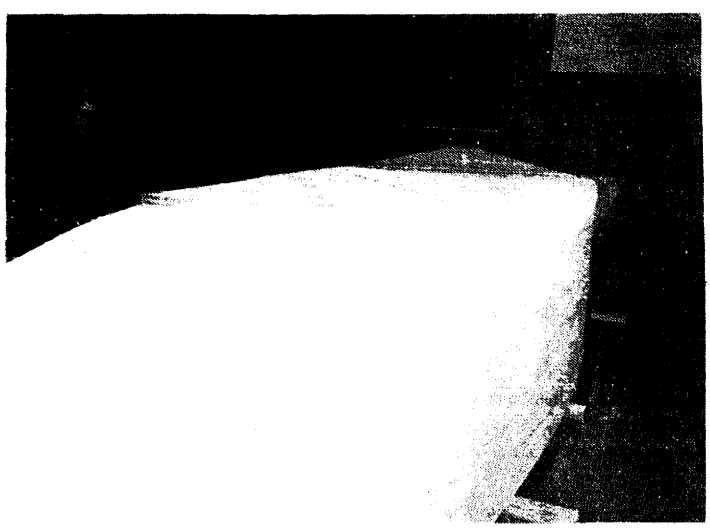
3. Turn Prop. to find the compression stroke of #1 cylinder, With a rod stuck into #1 spark plug hole find top dead center. Permanently mark the prop. hub on top when at top dead center at the engine case split.

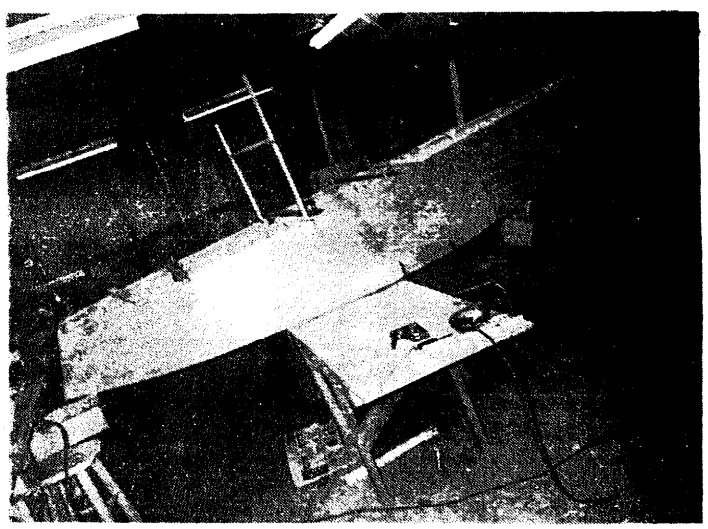
4. Move prop. back 25 degree.5 and with the Mag. set with the drive pulley mark still on top. Install the drive belt.

5. Mag. output rotation is opposite engine rotation so facing to rear, next wire going left will go to cylinder #4, next to #3 and next to #2.

6. If impulse is on, a check can be made of the 25° by moving the prop back to engage it, then forward slowly. The impulse should click exactly when the top dead center hub mark is lined up with the engine case split.

7. Set spark plug gap to .018.





First newsletter pictures are of the KR-3 fuselage under construction. Note the wing rib at mid fuselage, The clamped on crossbar is 16" above the top longeron, that is the height of the bubble canopy. Wing spars have been installed since pictures were taken.

Target completion date is still Oshkosh '76!

BITS & PIECES... in response to queries--the January issue was late due to mails and the holidays. Also, I'm still receiving many questions that want and need immediate answering. If a self-addressed stamped envelope isenclosed, I will answer by return mail. All others will be answered in future newsletters. One other item--the newsletter is now being sent bulk rate. This is 3rd class mail. The Post Office will not forward without a postage guarentee from the addressee. If a change of address is sent to me early, this problem will not arise and there shouldn't be any disruption in your subscription.

TIPS FROM OTHER BUILDERS

More ideas from Larry Zepp in Ohio . . ...use a spring return key chain (key back) for canopy. No string, cord or sticks continually in the way.

Also Larry is planning on installing landing lights in the gear legs of his KR-2 and has found the ideal unit in a J.C. Whitney catalog for $1.79 each. A small (2") bulb that draws 2.5 amps and puts out a focused beam brighter than a car's headlight. It uses a standard bayonet socket.

EPOXIES---one problem continuing to arise with a number of builders is epoxy that either refuses to harden or hardened so fast as to become brittle. Without exception, all builders reporting these problems were using an epoxy that required careful measuring of part "A" and part "B". (i.e....4 to 1, 8 to 1, 10 to 1, etc.). The epoxy from Rand/Robinson is a 1 to 1 mix and almost mistake proof. (All epoxy requires thorough mixing). It can be used for the wood structure as well as the foam and dynel. You don't have to use another glue throughout your project.

This epoxy sells for $19.50 per gallon in two gallon lots. As a special offer to newsletter subscribers you can buy this epoxy at $17.50 per gallon.* Send your order to Rand/Robinson 5842 "K" McFadden Ave. Huntington Beach, CA 92649 Be sure to let them know you subscribe to the newsletter to get this discount.

*in the above mentioned lots of two gallons.

SAFETY NOTE

WARNING! Builders using a Vega type fuel pump for fuel transfer should look for another system. The armature of this pump is designed to always be immersed in fuel. Should it ever pump a tank completely dry, sparking of the brushes could ignite the remaining fumes;!!!

FEBRUARY COMING EVENTS

Feb. 28-29 Annual Open House and EAA fly-in at Riverside, CA Fla-Bob Airport.

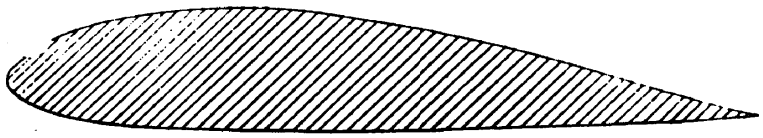
This is a new dept. If you know of a fly-in around your area, let me know at least 30 days ahead and I will list it here.

BUY-SELL-TRADE

WANTED for KR-2 . . .Engine cowling, control stick, fuel tank. If you have any one or all items, contact G. MICHAEL EVEN R.R. 1 Box 218 Barrington, IL 60010

WANTED. . . . . ..Low time, factory Monnet, Barker, or Revmaster VW B.J. LEMPA Rt. 4 Box 247C Lake Charles, LA 70601

FOR SALE . . . .KR-2 project. Fuselage nearly complete (mahogany plywood), spars under construction. Also have most materials kits. Write William Meyer at 1630 Central Alton, IL 62002



(*a*) Without flap. (*b*) With flap.

One of the R.A.F. 40 series, being a modification of the symmetrical R.A.F. 40 which is of 15 per cent thickness as compared with the 13 per cent of R.A.F. 30.

(*a*) Shows the results of the plain aerofoil section.

(*b*) Shows the effect of a 10 per cent split flap in the fully lowered position.

Notice how the flap—

(i) Increases C_L at all angles of attack.

(ii) Increases C_D at all angles of attack.

(iii) Completely spoils the L/D ratio, making it nearly constant at about 6 throughout the flying range.

(iv) Causes the C.P. to be further back at positive angles of attack.

Approx. Reynolds' Number of tests—

Plain aerofoil—7 million.

Flapped aerofoil—3½ million.

Distance from L.E.	Upper Surface	Lower Surface
0	0	0
1·25	2·60	− 1·65
2·5	3·65	− 2·34
5	5·20	− 3·16
7·5	6·39	− 3·69
10	7·30	− 4·03
15	8·63	− 4·41
20	9·53	− 4·58
30	10·40	− 4·56
40	10·20	− 4·33
50	9·38	− 3·90
60	7·94	− 3·36
70	6·05	− 2·65
80	4·02	− 1·83
90	1·95	− 1·00
95	1·05	− 0·60
100	0	0

Angle of Attack	C_L		C_D		L/D		Position of C.P. Fraction of Chord	
	(*a*)	(*b*)	(*a*)	(*b*)	(*a*)	(*b*)	(*a*)	(*b*)
− 4°	− 0·14	+ 0·53	0·009	0·119	− 11·5	+ 4·6		0·595
− 2°	0	0·69	0·008	0·128	+ 0·5	5·3		0·51
0°	+ 0·16	0·84	0·010	0·141	13·3	5·8	0·515	0·47
2°	0·32	0·99	0·015	0·157	21·4	6·3	0·38	0·44
4°	0·46	1·13	0·021	0·176	21·6	6·4	0·335	0·415
6°	0·60	1·28	0·031	0·197	19·9	6·5	0·31	0·40
8°	0·76	1·42	0·044	0·219	17·7	6·5	0·30	0·385
10°	0·91	1·56	0·058	0·243	15·7	6·5	0·29	0·37
12°	1·04	1·70	0·075	0·270	14·2	6·3	0·285	0·36
14°	1·19	1·82	0·096	0·297	12·5	6·1	0·285	0·355
16°	1·33	1·94	0·117	0·326	11·2	6·0	0·28	0·35
18°	1·42	2·08	0·140	0·358	10·1	5·8	0·28	0·345
19°	1·42	2·14	0·166	0·376	8·6	5·7	0·285	0·345
20°	1·38	1·65	0·187	0·422	7·3	4·0	0·29	0·36
25°	1·21	1·29	0·288	0·516	4·2	2·5	0·32	0·40
30°	0·90	1·20	0·419	0·760	2·2	1·8	0·36	0·46

The above R.A.F. 48 co-ordinates were sent in by H.D. Garner of Newport News, VA

Ernest Koppe
6141 Choctaw Dr.
Westminster, CA 92683
Issue #8

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KR-1 KR-2 NEWSLETTER

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Ph. 714-897-2677

#9sue March 1976

O.K., you guys. This is the ninth issue of the newsletter and I still haven't had a flight report from any of you. I know some' of your planes were well along in construction when I received your subscription so how about sharing a few performance figures and flight characteristics with the rest of us. Ken is going to check me out in the turbo-KR-2 so I'll give you a flight report soon probably in the next issue.

I sure can't complain about the imput of informationa nd tips from current builders. There is an extremely interesting idea from Fred Richen this month plus all the other hints and tips.

Now, down to business! The last two newsletters were mailed bulk rate. It takes more time getting them ready to mail but with the increase in postage this year, I'm doing it to avoid raising subscription rates. As long as I'm kept informed of any address changes, you should receive your newsletters with no problems. If you haven't received the newsletter by the 15th of the month it is probably lost somewhere in our fabulous mail system. Drop me a line and I'll send you another. Also, I've stopped listing subscribers so I can utilize the space for more tips, modifications, etc. If you want to know the builders in your area, send me a S.A.S.E. and surrounding zip codes and I'll mail them off to you.

One thing I would like to clarify about the modifications suggested in the newsletters. Modifications take additional building time and usually add unwanted weight. If you are planning on using any ideas suggested in the newsletter, consider the idea from all sides first. Are they worth the extra time, extra wieght and extra cost? While some modifications are definitely beneficial, others need careful thought. Don't let this discourage you from trying out a new idea that looks promising. That's what homebuilding is all about.

Odran Benson is installing a Continental A-75 in his KR-2. He has drawings available for the engine mount if anyone needs this info. He also is using a 15 ga. fuel tank from an Aeronca Chief: says it fits perfectly. You can write to him at: 14602 Fancher Ave. Fair Haven, New York 13064.

Bruce Gilinsky owns a VW shop and has worked with VW engines for several years. If you run into a problem with your VW, drop him a line. He says he will be happy to help, His address is: Box 289 Lakeview, Ore. 97630.

William Lee reports he has mailed over **30** of the full size rib tracings (RAF **4.8).** If you send for them, be sure to enclose a LARGE S.A.S.E., they will arrive in much better shape. His address is: 114 Indian Ave. Tavernier, Florida **33070.**

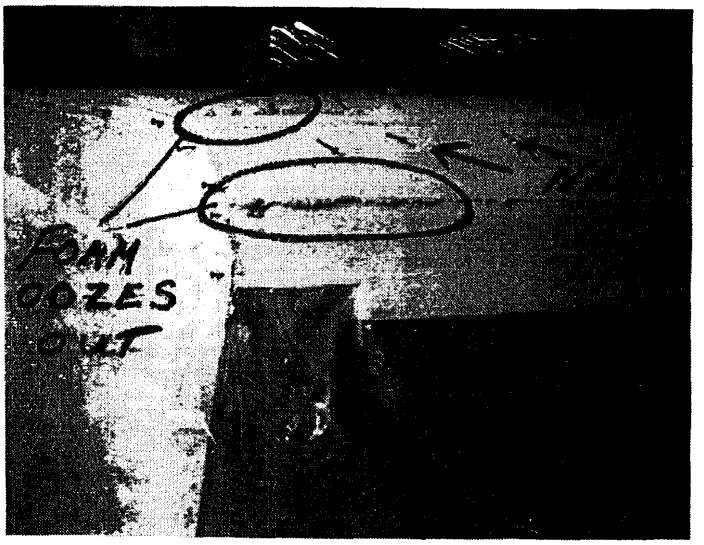
FOR YOUR INFORMATION

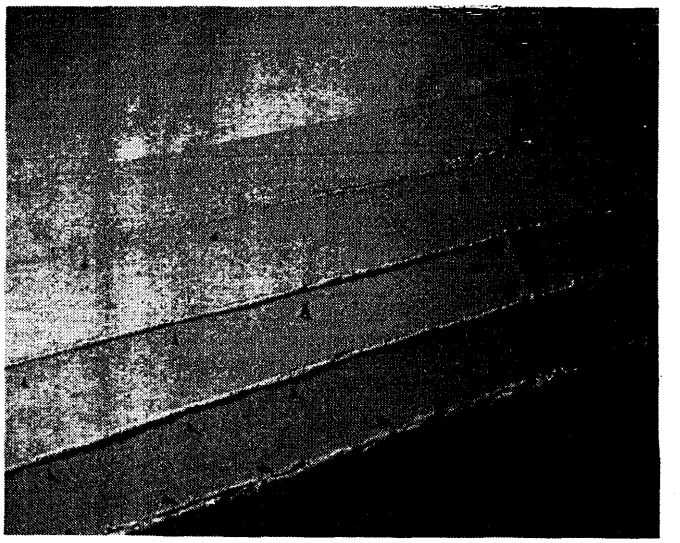
The F.A.A. recommends 0.015 stainless steel or 26 gage galvanized steel for firewall material. 0.016 302/304 SS weighs 0.676 lbs. per sq. ft. and 0.022 galvanized wieghs **0.906** lbs per sq. ft. The average KR-2 firewall (about 5 sq. ft.) will weigh about one pound less in stainless than in galvanized if these minimum thicknesses are used. SS is approx. $2.00 per lb. and galvanized is approx. 20¢ per lb.....Marty Rezmer California

How many of you are into the foam contruction stage of your KR? If you are just starting or only have the engine cowling left do do, I have some good news. There is a better way to bond those pieces of foam together. Fred Richen sent me the following letter.....

"Here is a good tip I think a lot of the fellows will like. I have tried white glue and weldwood glue both for bonding foam together but it is not as good as poly-foam which bonds and fills any cracks or holes between foam surfaces or between foam and wood. It is strong, has a 2 lb. density when the foam is produced, sands easy, excellent bonding properties to dry, clean surfaces such as wood, metal, fiberglass etc. It comes as two liquids and these are mixed together and foaming is complete in two to three minutes. Has excellent chemical resistance and is not affected by gas or oil. When glueing foam together don't mix up too much at a time because it does foam quick. I use a small glue brush to apply to both surfaces. This method sure takes the touchy work out of trying to get good mitered joints on that foam. Have tried breaking it and foam will break before the joint, that is the foam planking. Hope you like the foam as well as I do....Fred Richen 9917 --152nd St. E. Puyallup, Wash. 98371."

If you want to try Fred's technique, see your local fiberglass or plastic products dealer. Ask for TITAN POLY FOAM or equivalent liquid poly-urethane foam.





Fred sent in these pictures to show how the liquid foam works. Really looks like a great idea!

I get letters almost every day wanting details on a sliding canopy arrangement and a different type of seat. No one as yet has reported using a sliding canopy so if you are working on one, we're waiting to hear about it. The sling seat may not look it, but it is comfortable, light and easy to make. If you have some ideas though, I'll be happy to pass them along.

Just talked to Ken on the phone. They are all set for the Fla-Bob Fly-in and are going to have both planes there. Stu Robinson will fly the KR-1 and Ken will be flying the KR-2.

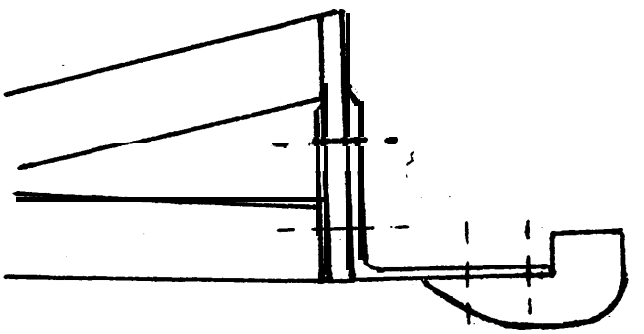
NOTE.. .Ken said that due to the many requests he has received, Rand/Robinson will now carry the Posa injector along with the other parts they have available. Price is a low $48.00 for the 29mm model which fits most VW engines 1300 to 1834.

PROBLEM AREA: Balanced Ailerons

Some KR-2 builders have reported difficulty interperting the instructions for balancing ailerons as given in the plans book. KR-1 builders have no instructions at all in their plans. The new KR-1 plans do have balancing instructions. Many builders want the safety factor available with balanced ailerons so I'll use some space here to help answer the questions most asked.

Q. Where on the aileron is the balance arm located?
A. On KR-2 with full length aileron hinge, it is centered on the aileron spar. On KR-1 it is located approx. 12" from aileron control horn. If you are using full length hinges, put it in the center of the aileron.
Q. What do I use for the balance arm?
A. Use 2" aluminum angle, 2024 T-3 or stronger, at least 3/32: thick and 1½" wide. Be sure to use back-up plates. See drawing.....

A mold for the lead weight can easily be shaped in foam and an impression made in damp sand. Melt lead and pour slowly into sand mold, (1 to 1½ lbs for KR-1 and 1½ to 2 lbs. for KR-2 is average per aileron. Be sure when positioning lead weight on balance arm that down aileron is not limited by aft wing spar. Ken Rand reports that 100% balance is not necessary to increase red-line over 200 mph. A 1 lb. weight located 2" ahead of the hinge point is sufficient.



BUY-SELL-TRADE

FOR SALE.....(KR-1...40% somplete) Wood construction finished and signed off by FAA. Sitting on gear and all parts to complete except engine and instruments. $800.00 or offer. Contact BILL SOUZA 714-846-2148

FOR SALE . . . ..Foam kit from Aircraft Spruce...Styrofoam-$90.00...7 gal. Aircraft Spruce epoxy -$100.00 Contact MARTY REZMER 17131 Berlin Huntington Beach, CA 92649 Ph. 213-685-4050 days or 714-846 0358 nights.

DYNEL . . . .80 yd. roll..$1.50 per yard. LARRY ZEPP 214 Napoleon Rd. Apt. 90A Bowling Green, OH 43402 Ph. 419-352-2357

KR-1 COMPONENTS... Work table, clamps, steel and aluminum kits and landing gear, dynel, epoxy and wood kit from Aircraft Spruce. Also foam kit, tach, alt., T & B, cyl. head temp, 2 dismantled 40 hp VW engines, prop & hub. $750.00 for all. Also 18 ft. hang glider $30.00 RUSS DUNHAM 3738 Lake Grove Dr. Yorba Linda Calif. 92686

TIPS FROM OTHER BUILDERS

I am going to use two VW gas pedal cables for my brake cables. The VW cable has an end that fits the brake lever perfectly. Cost is about $1.20 each.....Bruce Gilinsky Lakeview, Oregon

A suggestion for new builders: when installing the plywood sides and bottom, I found by using ½" wide packing binding I could remove the staples very quickly with needle nose pliers. Like opening a spam can.....Jake Enns Canada

QUESTIONS & ANSWERS

Q. I have a piece of channel aluminum 125 x 38½" long from Rand's aluminum kit. What is it used for?

A. This channel is cut in half and used for mounting the magneto and, if electric system is used, the alternator to the VW engine. On the KR-1 it also doubles as the engine mount.

Q. Can the Wico alternator (see issue #7) be mounted on the Revmaster 1834 or 2100, with or without starter?

A. Yes, to either, The Wico mounts on the front of the engine.

Q. What type glue would be suitable for use in a basement that usually stay at 62 degrees?

A. I have not found anything as good as Rand/Robinson's 1 to 1 epoxy. Temperature range is 50 degrees to 100 degrees.

Q. Will the inspector want to look at the rear stabilizer complete with hinges installed before the foam is glued in?

A. The inspector will want to see any fitting before it is covered permanently.

Q. Does scarf joints in plywood have to lie against fuselage upright?

A. Not if you have a good 10 to 1 scarf joint, I like to have them on a crossmember anyway. It's usually a matter of a few inches.

Q. Has anyone had any problems with water or gas getting into the wing or rear fuselage? I live in a very wet, humid climate.

A. No more than with any other aircraft. The people at Wick's Organ recommends small drain holes at the aft inboard of each box section. Waterproof these holes with varnish or epoxy.

Ernest Koppe
6141 Choctaw Dr.
Westminster, CA 92683
Issue #9

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KR-1 KR-2
N E W S L E T T E R

Ernest Koppe
6141 Choctaw Dr.
Westminster, CA 92683
Ph. **714-897-2677**

Issue #10 April **1976**

Drove up to see Stu Robinson and the KR-3 this week-end, Work on the KR-3 is progressing slowly but steadily. The bottom hull was finished. The landing gear was off having some final machine work done.

Stu was at Joe Pfeiffer's hangar at Columbia Airport setting up a jig for the engine mount of the KR-3 and Joe was assisting with technical know-how. Joe's Corvair powered Parasol had a feature article in March Sport Aviation.

Stu has built a neat workshop for himself... .high up in the mountains with nothing but an occasional deer to distract him. Anybody wanting to see the KR-3 will probably have to wait until it is finished since Stu's workshop is so far off the beaten path.

Stu also reported that while flying back from the Fla-Bob fly-in at Riverside, he lost a prop spinner on the KR-1. As the spinner separated it was hit by the prop and was thrown back at the canopy. The force of the-spinner striking the 1/8" plexi-glass and the 140+ mph airspeed, completely wrecked the canopy. Stu wasn't hurt and made a safe landing but considers himself very lucky to escape injury.

As a result of this incident Stu is recommending all builders with intentions of using a foam spinner mounted with a single bolt give serious thought to using something else.

I am still using the foam spinnner on the KR-2 I am currently building with Bob Stone. I am, however, using a different mounting arrangement and expect to forestall a situation such as greeted Stu. It's fairly simple and you'll find step by step directins in this issue.

I asked Stu about my idea on the foam spinner and he agreed it was much better than the current method of mounting and if you are going to use a foam spinner, mount it this way.

- -

Is your KR flying yet? I'm sure some of you have completed your bird, co why not send me a picture of your pride and joy so I can put it in the newsletter. Also, Jack Cox, editor of Sport Aviation, is interested in putting photos of completed aircraft in the EAA magazine. Speaking of Sport Aviation, this month's issue had some very good tips on installing a trim tab, Several KR builders have written me asking for details of a trim tab system so these tips were most timely.

Most of you belong to the EAA alreay, as indicated by your letters, those of you who don't belong yet are missing out on a lot of good info. Tony Bingelis's designee corner is worth the membership fee in itself, not to mention all the other fine articles and pictures.

It's almost Oshkosh time again... anyway time to start making plans to be there if at all possible. You guys planning on flying your KRs, let Ken Rand or myself know your planned route. Maybe we can put you in touch with someone else heading in the same direction. Ken's address is on your plans, (Rand/Robinson) mine is at the top of this page.

The Corona Fly-in is coming up the first of May. It's our 2nd annual EAA Regional fly-in. If last year's fly-in is any indication, it ought to be a good one.

TIPS FROM OTHER BUILDERS.. . . ..Al Carter of Maine suggests checking with insulation (spray-in-place) companies for the liquid foam. He was able to get some free by scraping "empty" 55 gal. drums.
NOTE...., just completed foaming the KR-2 cowl. Liquid foam is great!

E.K.

THE V.W. ENGINE THRUST BEARING AND PROP HUB
by Wallace Mynatt

It, seems that one of the most asked questions concerns the need for relocation of the thrust bearing in the VW for loads carried through the prop hub.

Let's start off by looking at a paragraph from an EAA "How-to" series book,

"One of the things that makes the W useful in the air is that the other end of the crankshaft, the "back" end in a car, has double bearings spaced some inches apart. This serves just like the double bearings or single long bearing on the front end of an airplane engine, to stiffen and restrain the crankshaft against the twisting and shaking loads applied by the propeller. The blower pulley is removed and the crankshaft end ground to a 3-degree taper. A simple one-piece hub is then attached with a large bolt screwing into the end of the shaft. This simple method is well tried and works."

In light of this excerpt from the EAA Engine, Vol. I, etc., I would like to look at this problem constructively from two directions. ,

First of all you do not have to relocate the VW thrust bearing to have a dependable experimental aircraft engine.

At the same time we must realize that there are restrictions to anyone who chooses not to relocate or change the bearing set up in the VW engine.

The main restriction is the prop hub's length. If you choose to use one of the tapered or untapered prop hubs which are available, you should keep it short to avoid over-loads caused by increased leverage of a too long prop hub.

Don't despair. The short hub works very well but cost a little in the streamlining area up front, Also Monnett and others offer prop extensions which bolt on with no internal engine changes required.

On the other hand, companies like Revmaster offer an excellent engine with internal modifications made for the use of an extended prop hub.

The other problem encountered might be called the "stretch problem." The crank in its stock set up is secured for thrust loads on the number one bearine which is the front bearing while it is in the car, but when used in the airplane, the number one bearing becomes the last bearing to receive thrust loads. While the prop pulls from the number four bearing point the crank encounters pull forces along its full length.

This is one of the reasons you should have your crank magnifluxed for cracks. At the same time this rear location of the thrust bearing in aircraft use will be no problem if the engine is assembled correctly with parts of known high quality.

QUESTIONS & ANSWERS

Q. Is anyone using fixed gear in their KR-1 or KR-2?
A. I have not seen any myself but there are some being built. As soon as someone sends in pictures or drawings, I'll put it in.
Q. What is your opinion on the Gillespie "Design Review"? Are the modifications desirable or not?
A. I asked Ken and Stu about this. They feel most of the mods suggested are unnecessary, particularly the reinforceing of the horizontal and vertical stabilizer. I do know of one builder that reinforced his rudder spar and then found he had no room for the elevator control horn. As I said in the last issue, "modif ications require careful thought.

**New Kr-1 price list inadvertently left off KR-1 shock mounts. They're still available....still $15.00.

LET'S MAKE A SPINNER

There is really no need for anyone to go out and pay $40.00 or $50.00 for a spinner. You can make one very easily yourself using the foam and dynel method. Below is a step by step procedure to use to build a foam spinner for your aircraft.

1. Determine the size spinner you want. Usually the larger spinners are better (aero-dynamically). Mine is 9¼" in diameter and 11" in length.
2. Cut a disc from .090 aluminum same size as large diameter of spinner. Be sure this disc is perfectly round.
3. Cut a disc from 3/32" A/C mahogany plywood same size as aluminum disc, lay out this disc in 60° sections to locate mounting blocks.
4. Epoxy ¼" x 1½" x 1½" spruce blocks 4 places to the 3/32" plywood. Be sure these blocks are evenly sized and spaced to avoid any balance problems. The new three blade props will need only three blocks.
5. Match the plywood disc to the aluminum disc and bolt them together thru the center. Mark the two discs so you will be able to assemble them in this same position later.
6. Drill the wood blocks with a 3/16" hole thru both discs. Then separate the discs and enlarge the holes in the wood disc to install 10-32 tee nuts in the wood block side.
7. Drill ¼" hole in the center of the aluminum disc and use a ¼" bolt for an arbor. You'll probably need oversize washers to help keep everything square.
8. Cut a 2" hole in center of the plywood disc.
9. Put a sheet of wax paper between the wood and aluminum disc and assemble them together with 3/16" bolts in the tee nuts.
10. Now you have. the backbone of your spinner complete and you're ready to epoxy the foam in place. Use 2" or thicker foam to eliminate as many glue lines as possible.
11. After the epoxy has cured, chuck the whole assy. in a drill press and sand the spinner to desired shape.
12. Remove the aluminum disc and cover the spinner with a layer of dynel/epoxy. Keep laps in fabric opposite each other for balance. Cure, sand smooth and put another layer of dynel/epoxy on the spinner. Only one layer is necessary over the plywood. Be sure to keep tee nut threads free of epoxy, Small pieces of tape over each end does the trick.
13. Cure at least 24 hrs., then re-attach the aluminum disc and make sure the spinner runs true in the drill press. A slight wobble can be corrected by sanding or shimming between the plywood and aluminum disc.
14. Remove aluminum back plate, center the spinner on your propeller, and carefully remove whatever material necessary for a good fit around the blades. Now remove foam from inside of the spinner, evenly to keep everything balanced. Leave about ½" to 1" foam layer inside.
15. Cover the inside of the spinner with one layer of dynel/epoxy.
16. Fit aluminum back plate to your propeller hub and drill all necessary bolt holes. Be sure the prop, spinner, and back plate all line up.

Your spinner is now complete and ready to install on your aircraft.

This should give you some idea of how your spinner should look.

Ernest Koppe
6141 Choctaw Dr.
Westminster, CA 92683
Issue #10

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KR-1 KR-2
N E W S L E T T E R

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Issue #11 May 1976

I'm sure all EAA members have received their copy of Sport Aviation (April) and have read the article on the Turbo KR-2. The pictures and performance figures are enough to make your mouth water, aren't they?

Ken is testing his new 3-blade prop on the KR-1. Static tests are complete and very satisfactory. Flight tests are under way and as of this writing, Ken had accumulated four hrs. in the air. For those of you who haven't heard, Ken is going to market the ground adjustable, plastic/fiberglass prop as soon as flight tests are complete. Price is $195.00.

The metal spinner on the KR-1 is another new item being marketed at Rand/Robinson (see photo page). The spinner is 9½" x 11" without the cut-out so you can fit it to your own prop. Spinner and backplate are only $25.00. If Ken had ordered these spinners a little sooner, I wouldn't have had to make my foam one. Oh well, I'll need a new spinner when I get one of those 3-blade props anyway.

TIPS FROM OTHER BUILDERS

When installing rudder and elevator hinges attach the smaller half on the stationary spar. Much easier to foam and makes a nice looking hinge. I noticed Fred Kellar's KR-1 had the hinges installed in this manner and I haven't seen a better looking KR-1.

Found anything to get that epoxy off your hands? Try Joy dish soap ((before the epoxy hardens) works great on the Rand/Robinson epoxy.

Jim Reisinger sent in this tip. If you mix too much epoxy (and its "pot life" has not expired) put it in the freezer. He says he's used the epoxy as much as a week later and it was as good as new. Also, Jim reports, "for cleaning your epoxy brushes, use cold water, works better than any of the commonly used solvents."

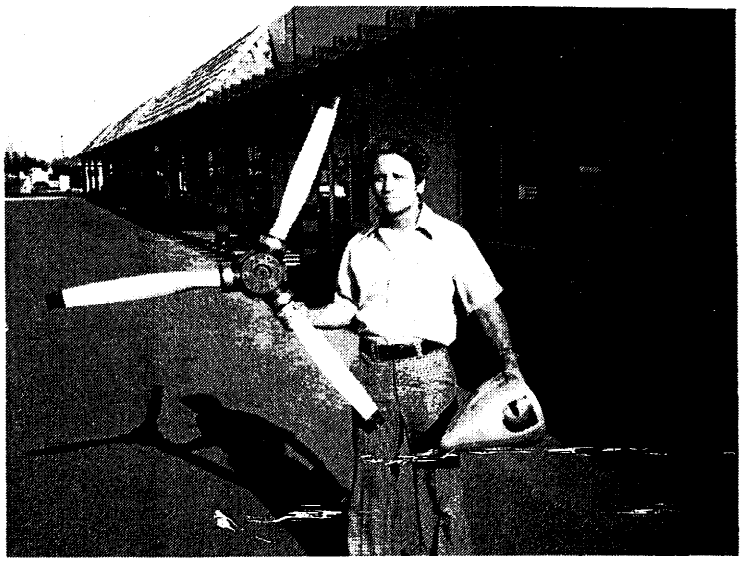
"Anyone using a used VW should check the case around the main bearing for fray and wear. The center main is often beat out. Not much but enough to cause problems. Get your case line bored and install oversize main bearing" . . . . . Ward Smith

"After making your hinges and other aluminum parts, use #200 wet/dry sand paper to smooth all file marks. Finish up with #400 for a mirror like finish. This may seem like a lot of work but these are the little extra touches the FAA inspector appreciate and readily sign off your work without hesitation" . . . . . Bruce Gilinsky.

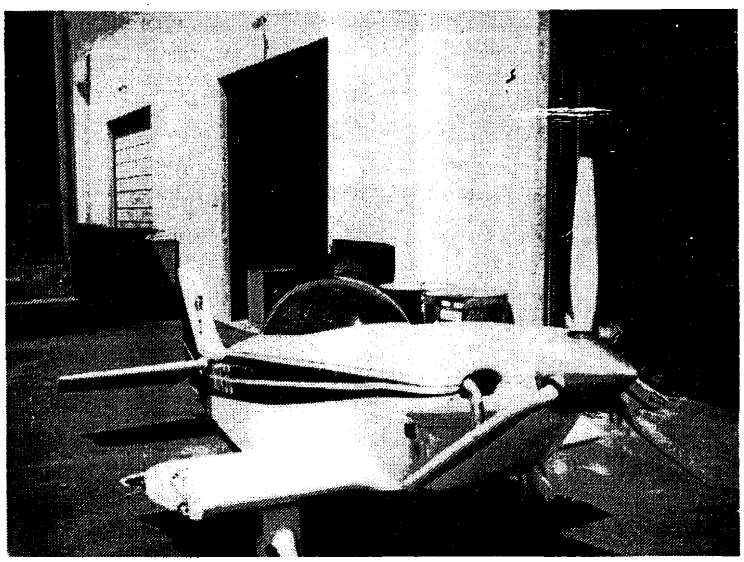
BITS AND PIECES....Jim Mottin of Long Beach, CA is building a ½ scale P-51. Basic structure is KR-1, power will be a Mazda rotary.....NOTE... on page 35, April Sport Aviation, it states "The FAA now requires that primary control systems use at least 1/8" cable." The FAA man in my area said the FAA has no such requirement for experimental aircraft and if your inspector says it does, have him show you where it's written. There are no "required" parts or materials for homebuilt aircraft.....The EAA Southwest Regional Fly-in is April 30th, May 1st and 2nd, at Corona, CA. Looking forward to meeting many KR-1 and KR-2 builders. See ya there!

PHOTO PAGE

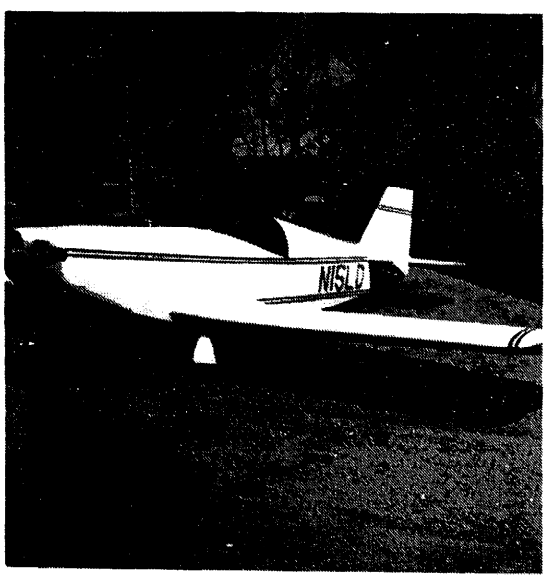
Top right photo is Ken Rand holding his newest development, the injection molded, ground adjustable, 3-blade prop. Also Ken is holding the new spinner he is now marketing.

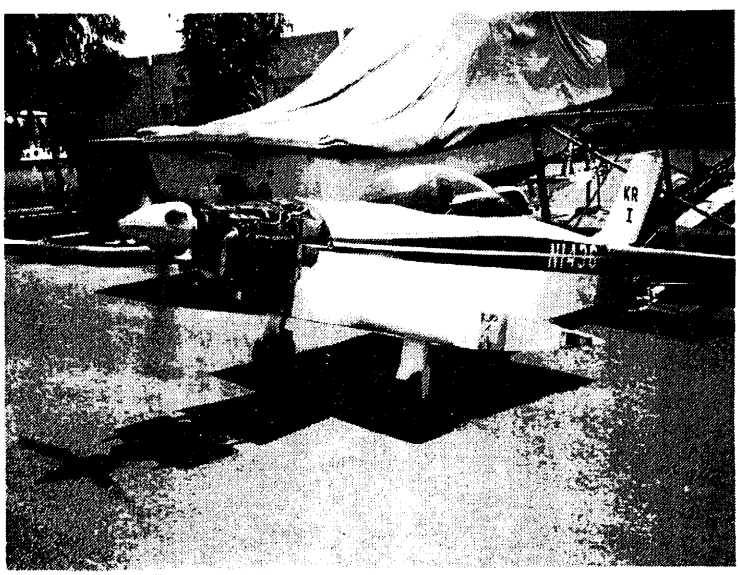


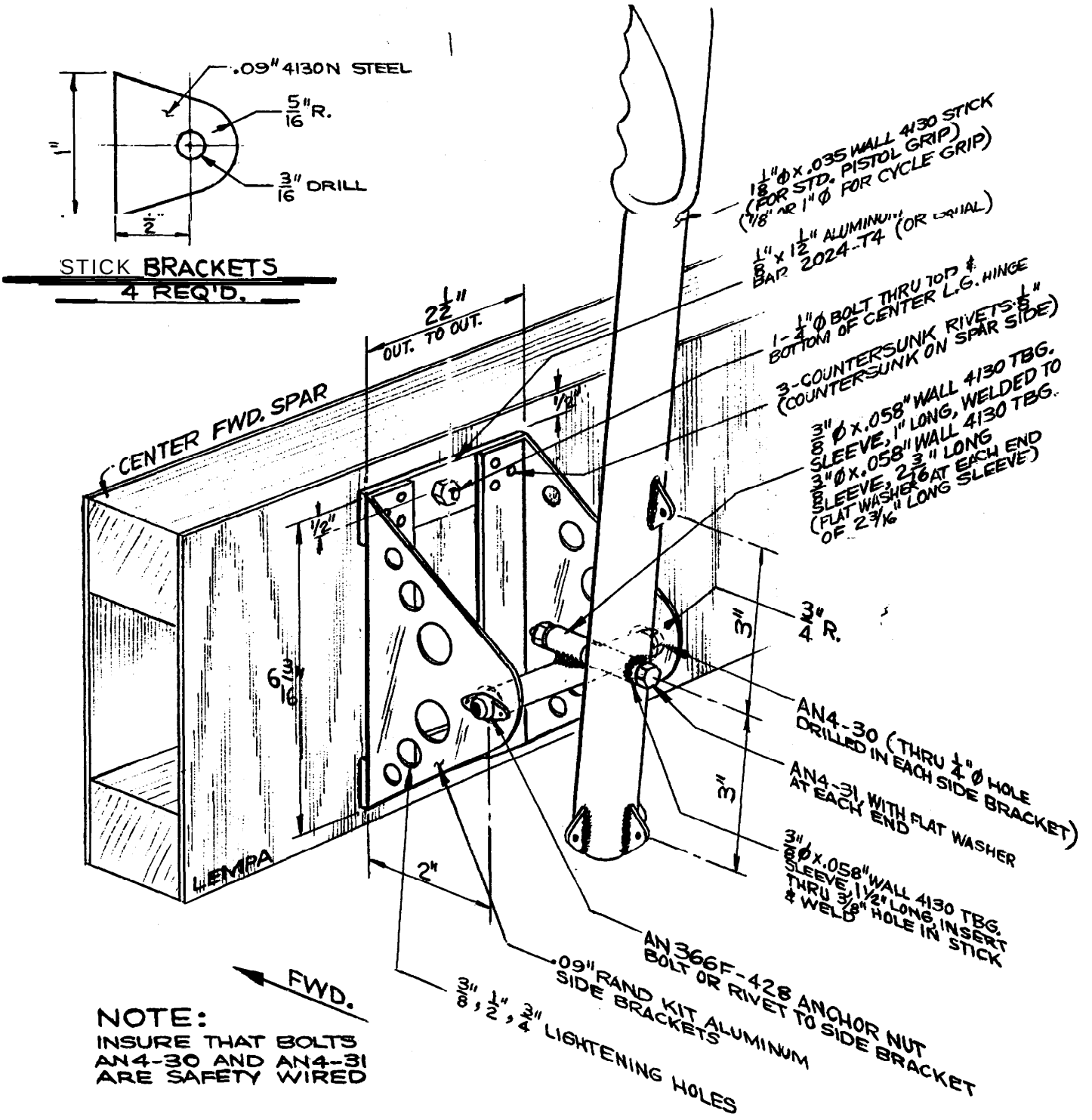
Middle and bottom right photos show the KR-1 with prop and spinner installed and being tested. Test results to date show no structure problems.



Leo Davison of Spearville, KS sent in this picture of his KR-2. Work was begun on N15LD in July of' 19'75 and after approx. 700 hrs. is 99% complete. It has not been flown yet and leo has promised more info after the test flight. Looks like the Wick:; KR-2 had a little influence on the paint scheme.



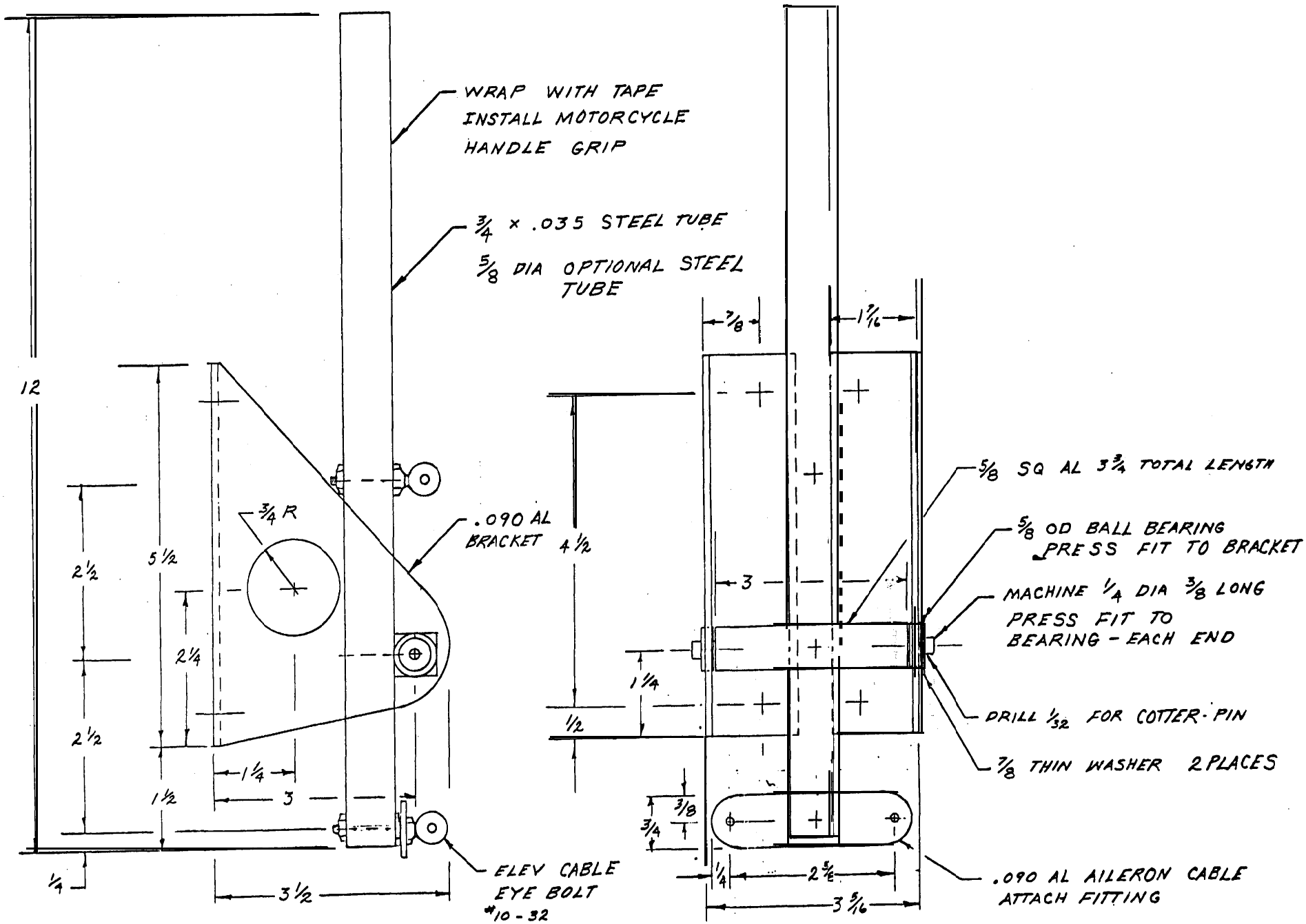




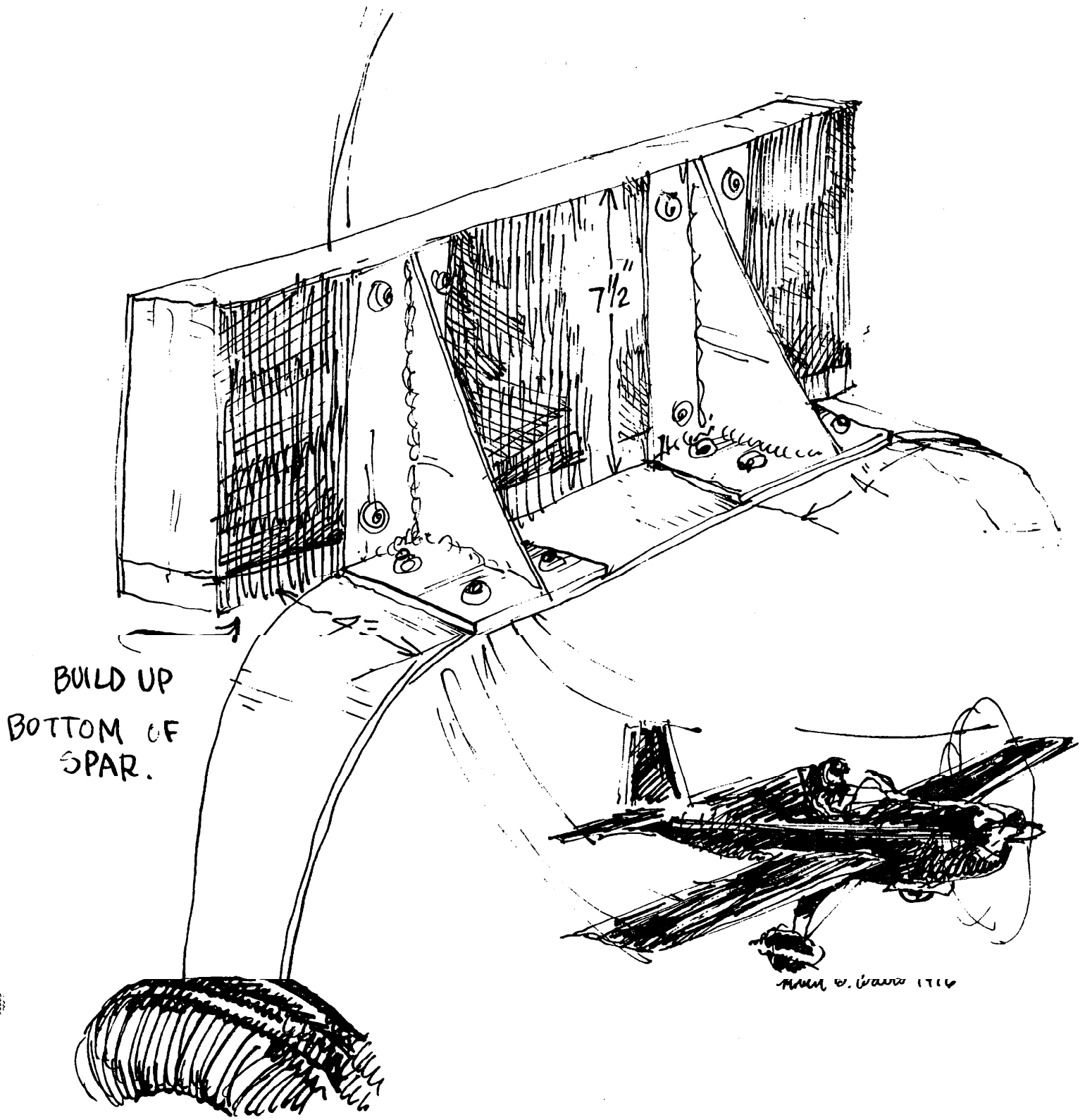
QUESTIONS & ANSWERS

Most of the questions I get are on the control system. One this page are two very good drawings of the control stick. This one requires welding to fabricate but looks like a nice stick assy'. Many thanks to B.J. Lempa for the drawing.

On the flip side of this page is a drawing from the new KR-1 plans I'm sure these drawings will help answer the many questions.. Notice the different measurements at the hinge'points, either is satisfactory but I prefer 3" on the aileron attach points and also for the hinge point.


WRAP WITH TAPE
INSTALL MOTORCYCLE
HANDLE GRIP
3/4 x .035 STEEL TUBE
5/8 DIA OPTIONAL STEEL
TUBE
12
3/4 R
.090 AL
BRACKET
5 1/2
2 1/2
2 1/4
2 1/2
1 1/2
1/4
1 1/4
3
3 1/2
ELEV CABLE
EYE BOLT
#10-32
7/8
1 7/16
4 1/2
3
1 1/4
1/2
3/8
3/4
1/4
2 5/8
3 5/16
5/8 SQ AL 3 3/4 TOTAL LENGTH
5/8 OD BALL BEARING
PRESS FIT TO BRACKET
MACHINE 1/4 DIA 3/8 LONG
PRESS FIT TO
BEARING - EACH END
DRILL 1/32 FOR COTTER-PIN
7/8 THIN WASHER 2 PLACES
.090 AL AILERON CABLE
ATTACH FITTING

Many builders are planning on having a fixed gear in their KRs They are not interested in speed so much as they are in just plain-fun flying. This drawing was given to me by Frank Walker of Whitter, CA who plans on using this gear in his KR-1. Frank is going to use a 36 hp VW and expects to really enjoy his KR in this Southern Calif. climate.



Survey

I hope most of you take time to answer these questions. I'm trying to get some idea of how many KR-1s and KR-2s are being constructed and estimated time of completion. (plus a few other odds and ends). You don't have to send in this questionaire. ..a separate sheet of paper will be fine. Results should be published in issue #13.

1. Are you building A KR-1 or KR-2?
2. How long has your project been under construction?
3. What is your source of parts and materials?
4. Are you making major or minor modifications to your KR?
5. Are you building the engine yourself or buying one already converted?
6. What brand, type, displacement or hp is your engine? i.e. Revmaster 2100, Barker 1700, Cont 65 etc.
7. Estimated completion date.
8. What would you like to see more of in the newsletter? Tips-drawing:+ pictures-questions and answers or something else?
9. Would you like to see newsletters devoted to one subject or do you prefer the mixture of ideas, etc.?

I think that about covers it. Any other thoughts or suggestions are welcome. Looking forward to hearing from you.

Ernest Koppe

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Issue #11

Subscription Rates
6 mo. @ $2.50
1 yr. @ $4.50
Back issues-50¢ ea.

KR-1 KR-2
N E W S L E T T E R

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Issue #12 June 1976

Issue #12...it doesn't seem possible a whole year has slipped by since I started this thing. The newsletter has really kept me busy from month to month and the year just seemed to evaporate! Well, it wasn't wasted, just looking thru the back-issues is proof of that. The builders that contribute drawings, notes, ideas & questions have been deeply appreciated. I am confident the new builders and new subscribers will have new ideas to share with the rest of us.

The next twelve months should increase the finished and flying KR total by 250 to 300 aircraft.. and I think that it is a conservative estimate. From the letters received, I get the impression about half that number would be flying now except for the time spent in modifications. There ought to be some interesting KRs showing up at airports this summer. ,

Lynn Morelock of Greenville, TN reports there is a finished KR-1 in Kingsport, TN belonging to James Summers. First flight has not been made yet.

Jim Warkentin of Santa Ana, CA was at the Corona E.A.A. fly-in with his just completed KR-2. Jim did an excellent job on the 2, which, by the way, is for sale. It has a Revmaster 2100 and basic flight instruments. I asked Jim why he was selling his pretty little bird...."so I can start building again" ..was his answer. If you are interested or know of someone who is ...price is $5000.00. You can write to Jim at P.O. Box 10996 Santa Ana, CA 92711. Phone number is 714-541-3484.

Ken Rand is going to be in and around northern Calif. with the KR-2 this month, Merced. ..June 5 & 6---Porterville...June 11,12, & 13---Santa Rosa...19 & 20---Hollister...July 9 & 10. If you builders in that area want a look at the turbo KR-2, you have several opportunities coming up so take advantage of one or two of them.

BITS & PIECES.....Issue #4 and #8 had co-ordinates for the RAF airfoil. If your KR-1 or KR-2 plans had the 48" rib in 3 sections you should use the co-ordinates to draw a full size template as the trailing edge section of the 3-piece rib is out of line. Bill Lee has been sending full size tracings to anyone sending him a large SASE (two 13¢ stamps). Bill does not charge for this service, he is just one of the "good guys" you meet every now and then. You can write to him at 114 Indian Ave. Tavernier, FL 33070. . . . . .Neal Sult is looking for KR builders in Hawaii. If you know of someone or maybe you might be in his neighborhood sometime, drop him a line at 94-341 Ulukoa St. Mililani Town, Hawaii 96789.....Something new from Rand/Robinson again. They have been trying a new product with such success they are going to market it. Duroc Featherfill is the item, a polyester filler/primer that is thin enough to spray on large surfaces. Cure time is approx. 45 minutes and then it's ready to sand. Fine sandpaper leaves a very smooth surface without the mess of wet sanding. Price for the Featherfill & catylyst is $6.00 a Qt. from Rand/Robinson... For all builders wanting info on a sliding canopy arrangement, Ray Ellis has one worked out for his KR-1. I saw a picture of it in Ken's shop & it looks good. Ray is willing to give details to interested builders so contact him at 2416 East Douglas Des Moines, Iowa 50317 or phone 515-265-3007....Just talked on the phone to Tom Speakman in Portland, Ore. Tom has devised a simple effective dive brake for his KR-2 and it is working great.

QUESTIONS & ANSWERS

Q. Are spars tapered with all taper cut off the same side?
A. Check the grain direction in your spar material. If you can take advantage of longer grain by cutting more wood off one side, do so,
Q. Will the R/R tubular engine mount fit the back of the W engine without the rear casting as used on the Revmaster, Monnet, etc., conversions? If so, how does the magneto mount?
A. The R/R engine mount fits the existing VW mounting holes and these are the ones Ken is using on the KR-2.
Q. Where does cooling air exit from the cowl?
A. Usually from the bottom and around the exhaust pipes.
Q. Why doesn't Ken use his new 3-blade prop on the turbo KR-2?
A. He is waiting until all testing is complete. By the time you read this, it will probably be installed.
Q. What type of paint is recommended for the KRs?
A. Ken uses an acrylic enamel auto finish on the entire *aircraft. The plywood should be sealed before painting.

BUY-SELL-TRADE

SELL . ..KR-2 unused plans and back newsletters--$35.00. 84 yds. Dynel @ $1.50 per yd...T.L. Bachi 1595 South Ridge Dr. Marietta GA 30066

SELL . ..KR-2 fuselage 90% complete, plans, VW engine--$500.00. Contact Wm. Meyer 1630 Central Ave. Alton, ILL 62002 or phone 618-465-1181

SELL... KR-2 kits #3, 5, 8, 9, 10, 11, 12, 15, & 17...J.R. Heltzel at Route #2 Box 42D Edinburg, VA 22824

Due to the demand, Rand/Robinson has the following kit items for sale as separate pieces:

Spring Bar . . . . a.,,... .....$35.00

1" x 1" x 24" .....$ 4.00
Hinge-Bellcranks

1¼" x 1¼" x 7¼" ..... $ 2.00
Hinge Elev., Rudder, Tail

1½" x 1" x 389" ..... $ 6.00
Eng. channel mt. (KR-1)

1" x 4" x 36" (L) .....$ 8.00
Pulley brkts., Supports for aileron bellcranks, stick supports.

Piano hinges 3' .....$ 3.00
Canopy hinge, aileron hinge

5" (I) Section ..... $ 3.00
Landing gear assembly on spring bar

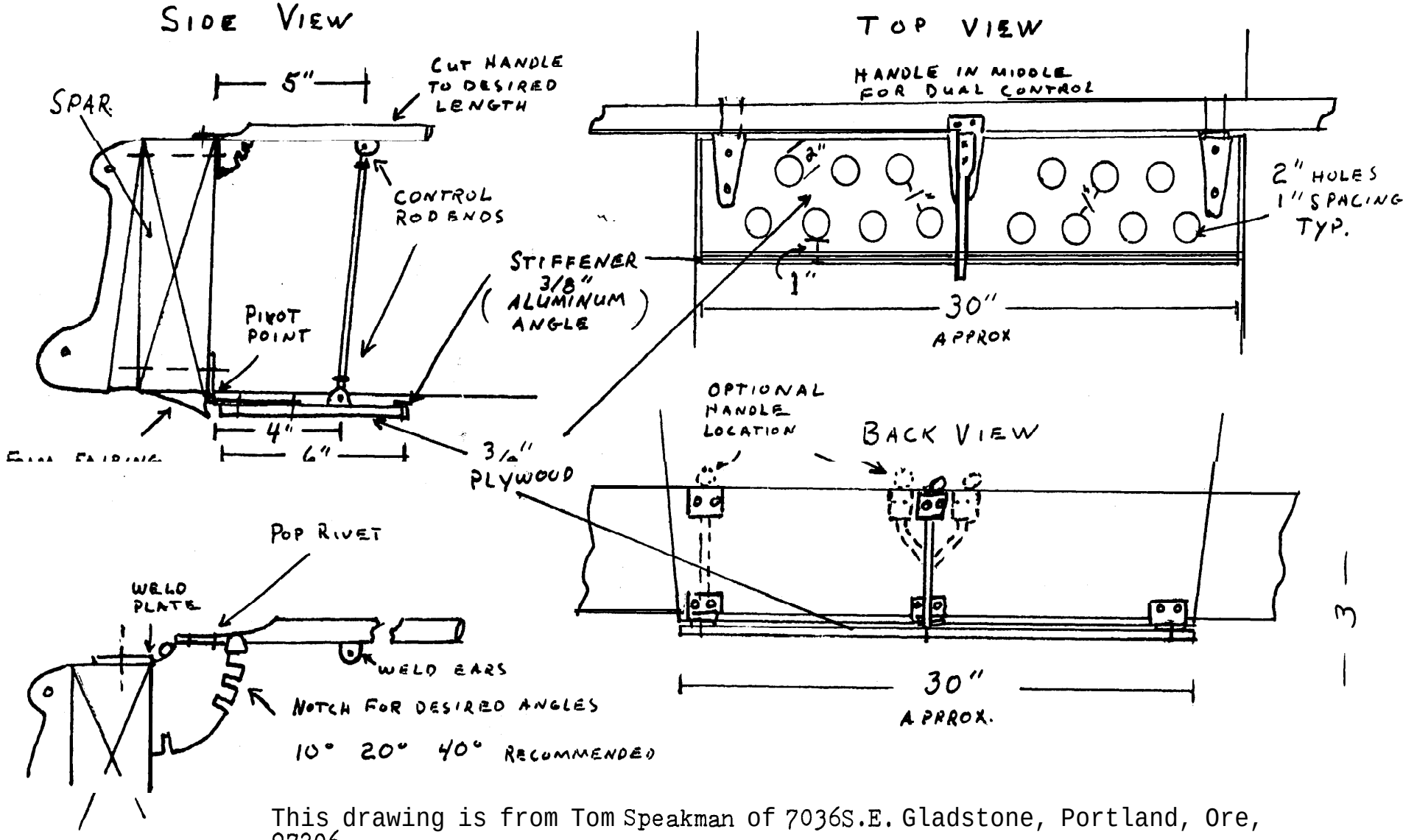
1" x 2" x 16" (Box).....$ 4.00
Aileron bellcranks, gear retract handle

1" x ½" x 16" (solid bar) .....$ 2.00
Gear latch bar

Gear lag casting, ea. $35.00

Small hinge casting, ea. ..... $ 2.00

Large hinge casting, ea. .....$ 6.00



This drawing is from Tom Speakman of 7036 S.E. Gladstone, Portland, Ore, 97206.

The center lock and handle is a folding table leg hinge with lock, It is called "E Z Hinge" and is from Ardor Mfg. Co. This along with the three 5" hinges are available at most hardware stores. If you can't locate the foldinghinge, contact Tom, he has eight of them @ $1.50 ea. post paid.

P.S. Tom (6'1" 225 lbs.) has worked out an offset seating arrangement for his KR-2. If you're interested, drop him a line. (SASE helpful)

A recent issue of Air Progress (May 1976) had an article on the use of foam in the construction of homebuilt aircraft. It wasn't very complimentary to Ken Rand but it did give him credit for being the first to use this construction method.

Their main argument was against the use of foam ribs to carry skin loads to the spars. The prototype KR-1 has been flying approx. 300 hrs. now and has never shown any weakness in this area. Since the article appeared however, there has been several builders with questions regarding the construction and safety of the wings. To these builders I am suggesting this modification. It's quick, easy and adds considerable strength without a weight penalty.

Just install the foam ribs in the wings as outlined in your plans but use half thickness. After installation of the ribs, sand to airfoil shape using a long sanding board between the plywood ribs. This will give you the exact shape of the ribs. Use one layer of Dynel/epoxy on each side of the ribs with a 2" overlap against the spars. It would also strengthen things more to put a layer of Dynel/epoxy on the top and bottom of the rib to tie everything together. When your wing is complete you will have several box compartments distributing loads through-out the wing.

If you plan on wing tanks forget about these modifications. The wing tanks increase the strength of the wings much more than the simple method above, but also adds weight.

Ernest Koppe

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6141 Choctaw Dr.
Westminster, CA 92683
Issue #12

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KR-1 KR-2 NEWSLETTER

Ernest Koppe
6141 Choctaw Dr.
Westminster, CA 92683
Ph. 714-897-2677

Issue #13 July 1976

This last month's mail has really been interesting. The response to the survey was very good and provided some significant information...item #7 in particular. If the percentages can be applied to the total number of newsletter subscribers (600+) there will be 210 (35%) more KRs flying by the end of this year, an additional 300 (50%) by the end of next year. The other 15% either has not started construction yet, or had no definite completion date in mind. Now, to carry this a little further, apply the same percentages to the 8500 sets of KR plans delivered.....wishful thinking of course.

SURVEY RESULTS.....On the back page of issue #11 was a short questionaire designed to get a better idea of what you guys are doing. The results are in and the figures below are based on a total of 87 replies. Some letters were from groups building more than one KR so the totals might not always add up but they do indicate what is happening.

(1) 61 KR-2s and 24 KR-1s (2 Taylor Monoplanes)
(2) Building time to date has been evenly divided thru the last 1½ yrs. with the exception of 3 KR-2s (2-2½ yrs) and 5 KR-1s (2-3 yrs).
(3) The list of materials sources is as-long as the list of builders. 90% of the builders listed Rand/Robinson as the major source of parts and supplies with scrounging bringing up a close second. Wicks Organ and Aircraft Spruce & Specialty were next, evenly divided at 15% of the total each.
(4) Only 10% of the builders are planning on no modifications. 80% are making minor mods. These range from wing tanks to speed brakes and sliding canopies to dual controls. Another 10% is really making some changes...tricycle gear, extended fuselage, longer wings, different airfoil, shorter wings and the list goes on. (One item that some builders listed as a minor modification was the enlarging of the tail surfaces by 10% or more. This is not a minor modification. The horizontal and vertical tail is plenty effective as is. Changing it may not bring the expected results.)
(5&6) The VW engine modified to 1834cc by the builders themselves accounted for 30% of the engines being used. 25% reported they had notdecided yet. 10% went to the Revmaster engines, mostly the 2100. The remaining 35% are really varied.... 1200 to 1700 VW, Corvair, Porshe, Continentals 35-65-75-80, Lyc O-145 (65 hp) Barker, Monnet, Limbach and at least one rotary engine.
(7) Completion date... 35% will be ready to fly this year, 50% next year and the remaining 15% aren't sure.
(8&9) Almost all replies preferred the newsletter to continue the present format. I would like to include more photos but I don't get very many that will reproduce well enough to show good detail. Those builders that have-sent drawings are really appreciated. I know the time and effort it takes to get your ideas down on paper. Several drawings sent in can't be printed as received. Not enough margin is the most troublesome factor. The printer says he needs a ½" margin on all 4 sides of an 8½ x 11 or 11 x 17 drawing, the drawing should be in black ink, pictures should be black and white. Many builders want an accident and safety column. I am willing to print any <u>first hand</u> accident reports and any thing that will relate to the safe operation of these fantastic foam aircraft.

Many builders have run into the problems establishing the dihedral, the angle of incidence and the washout to be built into the wings of their KRs. Below is a summarized and (hopefully) easy to understand method to arrive at the correct wind shape,

When you have reached the stage of construction where you are ready to build the outer wings, the center section should be complete. If you followed the directions in the plans, the center section spars are resting on the bottom fuselage longerons. This will give you an angle of incidence Of approx. 4½°. Verify this angle by leveling the fuselage on all axis and then check the chord of the root rib with a level and protractor. You will get a reading of 4° to 5° depending on your fore and aft leveling points in the fuselage. Once you have the fuselage leveled and incidence of the root rib established you are ready to get wing dihedral, On the KR aircraft this is 5" measured from the bottom of the fwd spar...(KR-1 drawing #2, back side--KR-2 drawing #10). Clamp the outer fwd spar in place and using one nail, install the tip rib so it can rotate using the nail as an axis. Use the level and protractor to set the tip rib at an angle 3° less than the root rib. This will give you the washout required for good stall characteristics. Clamp the tip rib in place and install the aft outer spar. (The 4130 steel attach fittings for the rear spar will have to be bent on a slight angle. Bend them before installing on the spar.) Complete spar and tip rib installation by rechecking all measurements, then permanently install attach fitting bolts and epoxy tip rib in place. Install the foam ribs (see NEWSLETTER #12) and complete wings per plans.

Unless you have more room than most builders you will be building one wing at a time. Just be sure one wing is the same as the other.

BITS & PIECES.....Elo Zinke of Lubbock, Texas reports his KR-1, N76EZ (eat your heart out, Burt) will be ready for FAA pre-flight this month... Tom Speakman of Portland, Oregon sent in pictures of his off-set seat. Says if there is enough interest he will send us a drawing. Expecting a flight report on Tom's KR-2 shortly..will get it in the newsletter first opportunity. . . . . ..Ray Ellis has a very nice sliding canopy on his KR-1, look for pictures and construction tips next issue.....Daryl Rogers 1856 W. Kentucky Ave. Denver, Colo. 80223 has nearly finished a turbo KR-2. Daryl has made the entire fuselage turtle deck see-thru. No visibility problems here . . . . .One of the builders reportes he purchased some pre-formed foam leading edge for his KR-2. He says it was OK but more work fitting them than building from scratch.,,,,,, .Next month's newsletter should be early. Going to leave for Oshkosh on the 24th and will try to have the newsletter in the mail before leaving.

FOR SALE: 36 hp VW converted. Crank tapered 3°, all new parts. STEVE BENNETT 2819½ 48th Des Moines, IA 50310 or ph. 255-2544

* * *

The engine mount drawing on page 3 was sent by Odran Benson. Included was the following notes.

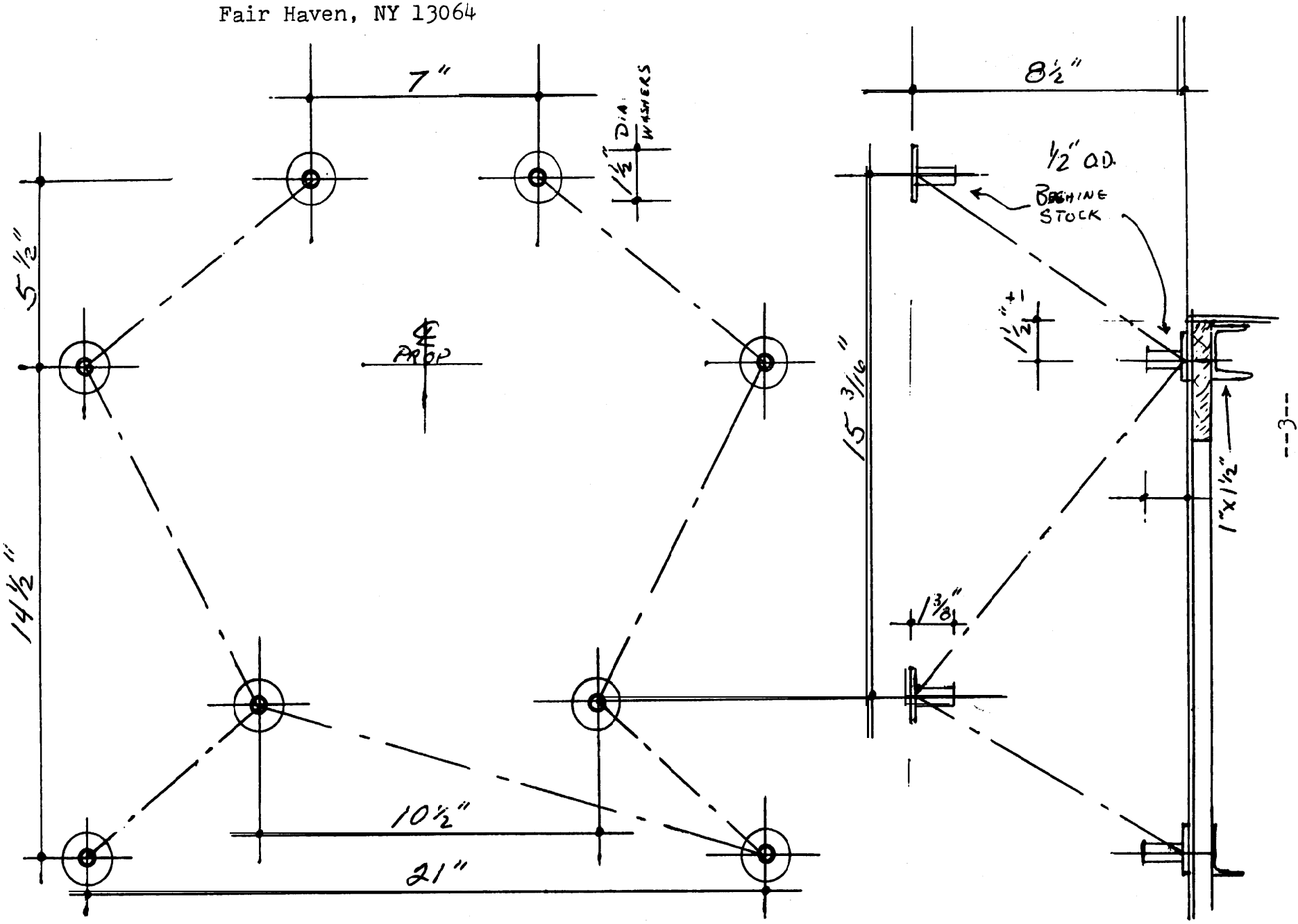
Materials : 12" x 5/8" x .049 4130 tubing, 8 washers 3/8" x 1½" O.D.
18" x ½" O.D. bushing stock (ream to 3/8" I.D.)

Construction: Make 2" x 2" x 3/4" plywood jig (two pieces) with 8½" spacers. Mark and drill 3/8" bolt holes for fuselage mounting on one piece and engine mounting holdes on the other., Bolt washers and bushing stock in place, fit 5/8" tubing and weld.

Odran used the 1" x 1½" aluminum channel from the Rand aluminum kit to reinforce the fire wall of his KR-2.

KR-2 ENGINE MOUNT for A-65/ A-75 Continental Engine

Drawn by Odran V. Benson
14602 Fancher Ave.
Fair Haven, NY 13064



QUESTIONS & ANSWERS

Q. What is the "washout" mentioned on pg. 36 of the KR-2 plans book?
A. Washout is the difference in angle of incidence of the 48" root rib and the 36" tip rib. In the case of the KR-1 and KR-2 this difference is 3°.
Q. What size bolts are used to attach the aileron hinge to the aileron spars and what is the spacing?
A. I used 10-32 machine screws on the KR-1. Spacing worked out best at every 4". KR-2 builders should be able to space theirs at 6".
Q. What are the power-off (dead-stick) characteristics of the KR-2?
A. The KR-2 with poer off descends 350-400 fpm and 65 ind. All controls remain very responsive.
Q. Is the center section finished (foam & dynel) before the outer wing or are they both covered together?
A. I found it easier to complete the center section and then do the outer wing.
Q. What type of hose is used for the fuel gauge?
A. A ¼" clear vinyl available at most auto parts stores.
Q. What is the angle of the seat back (wood) in relation to the rear spar?
A. Whatever is comfortable to the individual builder, usually 20° to 30°.

THREE BLADE PROP UPDATE from KEN RAND...testing of the prop ran into a snag last mont. The three KR-2s flight testing the props all had non-flying accidents. Bob Hancock's turbo 2100 powered KR jumped the chocks during a run-up at Long Beach, It went over on its' nose and wiped out the prop blades, Ken's own plane had a similar accident at Meadowlark while a cylinder compression check was being made. Again the blades were wiped out . The final. incident concerned Lt. Nat Godley's KR at Oceanside, CA. The N36119 ran off the runway and wiped out the blades. All this in one week! A thorough examination of the broken blades was made and result show that an ideal proportion of components has been reached. A production run of 100 props is planned June 30th and after a few more tests, they will be released to the many builders who have already placed their orders. For more info or to place an order, check with Rand/Robinson,

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Issue #13

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KR-1 KR-2 NEWSLETTER

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Issue #14 August 1976

The best laid plans etc., etc . . ..last month's newsletter run into a log jam at the print shop. Seems they were swamped with orders all at once. In any case, the printer still has #13 copy while this issue is being put together. Maybe I should have used a different number.,...

As promised in Issue #13, the photos from Ray Ellis are in this issue. Looks like Ray has done excellent work on his KR-1.

Drawings this month are on rudder pedal/dual stick assy and an offset throttle linkage for the very popular Posa injector. Verne Lietz sent the dual control drawing. It is one of a complete set of drawings and instructions Verne will mail for $1.25. His address is Box 234, Peshastin, WA 98847. The throttle linkage was worked up by Bob Stone. The idea was to put the throttle on the left side of the fuselage so the man in the left seat wasn't reaching across his body or removing his hand from the control stick to use it. Initial run-ups of the engine was made this week and it worked very nicely.

The tests of the three-blade prop has revealed an unsuspected flaw in the combination of materials, One blade of a prop being run under constant load at high rpm failed from internally generated heat. Another test was run with different blades with the same result. This effect has been investigated by the plastics engineers involved since the developement of the prop began. They feel different materials will solve the problem. Unfortunately this means another lengthly series of tests and another delay. In the interim, wood blades are being manufactured. These blades will have fiberglass (maybe Kevlar) covered tips and will fit the existing three blade hub. Performance will be equal to the plastic blades. In spite of higher costs, the props will be delivered for $190.00 as originally announced.

Ken Rand and Stu Robinson with the KR-1 and KR-2 will be at Oshkosh this year. The KR-3 will not be completed in time and will not make its' debut there. I am going to bring my family and will stay at the EAA camp grounds. Looking forward to seeing several friends met thru this newsletter.

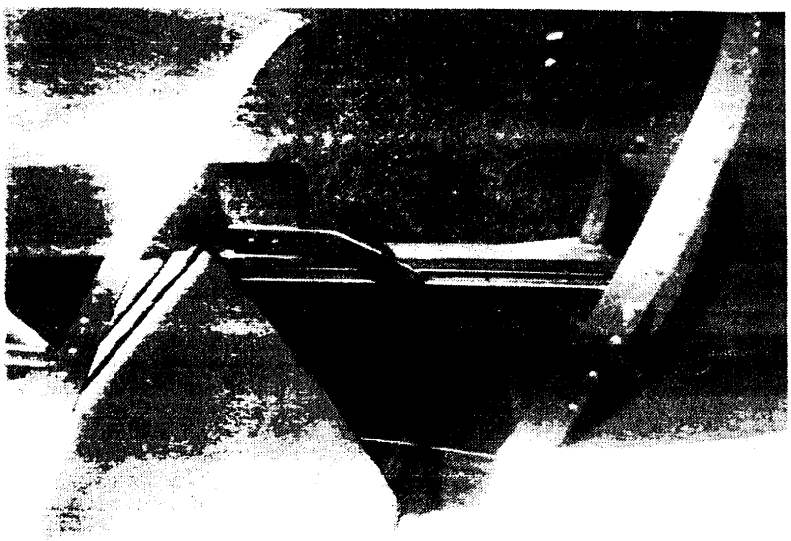
Bought me a C.B. radio just for this trip and expect to hear from other builders along the way. Last year I expected to bring my KR-1 to Oshkosh "76", however this newsletter has taken over as #1 project, Maybe next year.....,...

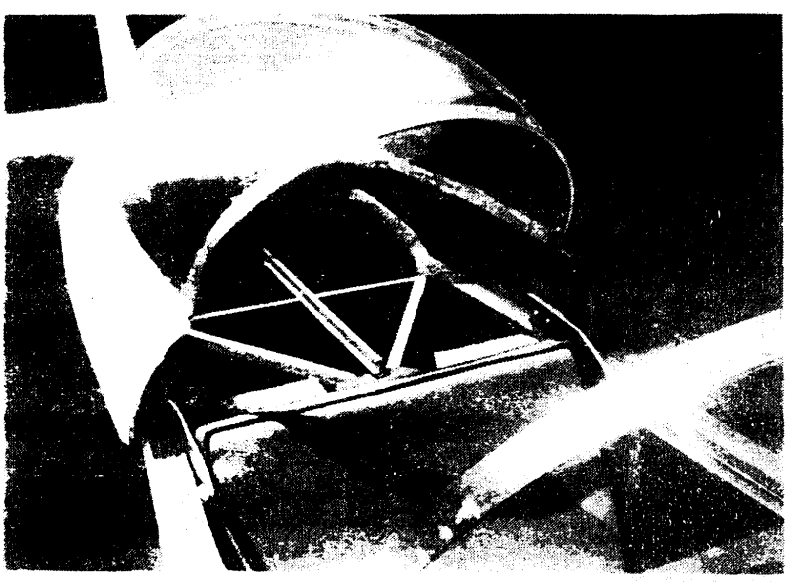
Hey, East Coast!!!

Ken is planning on a cross-country in your direction this Sept. He will fly from California to Connecticut. Itinerary will be: Goodspeed Airport, East Haddam, Conn. Sept. 12, EAA Chapter 543 Fly-in at Georgetown, S.C. Sept. 17-19, EAA Fly-in at Shenandoah Valley airport, Harrisonburg, VA Sept. 24-26.

Next issue will have a report on any new KR aircraft that shows up at Oshkosh this year plus tips gathered from builders there.

See ya' at Oshkosh!!!





Here are three photos of the sliding canopy on Ray Ellis' KR-1.

Construction: Form the entire foam portion of the fuselage above the top longeron and fair it to the bubble. Cove the foam with wax paper or poly sheet and lay up the skra using three layers outside ad one inside. The dynel shoul overlap the bubble 3/4".

Stop the skirt at the point where the canopy and wind-screen will part. Allow a 2 overlap over the rear deck.

After cure, cut the bubble ad epoxy the windscreen in plac.

The metal dividers are made from aluminum extrusions use between marlite or formica wl panels. They are "H" sectios turned bottom up. Trim one r more of the edges to make thm nest together and to accept rubber air seal. They are formed with a rubber mallet n a soft block of wood.

The tracks are single drawer tracks and are purchased frc local hardware stores. The arms are made from .125 alum, the rollers come with the drawer tracks.

The rear track is raised slihtly to prevent the skirt from rubing during opening and closing.

The shelf in the rear half c the bubble is $\frac{1}{2}$" foam sand-wiched between 3/32" plywood and serves as a place to mou the rear track roller.

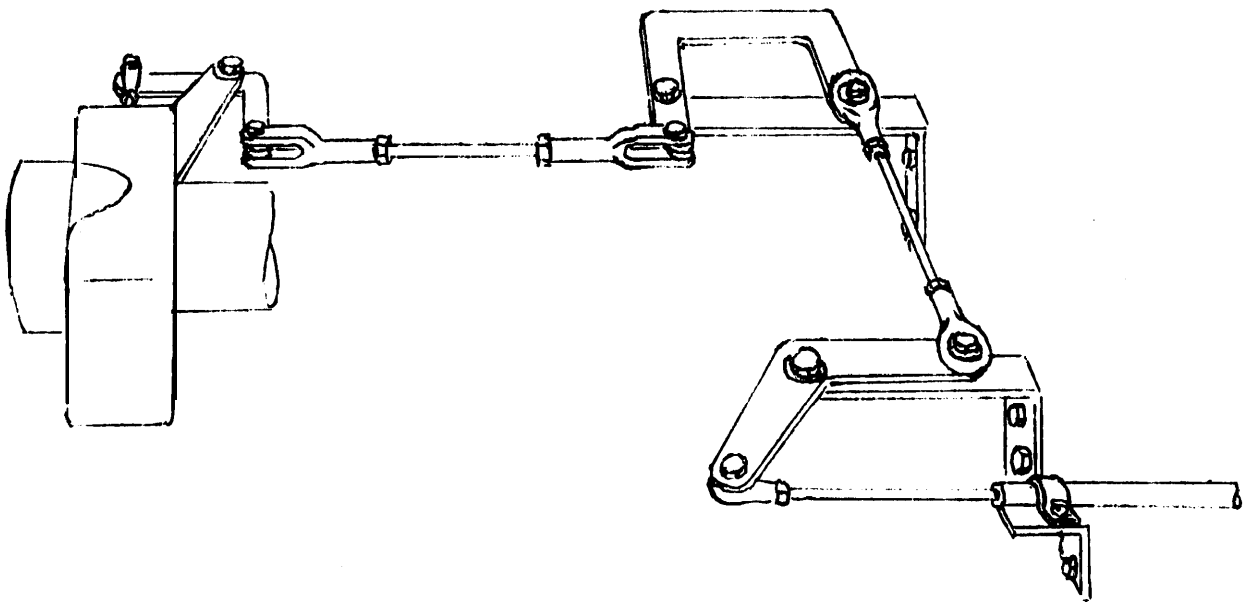
This arrangement leaves all tracks inside the canopy, ou of sight and out of the weater.

Ed. Note: Ray said he had r-prints of these photos made has a few left. His cost wa 25¢ ea. & he will mail them or same. There are four photos Write to: Ray Ellis 2416 Est Douglas, Des Moines, IA 5037

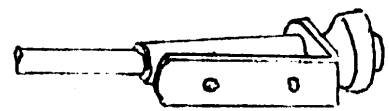
KR-2 THROT'J'LE LINKAGE

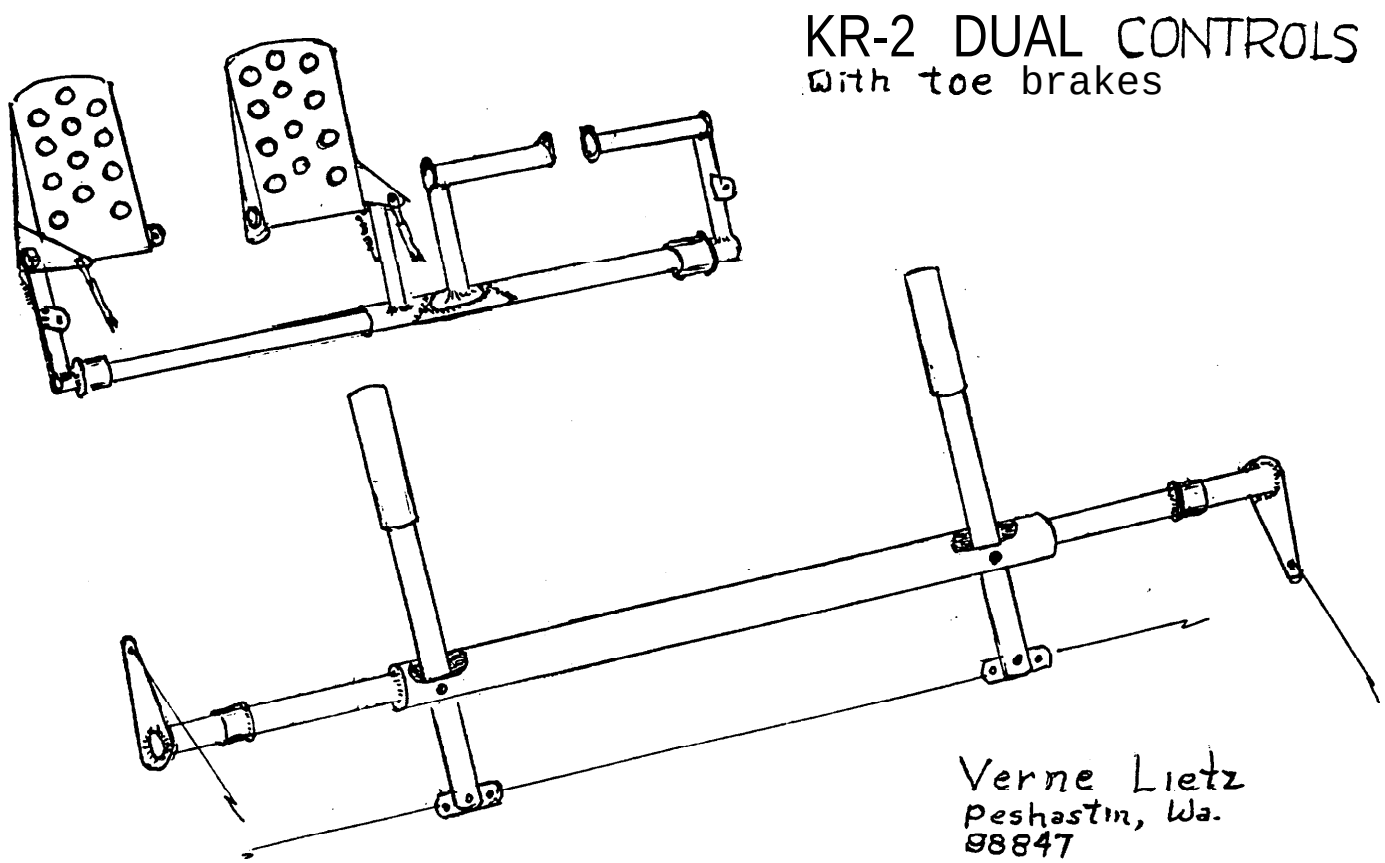
by Bob Stone

Since Ernest (Butch) Koppe and I are personal friends and partners on a KR-2 project, he asked me to furnish some information on the throttle assy that I designed and installed on our aircraft. (See drawing) The hardware is 3/16bolts with washers and castellated nuts with cotter pins. Since this is in a very important part of the control system, positive locking type hardware must be used. The bellcranks are made of (20-24 T-6) 1/8" aluminum. The push rod is aluminum with ¼" x 3/16"self aligning rod end bearings. Care must be taken to insure that all holes drilled in the bellcranks are the saem distance apart, otherwise the geometric ratio will not be the same between the throttle control in the cockpit and the connecting point on the injector, The odd shape of the inboard bellcrank is so that it will fit and work around the engine mount. The advantage to this type installation is no cable bends at all. Mechanicallever-age is shifted from firewall side to firewall center, through this linkage in a smooth manner. We could not mount the throttle in the instrument panel because it would have been awkward to reach with the left hand and also the gas tank was in the way thus the necessity for a throttle linkage system.



DRAWING
by
BUZZERMEY





TIPS FROM OTHER BUILDERS

I have two gallons of epoxy (from Wicks) which is now a year old. Cross linking has already begun making it unsuitable for use. I understand all resins do this over a period of time. Perhaps, a word of warning to other builders about buying epoxy too soon before its' use. Might save some bucks . . . . .Greg Van Erem.

Tips on foam construction from first had experience. (1) A hot melt glue gun is terrific for sticking foam together. Cost approx. $15.00 anywhere. (2) Forget wax paper, Mylar 4 mil. is better. Leaves a finish like glass. (3) Sanding is out! Scraping is the thing! A good quality hardened steel paint scraper of the curved blade variety is best, preferably 1 3/4" wide.....Bob Briggs Ontario, Canada

Dick Johnson of San Antonio, Texas reports he built a control stick per B.J. Lempa's drawing in Issue #11. He ran into a problem with the elevator cables in that they would lock in full up or down position. Problem was determined to be caused by pivot point of the stick cable attach points not being in line.

All plans and drawings I have seen show the use of a standard pulley bolt to hold the prop hub. The bolt used with VW air conditioning is 3/8" longer, giving more thread contact with the crankshaft. Much safer I think . . . . . .Frank Walker

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KR-1 KR-2
N E W S L E T T E R

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Issue #15 September 1976

I don't believe I've ever had as much trouble with the first page of the newsletter. Everytime I had a format laid out there would be something else that needed equal time and space. First on the agenda has to be a report on Ken Rand's accident. Hopefully, it will help end the many rumors circulating throughout the country.

As the builders that attended the EAA Convention already know, Ken Rand and the KR-1 didn't make the fly-in. One week previous to the annual happening Ken & the KR-1 were involved in a serious accident. The KR-1 had been painted to appear as a pilotless drone (RPV) for an episode of the new TV series "Spencer's Pilots" on CBS this fall. The bubble canopy had been painted (white outside, black inside) with a small clear area at the front. Also a large dummy antenna was bolted to the top of the canopy. The pilot had to wear a black cloth hood plus dark glasses to insure against inadvertently being seen thru the clear area of the canopy. Combine all these factors with a rough, unsurfaced landing strip bulldozed out just for the purpose to filming the TV show and you can see there possibly could be a few problems. There was.....on July 19, the day previous to the accident, Art Scholl, who was to do the aerobatic sequences, was wheel landing the KR-1 and had the gear retract when he applied brakes. The extremely rough dirt strip was working the landing gear enough to cause both latch handles to bounce off their catches. Damage was minor, being limited to the prop & bottom fuselage skin. (An earlier landing into this field by Ken was uneventful, however being shorter than Art, Ken's legs actually rest on the latch handles. Also he 3-pointed it on and didn't use brakes until almost stopped.) An hour later, Frank Tallman was about to fly Ken to R/R shop in a Cherokee Six to pick up a new prop and repair materials when the gremlins struck again. A final jolt to the left landing gear as the Cherokee was taking off was so violent that it raised a foot high bulge and about 10' of wrinkles in the top of the wing. The airplane would not climb over trees at the end of the runway so Frank made a steep left bank and flew between them. (Only passenger was Ken, so the Cherokee wasn't exactly overloaded.) An emergency landing was made at Fox field in Lancaster, CA and the trip resumed in another plane. July 20....repairs had been made to the KR-1, filming was to start with Ken doing some flying for the cameras & Art doing the fancy stuff later. Take-off was made with no problems as was the climb-out. Leveling off at around 130mph ind. produced so much vibration that during radio communications Ken said he thought the prop was coming off. Returning immediately to the field, Ken aimed the KR-1 between the trees and set up for a landing. Because of the painted canopy (the black hood probably didn't help) he didn't see one of the trees. The left wing contacted a 4" dia. tree about 40' alt. and 65 mph in a 15 degree left bank. The tree sheared off, taking about 2' of leading edge with it. The KR-1 side slipped right wing low, into the ground and disintegrated. Ken suffered a broken collar bone, concussion & back injury. At this writing he is recovering nicely & has returned to work at Rand/Robinson.

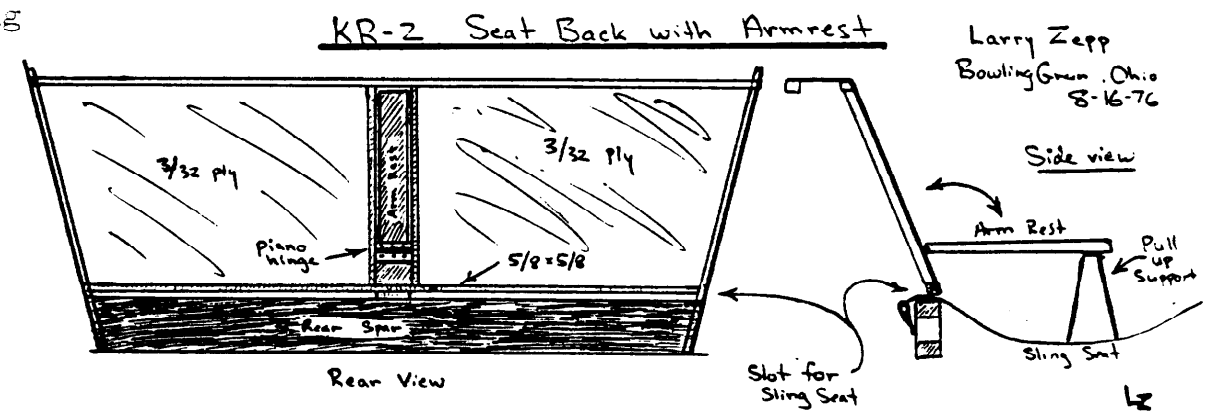
Subsequent investigation of the wreakage showed no indication of prop or engine malfunction. The vibration experienced by Ken had probably been caused by the dummy antenna attached to the canopy. Many parts of the KR-1 were salvageable and there are already more parts in the pile than came out of the wreck. An electic starter, for example, and since the engine exhaust pipes were bent & have to be replaced anyway...a turbocharger is under consideration.

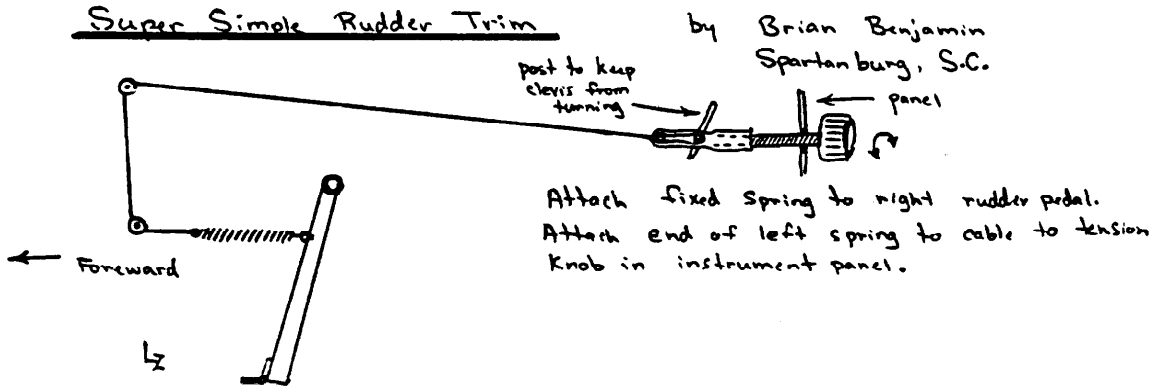
Q. Can wood surfaces which will have foam glued to them be treated with preservative and/or varnish?
A. Yes, just be sure to mask off any area which will later have dynel/epoxy skin contact.
Q. In what direction should the grain run on the outside belly plywood?
A. Fore and aft.
Q. I can't find Titan Polyfoam in my area. Are there substitutes?
A. Yes, most marine supply shops carry a two part liquid urethane foam. This is basically the same product and will have many different brand names.
Q. I've just heard about using epoxy as the bonding agent for the wood portion of the airframe. Is this acceptable?
A. I've personally used three different types of epoxy for the wood structures. I feel they were all superior to the powder mixture.
Q. Some builders are having trouble bending the fuselage sides together after the skin has been applied. Should the skin be glued on after the framework is bent to shape?
A. Either method will give satisfactory results. If you skin the sides first, bend them together slowly over a 24 to 48 hr. period. If you bend the framework first make sure you get proper glue/skin/frame contact.
Q. Where do I find plans for the KR-2 wet wing?
A. There are no actual plans. There are instructions in issue #5 of the newsletter and in the new KR-1 plans.
Q. I have heard that be laying a poly-ethylene sheet over resin/cloth while wet and then peeling it off when cured will give a smooth finish. Have you heard of anyone doing this?
A. Almost everything has been tried at one time or other. The problem with flexible material like poly-ethylene is it will not lay smooth over large surfaces. Best results have been obtained using 4 mil milar which is much stiffer and leaves a smooth surface with minimum sanding.
Q. Is it OK to use VW engine instruments in lieu of aircraft type?
A. Yes, electric or mechanical are satisfactory.
Q. Can I get Rand's 3-blade adjustable prop drilled for an A-40 prop flange?
A. Yes you can, but unless you plan on reversing engine rotation or using it in pusher configuration a la Varieze, the blades won't work. VW engine rotation is opposite to the continental. Rand/Robinson plans on marketing standard blades later this year as the KR-3 will be using them. (Pusher VW)
Q. Has anyone used a different form of wing attachment such as a spring loaded taper pin to faciliate quick wing removal?
A. Yes, but most builders are using bolts for a more positive system of fastening.
Q. How many turn buckles are used in a KR-2?
A. A minimum of 5, two for rudder, two for elevator and one for aileron. (same as for KR-1)
Q. Do you have any engineering data on the wing panel connections as to G values? (the 4130 steel and the bolts)
A. These fittings are by far the strongest part on the airframe. Computer stress analysis indicated they would withstand forces to 24Gs.
Q. How far forward are the axels located from the rear face of the spar?
A. From the rear face-5 7/8", fwd face-3 7/16". These measurements can be varied to allow an ideal weight of 5 lbs. at the tail wheel.(empty)

TIPS FROM OTHER BUILDERS

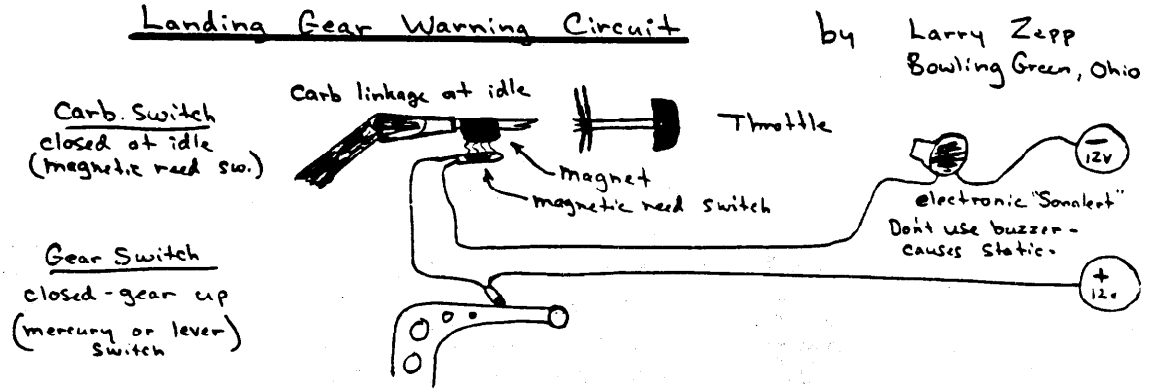
There are some builders who seem to devote their spare time looking for and thinking of new ideas to incorporate into their KRs. One such is Larry Zepp of Bowling Green, Ohio. Larry has been sending in tidbits and tips to the newsletter since Oshkosh '75. The drawings & tips on this page were sent in by him. I would like to take this space to thank him and all others like him. By sharing their ideas and general knowledge they are increasing the quality and quanity of not only KR aircraft but all of the sport aviation movement.

Special seating foam--forms to fit your bod. Modified poly-urethane foam developed for Apollo seats feels great & is available: Ask for info & samples TEMPER FOAM-Edmont-Wilson Co. Coshocton, OH 43812





Electric Trim Servos--RC servos made for landing gear retraction on aircraft models are ideal for electric trim. They have built in limit switches and static filter. A gas gauge sender and gauge can also be used as a trim position indicator. Servos are made by: WING MFG. CO Carl Goldberg Mfg. See your local hobby store.



COMING NEXT MONTH

More goodies from Larry Zepp plus new ideas on KR construction from Bob Briggs, a Canadian builder. Lookin' good!!!

OSHKOSH '76....Although the original KR-1 didn't make the fly-in, it was well represented by the four that did. George Andrew was back this year with his KR-1 P-51. (It's for sale, see the want ad section.) Another KR-51 made a short appearance but left before I could talk with the builder. Ray Ellis brought his KR-1 with the sliding canopy (see issue #14). The other KR-1 belonged to Bob O'Day who had made an effort to turn out a nice looking aircraft.

KR-2 builders must still be building as the only KR-2s in attendance were back from last year. The Rajay Turbo installation in the Rand/Robinson KR-2 attracted so much attention the cowling was on the ground more than it was on the airplane. Wicks Organ was displaying their "9 week specail". The dual sticks from last year are gone, replaced with a single center stick.

Stu Robinson was well received by the crowd of interested builders attending the KR forum. Questions brought out at the forum and during talks with builders around the display area are in this issue & should be of interest to all.

I want to say hello to all the builders I talked with at Oshkosh this year and a special thanx to all who helped bed down the KR-2 each night. Looking forward to next year, see y'all then.

BUY SELL TRADE

FREE....Brand new crank from a Super Beetle, various parts (cylinder, pistons, etc) plus one old partially disassembled VW engine. I'm willing to give them away--just come and get them--to anyone who feels that they can be useful. BOB GAULIN 82 East 2nd St. New York, NY 10003

SELL....KR-1 modified to P-51 configuration. 1700 cc VW, 4-blade prop, sliding canopy, 150 mph cruise. Colors-silver w/red & white checkerboard tail & wing tips. GEORGE ANDREW 5200 N. Lovers Ln. #4 Milwaukee, WI 53225 Ph. 414-463-5758

BUY.....Wanted---completed KR-2 with 1834 or 2100 cc engine. BOB COWART Rte. #3 Box 348 Harlingen, TX 78550

SELL....Fiberglass Cowling for KR-2. Weight 12 lbs, very strong. Firewall template & engine, baffle templates are included. $125.00 DAN DIEHL 4132 E. 72nd St. Tulsa, OK 74136 Ph. 918-492-5111

TRADE...Will trade good corvair engine for usable VW engine. C.S. GALLIAN P.O. Box 32 Huntington, WV 25706

Ernest Koppe
6141 Choctaw Dr.
Westminster, CA 92683
Issue #15

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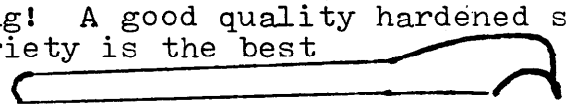
Issue #16 October 1976

A couple of issues back, I ran a drawing of Frank Walker's fixed gear KR-1. Since then I have received numerous letters wanting more details, measurements, etc. Frank has obliged with pictures & information so all interested builders can use it to their best advantage.

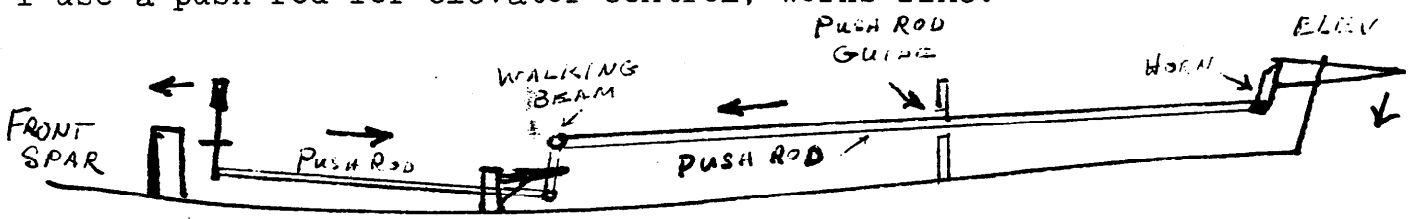
Seems there is always room for improvement even in a good idea. Larry Zepp has sent in modifications to Tom Speakman's speed brake that looks very good. Also, one of our Canadian builders, Bob Briggs, has sent in some interesting new methods in foam/epoxy/dynel construction. The following is from his letter.....

"Ernest, I think I can offer some very useful tips to other KR-2 builders which I'll list below.....

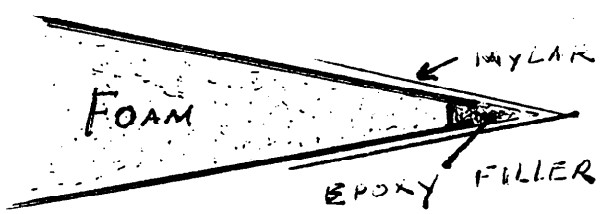
1. Forget about wax paper, it's obsolete! Mylar 4 mil is in! It works terrific & the finish is like glass.
2. Sanding is out! Scraping is the thing! A good quality hardened steel paint scraper of the curved blade variety is the best preferably 1 3/4" wide.



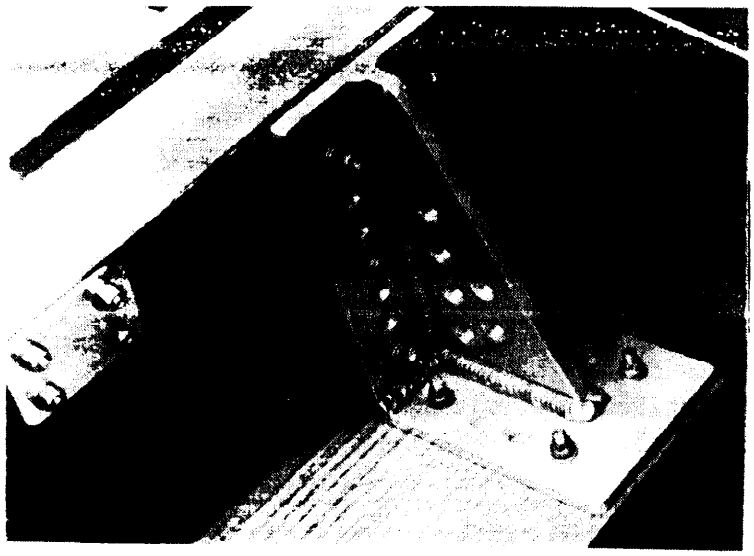
3. A hot melt glue gun is terrific for sticking foam together; cost approx. $15.00.
4. Wing tanks in center section can work fine & hold 4 imperial gals. ea. Also adds good bracing to wing, lots of support for wing walking.
5. I use a push rod for elevator control; works fine.

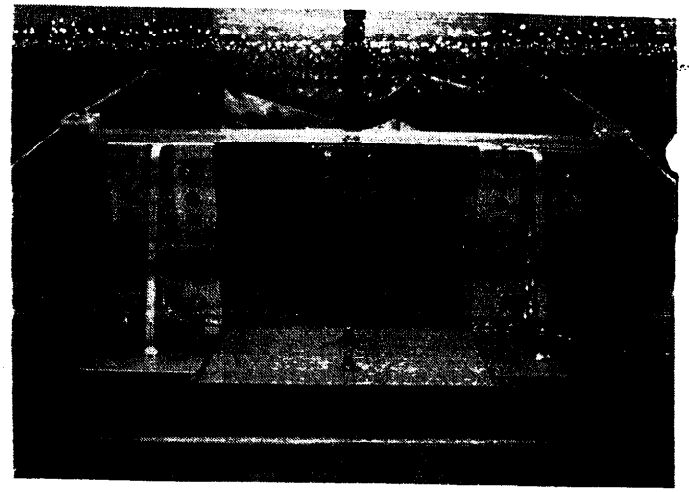


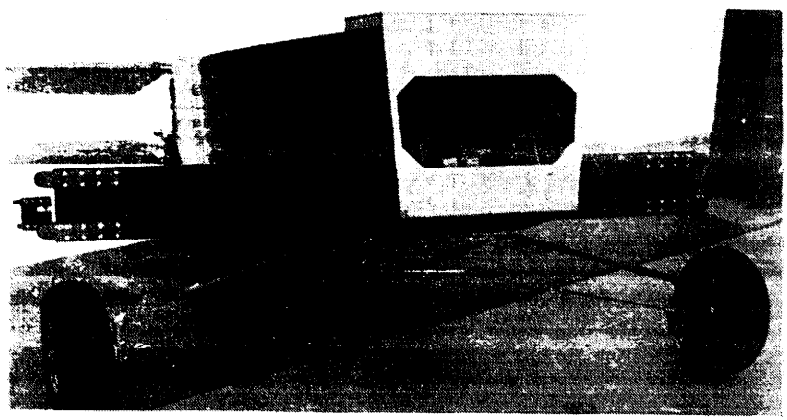
6. Trailing edges...bring dynel up close to edge but don't overlap or wrap around. After curing, trim back with wood plate approx. 1/8" (see drawing). Fill with glass fortified epoxy (quite thick) after filing out about 1/8" of the foam. Then take a piece of Mylar 4 mil polyester sheet, cut about 2" width & fold it down the center to a sharp edge & it will remain bent, fit it over trailing edge & tape in place until cured, then remove & voila! a lovely trailing edge."

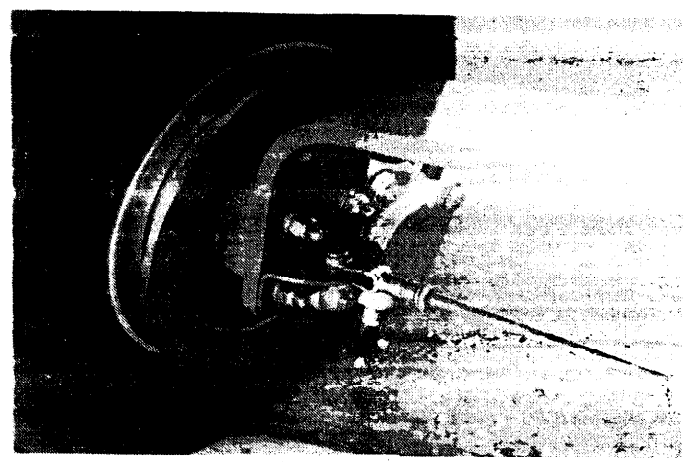


On the back page of this issue are a couple of hints on the use of liquid foam. If you haven't tried this method of foam construction yet, you're in for a pleasant surprise when you do! It makes a sometimes tedious job very easy. There is, however, a note of caution.....it has been reported that some builders found the liquid urethane foam expands when heated, long after the initial set up. Apparently heating retriggers the reaction. This was brought out at the plastics forum at Oshkosh & reported by Larry Zepp. I applied heat (from a hair dryer) to some work in which I had used liquid foam, with no noticeable results. If you do get a delayed expansion with the liquid foam you use, it shouldn't prove to be a problem. Just heat it, let it cool, then sand as usual.









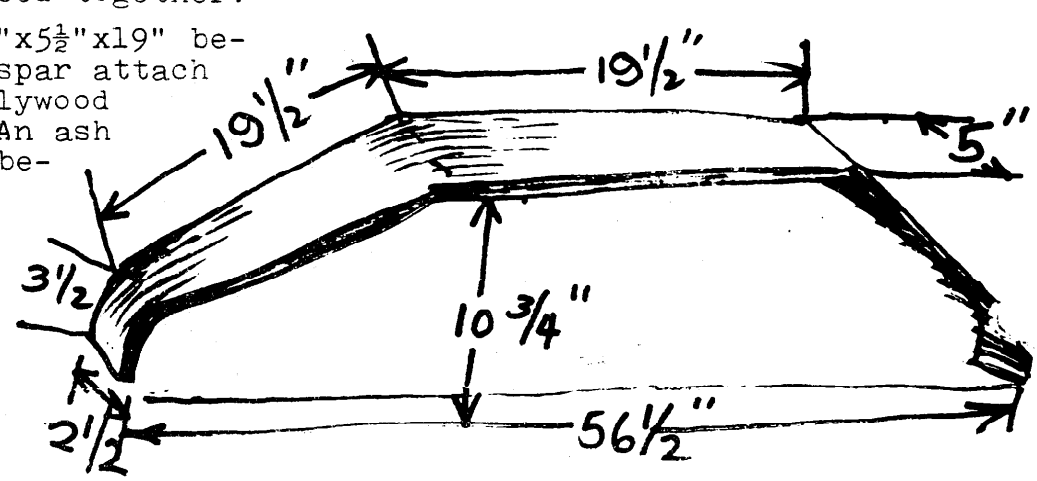
Ken Rand's wheels are 10½" diameter. I installed Cleveland 500-5 wheels & brakes which are 13½" diameter. The larger wheels will allow landings & take-offs on other than hard surfaced runways.

The landing gear is made from 3/8" 6061-T6 aluminum & is braced by two ¼"4130 steel rods. The rod/gear attach brackets are made from .090 4130 steel.

The purpose of the ¼" steel rods is to prevent gear flexing as there are only a few inches clearance between the top of the wheels & the bottom of the wing.

The landing gear/spar attach brackets are made from three peices of 3/8" 6061-T6 aluminum heliarced together.

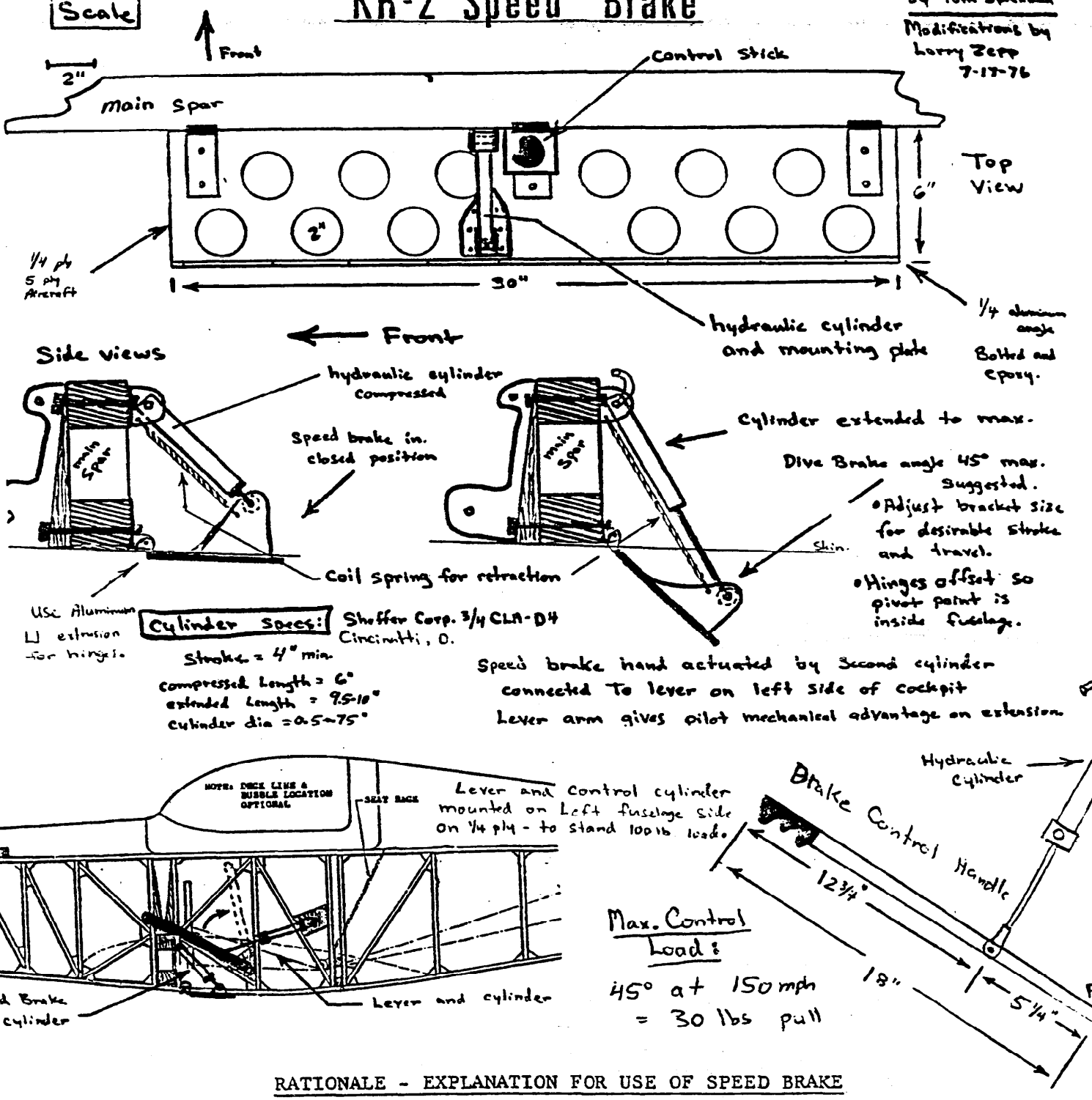
There is an oak plank 1"x5½"x19" between the landing gear/spar attach brackets & the bottom plywood skin of the fuselage. An ash wedge will be required between the spar & the bracket to obtain the correct seating angle between the bracket & the oak plank.



KR-2 Speed Brake

Original Design by Tom Spurlock

Modifications by Larry Zepp 7-17-76



Max. Control Load:

45° at 150 mph = 30 lbs pull

RATIONALE - EXPLANATION FOR USE OF SPEED BRAKE

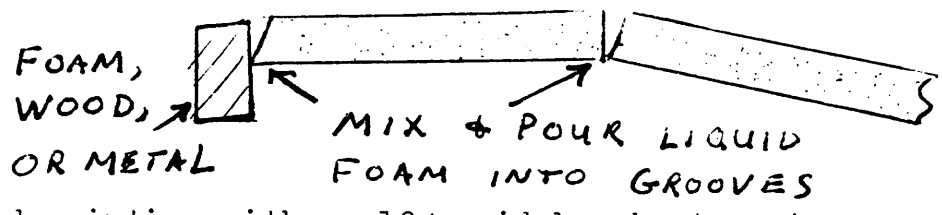
(1) I believe a speed brake is a modification that makes the KR a more versatile airplane and allows the pilot to easily vary the speed and glide angle.

(2) To me, ease of control operation and placement is very important. I feel you should pull back to activate the speed brake and that this handle should be right next to the throttle.

Sincerely, Larry Zepp 8-15-76

From Bill DeFreze of Dublin, CA....."As Fred Richen said, I found the liquid poly foam the greatest--it not only sticks to foam but everything else it comes in contact with...wood, metal, skin, shoes, clothes, hair, etc. I have found nothing cuts it except sandpaper! My bride thought I was nuts one evening when I came in from my garage with a piece of sandpaper sanding my hands, shoes, clothes, etc. I think I have found a very successful method of applying poly foam. For what it worth, here it is.....

Fit foam panels as close as possible. Remove & bevel top side:
Mix & pour foam in groove.



For those of you who are not familar with poly foam, Fred neglected to tell us the main characteristic of the beast. He said to work quickly. I mixed some in 1¢ cup, started painting with my 10¢ acid brush etc.,etc., I went back to the cup for my third brush full and this stuff was attacking me and the KR-2 and the garage and everything in sight!
On top side of fuselage there is no need to bevel, as Fred says. The poly foam is as strong as, if not stronger. One point to remember is to make sure foam has set before shaping as outside air temp does affect it. If you want to extend its "cup" life, put the mix in the refreigerator for about 20 min. before you mix. It won't be much longer but you will notice a difference and with this stuff, you need all the help you can get."

FOR SALE...Westach electric oil pressure & oil temperature gauge with senders--like new...$35.00 Contact Frank Walker at 10522 Santa Gertrudes #35 Whittier, CA 90603

Rand/Robinson reports that their 3-blade prop is performing up to expectations. Sales are increasing daily as word of the low cost, wood blade prop is getting around. Next issue will have an article on how to adjust the prop to match your engine.

Ken Rand has just returned from his trip to the East coast (via commercial lines as he is still recuperating) and maybe he has picked up a few things to pass along.

See you next month,

Ernest Koppe

Ernest Koppe
6141 Choctaw Dr.
Westminster, CA 92683

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Ph.-714-897-2677

Issue #17 November 1976

In a past issue of this newsletter I ran a survey to see who was building what, how far along their projects were, and how could I best help with the newsletter. Response was good I felt, with 15% of the builders taking time to send in the information requested. I was pleased to note that all replys considered the newsletter an invaluable aid to their KR-1 or KR-2 or whatever they were currently building and favored keeping the newsletter in the present format. A recent critical letter from a builder has popped the balloon of contentment that the survey constructed and has prompted me to take some space to clarify my position with Rand/Robinson. They do not employ me or re-imburse me in any fashion. The KR Newsletter is my own form of reaching as many builders as possible, to pass on information and to help builders with questions as they run in to rough spots. I am not an engineer, aeronautical or otherwise, so modifications sent in by builders like yourself require your personal judgement as to whether they should be included in your aircraft. Questions regarding the construction of a KR are answered based on experience gained thru working on my own KR-1 as well as an uncounted number of other KRs. Questions I can't answer, or am not sure of, are checked with the guys at R/R. Drawings I use in the newsletter are sent in from builders who wish to help the next guy. The drawings aren't always the best but they do what is intended; they get the idea across. I appreciate them and I thank the guys for making the effort.

There is one area I consider that could use some improvement....flight tests and pilot reports. The guys about to finish their birds want to know what to expect when they are ready for their first flight. If you have a KR-1 or KR-2 with a few hours on it, tell us about it. We're waiting to hear from you.

From Dan Diehl....."I wanted to write a letter and tell the other KR-2 builders how my plane flies. N4DD now has over 80 hrs. I started building it in Sept. of '75 and first flew it July 6, 1976. During this time I spent two months on another project (converting a VW Beetle into a pick-up truck). My KR-2 has a full electrical system including starter, generator, lights, Escort 110 radio, etc. (this I bought from Gilbert Duty, Rte 3 Box 427 Sanford, NC 27330) It's a neat little unit. The engine I built myself, it's a 2200cc with a 32mm posa carb. The prop is Bernard Warnke's latest. The cowl is one of my own. The plane is covered with 10 oz. glass cloth instead of dynel. The interior is complete with sound proofing, carpeting, rolled & pleat seat and side panel. Fuel tank capacity is 13.2 gal. Empty wt. is 522 lbs., top speed is 141 indicated. Stall is gentle at 40-41. Cruise is at 132-3 at 3200 rpm. Rate of climb is 1200 fpm with two aboard. The plane has been let down at 200 indicated. A true air speed on the day the 141 was done showed a TAS of 167. I have rolled the plane but that's all. I have gound looped it once, as a result of R/R tail wheel failure. I can get super-good tail-wheels for $11.00 apiece for those interested. These will fit the R/R assembly. The gound loop resulted in a gear failure. No problem to fix but it knocked me out of a trip to Oshkosh. The plane has a glide ratio of 1-6 with two aboard. I have had my plane to 16,200 and still had 300 ft/min climb. The plane is very quick on the controls and very stable in rough air. The airplane is fun to fly as I still average one hour a day."

THE RAND/ROBINSON 3-BLADE PROPELLER
How to achieve optimum perfromance!

After looking around at the different props available, you have decided to buy an adjustable to get wider performance range. Now let's take advantage of the adjustable feature to best use the horsepower available in your engine.

As you open the packing crate of your new R/R 3-blade, you will find the plastic/fiberglass halves of the injection molded hub, three propeller blades, (current blades are made from laminated birch with epoxy/Dynel covered tips) and three 4130 steel bands with allen head bolts.

Assembly: Close examination of the hub halves reveal each half to be almost identical, the key word being almost. On the outer rim of each half is a center punch mark. Make sure these marks are opposite each other when the halves are joined. Reason for this is both halves are assembled together when the bolt holes are drilled. Possible bolt or hub misalignment could occur if the punch marks are not properly located for assembly.

Lay one half of the hub on a flat surface and place a propeller blade flat side down in each of the semi-circle grooves provided. (Nothing critical here but it does help to have the holes in the base of the blades lined up with the holes in the hub.) Cover with the other half of the hub, align the punch marks, and install one propeller hub bolt thru each lobe of the hub. As on other props a thrust plate is necessary to distribute torque evenly, so be sure you have one installed. A 5" disc of .125 2024 T3 aluminum works best. Lightening holes are permissable.

After the prop bolts are in place (one thru each blade) remove the allen bolts from the 4130 steel bands and slip one band over each blade and into the groove provided around the hub and replace the allen bolts. Do not tighten the bolts. The bands should be positioned for ease of accessability but to avoid any blance problems, make sure each band has the allen bolt at the same position around the hub.

Adjusting the prop: Mount the propeller on the engine with all bolts in place but not tight. You should be able to rotate blades easily. Set one blade about the middle of the adjustment range. Turn the prop until this blade is horizontal on the left side of the engine. Hold a straight-edge flat against the back of the blade ½" from the tip. The straight-edge should be long enough to reach the floor. Mark the straight-edge carefully along the leading edge of the blade and place a mark on the floor exactly where the straight-edge rests. Snug the allen head bolt just enough to hold the blade in place and then turn prop to the next blade. Use the mark on the straight-edge and the mark on the floor to set the blade at the exact same angle as the first, snug the allen bolt and repeat the procedure for the remaining blade. Re-check all three blades to be certain that blade angle has not changed then torque all bolts to proper tension. The 5/16" hub bolts should be 20 ft. lbs., allen bolts 8 ft. lbs. (Not all at once please; alternate until each bolt has correct torque.)

Start engine and check for max. rpm. Best cruise will be achieved with a static 2800 to 2900 rpm firewalled, (30" m.p. for turbo-charged engine.) Best climb performance will be achieved from a static 3100 to 3200 rpm. Fixed gear aircraft will find best all round performance in the latter range. If the mid-range blade angle does not let you obtain the desired rpm, and it probably won't, adjust the blades accordingly. More blade angle will give less max. rpm, less angle will give more rpm. Re-check torque on hub and band bolts after one hour of running time and every ten hours thereafter.

We have a couple of corrections on drawing that appeared in the newsletter. First is a dimensions correction on the continental A65/75 engine mount drawing in issue #13. Given dimension for mounting holdes vertical to the engine was 14 9/16". It should be corrected to 11 9/16". The gear handle drawing sent in by Larry Zepp in issue #8 calls for 2024 aluminum.. 2024 is not weldable so 6061 alum. should be used.

SAFTY NOTE: I'm sure many of you have heard of the unfortunate accident that took Cletus Brow & the "El Gringo". (The "El Gringo" was a foam/Dynel aircraft with steel tube fuselage & spars.) Cause of the accident was leading edge separation of one wing. Investigation showed that in trying for a super smooth finish, the dynel skin had been sanded almost completely thru at the steel tube spar. Don't let this happen to you! If you have an area that needs a lot of sanding use a filler such as "Featherfil" or a micro-balloon/epoxy putting to build up low areas. Finished product will be safer& will look better.

As long as we're on the subject of safety, I'll pass on another tip from Larry Zepp. Baffle your fuel tank(s) with foam. Special reticulated foam used as gas tank baffle (entire tank filled with foam)1.4 lbs per cubic ft. displaces only 3% total fuel tank capacity. Will not stop fires but prevents explosion & fuel splash in event of crash. The foam is used in several US military aircraft & is mandatory equipment in race cars competing in NASCAR, Sports Car Club of America & the United States Auto Club sanctioned races. The foam is a product of Scott Paper Co. and is distributed by the Coated Fabrics Division of the Firestone Tire & Rubber Co. in Akron, OH...the Engineered Systems Division of Uniroyal Inc. in New York...the Aviation Products Division of the Goodyear Tire and Rubber Co. In Akron, OH. Made in 12" x 44" x 110" boards @ 60¢ per board foot.

RAND/ROBINSON UPDATE....Work on the KR-3 amphibian is progressing well. All design is finalized and foam work has begun on the outer wings.

The KR-3 resembles the Osprey 2 but will not have wing tip floats ala Taylor Coot. Revmaster 2100 will provide power.

R/R now has available the lightweight Bosch starter that has proved so successful on the KR-2. Price is a low $35.00. The KR-1 engine is currently being fitted with the under 5 lb. starter & it looks as though only minor modifications to the original style engine mount will be necessary. There will be an article on how to install a starter on your KR as soon as the R/R installation is completed & tested. Maybe next issue. Progress is being made on the KR-1B. Right now it is being fitted with a larger main fuel tank then engine installation is next. The long GA(W)-2 wings using ½ span spoiler/flaps & tube actuated aileron controls. Completion date will be early next year.

BUY-SELL-TRADE

FOR SALE: KR-1 with 1200cc VW. Ready to fly. FAA pre-flight completed. $2500.00 or make offer. Contact ELO ZINKE 2307 56th St. LUBBOCK, TX 79412 PH. 806-797-3032.

FOR SALE: KR-2 fuselage frame with plywood on bottom, horiz. stab. complete, rudder & elevator spars cut, all wood & foam needed to complete airframe...$450.00. Contact BOB SCHUMAKER 403 MEADOW VIEW DR. HUNTSVILLE, AL 35802

FOR SALE: KR-2 fiberglass engine cowls complete with full-size firewall & engine air cooling baffle templates. The cowl comes in one piece so the builder can split it where he wishes. Instructions included on how to split and fasten together...$125.00 Contact DAN DIEHL 4132 E. 72nd ST. TULSA, OK 74136 PH 918-492-5111.

Note Dan now has over 80 hrs on his KR-2 and has had no sign whatsoever of cowl fatigue or cracking. See his letter this issue.

QUESTIONS & ANSWERS

Q. Should the wing attach fittings be plated? If so, what type of plating?

A. Yes, some sort of protective coating should be used. Zinc Chromate is good and is easily applied.

Q. Is there any information available on putting a KR on floats? I see a Japanese EAA member has a VP-1 on floats & see no reason a KR couldn't be a floatplane also.

A. A successful floatplane will depend on enough power for take-off. A KR-1 with one of the larger VWs would probably perform satisfactorily.

Q. Has anyone attempted to install a vacuum pump on the VW engine where the distributor was before conversion? How much vacuum is necessary to run a panel full of air type instruments?

A. I haven't heard of such a vacuum pump but one could probably be fabricated using the VW distributor shaft. Amount of vacuum necessary will depend on your instruments but most will require 4 lbs minimum for safe operation.

Q. My KR-2 plans list wing span as 20'8" and wing area as 78 sq. ft. In the last couple of weeks I have seen ads for the KR-2 listing wing span as 20'2" and wing area as 82 sq. ft. Which is correct?

A. Look for new ad and pictures (actual wing area on KR-2 prototype is 80 sq. ft. with a 20'6" wing span.

Q. What does one use to make sure the wing attach bolts stay put?

A. Since these bolts are subject only to shear loads, a lock nut is sufficent.

Q. How can I get in touch with builders in my area?

A. Send me a SASE & the zip code of the areas around you. I'll send you what I have.

Q. Could you please state in the newsletter that Grant Pascoe of 484 Burrin Ave. Winnipeg, Manitoba Canada R2V-1G4 would like to get in touch with any, mainly young, KR builders?

A. Done, good luck.

Q. How does one keep tabs on the amount of fuel left in the wing tanks? I believe the FAA requires a gauge for each tank.

A. There are some certificated aircraft being flown without fuel gauges in the wing tanks, an Aeronca LC for instance. Like in the KR-2, fuel is pumped to the main tank before being routed to the engine. Aircraft using only wing tanks will have to be equipped with fuel gauges.

Ernest Koppe
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Seasons KR-1 KR-2 NEWSLETTER Greetings

Issue No. 18 December 1976

I am continually surprised at the number of pilots who have never heard of the Experimental Aircraft Association (EAA). I suppose I shouldn't be, until I was actually involved in building my KR-1, I Hadn't heard of the EAA either. I joined about 4 yrs. ago and since then it has become S.O.P. to take advantage of the mine of information available to all members. The monthly magazine "Sport Aviation" contains a seemingly never-ending supply of pictures and articles about building, flying and plain enjoying aircraft of all types.

There is also a designee program in which qualified members have volunteered to give their time and knowledge to help us build safe, fun to fly, aircraft.

If you aren't already a member, you too should avail yourself of the benefits of the EAA. Write to them for more information at: E.A.A. P.O.BOX 229, HALES CORNERS, WI 53130.

We have goodies galore in this issue, electric trim tab, a folding wing idea, a KR-2 flight report, plus the usual questions and answers.

The folding wing idea will really be popular with the several builders who plan on sharing hangar space with other KR builders. It will be possible to get three or more aircraft in a hangar meant for only one.

The flight report is from Leo Davison. Remember the picture of his KR-2 in Newsletter #11? Well, Leo followed thru on his promise to send us a report on his KR-2. Here it is...."a note about the first flight of our KR-2. N15LD has an empty weight of 449 lbs. The engine is a 1700 VW with a 32mm posa carb. and is complete with an electrical system except for the starter. We started the project in July 1975 and flew it July 10, 1976. The field elevation was 2500 ft. on a calm day. Take off roll was approx. 400 ft. I leveled off and circled the field getting the feel of it. I trimmed it out and flew it hands off. Second time up I clocked the ground speed. Top was 180 and cruise at 165 at 3250 rpm. Had engine failure and glided to airport and made a safe landing. Trouble was a faulty fuel pump. Controls are quick but plane flied like a dream. After 30 wonderful hours of flying I attempted to take off on strong gusty cross winds and lost it. Did extreme damage to plane but survived the crash with eleven stitches in one finger. Have flown it in winds of 30 mph but, of course, we always have winds in Western Kansas. However, never again. Am rebuilding it exactly as it was. Because it was the most enjoyable flying I have done".....Looks as tho' Leo will have a project to occupy him thru this winter. Rest of you builder/pilots take heed, watch those crosswind landings and take-offs.

**** **** ****

NOTE TO NEW OR RENEWAL SUBSCRIBERS:

Due to an increase in printing and handling, our subscription rates will be increased beginning January, 1977. The service will, however, be better because all newsletters will mailed first class. The price will be increased as follows:

6 mo. @ $3.50
1 yr. @ $6.00
Back issues — 50¢ ea.

Ernest Koppe
6141 Choctaw Dr.
Westminster, CA 92683
Ph. (714) 897-2677

MERRY CHRISTMAS

SUMMARY ON BACK ISSUES

1. Introductory, tips on foam construction.
2. Control stick drawing.
3. Oshkosh '75, list of builders, Questions & Answers.
4. KR-2 plans errors, Pilot report KR-1, bellcrank drawing.
5. Wing tank construction, Questions & Answers, list of builders.
6. KR-2 plans errors, KR-1 & KR-2 contruction tips.
7. KR-2 plans errors, Questions & Answers, list of builders.
8. VW engine info, RAF 48 co-ordinates, tips.
9. Balancing ailerons, tips, Questions & Answers.
10. Spinner construction, VW engine info.
11. Control stick drawing, 3-blade prop ics, fixed gear drawing.
12. Dive brake drawing, tips, Questions & Answers.
13. A-65/A-75 engine mount drawing, wing washout info.
14. Sliding canopy pics & notes, dual stick drawing, tips.
15. KR-1 accident report, Questions & Answers, tips.
16. Hydraulic speed brake, liquid foam tips, fix gear pics.
17. KR-2 builder/pilot report, 3-blade prop adjustment info, Questions & Answers.

The KR Newsletter was first issued in June of '75 and has been published monthly ever since. I have tried to make each issue as informative and helpful as possible. Back issues are 50¢ each.

QUESTIONS & ANSWERS

Q. Can aircraft quality sheet aluminum be bent & used for pulley brackets, etc.?

A. No. Bending tempered aluminum causes small stress cracks.

Q. Extra fuel tanks have been mentioned as in center wing & outer wings. Exactly where are they & what size?

A. Builders using the area between the center section wing spars are limited to approx 8 gal. max. each side of fuselage. Outer wing tanks can be the entire length of the wing, also between the fwd & rear spar.

Q. I noticed a report of a R/R tail wheel failure in issue #16. What is the cause.

A. It was reported to me as a bearing failure. To my knowledge this is first & only instance of a failure in this part.

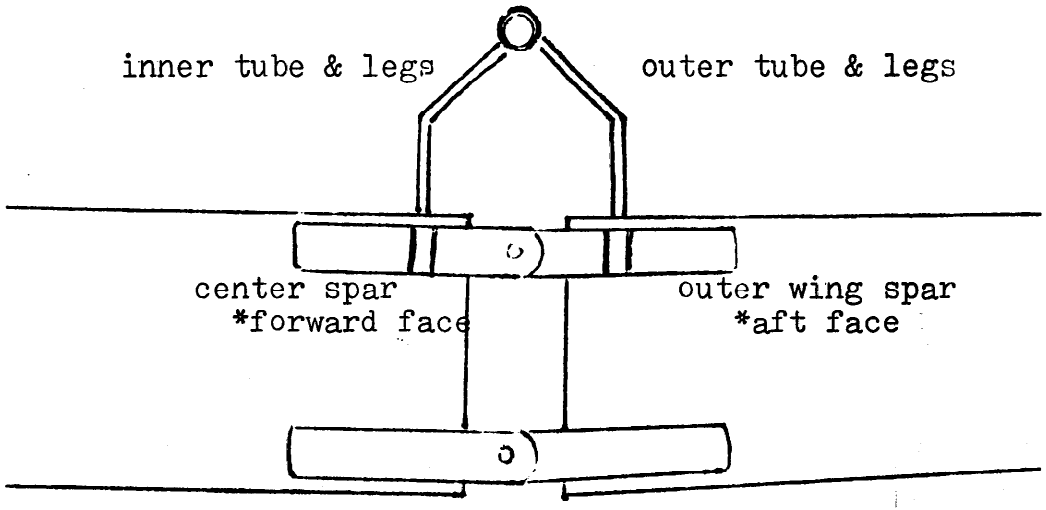
Q. I had to cut bottom of first ribs outside both sides of fuselage for full gear retraction. Is this the correct procedure?

A. The spring bar when in the fully retracted position should have at least 1/8" clearance from bottom of rib. It is OK to cut the rib completely thru for installation purposes.

Q. I am interested in installing a starter. According to you there will be an article in the newsletter soon. Will a turbo-charger installation interfere with the starter location or vice-versa?

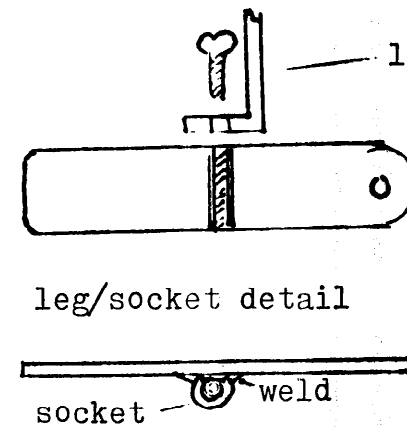
A. There is no problems in combining the two systems. The article on starter installation will be in the next issue. An article on turbo installation will appear in a following issue.

M. Plowright in New Zealand is seriously considering using a GAW-1 airfoil on his KR-2 He would greatly appreciate correspondence with other builders with the same idea. Write to him at P.O. BOX 11, KAWAKAWA, BAY OF ISLANDS, NEW ZEALAND



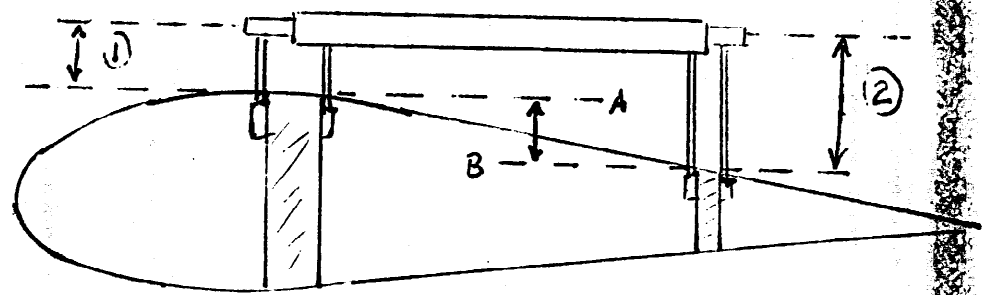
*reverse for other spar

by Peter Steckler
5 Millcreek Rd.
New City, NY
10956



These are my suggestions for a wing folding accessory for KR aircraft. The device folds the wings vertically against the fuselage, as on a Corsair, for towing. It will position the wings when lowered for installation of wing-attach bolts.

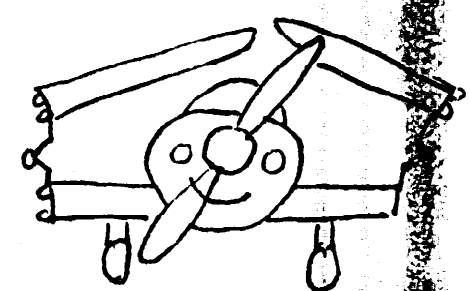
The principal advantages of this device are found in its detachability from the aircraft when in flight and in its applicability to the aircraft without redesign of the wing attach fittings.



(1) as small as possible to fit hardware

(2) same as #(1) plus distance A-B

The device consists of two close fitting metal tubes, one being inside the other, with the smaller inner tube being several inches longer than the outer tube. Legs are attached to each end of each tube. The legs end in a screw fitting as shown. The legs on the shorter tube screw into sockets welded to the wing attach fittings of one wing panel, on the inner-facing side of the spars; the legs on the longer tube to those on the adjacent wing panel, on the outer-facing side of the spars. The system involves only the eight sockets to be permanently fastened to the airplane. The working geometry of the device is similar to that of the partly external hinge system found on the Dyke Delta.

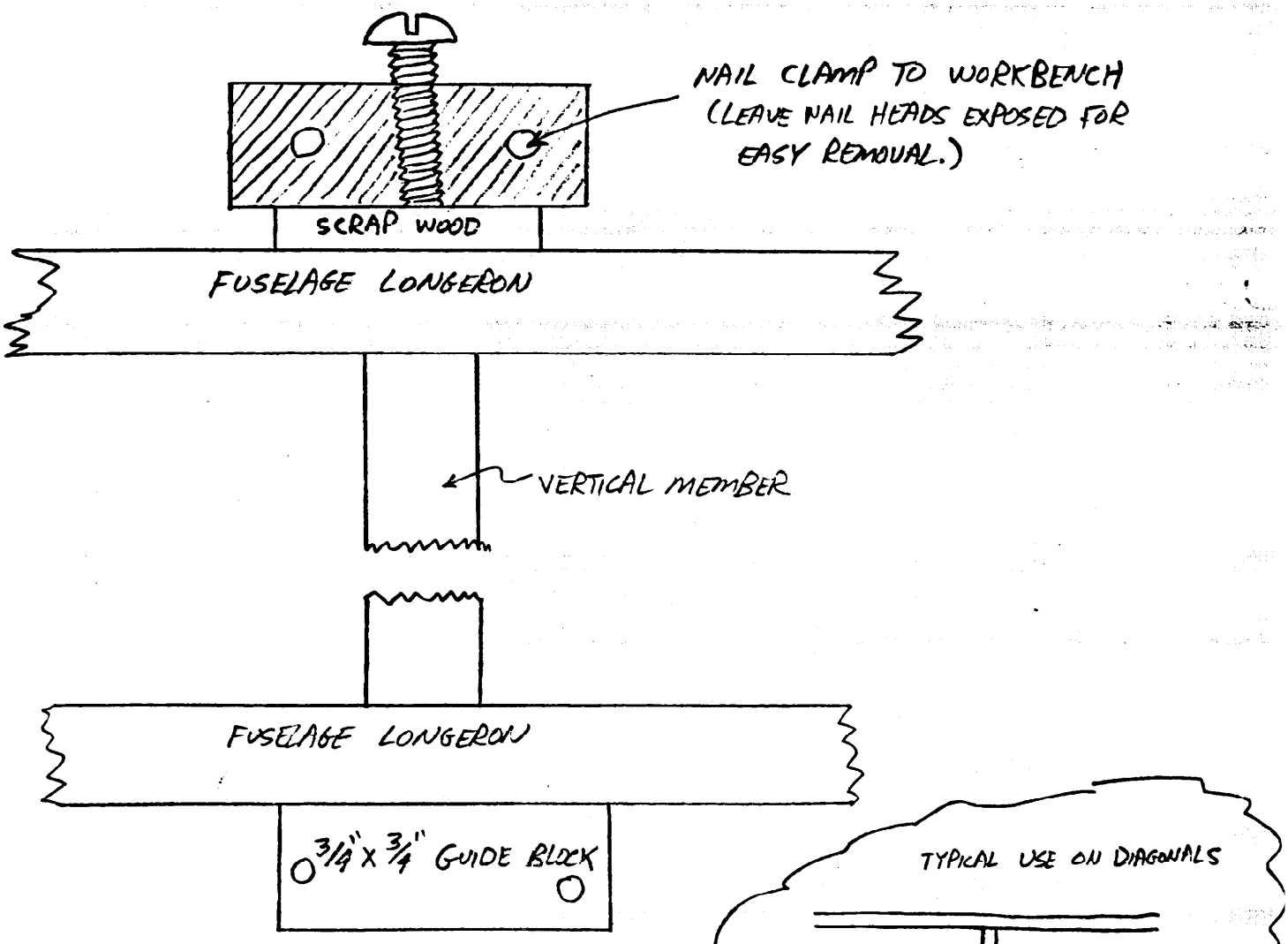


That's my idea. I would appreciate any info as to other folding-wing mechanisms applicable to the KR-2, particularly any which might simplify or speed up assembly of the plane.

FUSELAGE ASSEMBLY SUGGESTIONS

DURING THE GLUEING OF THE FUSELAGE VERTICAL AND DIAGONAL MEMBERS, I FOUND THE CLAMP SKETCHED BELOW TO BE VERY USEFUL. IT IS SIMPLY A PIECE OF 3/4" SQUARE WOOD, DRILLED AND TAPPED FOR A 1/4-20 SCREW. IN USE, THE CLAMP IS NAILED DOWN TO THE WORKBENCH IN THE SAME MANNER AS A GUIDE BLOCK, LEAVING ENOUGH SPACE BETWEEN THE CLAMP AND THE FUSELAGE LONGERON FOR A SMALL PIECE OF WOOD (TO PREVENT DAMAGING THE LONGERON). AFTER VERTICAL MEMBERS ARE FITTED AND GLUE APPLIED, THE CLAMP SCREW IS TIGHTENED ENOUGH TO SQUEEZE OUT EXCESS GLUE. ABOUT 15 OF THESE ARE NEEDED FOR VERTICAL MEMBERS AND DIAGONALS.

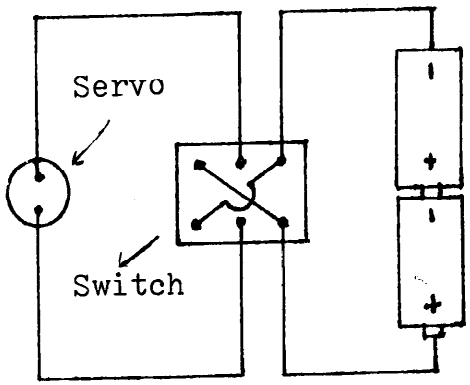
BILL GIDDEN



ELECTRIC TRIM FOR YOUR KR? Why not???

Here are some notes to get you started.

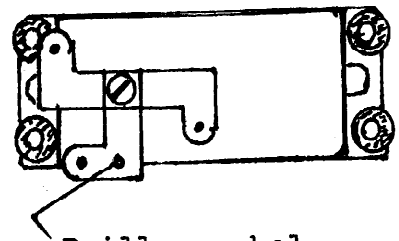
Wiring diagrams



This diagram utilizes a double-pole double-throw, center off, spring loaded toggle switch.

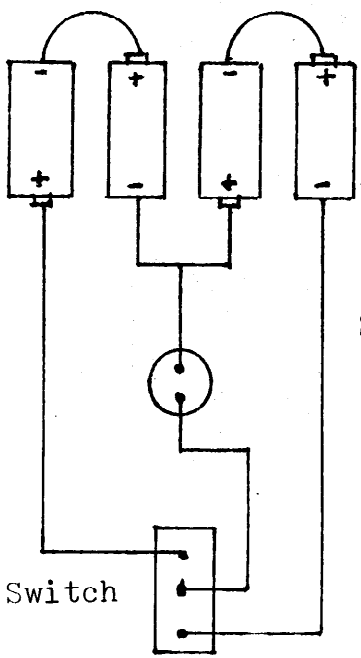
Batteries are 'C' or 'D' size alkaline cells. They will give many flying hours of service before replacement is necessary. Wiring is 18 ga. double insulated.

Use the landing gear retract servo manufactured by CARL GOLDBERG, INC. This servo has heavy duty gears & is self-limiting (155° travel) with built-in limit switches. Mount servo with aluminum angle, attach to 3"x 3" piece of 3/32" plywood. Epoxy entire unit to inside skin of control surface.

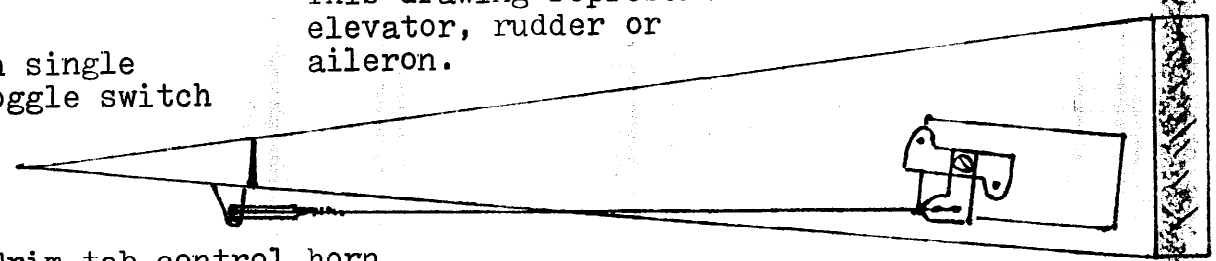


Drill new hole for pushrod.

Lower diagram uses the more common single pole, spring loaded, center off toggle switch found on control sticks.

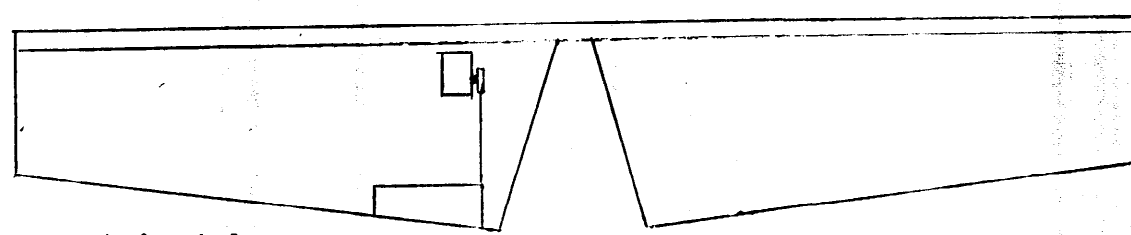


This drawing represents the elevator, rudder or aileron.



Trim tab control horn should be mounted to 3/32" ply. Use 2-56 screws, epoxy into trim tab.

Hinges, control horn, and pushrod are standard R.C. model parts.



Elevator trim tab should be at least 2½"x 6".

Thanx to Bror Faber for much assistance. Bror has a KR-2 about 70% complete & has installed elevator & aileron trim. One control stick mounted switch activates either unit. (Chinese hat switch)

BUY SELL TRADE

FOR SALE...Stainless steel for firewall. R/R has it. .005" thick, five square ft. (Large enough for KR-2) $7.00. RAND/ROBINSON Eng. 5842 'K' McFadden Ave. Huntington Beach, CA 92649

FOR SALE...KR-2 project. Fuselage ready for foam. All materials to complete less engine and instruments. $1900.00 JOHN SCHLADWEILER 1100 E. Church st. Pierre, SD 57501 or Ph. 605-224-7558.

WANTED.....To buy KR-2 in any stage of completion. Send price & info to BRIAN HYMA 3769 Hollywood Dr. Holland, MI 49423

FOR SALE...Two-part liquid foam, best solution to gluing foam, repairing if you sand too deep, break off a corner, etc. (See newsletter #9 & 16) Quart (2 pint cans) $9.50; ½ gal. (best for KRs) $12.95; 2 gal. $32.80 UPS or PP prepaid. VERNE LIETZ P.O. Box 234 Peshatin, WA 98847

Note: Verne says there is a good supply of Douglas fir in his area. He is willing to put together wood kits for approx. $80.00. Drop him a note for more info.

FOR SALE...Nylon bar stock for fairleads. 3/4"xl"xl2". wt.-5 oz. $1.50 ea. Will ship postage paid JIM SNYDER Box 696 Hesston, KS 67062

FOR SALE...33½ yds Dynel $40.00 B.J. LEMPA RTE. 4 Box 247C Lake Charles LA 70601

FOR SALE...KR-2 parts & materials: Spruce kit (Wicks), 2 gal. epoxy(R/R) Fuselage halves completed, wing spars completed (need webbing & hardware. Rands most recent plans. Will sell this project to highest bidder. RONALD W JOHNSON 1245 Kings Row Reno, Nevada 89503 Ph. 702-747-2466

FOR SALE...KR-2 fiberglass engine cowls, complete with full size firewall and templates. $125.00 DAN DIEHL 4132 E 72nd St. Tulsa, OK 74136 PH 918-492-5111

MERRY CHRISTMAS
and
HAPPY NEW YEAR!!

Ernest Koppe

Ernest Koppe
6141 Choctaw Dr.
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Issue #18

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KR-1 KR-2 NEWSLETTER

Ernest Koppe
6141 Choctaw Dr.
Westminster, CA 92683
Ph. (714) 897-2677

Issue No.19 January 1977

BUY SELL TRADE

WANTED . . . Unfinished KR–2 project. Also best buy on engine for same. Prefer within 300 miles of Sacramento, CA. Jim Ducharme 5869 Ambler St., Sacramento, CA 95823 Ph. (916) 422-3186 No Collect calls please.

FOR SALE . . . KR–2 fiberglass engine cowls, complete with full size firewall and engine baffle templates $125.00. Dan Diehl - 4132 E. 72nd St., Tulsa, OK 74136 Ph. (918) 492-5111.

FOR SALE . . . Nylon bar stock for fairleads. 3/4" x 1" x 12" – wt. 5 oz. $150.00. each postage paid. Jim Snyder - Box 696, Hesston, KS 67062.

Jan '77 fly-in dates . . . look for Ken Rand and the KR–2 at the following:

Jan 8 & 9 – Cable airport, Pomona, CA – – – Jan. 17 thru 23 – Lakeland, FL. – – – Stu Robinson is also going to be at Lakeland this year. Get the KR–3 up-date from him. I'll be at the Cable fly-in, see ya there.

There has been some concern lately over the locking mechanism from builders who wish to operate from grass strips. I have here two very good examples of what others are doing to their KRs to allow rough strip operations.

The drawing is from Jim Manento. Jim reported the safety latch he installed worked fine on several high speed taxi runs at a friend's grass strip. (50+ mph)

The pictures inside are of the latching developed by Charles Wells of Oxnard, CA. Guaranteed positive locking, one hand operation.

Phil Writer was one of the many people who flew with Ken in the Turbo KR–2 last spring. He enjoyed the experience & wrote an account of the flight for the rest of us.

An idea has been voiced by a couple of builders: Why not have all KR builders attending Lakeland or Chino or Oshkosh or wherever, set up a time & place for all to meet, compare notes, etc.? Sounds good to me . . . a hangar, cafe, or even an airplane could be designated as the place to be at a certain time. I can use the newsletter to get the word around some but signs at the fly-in should be posted.

The Lakeland, Fl "Sun & Fun Fly-in" Jan 17 thru 23rd is a good place to check this idea. Needed is a couple of residents of the area to set up the meeting place.

I have had several letters from KR builders wanting to buy jacket patches with a KR–1 or KR–2 emblem. There isn't any such item on the market at present but if enough interest is shown (100 or more builders) I will arrange to have some made.

If you are interested drop me a note. Be sure to include any suggestions for design, motto, or any other ideas you feel should be considered. Let me hear from you soon, it would be nice to have these in time for the fly-in season ahead.

TIPS FROM OTHER BUILDERS

From Jack Geall, president of EAA Chapter 266, "Anchor nut plates should be installed in all blind locations to allow future replacement of components that wear or become damaged."

I have a report of a defective new VW oil pump. Frank Walker had just completely overhauled his VW engine including replacing the oil pump. After re-assembly the engine was run for a short time on a test stand. The engine ran smooth, sounded good, gave every indication everything was OK. However, on examination of the cover over the oil pump, grooves were found, caused by the gears. Further examination showed all bearing to be scarred from metal filings from the cover. Another overhaul was in order. The oil pump was miked, found to be .007" oversize, and replaced. Point of this note is to not accept something as being good just because it's new. Check the parts you put in your aircraft carefully. A little precaution now can save time, money, and more, later on.

The starter installation Ken is using now is very easy to make. Just a matter of using (1) a very light flywheel, available from Custom Aircraft Engines P.O. Box 441 Rte. No. 3 Sanford, NC 27330 (Last price I saw was $60.00 ea.) and (2) the light Bosch starter from R/R ($35.00). Bolt the starter to an aluminum plate and then to the 1½" aluminum channel engine. Power is supplied by a 15 amp Honda motorcycle battery thru a 12 volt solenoid. Provides plenty of starting power, beats hand propping by a mile.

QUESTIONS & ANSWERS

Q. Should the KR–2 ailerons be larger for more response?
A. No, the KR–2 is extremely responsive to aileron control. Larger ailerons would only cause problems.
Q. Has the speed brake in the newsletter actually been installed on a flying KR?
A. Yes, the speed or dive brake was designed by Tom Speakman in Portland, Oregon. He installed it on his KR–2 and reported excellent results.
Q. I have heard differing opinions on the use of dynel over glass cloth. What is best for the KR–2?
A. Each fabric has points in its favor. The glass cloth has much greater tensile strength, dynel has a better peel strength. Union Carbide, developers of dynel, reports a 4 times greater "toughness index" for dynel. The "toughness index" is the ability of material to absorb work. Ken Rand originally used dynel for this reason and for ease of working. He still recommends dynel for the same reason.

FLYING THE TURBO KR–2

by Philip L. Writer

"OK, let's hop in and take a ride . . . " When Ken Rand said those magic words, my ears perked up, my eyes lit up, and I was instantly ready, willing and eager to jump into his turbo-charged KR–2. Ken had promised to give me a ride for almost four months. However, this was the first time the chance arose.

It was mid-May at Ramona airport, slightly north of San Diego, CA. We were at EAA Chapter 14's annual fly-in. The temperature was in the mid-80's with a slight cross wind blowing across the 4000 ft. runway. The field is 1393' above sea level, paved, and has no major obstructions. We pushed the KR–2 passed the many people crowded around the display area. After reaching the flight line, we gave the 'little bird' a quick walk-a-round, and climbed in. I entered first, since entrance can only be accomplished from the left side and it might be a little hard on the pilot to have his passenger climbing over him. The airplane is very small when compared to a Cessna 150 or a Yankee, having an overall length of 14'6" and a span of 20'8". The side-byside seating in its 38" wide cockpit requires that the pilot and passenger be on the friendliest of terms. Despite the small size, no problems were found during ingress or egress, nor during actual flight.

Ken touched the starter and the 1834 cc turbo-supercharged Revmaster VW almost instantly perked to life. We then taxied to the end of the runway. We taxied with the canopy open to allow cool air to enter the cockpit and to give better visability. (The canopy and the wind screen are one piece. When it is opened by lifting the left side, part of the cowl is also removed, resulting in an improvement in forward visability.) With the canopy closed, the KR–2's visability is as good or slightly better than most tail draggers. Only slight 'S' turning is required while taxing. Steering, on the ground, is accomplished by a steerable tail wheel. The mechanical breaks are not operated differentially, but together by pulling on a common break cable. No problems were found in ground handling, in fact it was almost too easy.

After reaching the end of the runway, we held the quickest run-up I have ever seen! In fact, that is all we did, we ran it up! (It seems that this model Revmaster having single ignition, a Posa injector carburetor without carburetor heat simply does not require anything else.) We then checked to see that the canopy was properly latched and that the runway was clear of traffic. Ken then opened the throttle and we started our take-off run. Considering the small engine, I was amazed at the acceleration. In approx. 350' we became airborne. We leveled off at about ten ft. above the runway, then Ken retracted the landing gear. I had never seen the landing gear on any plane retract so quickly, in fact I would estimate that the total time was something less than one second! (The gear is connected directly to the retraction lever and is 100% mechanical.) As soon as the gear was retracted, we accelerated to about 90 mph at which time we were passing the end of the runway. We were now climbing at about 800 ft/min and indicating about 110 mph. We quickly left the pattern and leveled off at about 3000'.

From the time we started our takeoff run until we leveled off, I was in utter amazement at the almost total lack of noise. The noise level was closer to that of a commercial jet, rather than that of a typical light plane. This lack of noise was a by-product of the foam and dynel construction. (It seems that polyurathene foam is one of the best sound dampening materials available; this, in turn, tend to greatly reduce noise within the aircraft.) In addition, the Revmaster engine is much quieter than most of the "mills" found on most modern aircraft.

After reaching an altitude of about 3500', Ken gave me the stick. (In the KR–2 there is but one control stick. The stick is located between the pilot and the passenger. This means that the pilot flys the aircraft holding the stick in his right hand and the passenger holds it in his left.) At first the configuration felt 'unnatural', however, it is surprising how fast it starts to feel great. In fact, I think the "off center stick" design is more comfortable than a center stick or a yoke. (The design has been used in some of the newer military jets.)

I flew the aircraft for a few minutes simply to get a "feel" for its characteristics and at the same time take a quick refresher course in flying. It seems that I had not been at the controls of any plane in about nine months. I flew the aircraft for about twenty minutes. Because of the slightly tapered wing design, I was especially interested in the stall characteristics. I was considering modifying the KR–2 I am building into one with non-tapered wings. After performing both power on and off stalls I was convinced to leave the wing design alone. The airplane showed no signs of dropping a wing during stalls, both with and without power. In addition, the stalls were so gentle that the actual stall was almost imperceptable. In fact the rate of climb indicator was a better indication of a stall than your stomach.

Next I tried some steep turns in both directions. The turns were banked in excess of 60^{o} and for 360^{o}. In both cases, no use of rudder was found necessary. The "ball" simply remained in the middle of the indicator, just as if I were a better pilot than I really am. The airplane was so easy to fly, that most of the time I had my feet resting on the floor rather than on the rudder pedals. For the entire time I was flying, the plane was never trimmed. It has an electric trim but I left it alone. The reason I failed to trim the airplane is simple, I was always going up, down, turning, stalling or what have you? It was hard to believe the airspeed indicator, which was reading 160 mph most of the time. Except when we were in slow flight (approx. 45 mph) or doing stalls and turns, we were climbing slightly. How this little plane could carry two people at that speed, and be powered by a VW engine burning about 3½ gal/hr is hard to believe but there it was.

Ken keeps his manifold pressure at 30 in. This is to ensure long engine life. Manifold pressure is controlled by the throttle only. The airplane is equipped with a "ground adjustable" prop.) In practice this meant extra power was available if ever needed for some type of emergency. I was tempted to try some spins but since we were not carrying parachutes and wished to remain legal, we did not. The airplane has been spun safely in both directions. I was told that recovery is obtained by neutralizing the controls. Unfortunately for me Ken had promised rides to other KR–2 builders attending the fly-in. This meant that we would be forced to return to the field. On landing, Ken slightly misjudged his point of touch down. (The fact that Ken's home field, Meadowlark, has an altitude of only 30', while Ramona is at 1393' might have had something to do with it.) We came in high and "hot"! Ken decided to land anyway. We slipped to lose approx. 60 mph. (45 mph is normal) This required heavy use of the brakes. The mechanical drum brakes did a fine job! We were able to come to a stop in about 1500'. It is easy to see how a landing run of less than 1000' is possible. We then taxied back to the edge of the strip. I then de-planed to allow others the joy of flying the KR–2.

Fig. 1

Full view of landing gear locking system-this adds a little over 2 lbs. over Rand's system but I feel that the positive locking & smooth operation is well worth the time to make, and weight to carry.

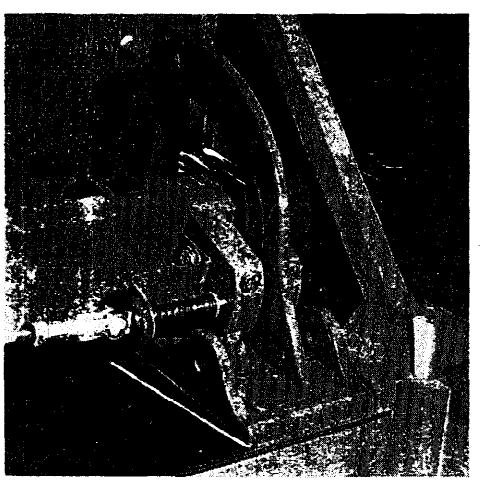


Fig. 2

This position is locked with the wheels down. The curved bar from casting to floor is 6061 alum. ¼" thick x 1" wide - steel bushing pressed in holes for gear down position.

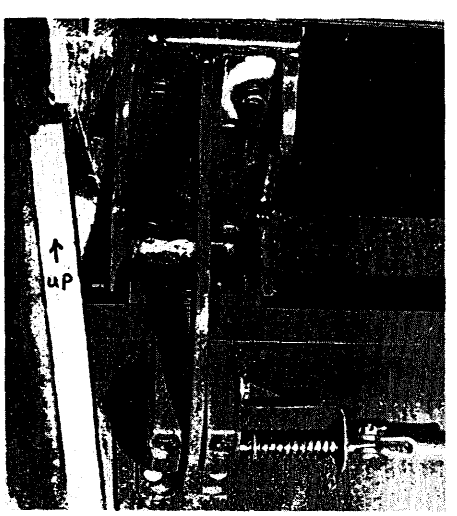


Fig. 3

Wheels up position. Note adjusting bolt in center of casting - very important in stopping spring bar at proper location for locking pin to engage with steel bushing hole in the slide bar.

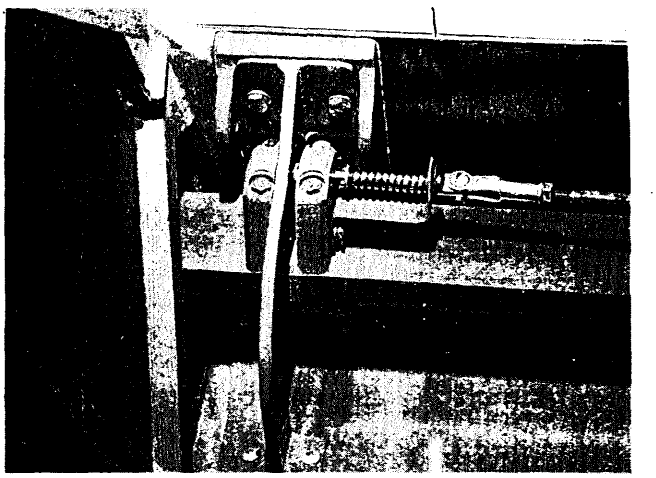


Fig. 4

The tube w/clevis is ¼ chrom molly w/1)-32 stud welded in. The locking pins is ¼ stainless steel, machined down from ½ round The bracket holding spring is .032 chrom molly. The split block is aluminum 6061 & can be cut out in a bandsaw & finished on a sanding disc.

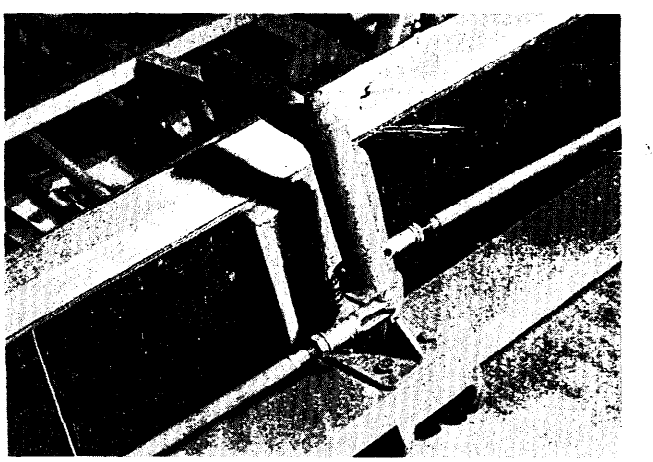
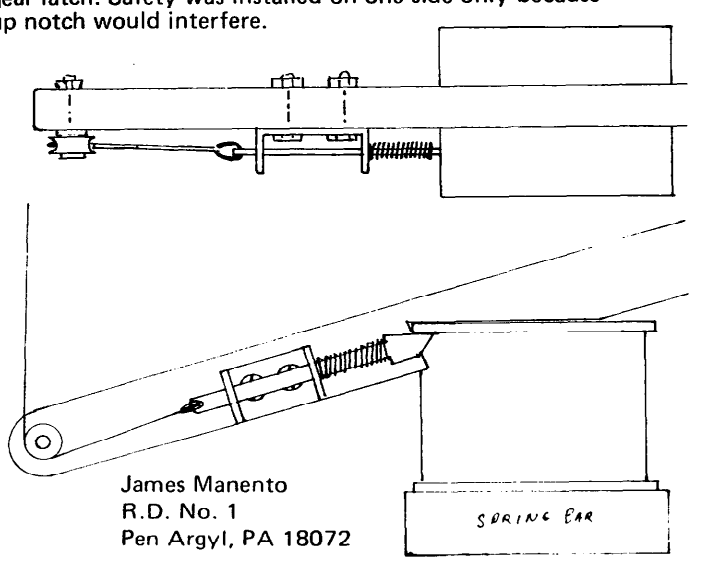


Fig. 5

Handle is 7/8 tube over 3/4 tub w/stud welded to top & angle supports welded to bottom - 7/8 tube has cam welded to bottom. Cam just clears casting nut on top holds it all together - works very smooth.

The Slide is spring loaded. When cable is pulled the safety releases first then the gear latch. Safety was installed on one side only because the gear up notch would interfere.

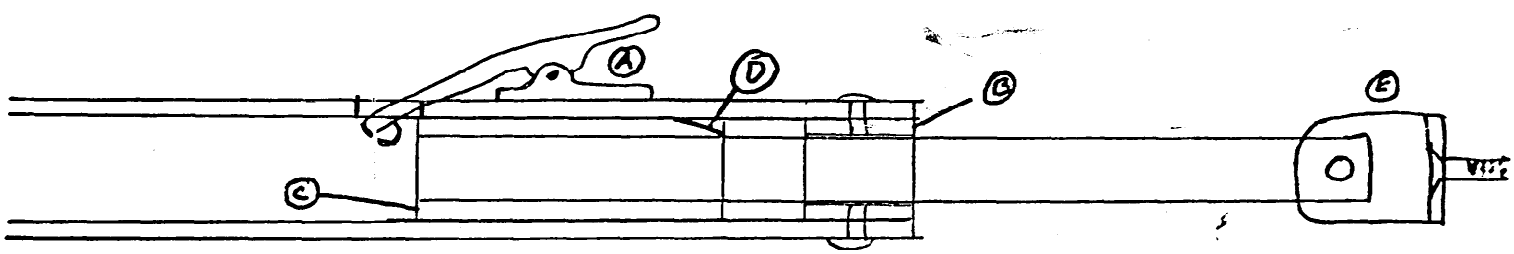


James Manento
R.D. No. 1
Pen Argyl, PA 18072

Bill DeFreze started building his KR–2 this summer and now is waiting only for the prop to complete it. Busy as he must have been, Bill has still found time to send several items for the newsletter. One of latest is the canopy holder . . .

CANOPY HOLDER . . . 3 different size aluminum tubing, some rivets, small elect alligator clip and aluminum angle.

I cut off one side of the clip, drilled a small hole in the tip of the other side, soldered a small screw in the hole and ground it round. Epoxy the clip (a) to the side of the outside tube in line with the ¼" hole. The next size tubing down is the up (b) stop and slide (c) stop. The slide stop is "ramp" (d) ground so the clip will allow the slide stop to pass the clip automatically. Mounting (e) brackets are aluminum. I found that collapsed it's about 14" long and works fine.



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KR-1 KR-2 NEWSLETTER

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Issue No. 20 February 1977

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 occurence 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 KRs 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 KRs & .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.

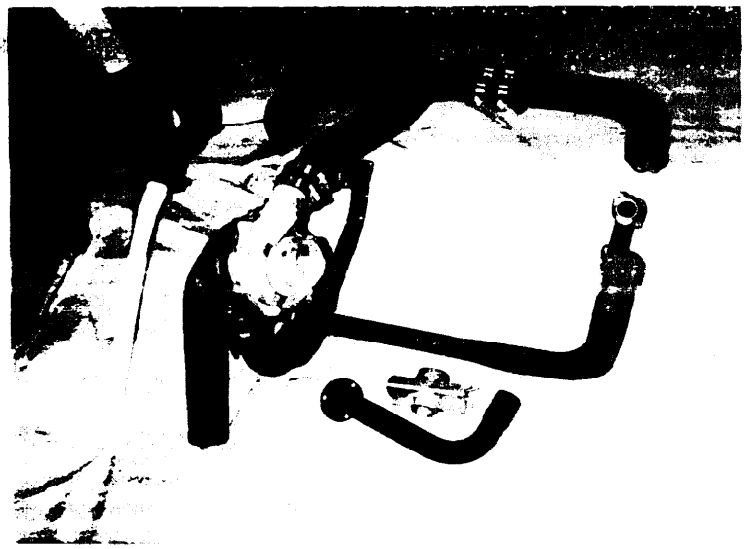
Plans correction - - KR-2 . . . On page 28 of the plan book the dimension on part 'C', bellcrank support brackett, should be 5/8 R instead of 3/8 R. If a hole is drilled using the 3/8 dimension it will not line up with the hole in part 'D' as shown on page 14 . . . Paul Pryor.

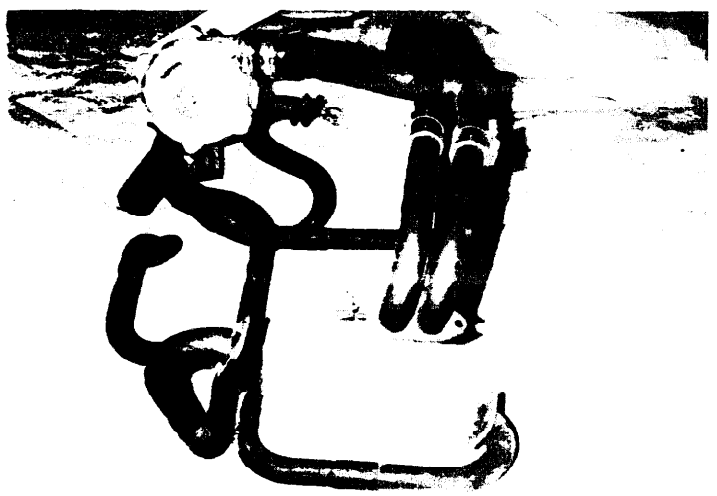
**Ed. Note . . . this same error is in the new KR-1 plans, pages 14 & 26 of the blue book.

***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 tensel and sheer strength; and it soaks up probably only about ½ 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.

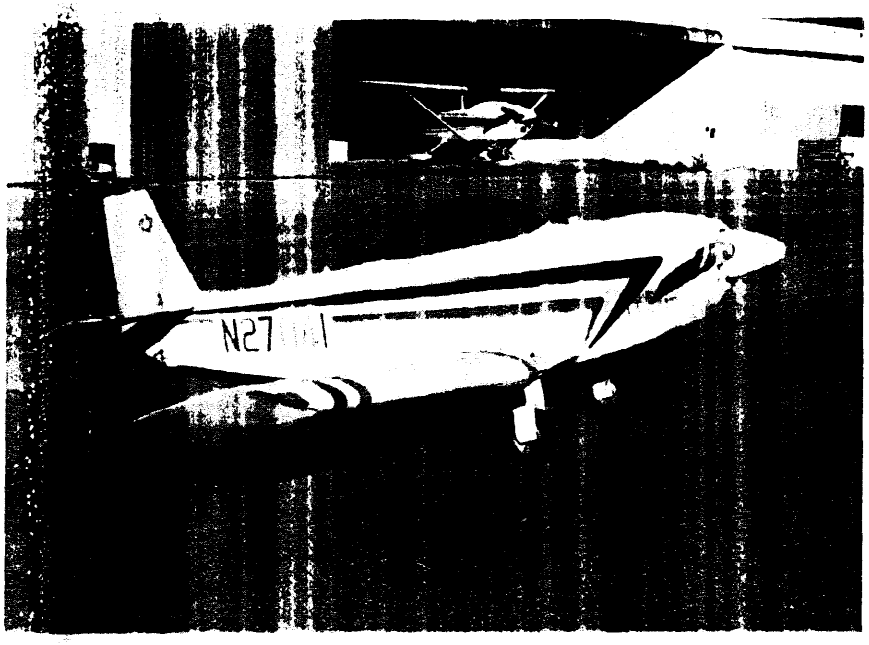
FOR YOUR INFORMATION . . . I have a letter here from Garth Hess, a KR-2 builder in Upland, CA. What he has to say could save you some problems later, so read on . . . "I have made some test of possible gasoline tank cap materials and would like to pass the results on to you. The lids of recommended freezer 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 trailered.

***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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KR-1 KR-2 NEWSLETTER

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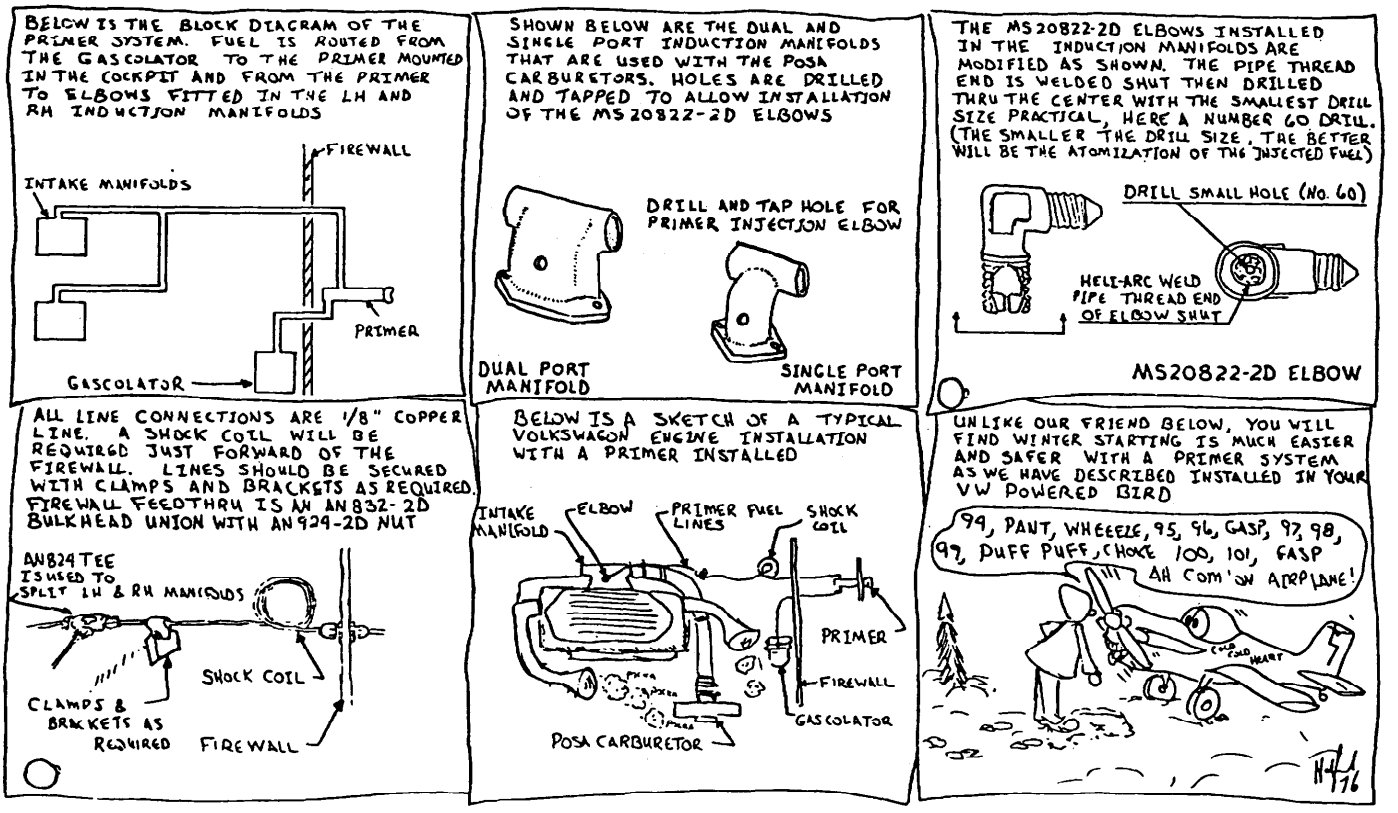
Issue No. 21 March 1977

Anyone who has propped a VW until it felt as though your arm was a hunk of lead will appreciate the primer system shown below. Bill Defreze reports he has installed it on his KR-2 and it now takes only one flip of the prop to start his engine.

The article was printed in the EAA Designee Newsletter.

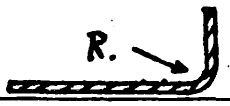
Posa or Lake-type of injector carburetors, particularly when installed in an up draft induction system, need a primer system for cold weather operation. Injectore carburetors do not atomize the fuel as conventional carburetors do. Rather they inject liquid fuel into the indection air stream to find its way, as best it can, to the cylinder intake ports. In warm weather, and/or with a hot engine, there is sufficient heat to readily vaporize the fuel. During cold weather, the fuel does not vaporize readily, consequently it takes a lot of cranking and fuel to get enough fuel to the cylinders to fire the engine. The excess fuel which doesn't make it to the cylinders, runs down the inside of the carburetor and onto the ground if an overboard opening is provided in the cowl. This presents a fire hazard. Worse yet, if the cowl doesn't have a hole below the carburetor throat, as many installations do not, the fuel collects inside the cowl to drain where ever it can find a way out. Think what would happen if the engine whould back-fire during the start in such a situation! In this issue, Harry Homebuilder presents a primer system for the VW engine. This will remove the fire hazard and greatly decrease the hand propping on a cold day.



** For whats what in turbo-charging, get this book...TURBO CHARGERS by Hugh MacInnes. Write or phone H.P. BOOKS, P.O. Box 5367 Tuscon, AZ 85703 PH. 602-888-2150

There are always times when you need a special part to do a particular job. There probably isn't any extra material in the aluminum kit you ordered, so you have to make this part from scratch. Aluminum can be bent if a few simple rules are followed. Use this table as a guide.

NEVER!!..Bend any aircraft structural part on a sharp corner.
Or.....bend a piece, straighten it out, then rebend. Throw it away!
Or.....scratch a line across metal to be bent. Use felt tip markers.



MATL. THICK.		ALLOWABLE BEND RADIUS (minimum)					
		ALUMINUM ALLOYS				STEEL	
FRACT.	DEC.	5052-0 5052-H32 6061-0	2024-0 5052-H34 6061-T4	6061-T6	2024-T3	1010,1020 1025 Carbon	4130 Chromoly condition N
1/40	.025	1/32	1/32	1/32	1/8	1/16	1/16
1/32	.032	1/32	1/32	1/16	1/8	1/16	3/32
1/20	.050	1/16	1/16	3/32	3/16	3/32	1/8
1/16	.063	1/16	3/32	1/8	3/16	1/8	5/32
3/32	.093	3/32	5/32	3/16	3/8	3/16	1/4
1/8	.125	1/8	7/32	9/32	1/2	1/4	5/16

YEILD STRENGTHS (pounds per square inch) for aluminum alloys.
5052-0...14,000 5052-H32...26,000 5052-H34...29,000
6061-0... 8,000 6061-T6 ...40,000 2024-T3,T4.46,000

Source of article is NASA's drafting manual. Aluminum alloys, -0 (pronounced oh, not zero) means dead soft, -H32 is quarter hard, -H34 is half hard and -T3, -T4 & -T6 means heat treated to maximum strengths.

Ed Smith of Tampa, FL

Darrell Bosely (see ad section) is using douglas fir to construct his KR-2. Anticipating questions from the FAA inspectores, Darrell worked out the test weights for each size stringer and spar being used in his KR.

The test procedure and weights were formulated from information in the Dec. 61 Sport Aviation, pge. 15. Below is the numbers applicable to KR-1 and KR-2 construction. (With weights shown test piece should not break.)

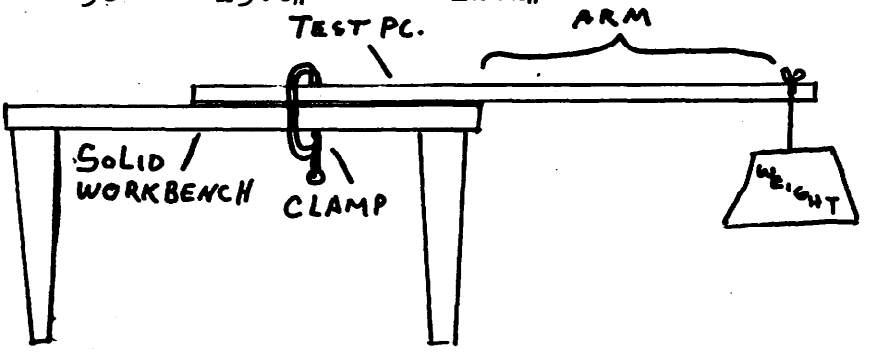
Fuselage pcs.	ARM	FIR	SITKA SPRUCE
5/8"x5/8" test pc.	12"	16.9#	13#
	24"	8.4#	6.5#
	36"	5.6#	4.4#

You can reduce the fir to 19/32 x 19/32 and test to Sitka spruce wts. (It will actually test some higher)

Hor. & ele. stab spars before shaping	ARM	FIR	SITKA SPRUCE
5/8"x 1 7/8"	24"	25.3#	19.7#
	36"	16.9#	13.1#

Vert. and rudder spars	ARM	FIR	SITKA SPRUCE
5/8" x 1 3/4"	12"	47.8#	36.8#
	24"	23.7#	18.4#
	36"	15.8#	12.2#

To test spruce or fir for strength (to eliminate defective pieces) use this set-up.



QUESTIONS & ANSWERS

Q. Has anyone came up with a suitable engine driven fuel pump for the VW conversion?

A. The conversions I've seen with an engine driven pump have used a stock VW unit.

Q. What temperature should foam, dynel and epoxy be stored at? What temperature should they be used or worked at?

A. 70°F. is optimum in all cases, especially for storage. Lengthy storage time is not recommended (over 1 yr.)

Q. Where can I get a good book of instructions on use of foam, epoxy, resin & dynel fabric?

A. The KR plans and past KR Newsletters are the most up to date instructions available.

Q. I understand Revmaster is phasing out the 1700 & 1834 series engine. I've heard and read that 2100cc is pushing the VW engine to the limit and may not be safe, is this true?

A. Revmaster is concentrating on the 2100 and 2500 VW. Current plans are to get FAA certification for these engines so I'm sure capabilities are being thoroughly investigated.

Q. Does anyone make a KR-1 type bubble canopy for the KR-2?

A. No, not specifically for the KR-2, but any bubble the right width can be tailored to fit by using the foam/dynel/epoxy method.

Q. How many inspection plates are required and where are they located?

A. Inspection plates aren't required but should be used. Any moving part should be accessible for service and inspection.

Q. How come so much variation in cruise and top speeds in KRs using the same engine?

A. Weight, frontal area and most importantly the propeller, contribute to to variation in speed.

Q. Where should the vent be installed on the KR-1 main fuel tank? I'm using a metal tank with an unvented cap.

A. Vent the tank at the top, 2 to 3 inches aft of the fwd side.

Q. Should the fin of the KR-1 be diverted to one side to offset torque? How about the engine?

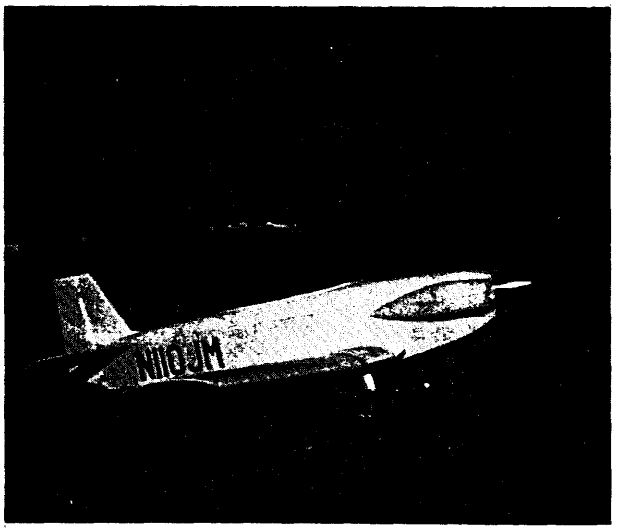
A. Rand says an offset fin is not required. Larger VWs <u>might</u> require a shim under one side of the engine mount but flight characteristics should be checked first.

Q. What qualities does the wing tip design shown in the plans give to the flying characteristics of the aircraft? What might be an alternate design?

A. The tip design was selected for being lowest in drag. Any other wing tip will be OK but Rand recommends the design described in the plans.

This is a picture of my KR-1, N110JM. Started Feb. 74 and completed Dec 29,76. First flight was on the first day of Jan. 1977. Temp. was 23° and when I moved it outside, two cracks appeared in the wing root fillets & one in landing gear opening It was built to plans except for minor mods. to MTR. mount & wings. Empty wt. is 415 lbs. & gross is 610 with 9 gal. fuel. Top speed is 160 mph cruise 145mph Rate of climb is 1200 FPM. Engine is 1600cc with 52-40 prop. To date I have only 4 hrs on the KR but it flies perfect with no bad habits at all.

James McCanles
Butler, MO



TIPS FROM OTHER BUILDERS

The 3-piece center section rib drawing in the KR-2 plans is incorrect and should not be used. Bill Lee of Tavernier, Fl., has been sending out correct rib patterns for those builders that didn't know how to draw their own. Rand/Robinson has corrected drawings now, so send them a S.A.S.E. (business size) if you need the RAF 48 airfoil drawing. Address is Rand/Robinson Engineering 5842 'K' McFadden Ave. Hungtington Beach, CA 92647.

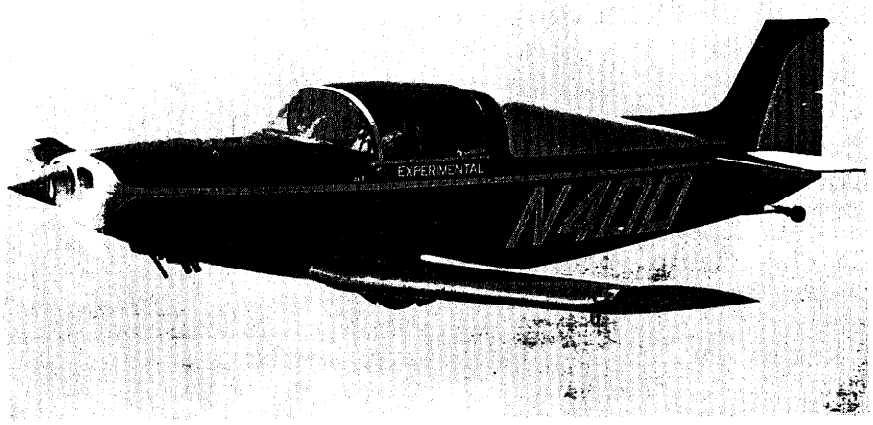
"You can get maximum contact at wood/plywood glue joints by sanding! Get some 3" x 24" sanding belts, glue them to a rigid piece of wood that is approx. 1' longer than the widest piece of work to be sanded. Lightly pencil mark all surfaces to be glued, then sand across until all pencil marks are gone. This will leave all areas level and will provide for 100% contact of wood/plywood. You will be surprised by how much pieces are out of level before sanding."....Darrell Bosely.

"I'm experimenting with a new fire-wall material to go with R/R .005" stainless steel. "Ceramic Paper," looks like blotter paper but is made from ceramic fibers, 3 times better instulator than asbestos at about 1/3 the weight. Melting point is 3200° F.! It is available in 8 sq.ft. kits along with a 4 oz. jar of adhesive. Price is $15.95 ppd. from Edmund Scientific Co. 155 Edscorp Bldg. Barrington, NJ 08007"....Larry Zepp.

"Since my plane has about 140 hours flying time and the weather has been rather cold for flying, I pulled my engine down for inspection. Everything was fine except a wrist pin retainer had broken. The broken retainer, bouncing up and down in the cavity at the side of the piston, caused erosion of the piston to the point that the oil ring siezed and was causing that cylinder to burn oil. In order to eliminate this possibility of retainer breakage, I'm installing wrist pin button type retainers, similar to those used in regular aircraft engines. These buttons can be purchased through Dynomite Products, 12943 South 122 East Ave., Broken Arrow, OK 74012."....Dan Diehl.

COMING EVENTS...big news locally and in western states is the coming of the 3rd annual EAA Regional Fly-in Convention. The fly-in has outgrown Corona Municipal Airport where is was previously held. This year it is to be at Chino Valley Airport on April 29,30 and May 1st. Featured will be daily aerobatic shows, several free forums given by experts in the field of building, testing, flying and maintaining your own airplane. Several aviation interested Hollywood celebrities have been invited to attend. Campgrounds have been arranged for both on the airport and just a few miles down the road at the Prado Regional Park. For more info contact Guy Veasey, 23276 Buckland Ln. El Toro, CA 92630

**Porterville Fly-in is March 27



Dan Diehl's sharp looking KR-2!

The KR flight reports in the recent newsletters have received much favorable comment. The fellows still in the construction stage are learning what to expect from their own KR on the first flight.

The following isn't exactly a flight report but I'm sure everyone will get some useful info from it.

KR-1 ACCIDENT REPORT

James Manento RD #1 Pen Argyl, PA 18072

I finally finished my KR-1 after one year and 11 months of construction. I took it to a friends' private grass strip (2000') for ground testing before having the final FAA insepection. My experience with a tail dragger was nil, with this in mind you can see how I got myself in trouble.

SAT: Wings were put on, made about 10 taxi runs. On one I had a lift-off of about one or two feet for a distance of maybe 50'. Quit for the day.

SUN: Started out with about 8 or 10 runs reaching speeds of 50 to 60 mph. The engine started to overheat so I stopped for a while to let it cool. We pulled the cowling, checked the oil level and the spark plugs for mixture. The engine had cooled down enough so I started my taxi runs again. The first felt real good. I made three runs, breaking ground each time but backing off with plenty of time to stop on the runway. On the fourth run I must have felt I really had it. The first three runs went beautifully which really built up my confidence. Starting out with full power, I raised the tail and held it to about 50 mph keeping a little back pressure on the stick. I felt it start to lift but didn't realize I was off the ground. At this point I pulled the stick a little further which caused the plane to climb very quickly. I realized I had pushed it a little too far. Speed was around 60 to 70 mph. I chopped the power and the plane banked to the left. I corrected to the right but I must have released the back pressure on the stick because the nose dropped causing the plane to hit the gound on the right gear and snapping it off. At the time, I didn't know the gear was broken off, for the plane was firmly on the ground traveling in a slight right turn. It continued to turn until at the end of the slide it was going side ways. The last 20' of the slide was too much for the left gear and it snapped off doing about 99% of the damage.

The following is what I got out of this:

1. The KR-1 is very quick and fast.
2. The distance traveled from point of start to first contact with the ground was 500'. When power was cut plane was up to 10' to 15' A.B.G.
3. The left bank after power was cut must have been due to torque of engine 1500cc 87 mm cyl. 53 x 38 prop.
4. The right gear leg snapped on contact with the ground. The lightening holes cut in the legs might have helped the cause.
5. I used ¼" shear nuts to bolt on the gear legs. The left gear collapsed after stripping the nuts from the bolts.
6. The small wheels performed very well on the grass.

I now have the new gear castings which seem more hefty then the older style. Repairs are going very well. With winter here now, I guess spring will be the next attempt. Only after getting some experience in a tail dragger will I make an attempt at it. All in all the short time I had with it, I was very much impressed

I hope the next report will be better.

R/R UPDATE....Rand/Robinson is adding to their list of parts & supplies available again. They now carry, in stock, KR-2 fiberglass cowlings. Price is only $95.00. Included is baffle & firewall templates.

The KR-1b was rolled into the sunlight. Not ready for that initial flight, just for some engine run ups. The long wings (27') were not attached, so the craft didn't look different from any other KR-1. If the flight characteristics prove acceptable, plans for the long wings & with spoiler/flap system will be available.

BUY-SELL-TRADE

I would like to buy an 1834D Revmaster, low time, with electrics. Starter not necessary. John Reid, 457 Milltown Blvd., St. Stephen, B.C. Canada

KR-2 fiberglass cowlings plus baffle and firewall templates...#125.00. Tail wheels for KR-1 and KR-2, very durable...$14.00 Dan Diehl, 4132 E. 72nd, Tulsa, OK 74136.

Spar drilling jig and long drill bit to loan, $12.00 for two weeks. Return for refund except postage and #2.00 handling charge. Liquid 2-part foam (Newsletter #11,14, & 18) Dual stick & all metal toe-brake rudder pedals. Eight pages plans $1.25 (Newsletter #). 5/8" fir or spruce for longerons. cross pieces, tail spars, rear wing spars or laminated (only) front spars. Save about 50%. Verne Lietz, Box 234, Peshastin, WA 98847. Ph. (509) 548-7504 eves.

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 Monoplane. Gear design featured in Sport Flying, Summer of 1976. Hydraulic brakes. Foam and dynel from Wicks....$800.00. Philip Harris, Palmyra, IL 62674 Ph. 217-436-2253.

Full sized cardboard patterns for all fittings in control system. Will send anyone a set of them for $5.00. (10 pcs. total including a pattern for the fin nose rib. Darrell Bosely, Rte. #4, Marietta, OH 45750.

Ernest Koppe
6141 Choctaw Dr.
Westminster, CA 92683
Ph. (714) 897-2677

6 mo. @ $3.50
1 yr. @ $6.00
Back issues – 50¢ ea.

KR-1 KR-2 NEWSLETTER

Ernest Koppe
6141 Choctaw Dr.
Westminster, CA 92683
Ph. (714) 897-2677

Issue No. 22 April 1977

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) 1½" 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 neglible 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 istalling 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.

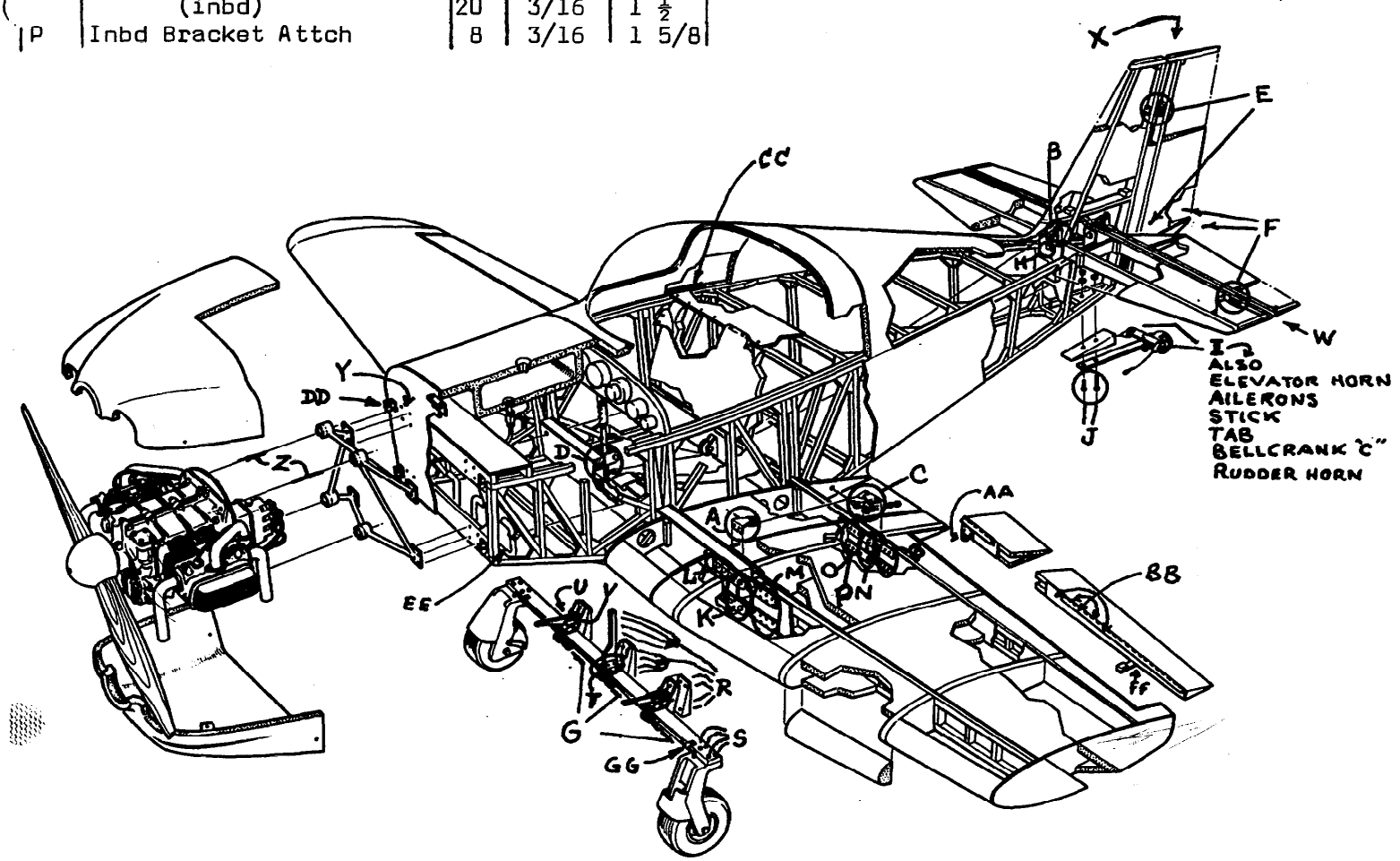
Issue #20 I just realized that with John Shippey's KR-1 flight report, the Newsletter has had four flight reports in a row! Also just noticed I left John's address off. It is Rte 3 Box 270 B, Henager , Alabama 35978. Who's next ?

Issue #21 MORE PICTURES !!! Send pictures of your KR (or anybody elses). 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
A	Aileron pullies	2	3/16	3/4
		2	3/16	1
	Cable guard	2	3/16	1/4
B	Elevator pullies	4	3/16	3/4
		4	3/16	1 1/4
	cable guard	1	3/16	1/4
C	Aileron Bellcrank	2	3/16	2 1/4
	Assembly	4	3/16	1/4
D	Stick Group	4	3/16	1
	Stick to bracket pin	1	1/4	3 1/8
	Lateral pivot pin	1	3/16	2
E	Rudder hinge brackets	7	3/16	7/8
F	Elevator hinge brackets	8	3/16	7/8
		2	3/16	1
		2	3/16	1 1/4
G	Spring pin bolts (pivots)	3	5/16	3 3/8
H	Fin to bulkhd. Attch.	1	3/16	2
I	Clevis bolts	8	3/16	3/4
		8	3/16	1
J	Tailwheel Spring	1	1/4	2
		1	1/4	1 1/2
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 attch. (inbd)	20	3/16	1 1/2
P	Inbd Bracket Attch	8	3/16	1 5/8
Q	Outboard	28	3/16	1 1/4
R	Lndg. gr. casting to spar	6	1/4	3 3/8
		6	1/4	3 3/4
S	Gear leg to spring	8	1/4	1 1/2
T	Gear retract hndl	4	3/16	1/4
	Handle to spring	4	3/16	1 3/8
U	Gear latch bracket	8	3/16	1 1/4
V	" " Pivot pin	2	3/16	3 3/8
W	Elevator pivot pins	3	1/4	1 1/4
X	Rudder pivot pins	2	1/4	1 1/4
Y	Engine mnt to firewall	16	3/16	1 1/8
Z	Engine to mount	4	10mm	50mm
AA	Aileron contrl horn	4	1/8fh	7/8
	flat hd 82° csk	2	1/8fh	1/4
BB	Aileron Piano hinge	152	1/8fh	1/4
CC	Bubble piano hinge	48	1/8fh	1/4
DD	Cowl attach clips	27	1/8fh	1 1/8
EE	Rudder pdl piano hinge	14	1/8fh	1
		14	1/8fh	3/4
FF	Aileron counter balance	4	3/16	3/8
GG	Brake cable clips	2	1/8	1 1/4

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 1½" 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 Farleight 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 Laural, 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 Monoplane. 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!!

ERNEST KOPPE
6141 CHOCTAW DR.
WESTMINSTER, CA 92683
Issue #22

6 mo. @ $3.50
1 yr. @ $6.00
Back issues — 50¢ ea.

KR-1 KR-2 NEWSLETTER

Ernest Koppe
6141 Choctaw Dr.
Westminster, CA 92683
Ph. (714) 897-2677

#33
May 1977

Spring is on us and the serious business of attending fly-ins is at hand. At least I tell my wife it's serious business but I'm not sure she believes me. Anyway, Bob Stone and I have been working feverishly to get our KR-2 ready for the EAA Western Regional Fly-in at Chino, CA. We were there but there are a few more details to take care of before the FAA final inspection to get the airworthiness certificate (placards, labels, & etc.). The picture of our plane, N31158, was taken just after the paint was applied. Color is white with green and yellow stripes. More details with the picture.

There are several fly-ins between now and the big one at Oshkosh. I am going to attend all of them in my area but the anticipation of the Silver Anniversary of EAA is getting to me. I just can't stand the wait. A couple dozen KR-1 & 2 builders told me they have definite plans to have their KRs at Oshkosh this year. I'll be happy if only half actually get there but if they all make it, wow!! See you there.

The 2nd Annual Indoor Aircraft Show at Anaheim, CA Convention Center is scheduled for May 13, 14, & 15 this year. An outside type fly-in at Angel Stadium will be held prior to the show and then the display aircraft will be towed down Katella Ave. to the Convention Center.

East Coast builders can get together at the Kentucky "Sport Aviation Week-end" on May 13, 14, & 15 at Rough River State Resort Park Airport. This fly-in is the joint efforts of EAA Chapters 110, 162, 169, & 482 along with the Kentucky Aviation Assoc., the Kentucky Division of Aeronautics and the Kentucky Dept. of Parks. Co-operation of all these people to promote interest in our sport are to be congratulated. I hope their effort is highly successful. (Contact Glenn T. Bumpous for more info...Ph. 502-564-4590.)

Other happendings....May 14 & 15 at Quincy, FL "Fabulous Fifth Fly-in" sponsored by EAA Chapter 445....May 15th At Newburyport, Mass "Picnic Fly-in" in Plum Island Airport sponsored by EAA Chapter 502...May 28 & 29 at Watsonville, CA "13th Annual West Coast Antique Aircraft Fly-in and Airshow"....May 21 & 22 at Brown field in San Diego, CA a fly-in for antiques, homebuilts and warbirds. Everyone welcome.

RAND/ROBINSON UPDATE

The fiberglass cowlings are being received well, so the guys at R/R decided to go a step further. Now available already formed is the forward deck/fuel tank/instrument panel section of the KR-2. Not only does this unit save hours and hours of construction time, it also increases the fuel capacity to 16+ gallons. Price of the fiberglass pieces available from R/R is as follows....cowling, already split, firewall and baffle templates, $95.00....forward deck/fuel tank/instrument panel, $115.00.

New price lists for KR-1 and KR-2 parts and kits are available (effective 4-77). All the new parts and kits R/R now carries are listed. Send a S.A.S.E. to Rand/Robinson Engineering,Inc., 5842 "K" McFadden Ave. , Huntington Beach, CA 92649. Ph. (714) 898-3811.

Received more information on Warren Aiken's aircraft. Warren now has approx. 20 hours on his KR-2 and reports the following:

Engine.....1800 cc VW using a Monnett conversion, dual port intake, 29mm Posa.
Prop.....Made own, ground adjustable, weight 4 lbs. Now spinning 52 x 44 at 3900 T.O. 3200 cruise.
Weight.....460 lbs w/oil, no fuel.
Stall.....just mushed down, nose doesn't drop.
Mods.....GA(W)-1 airfoil, 2" added to rudder & elevator, pressure cowl.
High speed cruise is about 155 ind., landing about 40.

Warren Aiken, 2323 Farleigh Rd., Columbus, OH 43221

TIPS FROM OTHER BUILDERS.....I received a bit of an eye opener when I roughed out the loads on the engine shock mounts and the forward fuselage. Knowing the numbers won't hurt anyone's project & it may cause a few folks to cast a wary eyeball on their glue joints. Supposing +5g & -2g situations with full torque, we find that each upper shock mount is required to survive up to 175 lbs shear with either 175 lbs compression or 75 lbs. compression or 75 lbs tension. The reason for this asymetry is that the upper two absorb the tipping moment in tension or compression with nearly zero arm while the lower mounts have a nearly 14" arm. "ONE DROP HOLD A TON"....I certainly hope so. Dale Walker, 11018 Hedwig Green, Houston, TX 77024.

Darrell Bosely sent the following tips...be sure you install the rear spar top wing attach fittings low enough to allow you to bevel the spar. Clamp all assemblies in place to check clearances before drilling spar....bevel fuselage vert. pieces under hor. stab. spar to receive ply bulkheads before skin is glued on....put a coating of wet varnish on each bolt on final assembly of metal to wood parts. Wood does have moisture and the bolts can corrode or rust.

Ready to start your VW engine for the first time? Prime the oil pump!! Your KR, sitting there with its' nose in the air, has left the oil pump high & dry. A lengthy period of disuse of the engine can cause the oil in your engine to drain away from the oil pump. A dry start can cause possible damage to your engine. If your aircraft has sat awhile without use, take the following precautions:

1. Check to see all switches are in the off position.
2. Raise the tail until the aircraft is level, or slightly nose down.
3. Turn the prop thru several revolutions (6 or more).
4. Tie the aircraft down then go thru the regular starting procedure.
   WATCH THAT OIL PRESSURE!!!
5. If you do not have an oil pressure reading in 15 sec. repeat the previous steps.

QUESTIONS & ANSWERS

Q. Are wood screws used to hold the aileron hinge?
A. No, wood screws should not be used any place except possibly to hold the sling seat at the main spar.
Q. Are face plates required with R/R's fiberglass prop hub?
A. Yes, treat these hubs as though they are wood. .125 AL 2024T3 works fine.
Q. What in the world does the term "scarffing" mean?
A. Scarffing is the method used to join two pieces of plywood. Accepted ratio is 10 to 1, i.e. 3/32 plywood requires a 15/16 scarf joint.

BUY-SELL-TRADE

FOR SALE: KR-2, N31158 (see picture) This aircraft just recently completed and has not yet flown. The engine is a VW 1700, balanced crank, stainless valves, alternator, etc. The plane will have a R/R 3-blade adjustable prop and final FAA inspection when sold. Price is $5500.00. Will consider partial trade, (engine instruments, etc.). I have a KR-1 50% complete to finish. Write to me at the address on the newsletter if you're interested. E.K.

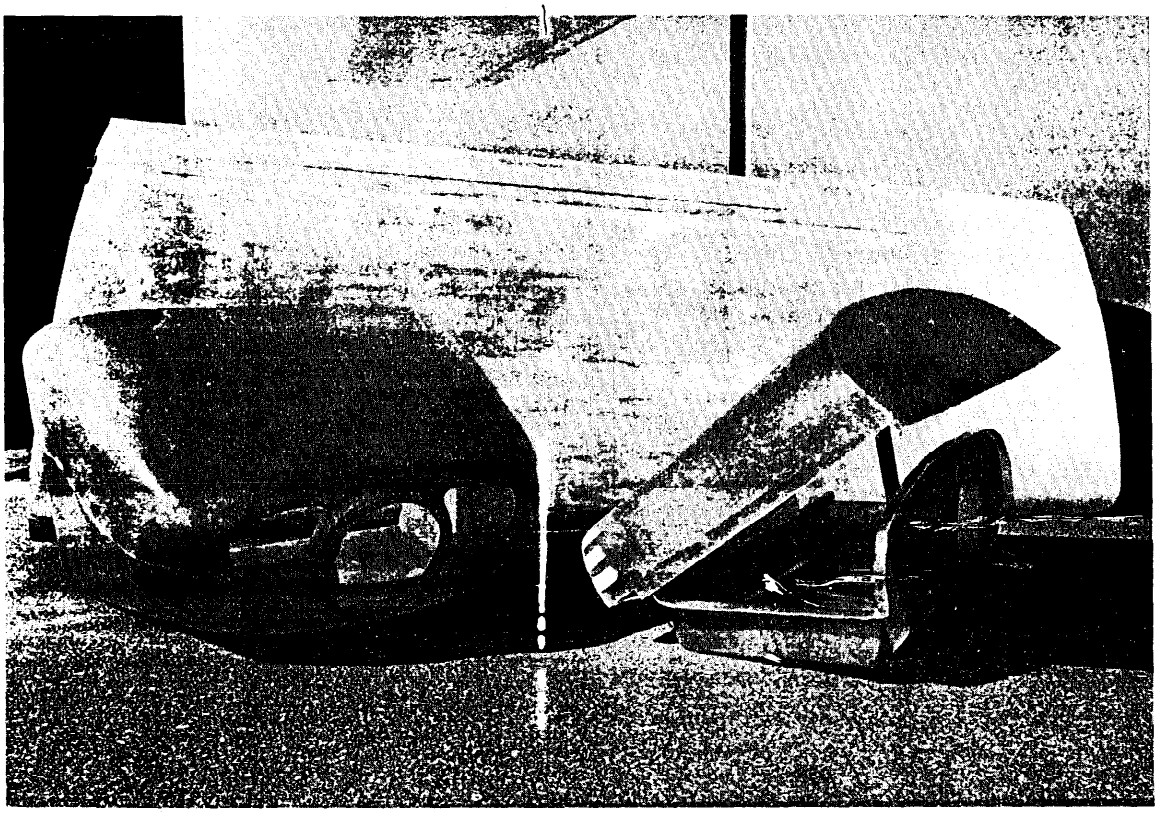
FOR SALE: KR-2 project. Fuselage sides, bottom assembled & skinned. Center spars assembled, no webs. Plans, all KR Newsletters, remainder of spruce & plywood kits, $500.00.....Ken Neely, 1196 Morning Sun Dr., Pomona, CA 91767 or phone 714-623-2701.

FOR SALE: KR-1 canopy (clear) $40.00 plus shipping...Dennis Busch, 307 Deens Ln, Bay City, MI 48706.

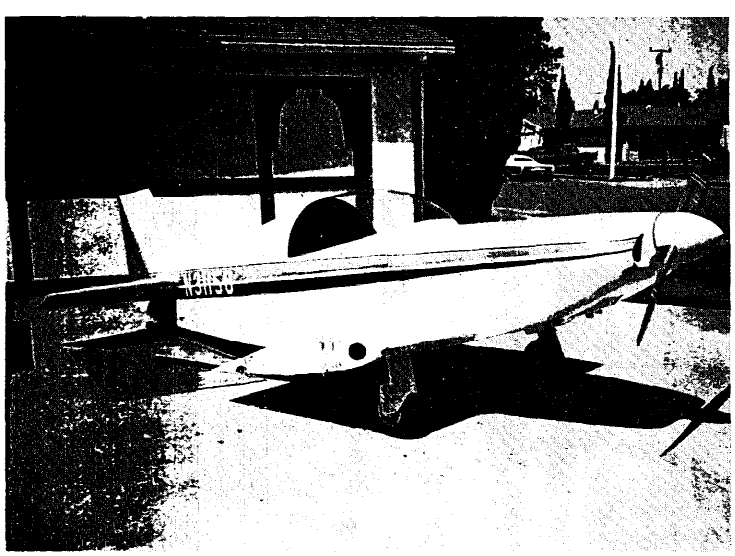
FOR SALE: Rand/Robinson KR-2 engine mount $60.00 plus shipping....Gilbert Shue, 1372 Kitchen Rd., Pinconning, MI 48650.

FOR SALE: Full size cardboard patterns for all control fittings and fin nose rib. Includes a 3D view of aileron bellcrank & brackets in position, use of eye bolts at top rudder hinge, etc. All for $5.00.....Darrell Bosely, Rte. 4, Marietta, OH 45750.

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

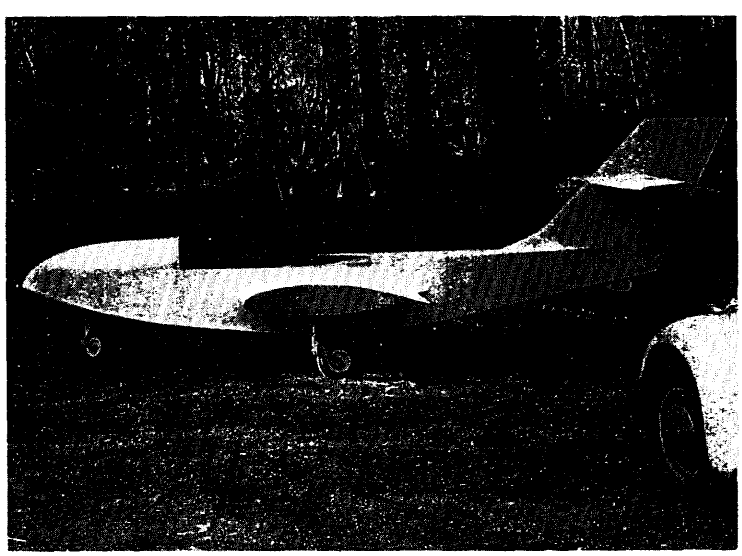


FIBERGLASS KR-2 PARTS NOW AVAILABLE....as you see in the picture, the fuel tank has been indented for radio gear. The wing panel in the background is the GA(W)-1 airfoil off the KR-3.



KR-2 N31158

Here is the reason this month's Newsletter is a week late. This beautiful KR-2 belongs to Robert Stone and myself and we were frantically preparing the craft for the EAA fly-in at Chino. I was very pleased to accept the trophy for "Best Composite" from EAA Pres. Paul Poberezny. Made all those hours of work worth while.



The KR-3 made its' public debut at Chino. The picture I have doesn't show it off very well bu you get the idea. First flight of the amphib is still in the "coming soon" stage. Ken was awarded a trophy for "Best Static Display" for the amphib.

I am continually receiving questions as to the ability of the KRs to handle crosswinds & just how much crosswind they can handle. The crosswind capability of any aircraft will depend much on the ability of the pilot. Here are some rules that apply to any aircraft & can be used as a "rule of thumb" with our KRs.

1. Never attempt taxiing when crosswinds or gusts exceed 50% of stall speeds unless outside assistance is used. Taxi very slowly when winds exceed 30% of stall speed.
2. Never attempt take-off or landing when 90^{o} surface crosswind exceed 20% of stall speed or 45^{o} surface winds exceed 30% of stall speed.
3. Never taxi closer than 1,000' from "blast" end of powerful aircraft and then only when headed into remaining blast effect.
4. Never follow a powerful aircraft on take off, in the air, or on landing without allowing time for turbulence to subside (2 minutes if a jet).

KR-2 Bolt list continued from Issue #22

	Summary Washers	#	Dia. I.D.
	Aluminum Washers	900	3/16
	Aluminum Washers	130	1/4
	Aluminum Washers	15	5/16
	Aluminum Washers	300	1/8

#	Summary Bolts		
11	3/16 x 1/4	5	1/4 x 1 1/4
14	3/16 x 3/4	13	1/4 x 1 1/2
15	3/16 x 7/8	1	1/4 x 2
16	3/16 x 1	7	1/4 x 3 1/8
x-42	3/16 x 1 1/4	6	1/4 x 3 3/4
4	3/16 x 1 3/8	3	5/16 x 3 3/8
24	3/16 x 1 1/2	200	1/8 x 1/4 F.H.
8	3/16 x 1 5/8	4	3/8 x 1/4 F.H.
2	3/16 x 2	24	1/8 x 3/4 F.H
34	3/16 x 2 1/4	14	1/8 x 1 F.H.
32	3/16 x 2 1/2	41	1/8 x 1 1/8 F.H.
x-16	3/16 x 1 1/8	2	1/8 x 1 1/4 F.H.
		4	10mm x 50mm

#	Summary Lock Nuts Size
218	3/16
32	1/4
3	5/16
285	1/8

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
ISSUE #23

KR Newsletter

ISSUE #24 JUNE 1977

Ever since the EAA fly-in at Chino last month, questions have been pouring in. "How did you get such a smooth finish?" "What kind of paint are you using?" "Why are you selling your KR-2?" Etc, etc.

The last two questions are easy, the paint used is DuPont "Centari" acryllic auto enamel. It's great! Reason for selling? To finance another project of course. I'm going to finish my KR-1 and maybe get on to a KR-3. The smooth finish.....that will take a little more space to describe but it is important, so here goes.

Just as in any other phase of construction the end product will reflect the amount of time and effort that went into the very first steps, in this case, shaping and sanding the foam. Foam is so easy to work most builders have a tenency to sand more than is needed. What happens then is one (or all) of three things. One, the foam becomes too thin and will sag when the Dynel/epoxy skin is applied. Two, the wood spars do not sand as readily as the foam so, unless care is used, the spars will leave a ridge that cannot be safely sanded flat. Sanding thru the skin along a spar is inviting disaster. Three, the amount of filler needed to smooth out an uneven surface adds unwanted weight.

Time now for a few positive thoughts, don't want to get you discouraged. The foam is easiest to sand when it is securely in place. (Loose foam sections make for a very bumpy surface.) Two of the best ways to hold the foam in place is by the use of epoxy or liquid foam, check your back Newsletter for details.

Now then, we have the foam under control, let's get on to the skin. Whether you use Dynel, fiberglass, Sharkskin, or whatever, a basic rule is going to apply. Cover as much area with one piece as is possible, fewer laps mean a smoother surface. This is where Dynel shines, I've yet to see any other fabric get in corners and around curves as well. This is important when you're ready to start sanding. One disadvantage of Dynel is the fact that you must use an epoxy that will not become too brittle. The epoxies necessary to let Dynel reach its full capability does not provide a good finishing surface. Answer to this problem is a good primer. One such is Feather-fil, not only is it a primer, it will also serve as a filler for the many pin holes that always seem to show up. I use Feather-fil as the first step in a two stage finish sanding operation. First the Feather-fill is sanded then a coat of regular primer is applied and sanded. This last primer should be compatible with whatever type paint you plan to use. Several sources recommend using a primer that has carbon black added as a deterrent to possible damage from UV rays emitted from the sun. I'm sure much research went into this, so it would seem reasonable to follow the advice.

Some epoxies will lose rigidity when heated, they will, in fact, become quite soft. The heat from direct sunlight on a dark surface is sufficient to generate enough heat to cause this problem so, take one more tip from the experts, paint it white.

* * * * * * * * * * * * * * * * * *

When I started writing this newsletter 2 years ago my KR-1 was about 50% complete. Now, after deciding on the final configuration, it's closer to 40% complete. Must be doing something wrong!?! Not really, in the last 2 years I have had the opportunity & pleasure to compare ideas with hundreds of KR builders. Modifications made (or that will be made) to the -1 is the reason for the decline in progress. Nothing major, just a lot of minor things. Watch future Newsletters for progess.

BUY SELL TRADE

FOR SALE...KR-2 project at material cost. Fuselage 95% complete. Spar material, Mahogany and Spruce. Also kits #5, 6 & 8. E.J. Dyke, 1010 - 10th, Gothenburg, NE 69138. Phone-803-537-3530 eves.

FOR SALE...Control stick assembly for KR-2, $20.00 plus postage. Send for photos of assembly installed. Francis Brooks, 9542 - 134th Way North, Seminole, FL 33542 or phone 813-596-6217.

FOR SALE...KR-2 project. Basic fuselage complete, wing spars complete & installed. Landing gear 90% complete and installed. All wood to finish empennage and ailerons. $900.00...Bruce Gray, 356 Lafeyette Dr., Oxnard, CA 93030. Phone (nights) 805-485-6306 or (days) 483-7044.

Freon operated gear retract & extend. Less than 3¢ cost per cycle. Manual back-up. Send S.A.S.E. for details. Kits available. Paul Pryor, P.O. Box 435, Mayaguez, Puerto Rico 00708.

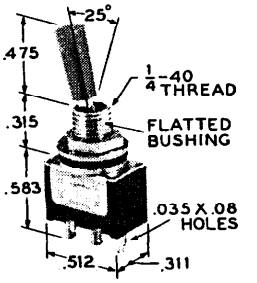
KR-2 jacket patch--$1.80 postage paid or $1.65 with a SASE. Cock-pit interiors for KR-1 and 2. Darwin E. Roach, 1158 Wanda Dr., Granite City, IL 62040.

Complete plans for an inward folding landing gear system...$10.00. 90° Magneto drive, lets you bolt a Magneto in the distributor hole...$75.00. Glenn Ware, 223 B E. 23rd. Costa Mesa, CA 92627. Phone 714-642-5162.
Editor's NoteI was able to get a close look at Glenn's landing gear as installed on his Teenie Two. A well-thought out system. Looks like a natural for KRs.

FOR SALE...KR-1 kits. New plans, work table. All parts to build a KR-1 less engine, prop & instruments...$1150.00. Mac McCraw, 825 N. Janss, Anaheim, CA 92805 or Phone 714-991-6057.

Ready for that final touch? Pinstriping, lettering, & numbers for aircraft, autos, etc. by Ed "Big Daddy" Roth. Write or call Ed Roth, 14245 San Feliciano, La Mirada, CA Phone (714) 523-8676.

TIPS FROM OTHER BUILDERS...Want to save space on your instrument panel? Try these switches, they're compact & durable. Good for 50,000 operations. Each pole rated 6 amps @ 28V which makes for 9 amps @ 12V. A typical switch is pictured here but many types are available. For more info write to Cutter-Hammer, Specialty Products Div., 4201 North 27th St., Milwaukee, WI 53216.....Bror Faber.



I have come up with a gear retract system for KR-1 & 2 which retracts or extends at the touch of a button. The system uses freon gas as a power source & will give over 60 cycles per one lb can of freon. The only change made to the present parts is the fabrication of a new gear handle. You still have the manual system as a back-up in case of pressure loss. The cost works out to less then 3 cents per cycle for the freon. The overall weight increase is less than 3 lbs. A SASE will bring complete details..... Paul Pryor, P.O. Box 435, Mayaguez, Puerto Rico 00708.

The wing attach bolts on our KRs are sometimes a real hassle to reach. Now things are looking up, some new wrenches are hitting the market that appear to have our problem well in hand. One I likebest is called "Tite-Sqez" which is actually a complete tool kit, the heart of which is a squeeze action ratchet. Cost is in the $20.00 range and well worth it. You get the 9/16" master ratchet, 5 inserts, ¼" thru ½", 4 screwdriver tips (2 Phillips), 6 allen wrenches, 5 metric inserts, 9mm to 14mm and a 3/8" socket drive attachment. All this comes in a box moulded to fit each piece. For more info send a SASE to A. Lipp, 3640 Sepulveda Blvd, #217, Los Angeles, CA 90034. Tell him you read about it in the KR Newsletter.

Charlie Wells gear latch system was a big hit in a past Newsletter. I've talked with a couple of builders who feel it's the "only" way to to go ". John Galecic, P.O. Box 67 Hookstown, PA 15050 has adapted a hand operated brake to Charlie's mod and will send pics and drawings to anyone interested. Send $1.00 to cover cost of pics, printing & mailing.

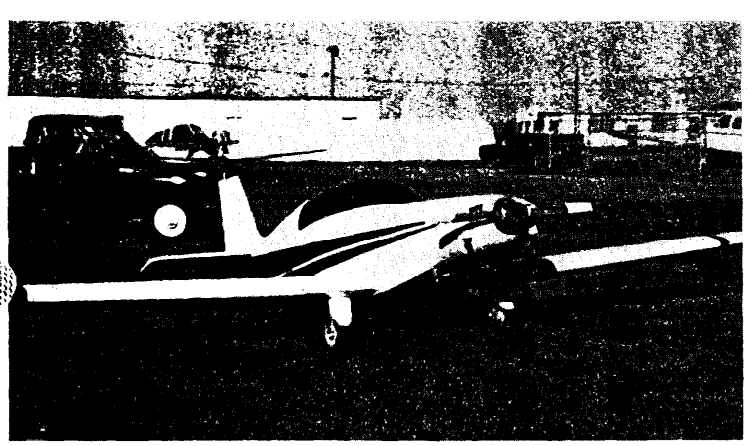
From Murray Rouse, 12579 Laurel, Lakeside, CA 92040....Now that the actual building of my KR-2 is over and to date have enjoyed over 30 hrs of flight, I guess fellow builders might want to know my impressions.

To start in the beginning, building and flying my own airplane has been an ambition of mine for fifteen years. Most of the popular plans were studied and I jumped around from one potential project to the other but all seemed to posses some compromises, either in performance, cost, or cost to operate. Until Ken Rand that is! The airplane was right and refreshingly, the cost of plans and materials were realistic.

Well, fifteen months later I rolled a completed KR-2 out of my garage. For the benefit of those who are still building I would like to say a few things about this phase. I've observed a few KRs for a couple years that seem to progress very slowly. Understandably, different people work at different speeds but in almost every case, these builders can't seem to accept the airplane like it is. Modifications require lots of time and I can tell you after flying my ship that these tiny airplanes need no modifications but are very strong, docile and well performing as designed. So, stick to the plans get it done and enjoy. Take this from a builder who has seen both sides, carefully consider all things, including weight before proceeding with changes.

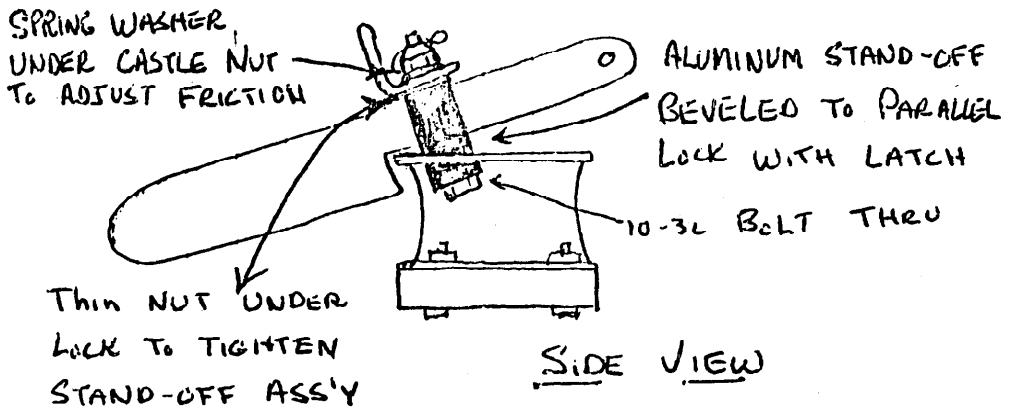
Now, of more interest I'm sure, how does it fly? Let me first mention that Im a low time private pilot with experience in only three different planes, mostly taildragger time. This was probably quite valuable. The ground handling seems 'normal' whatever that means, it just seems natural. Even the simple (dumb was my first impression) hand 'pull on the cable' brakes seem perfect, offering plenty of stop power without too much risk of standing it on the nose. Forward visibility is quite limited in three point, slight S turns take care of that. For first flight (using suitable airport) you'll help yourself a lot by feeding in throttle slowly being sure of total control before advancing more power. Suddenly you'll be flying, all the time carrying somewhat a neutral stick, and expect plenty of results when control inputs are made. Go easy, keep your speed up and you'll find within minutes an airplane very delightful to fly and responsive to touch. In the air it again seems 'normal' with no hidden tricks. Now the most important flight you'll ever make must end with a safe landing so let's not let the speed drop off too much. Even close to stall all controls are fully effective so don't get a sense of false security. If its sinking fast, you're slow. Don't feel committed to a landing without a decent approach. Keep your elevator inputs to gradual nudges, the ship will float when down close and finally break through ground effect without the pilot having to do much but just 'hold it barely off'. If you do this it will land itself. You may need quick rudder corrections but nudge, don't shove. It's easy as taildraggers go. If a gound-loop seems to be developing, get that throttle in and go around, it'll be in the air immediately. Avoid crosswinds for awhile, work into them gently.

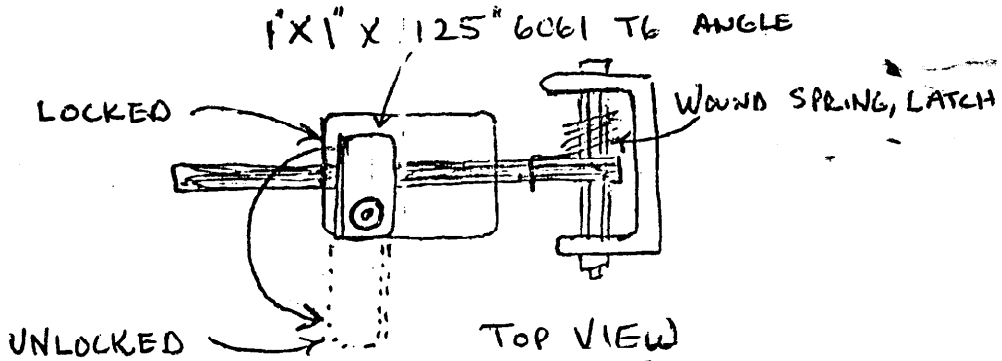
My impressions of flying this may seem quite elementary to some but to those who "wonder" about what kind a monster they're working on I hope I've left you feeling the need for caution, not fear. Make very sure everything is right...airplane, fuel, weather and pilot. If you can find another KR pilot or test pilot experienced in light homebuilts do it!



To date, my figures on performance are only approx. but seem to be about like this...stall-under 50, cruise-150, top around 165, climb-900+ depending on fuel load. My KR-2 has the Revmaster 2100, uses about 4¼ GPH, has full electric with starter, alternator, radio, omni, wing tanks, total fuel cap. 25 gal. EW-570 lbs. Probably the heaviest one so far. In summary, I like my little airplane very much, even more than I'd hoped for. I've also found all the people at R/R to be very honest and responsive to their builders. You just can't do better. As time allows I'll share a few building hints as I found many in this Newsletter helpful.

SAFETY LATCH





On more than one occasion, the latches have failed to hold (stay down) on the KRs. Well when it happened to my ship (damage was minor) a fellow builder and I decided to do something and came up with this. It's simple, light, and can be made in an evening. I think you owe that much time to your prop and cowl. This not only holds one lever down, it makes sure it's <u>completely</u> down to start with..... Murray Rouse and Butch Grafton.

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
ISSUE #24

K-R Newsletter

ISSUE #25 JULY 1977

Summer at last!! KRs are rolling out of garages, basements, and hangars like butterflies out of a cocoon. The fly-in season is here with the warm summer sunshine, get out and go!

Have you made plans for the big one at Oshkosh? End of this month starts it winging. I'm really looking forward to seeing many friends there plus all the new guys who are planning to be in the middle of things this year. My family isn't going to camp at the campgrounds this time, matter of fact, they aren't going..period. That means I'll be looking for a place to throw my bedroll. Any offers? Ken Rand is going to fly his KR-2 to Oshkosh and is also looking for a place to bunk. So....if you're looking for someone to share expenses, let me know.

Been getting lots of letters requesting info on the KR-3 amphibian. I didn't know so many were interested in this type of aircraft. At this writing, initial water taxi test has been made. All proved well except for a tendency toward a super quick 180 (waterloop?) if a wing tip hit water. Stu Robinson has installed floats and I am waiting word of his results with this addition. First flight test will be made if everthing is satisfactory. The KR-3 will be at Oshkosh in any case, hopefully with some flight time on the bird.

Revmasters latest Turbo 2100 D and Maloof adjustable prop is installed on Ken's KR-2. Makes a beautiful combination, look for it at Oshkosh and future fly-ins.

We have another flight report for you. This one is with an aircraft engine and should prove very interesting to all. The fact that it is 100+ lbs. overweight and still has such good performance is great news to many builders worried about their overweight projects. Many thanks to Odran Benson for the report. Maybe he will send us a picture for a future newsletter.

Speaking of pictures, I received one from Irwin Faur, Box 236, Princeton, IA 52768. A snapshot of just completed KR-2. Unfortunately it is a color picture and one that will not reproduce well. Irwin has not had the final inspection from the FAA yet as there are a few things to take care of . He expects to make the first flight in July.

A few issues back I requested information on completed, flying KRs for our fellow builders in Australia. Thru a misunderstanding on my part I stated info needed was a total of 100 hours on seven KR-1s or KR-2s. I should have said 100 hrs on each of seven or more KRs of each type. The Australian version of our FAA requires this info before the KRs will be listed as an "Approved to Build" aircraft in Australia. I know of at least four KRs that qualify, Ken's N4KR, the Wicks Organ KR-2 N100MW, Dan Deihl's KR-2 N4DD and Fred Kellar's KR-1 N5552. The number would be five if you count the KR-1 that started it all, N1436, but it is no longer flying so I'm not sure it counts. More and more KRs are flying so its only a matter of time til several have accumulated 100 hours or more. Unfortunately, unless word is passed on to the Australian builders they will not be able to enjoy these great little planes. Please send a note to this Newsletter if your KR has reached the 100 hour mark (or if you know of one who has). I will forward the information to the fellows "down under" to get their projects going. Name of builder, type of aircraft, registration number and hours flown, that's all that is needed so send it in. Many thanks

KR-2 FLIGHT REPORT...On June 1st following a successful pre-flight inspection by Phil Westbrook of the FAA in Teterboro, NJ office, N2508 took to the air for the first time.

With a stiff 15 mph breeze directly down the runway, the plane lifted off in about 300' (8 seconds) with pilot and 10 gallons of gas aboard. The Warnke ground adjustable prop had been set to minimum pitch and engine speed was held to 2600 rpm with less than half throttle. All controls functioned nicely and after a 20 minute flight which included gentle stalls and medium banks, etc. all with gear down, the plane landed gracefully after some considerable floating down the 5000' runway.

The second flight included retraction of the gear...it really works easily. Steep banks and climb out, a high speed low level pass at 150 mph indicated were included in this 35 minute flight.

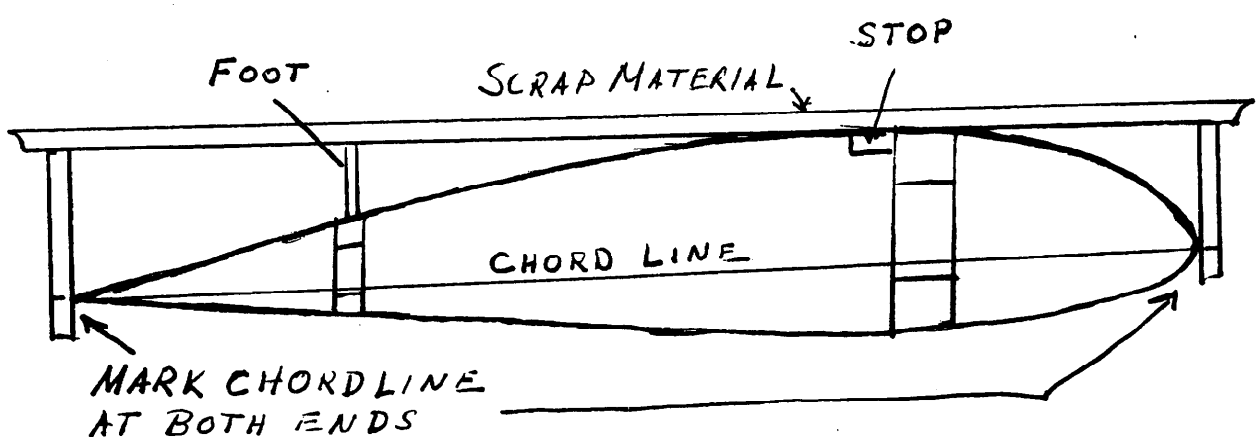
The third flight had both builder and test pilot (Rusty Burtch) aboard and for me this was the high light of two years and 1015 hours of work. Controls were sensitive and positive. All maneuvers were smooth and effortless. The Continental A-75 engine works beautifully. Some doubt on the accuracy of the air speed indicator makes me hesitate to quote actual figures. A static port was not installed and this may be part of the problem. Enough to say I am more than satisfied with initial flights and testing will continue until such time as I can prepare an accurate test report with performance figures which have been verified.

The fourth flight of the evening included rolls which looked very good and a further work out on steep turns and wing overs, this time with pilot only. With darkness approaching, the runway lights were on, the final flight of the day came to an end with a total time of over two hours clocked up on the first day.

Since June 1st an additional ten hours have been flown and the mid-range of the ground adjustable prop has been selected as most suitable. The air speed indicator has been checked against other aircraft and a top speed in excess of 170 mph is easily achieved (at 2600 rpm in still air) a cruise of 145 at 2450 is very comfortable for the engine. The plane has been looped, rolled, stalled and done wing overs. Rate of climb is between 700 and 2000 fpm depending on loading. Empty weight of the plane is 589 lbs. I used 15 gallons of resin and this may be part of the overweight. The only critical feature is landing. Approach is made between 90 and 100 mph holding 75-80 mph down to ground effect. At touch-down the needle is at the peg but appears to be about 50 mph. One has to be very careful not to drop a wing during the final holding period. On take-off the throttle must be advanced slowly and considerable right rudder held until lift-off and flying speed is attained. All movements of the control stick must be gentle and of small magnitude or over-control could occur. This is especially true in stalls.

All in all I am well satisfied with my KR-2 and believe more than ever that the Continental A-75 was the way to go.....Odran Benson, 14602 Fancher Ave., Fair Haven, NY 13064.

Raymond Marshall sent in this handy idea. No problem lining up all three pieces of the center section rib with this jig. Ray's address is 120 Anderson Pl., Martinsville, Ind. 46151. He would like to meet with other KR builders in his area.



BUY-SELL-TRADE

FOR SALE...KR-2 project at material cost. Fuselage 95% complete. Spar material, mahongany and spruce. Also kits #5,6, & 8. E.J. Dyke, 1010 - 10th, Gothenburg, NE 69138. Phone 308-537-3530 eves.

Freon operated gear retract & extend. Less than 3¢ cost per cycle. Manual back-up. Send S.A.S.E for details. Kits available. Paul Pryor, P.O. Box 435, Mayaguez, Puerto Rico 00708.

Complete plans for an inward folding landing gear system...$10.00. 90° magneto drive, lets you bolt a magneto in the distributor hole...$75.00. Glenn Ware, 223 B East 23rd Costa Mesa, CA 92627. Phone 714-642-5162.

Ready for that final touch? Pinstriping, lettering, and numbers for aircraft, autos, etc. by Ed "Big Daddy" Roth. Write or call Ed Roth, 14245 San Feliciano, La Mirada, CA Phone 714-523-8676.

TRADE...1936 Chev 4-door Master Delux for a KR-1. The car has many new parts, no rust, and two engines. Bill Bayman, 1216 Maple, Clarkston, WA 99403.

FOR SALE...Rimco line bored case, aluminum NPR 92mm pistons & barrels, new crank, cam, lifter, all bearings, valves, guides & ground seats. Accessory case w/starter & mag, mounting for alternator (drive included), prop hub, oil cooler, inlet manifold fittings, gaskets & much more. Sacrifice $750.00 firm. Mary Rezmer...714-894-9131 or 714-846-0358 after 10 pm.

Liquid foam. If you can't find it cheaper there, send $33.50 for 2-gal kit, $12.95 for 2 qt kit, $9.50 for 2-pt kit, UPS prepaid. Dual sticks, toe brakes, all metal, 8 pages plans...$1.25. Spar drilling jig...$12.00 deposit with $10.00 refunded on return less postage. Engleman spruce kits with sitka wing spars...$115.00. Poly vinyl chloride gas tank filler neck, cap, gasket and key set, set of three...$16.00 prepaid. Verne Lietz, Box 234, Peshastin, WA 98847.

FOR SALE...Heel brake pedals, cables, brackets, fully assembled, ready to install...$30.00 Peter Steckler, 5 Millcreek Rd. New City, NY 10956.

FOR SALE...KR-1 project, 80% (?) complete. <u>All</u> components and materials to complete. Includes wing tanks, electrical system w/alt., overhauled 1500cc engine w/accessories mounted. Fly it this summer. Reason for selling...trying to finance a major overhaul for my Colt. Greg Van Erem, 1116 First St., Hudson, WI 54016 or phone evenings 715-386-9721. Price....$2000.00.

QUESTIONS & ANSWERS

Q. In Issue #5 the cross section of the wing tank shows ½" foam between the sapr web & the fuel tank. Is this mandatory or may the dynel/epoxy contact the spar directly?

A. Experience has proven that the ½" foam is not necessary. Just be sure all bolts, corners, etc. are well coated with dynel/epoxy to avoid leaks.

Q. Where may I get a revised or corrected drawing of the RAF 48 airfoil?

A. Send a S.A.S.E. to Rand/Robinson (two stamps) or postage costs if overseas. Their address is on your plans.

Q. The airspeed quoted on the KR pamphlet, is it statute mph or knots TAS?

A. Statute mph.

Q. Where do I get the 10mm x 50mm bolts to attach the engine to the Rand/Robinson engine mount?

A. Try a VW dealer with a large service dept. I bought mine from one.

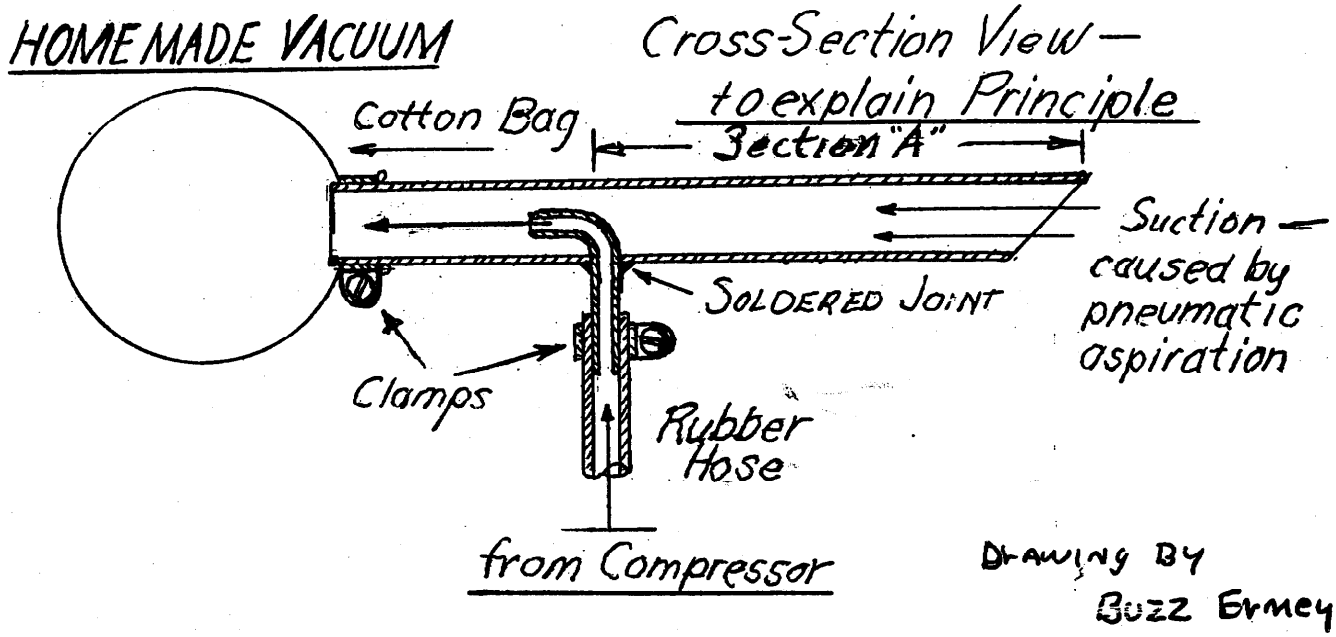
Q. What modifications are needed to install a 2100 VW on a KR-1?

A. Re-inforcing of the fire-wall area. This is covered in the KR-1 plans (blue book) last issue.

Q. Can one purchase a set of photographs that further complement the Rand photos? I would gladly pay reproduction cost to another builder who has take construction photos. Bob Soikkeli, 810½ Silver Fir Rd., Walnut, CA 91789.

A. I printed your address so other builders will be able to contact you. I'm sure at least one builder has a photo record of his project.

Here is a very simple and easy to contruct vacuum sweeper. It is especially adaptable to a KR project because the suction nozzle can be made to almost any size or shape and will retrieve nuts, bolts, and etc. which are dropped into hard to reach places. Any size air compressor will work.....Bob Stone.



ERNEST KOPPE
6141 CHOCTAW DR.
WESTMINSTER, CA 92683
ISSUE #25

K·R Newsletter

ISSUE #26
AUGUST 1977

SUBSCRIPTION RATES 1 year $6.00
AIR MAIL $10.00 O/seas $7.50

Just came back from an EAA meeting (Chapter 92) and thought I would pass along a couple of items. We saw an old WWII training film on aircraft maintenance that dealt with flutter and how to avoid it.

Balance was considered the most crucial factor in control surfaces (which is the area that concerns us most). Static balance of a control surface is the easiest to accomplish. This is simply a matter of adding weight ahead of the hinge line until a balance point is reached.

Balance weight can be mounted in various ways, either externally or internally. External weight is the easiest to mount but is also subject to fatigue from vibration and is also a source of parasite drag. Include the balance weight in your pre-flight if you use this type of balance.

Typical KR installation (aileron)

The internal balance is more difficult but is worth the extra effort. I haven't seen any KRs utilizing internally mounted weight as yet but it could probably be mounted much the same as military aircraft. Some re-inforcement of the spar would be necessary, such as plywood webs at the attach point and continuing to the closest hinge.

Trim tabs can also be a source of flutter. A trim tab that can be moved over 1^{0} at a fixed position should be re-worked. 1^{0} is equal to 1/16" per 3" tab ($\frac{1}{4}$"per ft.). Cable or puch rod connections are generally the culprits in a loose trim tab, so check yours carefully.

Flutter is not limited to control surfaces but is usually generated from them. Wings and especially horizontal and vertical stabilizers will flutter if subjected to the right conditions. Airfoils, under load from high airspeed, a dive or turn, hit with a sudden control movement can and has retaliated with disasterous results. Total destruction of elevator and/or rudder can take <u>less than one second</u> once flutter develops.

To date I have heard of only one instance of flutter in a KR. That was in a KR-1 with out balanced ailerons. No damage to the aileron or wing was sustained <u>but</u> it could happen. So.....a few rules:

1. Balance the ailerons. You "big engine" guys ought to give serious thought to balancing the rudder and elevator.
2. Don't have excessive play in the control surface hinge or push rod connections.
3. Control stick and cables should be checked for undue free play.
4. Abrupt control movements can induce flutter and/or over stress your aircraft. Don't be heavy handed!
5. Pay attention to the airspeed redline (Vne) of your aircraft; it is there for good reason.

NOTE Ken Rand says the redline on a KR-1 or KR-2 is 160 MPH IAS. Balancing the ailerons will advance the redline to 200 MPH IAS.

Inflight vibrations should be checked out to locate the source. They could be an indication of flutter and do cause fatigue in plane and pilot. If you suspect airframe or control surface vibration in your aircraft you may check it out in the following manner: Pay attention to the airspeed and engine RPM at which the vibration first occurs. Keep the engine RPM constant and gradually reduce airspeed by pulling back the control stick.

(cont. from first page)
Should the vibration disappear at slower airspeeds, you have airframe or control surface vibration. Conversely, you may check for engine/prop vibration by holding a constant airspeed and varying the engine RPM. Vibration that is intermittent with these various RPMs is probably caused by an out of balance prop.

Trouble shooting these gremlins makes for a safer plane and happier pilot. Get after them, it is worth the effort.

QUESTIONS & ANSWERS

Q. I am building a KR-1 and have the engine ready to mount to the original KR mount. Can I cut off the flange or should I make up spacers?

A. Use spacers same thickness as the flange. Removing the flange could possibly weaken the engine case.

Q. The fuselage upper longeron doublers slant upward at a definite angle, should you sand them down so they are level across the top?

A. Sanding the longerons so they are on an even plane with each other serves no real purpose. It does weaken them to some extent, so I don't recommend it.

Q. Will the heat build-up caused by using a cut-off wheel to cut the 4130 steel wing attach fittings result in any weakening of the steel?

A. The effect of heat on 4130 is to make it much harder. The only problem you might have is trying to drill the necessary holes in the fittings.

Q. Should the wing attach fittings be finished with an anti-rust paint?

A. Anti-rust paint would be a good idea. The attach fittings and all other metal on the aircraft should be protected from rust and corrosion. DO NOT PLATE THEM!! (chrome, etc). Plating causes hydrogen embrittlement and seriously weakens metal parts.

Q. Has anyone done aerobatics in a KR-2 yet? What oil pump and carburetion system is required?

A. The KR-1 and KR-2 aircraft were not designed for advanced aerobatics. A "standard" VW conversion with a posa injector will do light aerobatics with no problem. (Loops, rolls, spins, etc.)

Q. What is the recommended tire pressure on the KR-2 with R/R wheels?

A. 22 to 24 PSI

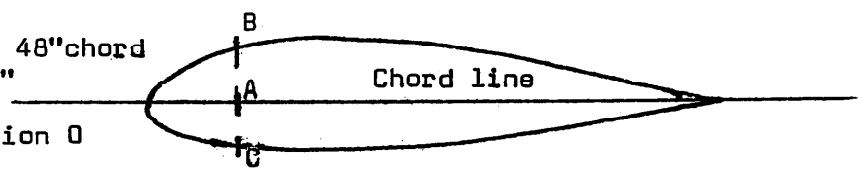
Q. How does one draw an airfoil from given co-ordinates?

A. The co-ordinates are percentages of the length of the airfoil chord. Multiply the length of the airfoil by the numbers on the rib drawing or in Newsletter #4 and #8. The upper surface column is the airfoil section above the chord line, lower surface below. Example.....

A. Distance from L.E.= .10 (%) x 48"chord = 4.8"

B. Upper surface=7.30 x 48" = 3.504"

C. Lower surface=4.03 x 48"= 1.9344"



Repeat this procedure for each of the stations given in the "distance from leadino edge" column then connect the stations as you would a "dot to dot" game.

Q. Is the Posa carburetor the same as the Revmaster fuel injector carburetor?

A. Yes.

Q. Can one paint the metal fittings before the FAA inspection? Would an epoxy paint be O.K.?

A. Yes, most inspectors will require the parts to be protected. An epoxy paint would be fine.

Q. My old KR-1 plans show the landing gear hinge bolt as 3/8" and the new plans show it as ¼". Which is correct?

A. ¼" is correct. A larger bolt won't hurt, especially in the heavier aircraft (400+ lbs).

Q. There was a modification for the aileron bellcrank is Issue #4. Are these pieces riveted together or bolted? Any idea of size?

A. They are riveted or bolted. I riveted mine with hard rivets. Some builders bolt them together using 3/16" bolts.

PILOT REPORT
7-11-77

KR-2 N27JL Serial #492
10.5 hrs TT

Weighs 535# w/Revmaster 2100 D and electrics. 2" added to motor mount for dual mags. 1" would have been tight. 4" added to fuselage between wing trailing edge and stab leading edge. Tail wheel spring installed per view on plans so additional leaf added to keep from destroying rudder. Wheel base is 130" and CG is 56". Weight on tail wheel is 5# empty. Use some method to hold stick back (elevator up) when starting or she will go on her nose.

Have been flying at 800# (185-190# pilot and 12 gal fuel). Ground handling is far better than led to believe, it's even good. Yes-it is very responsive (quick, sensitive or what have you). Visibility is excellent in flight attitude but dismal in 3 point attitude. A 65-70 MPH final eliminates most of the floating on landing. An 80 MPH final will float you for 2000 feet. R/R brakes are marginal so never get into a position where you must rely on them. This would be a swell plane for a young person with conventional gear time working into high performance aircraft but is not for the average tri gear trained student pilot. I think I would sell it to the first one that offered $5,000 because it is not a family plane in any way, shape or form. You fly this plane-you don't just go along for the ride.....John Lorence, 853 Cessna, Independence, OR 97391.

BUY-SELL-TRADE

FOR SALE....two KR-1s. One, on landing gear, 95% of woodwork completed, polyurethane foam kit (still in boxes), 30 yds dynel, 2 gal. epoxy, modified 1600cc VW (unassembled), some instruments, all fittings, etc....$1,700.00. The other, fuselage box finished, all wood to finish, plus Rand extrusion & landing gear kits...$500.00 or both for $2050.00. Call Mike (602) 888-3534 after 6:30 p.m. (no collect calls please).

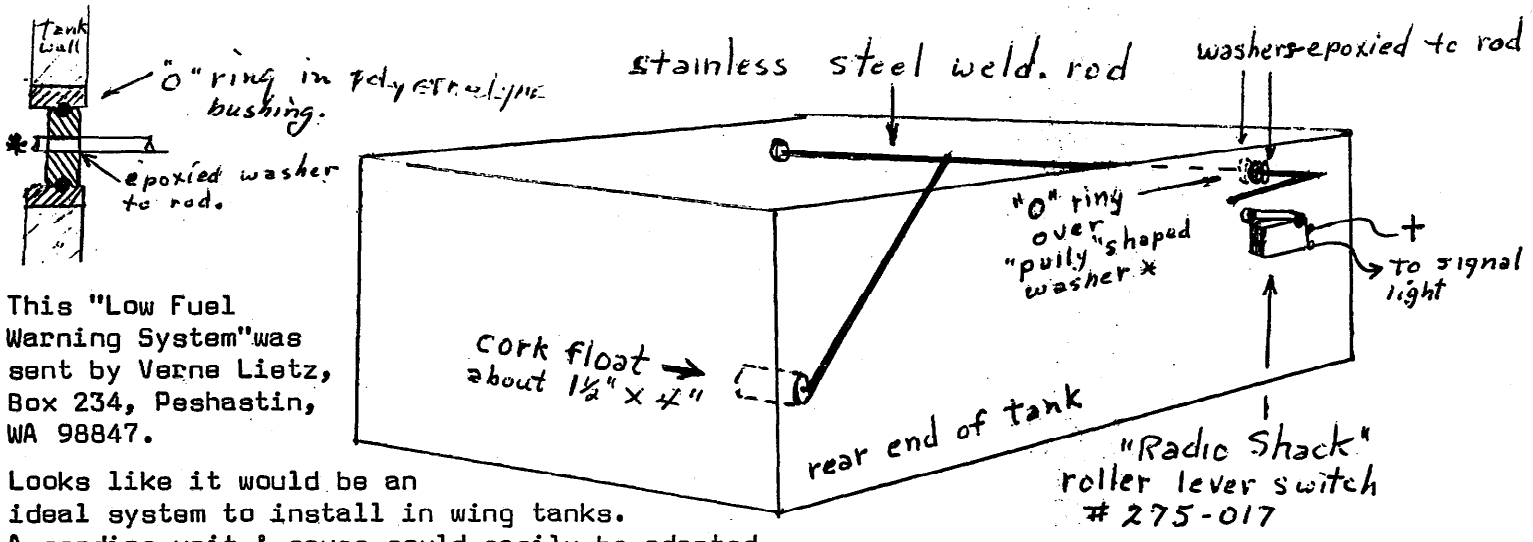
Precision aircraft parts to your specs. Also KR hardware. KOOYERS MACHINE AND TOOL, 30001 N. Hwy 101, Willits, CA 94590 (707) 459-5422.

FOR SALE....Partially finished KR-2. Passed first inspection. Contact Mrs. Terrel D. Repp, 2410 NW Grandview Dr., Albany, OR 97321.

FOR SALE....KR-1 project 60% complete. Fuselage complete except for foam and dynel. Spars, control surfaces signed off. Landing gear installed. Rudder mounted, stab. and elevator ready to mount. All aircraft materials. Most material to complete including canopy except engine, prop and instruments...$950.00. Ray Backstrom, 7721 N. Soledad Ave,, Tucson, AZ 85704. Or call, nights only (602) 297-6087.

Liquid foam. If you can't find it cheaper there, send $33.50 for 2 gal. kit, $12.95 for 2 qt. kit, $9.50 for 2 pt. kit, UPS prepaid. Dual sticks, toe brakes, all metal, 8 pgs plans...$1.25. Spar drilling jig, $12.00 deposit with $10.00 refunded on return less postage. Englemann spruce kits with Sitka wing spars..$135.00. Poly vinyl chloride gas tank filler neck, cap, gasket and key set, set of three...$16.00 prepaid. Verne Lietz, Box 234, Peshastin, WA 98847.

Freon operated gear retract & extend. Less than 3¢ cost per cycle. Manual back-up. Send SASE for details. Kit available. Paul Pryor, P.O. Box 435, Mayaguez, Puerto Rico 00708.



This "Low Fuel Warning System" was sent by Verne Lietz, Box 234, Peshastin, WA 98847.

Looks like it would be an ideal system to install in wing tanks. A sending unit & gauge could easily be adapted.

- -

Received some pictures of part of a tricycle gear stystem for a KR-2. As soon as development & testing is complete the system will be put on the market if enough interest is shown. Don't know about you but I'm interested. Write to Mike Lamb, 5327 West Ave., L-10, Quartz Hill, CA 93534.

- -

I am making preparations for Oshkosh and am running behind answering SASE questions. Will catch up on them when I get back. See ya' there.....

Ernest Koppe

ERNEST KOPPE
6141 CHOCTAW DR.
WESTMINSTER, CA 92683
ISSUE #26

K·R Newsletter

ISSUE #27
SEPT. 1977

SUBSCRIPTION RATES
AIR MAIL $10.00
1 year $6.00
o/seas $7.50

OSHKOSH '77...I suppose there could be someplace or something, somewhere to be as interesting and fascination as Wittman Airport the 1st week in August each year but I doubt it.

I was there for the full week and I know there are things I missed. There is so much to see and just when you're sure you've seen it all, new arrivals or a previously overlooked exhibit that just has to be investigated, pops up.

There seemed to be no end of interesting forums. I attended several on various types of aircraft and engines. Fascinating!!

Ken Rand entered the efficiency contest as usual. He was clocked at 184.9 mph on the high speed run and 56.? mph on the slow end. The high speed was pretty much as expected but the low end was a surprise. I know the KR-2 will fly slower than the speed it clocked. Maybe Ken ought to practice some slow flight techniques before next time.

The one thing that would make Oshkosh even better is for more KRs to show up. There were only seven this year...2 KR-1s, 4 KR-2s and the KR-3. Fred Kellar flew his very sharp KR-1 in from Alaska. Bob O'Day was back again this year with his KR-1. The KR-2 prototype drew the usual amount of interest but there were three other KR-2s trying to steal the show. I think Paul Deeter succeeded in getting much deserved recognition, his KR-2 was always surrounded by a group of admirers. Jim McCoy's nice KR-2 was also getting a good share of attention. Jim flew his craft in from Ohio. Dan Deihl flew his KR-2 to Oshkosh from Oklahoma with a passenger. Like all the rest of the builders, Dan was constantly fielding questions from other builders. Matter of fact, he was the surprise star of the KR forum. Dan's account of his first flight in his KR-2 had everyone in stitches.

I'm going to answer a question on Dan's plane before you guys write and ask. It is not a sliding canopy. It is a combination of Jodel canopy and a wind shield he made himself. Entrance to the cockpit is from the right side, thru a "gullwing" door.

Karl Schaarsmidt brought his KR-1 fuselage as a static display. He had some interesting ideas to show, a gear leg casting of his own design, plus a folding wing system under development. Write to Karl c/o Silent Wings, W 204 N 5022 Lannon Rd., Aeor Park Airport, Menomonee Falls, WI.

The KR-3...what can I say? I was amazed at the enormous amount of guys who were certain this was the aircraft for them. Many didn't even live near water but felt that this was an all around aircraft to do anything, anytime.

As some of you are aware, the KR-3 was launched into Lake Winnebago during the EAA Convention at Oshkosh. Purpose of the launch was to see how well the Amphibian would "get on the step", with light tests to be conducted at a later date in California. While there was a definite improvement over the last water tests, more hull design work was indicated. The step will be re-located and wider spray rails will be installed, then more tests will be in order. Plans will not be made available until everthing is satisfactory, so the hoped for September delivery has been set back approx. 30 days. Once the hull configuration is finalized there will be a notice in the KR Newsletter. All other details of the KR-3 have been worked out so plans will follow shortly after.

QUESTIONS & ANSWERS

Q. I'm having difficulty finding a fuel level sending unit for wing tanks. What do you suggest?

A. Any available unit would probably be a compromise. Best bet is to select one matched to your gauge, then "customize" it by shortening (or lengthening) the float arm.

Q. Where can I get the "Featherfil" sanding filler/primer referred to in your Newsletter?

A. Rand/Robinson carries this product as well as several other new items. Send a SASE to R/R for the latest complete list of products and prices.

Q. Are the back-up plates for the engine mount made from aluminum angle, channel or sheet? Do they extend the entire width of the firewall or are they localized?

A. Any of the above configurations may be used. The idea of the back-up plates is to spread the compression loads thru the wood. Some builders are re-inforcing the firewall with alum angle or channel full width of the fire wall but a common every day back up plate is localized.

Q. Has anyone used springs in hooking up the tail wheel, would it help ground handling?

A. Rand recommends using a "no spring" connection for positive ground handling. There are compression springs available however that should work very well, plus giving the rudder cable some protection should the tail wheel hit a rock or hole in the runway.

Q. I ordered (and paid for) some parts from Ted Barker, some of which was back-ordered. After several months I have not received either the back ordered parts or a refund of their cost. Several registered letters to him have gone unanswered. I know he received them because I have the signed receipts. Have any other builders had this experience with Mr. Barker? If so, would you please have them communicate with me? Fred Richen, 9917 152nd St. E., Puyallup, WA 98371

A. All firms that do business thru the mails, at one time or other, will run into snags. It is my hope that Mr. Barker will straighten this matter out for you, although I don't understand why he has not replied to you correspondence.

BUY-SELL-TRADE

FOR SALE...KR-1 (P-51 configuration) 70.5 hrs, new annual $4,500.00 George Andrew, 1834 S. 10th, Milwaukee, WI 53204.

KR-II patches, interiors, write for prices...Darwin Roach, 1158 Wanda Dr., Granite City Ill. 62040.

FOR SALE...KR-2 project, fuselage skinned bottom and sides, wing spars partially completed, some Gillespie mods, remainder of spruce & plywood kits and much more $375.00 or best offer by October 31st. Ken Neely, 1196 Morning Sun Dr., Pomona, CA 91767 (714) 623-2701.

Mylar-Microspheres and more...send SASE for price list. Harold Middleton, P.O. Box 26277, San Diego, CA 92126.

WANTED: Wood cruise prop for KR-2 1700cc VW. Jack Aldrich, 2404 Emory Ave., Bradenton, Florida 33507.

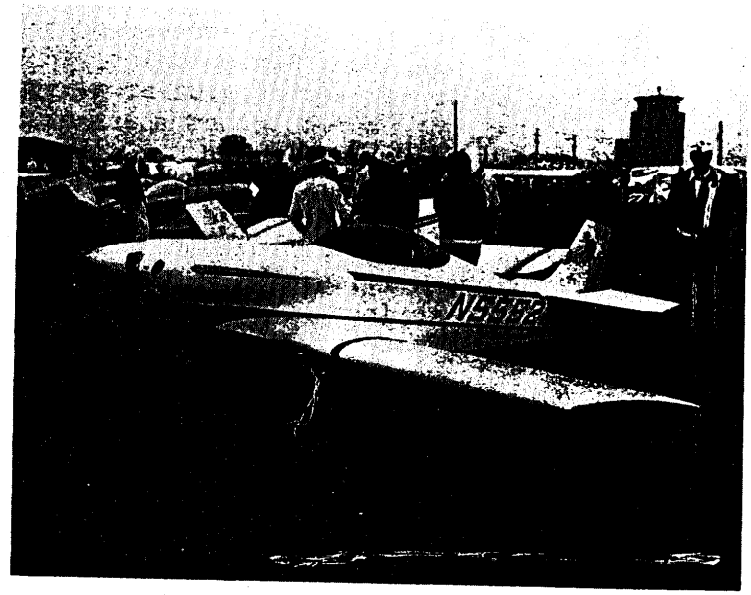
WANTED to buy...A KR-1 or KR-2 (maybe a KR-3). I will baby it, brag about it and <u>fly</u> it! Please write or call...Bob Carr, Box 303, Mackinac Island, MI 49757 or phone 906-847-3557.

Freon operated gear retract and extend. Less than 3¢ cost per cycle. Manual back-up. Send SASE for details. Kit available. Paul Pryor, Box 435, Mayagues, Puerto Rico 00708.

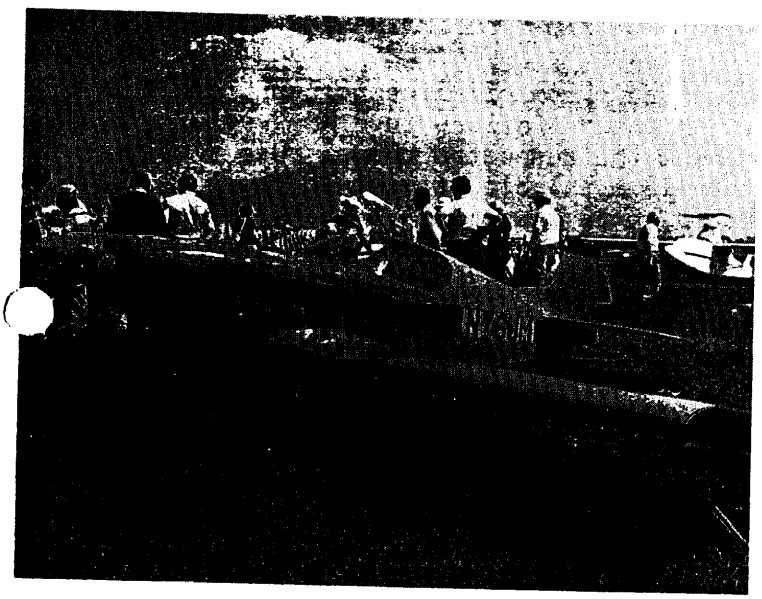
Liquid foam. If you can't find it cheaper there, send $33.50 for 2 gal. kit, $12.95 for 2 qt. kit, $9.50 for 2 pt. kit, UPS prepaid. Dual sticks, toe brakes, all metal, 8 pgs plans...$1.25. Spar drilling jig, $12.00 deposit with $10.00 refunded on return less postage. Englemann spruce kits with Sitka wing spars..$135.00. Poly vinyl chloride gas tank filler neck, cap, gasket, and key set, set of three...$16.00 prepaid. Verne Lietz Box 234, Peshastin, WA 98847.

FOR SALE: One piece fiberglass cowlings for the KR-2, includes firewall and baffle templates. Also ball bearing tail wheels. $125.00 for both, I'll pay the freight cost. (U.S.) Dan Deihl, 4132 E. 72nd St., Tulsa, OK 74136 or phone 918-492-5111.

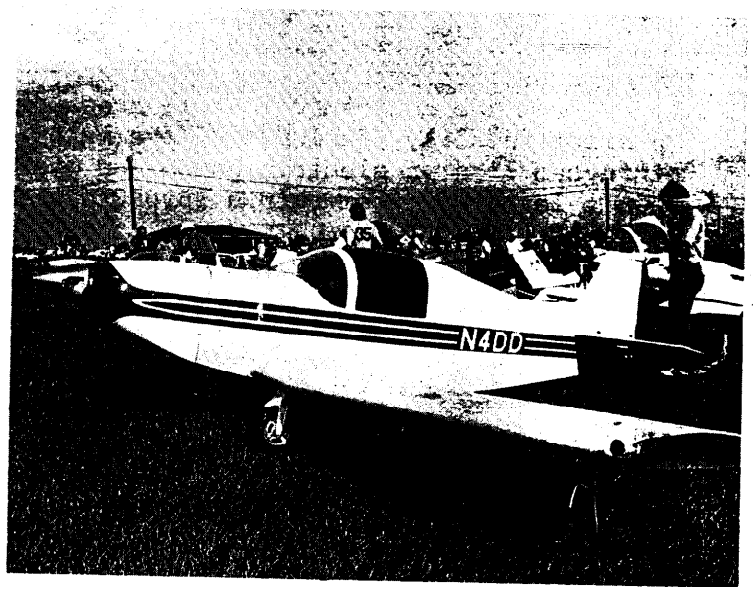
PAUL DEETER



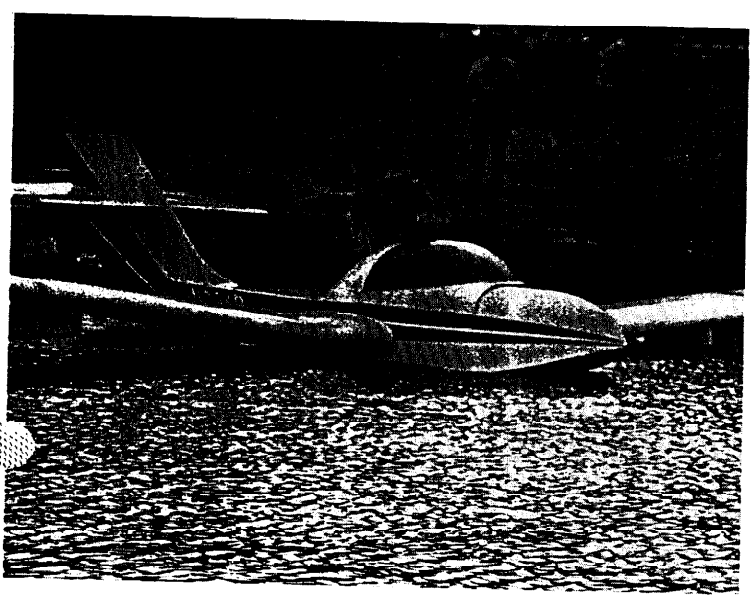
FRED KELLAR



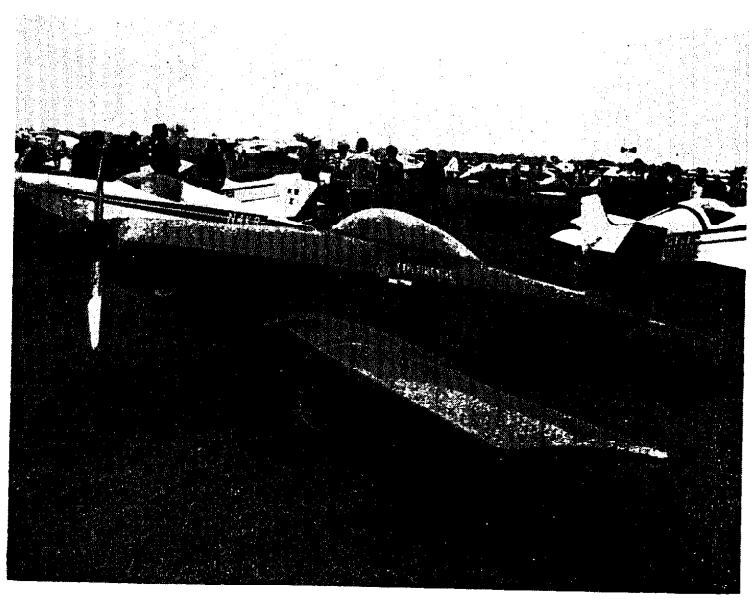
JIM McCOY



DAN DEIHL



KR 3 ON LAKE WINNEBAGO



BOB O'DAY

BITS & PIECES.....The address of the manufacturer of the Du series Garlock bearings is: Bearing Division, Garlock, Inc, 16 Springdale Rd., Cherry Hill, NJ 08003. Write to them for a distributor in your area.....Do you have an early set of KR-2 plans? Check to see that the rear outboard spars ar 78" in length. This measurement was originally mis-print as 72". All plans were thought corrected but one builder has surfaced with an uncorrected set.....Western Canada KR builders and VW buffs can get help with their VW engines from: Bow Wow Parts of B.C., 9553 120th St., Delta, B.C. Canada or phone 604-588-6011.....Bill DeFreze writes: "Airplanes are not a big job---just a ton of little ones." Right on!!.....How many of you guys are using Corvair mills in your KR-2? I've been getting an increasing amount of mail requestion info on these engines. How about some pro/con feed-back? Send your letter in today.....There is a KR-2 flying in Africa, belongs to Mr. Lot Esterhuysen of Windhock-9100 South West Africa. At least nine other KRs are under construction there.....In this day of metal airplanes, FAA inspectors that know wood are becoming a rarity. Don't try to get something questionable by an inspector just because he isn't aware there is more than one way to build an airplane. It could be your neck!

SAFETY NOTE Several KR-2 builders are using a 1" thick spring bar instead of the 3/4" listed in the plans. A problem has surfaced with this installation you should watch for: The 1/4" hinge bolts the spring bar rotates on receive more wear and stress with the 1" bar. Rand says to use 5/16" or larger if you use the heavier bar.

A more serious problem is the use of the high-pressure nylon oil line to carry oil pressure from the engine to the oil pressure gauge. An engine failure in a KR-2 resulted in a pilot fatality, failure of the nylon oil line was the suspected cause. Use a mesh reinforced line or electric gauge and sender, either is available at most auto parts stores. Don't let a 50¢ item ruin a $5,000 plus aircraft or, more importantly, your life!

ERNEST KOPPE
6141 CHOCTAW DR.
WESTMINSTER, CA 92683
ISSUE #27

K-R Newsletter

ISSUE #28
OCT. 1977

SUBSCRIPTION RATES 1 year $6.00
AIR MAIL $10.00 O/seas $7.50

Last issue of the Newsletter had an appeal from Fred Richen, 9917 152nd St. E, Puyallup, WA 98371 for anyone having difficulty getting paid-for orders from Ted Barker. I know Fred has received at least two replies...one from R.L. Smith, Sandspit Q.E.I., B.C. Canada VOT 1TO and one from G.W. Townsend, 234 Charles St., S Meriden, CT 06450. Seems Mr. Smith has spent $430.00 and all he has to show is a $30.00 prop hub. Bill Townsend was luckier, he received all the parts he ordered but only after a very long delay and several unanswered letters (registered). He notified Barker to expect a visit from a local lawyer because he was going to sue for all expenses incurred, including if necessary, a trip to California. Bill's order came almost by return mail. If you are one of the many that have had problems with Ted Barker send a letter to Fred and enclose photostats of receipts, etc. and perhaps something can be done.

Last issue had a request for Corvair engine conversion information. Seems there is a newsletter out just for Corvair engines. Interested builders should write to J. Hartley Locker, 69 Murray St., Norwalk, Conn. 06851. Subscription fee is $9.00 per year.

* * * * * * * * * * *

If you were going to improve the performance of your aircraft, what single item would give the best results for the least amount of work? I mean a real improvement as much as a 20% decrease in parasite drag. I'll give you a hint, one of the greatest sources of parasite drag is the cooling system of an aircooled engine. You EAA guys know by now what I'm talking about...a cowl flap! This is the easiest, most effective, single thing you can do to increase the performance of your aircraft. What brought the subject up is a very fine article in the Sept. EAA magazine"Sport Aviation" on the installation of an "automatic cowl flap actuator." This is a big name for a small inexpensive unit. Made by VW, it sells for approx. $5.00 at your nearest VW dealer. Ask for a "Cooling Air Intake Housing Bellows". Use this drawing from "Sport Aviation to get your own ideas of installation.

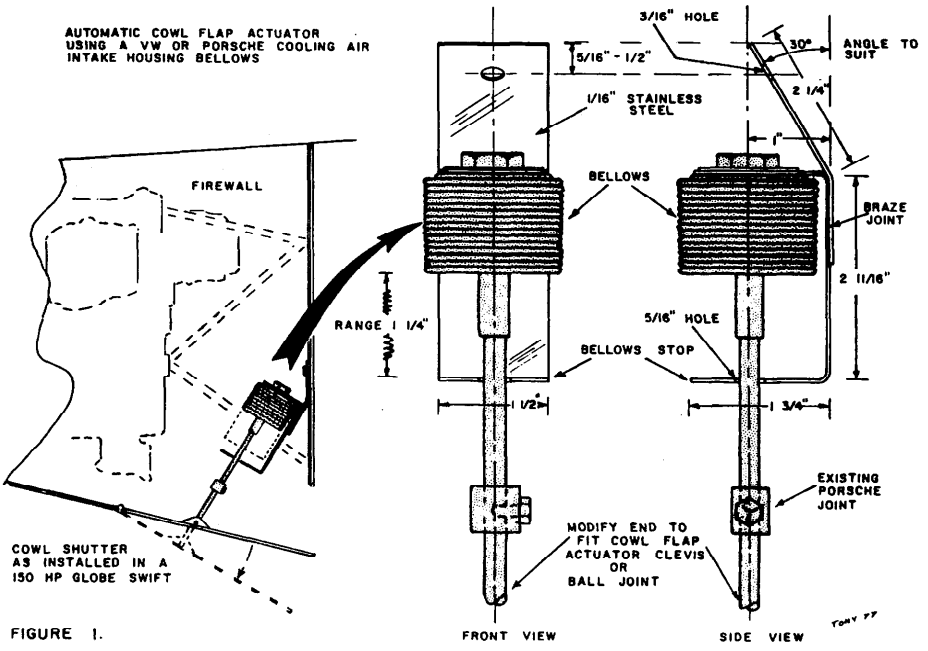


FIGURE 1.

TIPS FROM OTHER BUILDERS.....Last month's mail had a very interesting letter. There was no signature or return address on the envelope or in the letter itself but the information contained is worth repeating...."Here is an anonymous report on loss of a prop blade on a homemade ground adjustable prop on a KR-2.

RPM at failure...3600. Time to failure from last assembly-adjustment...20 min. Total time ...12 hrs. Weight of blade...24 oz., shaft...2"diam., stainless welded clamps. Alum 3/16" thick split retainer rings.

Cause of failure...blade shaft flexing in hub sufficient to work way past retainer ring, split out 2" endgrain wood behind prop bolt and fly off.

Damage...(slight) instrument panel came loose and crack in epoxy/dynel appeared along right longeron nearly to firewall and toward tail along turtle deck. Fuel gage tubing pulled loose slightly to cause gas leak. Exhaust stack ruptured around curve.

Analysis...engine stopped NOW due to immediate separation of clamped hoses of intake Y to dual port manifold. Initial high torque responsible at instant of blade separation. A major contributing factor to absorb twisting motion was right rear exhaust stack which passed rear ward under lower edge of firewall, about 1" clearance. Torque caused stack to contact firewall sufficiently to rupture which absorbed twisting energy. Light weight of blade may have a factor also.

Observation...manifold attachment could be a life and aircraft saver in event of prop failure."

* * * * * * * * * * *

Another letter has some pertinent info on UV protection.."Your Newsletter #24, June 1977 has a statement in it which I believe to be very dangerous, the use of carbon black in primer coat of paint to prevent UV rays from damaging the dynel/epoxy skin. I have checked with a chemist at the University of Arizona and a local FAA official and I think your statement is wrong. The USAF and USAAF discovered many years ago that aluminum powder mixed with what ever base was being used was the best protection from Ultra-Violet rays. Since most aircraft of that era were never hangared, I say aluminum primer (at least two coats, sanded lightly) is the way to go." Lt. Col. Neil King (ret), 9361 E. Palm Tree Dr., Tucson, AZ 85710. ED. NOTE...This was also brought to my attention by another builder who added this comment, "the aluminized primer will paint a brighter picture on the radar scope of the big planes. These little planes should be seen and not hurt!"

* * * * * * * * * * *

"One of the problems I ran into when I installed the foam in the elevator was how weak the trailing edge was because it was so thin. I ended up by making a new elevator. On the second try, I sanded the foam down on the bottom only, leaving the trailing edge about one inch thick. I then applied the dynel/epoxy to this finished side only. After the epoxy set up, I was able to sand down the other side to a feather edge. No more problems. Another point, to drill the holes in the tail wheel spring, use a concrete drill in a drill press. These drills are carbide tipped and cut spring steel like butter. Run the drill press at slow speed." Paul Pryor, P.O. Box 435, Mayaguez, Puerto Rico 00708

* * * * * * * * * *

Here is an idea for a reliable fuel gauge for homebuilts. While doing some work on my VW (a '64), I noticed that the gas gauge is MECHANICAL. The sending unit transmits motion to the gauge unit via a flexible cable, like a choke cable. I haven't been able to test it yet but it looks like an easy job to modify the sender to work in cowl tanks, wet wings, or stubs. The VW gauge already has lighting provisions if required. Even tho you'd need one gauge per tank, its better than a sight glass or guess....T.A. Trimble, 1609 Luxton St., Seaside, CA 93955

QUESTIONS & ANSWERS

Q. Has there been any further developments in tricycle gear systems (retractable) for the KR-1 & KR-2?

A. I've heard of several under development but only one KR-2 I know of actually is flying with the retractable tri gear. It belongs to Bill Matto, 8556 Rhoads Circle, Fountain Valley, CA 92708. I have seen pictures of a system under development that looks very promising though. I understand if enough people are interested the gear will be marketed. Write to: Michael S. Lamb, 5327 West Ave., L-10, Quartz Hill, CA 93534.

INDEX FOR ISSUES 1-24

□ Plans Corrections, Important notes or Safety Notices

○ Questions & Answers

▣ Both of the above

MODIFICATIONS

We have Rich Trickel to thank for this index to past issues. As more and more subjects are covered in the Newsletter, a guide has become necessary.

BUY-SELL-TRADE

FOR SALE....Kr-2 project, passed two FAA inspections, controls installed, all parts to complete airframe except canopy...$1400.00. Ed Darling, 5321 E. 29th, Long Beach, CA 90815 or phone 213-425-7033.

Nico Press Swedging tool for control cables: 1/16, 3/32, & 1/8...$6.95 plus $1.00 shipping. Roska, Box 57, Greenvale, NY 11548

NEW A.C. aircraft spark plugs for VW conversion..$4.00 ea. Rand/Robinson Eng., 5842 'K' McFadden Ave., Huntington Beach, CA 92647

FOR SALE....Partially complete KR-1 Fuselage on retractable gear. Control cables in place, all metal fittings completed. Factory re-built 1500 VW engine, Monnet prop hub, Warnke prop. All material, components & instruments to finish except tach, intake manifold, firewall & ½ sheet plywood...$1700.00. M.T. Henry, 1321 Jackson Dr., Pulaski, TN 38478 or phone 615-363-3184, (no collect calls please).

WANTED....Completed and flight tested KR-2 with 2100 cc Revmaster and electrical system. Other features would be desirable but not necessary. Jack and Barbara Morelock, c/o Marine Sciences Dept, R.U.M., University of Puerto Rico, Mayaguez, Puerto Rico 00708

KR-3 UPDATE...Well, as reported last month, Stu Robinson took the amphib up to his "hidden hangar in the hills" and went to work. Last week more water tests were carried out to see how the new hull configuration would work. It did work but performance was deemed marginal with the available horsepower. So....back to the hanger. Next tests will be carried out using a Turbo 2100 VW and should have power to spare. Further results next month.

Ernest Koppe

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683

KR Newsletter

ISSUE #29
NOVEMBER 1977

SUBSCRIPTION RATES 1 year $6.00
AIR MAIL $10.00 O/seas $7.50

I think we have in this issue the two best latching systems yet for the KR retractable gear. One is a drawing of Charlie Wells super fine set-up as pictured in Newsletter # 19. It was sent in by Bill DeFreze of Dublin, Ca. who built it up from the pics for his KR-2. The other system is a simple add-on to the plans version and will appeal to the cost consious among us. It's simple,effective, and easy to install. Take your choice,they are the best ideas I've seen yet.

The flight report from Art Lederle is welcome and should encourage the lagging builders to finish their KR. It is typical of the enthusiasm of all the guys I've talked to that have finished building and are now flying.

FLIGHT REPORT

I have a KR-2 which I started building in April of 1975 and finished and flew first in April of 1977. It is built very closely to Rand/Robinson plans. Actual building time was about 20 months at 60 hours a month.

My plane N98DL has an 1834 cc Revmaster engine with full electric-single mag and a Rand/Robinson 3-blade, ground adjustable prop. To date, it has about 18 hours but I can't give more than just vague performance numbers...stall 40-45...cruise 150+..climb poor. Every time I get over 150 mph I get scared and slow down. Stalls-very gentle straight ahead. It flys hands off forever, is very comfortable and stable through all speed ranges and still extremely responsive to controls when I want it to work! Climb at 70 mph is about 500-750 feet per minute.

I fly out of a 2000' tall grass (5") field which makes the take off run about 900' or 1000', no wind-sea level. The landing roll is comfortably short which is welcome in view of the poor braking. I have to be very careful with speed control on the landing. Pattern-70 mph down to 50-55 on final and still slip and sweat it down to the threshold where I can float another 500". Ground handling is the best tail wheel I have ever flown. I feel that the worst tailwheel is still better than the best nose wheel.

There are at least four other KRs under construction around the Long Island area and I hope that seeing mine finished inspires the builders to stick to their projects. Maybe there will be a regular squad around here some day.....Arthur Lederle, R.F.D. 1 Box 338, Wading River, NY 11792.

BUY-SELL

FOR SALE...KR-2 project, fuselage complete, most kits to finish aircraft...$750.00. Everett Blair, 7672 E. Davenport, Scottsdale, AZ 85260 or phone 602-991-9447.

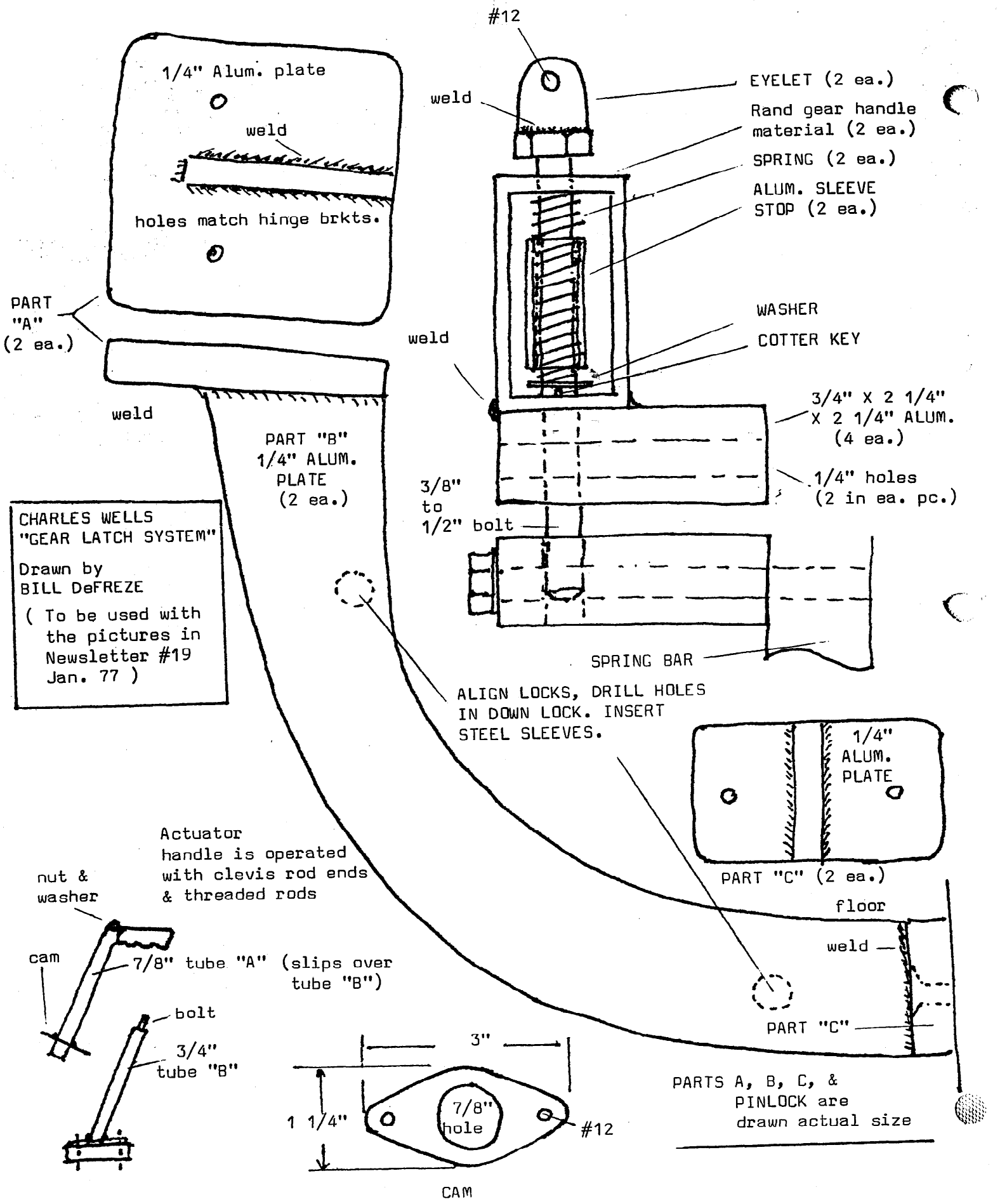
FOR SALE...KR-2, 50% complete. "0" time Revmaster 2100 D w/starter and electrics. Warnke ground adjustable prop. All materials to finish aircraft, less instruments. Joe Kvaltaine, RD 5, Airport Rd., Binghamton, NY 13905 or phone 607-797-0922.

FOR SALE...Rand VW engine mount. Bottom torqu member modified to accomodate Revmaster w/ starter or use with VW conv...$65.00. Tom Loftin, 3618 Norland Ct., Independence, MO 64055.

FOR SALE...Aircraft spark plugs, A.C., for VW conversion...$4.00 ea. Rand/Robinson Eng., 5842 "K" McFadden Ave., Huntington Beach, CA 92647. Phone 714-898-3811.

FOR SALE...Nico Press swedging tool. For 1/16, 3/32 and 1/8 cables...$6.95 plus $1.00 for shipping. ROSKA, Box 57, Greenvale, NY 11548.

KR-3 UPDATE...Due to a delay in getting an engine, the -3 will not be ready for flight test until November. The planned Revmaster Turbo 2100 D with Maloof prop will increase available HP by 30%. This is expected to solve the marginal performance problem (on water). Flight test should have started by next isse.


#12
1/4" Alum. plate
weld
holes match hinge brkts.
EYELET (2 ea.)
weld
Rand gear handle material (2 ea.)
SPRING (2 ea.)
ALUM. SLEEVE STOP (2 ea.)
PART "A" (2 ea.)
WASHER
COTTER KEY
weld
weld
3/4" X 2 1/4" X 2 1/4" ALUM. (4 ea.)
PART "B" 1/4" ALUM. PLATE (2 ea.)
1/4" holes (2 in ea. pc.)
3/8" to 1/2" bolt
CHARLES WELLS "GEAR LATCH SYSTEM"
Drawn by BILL DeFREZE
(To be used with the pictures in Newsletter #19 Jan. 77)
SPRING BAR
ALIGN LOCKS, DRILL HOLES IN DOWN LOCK. INSERT STEEL SLEEVES.
1/4" ALUM. PLATE
PART "C" (2 ea.)
Actuator handle is operated with clevis rod ends & threaded rods
nut & washer
floor
weld
cam
7/8" tube "A" (slips over tube "B")
bolt
3/4" tube "B"
PART "C"
3"
1 1/4"
7/8" hole
#12
CAM
PARTS A, B, C, & PINLOCK are drawn actual size

TIPS FROM OTHER BUILDERS

"A friend is building a VariEze and has given me some valuable information. Burt Rutan has done much research on composite type aircraft. He says that the European glass sailplane industry recommends protecting composite A/C from heat and the UV radiation in sunlight. Apparently excessive heat will cause some composite structures to soften. This leads to structural problems. Rutan recommends white paint to finish the A/C. If this is not possible, then the lighter the color the better. He also uses a primer/surfacer. This coating contains carbon black. More detailed information is found in the VariEze construction manual. The section is available to anyone from the Rutan Aircraft Factory. Ask for: RAF, P.O. Box 656, Majoave, CA 93501. This manual is excellent and well worth the cost. It also covers using micro balloons and Featherfil in finishing the surface. Straight "Bondo" should not be used extensively. It is made for cars and is very heavy. A VariEze builder used Bondo instead of Epoxy + microshperes and added 100 lbs. to his A/C! I also stumbled onto something which I had never heard of but maybe it is common knowledge to other builders. Its called Dragon-Skin and made by Red Devil. It is sort of a cross between sandpaper and the Arco disk rasp. It is a very thin flexible metal with holes punched in it. You can wrap it around a dowel or stick and shape places that you would think were impossible to get to. It also works very fast and never wears out. It is especially quick on end grain which cannot be worked with a plane. Oh, yes, Featherfil and micro balloons are available from the two VariEze distributors; (also Dupont 7OS) Wick's Aircraft Supply, Madison County, Highland IL and Aircraft Spruce and Speciality, Box 424, Fullerton, CA 92632. For those who cannot locate the small circular saw, Brookstone has them. Brookstone has everything. I did not pay $5.00 for the arbor. I cut the head off a 3/8" bolt of the appropiate length and sandwiched the blade between two nuts and washers. It works fine. What self respecting homebuilder is trying to build an airplane with a 1/4" drill instead of a 3/8" one? The saw is also good for cutting out the plywood where you have a irregular line to follow or when making the spar cut-outs in the skin. Number of the saw is P-4483-2" x .025" with 3/8" hole. Cost is $8.00 plus $1.35 from Brookstone Co., 125 Vose Farm Rd., Peterborough, NH 03458"... Bob Hartmaier, 240 McKinley Rd., Portsmouth, NH 03801.

QUESTIONS & ANSWERS

Q. I ordered & received the fiberglass fuel tank/instrument panel from Rand/Robinson minus instructions. How do I install them?

A. According to Rand, installation is the same as their foam counterparts, however, the the parts are pulled from a mold and there will be mold release compound on them. This must be removed before any of the pieces can be epoxied together or to the fuselage. Scraping and/or sanding is the only sure way to remove this waxy residue.

Q. Is it acceptable to use two 3/16" bolts side by side when assembling my tail wheel fork to the bell crank?

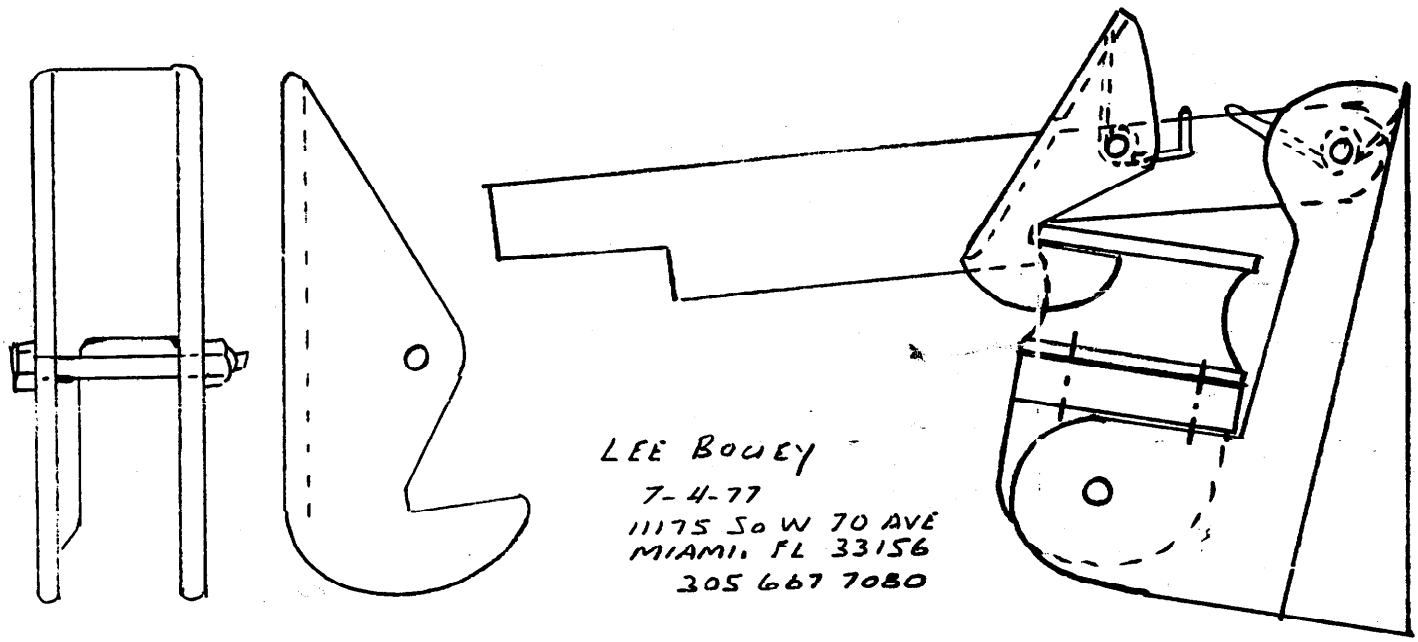
A. Yes, the shear value of two aircraft quality 3/16" bolts is more than adequate.

Q. Does the elevator cable go around or thru the vertical stabilizer spar?

A. Easiest route is thru the spar. A 1/4" hole is acceptable.

This is a KR-2 built by James Hutton, 2250 Sly Park Rd. Placerville, CA 95667. First flight of the red, white and blue KR was on Feb. 18th of this year. I'm hoping for a flight report from Jim for a later issue.

"This little goodie was constructed from a piece of stock left over from cutting out the aileron bell cranks. It doesn't seem like much but it works like a dream, costs the price of a nut and bold and spring. If anyone is interested in making one, there is only one principal that must be adhered to. The mounting hole must be made well to the rear of the leading edge of the gear bar catch so as to be an eccentric mounting. This allows the latch to raise itself over the bar catch when lowering the gear and aslo, conversely, prevents the latch from releasing when in place."



LEE BOWEY
7-4-77
11175 So W 70 AVE
MIAMI, FL 33156
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ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA. 92683
ISSUE # 29

K·R Newsletter

Issue #30
Dec. 1977

Subscription Rates

1 year--$6.00 Back issues-50¢ ea.

O/seas--$7.50 Air Mail- - $10.00

MERRY CHRISTMAS AND HAPPY NEW YEAR!

The KR aircraft is indeed of a very versatile design. Ken Rand has always said there was plenty of room for the builder to put his own ideas into his project and this has been proven out recently. There are two KRs nearing completion here in the So. Cal. area that have only their origin and quality workmanship in common. A KR-1 built by Frank Walker, an auto shop instructor in Whittier, represents the "strictly for fun" side of our sport. His KR is an open cockpit, fixed gear aircraft powered by the smoothest 36 hp VW I ever heard run. Frank is expecting to make the first test runs soon so there will be a more complete report in a future Newsletter. On the other end of the spectrum is a KR-2 built here in Westminster by Bror Faber, a C.F.I. and ex-R.C. modeler. His KR-2 is equipped for IFR operation via the nicest panel layout I've seen on a KR yet. Power is supplied by a Turbo Revmaster 2100 D w/starter and dual alternators turning a Maloof prop. Should move things thru the air at a goodly clip. A very complete and comprehensive testing program is planned for this aircraft, so watch for reports as they become available

* * *

I was at Ramona airport last month at a fly-in hosted in part by EAA Chapter 114. The So. California weather co-operated and the fly-in was very successful. I wasn't a big fly-in as far as number of aircraft is concerned but there was one group of aircraft there in a number never before seen outside of Oshkosh. Would you believe four KR-2s...all flown in? It's true, the KRs were there "en masse" and it really tickled me to see that many KRs at a local fly-in. Hopefully it will become common place to have this number and more at these gatherings. Don't miss out on the fun, get your KR flying and join the rest of the crowd! See you at the next fly-in.

* * *

RAND/ROBINSON UPDATE....New time saver from the ever busy "skunkworks" is a set of fiberglass wing tips to fit the KR-1 and KR-2. No more hours of shaping and then wondering if you achieved the proper airfoil, just epoxy these tips in place and fair in with some Micro-balloons. Price of the set is $65.00.......Plans for the KR-3 amphib will be available soon, probably before Christmas. Water operations and testing has taken longer than anticipated but now all is "shipshape". Plans will sell for $75.00. There is a large blow-up drawing of the KR-3 for prospective builders to study at a $2.00 price tag. If you are interested in any, or all of the above, drop a line to Rand/Robinson Eng., 5842 "K" McFadden Ave., Huntington Beach, CA 92647 or phone 714-898-3811.

Two friends of mine passed away recently. They lived several hundred miles apart but news of their death came within the same week. They didn't know each other and for the record, I had never met either of them. I came to regard them as friends thru letters and thru a shared interest, building and flying airplanes. They were both building KRs...Jim Manento a KR-1 and Charles Haws a KR-2. Their planes are for sale now as there is no one to finish them. I hope the buyers appreciate what they are getting in these particular planes. These men built a part of themselves and their love of flying into them. So...it is with a sense of loss and sadness I report their passing but at the same time I feel proud to have known them.

QUESTIONS & ANSWERS

Q. Have any KR-2s been built with thicker wings, such as the 44 or 63 series?
A. I have heard reports of builders using these airfoils but as yet, they aren't flying.
Q. Is there anything you can use to thin the R/R epoxy to apply a thin coat?
A. Since a chemical thinning of the epoxy can affect strength, I don't recommend thinning in that manner. By heating the epoxy to about 95° to 100° you will have a very spreadable consistency. A squeegie is the best tool for a thin coat.
Q. How can you tell if the R/R epoxy is getting too old for use?
A. Manufacturers recommended shelf life on most epoxies is one year. After that, you're on your own. However this doesn't mean you will have to throw out epoxy that has been around longer than one year. What happens to the epoxy is that it begins to "cross-link" or thicken as to be almost unusable. A little heat will usually restore the epoxy to usable consistency.
Q. How is the R/R 3-blade prop working out?
A. Due to the props ability to be "custom fit" to various requirements, it has proved to be highly successful.
Q. I have two VW engines, a 1200 and a 1600. Which is best for the KR-1?
A. I prefer the 1600 myself. This has proved to be a very dependable and economical engine and parts are readily available.
Q. Are plans for the ½ span spoiler/flaps and aileron control on the KR-1B available for the KR-2?
A. Until complete flight tests have been run, plans aren't even available for the KR-1B.
Q. What airspeed does Rand recommend for best rate of climb and best climb angle? What would be the best rate of climb in feet per min.? I know these figures will vary for the individual builder due to weight, engine and prop but it would give us guys something to shoot for.
A. O.K., shoot for an 850 R/C at 85 ind. A/S. As you said, these figures will vary with each aircraft but should be obtainable, expecially with an adjustable prop.

BUY SELL TRADE

FOR SALE...KR-2 project: Woodwork complete and inspected, fuselage on gear, horizontal finished, 1700 cc engine, Posa carb, slick mag, all Rand kits, 95% of all materials less instruments, over $2000.00 invested....Dick Hartwig, 2117 Liberty Dr., Cottage Grove, WI 53527 or phone (608) 839-4090.

Liquid foam...(please order only if you can't find it locally!) 2 gal. kit $39.75, 2 qt. $15.65, prepaid. Dual sticks, metal toe brake rudder pedals, 8 pages plans $1.50 (Newsletter #14); wing spar drill & jig, $12.00 deposit, $10 less postage refunded on return; Englemann spruce with sitka spars KR kits, each piece cut and labeled, $135.00 FOB.... Maj. Verne Lietz, Peshastin, WA 98847 or phone 509-548-7504 eves.

FOR SALE...KR-2 project, almost complete. Must sell due to epoxy allergy. Have instruments lights & controls installed. RevMaster 1834 turbo w/starter & alt. $4500.00...Joe Semancik, 633 W. Sierra Madre Blvd. Apt. 7, Sierra Madre, CA 91024.

FOR SALE...Beautiful VW props our specialty. As displayed at Oshkosh. Send for FREE brochure....The Prop Shop, Box 237, St. Ansgar, IA 50472.

FOR SALE...Unused KR-2 plans plus all Newsletter to date. Will include the issues of Sport Aviation from March...$45.00 for all....Grant Pence, 1522 W 4th Place, Mesa, AZ 85201.

FOR SALE...KR-2 project, 15% complete, plus remaining parts to finish aircraft (less prop). Includes instruments, Revmaster 2100 D. Over $3800.00 invested, will sell for $3300.00.... TEDDE, 3717 Ruth Rd., Ft. Worth, TX 76118.

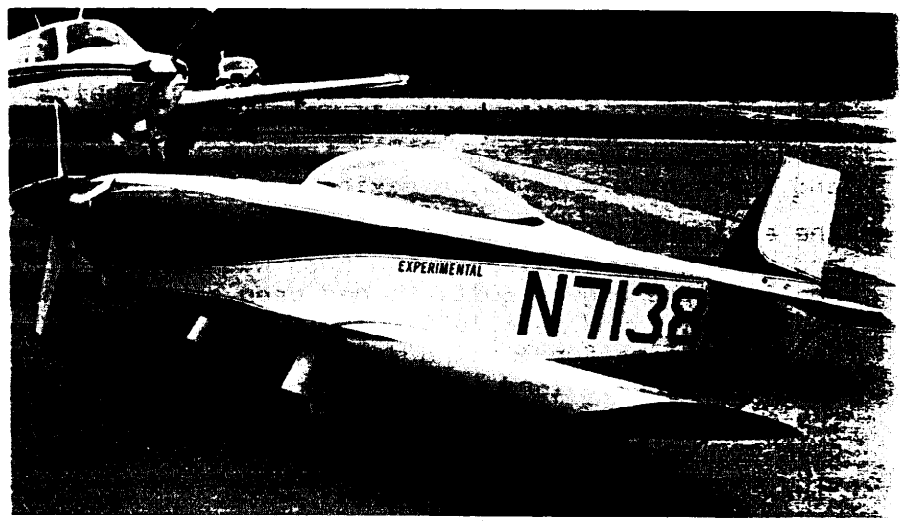
FOR SALE...Two gal. of five month old R/R epoxy ($30) and 30 yds. x 48" wide Dynel ($50). Ken Johnson, 208 N. Grace St., Lombard, IL 60148 or phone 312-495-1571 after 6 p.m.

FOR SALE...Slick Mag (4016), factory harness, Posi carb, oil pump (heavy duty), Magneto mount, 92mm cylinders & pistons...$250.00...Steve Meltsner, 97 Patriot Rd., Windsor, CT 06095 or phone 203-242-4826.

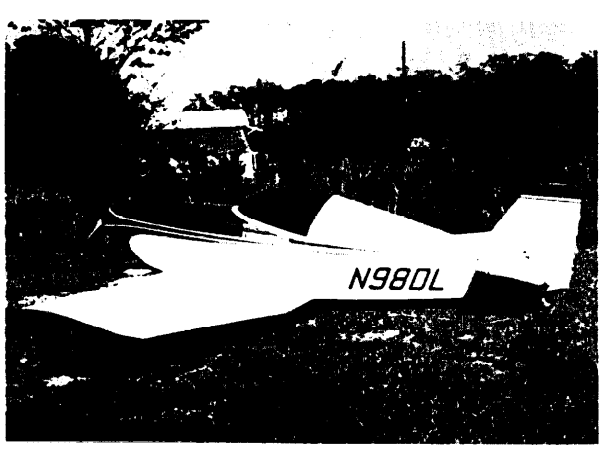
BUY-SELL-TRADE (cont.)

FOR SALE...Almost complete KR-2, ten days and you can fly it. 2100 Turbo Revmaster all electric, Rand 3-blade prop and spinner, 190 channel radio, full panel, ELT, rudder and elevator trim, 3 gas tanks with electric fuel pumps, heel brakes and fuselage painted. Everything NEW, no used or scrounged parts whatsoever. Will sell for $6000.00 parts and material cost only. Would consider plane in trade...Jack L. Bigham, 4483 Airport Rd., Redding, CA 96001 or phone 916-243-7179.

The KR-1 at the right was built by William Reents, 3874 Dunbar Dr., Youngstown, OH 44515. Engine is a 1700 VW turning a Rand 3-blade prop. Cruise is 160 at 3400 rpm and stalls at 45 mph. The aircraft is finished beautifully in DuPont Imron and weighs in at 462 lb.s First flight was in May, the picture was taken on Oct. 23, 1977 with 170 hrs. logged. The plane has been looped, rolled, & spun. Bill said the only problem was getting used to the torque on take-off. Photo and info by Carl West, 1208 Vine St. Girard, OH 44420



Here are a few bits of information that may help other builders. A piece of contact paper, purchased at a local department store makes terrific "N" numbers. It comes in different colors and stays on very well in weather but can be removed if you want to change size or color. I already took off my 9" numbers and put 3" ones vertically on the rudder. Just draw the number you want in ball-point pen onto the face..cut out with a razor blade and rub off any excess ink (if you cut down the center of the ink line).....Two tools which I found very useful in fiberglass work are a Rockwell Speed Bloc and a Dremel Moto-Tool. The speed block is expensive ($60) but worth every penny when sanding epoxy & dynel. Very fast! Very smooth! I can use 50 grit construction grade sandpaper and sand epoxy smooth enough to paint. It makes 12,000 1/8" orbits per min. which means smoooooth & fast. The Moto-tool is good for removing dynel, epoxy, foam, wood or aluminum from places like wing attach bolts,empenage hinges, cowl camlocks where wood blocks are inserted, etc...Try this for a conversation piece at some hanger fly-in. Instead of putting inspection plates in the tail area I cut 1¼" circles at inspection locations and eopoxied 1/16" clear plexi-glass flush with the surface. Instant inspection at a glance. Flashlight replacement lenses are similar to what I used. I extended the outboard wing spars in far enought to meet the center section wing spars. This acts as a spacer between the wing attach fittings. I already pinched one tire tube taxiing over a tie down loop with tire pressure under 20 p.s.i. Keep them pumpedup above 22 p.s.i.....Art Lederle, RD1 Box 338, Wading River, NY 11792.



On the left is a picture of Art's KR-2.

ACCIDENT REPORT...The aircraft was a KR-1 with a 2100cc Revmaster engine equipped with a Pesa carburator. Time of the accident was approximately 9:00 a.m....weather: temp 57°, dew point 54°, sky overcast with a 1500' ceiling, wind calm, visibility approx. 25 miles.

The carburator heat system consisted of a filter place behind a butterfly in the ram air intake. The idea was to take the ambient warm air within the cowl to furnish the heat for the carburator. The butterfly cut the ram air off and permitted the air within the cowl to enter carburator thru the filter. Due to the weather the entire flight including the high-speed taxi runs and the lift-offs were made with the carburator heat "on".

To assure sufficient cool air for the oil, a vent was cut in the engine cowl just under the prop shaft to permit air to be forced over the bottom of the oil pan of the engine. This worked real well as the oil temperature never exceeded 140° including the climbout. The side effect of this oil cooling method was that it also took all the warm air in the cowl with it and since the carburator was placed below this blast of air there was no warm air remaining to be used for carburator heat. It seems to be general knowledge that a Posa carburator will not ice. This has not been my experience. I have had the carburator ice and the engine quit while making a ground run of the engine.

The engine failure occured during the recovery from a stall. I carried 1000 r.p.m into and during the stall and when nose was lowered following stall and throttle very easily applied, the engine quit. I had been asked by the tower to move further from the airport for my stall and as a result could not return to the airport after engine failure. (I take half the blame for letting them move me away from the airport for the first flight.) It was necessary to land in a very rough pasture. Landing was rough and I was able to hold the plane on the ground for about 100 yards. The plane then hit soft dirt and flipped over on its back. I skidded about 30' upside down. I was pinned under aircraft for 25 minutes before anyone was able to get to me to lift it off me.

Plane is about 75% repaired and will be ready for another try soon, but with a differant method of carburator heat. Hope the above information will be of help to some others.....
Harry Downard, 1727 Old Oregon Trail, Redding, CA 96001.

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
ISSUE #30

HAVE A GREAT "78"

KR Newsletter

ISSUE #31
JANUARY 1978

SUBSCRIPTION RATES

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O/seas $7.50 Air Mail $10.00

The "First Flight" report in this issue is on the KR-2 owned by Bob Stone and myself. It's been a long time coming. Many of you have already experience the thrill and satisfaction that comes with that successful first flight, for most though the time of watching a "project" graduate to "aircraft" status is still ahead. I am really looking forward to hearing from all of you as your KRs join the ever increasing number now flying.

* * * * *

Australian builders take note: There is a source of foam and Dynel in Australia. The address is: Dadson Enterprises Pty. Ltd., 101 Esplande, Cairns 4870, P.O. BOX 1635, Telephone 51-4274 or 54-1903.

All flying KRs now near or past the 100 hr. make please notify the Newsletter if you haven't already done so. Australian builders cannot build a KR until it appears on their D.O.T. "Approved to Build " list. I'll list your names and Australian builders should see to it that they are brought to the attention of Walter J. Watkins of the Sport Aircraft Association of Australia, 39 Grandview Rd., Box Hill 5th, 3128 Victoria, Australia.

* * * * *

KR-3 flights have ceased temporarily. The Maloof prop installed at the engine swap went into flat pitch on take-off. The aircraft stalled 8 ft. off the runway and came down hard. One gear leg was broken and some hull damage sustained. Repairs are under way and the craft should be flying in a week. Barring any more problems the 75 hr. restriction should be flown off in time for the Sun N Fun Fly-in at Lakeland, FL on Jan 23-29.

QUESTIONS AND ANSWERS

Q. Have there been any structural failures in the KR-1 or KR-2?

A. This question is asked in several letters each month. To date I know of no failure in either type aircraft attributed to structural design. Exception is the early model landing gear legs when weakened by using lightening holes between the webs.

Q. I understand someone in Ohio is selling pre-fab fiberglass (molded) parts for the KR-1? Does the Newsletter have his address?

A. I haven't heard of anyone supplying molded parts for the KR-1 other than the wing tips offered by Rand/Robinson. If anyone else has information on pre-fab parts for the KR-1 or -2 I would like to hear from you.

Q. The Posa injector has been in use form some time now. Has anyone come up with a method for controlling the mixture from the cockpit yet?

A. Two systems have been tried with varying degrees of success. One way is to control the fuel flow to the Posa via a needle valve in the fuel line. The other way is to rotate the metering needle in the injector slightly via mechanical linkage. I prefer the first method but many feel no mixture control is needed at all.

Q. Can you epoxy over varnish?

A. No, sand varnish off down to bare wood.

Q. What is the manuvering speed for a KR-1 or -2?

A. 135 MPH IND.

Q. We're all interested in spoilers to help the KRs stop flying, any news would be appreciated.

A. Check the October and November issues of the EAA magazine "Sport Aviation". There are fine articles in these.

First Flight....KR-2, N31158, Corona Airport, Corona, Calif., Sunday, Dec. 19, 1977.

9:00 a.m.....The rain that had started on Saturday afternoon was gone. The sky no longer had that solid gray look of yesterday and was rapidly becoming the kind of day everyone looks forward to, especially pilots. After many hours of work by my partner, Bob Stone and myself, our KR-2 was going to show us what it could do. The first flight had originally been set for the previous week-end. A tachometer that had worked fine on several prior engine run-ups suddenly developed the jitters and the trip to the airport was postponed til the cause was determined and a cure effected. A check of the electrical system showed all connections correct...a loose ground wire was found to be the culprit. This was fixed and another complete check was made of all systems. Another engine run-up proved very satisfactory and now.....here we were.

11:00 a.m....The sky was continuing to get better with each passing moment. The wind was blowing almost straight down the runway at about 5-8 knots and several other planes were now in the air, taking advantage of the excellent Sunday weather. Ken Rand had been keeping an eye on the progress of N31158 as it was being completed.Ken must have liked what he saw because he volunteered to make the initial flight to check out the in-flight handling. So....

11:20 a.m....The KR-2 has been unloaded, wings attached and one more complete check of the airplane to see that all is right. Everything checks out and Ken is in the cockpit. The Posa injector is very susceptible to flooding so a careful starting sequence has been arranged.....1. All switches OFF.

2. Throttle full open.
3. Fuel on 5 seconds and then off.
4. Throttle closed to fast idle positions (1/8" to 1/4").
5. Switches on.
6. Hand prop to start. That 3-blade prop comes around quick so be sure of your balance. You guys with electric starters are probably smiling but pay attention anyway, batteries have been known to fail on occasion. The engine will usually start after 2 or 3 flips on a warm day but a warm engine (previously run) will sometimes start on the first flip. ALWAYS use caution!!!
7. After the engine starts the pilot should check for oil pressure within 15-20 seconds. Engines that have sat nose high in the airplane for a length of time have left the pump high and dry. Don't ruin an engine. USE YOUR GAUGES.

There was now a regular flow of aircraft going in and out of the airport so Ken had to get in line to wait his turn at the runway. A Stearman was just ahead of Ken and remembering an incident at Oshkosh when Ken was in his KR-1 behind a Staggerwing Beech caused me a couple of nervous moments. The fears proved to be unfounded as the Stearman rolled into position for take-off and then was gone.

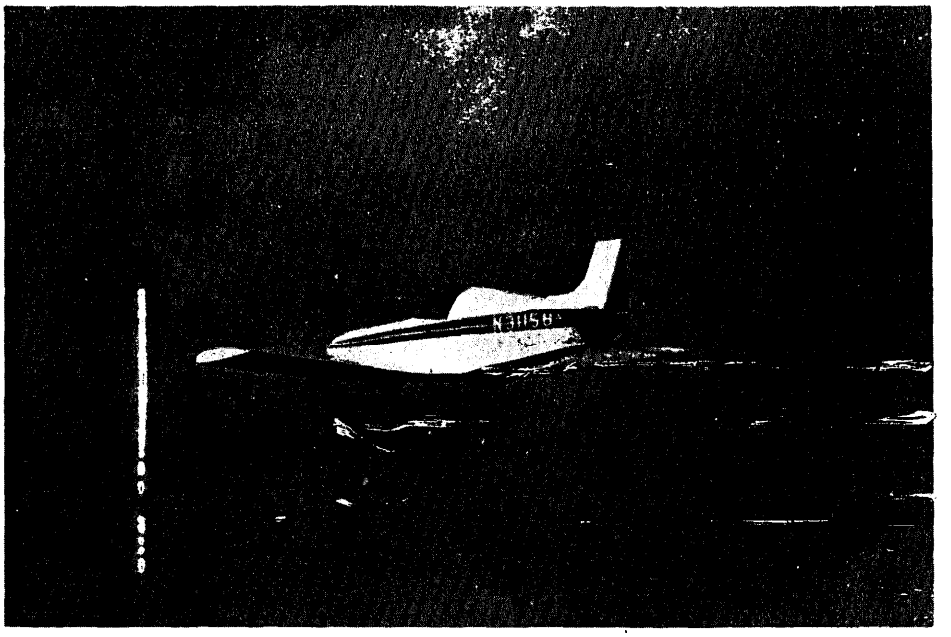
11:25 a.m....A group pilots, people and interested parties had gathered while we were preparing the KR-2 for its maiden flight. Word of the coming event had spread and now there were two dozen or more people watching the proceedings. All eyes were on the trim little KR-2 as Ken rolled onto the runway and advanced the throttle. I know there have been smoother take-offs than the sort of wobbly, lift off we were watching but I tell you for sure, none ever looked so sweet to me. The airplane lifted off after a 350 to 400 ft. run and then it was climbing. I had expected Ken to wait til reaching pattern altitude before retracting the landing gear but when he turned downwind and the wheels were still extended I suspected a problem with the gear latch. I saw the gear was retracted however, as he made a fly-by of the airport so if there had been a problem, it must have been minor.

11:35 a.m....The KR-2 appeared to be flying well as Ken made a couple of circuits of the airport. The 1700 cc VW engine was performing well and was moving the KR-2 thru the air with ease. Ken flew further from the airport after each pass. He made one low level run at a high rate of speed that really showed off the lines of the sleek little craft.

12:00 a.m....Ken is downwind again, looks as tho he' s going to attempt a landing. There is still a lot of traffic in the pattern and I worry about the other pilots being able to see the KR-2. It is only half the size of anything else in the air today. Sure enough, as Ken is on final about ¼ mile from the threshold, a Cherokee 140 drove onto the runway

First Flight (cont.)
and started his take-off run. Ken applied power and went around for another try. This time there were no other aircraft waiting to take-off and I felt much more at ease.

12:05 p.m....The KR-2 came down like it was on a wire. Ken chopped power, and greased it on. The flight was over. Short, sweet, and beautiful. Congratulations were the order of the moment...a time to remember.



12:15 p.m....Pilot de-briefing: The wobble on take-off was explained, there was too much friction in the control system for Ken to get a positive feel of the aircraft at first. As he became used to the heavy feel, the problem became minor. Gear retract latch was slightly mis-aligned and created some difficulty in getting the gear properly retracted. Everything else functioned beautifully. A full stall was not attempted but the aircraft was slowed to 40-45 IND and still had good aileron response. Rudder was very effective, more so than the prototype. The reason for this is not yet apparent since both are the same size. Highest airspeed attained was 160 IND. Full power was never used, even on take-off but a 3000 RPM tach reading at 110 IAS produced a 1000 FPM rate of climb and approx. a 130 IAS cruise. These readings were made with a Rand 3-blade adjustable prop set at the low stop (climb configuration).

More flying is planned for the following week-end after a thorough check of the entire aircraft. The control system will be checked, the gear latch fixed. Should be a great week-end.

BUY SELL TRADE

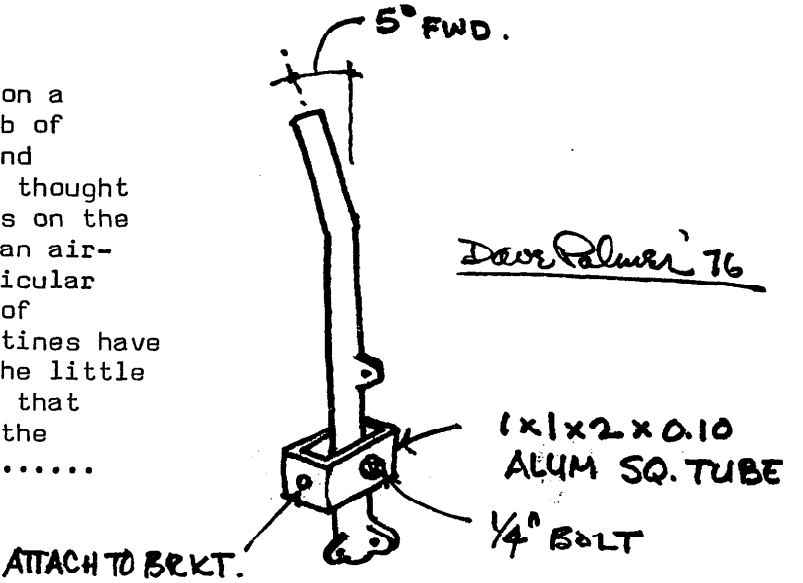
TRADE?...Does anyone have a set of KR-1 plans for sale? I have the KR-2 plans and am considering the -1 instead. Bill Tidmore, Box 632, MSU, Mississippi 39762

SALE.....Beautiful VW props our specialty. As displayed at Oshkosh. Send for free brochure. The Prop Shop, Box 237, St. Ansgar, IA 50472.

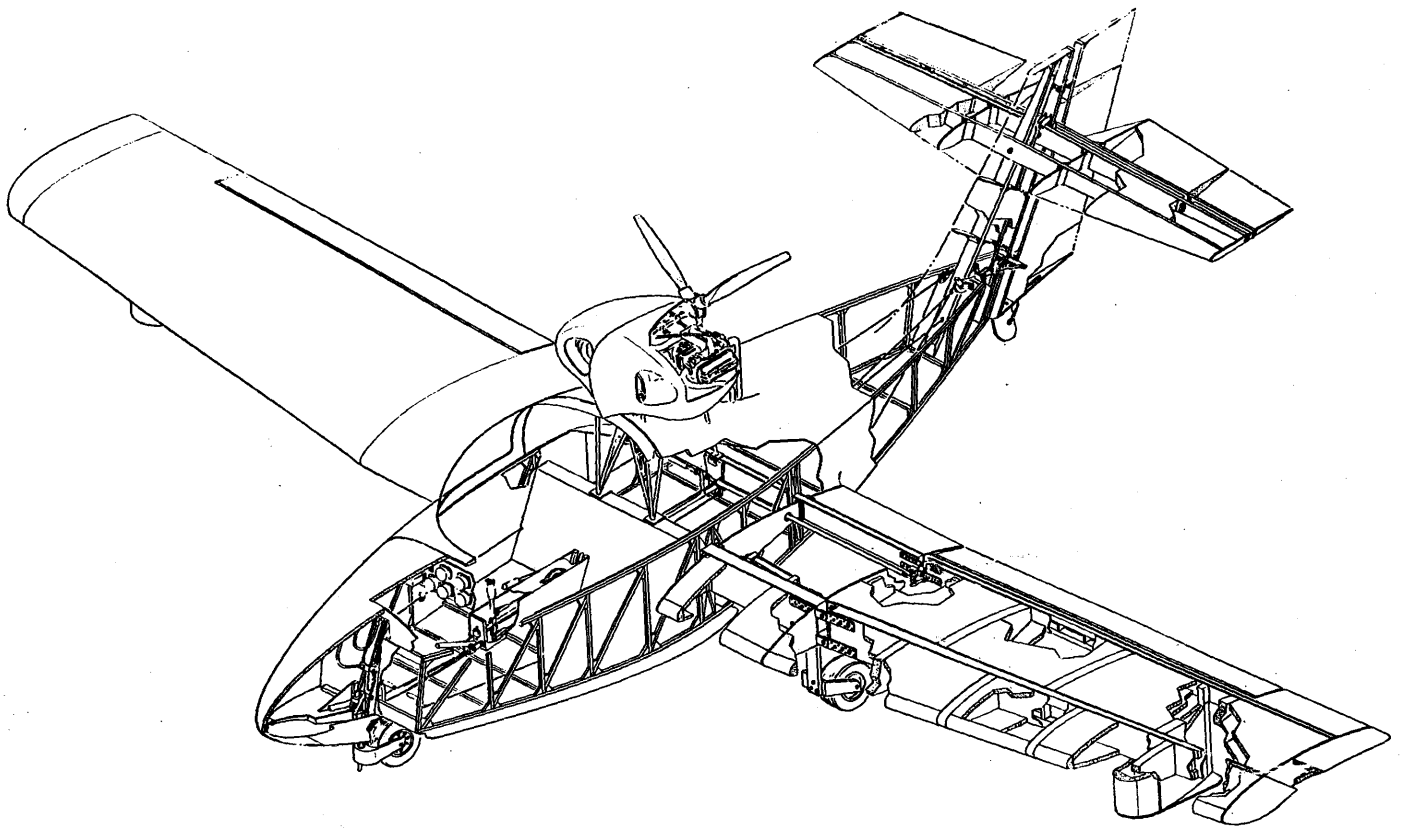
TIPS FROM OTHER BUILDERS

Recently I had the opportunity of sitting in on a technical conference with Dr. Richard Whitcomb of airfoil and winglet fame. When talk got around to airfoil design technology, I asked what he thought of the use of the GA(W)-1 and GA(W)-2 airfoils on the KR-2. He pointed out that, to be effective, an airfoil must be designed specifically for a particular airplane, or at least for a particular range of Reynolds numbers, and that the new design routines have not yet been applied to the regime in which the little KR-2 wings operate. His specific comment was that "the RAF airfoil is probably just as good as the GA(W) airfoils for that particular airplane"..... Doug Garner.

The control stick drawing on the right is about the simplest yet. Should be very easy to make.



CONTROL STICK



KR-3
RAND/ROBINSON ENGINEERING, INC.
5943 K McFADDEN AVE., HUNTINGTON BEACH, CALIFORNIA 92649

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
ISSUE #31

K·R Newsletter

K·R Newsletter

ISSUE #32
FEB. 1978

SUBSCRIPTION RATES

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First, I want to pass along an observation or two on characteristics of the KR-2 featured in the last Newsletter. Hopefully I can give you guys a hint on what to expect on that first flight of yours.

1. Contrary to what you might have heard about taildraggers, the KRs are very easy to taxi. The positive steering tail wheel lets you drive the aircraft around like a kiddy-car. The only problem here is that a sudden application of brakes could very well ruin a prop. Go easy on the binders and keep the stick full back while taxiing.
2. The KR is a light aircraft and will readily respond to the throttle. Don't just fire wall the throttle and hang on. There is a lot of torque in the VW up front and it will try to take you to the right side of the runway. Just ease the throttle in and be ready on the left rudder pedal.
3. Next thing you will notice is how sensitive the KR is to elevator control. The unwary pilot is going to find the aircraft and himself going down the runway like a porpoise. Over control at this point can cause disaster so hold that stick steady and make small attitude corrections while the aircraft climbs out. Best rate of climb is going to vary from one aircraft to another because of engine, prop, etc. The 1700cc VW in N31158 turning a R/R 3-blade set at the low stop will give a R/C of 1500 to 2000 fpm with only the pilot on board. Pilot and passenger brings the R/C to 800 to 1000 fpm. These figures are at an IAS of 80 mph.
4. Initial landing gear retraction should not be attempted until at least pattern altitude has been reached. I found the gear retract handle location to be unsatisfactory as far as accessibility was concerned. I would advise all KR-2 builders to change the location of the gear handle from center of the spring bar to center of the left seat. Much easier to operate.
5. Now you want to try a few turns to get the feel of the aircraft. Response to the stick is positive and quick. Rudder isn't needed in any but the steepest of turns. Put the aircraft in a bank, hold altitude, and it will do 360s like it was on a track.
6. Landing...the KR doesn't have any surprises in the store for you here. The main thing you want to watch is airspeed on final. Too hot and it will want to float. I've found 60 mph ind. will set up a good glide angle and allow plenty for flare out.

That pretty well covers it, I guess. I'm sure you have more questions on performance, stalls, etc. but I've given you an idea on what to expect from your KR on the first flight. Should you disagree with me on any point be sure to write. The more information in circulation the safer it is for all.

BUY SELL TRADE

FOR SALE...KR-2 plans, Newsletter from #9 to date and KR-2 bolt kit...$100.00. Joe Beyer, 168 SE Haig St, Portland, OR 97236 or phone 503-761-4914.

FOR SALE...Full size cardboard templates for the metal fittings of the control system and the nose rib of the vertical fin...$5.00. Darrell Bosely, Rte. 4, Marietta, OH 45750.

FOR SALE...Beautiful VW props our specialty. As displayed at Oshkosh. Send for free brochure. The Prop Shop, Box 237, St. Ansgar, IA 50472.

FOR SALE...Complete material kit for KR-2, 15% discount from original price. For details write....Harold Neely, 190 Lorane Rd, Reading, PA 19606 or phone 215-779-7594 after 6 p.m.

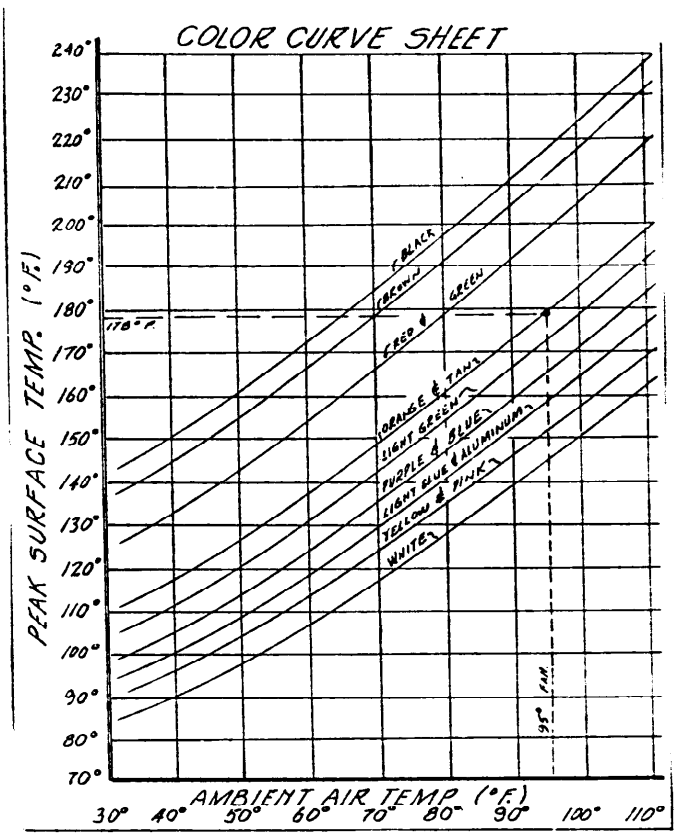
FLIGHT REPORT...I have two flight reports this month, one from a very experienced pilot and one from a pilot who has never flown taildraggers.

From Jack Aldrich, 2404 Emory Ave., Bradenton, FL 33507.....One word describes the KR-2 in flight, beautiful! We worked on our plane for nine months, beginning from scratch the end of Feb '77 to the final paint job at the end of Nov '77. After going through the hassle of getting the inspector to give it the final inspection and working out a few minor bugs, I finally flew it on Jan 21, '78. Weather was also a factor in the delay. Let me say first that I am by no means a super pilot but average. I hopped into the KR-2 with 200 hrs total time and NO taildragger or stick time. The whole time I was building my plane, I was warned by the old timers to get some taildragger time and I did try, but no one gives lessons in my area. So I decided I would have to teach myself. My first run went like this: throttle advanced slowly, tail wheel came off. Keeping her straight was a little difficult at first due to my inexperience but I quickly got used to it. I had intended to keep her on the ground but she suddenly became airborne. Out of surprise, I chopped the power, came down and hit hard and bounced. This time I gained control and greased it in. I then pulled off the runway and inspected the plane and found everything in order. (Landing gear is tougher than I thought.) Second run: Tail wheel off, steering much better. She lifted probably a foot. Greased it in again. Third run: Tail off, this time I gave it all she had and took off. Controls were a little touchy but I quickly got used to them. I climbed at 80 mph up to 1000 ft. and leveled off to a cruise of 100 mph. But this was with an rpm of 2500 and wheels were left down. This rpm was the best I could get out of the 1700cc VW but we think it is because of the prop which we also made. Anyway, I circled around, made a pass over the field at 300 Ft., circled again and made my approach. Pitch control was a little quick but not to the point of being unsafe for the average pilot. Near the ground, I flared and just let her float in, adding small corrections with the rudder and finally the wheels kissed the runway. Approach was made at 60 mph. The KR-2 is a very well handling and safe airplane and in my opinion, no more difficult to fly than a Cessna 150. Please don't let this statement make anyone who hasn't tested their KR to be over confident though. Use caution and make sure all is well before flying. P.S. Also add that wind conditions were 10-15 mph and 5-10° cross-winds.

From Richard Maddux, 631 Lakeshore Dr., Milton, FL 32570.....I recently purchased a beautiful KR-2 from Rick Basden of Goldsboro, NC. We made arrangements to meet in Winder, GA (outside of Atlanta). After examination of the aircraft I joined him in the cockpit for a flight check. The aircraft interior is nicely appointed with vinyl and fabric seats. The panel has a Bandix 360 Nav/Com. localizer and 3 LMB that takes about ½ the panel. It has dual headsets and an ICS system which makes inflight com very nice. After a short flight around the area we landed. Mr. Basden hopped out and I was going to take it. However a flat left main stopped me short. About an hour later I was ready to go but the sun was getting lower and I had to get to Pensacola, FL before it set. So my first landing enroute would be my first landing. (without any taxi tests or touch & go's) I brought a friend with me and the two of us climbed in and taxied out for take off. The take off roll was normal with the exception of left rudder vs normal right. After lift off, however, the fun begain. The two of us weighed about 340 lbs and the empty weight was 590 lbs. for the aircraft with about 72 lbs for the fuel. To say the least, we were heavy. CG was pretty far aft so elevator sensitivity was wild. I thought I was on a roller coaster when I tried to retract the gear. So I gave that up until I reached approx. 800'. Aileron and rudder were fine but that elevator! Wow! (Ifound out later that with one person or two small people -- no problem.) After clean up at 3200 rpm cruise I was indicating 145 mph. However a static port is not installed and subsequent tests with other aircraft indicate this to be 10 mph too fast. As soon as I can find a suitable static port and its aircraft location I'll install it. Landing on my first hop proved to be no problem although I was quite nervous after that take off. I used 70 mph for approach and was greeted with less float then at higher speeds. Perhaps I should explain that I have approx. 3500 hrs flight time with about 6 hrs in a Pitts, 75-100 in a Starduster and another 50 in other assorted homebuilts so I wasn't really worried about my ability to handle the KR-2 but I do approach each unknown with much caution. At present I am a military pilot and have experience in a wide variety of aircraft. Back to the KR-2, I haven't had any trouble with it yet. It's a sheer joy to fly. I've looped it, rolled it, stalled it and even done hammerheads. Its performed flawlessly. I have about 6 hrs in it so far and the aircraft has about 80 hrs total time. I have a few bugs with the engine. The CHT is running about

425° F (too hot) in cruise and oil temp about 110° (too cold). Further mixture adjustment and a larger oil cooler blocking plate should remedy this. Also the 92mm jugs are blowing oil through the breather and make my belly a mess. I'm told however that "venting" the rocker covers should help. The engine has been burning 100 LL but I believe I'll switch to Amoco premimum (no lead). The prop is a 52" 44 pitch. I know little about this and would appreciate any info on props and if this is the correct pitch for a good cruise. The engine is a dual plug, dual mag (Bendix D-2000) set up. I understand there's an A.D. on the bearing on this unit and am checking to see if my serial number is one of them. I am extremely pleased with my little "jewel". It's a hot little ship that loves to kick up its heels. No dull flying here. If any readers have any ideas or comments I would like to hear from them as information on the aircraft and engine is scarce.

TIPS FROM OTHER BUILDERS.....The reference in Issue #29 to the importance of white or light colors in aircraft (particularly plastic ones) reminded me of an article I had saved from "Soaring", Sept '75 issue. I refers to a particularly thorough experiment carried out with various colored fiberglass panels. The details of the article are interesting, but the graph (ambient air temperature vs peak surface temperature) tells it all. I'll be happy to mail free a copy of the article to anyone sending a self addressed stamped envelope. In reference to ultra violet protection, the Rand factory recommends a couple of coats of aluminum paint of the same type used for the fianl finish. I'm enjoying the Newsletter thoroughly, keep up the good work...Buck Buchanan,4727 Milne Dr., Torrance CA 90505.



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I am building a KR-2 and have been working on it for 2½ years-part time. For power a Mac 72 np engine is planned. I have heard both good & bad about the engine, but feel that with the proper bearings, new 2 cycle oil and temp. Monitoring will ward off the problems common to this engine. If it does perform well, the plane whould be some performer. Anyone interested, or in the process of the modification is welcome to write. I can recommend the Monnett tail wheel casting. It came out great. Both myself and Al Starke in Helena used an Aeronca Champ fuel tank. It fits perfectly and did not require fabrication. therefore letting me spend the time elsewhere.... Norman Tebag, Rte. 1, Whitehall, MT 59759 or phone 406-287-3390.

Terry Grimes, 2214 S. Volutsia St., Wichita, KS 67211 reports his KR-2 is ready for final inspection. Norteworth mods on Terry's KR are fixed tricycle gear, toe brakes, bucket seats and a three piece canopy. Looking forward to hearing more from Terry.

The last Newsletter included a question about pre-molded parts for the KR-1. Well, there is a company in Ohio selling some pre-molded foam (not fiberglass) pieces. For more info write...Aircraft Custom Foam Service, Inc, 208 Victor Ave, Columbus, OH 43207. Thanks to Al Remenicky, Ft. Wayne, In. for sending this in.

Bill Lee of Tavernier, FL used particle board to make his spar drilling jig. Easier and cheaper than a metal one and just as accurate. Every hole came out perfectly aligned.

Received a phone call from Don Land, a KR-2 builder here in S. Cal. He has developed a very workable retractable tricycle gear that will bolt directly to a KR-2 with only minor modifications. I went over and had a look and was impressed. The system was well designed, light (13 lbs.) and very strong. Don will probably sell plans and/or kits for the system after it has been tested on his KR-2. His address, if you want to write,is...906 Manzanita, Los Angeles, CA 90029 or phone 213-666-2869.

RAND/ROBINSON UPDATE...Remember last issue? The amphib had just suffered a minor set-back. Turns out the prop used for that particular flight had not been adjusted to the engine. The prop, a Maloof/Revmaster unit, was a loaner replacing the original that had sustained damage from a foreign object (screw, cowl fastener, etc.). The loaner was handed over with directions to adjust the pitch setting before flight. For one reason or another, probably haste, the necessary adjustment was not made properly. Result was an over revved engine and a stall when power was cut. Repairs were made to the KR-3 and within a week it was ready to go back to the airport. The result of this latest trip you see in the picture. The pilot, Jack Moell, received only a couple of minor abrasions. Cause of the accident has been attributed to low-speed control reversal and has prompted reconsideration of the GA(W)-1 airfoil used on the KR-3. Rand says there will be about a year delay in release of the KR-3 plans and those who already ordered plans will have their money refunded. Mean while, the KR-3 will be rebuilt using a different airfoil (probably the RAF 48) and testing will start over from scratch....There is some news on the brighter side. N1436, the KR-1 prototype is currently being rebuilt. Should be flying by summer.....Molds will be made for fiberglass cowlings and fuel tanks that will fit the Revmaster turbo-2100. These parts, as well as a welded engine mount, will be marketed. Watch the Newsletter for availability.

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
ISSUE #32

MARCH 1978
ISSUE #33

K·R Newsletter

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O/seas	$7.50	Air Mail	$10.00

I've been getting many requests for info on VW engine operation lately, so I started looking to see what was readily available. I found the following figures in a booklet on the Barker VW conversion. CHT -450° max...Oil temp-250° max...Oil pressure-30 lbs at 70° C min. (?)...Recommended rpm cruise-3300 max 3800.

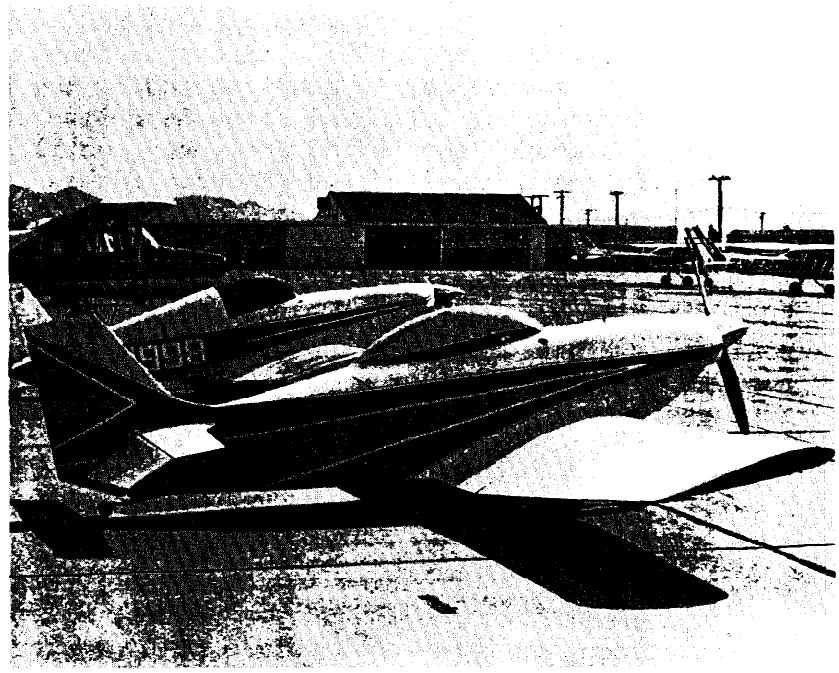
The CHT is with the thermocouple under the spark plug and is the most accurate of the methods used to measure CHT. Oil temp sensor is located at the oil screen cover plate on the bottom of the engine. These figures do come close to what I've experienced on my KR-2 since the first engine run-ups. Normal operating range appears to be as follows... CHT-395° to 415° F (with VW type gauge)... Oil temp-180° to 200°...Oil pressure-35 to 40 lbs cold, 20 lbs hot...rpm-3200 cruise 3800 max.

Your airspeed will vary with size of engine and/or prop. For the larger VWs (1700cc to 2100cc) the following applies...climb props have 40" to 45" of pitch, cruise props 55" to 60" of pitch. Length of the props are generally 50" to 54". The majority of VWs use the middle range 45" to 55" of pitch on the non-adjustable type prop. There are exceptions of course but this has pretty well proved out over the years. You can readily see the advantages of the adjustable prop!!

There are still many things to learn about the VW as an aircraft engine but generally it has proven highly successful. That about covers it, hope your VW performs as well as expected. I'm sure it will give you much pleasure.

The KR-1 pictured here belongs to Butch Grafton, 1605 Eucalyptus Dr., El Cajon, CA 92021. The trim little craft is the nicest looking KR-1 I've seen since Fred Kellars beauty at Oshkosh. The KR-2 in the backgroung belongs to Murray Rouse and has previously been pictured in an earlier Newsletter.

Butch actually sent the picture to Rand/Robinson (from whom I lifted it) so at present I have no performance figures to pass along. I do expect to see Butch & Murray at the Fla-Bob Airport open house this coming week-end. Maybe more info next month.



TIPS FROM OTHER BUILDERS

I misplaced the name of the builder that phoned in these tips. I did get the information tho. The trouble with sanding epoxy has been the rapid way it loads up sandpaper. A grill brick of the type used in restaurants removes the sticky part and allows easier finishing with sandpaper. He ran into a problem painting his KR. A finish coat of Dupont Dulux over Dupont 1005 primer peeled off. Dupont rep said it was because the interval between coats was too long (1 week).

QUESTIONS & ANSWERS

Q. I am thinking of using the existing VW fuel pump to transfer from the wings to the center tank. Will there be any problems due to the long periods of disuse of the pump?

A. The fuel pump would constantly be in operaion whether or not there was a fuel flow. This could cause a premature failure of the pump diaphragm. It would also be a constant horsepower loss.

Q. Where are most of the people putting the battery in the aircraft equipped with an electrical system?

A. Varies.....most are on the firewall, some are behind the seat.

Q. I am building a 1971 VW engine to 1834 cc with a 3/4 race cam. I see where most of the engine gages go but where are builders hooking the oil temperature sensor into the engine?

A. Most gauges are matched to a sender so lacation recommended by the manufacturer should be best. Generally a location below the oil level in the case is considered most accurate.

Q. I understand that Rand doesn't use carb heat on Posa carb. Are builders taking air from inside the cowling or using ram air? How does this lack of carb heat work out in the colder climates?

A. Ram or cowled air supply is a matter of choice. I used ram air in my KR-2. There is no venturi in a Posa so ice is not a problem (according to the experts).

Q. Any recommendations on building a cabin heat muff and hooking it into the cabin?

A. The only one I've seen was a section of stovepipe over on exhaust pipe with ducting to the cabin.

Q. Did Rand get the bugs out of the plastic 3-blade props? Is this what he is now delivering or are they furnishing wood blades?

A. The blades will continue to be wood indefinitly.

Q. I'm having trouble finding out from the plans how they seal cabin from water and rain? Also how about the wings where they are cut off, are seals of any sort used at these junctions to keep water out?

A. The cabin can be sealed using foam rubber weather stripping available at a hardware store. The end of the wings should be sealed off with foam/Dynel. Also the center section stubs except around the aileron control.

Q. I am interested in the Subaru 1600 cc water cooled engine...do you have any info?

A. There was a Subaru engine mounted on the Taylor-Bird at Oshkosh last year. To my knowledge, this is the only aircraft using a Subaru so information is sketchy.

Q. What is the best way to mount or modify the tail wheel spring? I built mine according to plans and the tailwheel hits the bottom of the ruoder with weight on the aircraft.

A. Rand recommends shortening the spring until a satisfactory condition is achieved. Usually the removal of two or three inches is required

*Ed. Note...The circulation of the Newsletter has increased to the point that answering questions by mail is consuming an increasingly large amount of time each week. In the future I will have to limit the answering service to the Newsletter Q & A column. I realize some questions are too pressing to wait until the next Newsletter so I will be happy to answer this type by phone. My phone number is 714-897-2677 (no collect). Overseas readers will still be able to have questions answered by mail since a phone call is impractical.

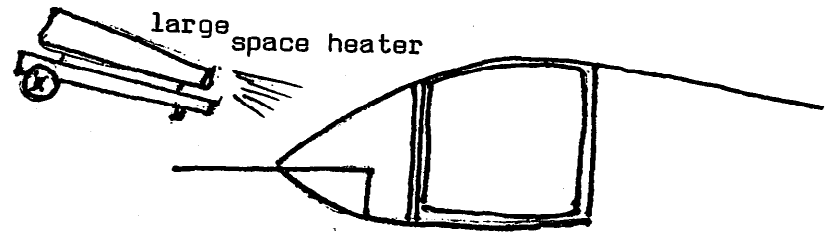
TIPS FROM OTHER BUILDERS

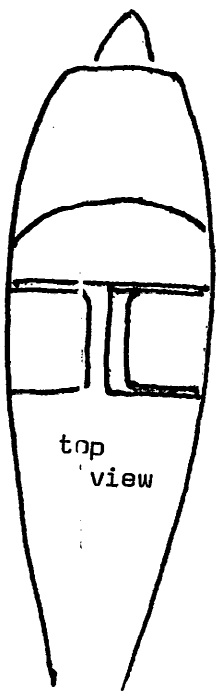
As more builders have reached the Dynel/epoxy stage in their KRs, more ideas surface on getting a smooth skin on a KR. Jim Snyder, a longtime subscriber and contributor to the Newsletter sent in this idea. Jim's method: Lay down Dynel and epoxy as usual but without using wax paper or Mylar. Leave it rough, tacky. A day later lay down a slurry of resin (1 part) and microballoons (3 parts). A piece of Mylar was laid down on the slurry to get a smooth finish. Jim has tried various tests to check for separation of materials using this method and found no problems at all. He would like comments from the rest of the builders so if you have questions or criticisms, drop him a line. Address is: Box 696, Hesston, KS 67062.

TIPS FROM OTHER BUILDERS

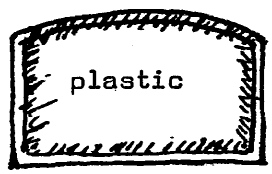
From Dan Diehl....Many people have written to me about my canopy. Here is a quick sketch you may want to put in your letter.

Make front windshield bows of wood. Bend aluminum around bows and cut to fit just as plastic will fit. Place cotton flannel over aluminum & then lay on plexiglass. Use a large space heater to heat plastic.



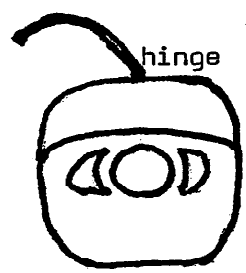


I did mine one half at a time. This will give shape for front. Side windows are made for an emeraude. Available from...Bouwens Aerospace, Twing Rd., LeRoy, NY 14482. They sell for $75 a pair. Several colors available. They come too large so you will have to cut them down, mostly on the bottom. Left half is permanent. Right half opens as a gull wing door. Make frame for door out of wood and then use foam to fill in around glass. Dynel around wood, foam and glass.



wood frame
foam enclosure

dynal around all



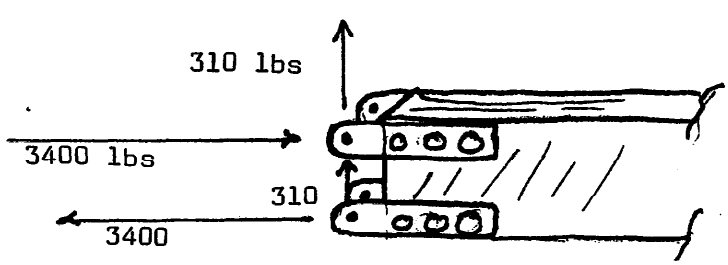
hinge down center

use wood dowel pins to locate bottom when door is closed

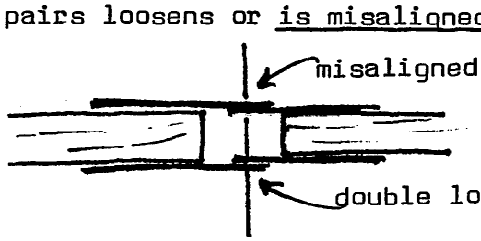
DAN DIEHL
4132 E. 72nd
TULSA, OK 74136

In my last letter (stresses on engine mounts/firewall) I promised to send you a summary of the landing gear stresses. I haven't finished them yet but I have done the wing fittings... another eye opener. I'm sure a number or two will keep those builders honest! An easily attainable +5 G loading (KR-1 gross 750 lbs) produces the following stresses on the main spar fittings.

Or 3415 lbs angled slightly upward at 5° on each of 16 fittings



If one of your two fitting pairs loosens or <u>is misaligned</u>, <u>these figures double</u>. Similarly, if your bolts through the spar are misaligned <u>they won't take their load.</u>

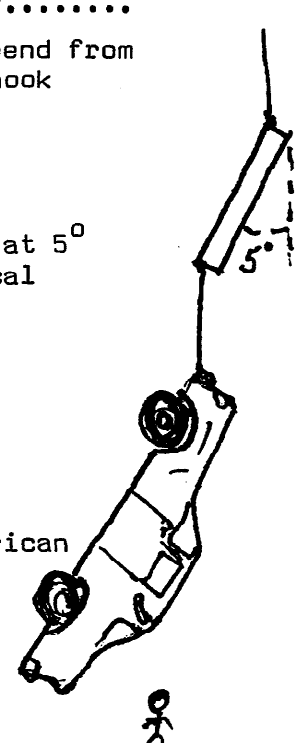


A static test would be easy.....

suspend from skyhook

your spar at 5° off vertical

large American car



When you finish installing your wing fittings take a hard look at your car and your workmanship. Imagine the above experiment. Not ask yourself..."Would you stand under that car?" It is the same thing as trusting your wing spar

by DALE WALKER
11018 HEDWIG GREEN
HOUSTON, TX 77024

BUY SELL TRADE

BUY....I am looking for a good used Revmaster 2100 VW engine. Please write and advise price and conditon if you have one available. R.F. Creed, 39 Claymore Crescent, Surfers, Paradise 4217, Queensland, Australia.

SELL...Rand VW engine mount, never used, $50.00. Tom Loftin, 3618 Noland Ct., Independence, MO 64055

SELL...Coot plans, never used. Cost $150.00, sell for $100.00. Also VW parts...name brand (ISS) new piston/cylinder sets, 92 x 69-$82.00. New German made cases, 1600s, 8 or 10mm head studs plus case savers, less than $100.00. Have all engine components. Can supply 914 or 411 cases, kits up to 2700 cc (horsepower to 125). Albert Epp, 4919 Nattis Rd. St. Louis, MO 63128.

SELL...Beautiful VW props, as displayed at Oshkosh. Send for free brochure. The Prop Shop, Box 237, St. Ansgar, IA 50472.

WANTED.Someone to make up the metal parts required for the KR-2. I will furnish the templates and aluminum extrusion kit if necessary. L.V. Farina DMD, 823 Troy-Schenectady Rd. Latham, NY 12110.

SELL...KR-1. Flying! Must see to appreciate, built just like the original prototype. Has extra 36 hp engine, picure on request. Herbert Dodd, Route 1, Morrison, TN 37359.

HAPPENINGS.....EAA 225 "Seacoast Region" and Associates are sponsoring a fly-in at Sky Haven airport, Rochester ,NH on the 20th and 21st of May '78. Static displays and an airshow both days.

On June 4th there is the annual EAA and AAA Fly-in at Meadowlake Airport, 12 miles east of Colorado Springs, CO. Also on hand will be several anitque cars.

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
ISSUE #33

K-R Newsletter

ISSUE #34
APRIL 1978

SUBSCRIPTION RATES

1 year	$6.00	Back issues-50¢ ea.	
O/seas	$7.50	Air Mail	$10.00

How are you coming with your KR? Letters I've been getting indicate that this is going to be the kind of year expected 2 yrs ago. KRs are taking to the air regularly now, as indicated by the flight reports in the past few Newsletters.

There is a dark cloud on this rosy picture tho'. I've noticed what seems to be a nation wide apathy on the part of homebuilders, pilots, and aviation related businesses when it comes to supporting local airports and aviation in general. I know it's easy to stand back and let someone else shoulder the responsibility but if we, as a group, don't let our elected officials know that we even exist, there just might not be an airport available when you're ready to fly your winged wonder.

I admit a large part of the problem is a lack of knowledge in where to start, so I'm going to suggest a few things you can do to start the ball rolling.

1. Join an aviation related organization. Two would be better, a national, one such as the E.A.A. or the A.O.P.A. and a local county or state organization.
2. Write a letter to your local, state, and national elected representatives. Let them know how you feel about issues and laws directly affecting your interests. I don't mean abusive or crank type letters, they just end up in the trash. A respectful letter that states the facts will draw the most attention and consideration.
3. Interest your non-pilot friends in aviation. Not by those hair-raising war stories and tales of close calls but by taking him to lunch at a nearby airport or just showing him points of interest from the air. A short flight on a C.A.V.U. day can do more to dispel bad publicity than anything else I can think of.
4. A recent trend is for E.A.A. chapters to hold static displays at the large shopping malls that are mushrooming thru-out the country. Should one of this type of outing be on your calendar do what you can to make it educational to the general public. We don't want to look like a bunch of daredevils, just a group of people with a different recreational vehicle.

I'm sure you can think of several ways to promote general aviaition. What it comes down to is a critical need for all of to do something.

HAPPENINGS.....DATE CORRECTION: The EAA & AAA Fly-in at Meadowlake airport in Colo. Springs, CO will be on May 28, 1978. Previous Newsletter had it listed as June 4th. Sorry 'bout that.

Fourth annual Sourthern Calif. Regional Fly-in sponsored by EAA Chapters 1, 7, 11, 92, 96, 448, and 494 on May 5,6, & 7. Contact Gene Vickerey, 1115 S. Sierra Vista Ave., Alhambra, CA 91801 or phone 213-289-8944.

Anaheim Indoor Aircraft Show will be held at the Anaheim Convention Center in Anaheim, CA on May 19, 20, & 21.

The impatient builders among us will be happy to learn that R/R has added yet another preformed section of the KR-2. Now available is a fiberglass turtle deck, ready to mate to your KR-2 wood fuselage. Price is $115.00 from Rand/Robinson, 5842 "K" McFadden Ave, Huntington Beach, CA 92647.

Contrary to popular belief, writing, editing and mailing the Newsletter is not my sole occupation. I work days as a construction foreman and in my "spare time" work on the Newsletter, a room addition to my house and try occasionally to squeeze in some time on my own project, (after assorted "honey do" chores). You can see from this schedule it is not possible for me to check out each idea or modification submitted to the Newsletter. So I will continue to pass along as much volunteered info and drawings as possible. I leave it to your discretion as to whether or not you use them in your aircraft.

QUESTIONS & ANSWERS

Q. What kind of tape is used to seal the gap where the wings connect?
A. I used Scotch "Mystic" tape, available in assorted colors but any fabric based tape would probably work.
Q. How do you hook up the throttle linkage for the Posa carb?
A. Most builders are replacing the cable on the slide with a shaft, then almost any linkage may be devised, according to your needs.
Q. I have heard rumors there is a KR club in the San Jose, Calif. area. Do you have any info on this club?
A. I have not heard of anyone forming a KR club in <u>any</u> area as of yet. Should there be one I would be happy to print any info sent to the Newsletter.
Q. Has a KR-1 or 2 flown using a Corvair engine?
A. Not to my knowledge, however there is a great amount of interest in this engine, so it is probably a matter of time
Q. Has anyone experimented with different kinds of foam? What kinds are acceptable?
A. Most foams can be used if it is the right density, 1.8 to 2.2 lbs per cubic ft is recommended. I have seen a urethane foam that should <u>not</u> be used. It is yellowish and appears to disintegrate constantly. Just touching the stuff will leave your hand covered with a film of sparkling, grainy dust.
Q. Have there been any failures of the magneto belt?
A. No.
Q. Will the KR landing gear really hold up under rough grass fields?
A. At least two KRs are operated out of grass strips and to date I have heard of no problems.
Q. I hear some people have trouble with their stick/cables binding in one direction and slack in the other. Comments?
A. This has happened to several builders and is caused by the pivot point of the stick not being in line with the cable attach point. It is easily remedied once the problem is recognized.
Q. I have not been able to get the 7075 T6 .020 aluminum for my KR-2 firewall. Is there an acceptable substitute?
A. You bet, Rand recommends using .005" stainless steel and will be happy to sell you some. Write to Rand/Robinson for the latest price list for this and several other new items.
Q. Has anyone used bi-directional fiberglass rather than Dynel on the Rand designs? Any reason not to use it?
A. Yes, it has been used. No reason not to if you don't mind some itching.
Q. Has anyone glassed the plywood section of the fuselage?
A. Yes, with very light cloth ($\frac{1}{2}$ oz) for a longer lasting finish.
Q. What information is available on prop hub extensions? I have seen comments that advise anywhere from zero length to 3". What are the problems?
A. I have heard of no problems with the bolt on extensions, nor in my opinion should there be, as long as the propeller is balanced correctly.
Q. Could you publish a list of V-speeds for a KR-2 w/1700 VW?
A. Va=135, Vc=135, Vle=200, Vlo=200, Vne=200, Vx=90, Vy=100. These figures are in IAS mph. They will vary depending on weight and prop.

BUY SELL TRADE

BUY.....I'm looking for a Revmaster 1834 D w/electrics (low time). Call 1-506-466-1410 collect, or write to John Reid, 457 Milltown Blvd., St. Stephen, N.B. Canada E3L 1K2

SELL....Bosch starter, small, light, strong....$30.00 Allen Cox, 201 Honeysuckle, Casper WY 82601 or phone 307-265-2172.

SELL....L-16 parts (from CAP) still in original wrap. Will fit Aeronca Champs & Chiefs, Bob Eppersen, 1653 Beavercreek Rd., Oregon City, OR 97045.

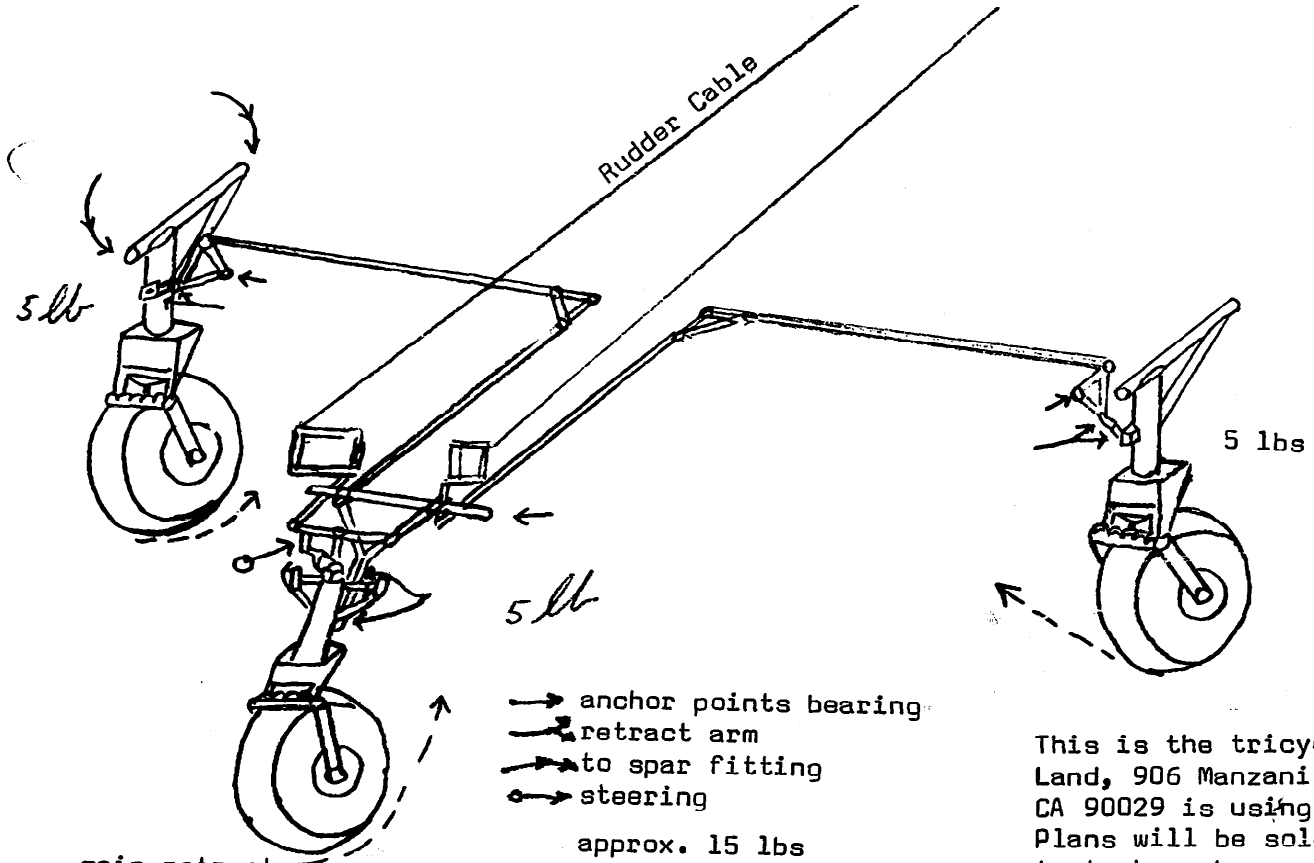
SELL....KR-2 or -3 canopies for the 6' plus builders. Excellent optics...$240.00. Write to Siegfried Richter, 43475 Schoenherr, Sterling Heights, MI 48078 for more info.

SELL....1974 412 VW engine, 12,000 mi. Contact Harold Parker, R.R. 1, Diagonal, IA 50845.

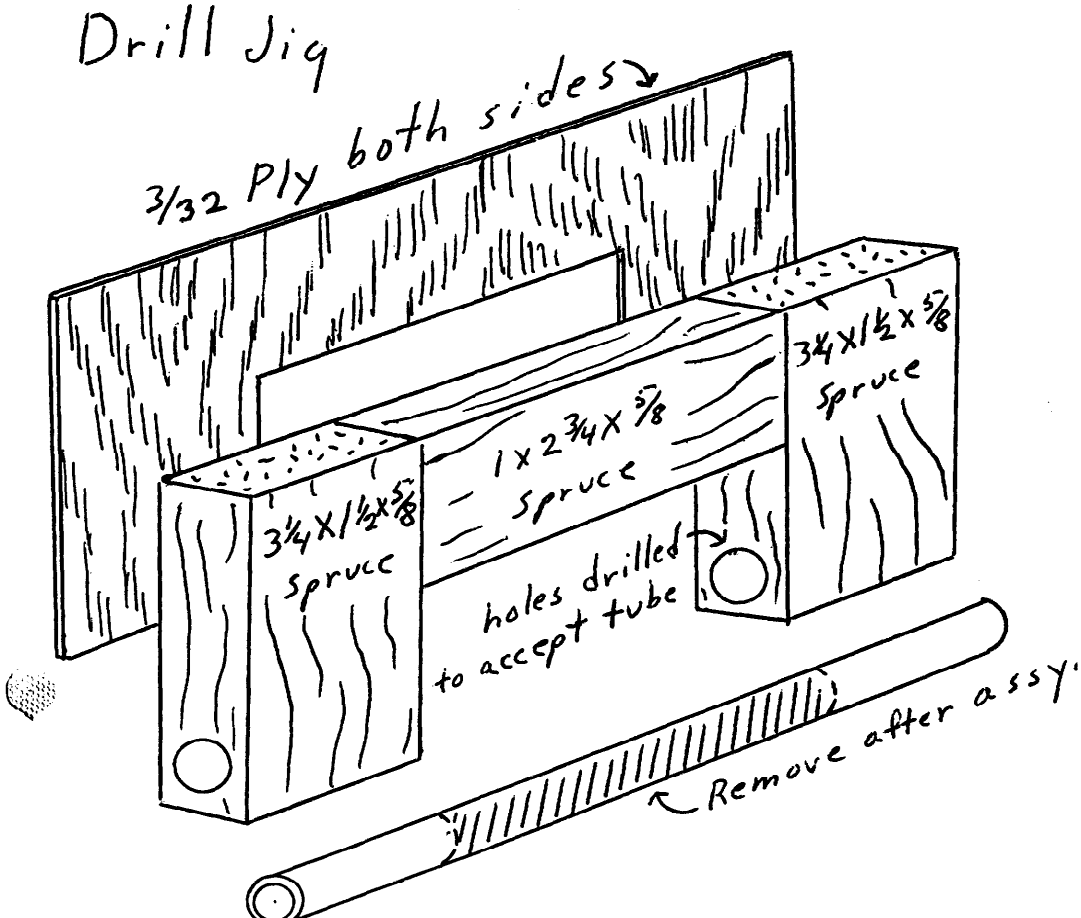
BUY.....KR-1 or KR-2 90% or more complete. Send info to Bob Dingwall, 5832 Raphael Dr., Huntington Beach, CA 92649.

SELL....Nichrome wire and plans for hot wire foam cutter...$1.00. Bernie Steinbaugh, P.O. Box 64, Waterville, OH 43566. (NOT FOR USE ON URETHANE FOAMS)

SELL....Beautiful VW props as displayed at Oshkosh. Send for free brochure. The Prop Shop, Box 237, St. Ansgar, IA 50472.



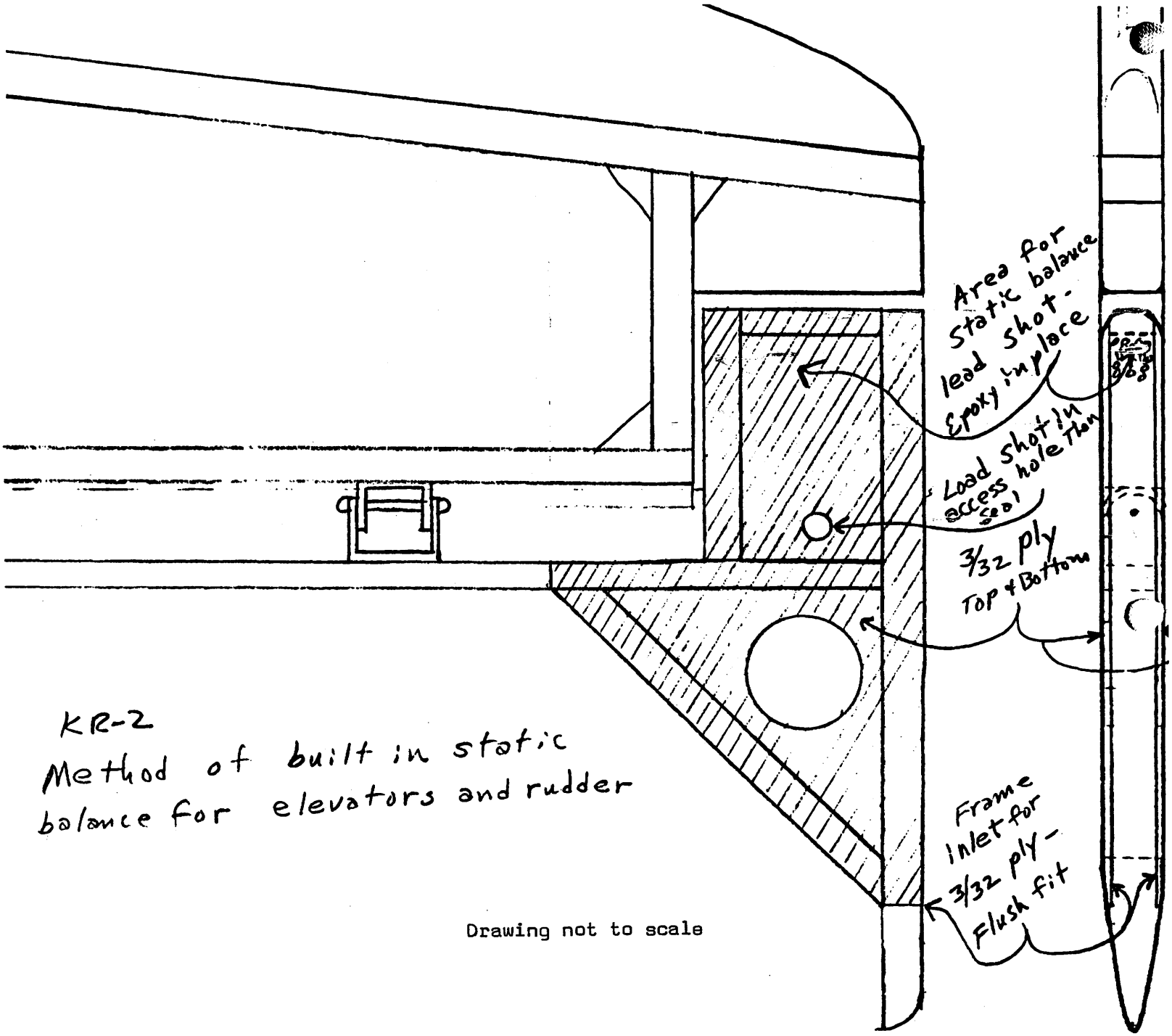
This is the tricycle gear Don Land, 906 Manzanita, Los Angeles, CA 90029 is using on his KR-2. Plans will be sold after complete tests have been made.



Here is a drawing of a wing attatch fitting drill jig I constructed for my KR-1. As you can see it can be made with scrap wood.

1. Cut spruce to size
2. Drill end blocks
3. Insert tube to align wood
4. Glue and staple ply to both sides
5. Epoxy 3/16 I.D. tube in place.
6. Remove center section of tube after cure

John Karnage
3301 NW 42nd St.
Ft. Lauderdale, FL 33309



KR-2
Method of built in static balance for elevators and rudder

Drawing not to scale

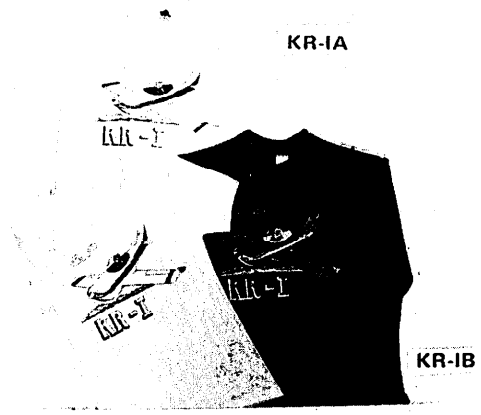
Noticed comment about static balancing of elevatores and rudder. I have already incorporated them in my KR-2. I will also use the Revmaster 2100 engine. The construction and covering is complete and it is very rigid and strong.....Garth Hess

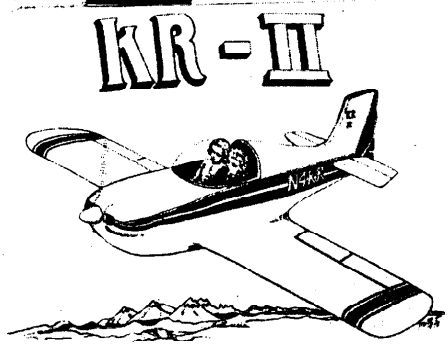
881 Emory Ct.
Upland, CA 91786

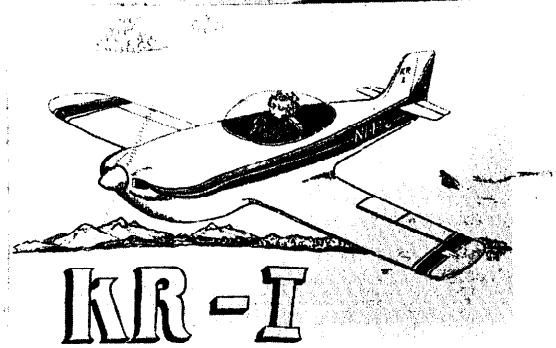
FLIGHT REPORTS

Ivan McLay, 1206 Cheyenne Ct., Boulder City, NV 89005 is flying a KR-1 with a 36 hp VW. He has only 5 hrs on it because of some cooling problems (solved now) and reports the aircraft handles great. The 36 hp provides marginal power with an A/C empty weight of 410 lbs and a 170 lb. pilot but it flies....2900 rpm = 120 IAS w/3 blade GA prop.

Last issue of the Newsletter had a picture of a KR-1 belonging to Butch Grafton, 1605 Eucalyptus Dr., El Cajon, CA 92021. The picture looked so good I had to see the aircraft "in the foam" so to speak. Off I went to the Fla-Bob airport open house hosted by EAA Chapter #1. The KR-1 looked better than anticipated, a really nice aircraft. I had to know if it flew as well as it looked so at first opportunity I cornered Butch and urged him to send some figures to the Newsletter. His letter follows.....Flew my KR-1 to Fla-Bob Feb. 28 and was trapped by Ernie Koppe into promising to send in a report on performance, etc. on my ship. The airplane has about 30 hrs. since the initial restriction, which gives over 100 hrs. with no problems. Haven't had to make any changes. The longest trip has been from San Diego to the Casa-Grande, AZ Fly-in. Everything worked fine. I built the engine, using all new parts. Stock single port heads, 92 mm Alloy cylinders (1834 cc), slick belt drive mag., Honda 125 alternator, 29 mm Posa carb., Corvair oil cooler. Had the crank, pistons and rods balanced by Rimco in Santa Ana, CA. I use the warm cowled air for induction, no carb. hart. One loses a little performance with the warm air but it is simple and I have had no icing problems. Here's a few press. and temp. figures. Oil pressure out of cooler, hot, 40 PSI (In cooler 55 PSI). Oil temp., depending on ambient, from 160°-220°. Cyl. head temp.,from #3 plug, 260°-400°. I take my oil temp. from a tapped hole on the lower left side of the case. My ship is probably one of the heaviest KR-1s (490 lbs). Some of the extra weight is in the wing tanks, wobble pump & a fairly heavy radio (Genave 600, 1½ system with VOR). I carry 13 gal. of fuel in the wing tanks and 9.2 gal.in the nose tank. Fuel is transfered from wings to nose with the wobble pump. Until a couple of weeks ago, I had been using a Wayne Ross 52 x 46 fixed pitch prop. I am now experimenting with a Warnke groung adjustable. I cut an inch off each blade (54" to 52") and am foolwing around with the pitch. With the pitch setting I had today, full throttle gives 3625 rpm and 160 mph. Cruise power setting of 3400 rpm at 1500' msl indicated 150 mph. I talked with Warnke today and we are going to try a 50" blade and play with the pitch. Will see what happens. By the way, I pushed over from 3500', leveled off at 1500', indicating 198 mph. No problem, nice smooth pull out. Even tho' the ship is small and lively, it is surprisingly easy to fly. Stalls are gentle with no tendency to fall off on a wing. Carrying a little power (1500), the break comes at 53 mph. Ease off the back pressure and recovery to level flight is quite simple. Probably the most noticeable differenoe between the KR-1 and a larger airplane is control of pitch attitude. This ship, with the 5" central stick, is quite "touchy" and if a person is heavy handed, when sliding down on final approach, the airplane will appear to be a cork bobbing in the water. But if the airplane is flown with gentle pressure, using thumb and fore finger on the stick, there is no problem. The KRs could probably get by fine with about half the elevator. The KR-1 descends quite rapidly, which makes it quite easy to enter traffic fast and still get down without going 3 or 4 miles past the airport on down wind. I usually enter traffic around 130 or 140, slow to 120, get the gear out, slow to 100 turning from downwind to final, then let the speed bleed off thru' 80 or so, then just fly the airplane and land. A person must get used to sitting so close to the ground in this tiny ship, otherwise there could be a tendency to round out too high, slow the ship and drop it in. The airplane seems to land best in almost a 3-point attitude. In other words, when landing hold it off just a tiny bit nose low and the airplane will touch down with the tail wheel barely off the ground. Then, unlike other conventional geared airplanes, there is no need to suck the stick clear back, just let the tail lose all lift and you are on solid. And then is when you will find the ship so nice. Directional control is terrific, good rudder control, straight as an arrow. Far better than any of other tailwheel airplanes and I must say I have flown most of them, from J-3 Cubs, thru Stearmans, Ryans, North Americans, Mono coupes, Swifts, etc. thru' Lear 25s. In closing, let me say that the KR-1 is easy and fun to fly and a low time tri-geared pilot should have no trouble with the ship. Just drive it around on the ground for a while and remember, gentle pressure on the stick for controlling pitch.







STYLES:
LADIES - 50-50, Cap Sleeve, 1-Rib
MEN - 100% Cotton, Standard
JUNIOR - 100% Cotton, Standard

SIZES:
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ERNEST KOPPE
6141 CHOCTAW DRIVE
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ISSUE #34

K·R Newsletter

ISSUE #35
MAY 1978

SUBSCRIPTION RATES

1 year	$6.00	Back issues-50¢ ea.	
O/seas	$7.50	Air Mail	$10.00

Are you interested in joining a club for KR builders and pilots? Much enthusiasm for an organization of this type has been expressed by almost all the builders I've spoken with. At present such a club does not exist but I am going to use this Newsletter to get things organized. Suggestions or ideas are welcome, I want to know what you expect a club of this type to offer. Here are a few ideas of my own. Let's hear what you think of them.

A club library consisting of technical manuals, aviation magazines and other books or pamphlets of interest. Club members would be able to use this library by mail, the only charge being for postage.

If enough interest is shown, cassette tapes of various stages of construction and flight testing could be made by and exchanged with other builders. One builder might be a cracker-jack in wood or in engines and lack knowledge in other areas such as instruments or foam construction. This concept could be carried a step further.....the increasing popularity of the video cassette recorders has unlimited possibilities. I recently purchased the Sears model and a RCA camera. Home movies, with sound, were never easier.

Why not exchange knowledge among ourselves via cassette tapes sent thru the mail. A list of tapes available would be kept by the KR club library.

Fly-ins, seminars or picnics could be scheduled for local areas so members could meet and get to know each other. A club emblem, cap, etc. could be adopted so you would be able to spot other club members at aviation gatherings.

Annual dues would be a necessity but should be kept to a minimum and would include club membership, the KR Newsletter, access to the club library, etc.

I could go on and on but I want to hear from you, to get your ideas and thoughts on the subject. Write soon, perhaps we can get the club "airborne" by Oshkosh '78.

TIPS FROM OTHER BUILDERS

Your issue #34 received this week again reminded me of something I intended to write earlier. I'm speaking of the fellow who asked the question about binding and slack in the controls. It happened to me and I had put bearings on everything. After about a month of staring at the d--- thing, I figured it out. The question asked in the Newsletter did not accurately describe the problem. The question should have read, "Why does the elevator control bind and tighten when full back and forward pressure is applied and when the stick is neutral there is a slack in the cables? I don't think you had this occur to you because you had a copy of the old plan book that did not have a drawing of the control column. When Ken later placed this page in the book he used a drawing you had published earlier, which was modified by the builder so that the dimensions from the center axis to the control cable axis in indicated 2½". The control horn (bell crank) for the elevator and rudder measures 3". These two different dimensions breaks up the parallelogram configuration of the cables. To correct is only a matter of making all the dimensions equal. I simply bored new holes in the control horn to conform to the 2½" measurement at the sitck.....Lee Bouey, 11175 SW 70 Ave., Miami, FL 33156.

Where do you get the tools, brushes, buckets, etc. to work with epoxy? Most builders make do with what ever is handy but would get the right stuff if it was available. Harvey Altergott of Chevy Chase, MD sent me the name of a company that is evidently willing to mail order their products, (which include aluminum powders for U.V. shielding). The address is Gougeon Bros. Inc., 706 Martin St., Bay City, MI 48706.

Bruce Gilinsky, Box 989, Lakeview, OR 97630 is a regular contributor to the Newsletter (and a VW mechanic). His latest letter was very interesting. "I found some sanding tubes at a local body shop, they are 1 3/4" x 24" and come in 2 grits. They sure work better than the peanut jar." For a trim control handle, Bruce has adapted the VW heater control handle and used the plastic spacers as frictions. The handle is mounted on a spruce block and glued in place to suit your needs. Want to know how much your fuel tank holds? So did Bruce, also included in his letter was the following:

Steps to calculate volume (in gallons) of your gas tank.

Step 1 Multiply - width, length, and depth to obtain the volume in cubic feet.
Example 8" x 8" x 32" = 2,048 cubic inches

Step 2 Divide the volume of the tank (cubic inches) by the number of cubic inches in a cubic foot.
Example a. 1 cubic foot = 12"x12"x12" = 1728 cubic in. (constant)
b. 2,048 divided by 1728 =1.185 cubic ft. = volume of tank in ft.

Step 3 Multiply volume of tank by the number of gallons per cubic ft.
Example 1 cubic ft. = 7.48 gallons (constant)
7.48 x 1.185 = 8.86 gallons in your tank.

After I found out how many gallons I had, I bought Rand's tank and added about 10 more gal.

I "borrowed" the following item written by Robin Butler from EAA Chapter 588's Newsletter. I found it interesting and I'm sure you will too.

"So many times during the static display the thought crossed my mind: I wish I had gotten more done in time for this! Why, I wonder, does a man put off the effort it takes to achieve a personal dream? Why are we so willing to fill our time with "obligations" from which we get little pleasure or reward and then find we have no time left to put in on what we want most to do? Well, I believe we are all "brainwashed" from the cradle up, to put ourselves last, so that eventually, deep down inside, we come to feel that we aren't "entitled" to the joy of rewarding ourselves with the accomplishment of a cherished dream. And that's why that airplane gets put off, and put off, and put off. At the static display I resolved to change that pattern of behavior in myself. The principle of "paying yourself first" should apply to dreams as well as money. I resolved to begin my day with work on my KR-2. Monday morning I awoke to an earlier alarm than usual, forced myself out of bed, plugged in the coffee, then got dressed. I filled a cup on my way out the back door to my workshop. My wife would awaken about an hour later and I would have my breakfast then. Fortified with a cup of coffee, I cleared my workbench and arranged lumber for wing spar laminating. It took an hour, at the end of which I turned off the shop lights and went to breakfast. The rest of the day was the same as a thousand days before: errands to run, faucets to fix, bills to pay, people to call and eight hours at my regular second shift job. But there was a difference! The day was lived with a feeling of accomplishment and I actually began to look forward to getting up early the next day! Well, I did,..and I do. Every morning now. And the airplane is progressing. Sometimes only a half hour goes in on my project, sometimes two or three hours, the time total is not important, although I do think in terms of at least one hour. What's important is the fact that I am actually putting the airplane first each day. I am starting each day with an immediate exercise of what I want to do. And it's doing more for me than just build an airplane. My whole view of the day and its activities is changing. I approach my job with more confidence and less worry. I linger less on the edge of the bed in the morning, no longer reluctant to face the old boredom of another ho-hum day. Try it. The personal reward is fantastic. It surely can't hurt me to put myself first for a mere hour. I did not neglect my other obligations in order to cherish this dream. Therefore I really am entitled to this airplane and the joy of building it. In other words...I OWE IT TO MYSELF. It's the most enjoyable debt I ever paid."

TIPS (cont.)

A note from Jim Snyder sent in the tip on using microballoon slurry in issue #33 and now sends this follow-up: "I've found it better to mix the epoxy and microballoons about 1:1 to make it runnier. It spreads out better on the rough epoxy skin, has less air pockets in the slurry than did the former 1:3 mixture. I've also found it is more difficult to lay up a rudder side using the method I described (and still get a good looking finish) than it is to do a small sample 6" square! Now I'm working to try to leave off the Mylar completely and just dressing down the slurry surface by using a grinding wheel on my rotary drill (#50 grit). This makes tons of dust but it goes fast. I wear a mask to keep the dust out of my lungs."

BUY SELL TRADE

I originally intended to use this section of the Newsletter so builders could sell or exchange surplus parts and materials with other builders. As some have noted, the ads have become more and more commercial. I feel a change is in order. Effective next month there will be the following changes.....

1. Free ads to the Newsletter subscriber (or club member) seeking or selling parts and materials, etc. for their KR projects.
2. Other ads, including completed aircraft for sale will be classified as commercial and will be priced according to size. "Business card" ads...$5.00 min. 1/8 page.... $7.00 1/4 page....$15.00 1/2 page....$26.00 full page....$50.00.

Prices are per monthly issue and may raised without notice.
Ads should be camera ready. Typesetting and half tones if desired will be available at an extra charge. By charging for advertisement space I will be able to expand the Newsletter. This way I will be able to have more construction sequence photos, more detailed drawing and more "How to" articles.

KR-2 patches, can easily be converted to KR-1....$1.90 ea. Darwin Roach, 1158 Wanda Dr., Granite City, IL 62040.

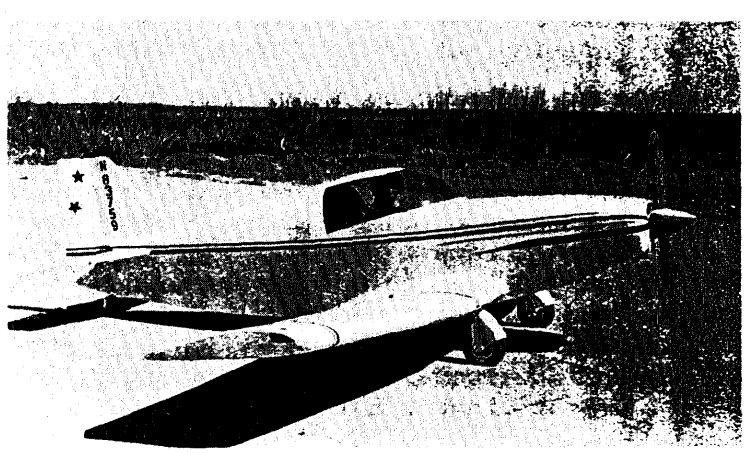
Need help? "Factory" experienced in all phases of KR construction...$10.00 per hour. Paul Venne, 919 Grand Ave., Long Beach, CA 90804. Phone 213-433-0520.

Photo Exchange Service, KR-1s and KR-2s Wanted: good clear color negs (Kodacolor) of completed projects for personal collection. Will send color prints to persons requesting them, at cost (about 40¢ ea.). Please include info on name and address of builder. Jim Snyder, Box 696, Hesston, KS 67062.

Nylon bar stock...$1.50 per ft. (3/4" x 1" stock) 2 part liquid foam...$30.00 per 2 gal. kit. Epoxy paste, will not run....$7.00 per qt. kit. Sunflower Aircraft, Box 696, Hesston, KS 77062.

NICHROME wire and plans for hot wire foam cutter...$1.00. Bernie Steinbaugh, P.O. Box 64, Waterville, OH 43566 NOT FOR USE ON URETHANE FOAM.

KR-2 FOR SALE....completed 3/23/78. Awaiting final inspection. The aircraft features full electrical, 1834 engine, 52 x 50 Hegy prop, 20 gal. fuel, 5 gal. in each wing tank, weight 540 lb empty, Imron paint. The KR-2 has been test hopped off the runway about 3 times, ground handling compares with a Cessna 140.....$5,500.00. R. C. Holcombe, Box 28, Sanderson, TX 79848.



Buy Sell Trade (cont.)

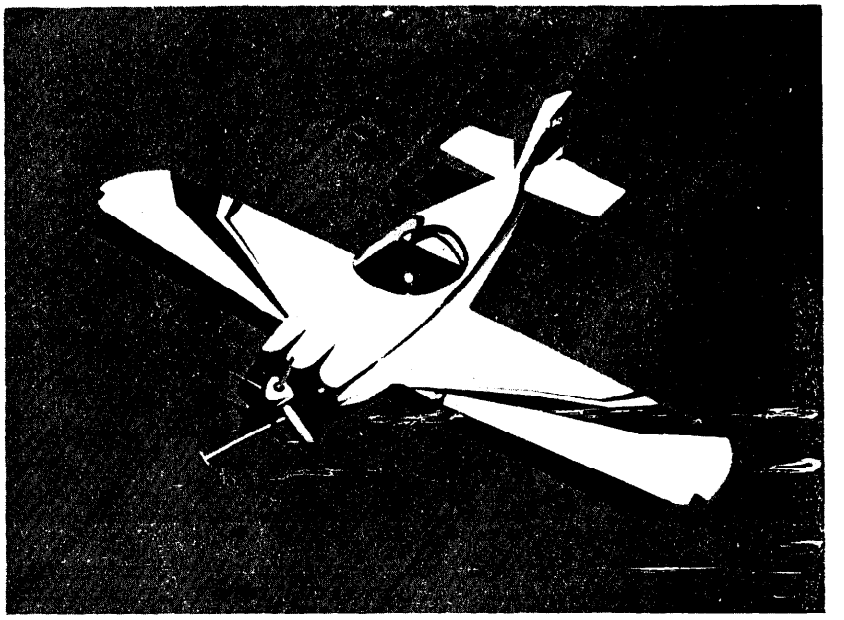
FOR SALE: KR-1 kit, everything but engine and instruments. New plans and a 14 foot work table.....$1000.00. Maurice McCraw, 825 N. Janss, Anaheim, CA 92805. Ph. 714-991-6057.

QUESTIONS & ANSWERS

Q. Have you heard of anyone using a rotary engine in a KR?
A. No, a couple of builders had planned on using a Mazda engine but to my knowledge they have not done so.
Q. What kind of alternator did you use on your KR-2?
A. I used the Honda 125 alternator but I don't believe this is adequate if a starter installation is planned. Max output was 4 to 6 amps.
Q. I have a 412 engine for my bird, where can I get conversion parts for this engine?
A. A KR builder has informed me that Custom Aircraft Engine, P.O. Box 441, Sandford, NC 27330 is developing an aircraft version of the 411/412 engine.
Q. Will the aluminum undercoat for protection from U.V. rays interfere with radio reception?
A. Since each aluminum particle is in suspension, interference is negligble and you won't notice it.
Q. Is it necessary to balance the rudder and/or elevator?
A. Ken Rand says the empennage does not need balancing because it will not flutter until well past the 200 mph redline.
Q. How fast can I expect to lift off and climb out at my elevation (4,400') with a turbo-charged 1600 VW?
A. Your take-off run might be as much as 400', your rate of climb should be 700 to 1000 FPM depending on prop and wieght
Q. Is the Newsletter interested in pictures of KRs under construction or just finished jobs?
A. All pictures are appreciated.
Q. My plans aren't too clear on this, could you help? 1. Define washout 2. What is its function 3. Is it used on both wings and how is it applied?
A. 1. Washout is the difference of the angle of incidence in the wing when measured at the tip as compared to the root. 2. Since a wing will stall at high angles of attack, decreasing the angle of incidence at the tip allows the wing tip to stall last. This will give more aileron response into and during a stall. 3. It is used on both wings and it is built into the KR wing by decreasing the angle of incidence of the tip rib 3° in relation to the root rib.
Q. Has there ever been any testing done on the KR-2 in respect to Aerobatics?
A. There has not been an official test program regarding aerobatics on the KR-1 or -2. Several builders report that it can do limited aerobatics with ease however.
Q. How does the KR-2 perform with the stock VW engine? Where can I get parts for the larger displacement engines?
A. The KR-2 will perform very well with the stock 1600 VW engine, however performance with the larger engines 1834cc to 2180 is fantastic. I'm sure you can find a VW or dune buggy shop near you that carries the parts you need. If not, may I recommend "Rimco" 520 E. Dyer Rd., Santa Ana, CA . Several local builders bought parts there and have nothing but praise for the parts and service.

I have an answer to a question in the last Newsletter, sounds like these guys have a good thing going!
We of EAA Chapter 338 in San Jose, CA have a get together on the fourth Wednesday of the month for builders of foam and fiberglass aircraft which included KR and WAR and anyone else interested in the type of aircraft. We kick around the problems we have and methods to correct same. There is only one flying KR-2 in the group. We meet at the location of any one of the projects so we have no formal meeting place. The location of the next meeting is determined at our EAA meeting which is held on the third Wednesday of each month at Norton Abrasive Co. on LaFayette St. at approx. 8 p.m. Anyone interested in our group is welcome to join us in our building problems. We are not a social group.
V. Emmett Dignon, 581 Nello Dr. Apt. 5, Campbell, CA 95008.

Bill De Freze has completed his tricycle geared KR-2 and sent in the nice photos. The gear does retract so performance should not be any less than a conventional gear KR-2. A problem with getting the turbocharged engine to run the way it should was finally located. Many hours of trouble-shooting turned up the cause and it is something all of the guys building their own engines should watch for... the dowel pins had elongated the holes in the crankshaft and in the cut down flywheel. This was probably caused by the flywheel bolt not being torqued properly while the engine was still in the car. The magneto drive is bolted to the turned down flywheel stub and the elongated dowel pin holes allowed the timing to wander. Bill was able to solve this problem by drilling and tapping the dowel holes for a 3/8" allen head bolt.



Bill's workshop includes a lathe, arc welder, acetylene torches, and many other tools. Local KR builders are welcome to use these tools, and more than welcome to come by just to talk airplanes, KRs in particular. Taxi test are being carried out at Tracy airport so drop by if your in the neighborhood. If you don't see Bill at Tracy, you can catch him at the Watsonville fly-in, May 26th thru the 28th.

HAPPENINGS

May 5-7 Chino California, 4th annual Southern California Regional Fly-in

May 13, 14, E.A.A. Chapter 532 Fly-In. Ocean City Airport, Ocean City MD

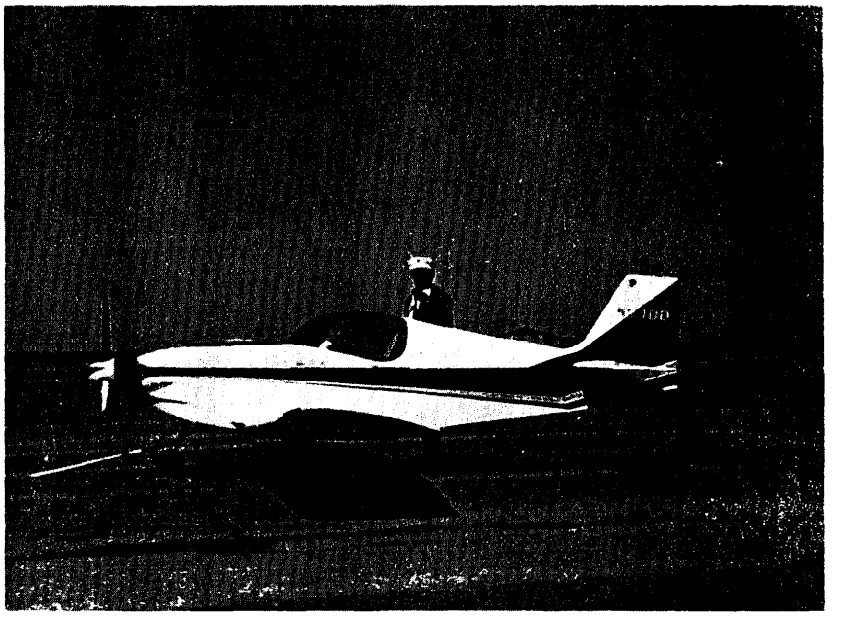
May 20-21 Rochester, New Hampshire Skyhaven Airport. Air Fair sponsored by EAA chapter 225

May 20-21 Enid, OK - 6th annual EAA Chapter 455 Fly-in and Air Show. Free breakfast Sunday for fly-ins. Air Show Sunday. For reservations and info contact Ron Pair, 524 N. Taylor, Enid OK 73701

May 21 Arlington, TX - EAA Chapter 34 Third Annual Air Show.

May 26-29 Watsonville, CA - 14th Annual West Coast Antique Aircraft Fly-in and Air Show.

July 29 - August 5, 1978 - OSHKOSH, WI Start making your plans now. It isn't too early. We want to see a lot of KRs this year



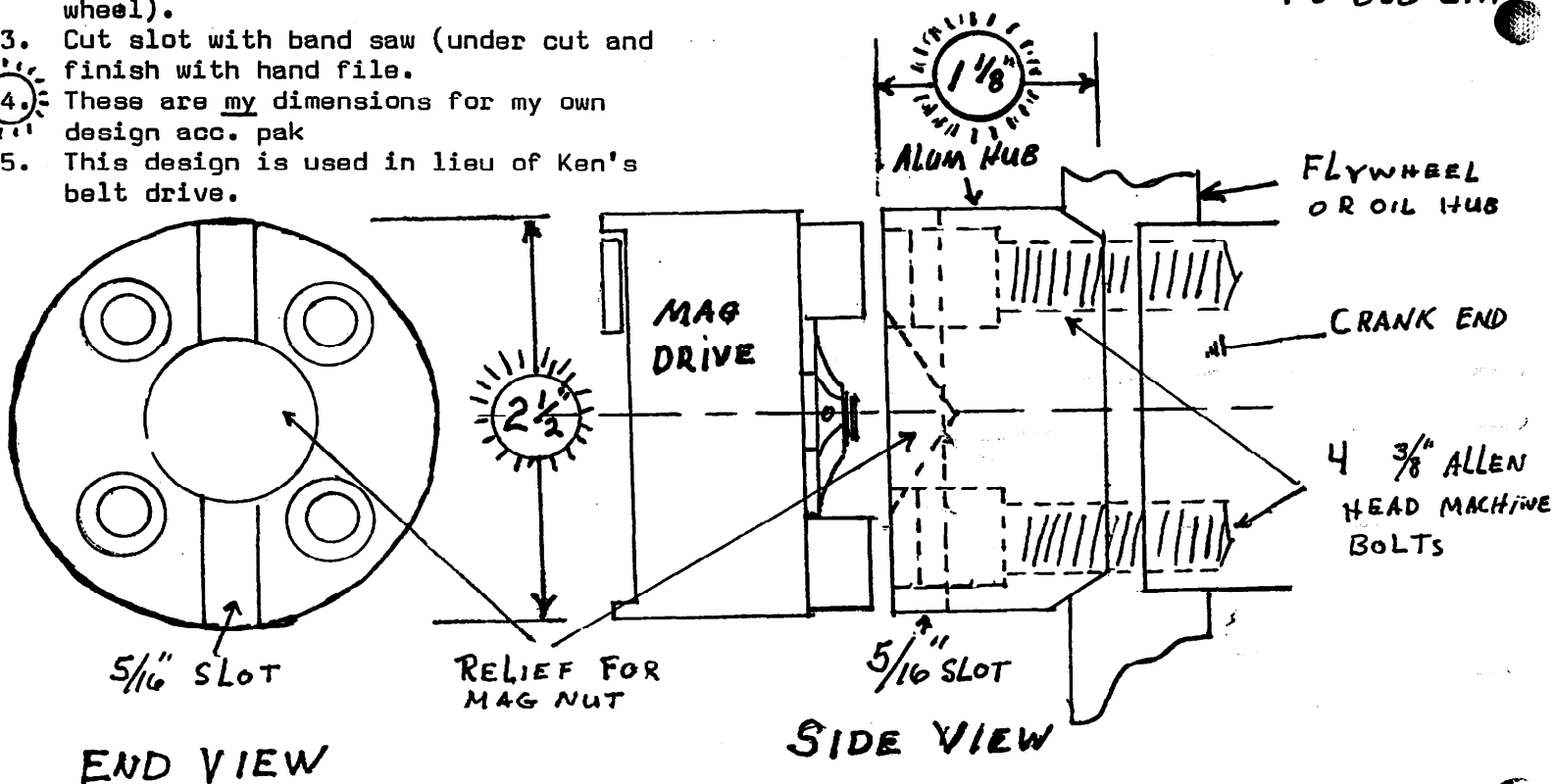
The nose wheel strut on Bill's "Baby" is modified from a Teenie Two, it is steerable and fully retractable. The main gear is modified from the original KR parts, including the spring bar. He is happy to answer your questions so don't hesitate to write or phone.... Bill DeFreze, 7530 Ironwood Drive, Dublin, CA 94566. Phone number is (415) 828 2111

MAGNETO DRIVE

BILL DE FREZE
7530 IRONWOOD DR.
DUBLIN, CA 94566
415-828-2111

NOTES:

1. Discard 4 dowel pin
2. Drill and tap dowel holes (I used 3/8" as my dowels had elongated my crank and fly wheel).
3. Cut slot with band saw (under cut and finish with hand file.
4. These are my dimensions for my own design acc. pak
5. This design is used in lieu of Ken's belt drive.



ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
ISSUE #35

K-R Newsletter

ISSUE #36
JUNE 1978

SUBSCRIPTION RATES

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CHINO '78

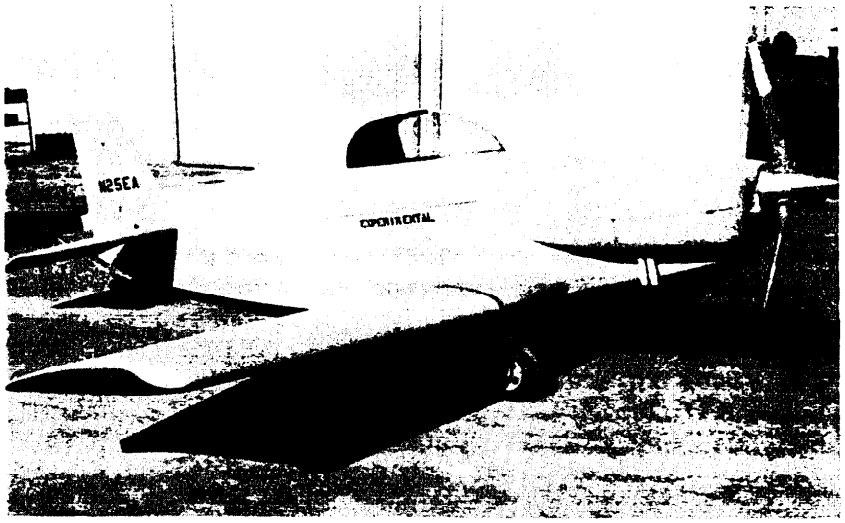
Finally!! The So Cal EAA Fly-in is showing its real potential, a sunny week-end brought 'em all out. There were the Warbirds (better known by the announcer as the "Big Iron", P-51s, Sea Furies (a pair), a real honest to goodness Spitfire, a Corsair, Wildcat, and a B-25 all doing what they do best...Flying. A surprise visit was paid by the Confederate Air Force in a B-17 that looked like it could have just came off the assembly line. It was a beautiful aircraft and it really was a pleasant surprise to all. Then there were the antiques and classics from one of a kind airplanes such as the exquisite "Harlow" to the "garden variety" Piper Cub without which no fly-in is complete.

The homebuilts, of course, were there from as far as Canada (Chris Heintz's Tri-Z) and as close as Chino airport itself, homebase for a great many custom crafted aircraft. The "Quickie" made an appearance, 4 Vari-ezes (one from Wyoming), T-18s, RV-3s, Tailwinds and Stardusters. "But," you say "were there any KRs?" You can bet your squeegee there were KRs! Ten of them, "One-Zero", a double handful of the composite creation of Ken Rand! Ken flew his KR-2 in but the turbo-charged KR-1 was not completed in time and was trailered in as a static display. The long nose and sliding canopy really made it look like a little fighter. Garth Hess brought his partially completed KR-2 as a static display. The project drew attention from all sides as he had some very interesting modifications. Besides the balanced tail surfaces featured in a previous Newsletter, Garth is using a laminar airfoil with reflex ailerons with a 10% increase in wing area. I'm looking forward to hearing more about this fine project. Bill Matto who trailered in his tri-gear KR-2 last year, flew it in this year. He says there has been some performance loss over the original conventional gear arrangement, probably due to weight. Dan Rohn of Whittier is getting his KR-2 ready for final inspection. His KR-2 was one of four turbo-charged KRs at the Chino fly-in this year. Bob Osborne from San Diego, CA flew his KR-2 in for the Saturday edition of the fly-in but did not return on Sunday. Unfortunately most of my Saturday was spent as a parking lot volunteer and I didn't get any specifics from Bob before he left. Maybe he will send us a flight report for a later issue. Butch Grafton was there for both days. I'm sure you remember his KR-1 picture and flight report a couple of issues back. He is still experimenting with different pitch settings on his Warnke prop and will soon try a wider blade. Not that there is anything wrong with what he has but if it can be better...why not? The othere KR-2 in attendence belongs to Gerhard Carlson. Mr. Carlson came here from Sweden, built the KR-2 (turbo-charged Revmaster 2100) and plans to fly it back to Sweden. It has flown the initial test flight and is having a temperature problem corrected..i.e. baffles and oil cooler. There was, according to a reliable source, another KR-1 in attendence on Saturday. I never did see the aircraft because of the aforementioned volunteer duty so... will the owner/operator of the phantom KR-1 please drop me a line. We would like to hear about your KR.

Remember the drawing of the fixed gear KR-1 in Issue #11? Well, it's more than just a drawing now! Frank Walker has built the nicest KR-1 I've seen yet. The Fly-in judges evidently thought so too because it was awarded the trophy for "Best Composite". Frank is a high school auto shop instructor in Whittier, CA and did the 36 hp VW conversion himself as well as working out the modifications for attaching the 7075 T6 spring for the fixed gear. Everything in the aircraft shows the thought, care and craftmanship that made it a prize winner.....Congratulations, Frank!

Shortly after last month's Newsletter was mailed, my local paper ran a picture of an aircraft accident in which the pilot was killed. The aircraft in the picture was obviously a KR and I recognized the name of the pilot as a longtime subscriber to the Newsletter. It was like hearing of the death of an old friend. The few lines below the picture didn't give any reason for the crash, just that it was under investigation by the FAA. The following day after the picture appeared, my mail included a letter and some pictures sent by the pilot shortly before the accident. I want to share them with you.

"I am sending a picture of my KR-1 which I flew for the first time Sat. the 29th of April. It flew like a dream but got hot. So I had to land it on the first round (around the field). Now I realize how you feld on your first flight of your KR-2. I think my Revmaster 2100 will do me a good job when I get the over-heating corrected....Eldon Alt."



What happened to cause the accident? Was it due possibly to the engine failure due to over-heating, resulting in a stall/spin accident? Was there a weight and balance problem due to the large engine? Was it pilot error? As the article said, "The cause is under investigation." I'm trying to find out the results of the investigation so I can pass them on to you. Perhaps the knowledge of what actually happened can prevent a similar accident. I do not care to see pictures of my friends and their aircraft under the circumstances described in the paper and I consider you as my friend. So please...exercise caution, use some common sense or whatever it takes to make your flying safe. I want to meet you, talk with you, not read about you as a "cause under investigation" accident.

BUY SELL TRADE

Charges for ads are as follows: Newsletter subscribers seeking or selling parts, materials, etc. for their projects are not charged. Other ads, including completed aircraft for sale, will be charged according to size..."business card" ads...$5.00, 1/8 page...$8.00 1/4 page...$15.00 1/2 page...$28.00, full page...$50.00. Prices are per monthly issue and may be raised without notice. Ads should be camera ready, type setting and halftones available at extra charge.

VENNE KR CONSTRUCTION.....Experienced KR builder offers complete technical assistance, inspections and construction. Charges to suit any budget...international inquiries welcome.....919 Grand Ave., Long Beach, CA 90804 or phone (213)-433-0520

WANTED: Two men to share expenses to Oshkosh. Approx. $15.00 per day in self-contained mobile home. Lee Collins, Waukegan, IL Phone 312-244-4773.

FOR SALE or TRADE: KR-2, compled Dec 77. Solid white with blue trim, wing tanks, 65 hp VW engine (engine needs repair). Call Ted Cummins at 601-843-9690 (no collect calls please).

FOR SALE: Nico-press tool-1/16, 3/32, 1/8 $6.00, 11 x 14 breakdown drawing of KR-3 50¢ plus legal size S.A.S.E. BUY: Small Nav-Com for KR-2. Call collect or write price, etc. WANTED: A copy of Barker VW conversion planes. Xerox copy O.K. Write or call collect on price....Jim Mack, 1670 Van Petten St., Reno, Nevada 89503 or phone 702-747-3505

KR STALL CHARACTERISTICS

I was going to write an article about the stall characteristics of the KRs but as I wrote, I found I was writing about the same stalls that have been with us since we first read about them in ground school and practiced them in the air. Anyway, what started out as an article about stalls in a KR ended up a a refresher about stalls in general.....

Power off or approach stalls in a KR are gentle and straight forward. Cut power, hold altitude while the airspeed bleeds off and the break will come about 42 to 45 mph indicated. Unlike most aircraft, the KR has a high degree of aileron control thru the stall so, other than a rapid loss of altitude, the power off stall can be hard to recognize. Recovery is easy, a little forward stick and airspeed will build up rapidly. Apply power to maintain altitude.

A "power on" or departure stall in a KR is normally a straight ahead, wings level affair. With the larger engines this might not hold true. A KR-1 or - 2 pushed full power into a stall can snap suddenly to the right and go into a 45° nose down spin, especially if you're a little careless in keeping that left rudder in while the throttle is firewalled. It takes altitude to recover from this situation so don't get caught unaware. Pay attention to your airspeed and keep the ball centered while you're climbing out from take-off. Spin recovery, by the way, is normal: fwd stick and opposite rudder will stop the spin within a ¼ turn.

The accelerated stall is the sneaky one. This stall happens when you're in a turn and your degree of bank becomes too great for your airspeed. Rand says at a 60° angle of bank, his KR-2 will stall at 90 mph indicated. Next time you're on base and just about to turn final, you might keep the accelerated stall in mind. Since the pattern airspeed is generally in the 70 to 80 mph indicated range, too steep of a bank could easily cause an accelerated stall at a most inopportune time.

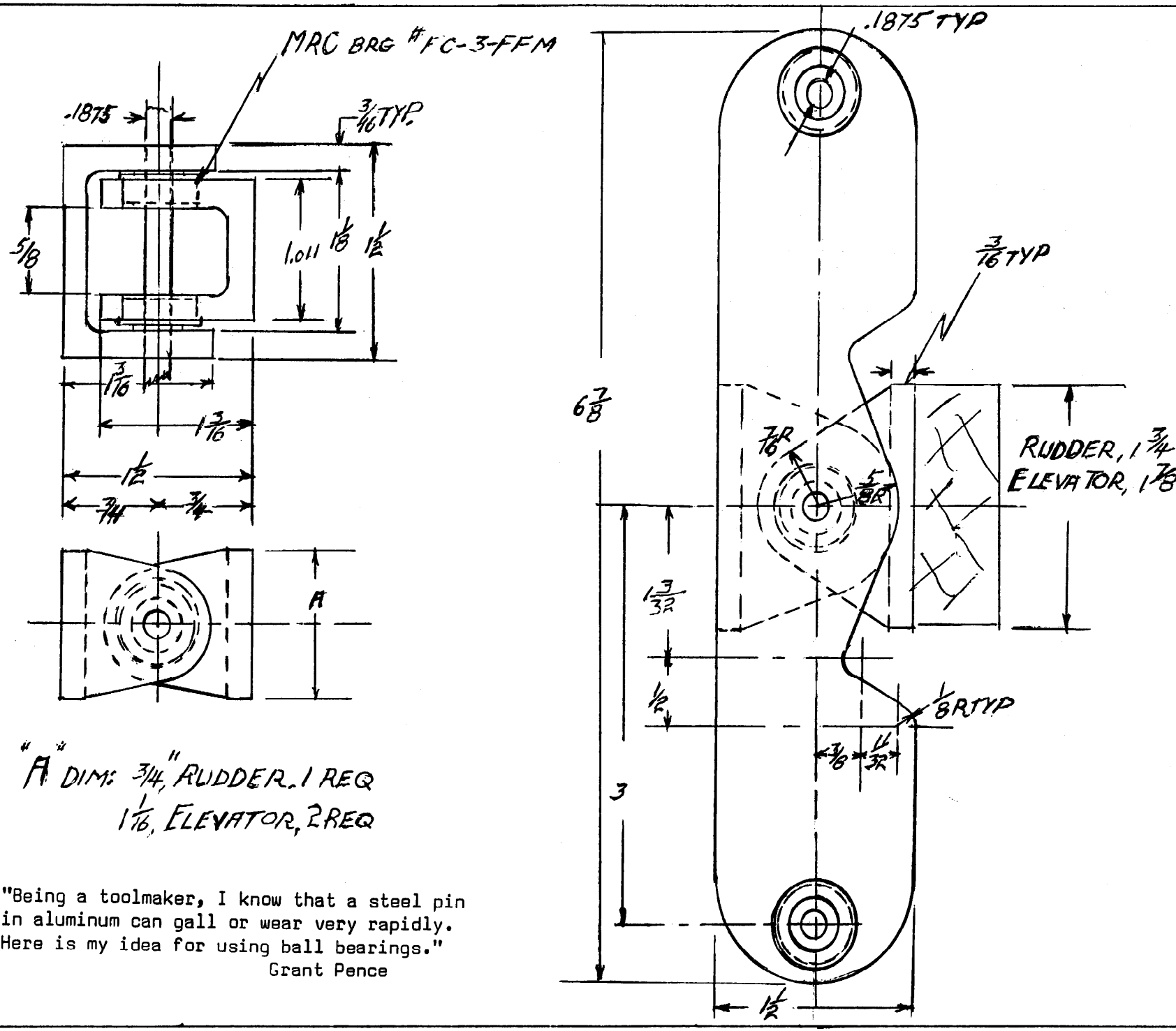
Well there you have it, as I said at the beginning, stalls in a KR are just like stalls in most other aircraft. Next time you're up flying you might get in some practice on stalls. Sure couldn't hurt and it sure might help.

QUESTIONS & ANSWERS

Q. Is it O.K. to use Kevlar 49 in place of Dynel fabric over the foam?
A. Yes, certainly. Kevlar is roughly 10 times stronger than fiberglass and is lighter in weight. It is much more difficult to work around compound curves tho and you will take much longer to get an acceptable surface.
Q. Where is a good attach point for an electrical oil pressure gauge?
A. Use the existing hole at the top of your engine, just below the distributor hole.
Q. Is anyone using a VW fuel injection system on their engine?
A. I haven't seen one in use as yet but I don't see why one couldn't be adapted for aircraft use.
Q. I have created a problem for myself by carelessly over-reaming my wing attach fittings. Is it possible to use a 7/16" bolt rather than the 3/8" bolt the plans call for?
A. Yes, the larger hole will not affect the capability of the part appreciably. I do recommend using a separate bolt for each pair of main spar wing attach fittings (a total of eight).

RAND/ROBINSON UPDATE: Ken Rand is continuing to add new items to his already long list of parts and supplies for KR builders. New price lists are available that contain all the new items so send a S.A.S.E. to Rand/Robinson for the latest sheet.
Ken just completed a non-stop flight from So. Cal. to the fly-in at Enid, Oklahoma. Distance covered approx. 1300 miles, time..6½ hours, fuel used..30 gallons. He was very happy with the performance of the turbo KR-2 and plans more long distance trips to future fly-ins.

Bill DeFreze telephoned the other night. Seems he has been getting a lot of mail with questions about his retractable tricycle gear KR-2. Because of all this interest, Bill says he will make drawings and construction notes as soon as he is satisfied there won't be any unexpected problems with the tri gear system. One more note, the last Newsletter indicated that the nose wheel on Bill's KR-2 was steerable, it isn't. It is castering and responds readily to individual brakes.



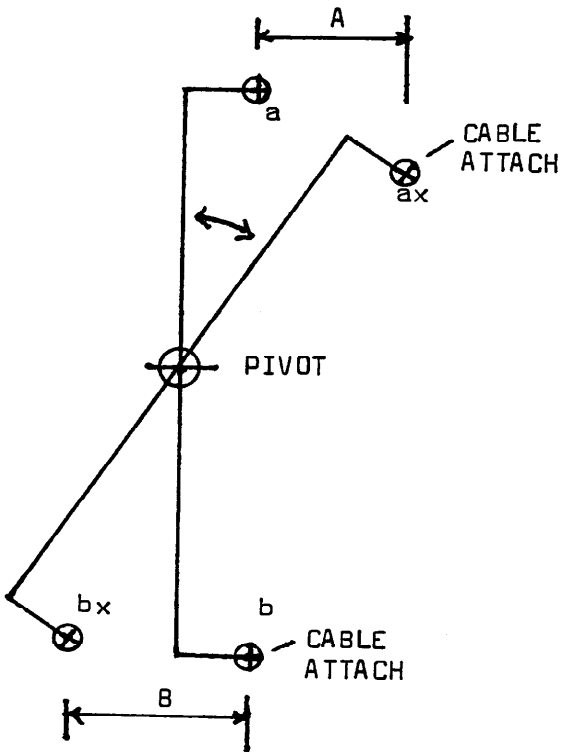
"A" DIM: 3/4" RUDDER, 1 REQ
1 1/16, ELEVATOR, 2 REQ

"Being a toolmaker, I know that a steel pin in aluminum can gall or wear very rapidly. Here is my idea for using ball bearings."

Grant Pence

TIPS FROM OTHER BUILDERS

***Several builders have asked what is used to cover the gap where the outer wing panel joins the wing center section. A fabric reinforced tape is the most commonly used, such as Scotch brand "Mystic" tape. However.....the same rules apply to colors of the tape as to the rest of the aircraft. Darker colors will absorb heat more readily than lighter ones. Frank Walker used 2" wide black tape on his and found that it absorbed enough heat from the sun to actually soften the epoxy skin beneath the tape. The tape actually became too hot to touch with your bare hand. So....use white or one of the lighter colors, save yourself some problems later.



Schematic drawing of Control Stick to show bind/slack problem

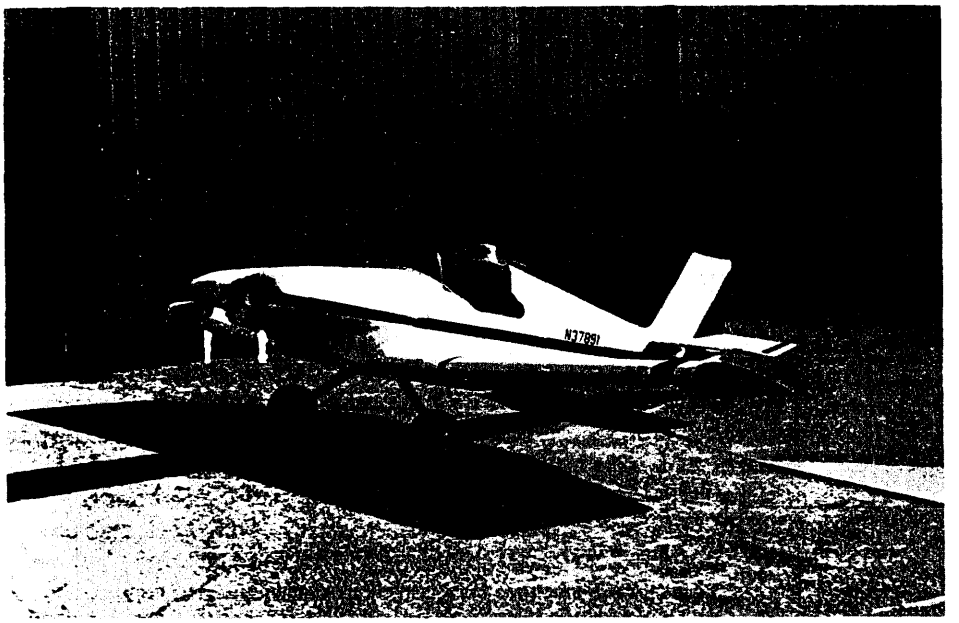
***Just a note to point out that the cause of slack cables is not the result of different distance between pivot and cable attach points on control stick and elevator control horn as reported in last Newsletter. That would only affect mechanical advantage/sensitivity of controls. Real problem is that in control stick (such as shown on page 3 of Issue #11) where the cable attach points on the stick are not in line with the pivot point. See drawing at left. If stick is pulled aft in such a set up, cable attach point 'a' goes to position 'ax' and attach point 'b' goes to position 'bx', that means the upper cable moves aft distance the horizontal distance 'A' while the lower cable moves forward distance 'B'. Since 'B' is a greater distance, the top cable goes slack (bottom cable at the elevator). The solution...be sure the cable attach points (the hole in the eye bolt) is in line with the pivot point. The illustration on page 4 of Issue #11 is closer to this ideal situation. I found I had to make a mounting bracket about 1" longer (fore and aft) to allow such a stick not to interfere with the spar. Hopes this helps clear up someone's problem before they repeat my initial mistake....Harvey Altergott.

***Oil leaks are messy, unsightly and a potential fire hazard. They should be corrected as soon as possible. The VW engine has an oil slinger just behind the generator pulley (prop hub) to keep oil from coming out around the crankshaft. Unfortunately it doesn't always do the job it was intended for. A 2" front wheel grease seal (G.M.) installed on the front of your engine case with some G.E. silicone sealer will end your leaks in this area. Be sure you use the orange colored silicone as it is better than the clear or white stuff.

***To answer the guy who wrote asking about a KR-2 club in the San Jose area, it isn't really a club in the sense of having business meetings, dues, etc. but it's a splinter group formed by guys in EAA Chapter 338 (Santa Clara, CA) who are building or are interested in KRs and has expanded to include non EAA builders. The roster now shows 21 names, most of whom have a project under way. A few are non-KRs but structurally similar, most notably an exquisite WAR Corsair. Meetings are usually held on 4th Wednesdays at member's workshops, and talk gnerally centers around specific problems and solutions, techniques, and bright (?) ideas. Meeting place info can be had by calling me after the 3rd Wed. at Litronix, 257-7910 ext. 215.....Chuck Cooke

***In regard to your caution to "taxi with the stick back"...I fly a Baby Ace with 65 h.p. She has several hundred hours on her and is a delight to fly. She is also light on the tail and has twice been over on her nose. You do not taxi her down-wind with the stick back. Never let the wind get under her flippers. Run up...(A) face into wind (B) brakes on (C) stick full back (D) open throttle and check mags (E) close throttle (F) release brakes (G) neutralize stick....in that order. Reversing sequence (E-F) can put you on your nose. Perhaps this applies to the KR?.....Gordon Lillie. ***Ed. Note...Gordon is right, to taxi down wind in almost all taildraggers requires fwd stick. A sudden gust of wind against the backside of an up elevator can easily lift the tail and wipe out your prop.

SUBSCRIPTION INCREASE...due to increasing costs of paper, printing and postage, it has become mandatory to increase the subscription rates to the Newsletter. Effective July 1, 1978 the following rates will apply: United States & Canada (1st class)...6 months @ $5.00 one year @ $9.00....Overseas (air mail only)...one year @ $15.00...back issues @ .75¢ each. You can beat the increase by getting your renewal or new subscription mailed in now. It must be received before July 1st however, at that time the new rates become effective.



Here is a picture of Frank Walker's prize-winning KR-1. If you missed it at Chino, look for Frank and his sleek little craft at Oshkosh "78".

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
ISSUE #36

K·R *Newsletter*

K·R Newsletter

ISSUE #37
JULY 1978

SUBSCRIPTION RATES

1 year $9.00 Back Issues-75¢ ea

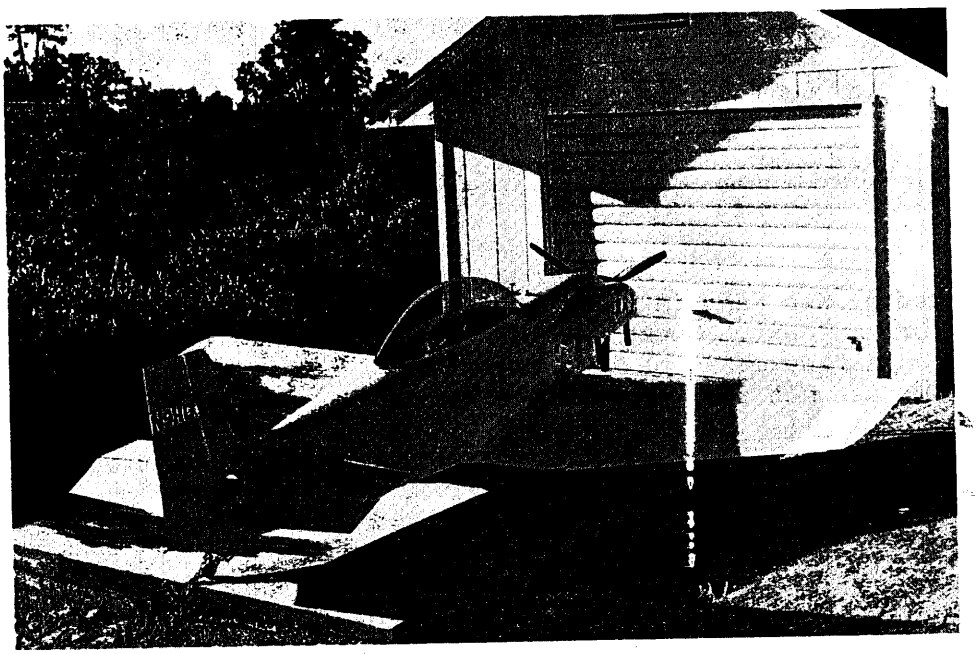
O/seas Air Mail $15.00

The recent flurry of fly-ins attended by Ken Rand in the turbo-charged KR-2 has started much speculation on where he will turn up next. Looks like Ken is out to show everyone the KR-2 isn't just a toy, but is a bona-fide means of transportation. Here are some figures Ken was getting on his recent midwest tour to Ohio via New Mexico and return: Altitude...13,500 ft. Temp...45°F I.A.S...140 mph T.A.S...176 mph. This was at an economy cruise setting of a 23" M.P. at 3000 rpm with a fuel consumption rate of a miserly 3.6 gal. per hour. Almost 50 miles to the gallon...that is real economy! The engine gauges showed how much the Revmaster engine appreciated the low power settings, oil temp ran 190°F and CHT stayed at 380°F. An interesting side note, Ken was curious as to how the KR-2 would perform at the same power settings but with the gear extended so... down went the wheels. An immediate vibration and noise at first had him believing he had dropped more than just the landing gear but a check of all systems proved otherwise. Gear down, the airspeed stabilized at 118 IND (TAS 148) but immediately the oil and cylinder head temps began a steady rise. When they reached a red line of 220° and 450° respectively Ken raised the gear. As the airspeed increased, so the engine temps decreased until all stabilized at the previous readings. The rise in engine temperature was attributed to less airflow over and thru the engine at the slower airspeeds. Ken will be the first to admit his baffling is not the most efficient. All in all, the turbo-charged 2100 D Revmaster purred like a kitten the entire trip, just as it did on the previous trip to Oklahoma.

Are you running a turbo-charger on your engine? If so, you will be interested in averting a possible failure of this expensive little blower. The problem area here is one of lubrication and cure is a matter of technique. Let's say you've been static testing your engine maybe adjusting the carb, checking the pitch on the prop, or whatever. You've run the rpm up around 3000rpm, decided it's running OK and then you shut it down. Now, unless you let the engine idle for a least one minute before you cut the power, you have a turbo charger scroll turning at several thousand rpm with <u>no oil pressure</u> in a housing <u>super heated</u> from exhaust gasses. You can see this isn't conducive to long trouble free service from your turbo. Next time you run your engine, give that turbo-charger time to slow down before you stop the engine. A one minute idle isn't much and it can save you hours of time and many $ later.

FLIGHT REPORT.....For an update on my KR-1 (first flight report to you published in your Issue #20, Feb 77) I'll keep it brief. I flew first with a 36 hp engine which did fine until warm weather arrived. With OAT up around 80-90° I found my rate of climb was down to 100 FPM or so, so I decided to hang a bigger engine in it. Beefed up a 40 hp case with 83mm jugs and 50 hp heads (with Corvair exhaust valves) and after waiting about 9 or 10 months for a new prop, finally got it flying. Now have about 55 hrs on it, cruise prop gives me about 500'FPM climb on a 90°+ day, cruises at 135 mph indicated at 3200 RPM. Still flies beautifully but is somewhat squirrely on the ground. All in all, I'm having a ball with it. Hope someday I can fly it out to the west coast.....John Shippey, Rte 3, Box 270B Henagar, AL 35978.

BUY SELL TRADE



KR-1 N9HD FOR SALE

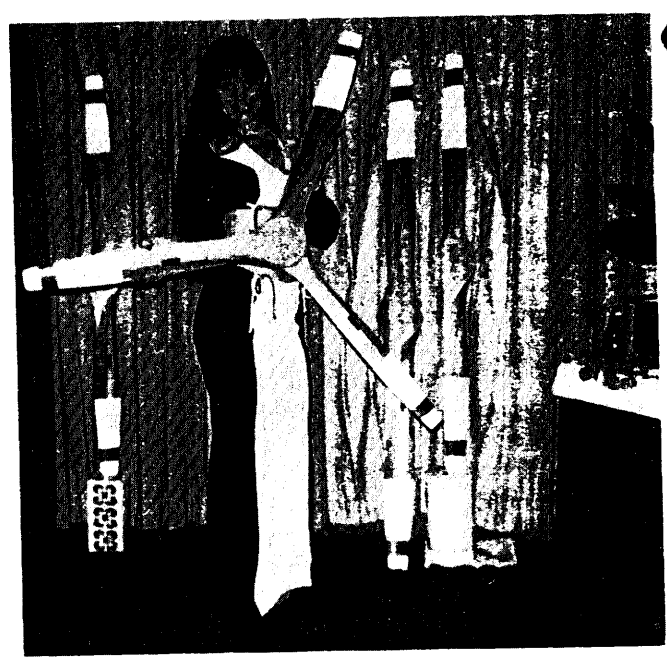
The aircraft has been flown a little over one hour and handles like a dream. Engine is the 2100cc Revmaster. $5500.00. Harry Downard, 1727 Old Oregon Trail, Redding, CA 96001. Phone-916-241-5470 NO COLLECT

One of our KR builders is a prop maker too. I saw a sample of his work at Oshkosh 77 and was impressed with the fine workmanship. As the picture testifies, the props come in a variety of shapes and sizes. Write to Harlan Anderson, Box 237, St. Ansgar, IA 50472.

FOR SALE.....1977 fuel injection unit for VW engine. Fits any dual port head engine...$100.00. Ken Byrd, 235 Belmont #7, Long Beach, CA 90803 or phone 213-434-5102.

FOR SALE.....KR-2 project, all materials to finish, on gear, all metal parts have been made. Canopy, engine mount, etc., everything but the engine. $1700.00 or best offer. Steve Meltsner, 51 Arnoldale Rd., West Hartford, CT 06119 or phone 203-523-9351 after 6 pm (no collect calls)

WANTED.....A Zenith side draft carb and Barker cast intake manifold for VW. H.A. Anderson, Box 237, St. Ansgar, IA 50472.



VENNE KR CONSTRUCTION

Most experienced KR builder offers complete technical assistance, inspections, and construction. Charges to suit any budget...international inquiries welcome. 919 Grand Ave., Long Beach, CA 90804 or phone (213) 433-0520.

HAPPENINGS...Hollister "78" EAA Chap. 62 is hosting a fly-in July 14-16 at Hollister, CA. Ken will be there with the KR-2 on July 15 & 16. OSHKOSH "78" July 29 thru Aug. 5, the silver anniv. of EAA should be a great show. See y'all there. Paul Venne (see ad) is hoping to hitch a ride to Oshkosh from S. Cal. If you have room, give him a call.

SAFETY CHECK LIST

Spend some time with your plane and this check list before those first flights. Thirty minutes with a pencil here may be worth the rest of your life.

PROPELLER	Yes	No
1. Blades		
Laminations not separated?		
Breaks, scratches, nicks, tipping?		
Loose rivets in tipping?		
Drain holes in tip clear?		
2. Hub		
Any cracks or corrosion?		
Hub properly seated and safetied?		
3. Control Mechanism		
Oil leaks?		
Worn bearings?		
Secure?		
4. Attachment		
All bolt & nut threads undamaged?		
All bolts & nuts secured & safetied?		
5. Spinner		
Cracks?		
Properly secured?		
Is spinner chafing into prop?		

ENGINE & ENGINE COMPARTMENT	Yes	No
1. Fuel System		
All lines of approved type?		
All strainers clean?		
All lines secured against vibration?		
Gascolator bowl at low point in system when aircraft is in normal ground position?		
Fuel drains operative?		
All connections properly tightened?		
2. Oil System		
All lines of approved type?		
All lines secured against vibration?		
Oil tank has no cracks or leaks?		
Tank properly secured and safetied?		
All plugs and strainers cleaned and safetied?		
3. Ignition—Electrical System		
All wiring proper type and gauge?		
All fastenings secured and safetied?		
Magnetos properly grounded?		
Spark plugs cleaned & undamaged?		
Spark plugs properly torqued?		
Engine grounded to airframe?		
Starter/generator secured?		
4. Exhaust Manifold		
Secured and safetied?		
All gaskets in good condition?		

ENGINE & ENGINE COMP'T.	Yes	No
All stacks in good condition — no cracks or rusted-out areas?		
Carb heat and cabin heat muffs removed and manifold inspected?		
5. Controls		
All secured and safetied?		
No excessive play in any linkages?		
No interference between any control and the structure throughout the full operating range?		
Carb heater gate open & close fully?		
6. Mount		
Secured and safetied?		
All joints inspected for cracks?		
Any bends in mount tubes?		
Bushings in good condition?		
7. Cowlings		
Secured and/or safetied?		
All latches or fastenings working properly?		
Any cracks properly checked or reinforced?		
Cowlings clean?		
8. Power Plant in General		
All necessary safeties, palnuts, locknuts, etc. in place?		
No fuel or oil leaks?		
All accessories secured & safetied?		

FUSELAGE — HULL	Yes	No
1. Structure		
All welds sound?		
All tubing straight and uncracked?		
No rust or corrosion?		
All attach fittings sound, no cracks, elongation of holes or worn threads?		
All rivets properly installed?		
Inspection openings for all vital areas?		
Fuselage properly drained, that is, no built-in moisture traps?		
Firewall of proper fireproof material?		
2. Cover		
Properly attached?		
No tears, distortions, or abrasions?		
Any breaks or ruptures properly repaired?		
3. Control System		
Properly secured and safetied?		
Controls stops provided & adjusted?		
All fittings of proper thread & size?		

FUSELAGE — HULL (Continued)	Yes	No
All pulleys of proper diameter for bends, proper size for cable, and guarded?		
All cable of proper size (⅛" min.) and condition?		
Any parts in system subject to rotation for any reason properly secured and safetied?		
Return springs on rudder pedals?		
No interference between any control part (cable, tube, or linkage) and any other part of the structure throughout full control movement?		
Adequate room for full control throw when aircraft is occupied?		
Controls arranged to minimize danger of blocking by foreign objects?		
Grip properly secured to control stick or wheel?		
4. Electrical System		
All grommets, particularly in firewall, snug fitting and in good condition?		
All wires of proper gauge, insulated, and secured?		
Wires do not rest on abrasive surfaces?		
Battery installation of sufficient strength?		
Battery properly ventilated and drained?		
No corrosion at or around battery or its vents?		
Fuses of adequate amperage?		
5. Fuel System — Tanks		
Drains properly located to discharge clear of aircraft?		
All outlets properly screened?		
Breather inlets clear?		
Fuel shut-off valve installed?		
Fuel shut-off valve easily reached by pilot?		
All fuel lines of proper approved type?		
All fuel lines secured against vibration?		
Is tank located so that sufficient head is available in maximum climb with minimum fuel? Placard if necessary?		
Has tank sufficient expansion area?		
Any tank overflow discharge clear of hazardous areas on aircraft?		
Is tank support sufficient to meet strength requirements?		
Does tank clear surrounding structure?		
Do tank supports minimize strain and chafing?		

Reprinted From EAA Service Manual

To insure its safe construction and operation, and to further emphasize the vital necessity for thorough consideration of every item which goes into your airplane, the following working check-list should be used, and it is suggested that it be made a part of the aircraft records.

SAFETY CHECK LIST

EXITS	Yes	No
1. Can aircraft be cleared rapidly in case of emergency?		
Are special precautions available during test period, such as jettisonable doors or canopy?		
If parachute is to be worn, does it clear all controls?		
Baggage Compartment		
1. Are walls and floors of sufficient strength to withstand flight loads?		
Can anything escape from baggage compartment by accident?		
Cabin—Cockpit		
1. Instruments		
Are all instruments functioning and accurate?		
Are all instruments marked, max pressures, temperatures, speeds?		
Are all vital instruments easily visible to pilot?		
2. Flight—Engine Controls		
Are all engine controls marked or easily identifiable?		
Are all engine controls smooth in operation, without excessive resistance, & easily available to pilot?		
Are all flight controls arranged so that jamming by dropped gloves, etc. is impossible?		
3. Fuel Systems		
Are all gas valves easily reached by pilot?		
Are all gas valves marked ON, OFF, LEFT, RIGHT?		
Are all gas valves in such a position that accidental operation is impossible, or guarded in such a way that accidental operation is impossible?		
4. Seats		
Are seats of sufficient strength for maximum flight loads contemplated?		
Does seat "flex" enough at any time to interfere with flight controls?		
5. Safety Belts and Shoulder Harness		
Is installation and attachments of sufficient strength to meet 9G forward load minimum?		
Does attachment connect directly to primary structure?		
Are belts and harness in top condition?		

EXITS (Continued)	Yes	No
Is belt of correct size, that is, no long over-tongue?		
Is a separate belt and shoulder harness supplied for each occupant?		
6. Heating—Ventilation		
Is cabin or cockpit in negative pressure area and liable to suck in exhaust fumes?		
Is any provision made for ventilating cabin other than normal leakage?		
7. Windshield—Windows		
Are windshield and windows of recognized aeronautical materials?		
Is windshield braced against positive or negative pressures in flight, either by design or extra bracing?		
WING — TAIL SURFACES		
Fixed Surfaces		
Are all interior fastenings secured and/or safetied?		
Is interior properly weatherproofed?		
Have any mice been inside lately?		
Movable Surfaces		
Are stops provided, either at wing or somewhere else in the control system?		
Are all hinges and brackets sound?		
Are all hinge pins secured and safetied?		
Is there any excessive play in hinges?		
Is there any excessive play in control cables or tubes?		
External Bracing		
Is the interior of all struts weather protected?		
Are all adjustable fittings locked, secured and safetied?		
Are struts undamaged by bends or dents?		
Are all wires serviceable with proper end fittings?		
Attach Fittings		
Are bolts of proper size installed?		
Are all bolts secured and safetied?		
Have all bolts been examined for wear?		
Flight Control Mechanism		
All cables and tubes unbroken or unbent & with proper end fittings?		
All control attachments secured and safetied?		

WING—TAIL SURFACES (Cont.)	Yes	No
All pulleys free from interference and guarded?		
All torque tubes and bell cranks in good condition?		
No interference with fuselage or wing structure throughout full control travel?		
Fuel Tanks		
See Fuselage Section Also		
Are drains supplied at low point in tank when aircraft is in normal ground position?		
Fuel overflow drains clear of aircraft—no tendency for overflow to soak into aircraft structure?		
LANDING GEAR		
Properly lubricated?		
Proper oleo inflation?		
Shock cords or springs in good condition?		
All attach fittings uncracked and sound?		
All bolts holes not elongated?		
All attach bolts secured & safetied?		
Brake lines in good condition?		
Brakes operating properly?		
Correct hydraulic fluid in lines?		
Wheels uncracked?		
Tires unworn & properly inflated?		
Excessive side play in wheel bearings?		

GENERAL

ALL BOLTS, WHEREVER POSSIBLE, HEAD UP AND FORWARD.

All exterior fastenings visible from cockpit or cabin should have safetied end toward pilot, wherever possible.

A complete walkaround inspection of the aircraft should be accomplished to check that every bolt visible on the exterior is secured and safetied. That there is no visible structural damage. That all inspection panels and covers are in place and attached. That all parts of the aircraft are in proper alignment.

DON'T FORGET TO PUT IN ENOUGH GAS PRIOR TO THAT FIRST FLIGHT — GROUND RUNNING AND TAXI TESTS CAN USE UP A LOT MORE THAN YOU THINK!

OK — Kick the tires, add another coat of paint and AWAY WE GO.

Is your KR ready for the first flight? Have you checked all the various pieces, parts, and systmes in your aircraft? The E.A.A. is a very safety conscious organization and the previous check list was borrowed from their service manual and recently reprinted in the E.A.A. Designee Newsletter. Many of you already belong to the E.A.A., those who don't, should. For more information, write to E.A.A., P.O. Box 229, Hales Corners, WI 53130.

Reprinted From EAA Service Manual

A couple of months back I asked in the Newsletter for an indication of interest in a club for KR builders and pilots. The letters received were all in favor and some offered to help at whatever was needed (much appreciated). So...with the ideas suggested in your letters and with a few ideas of my own thrown in, we'll get the KR Club going.

Here is an outline of the suggested rules:

1. To be eligible for membership in the KR Club you must be:
   A. Actively participate in one or more of the following,
      1. building a KR
      2. flying a KR
      3. owning a KR
   B. Willing to participate in one or more club functions such as,
      1. meetings
      2. fly-ins
      3. pic-nics
   C. Attend or participate in forums or seminars on the building and/or flying of KR aircraft.
   D. A current subscriber to the KR Newsletter
   E. A supporter of sport avaition in your community.
   F. A holder of a current membership registration card (see application on back page)

The membership rules are already met by most all of you, they definitely aren't designed to keep anyone out. They are still subject to change if the membership so directs. The benefits derived from being a KR Club member will grow as the membership grows. A library has already been started and a list of books available follow next month.

There is no charge to members other than postage for the use of these books for one month from the time your request is received. After that, there will be a 25¢ per day late charge until the book is returned or replaced. You can add to the list of books available if you are willing to share from your own library. Just send a list of titles of books or manuals you have and I will keep a current listing of such for other members to select from. The response to such ideas of sharing always amazes me, I can't think of any other sport, hobby, or whatever where so many do so much for each other.

A tool crib can be initiated. A list of tools willing to be shared by their owners (at the owner's convenience and supervision) can be kept so builders with need of such tools may contact the owners and make necessary arrangements. Use of materials and utilities, i.e. welding rod, electricity, etc. can sometimes be costly so you should take these into consideration before tools and equipment are used.

KR Club members will receive a registered membership card with a number. The number must be used by you when requesting any of the services offered to club members. A list of members living in a 100 mi radius of your residence will be furnished if you send a list of zip codes for that area. Overseas members will be sent a list of members in their respective countries or provinces.

The possibilites go on and on but I feel this is a basis on which to form the club. There will undoubtably be changes as time goes on and as a member you will have a vote in deciding those changes. Voting will be done on ballots printed in the Newsletter, one ballot per member

I spoke with Ken Rand about the possibility of him attending various meetings of the KR Club and he was very enthusiastic. He would have to be notified well in advance of such a meeting and it could not interfere with any prior committments. A meeting scheduled during a fly-in would be best. Meeting places can be anywhere, someone's garage, an unused corner in a hanger, at a city park or at a restaurant. The whole idea is just to get together and talk airplanes.

KR CLUB MEMBERSHIP APPLICATION

NAME_____

ADDRESS_____

ZIP or COUNTRY_____

PHONE NUMBER_____

I want to be a member of the KR Club. An organization for the education and advancement for KR builders and pilots.

*I have the following books or manuals I will share:

_____

_____

*I have the following tools and equipment I will share (at my convenience):

_____

_____

Please send me a registered membership card and a list of KR Club members in my zip code area.

SIGNED_____

KR Club membership dues are $3.00 per year and will cover the period from July 1st thru June 30th. Fill out this application and mail to:

Ernest Koppe
6141 Choctaw Dr.
Westminster, CA 92683

*It is not mandatory to have books or tools to share in order to become a member.

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
ISSUE #37

KR Newsletter

ISSUE #38
AUGUST 1978

SUBSCRIPTION RATES

One year $9.00 Back Issues-75¢ ea

Overseas air mail $15.00

So many, many things to do! Oshkosh is on us again and the list of things to get ready seems to grow. Everytime I cross off a task completed, I have to add two more.

The family and I are bringing the camper and will stay at the campground this year. I hereby declare the camper as KR Club HQ for the duration of the EAA Convention and as soon as I get it situated, I'll post the location on the bulletin boards around the fly-in. All of you are welcome to come by for some cold suds or ice tea.

Looking for a great KR turnout this year. Most of the KRs that attended last year have indicated they will return this year. One notable exception is the KR-3, it will be a-round Christmas before it is ready for the next public appearance. The new airfoil and slightly re-designed fuselage should cure the problems experienced with the original. Soon as the guys are satisfied all is well with the KR-3....well, you know what's next, the KR-4. All efforts will be turned toward getting a tri-gear (retractable naturally) VW powered twin into the air. Should prove to very interesting.

On the current scene, Ken is flying the turbo KR-1 every day to get the hours flown off. If all goes well (and it has so far) he will fly it to Oshkosh "78" and someone else will either fly or trailer the KR-2.

Did you see the picture of the KR-2 in this month's "Sport Aviation" (July 78)? It showed the flaps very well. The KR-2 has logged about 30 hrs now since they were installed and no real problems to report. A few more hours and perhaps Ken will get some plans drawn up.

***The KR Club membership list is growing by leaps and bounds. I'm going to send out the membership cards and area membership lists as soon as I get home from Oshkosh. I had planned on sending them sooner but with the many new members coming in each day, I want to send the most complete list possible.

***Good news for our Australian KR-2 builders. The Australian D.O.T. has awarded Amateur Built Aircraft Approval No. 45. I understand several KR-2s were already under construction so it shouldn't be much longer now before we hear of the first flight of one of them.

BUY SELL TRADE

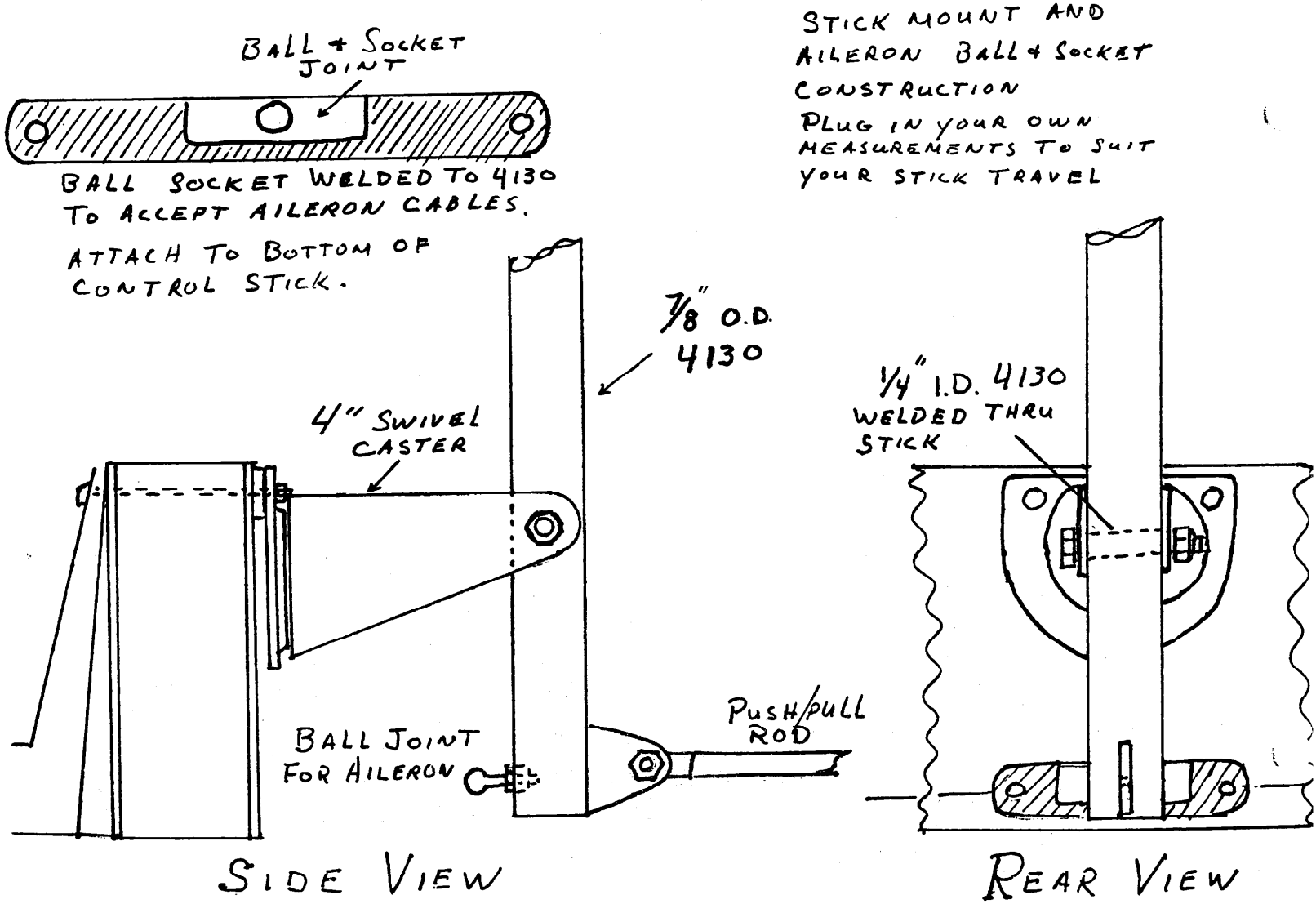
Customized pinstriping for your KR-1 or KR-2. A variety of colors to match your paint scheme. Tom Criss, Pacific Newport, Newport Beach, CA 92663. Phone 714-673-5372.

KR-2 Project: Fuselage completed up to step 3.18, installation of belly plywood is finished, 5 spars, spruce for tail, 2 VW engines, 1 set dual port heads, misc. materials, plans, catalogs and all KR Newsletters. $600.00...Jim Dillner, 2603 SW 9 Ct., Fort Lauderdale, FL 33312. Phone 305-791-3421 at home or 305-581-3772 at work.

FOR SALE: KR-2 project, all materials except motor and instruments to completely build this plane. I only have the fuselage sides completed. Best start from scratch. Selling very reasonably...$1,300.00. Gordon Young, 33825 Dlugosh Ave., Mission City, B.C. Canada, 604-826-1836 anytime. The proceeds of this sale will go toward the purchase of a turbo-charged Revmaster on the KR-2 I have purchased.

TIPS FROM OTHER BUILDERS

I'm building a KR-2 which has been under construction for 15 months and I plan to have flying by early spring. I have modified my landing gear to your article in Issue 19 and it works super. All my control cable work is in and signed off. All spars are signed off along with the tail surfaces, covered and finished. Forward deck and fuel tank is nearly complete with dash in. After contact through your Newsletter with Odran Benson, I've purchased a Continental 65, built my engine mounts and installed the engine, temporarily, and built my fiberglass cowling around it from which I'll pull a mold and make a fiberglass cowling. I'm installing a posa-carb and putting my oil tank on the firewall to keep it above the fuselage bottom so I can streamline my cowling. One modification I made which I haven't seen yet is to my control stick mounting bracket. I used a 4" swivel caster mount with ball bearings which bolted on to main spar using bolts from center gear hinge with no modifications to the caster mounting plate. Incorporated into this I used a push rod from the stick to behind the seat as in one of your previous Newsletters, with cables from bellcrank behind the seat on aft to the elevator. For the aileron control cables to the stick I used a ball swivel joint mounted on the bottom of the stick facing forward with the socket facing toward each wing tip, a piece of 4130 welded to the socket part with holes in each end for cable attach points. This enables a full amount of swivel in all directions which eliminates any tightening of the cable with motion of the stick. Below is a drawing if you wish to use it. One thing I would like to see in the Newsletter is a list of the fly-ins Ken Rand will attend around the country. I've attended several around our northwest area and I still haven't seen a completed KR. I guess I'll have to finish mine to see one! Keep up the good work.....E.H. Nelson, Box 858, Pinehurst, Idaho 83850.



Tips from other builders (cont.)

The VW engine, as adopted to aircraft use, is undoubtably the most popular of all the auto engine conversions. Assembled with reasonable care, it will give many hours of trouble free performance. As more and more VW powered aircraft take to the air, we are becoming aware of the various problem areas to watch for and get a fix on. The EAA Designee Newsletter ran the following letter about a possible problem area in the VW engine:

Gentlemen: This may be of interest to other EAA members like myself who fly behind (or in front of) Volkswagen powerplants. A few weeks ago a planned Saturday of airport hopping came to an abrupt end when after having run the engine for a few minutes and shutting down once, it seized up solid during the next start up. A tear-down revealed that one of the three bolts holding the timing gear to the samshaft had backed out - the oil pump was ruined and both the timing gear and gear of the crankshaft were damaged and of course the engine was locked up tight. I'm thankful that it happened on the ground. The bolts (metric) are a locking type that have anti-slip ridges on their inner face which I suppose <u>should</u> prevent backing out but I now have a ruined engine to prove that they sometimes <u>do</u>. Looking back, I can see that his unhappy event <u>could</u> have been prevented by having the bolt heads drilled, then safetying such as prop bolts are done. The bolts can be checked on existing installations by pulling the oil pump and turning the crank slowly. Each one will come into view for checking. On my next build-up of a VW, I plan to drill and secure them with .040 wire before assembly. As I stated this may be of interest to someone who if flying a VW. It sure was to me. Happy building and flying...Richard D. Fehiner, 1816 Kenwood Ave., Spring Lake, NC 28390.

While this is the first instance of this problem of which I've heard, obviously it could and did happen. A few minutes spent on prevention of a problem can save hours of overhaul at a later date.

* * * * *

Here is an item which may be of interest to KR owners using Warnke's newest prop with 7/16" pinch bolts on hub. With the pinch bolts installed to the front, a large cutaway is required in the spinner for bolt clearance. I flew my KR-1 18 hrs. with Warnke's prop, then experienced a little problem. Returning from Watsonville, CA to San Diego I had flown 400 miles and was within 10 miles of my home field when i experienced quite heavy vibration. After landing, I discovered the prop spinner cracked and torn loose from half of the 8-32 bolts to the backing plate. The cracks had started from the bolt clearance cutaways. As can be seen from the pictures, I have solved the problem by turning the clamps to the rear (photo #1) and fabricating a front backing plate for the spinner (photo #2). I have machined a die for spinning the front backing plate and can supply them to interested parties for $6.00, postage paid.....
Butch Grafton, 1605 Eucalyptus Dr.
El Cajon, CA 92021.

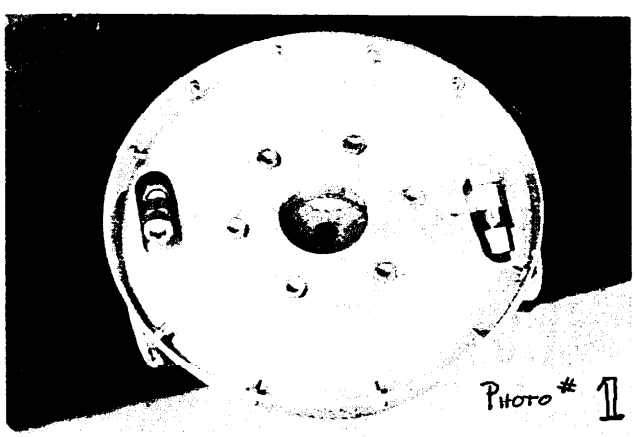
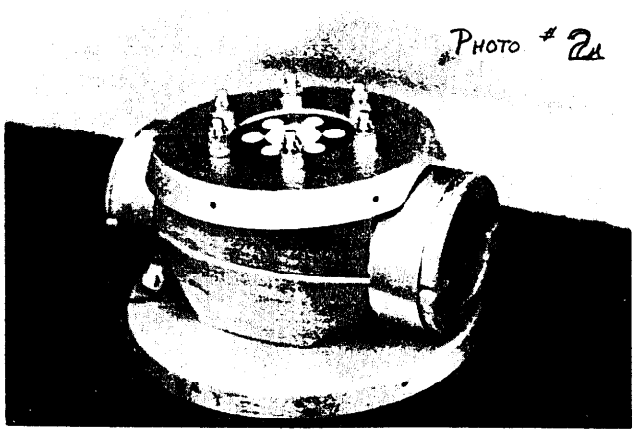


Photo # 1

Photo # 2



QUESTIONS & ANSWERS

Q. What torque is used for the hinge bolts in the elevator and rudder spars?
A. The procedure for tightening bolts passing thru wood is to tighten them enough to compress the wood using care not to break the fiber of the surface grain. Torque values required will vary greatly with different pieces of wood.
Q. What adhesive must I use when glueing foam to foam or foam to wood?
A. There are several alternatives, epoxy -five minute or regular and the two-part liquid foam are the easiest and most common methods used.
Q. How are the rudder cables routed thru the fuselage on a KR?
A. Nylon guides called fairleads are the best way unless you have a sharp bend and then you should use a pulley.
Q. I'm having trouble getting the wheel bearing over the 5/8" AL axle. Do you force them on or grind down the axles until they fit?
A. They are supposed to be a snug fit but not forced. Use 400 grit emery to polish the axles enough to get the bearings on.
Q. Here in New Zealand the Revmaster 2100 is not approved for two person operation, could you advise whether a KR-2 has been flown with a C-65 or similar aero engine?
A. While there are three or four KRs flying with aero engines, Rand recommends only the VW.

Q. Can you give me an address of a firm that would supply seamless steel tube to make rudder pedals? Steel tube has become almost impossible to purchase here in S. Africa.
A. Aircraft Spruce and Specialty is listed as a supplier in your plans book. They are a reputable firm and ship world-wide.

Here is a little hint for sanding the wing spars to the right contour. Attach some sheet metal to each side of the spar (fore and aft) along the desired contour and then sand with a belt sander. It is fast, accurate and does a beautiful job.....G. Fred Richen, 9917 - 152nd St. E., Puyallup, WA 98371.

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
ISSUE #38

K-R Newsletter

SEPT. 1978
ISSUE #39

SUBSCRIPTION RATES

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OSHKOSH "78"

This year's edition of the EAA Convention is now past history. As usual it was a great success for everybody. Everybody but KR enthusiasts that is. A disappointingly small number of completed KR-1s and KR-2s were on hand to greet the hundreds of current KR builder's inquisitive eyes. Eight KRs were on display, some trailered in, some flown.

KR-1 N-1436, this is the KR-1 that started the whole composite shebang. The restrictions have just been flown off the third rebuild of N-1436 which this time includes a Revmaster 2100 D, turbo-charged naturally, and the Maloof constant speed prop. The performance figures Ken Rand is givng this little hot rod is enought to stagger even a true believer, i.e. a 2000' R/C and a 240 mph cruise. WOW!!!!

KR-2 N4KR was flown in by Ken all the way from California. A malfunctioning fuel transfer pump, one of the few certified aircraft parts on the KR-2, failed about half way thru the flight. What started out to be a one stop flight ended up as one long jump and a half dozen shorter ones. N4KR was also flown by Ken in the 1st annual 500 mile efficiency race to be held each year at the EAA convention. An interesting race in that it is not only speed that counts. A participating aircraft must carry 22 gal. of fuel, use only 18 gal. or be disqualified. A bonus speed is awarded to each contestant according to how much remaining fuel he has on board after completing the race. Ken was one of four contestants selected for this initial running of what gives every indication of being a highly successful annual event. Steve Wittman (who won) and two Vari-ezes (2nd & 3rd) were the other contestants. Rand had trouble locating a turning point of the first lap, fell behind and then used too much fuel in trying to catch the others. Oh well, maybe next year.

KR-2 N17NA belongs to Albert Epp of 4919 Mattis Rd., St. Louis, MO 63128. First trip to Oshkosh for this KR-2 built by one of our senior builders. Al apparently followed the plans closely on all but the canopy which swung forward for enty/exit.

KR-2 N4DD built by Dan Deihl of 4132 E. 72nd, Tulsa, OK 74136. Dan probably has more hours in a KR-2 than anyone other than Ken Rand and is usually ready to give you a detailed account of the KR-2's abilities. I get the impression that "unusual attitudes" are more usual than not when Dan is at the controls.

KR-2 This one is owned by A. Carlson of Sweden. It was at the Chino, CA fly-in earlier this year, minus the tricycle gear. The gear modification was made by Finelli's Machining and Welding, 5327 West Ave., L-10, Quartz Hill, CA 93534 who is taking orders for the kit. Write to them for further information.

KR-1 N7138. Bill Reents, 3874 Dunbar Dr., Youngstown, OH 44515 built this very nice KR-1, the nicest KR to show up at Oshkosh this year. Powered by a 1700 VW turning a R/R three blade prop, Bill's is one of the two KR-1s flown in this year.

KR-2 N76PV. Paul Venne set out to build his KR as cheaply as possible. Power is a 1200 VW, pulling an aircraft as close to plans and as light as he could make it. First flight is due the latter part of September, more info will follow then.

KR-1 N31123. This KR-1 built by Steve Bennett, Rte 1, Bondurant, IA 50035 was the last to show up at Oshkosh this year. He arrived the morning I was leaving so I didn't get too much info from him. At present Steve is flying with his second prop, the first having been the victim of a mishap. Performance is not as good with this second prop but the fun flying is there.

BUY SELL TRADE

FOR SALE...Award winning KR-1...ready to fly. This modified KR-1 was displayed at the EAA Chino, CA Air Show in May 1978 and won the trophy for best composite aircraft. Some of the modifications include open cockpit, fixed landing gear, hydraulic toe brakes (disc), Cleveland wheels (500 x 5) & center control stick. All parts are new. It is powered by a 36 hp VW (run a few hours for break-in) with balanced crankshaft, rods and pistons. All internal parts are new. The magneto is driven directly by the crank. An oil seal (removable) has been installed in the case and rides on the prop hub. Fuel primers are installed in the intake manifolds. An extremely efficient oil cooler is mounted above the magneto. The propeller was built by Les Trigg. Instruments (all are aircraft) include air speed ind., compass, altimeter, oil pressure, oil temperature, manifold pressure, tachometer and cylinder head gauge with sensors on #1 and 3 cylinders. A unique gas gauge arrangement incorporates a magnetic dial with float and gear driven shaft which eliminates the gas line on the instrument panel. The entire instrument panel is removable. The interior of the cockpit is finished in mahogany and spruce. There is a compartment and access panel (hinged) behind the seat for access to the rear of the plane. Inaccessable aluminum hinges and bell cranks were drilled oversize and 4130 bushings installed. The entire wing section from the front spar aft is covered with a layer of Dynel and then with an additional layer of fiberglass cloth. This increased the strength tremendously without significantly increasing the weight. (The empty weight is 419 lbs.) Meticulous attention was given to detail and all aircraft parts were used in construction. The many refinements not even mentioned that went into the building must be seen to be appreciated. A photograph of the aircraft is in the July issue of "Sport Aviation" and in the June issue of the "KR Newsletter". Included with the aircraft is a custombuilt trailer from which the complete aircraft can be removed (or placed) in a very short period of time..... $3,900.00 FIRM. Contact Frank Walker at 213-943-7658 or write to 11226 Kibbee Ave., Whittier, CA 90604. No collect calls please. Photos sent on request.

WANTED.....KR-2 completed aircraft, send specs and price to A.N. Polidori, Rte. 2, Box 340 Mundelein, IL 60060. Phone 312-566-6469.

FOR SALE...KR-2 project. Most all woodwork and metal parts complete, extra materials... $1000.00 or best offer. Phone 805-525-8241 or 805-724-5393 after 4:30 p.m. No collect calls please.

I have received many requests for an address of anyone selling Type IV conversion parts. Gilbert Duty has developed the Type IV engines accessories from prop hub to accessory case. For more details write to Custom Aircraft Engines, Rte 3, Sanford, NC 27330.

FOR SALE...KR-2 project 60-65% complete, on gear, empennage complete, controls installed, all materials to finish except engine and instruments. Rick Thomas, 8300 Thoreau, Riverside, CA 92504 or phone 714-687-9567.

SAFETY NOTICE Dan Richards at R/R called my attention to a problem one builder encountered with rough field operation. The tailwheel bellcrank arems are getting nicked and bent by assorted runway debris. Make sure that you include the tailwheel bellcrank on your pre-flight check list. Another problem in this area is that some builders are putting too much tension on the rudder and elevator cables. They should only be taut enought to take up slack, not enough to make them hum.

Are you using a gascolator in your fuel system? A vapor lock problem is possible if the gascolator is located too low in regards to the injector/carburetor. High cowling temps will cause a vapor lock in the fuel line from the gascolator to the injector/carb. If you suspect a problem in this area, raise the gascolator until it is on an even plane with the injector/carb. This will end the vapor lock problem in this area.

One more time dept.....structural integrity of the KRs require that the Dynel/epoxy skin be in <u>direct</u> <u>contact</u> with the load carrying spars. <u>DO</u> <u>NOT</u> PUT FOAM BETWEEN THE SPAR AND THE SKIN!!!!

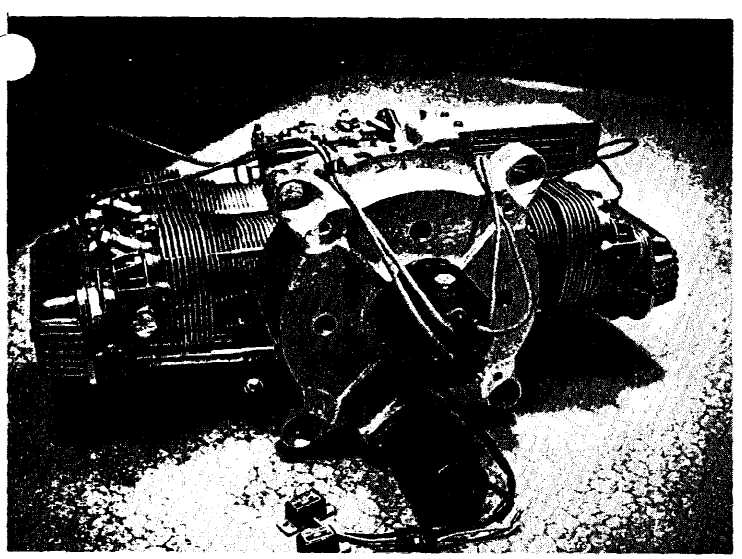
KR CLUB HAPPENINGS....Ken Rand is going to be a very busy person for a couple of weeks this month. He has scheduled a coast-to-coast cross-country and is going to follow this itinerary (weather permitting); Sept. 15th, leave So Cal early a.m. for the EAA Fly-in at Kerrville, TX. Sept. 16th, leave Kerrville, TX mid-morning for the EAA Fly-in at Baltimore, MD. Sept 17th, afternoon departure to Brainard Field in Hartford, CT where he will spend a few days with his folks. Sept. 22nd, leave Brainard Field early a.m. to fly to the EAA Fly-in at Alvin, TX. Sept. 23rd, depart Alvin for Mid Valley Airport in Albuquerque, NM. Sept. 24th, Ken will leave in the early afternoon to make the final lap of the long cross-country. None of these flights are for records, altho I'm sure he could set a few, Ken is just demonstrating that the KRs are capable of extended cross-country flights.

There will be an informal meeting of the SoCal area KR Club members Sunday, Oct. 1st at the Corona, CA airport. Circle that date on your calendar and fly, drive, walk, or whatever, just get there. Just across the street, south of the airport, there is a very large and well kept park, so bring a picnic lunch and we'll all talk about airplanes. Might even get Ken Rand to give us a de-briefing of his latest cross-country haul.

Is there an airport, hangar, shop or someones garage near you that the local KR Club members might use as a home base? If so, send in a time and place to the Newsletter and maybe we can get it together on a regular basis. Let's try it!

October 21st and 22nd look for Ken at Marana, AZ regional EAA Fly-in and Oct 28th and 29th at the EAA Fly-in at Ramona, CA.

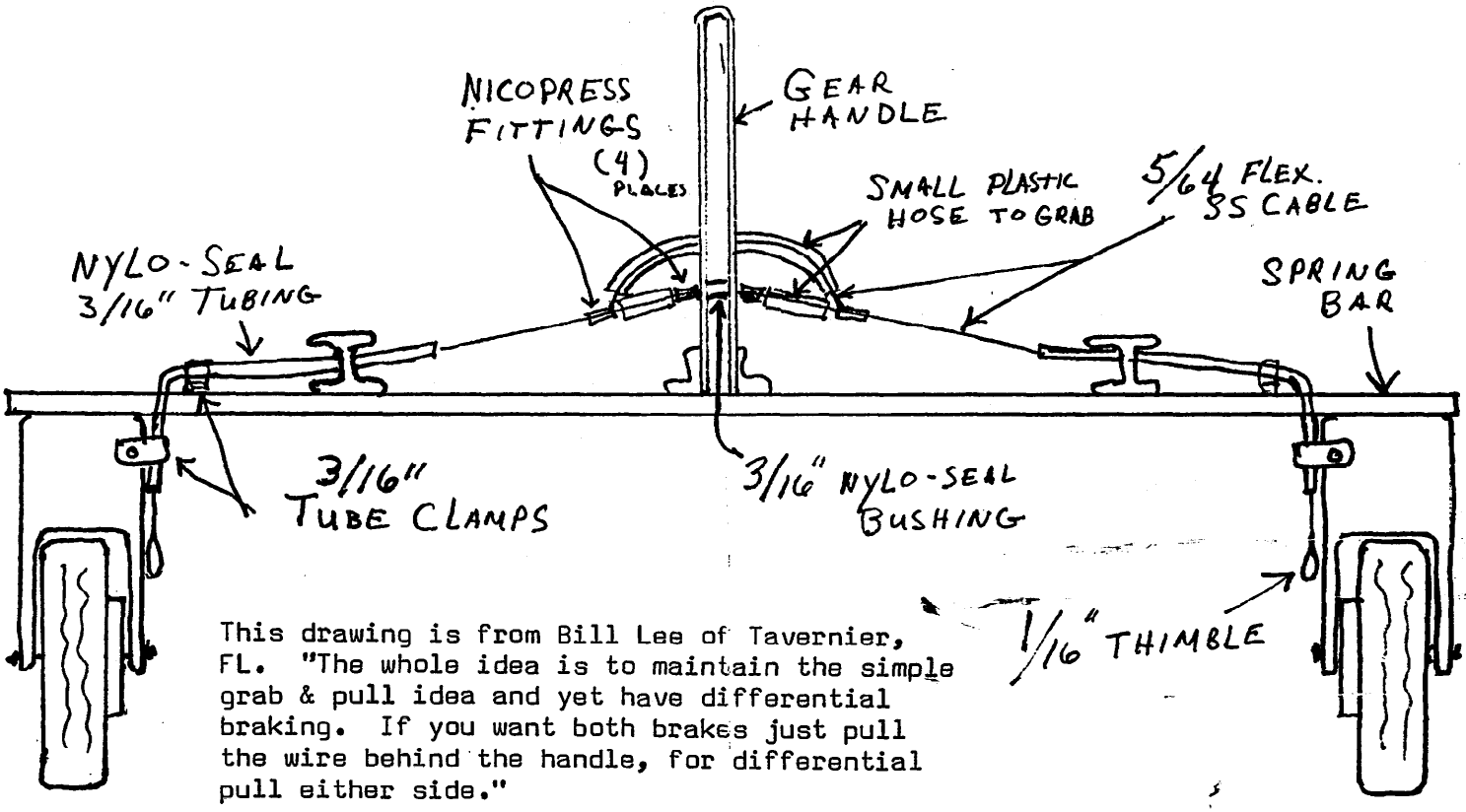
"SUPERCASE" By Dan Diehl



There are hundreds of KR builders wanting to build up their own engines but are not sure where to start or where to buy conversion parts. Dan Diehl (KR-2 N4DD) has developed an accessory case that will fit most VW engines (1200 cc to 2200 cc). It utilizes the new Rand/Robinson engine mount based on the Lycoming (Revmaster) bolt pattern. Currently available are the following items: Accessory case, machined and ready for installation-$100.00 Magneto drive-$35.00. Fly wheel (using your 6 volt 180 MM VW as a core)-$45.00, add $20.00 if no core furnished. The Slick Magneto and 12V starter sold by Rand/Robinson are bolt on items. A 20 AMP alternator will bolt on inside the accessory case-$90.00 if enough orders (25) are received, if not, Monnet sells a 10 AMP alternator ($100.00) that will fit. Weight of the case and all accessories comes to 24 lbs. Want more info? Send a S.A.S.E. to Dan Diehl, 4132 E. 72nd St., Tulsa, OK 74136 or phone 918-492-5111.

The picture and info above was received just before press time. Looks like Dan has a good thing going, I'm going to send him the first order.

EK



This drawing is from Bill Lee of Tavernier, FL. "The whole idea is to maintain the simple grab & pull idea and yet have differential braking. If you want both brakes just pull the wire behind the handle, for differential pull either side."

ERNEST KOPPE
6141 CHOCTAW DR.
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ISSUE #39

#40

I'm fully aware this is nothing out of the ordinary but having just completed a 5000 mile solo journey in my KR-2 I wished to let others share my experience. Many homebuilts are viewed as "pattern" or local type ships. I've never thought this of the KRs and certainly don't now. On this recent trip my fuel stops averaged over 500 statute miles apart. Twice take-offs were made with a gross wt. of 920 lbs at airports 5000 MSL, in one case 102°F. Climbout was adequate considering a density altitude of nearly 9000'. Oil consumpsion was nil, nothing added but was changed at other end. I carried a considerable amount of luggage in the right seat, usually sat from 3 to 4 hrs at a stretch and was quite comfortable with no sore spots. In time & distance checks I posted ground speeds ranging from 124 to 168 MPH, TAS generally seemed to fall between 145-150. I used 3100 RPM cruise. At 12000' MSL full throttle would yield 3600 RPM indicating my Warnke prop needs more bite; however, my static at sea level is only 3100 RPM. Maybe a different blade? Cylinder head temp ran about 300°, oil at 205°. I ran my engine to 38 hrs between valve clearance checks one time and had one down to .002, another to .003 indicating a definite need for 25 hr checks. Upon return a friend asked if I had encountered any problems. Yes....allow extra time for gas stops. Numerous pictures were taken and in one case a small town newspaper picked up on it. Enroute I was amazed at the hospitality given by total strangers. At one point while waiting out thunderstorms 6 miles to nearest town a "free" car was furnished In all cases free overnight hangers were offered. A crowd never failed to gather even at seemingly small airports. FAA and FSS personel were all very accommodating. At this point, I'm near 200 hrs total time with no problems. I'm quite satisfied with the KR-2 and continue to find it better as I "grow" with it. As Ken maintains, it is definitely a good traveler. So, you dreamers, finish your craft and allow it to show you these dreams. The KR-2 is up to the task.....Murray Rouse, 2112 Crest Dr., El Cajon, CA 92021.

From Barnaby Wainfan, 315 S Division #1, Ann Arbor, MI 48104.....I had a chance to run throught the tail incidence numbers for the KR-2. These numbers are for a gross weight or 800 lbs and CG in the center of Rand's specified range. The stabilizer incidence is with respect to the wind chord line at the root. The incidence with respect to the fuselage datum line is determined by adding the incidence angle of the wing chord line with respect to the fuselage datum to the tail incidence shown in the table. The rounded off valves are close enought to use. There's no pay-off in trying to measure .01°. Notice that a variable incidence stab would only need about 4° or 5° of travel to handle all trimming tasks.

V CRUISE IN MPH	EXACT INCIDENCE WITH RESPECT TO WING ROOT CHORD	ROUNDED OFF TO 1/2°
100	−6.47	−6.5
110	−6.35	−6.5
120	−5.51	−5.5
130	−5.15	−5.0
140	−4.76	−4.5
150	−4.35	−4.5
160	−4.14	−4.0
170	−3.92	−4.0
180	−3.30	−3.5

NEGATIVE IS L.E. DOWN

How do you like the new logo for the Newsletter? KR Club members will recognize it as the club emblem on their membership cards.

I have been contacted by a firm that makes brass belt buckles with assorted designs cast in relief (including aircraft). They want to make KR-1 and/or KR-2 belt buckles but want someone else to come up with the money for the molds and then order a minimum of 150 buckles. My question is this, are there 150 guys out there who want the belt buckles? Cost will be in the $5.00 to $6.00 range. Let me know if you are interested.

While you're at it, consider the new logo as a possible design for the buckles or jacket patches for KR builders. I think it would look great but I have to know how you feel about them before I would order them. Drop me a line soon!

BUY SELL TRADE

FOR SALE: KR-2 project...fuselage complete to step 3.18, plus assorted materials, plus two VW engines, one set dual part heads, plans, all Newsletters....$600.00. Jim Dillner, 2603 SW 9 Ct., Fort Lauderdale, FL 33312 or phone 305-791-3421 home or 305-581-3772 bus.

KR-1 Fiberglass Components...cowling, fuel tank, turtle deck, instrument panel. For more info write to Danny McCormick, 16902 Happy Hollow, San Antonio, TX 78232 or phone 512-494-6832.

Converting a VW yourself? Make it better with bolt on parts. Send a S.A.S.E. to Dan Diehl, 4132 E. 72nd St., Tulsa, OK 74136 or phone 918-492-5111.

VENNE KR CONSTRUCTION

Most experienced KR builder offers complete technical assistance, inspections, and construction. Charges to suit any budget...international inquiries welcome.

919 Grand Ave., Long Beach, CA 90804

or phone 213-433-0520

MINIATURE METRIC MACHINE SCREWS, BOLTS, NUTS, WASHERS, STEEL, STAINLESS STEEL. DIAMETERS FROM 2-14 MM. WRITE TO US WITH YOUR NEEDS AND DESCRIPTIONS.

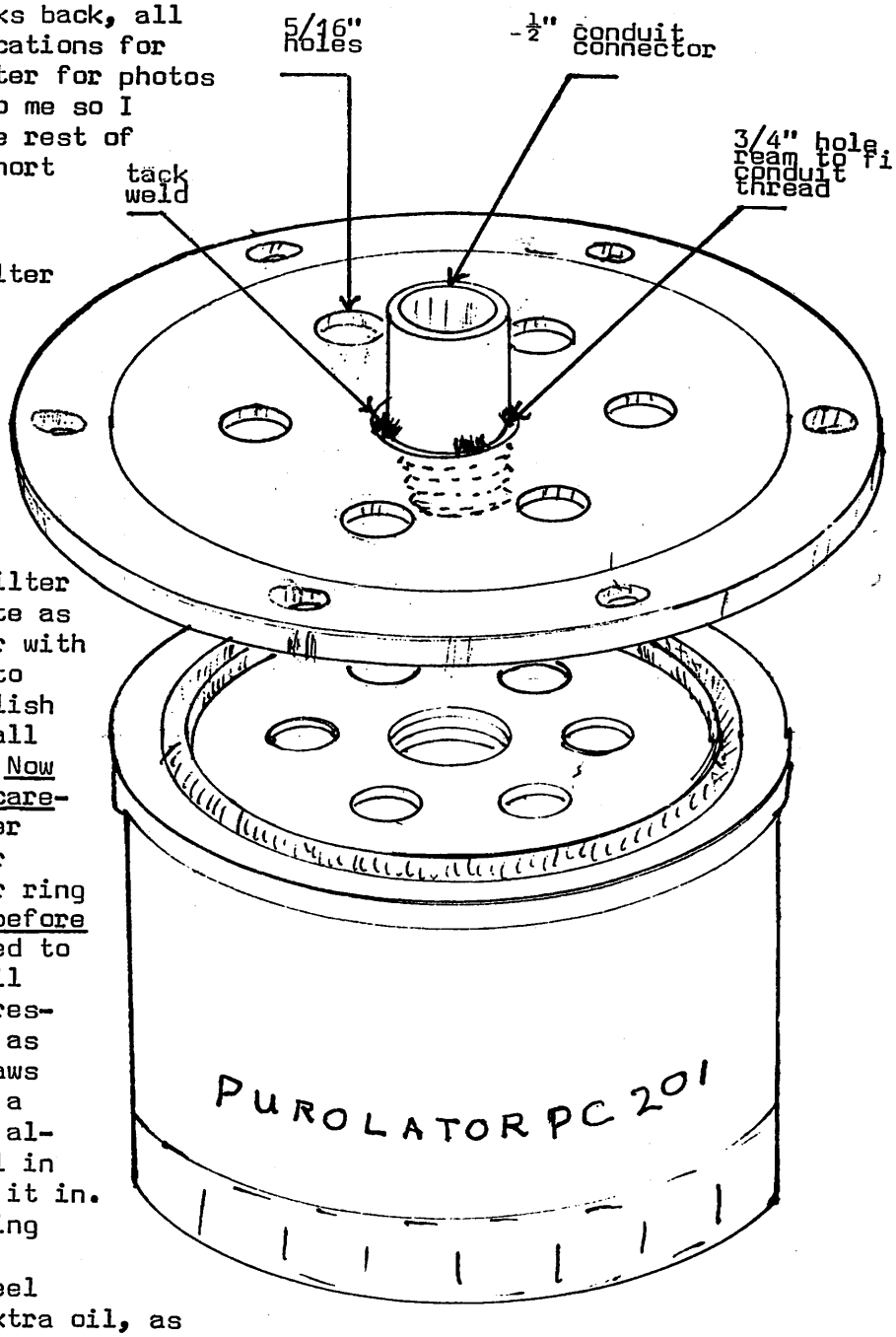
MINIATURE METRICS
7801 14th ST.
WESTMINSTER, CA 92683

QUESTIONS & ANSWERS

Q. Why doesn't Rand use polystyrene foam in place of polyurethane foam?
A. Although the polystyrence is stronger than the polyurethane foam, it is highly susceptible to fuels & solvents. If you use polystyrene <u>be sure</u> there is no possible chance of contact with fuels and solvents.
Q. What happened to the long wing KR-1B? Haven't heard anything for a while.
A. The KR-1B and the KR-3 are projects that get attention in between modifications and improvements to the KR-1 and KR-2 (which is an on-going thing) so work on them sometimes progresses slowly. The KR-1B could be flown in a couple of weeks but the KR-3 is months away.
Q. If you were building another KR-2 what wing section would you use?
A. I don't think it would be possible to get any better performance than with the RAF 48. A 160 MPH cruise and 42 MPH stall are hard figures to beat.
Q. On page 19 of the KR-2 plans book step 6.11 says to "adjust 'down stop' position bolts for maximum forward travel position of the wheels". WHAT 'down stop bolts'?
A. Even though Rand's gear retract system contains a <u>minimum</u> amount of moving parts eventually some wear will cause the latches to have more free play than desired. By installing two adjustable stop bolts some place in the system this unwanted slack can be adjusted out. The bolts are usually installed in the hinges attached to the spar so that the bolt head acts as a stop for the spring bar.
Q. How far down must the wing attach fittings be to allow for the contour of the airfoil?
A. I centered the main spar attach fittings in the spar caps. The rear spar fittings should be as follows: bottom, center in the bottom spar car; top, lower edge of fitting should be approx. 1/8" higher than the bottom of the spar cap to allow for the airfoil contour.

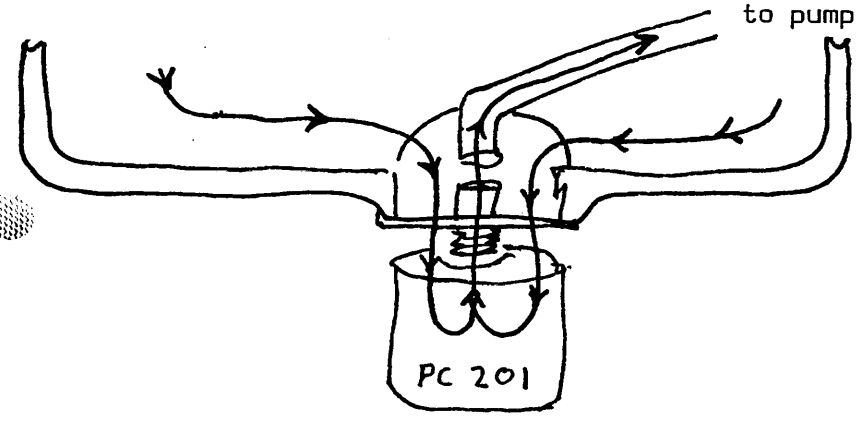
NOTICEDue to volume of mail I can no longer answer questions by mail. They will be answered in the Newsletter each month or you may telephone. Phone number is 714-897-2677, call after 5 p.m. Pacific time.

Bill DeFreze phoned me a couple of weeks back, all enthused over one of his latest modifications for his KR. (See issue #35 of the Newsletter for photos of his tri-gear KR-2.) Sounded good to me so I asked him to send some sketches for the rest of us. The following letter arrived in short order:



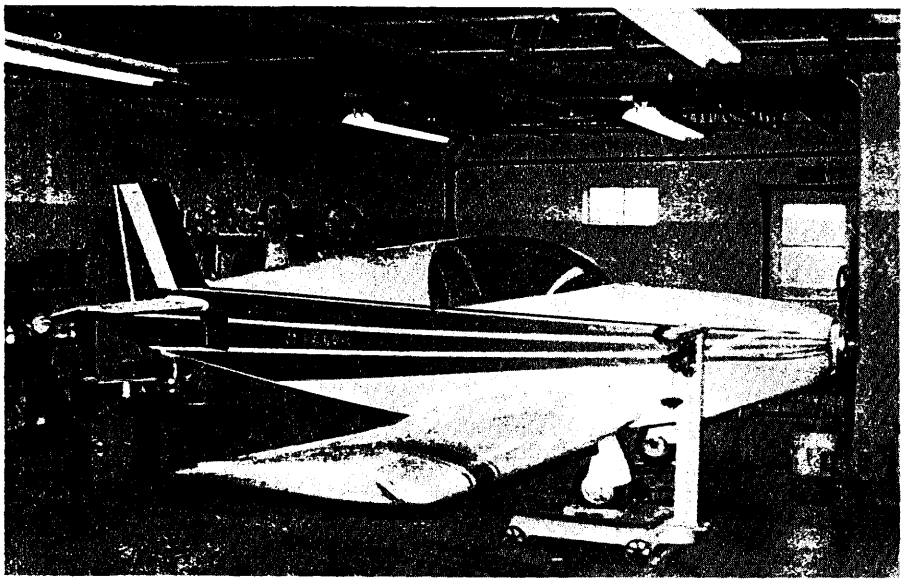
Dear Ernie,

Here is that design for a VW oil filter I was telling you about. First, go to a local hardware store & pick up a standard ½" conduit connector. From your auto parts store, pick up a Puralator PC 201 (or equal) fileter & a filter wrench to fit. Second, take a ½" pipe tap & lock it in a vise upside down. Take the oil filter and re-tap the filter thread. Be careful to get it started straight & use the filter wrench. Third, drill out the sump plate as illustrated. Install conduit connector with retaining nut & tack weld at shoulder to sump plate. Remove retaining nut & polish away all paint & slag. You can paint all areas outside of filters rubber seal. Now the important part. Warning!!! Read carefully. All oil filters of the cannister type that I looked at were designed for pressure systems. So there is a rubber ring valve inside the filter built in. So before you install the filter it must be primed to its fullest point. Let me explain. Oil drains to the pan in VWs so the only pressure is on the pump pressure side. So as the engine starts, the pick up line draws on the oil in the filter which creates a vacuum and opens the rubber valve thus allowing the oil to flow freely. The oil in my engine is as clean as the day I put it in. I'm sure you fellows have the same feeling I do about oiling our engines and know that carbons are our worst enemy. I feel this filter system gives us a little extra oil, as well as a better sight feeling on oil contamination. I would appreciate anyone trying this system out, to report to me thru Ernie and the Newsletter or direct to me. Now if you have the smaller pick up tube as in the 36 hp, then find a small pice of rubber hose and slip over the pick up tube all the way to the bell and the same procedures as before apply.



Good flying,

Bill DeFreze
7530 Ironwood Dr.
Dublin, CA 94566
Ph. 415-828-2111



KR-2 built by Ernie Hills, 1942 Split Rock Dr., Lancaster, PA 17601

Ernie is one of our more prolific letter writers and many of the questions appearing in past Newsletters were asked by him first. The photo here is his KR-2 getting weight and balance info just prior to the first flight, which he made himself. I would like to say the flight was an unqualified success but unfortunately this is not the case. Take-off, climb-out, etc. all went fine, and Ernie was climbing away from some friends in a chase plane. The landing however did not go as smooth...an incident on roll-out cost him his prop. Ernie attributes the problem to over control and is considering changing the geometry in the controls to make the KR-2 a little less sensitive. If you have ideas of your own along this line, why don't we get some imput for the Newsletter. A little pro & con along this line might be a good idea.

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
ISSUE #40

KR

NEWSLETTER

#41

KR CLUB NEWS.....On Oct. 1st some members of the KR Club in the Southern California area met at Corona Airport for an informal get-together and picnic. About two dozen people (members and their wives) were on hand to enjoy some sunshine and talk about airplanes. Butch Crafton flew his KR-1 up from San Diego to be there and I'm sure gladlhe did. Seems as tho all other parts of So Cal had a bad case of "low clouds and fog", typical weather for this time of year. Butch's KR was the only flying speciman to make an appearance. Ken Rand was present but he drove in because of the weather situation. Paul Vennes's KR-2 is based at Corona but Paul was in the middle of doing a valve job on his engine and wasn't able to fly that day. All in all, everyone enjoyed themselves so we will set up another day for a KR Club picnic here soon and hope the weather co-operates a little better.

Why don't you take a look around your neighborhood airport, see if there is a park, hangar, or whatever that a few KR club members might meet for a picnic or bull session.

Pick a date, tell me about it 45 days or more in advance and I'll put a notice in the Newsletter.

The last issue (#40) suggested using the new logo for a patch and buckle. Response has been very much to the affirmative so I am having some made. Might be available by next issue, I'll let you know then.....E.K.

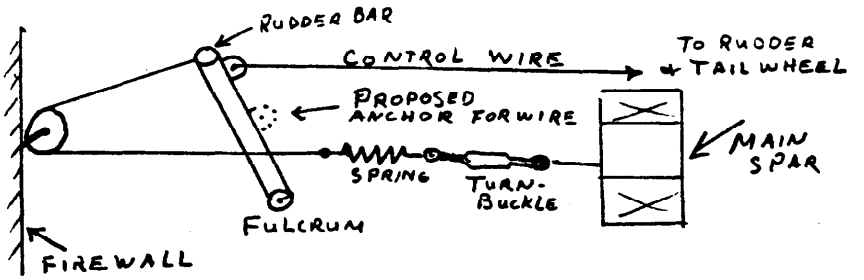
P.S. Ken Rand just made the 1st flight in Warren Vicents KR-2 at Santa Paula airport. The flight was cut short by an over-heating problem, but was very successful in all other respects. Warren's phone number is 213-882-6173.

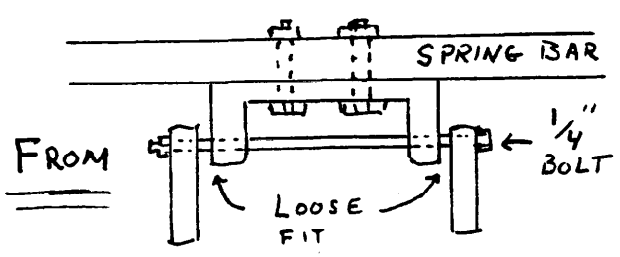
The newsletter editor for EAA Chapter 588 is a Mr. Robin Butler. Robin takes this duty seriously and turns out a fine newsletter each month, of which I sometimes borrow for the KR Newsletter. These latest tips are especially for KR builders and I"m sure you will find them interesting....."My KR-2 is coming along steadily, mainly because I'm spending every spare moment on it. Painstaking care in building the fuselage side frames and equal care in bending the sides to complete the fuselage pays off. My center section spars sqaure and parallel without shaving, cussing, or other finagling. I used a piece of oak 3/4" x 2½" x 60" in place of the landing gear spring bar to get all fittings correctly placed and drilled. Then the oak board served as a drill template for the spring bar. Eliminates the possibility of making mistakes on the costly spring bar! Also, since my spars rested perfectly in the fuselage, I did not glue them in until <u>after</u> all landing gear pieces, etc., had been aligned and drilled, including wing attach fittings (center spars only). Drilling could be done on the drill press simply by disassembly, removal, and re-assembly outside the fuselage. Takes a little more time but results in truer holes. I fell in love with E.H. Nelson's tip in KRN #38. Best I could find, however, was a 5" swivel caster from Fleet Farm, so I am doing a little tailoring but it's still worth it in time saved making the stick assembly. Another way to really polish those aluminum fittings is to use a cloth buffing wheel and the proper buffing compound. I am using a Sears compound kit which has 4 sticks of different compound including 2 grades of jeweler's rouge. Just follow the directions on the box for a super shine job on <u>any</u> metal fitting. One caution however, excessive heat caused by the friction of the cloth buffing wheel can anneal (soften) aluminum. Best to hold pieces in bare fingers and as soon as you feel the aluminum becoming <u>warm</u>, put it aside to cool while you buff another piece..... I used a spray can of Rustoleum #960 primer on my steel fittings. According to the manufacturer's specs, it is zinc chromate, even tho the label does not make that clear. I am told that the same item, sold by aircraft suppliers, <u>does</u> specifically say on the label that it is zinc chromate. Just another tip for the shrewd.....Here's something I picked up from a Designee's Newsletter on the shoulder harness plate-tail wheel assembly. I cut another wedge block with the same angle as the block above the tail wheel spring plate and installed it inside the fuselage, under the 4130 plate which is my shoulder harness attach. That eliminates any need for tapered washers and gives the harness attach plate a nose-high pitch more in line with pull forces from the shoulder harnesses. Two quarter inch bolts (insteadof 3/16) hold everything together. (Yes, the carbide-tipped masonry bit is the only way to drill spring steel!).....I have located expert help to assist me in building up the 95 hp Corvair engine. We are going for high performance--except that out goal is not high performance but rather, super reliability. It will be direct-drive, single sparkplugs, and breakerless electronic ignition. Already smooth-running, we are balancing even further. That's about all I can say for sure now but will keep you informed."....Robin Butler, 1841 Michigan Ave. Manitowac, WI 54220.

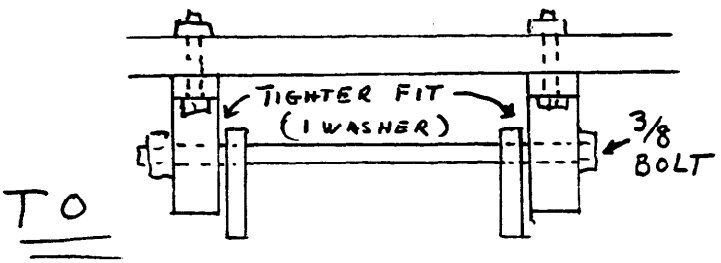
TIPS FROM OTHER BUILDERS

Couple of weeks ago I received a phone call from one very disgruntled KR builder. He was having problems with ground handling of his KR-2 to the point of wondering if it would ever fly. The following letter just came in.....

From Bob McLoughlin, 39 Forest Rd., Burnt Hill, NY 12027....."After our phone conversation about steering difficulties with our KR-2 we have tried some changes which I think are very interesting. The first thing we did was provide heavier springs to hold the rudder pedals in against the firewall. For this purpose, pulleys were fastened to the inside of the firewall and cables led through the pulleys to turn buckles (for adjustment) and springs anchored on the main spar. The springs had a force-deflection ratio of 14 lbs. per inch. We immediately found with this set-up that the rudder and tail wheel would not return to the zero position when deflected, either when the springs were tight or loose. This pointed up to the real problem which was friction in the fairlead tubes which were <u>phenolic</u>. Upon removing the rudder wires from the fair lead tubes (which held them to the fuselage sides to pass around the pilot and passenger) the friction disappeared. The rudder and tail wheel now snap back to the zero deflection position very nicely. We tried out the no friction rudder wires and springs by sitting between them with the stick between our legs and with feet on cut-board rudder pedals. Control was much, much improved. Apparently what we had before was a stick-up situation where it was almost impossible to make small corrections. The result was a weaving course which became a more and more exaggeration and resulted in our going off the runway several times,even at speeds below 40 MPH. Talking to Rand about this, he says he used nylon tubes and did not experience this problem. However, even nylon must have some friction so after our experience I am going to re-design the rudder controls with pulleys. I will keep the spring feature and also move the anchor point for the control wires down to halfway between the rudder bar and the fulcrum in order to double the foot movement for a given rudder/tailwheel deflection. Others may be having this problem to a lesser degree even with nylon tubes. Perhaps this explains the wide difference of opinions I see in various pilot reports on ground handling. I think at the very least the plans should have specified nylon or teflon tubing, but I wouldn't use tubing fairleads of any kind now. Another difficulty we have had is with the spraddle of the landing gear legs, causing excessive tire wear on the inside edges

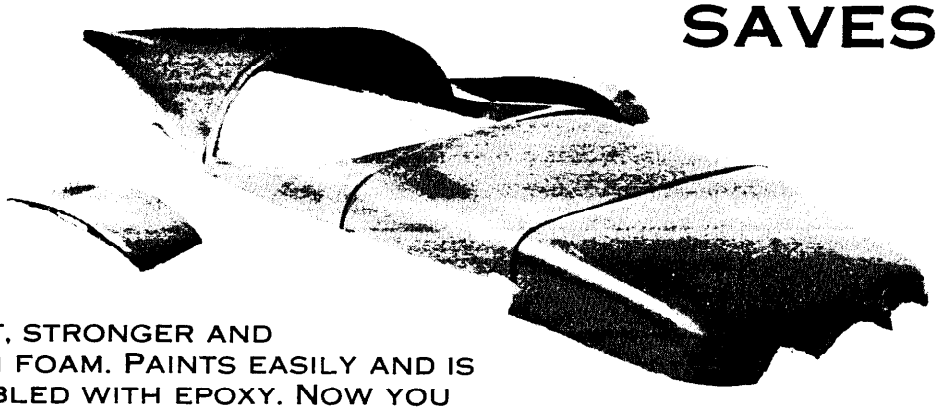






of the tires. We are putting larger pins in the landing gear pivots because the $\frac{1}{4}$" bolts bend due to the poor fit between brackets on the spring bar and ears on the casting bolted to the spar. We will replace the brackets with $\frac{1}{2}$" thick aluminum blocks bolted directly to the spring bar and 3/8" pivot bolts. Even after this improvement I expect about half the spraddle we now have. What should be done is to cock the gear legs slightly on the spring bar so they will be straight up and down when bar is deflected. I don't think we can do this without re-doing our wheel wells in the wings. It's a shame this problem wasn't pointed out by the designer because it would be easy to do if done before the wheel wells were put in. I hope the Newsletter can warn others before they make the same mistake we did. By the way, Rand suggested a fix for the above by tilting the axle in the legs. This is NOT possible with our wheels and brake drums as there is just no room to tilt the assembly. I <u>am</u> going to look for narrower wheels, however."

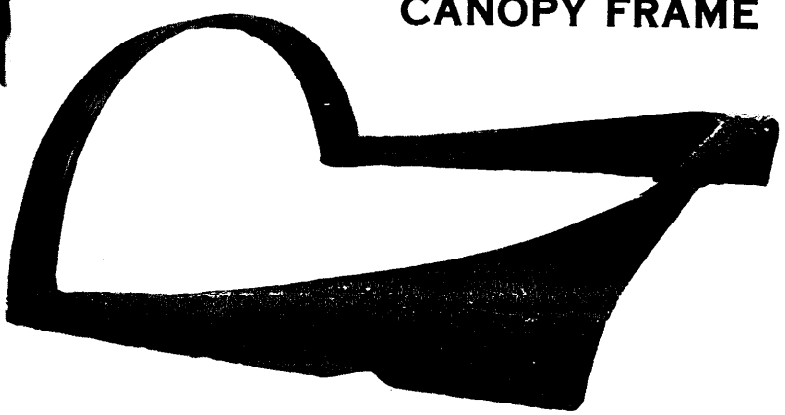
PRE-MOLDED FIBREGLASS KITS . . . SAVES TIME!

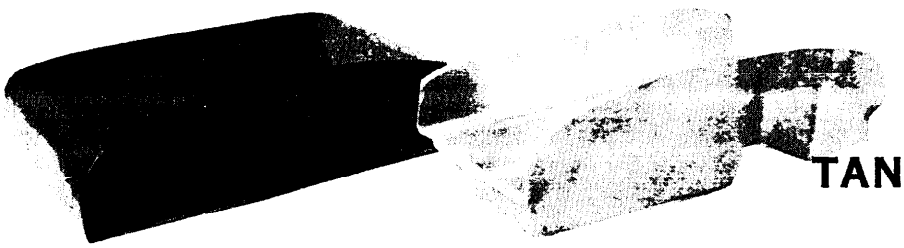


LIGHT IN WEIGHT, STRONGER AND SMOOTHER THAN FOAM. PAINTS EASILY AND IS QUICKLY ASSEMBLED WITH EPOXY. NOW YOU CAN SAVE MANY HOURS OF ASSEMBLY TIME . . . WITH SUPERIOR RESULTS.

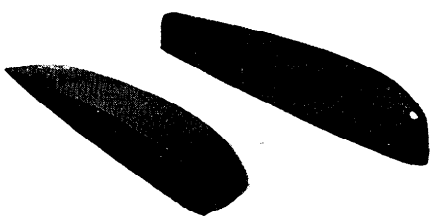
KR-2
TURTLE DECK

KR-2
CANOPY FRAME





KR-2
TANK AND DECK



WING TIPS FOR KR-1 AND KR-2

KR-2

TURBO - KR-1

OCTOBER 20, 1978

- Please send orders and make checks payable to:
- California orders add 6% sales tax.
- Shipping is collect, best way.

RAND ROBINSON ENGINEERING, INC.
5842 "K" McFadden Avenue
Huntington Beach, California 92649
Telephone (714) 898-3811

TIPS FROM OTHER BUILDERS (cont.)

Ready to make your aileron balance weight? Here's a handy tip. Use one of the 2½ to 3 lb. pear shaped fishing weight you can buy at most any sporting goods store. Cut it in half lengthwise and you have a streamline shaped weight you can trim or further shape as needed.....Jack Moel.

Several KR builders plan on using styrofoam rather than urethane foam. If you are one of these, keep this note of caution in mind. Pin holes are almost completely unavoidable when doing cloth and resin lay-ups. Make sure <u>all</u> of these tiny holes are filled with a filler made up of equal parts (by volume) of epoxy and micro-balloons. This will help insure that the aromatics in the paint of your choice will not damage the foam thru these pin holes.

VW ENGINE PROBLEMS.....Baffling for your VW engine is just important in your aircraft as it was in the car it was lifted from. Recent engine failures because of overheated engines is bringing this point forcefully home. I personally know of four engine failures resulting in forced landings that could have been avoided thru judicious use of a little sheet metal. Take a good long look at factory aircraft engine baffling installation. Notice how the cooling air flow is directed to obvious hot spots around the cylinders and heads. What your VW engine needs is the same basic cooling system the factory put on their engines. I know how impatient you can get when your aircraft looks so complete. The urge to fly the project you've devoted so much time and effort is almost overwhelming. DON'T DO IT!! A week-end spent with a pair of tin snips can mean many trouble free week-end later.....E.K.

Every now and then I get a lot of response to something in the Newsletter. Last issue (#40) had two things that really evoked letters and phone calls from readers in all parts of the country. First there was a mix-up of pages during printing which led many to believe that there was a page missing. There wasn't....my apologies for the confusion. Second (and more important) was the use of a rubber hose as part of the oil pick-up on the oil filter modfication sent by Bill De Freze. My phone started ringing almost the same day I mailed out the Newsletter and I have been getting letters everyday since. The theme was all the same: <u>Rubber and oil do not mix!!</u> Bill, I and obviously almost everybody else, know this but in case you don't: Oil, especially hot oil, is death on rubber. If you have the small VW engine which would require the use of a hose, use re-inforced neoprene.

BUY SELL TRADE

Rand KR-2 cowling. New, never used--$75.00. Tom Loftin, 3675 Noland Rd., Suite 150, Independence, MO 64055

Wanted: KR-2, complete or project. Phone Ed Woolsey at 714-444-7161.

Wing spar drilling fixture w/drill--$7.50 ea. post paid. Swaging tool for 1/8", 3/32", 1/16" Nico press sleeves...$9.95 post paid. Roska, Box 57, Greenvale, NY 11548.

FOR SALE: <u>Complete</u> unopened KR-1 kit. Includes wing tips, all hardware, duel mag engine mount, easy eye canopy, etc.... $1100.00 or trade for radio gear, Nav/Com, A.D.F., or C-85, C-90, O-200 parts. Will pay shipping of kit. Changing jobs, no place to build. Ron Fike, Box 53/748 ACW, Kotzebue, Alaska 99752. (907) 748-1289..no collect calls please.

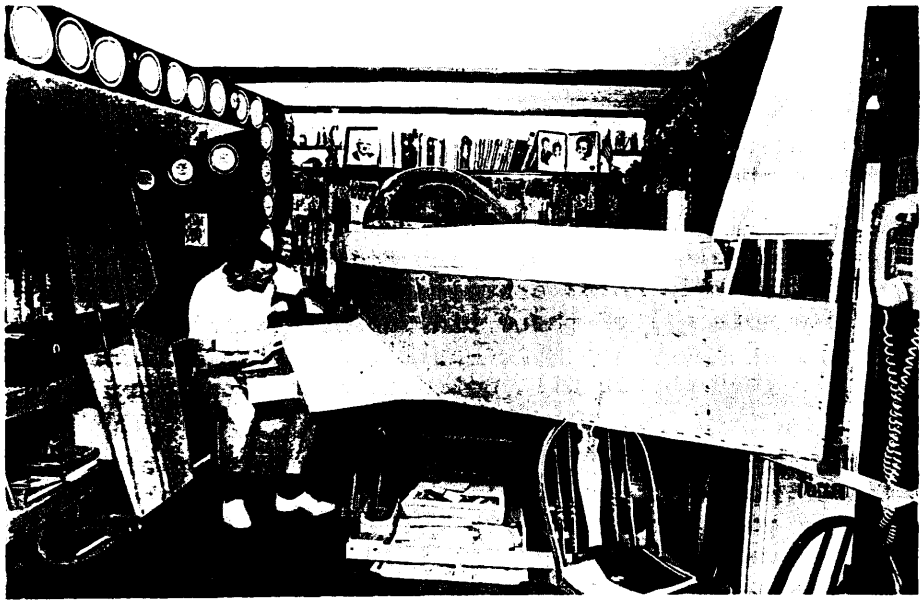
FOR SALE: Allergic to epoxy. Must sell KR-2 project complete to paragraph 12.20, plus materials to complete...$1600.00 less engine and instruments. F.Blair Gaffney, 1403 Chico, Carlsbad, NM 88220 (505)887-3697 home or (505) 885-2121 business. No collect calls please.

WANTED: Engine mount to fit Gilbert Duty's VW conversion. Johnny Hinton, Rte. 5, Box 191 F, Florence, Alabama.

Coast Pro-seal adhesives, ¼ pint kits. Jim Snyder, P.O. Box 696, Hesston, KS 67024.

"Supercase"...bolts on to your VW engine, 1300-2200 cc. Write for details, S.A.S.E. appreciated....Dan Diehl, 4132 E 72nd, Tulsa, OK 74136.

KR-2 project, two sides of fuselage completed, part of bottom and spars. Enought wood to complete. Make offer....call 714-494-7991 after 5 pm.



Over the period of three and a half years the Newsletter has been published I have heard of KRs being built in several unusual places...bedrooms, living rooms, even in a brownstone apartment in New York. The topper of them all so far is in this picture. Bill Egner, R.R. #2, Box 99, North Stonington, CT 06359 is building his KR-1 in his house trailer, (8' x 38')....now that is dedication!

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683

ISSUE #41

KR NEWSLETTER

Issue No. 42
December 1978

RATES
1 Year $9.00
O/Seas Airmail $15.00
Back Issues .75 each

NEWSLETTER

HAPPY HOLDIDAYS!!

The holiday season is back with us again. Seems as though I just dried out from last winter. Believe it or not, there are still fly-ins thru the winter months for us die-hards to enjoy. On Dec. 1, 2, & 3 there is a fly-in at Mexicali on the California-Mexico border. I understand they have a great airshow. Then there is the 5th annual Sun-N-Fun fly-in at Lakeland, FL on Jan 21 thru 27. Ken Rand will be there with his KR-2 again this year.

This issue of the Newsletter contains all pertinent drawings concerning construction of the flap system as used by Ken Rand on the KR-1 and -2. I don't usually devote an entire issue to one subject but feel this is an exceptional case due to the amount of interest generated by the flap system. The drawings are by Lisle Knight, 36 Margaret Ave., San Francisco, CA 94112; one of our talented KR club members.

The KR logo belt buckles and patches will be available by the time you receive this Newsletter. Sorry there isn't space for a picture...maybe in the next issue. Price of the belt buckle (antique brass finish) is $5.50 (overseas add $1.00 and Calif. residents add 6% sales tax). The patches are blue and white and will sell for $1.50 or three for $3.50.....Ernest Koppe.

BUY SELL TRADE

"SUPERCASE" adapts your VW engine to aircraft use. Starter, alternator and magneto are bolt on items. Send S.A.S.E. to Dan Diehl, 4132 E. 72nd St., Tulsa, OK 74136.

RETRACTABLE TRICYCLE GEAR!! See photos in Newsletter #35. Plans that utilize Rand's parts are now available....$20.00...Bill DeFreze, 7530 Ironwood Dr., Dublin, CA 94566 or phone 415-828-2111.

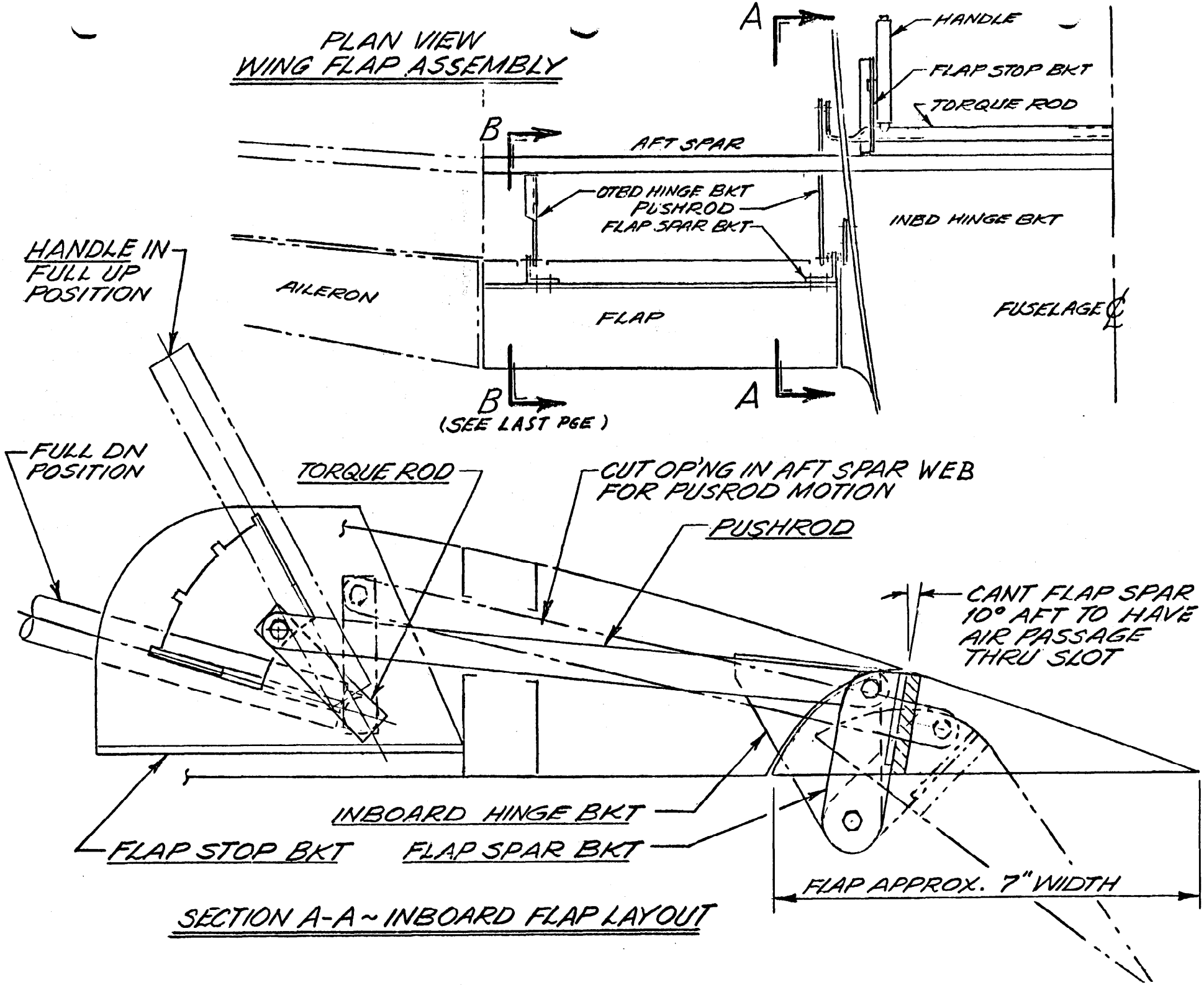
KR-1 Fiberglass components...cowling, fuel tank, turtle deck, instrument panel. For information write to Danny McCormick, 16902 Happy Hollow, San Antonio, TX 78232.

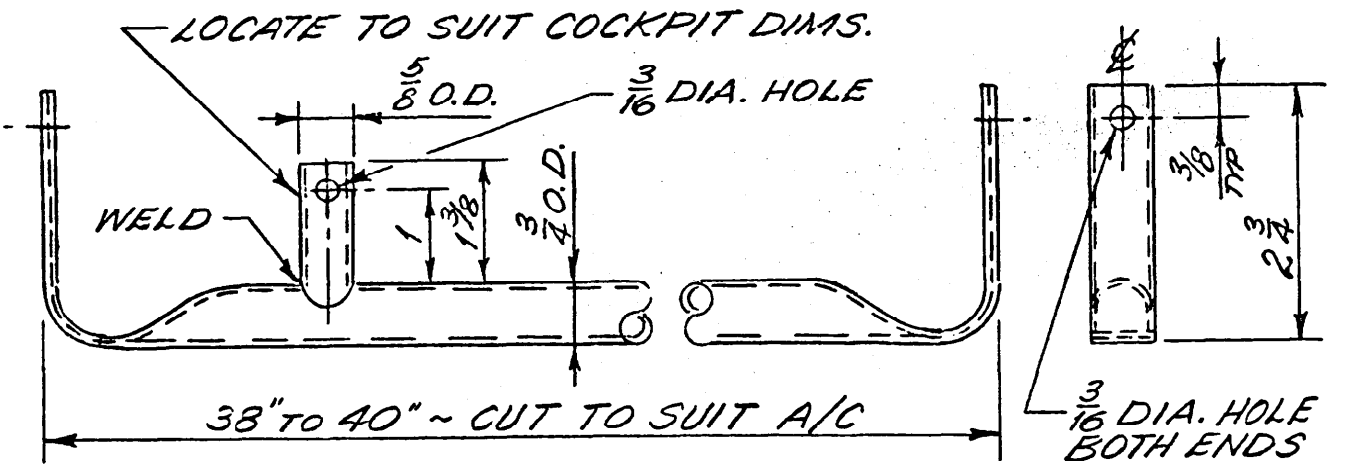
KR builder attending Sun-N-Fun desires first ride in KR. Also, ride wanted to Sun-N-Fun from Washington, D.C. Tom Hoopengardner, 1658 Primrose Rd. NW, Washington D.C. or phone 202-291-2135.

Australian KR Builders...you can buy all your fiberglass KR-1 & -2 parts from an Australian supplier. These parts are built under license to R/R and will save you the cost and delay of overseas shipping. Raylin Pty., Ltd., P.O. Box 37, Mermaid Beach 4218, QLD, Australia. Gold Coast 075-38-4848.

Barker 80 PH VW conversion. Never used, complete w/starter alternator, and 2½" prop extension...Steven Wiese, Ulita Manufacturing Inc, P.O. Box 412, Sheboygan, WI 53081 or phone 414-458-2842.

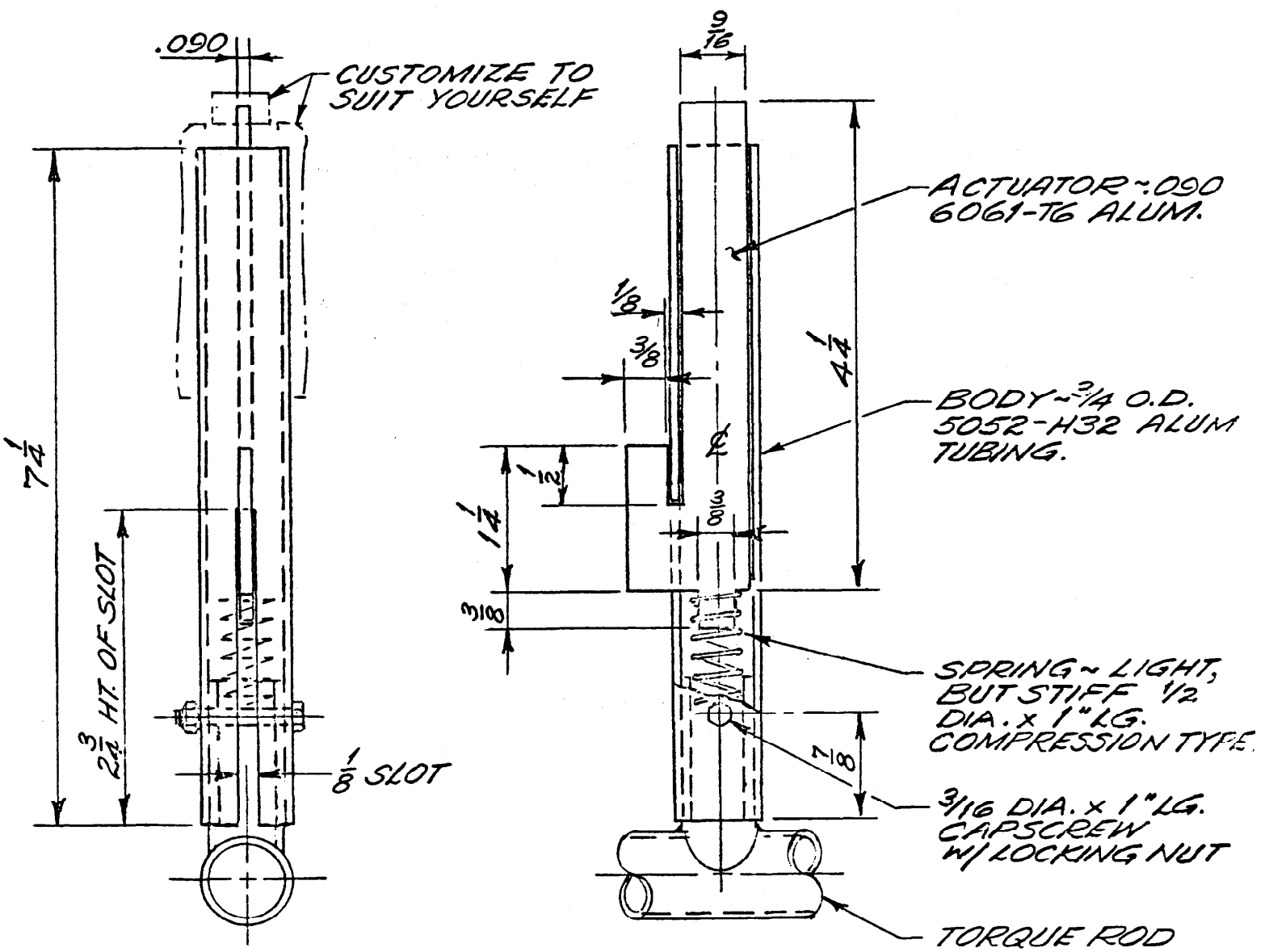
KR-2 for sale...(see Newsletter #40) TT 65 mins. air and approx. 10 hrs ground and taxi tests...$5000.00. Ernest Hills, 1942 Split Rock Dr., Lancaster, PA 17601.


PLAN VIEW
WING FLAP ASSEMBLY
A
HANDLE
FLAP STOP BKT
TORQUE ROD
B
AFT SPAR
OTBD HINGE BKT
PUSHROD
FLAP SPAR BKT
INBD HINGE BKT
HANDLE IN FULL UP POSITION
AILERON
FLAP
FUSELAGE ℄
B
A
(SEE LAST PGE)
FULL DN POSITION
TORQUE ROD
CUT OP'NG IN AFT SPAR WEB FOR PUSROD MOTION
PUSHROD
CANT FLAP SPAR 10° AFT TO HAVE AIR PASSAGE THRU SLOT
INBOARD HINGE BKT
FLAP STOP BKT
FLAP SPAR BKT
FLAP APPROX. 7" WIDTH
SECTION A-A ~ INBOARD FLAP LAYOUT

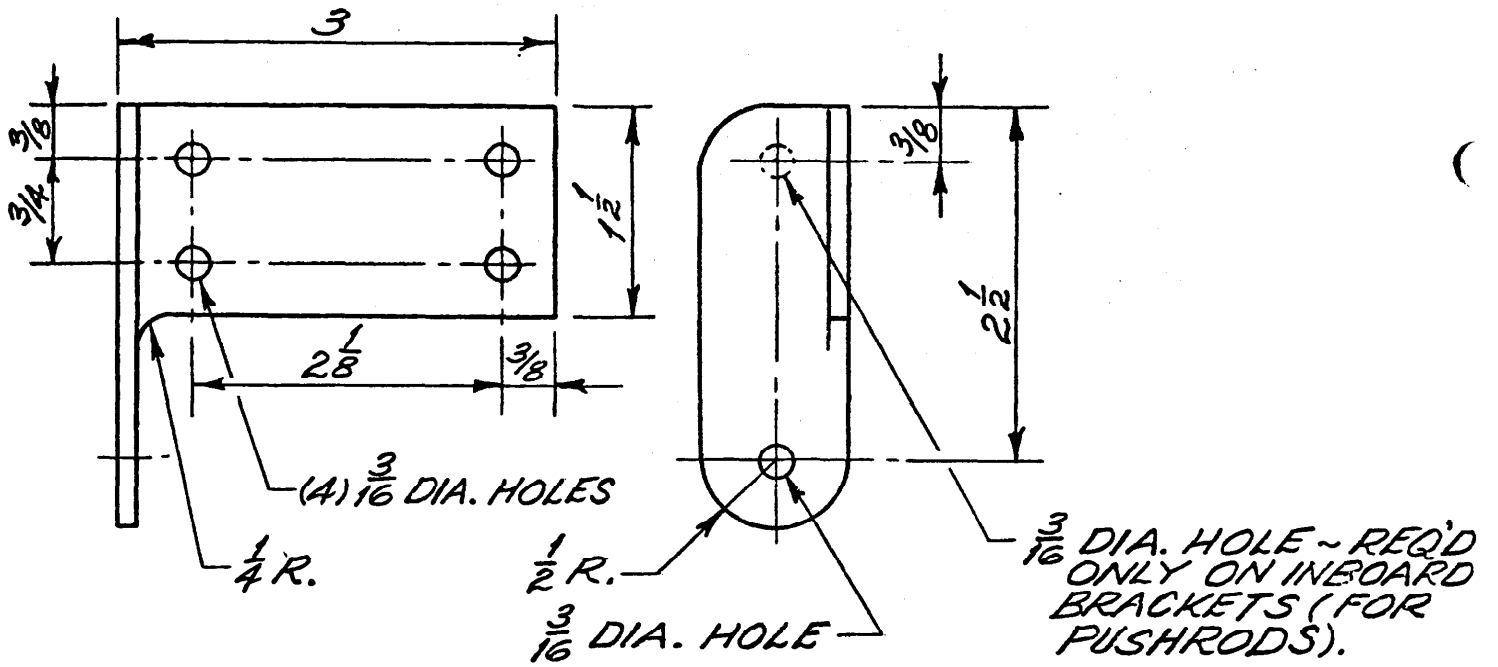


TORQUE ROD

MAT'L: 5052-H32 ALUM. TUBING

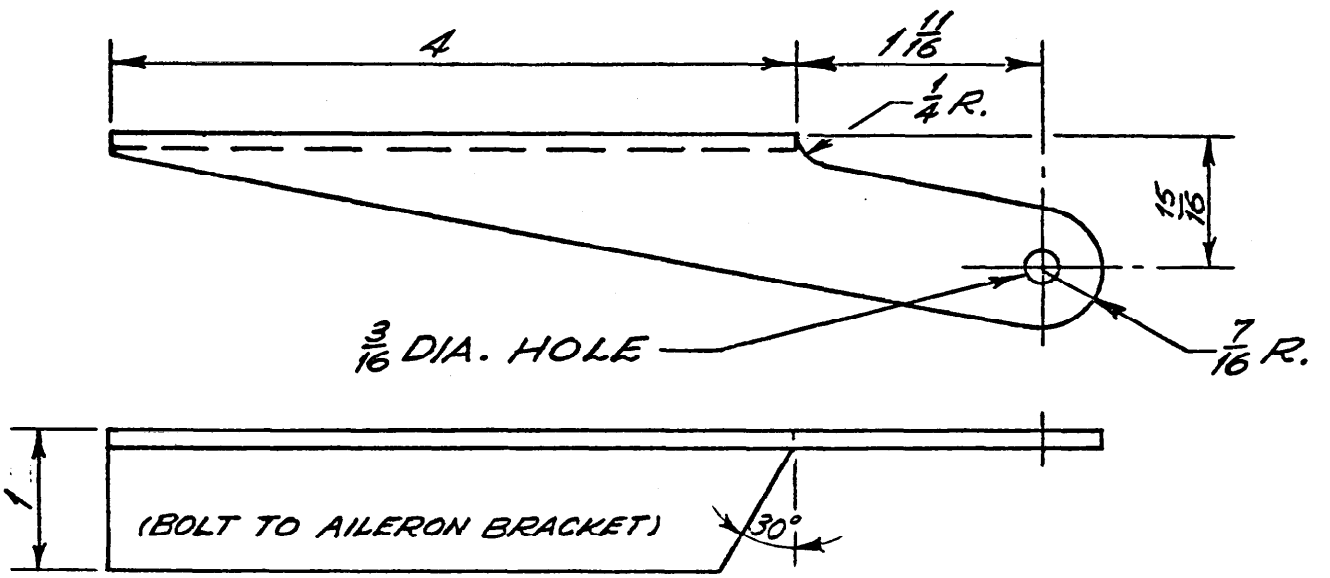


FLAP HANDLE ASSY



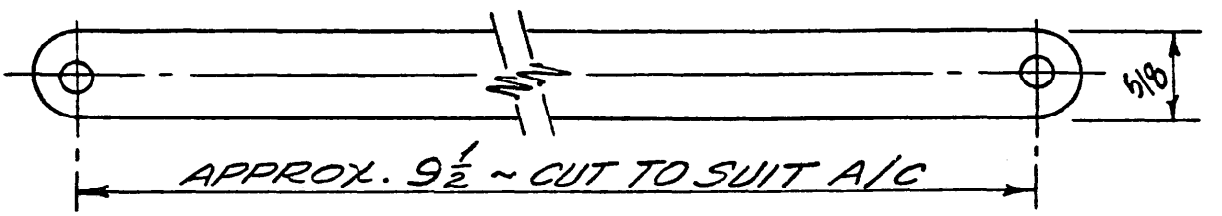
FLAP SPAR BRACKET

MAT'L: .125 6061-T6 ALUM. (2) REQ'D ~ AS SHOWN
(2) REQ'D ~ OPP. HAND



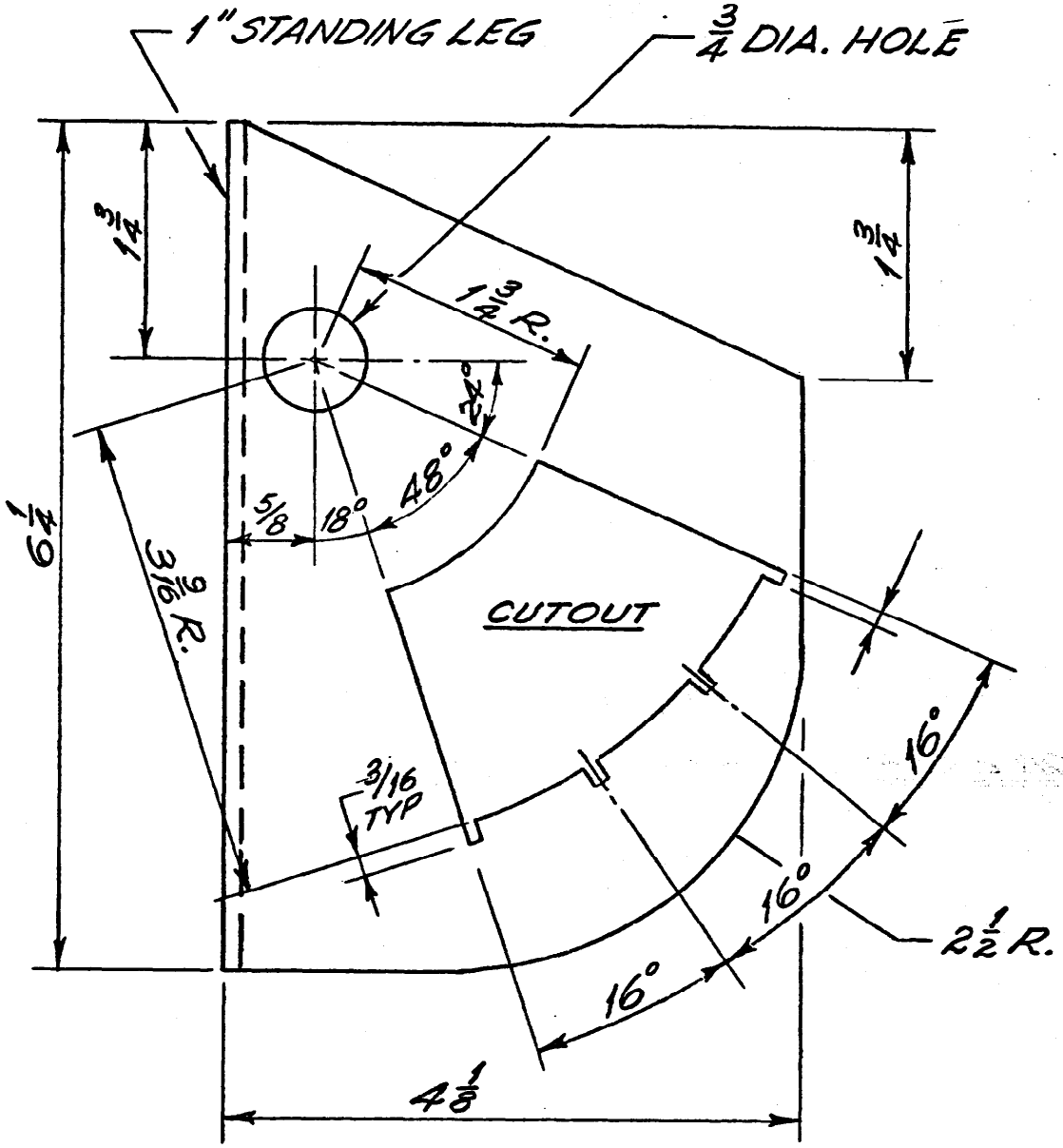
OUTBOARD HINGE BRACKET

MAT'L: .125 6061-T6 ALUM. (1) REQ'D ~ AS SHOWN
(1) REQ'D ~ OPP. HAND



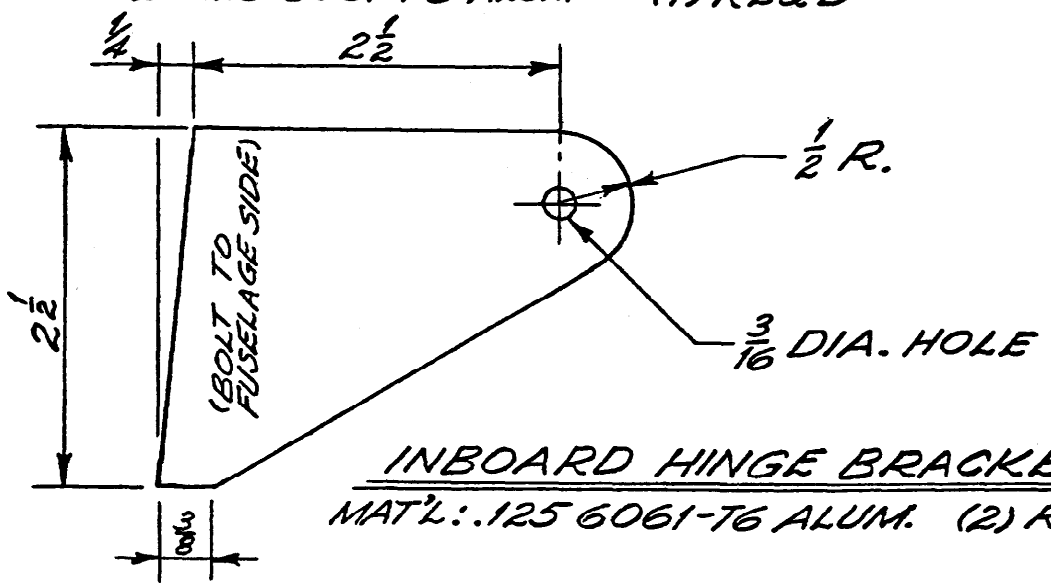
PUSHROD

MAT'L: .090 6061-T6 ALUM. (2) REQ'D



FLAP STOP BRACKET

MAT'L: .125 6061-T6 ALUM. (1) REQ'D

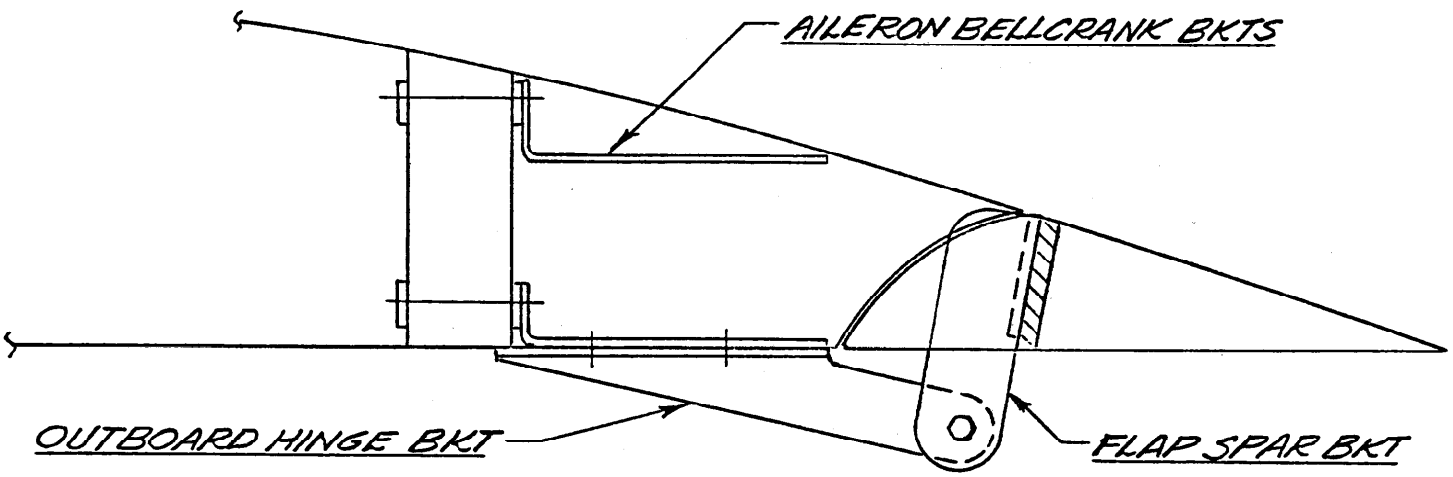


INBOARD HINGE BRACKET

MAT'L: .125 6061-T6 ALUM. (2) REQ'D

NOTES: 1. WHEN BOLTING THRU WOOD USE BACK-UP PLATES (.063 6061-T6 ALUM.), TYP ALL PARTS.

Fabrication of this flap system follows the same technique used in construction of the ailerons as detailed in your plans book and is easily retro-fit to your KR-1 or KR-2. The flaps give a KR greater short field capability thru ending the tendency these light aircraft have to float before touchdown. Put them on your KR, you'll be glad you did!!



SECTION B-B ~ OUTBOARD FLAP LAYOUT

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
ISSUE #42

ISSUE NO. 43
JANUARY 1979

KR NEWSLETTER

RATES
1 Year $9.00
O/Seas Airmail $15.00
Back Issues .75 each

AN ENGINE FOR YOUR KR.....At one time there were only one or two sources of parts and information on converting the hardy VW into a reliable power unit for aircraft. This situation is changing at last and the problem now is to select the one best suited for our particular aircraft. I'm going to list some of the suppliers I have had personal experience with and know to be reputable firms.

First on the list would have to be Revmaster Aviation. We've all heard of them and in my estimation they have the very best engine currently available. Unfortunately they do not sell separate conversion parts or plans to the individuals who wish to build their own engines. Revmasters basic engine is the 2100 CC version that sells for under $2000.00, various options (which include turbocharging and constant speed prop) can bring the total up to almost $4000.00. If you think this is the engine for you I would suggest you get on their waiting list to be assured of having the engine when your project is complete, there are several ahead of you. The address for further info is Revmaster Aviation, Dept. A, Chino Airport, Chino, CA 91710.

The following suppliers are listed alphabetically. All have excellent products and any one of them might have just what you've been looking for.

Custom Aircraft Engines (formerly Volkspower), Box 441, Sanford, NC 27330. You will find Gilbert Duty at Oshkosh each year, displaying a sampling of his wares. This includes everything from complete engines to almost any part you need to build your own.

Diehl Enterprises, 4132 E. 72nd, Tulsa, OK 74136. Dan Diehl wanted to build a strong, compact engine for his KR-2 but did not find the currently available systems met his needs. So...he designed his own. Dan does not sell complete engines or even all the parts necessary to build your own. He does have one of the finest accessory cases I have yet seen, the "Supercase". I ordered one of these cases along with a flywheel, magneto drive and 20 amp alternator. There are provisions on the case for mounting the magneto and a starter, the alternator fits inside the case and to the magneto drive. I was extremely pleased at the way everything fit, no tweaking, grinding, or bending. It just fits!. Dan also has a couple of other items for KRs so drop him a line.

H.A.P.I., Hangar 4, Calexico Intl. Airport, Box 5951, Calesico, CA 92231. Rex Taylor is the guiding force behind one of the newest entries in the VW engine conversion market. From the looks of his product Rex is going to be with us a very long while. I saw one of his H.A.P.I. engines on a test stand at the Ramona, CA EAA Fly-in recently and was impressed with the quality and compactness of his engine not to mention the low price. The H.A.P.I. Model 60 (1835cc) is top of the line and includes starter, alternator, oil cooler, and Slick magneto w/harness as standard equipment, each engine is test run before shipment. The price is $1895.00 F.O.B. Calexico. I talked with Rex last week and he revealed that he has three engines ready for immediate delivery. They won't last long at these prices so if you need an engine in a hurry I suggest you give H.A.P.I. a try. Unlike Revmaster, H.A.P.I. will sell their conversion parts separately as well as several machine shop services for the individual who is building up his own engine.

These are not all of the suppliers by any means, only the ones I have had personal contact with and know to be conscientious and reliable companies. Write to them for further information if you are in the market for an engine or conversion parts. Include a S.A.S.E. for faster replies.

**A note of caution! It doesn't matter how good the parts you buy if the VW engine you are converting is not of the same quality. You can't pull an engine out of a car or junk yard and expect to get a trouble free aircraft engine by simply bolting on some conversion parts. An VW engine being considered for converting should be torn down, inspected, and re-assembled using the appropriate manuals. Torque values of the assorted studs and bolts are extremely important for proper assembly, close attention here will enhance the reliability of your engine.

QUESTIONS & ANSWERS

Q. What is the status of the KR-3?

A. The hydraulic system on the landing gear is currently being completely re-plumbed. Some foam work is done on the wings. No completion date has been set but I expect the KR-3 could be at Oshkosh "79" No plans will offered until flight tests are complete.

Q. What insturments do you recommend for my KR?

A There is an urge in all of us to go overboard on filling up our instrument panel. The best course of action is to install only what the law requires for the purpose you intend for your particular aircraft. If you don't feel safe with this minimum of instruments, add only what you need to feel comfortable.

Q. Are the fiberglass parts from R/R heavier? What type of cloth should be used over them?

A. The fiberglass parts sold by R/R are lighter than their foam/dynel/epoxy counterparts. As for covering them, it is not necessary.

Q. What's the latest dope on keeping the oil cool? Mine runs to an excessive heat in 15 minutes of flying.

A. Most auto parts stores and all dune buggy shops sell a combination remote oil cooler and filter unit that will fit nicely in a KR cowl. They are simple to install and should cure your over-heating problem. A scoop or vent might be necessary to direct air to the cooler but I did not need one on my KR-2.

Q. Is anyone building a KR using conventional construction, i.e. truss ribs, plywood skin, etc.?

A. I suggest you contact J. E. White, 3 Howdenhall Dr., Liberton, Edinburgh EH16, Scotland. He has become sort of a clearing house for KR information in the U.K. where there is at least one KR-2 being built with conventional construction.

Q. I put together Rand's fiberglass tank and found I have a 26 gal. capacity with the tail wheel on the ground. Is this safe? What will this 175+ lbs of fuel do to the CG?

A. Most builders will find the Rand fiberglass tank will hold in excess of 20 gal. of fuel tho I've never heard of one with as much capacity as yours. Whether or not it is safe depends on adequate re-inforcement of the joints, corners, and bottom. What this much fuel will do to the CG will depend on the weight distribution of the rest of the aircraft but I would think a KR-2 would tend to be nose heavy.

Q. I can't find a serial number on my plans, how do I get one?

A. Look on your receipt for the number or write to R/R and ask to have a number assigned.

Q. What does R/R charge for their parts and supply catalog?

A. Just send them a S.A.S.E. and they will send you their latest parts/supply price lists.

Q. I just got Rand's turbo and manifold system...no instructions. What's the story on adjustments and wastegate?

A. There are no adjustments and no wastegate is necessary <u>if</u> you gave R/R the size engine you were installing the turbo on. All VW engines 1600 thru 1834 should use the Rayjay 302-825 and the VW engines from 1834 thru 2200 should use the Rayjay 302-840 turbocharger. The oil lines are $\frac{1}{4}$" ID. pressure line to the turbo and a 3/4" ID. drain line back to the engine. A manifold pressure gauge is mandatory to let you keep a check on things and to avoid overboosting. If your engine has more than 1650cc displacement sustained boost above 20" HG can cause serious damage. Boost pressures about 40" HG may cause the engine to self-destruct. Due to higher oil temps an oil cooler should be used. Special carburetors and ignition systems are not necessary.

RAND/ROBINSON UPDATE

**Builders looking for an inexpensive 2" saw will find a very workable substitute at the local 5 & 10. A pizza cutter blade works great, use a $\frac{1}{4}$" bolt for an arbor, chuck it in your electric drill and use it just as you would the 2" saw blade it replaces.

**The Slick 4016 magneto is no longer available. It has been replaced by the Slick 4216. Advantage is that it is rebuildable, the 4016 was not. Disadvantage is a higher price... $118.00.

**Dynel...R/R has just purchased a full year's supply from their distributor. There is plenty more available, so no problem in filling your orders is expected.

**Look for Ken and the KR-1 or -2 at these fly-ins this month...Jan 6 & 7--Pomona Valley Air Fair, Upland, CA and Jan 21 thru 27--Sun-N-Fun Mid-winter Fly-in at Lakeland, FL.

BUY SELL TRADE

FOR SALE: KR-2 project. Fuselage done, main spar done and signed off. All metal parts completed by professional. Have most other accessories and lumber, also a Dan Diehl "Super case" and flywheel...$500.00. Phone 1-518-785-8316..No collect calls, please.

FOR SALE: Revmaster 2100 D, New in crate, with starter, alternator, aluminum cyls. Revmaster mount for KR-2...$2200.00 FIRM. Bill Gidden, 3533 Oxford Dr., Santa Clara, CA 95051 or phone 408-746-7427.

FOR SALE: KR-2 85% complete, fiberglass deck, tank, cowling and canopy. Instruments, Alpha 200 radio, Rand 3-blade prop. All materials to finish except epoxy and engine, many extra parts.....804-794-7225. Leon Freeman, 1110 Clearlake Rd., Richmond, VA 23235.

FOR SALE" KR-2 project. All wood, two fuselage frames completed, 3 yrs Newsletters and plans. Must sell...make offer. 618-833-6972. T.J. Menees, R.R. #2, Anna, IL 62906.

CUSTOM MADE LEATHER BELT with your "N" number for your new KR Belt buckle....$9.95. State KR-1 or -2, "N" number and waist size. Jack Moell, 11432 Glen Cove Dr. Garden Grove, CA 92643.

KR builder attending Sun-N-Fun desires fist ride in KR. Also, ride wanted to Sun-N-Fun from Washington, D.C. Tom Hoopengardner, 1658 Primrose Rd. NW, Washington, D.C. or phone 202-291-2135.

Will the KR builder in Montreal, Canada that purchased Bill DeFreze's tri-gear plans please send him your address. There has been a revision to the plans.

KR BELT BUCKLES, antique brass finish...$5.50. KR Logo Jack Patch...$1.50 each or three for $3.50. Ernest Koppe, 6141 Choctaw Dr., Westminster, CA 92683

AN UNFINISHED SYMPHONY

Recently, a discussion was held at Rand/Robinson about a growing number of KRs being started and not finished. It seems the builders would reach a point or plateau at which progress on their project stops. This "plateau" appears to be at the stage of construction where the fuselage is on the gear, all controls installed, and just short of glueing the foam in place on the spars and fuselage. The end result is a number of KR-1 and KR-2 "skeletons" around the country with no flesh on their bones. The consensus of opinion was that inexperience on the part of the builder working with foam was deterring him from getting off the "plateau" and finishing the project.

I don't have any new solutions to this problem but I can offer a suggestion. Should you reach a point in your KR project where you think you lack the experience to continue, try this: make a trial run with some scrap material, i.e. foam, wood, aluminum or whatever. Even though this might not cure all your problems or answer all your questions it is a place to start. There is only one way to get experience at anything, that is by doing it! So....if your KR has been neglected of late because you reached a "plateau", take another look. Maybe, just maybe, it's not that difficult to get over that hump. E.K.

TRICYCLE GEAR KR? Why not? Most of the pilots today received their initial flight training in aircraft with a nosewheel, it's only natural that they would want the aircraft they build for themselves have a nosewheel too. There have been a few KRs built with fixed tri-gear but the loss in performance reported by these builders have kept others from following suit. Things are changing! Those who want the performance of the conventional geared KR and the positive features of the tricycle gear have a choice of three different retractable tri-gear systems. These units are in the process of being tested, all on KR-2s but it is my understanding they will fit the KR-1 as well.

Bill DeFreze is selling plans for his modification, the only one to fly so far. His system uses many of Rand's parts, including the spring bar, gear legs and wheels. This would undoubtably be the least expensive way to go for those who wish to convert a KR already complete (or nearly so). Bill's address is 7530 Ironwood Dr., Dublin, CA 94566. The plans are $20.00.

The system seen at Oshkosh "78" was developed by Mike Lamb. No plans are available for this system as it is going to be sold as a complete unit when testing has been completed. Price is expected to be around $1000.00. For more info, write to Finellis Welding, 5327 W. L10, Quartz Hill, CA 93534.

The third system is being developed by Don Land and is the type I'm planning on using in my next project (a KR-1½). Plans are being drawn up and a stress analysis is being run on the components. There is a lot of welding necessary to build this system but it shouldn't be beyond the capabilities of anyone with some welding experience. Those with no welding expertise will be able to buy the unit already fabricated. The plans are $40.00, the complete unit is expected to go for approx. $800.00. For more info, write Don Land, 906 Manzanita, Los Angeles, CA 90029.

Airframe modifications necessary to utilize either of these three systems are minor and are easily completed when installing the tricycle gear components. So...if you have been hesitating building your KR because of in-experience with tail dragger aircraft, wait no more. Get the plans from DeFreze or Land or buy the complete units as offered by Land or Finellis and lets get flying.

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
ISSUE #43

Issue No. 44
February 1979

KR NEWSLETTER

RATES
1 Year $9.00
O/Seas Airmail $15.00
Back Issues .75 each

EMERGENCY!!

YOU HAVE BEEN "STEPPED" ON.
Step 1. The F.A.A. has added 80 new Terminal Radar Service Areas (TRSA's) to the 86 that already exist. We have no voice in this.
Step 2. In the 1st of two N.P.R.M.'s the F.A.A. is asking for 44 new TCA's in addition to the 21 that already exist. They also are asking for alowering of Positive Controlled Airspace to 10,000 ft. east of the Mississippi and over most of California.
Step 3. The 3rd step will come in March when another N.P.R.M. will be posted which would require encoding altimeters and transponders for all 166 T.R.S.A.s (making them T.C.A.s). As of 1982, all transponders would have to be replaced with new units capable of answering collision radar in airliners. The worst part of this N.P.R.M. would, in the words of the F.A.A.: "include the establishment of in-route radar service areas below 10,000 ft. in certain traffic areas around the country. They would function like T.R.S.A.s.

All this "instant safety" is a publicity reaction to the San Diego mid-air between an airliner and a general aviation aircraft. For some unknown reason they are overlooking the fact that both of the aircraft involved were in radio contact with controllers on the ground, precisely in accordance with the very rules they want to foist on 200+ more cities as well as various airways in between. A number that, in true bureaucratic fashion, would grow and grow as time goes by. At the moment, use of TRSAs or Stage IIIs is voluntary but that will almost certainly change and become mandatory. In effect the plan would also give the FAA all the power they need to achieve what now clearly appears to be their goal: TOTAL control of all US airspace.

DO SOMETHING!!!

WRITE! Tell the F.A.A. you are opposed to their N.P.R.M. that calls for 44 new T.C.A.s and lowering of positive controlled airspace to 10,000 ft. The way to do this is as follows!...

1. Write to: FEDERAL AVIATION ADMINISTRATION
OFFICE OF THE CHIEF COUNSEL
ATTENTION RULES DOCKET ATC-24
800 INDEPENDENCE AVENUE S.W.
WASHINGTON D.C. 20591

Regarding N.P.R.M. Docket #18605
Notice #78-19

2. Let them know you oppose their plan as a hastily conceived measure that would not increase safety in the air. Offer your own suggestions for improvement of safety. Or...just state that you agree with the E.A.A.s objections to the F.A.A. plan and ask that the E.A.A. concepts be given consideration. March 5th is the deadline, write a letter now!!

3. Write a letter to your congressional representatives. Refer to the N.P.R.M. and its numbers. Ask for an explanation of the F.A.A. proposal and evidence how it could have prevented the San Diego crash. Stress the fact that E.A.A. has a better and safer plan thru sensible air traffic control. Insist the E.A.A. be heard. Use these addresses.....

Honorable (your Representative)
House Office Building
Washington D.C. 20515

Honorable (your Senator)
Senate Office Building
Washington D.C. 20410

***Petitions and vulgarity will not help.

4. Keep these addresses with you and encourge relatives and friends to write also. Don't wait for the "other guy" to stop this F.A.A. power grab! YOU are the "other guy".

TIPS FROM OTHER BUILDERS

Due to the importance of proper torque on VW engine bolts and nuts, the guys at Miniature Metrics have offered the following helpful hints and charts. There are also some tips on cleaning up the inside of your engine for better cooling and longer engine life. Y'all pay attention now!

"The following torque values are from charts and experience. Proper use of a torque wrench. First be sure you have the correct torque value from the following list. Then hold the wrench and socket firmly on the nut or bolt with one hand on the head or socket end of the wrench, keeping clear of the pointer rod (some types). Then pull the handle with a steady pressure. Position the work or yourself where you can see the reading clearly. Run all bolts in the series to 3/4 of final torque all around. Then go around again making sure all nuts or bolts are to torque."

LOCATION	SOCKET SIZE	METER KILOGRAMS	FOOT POUNDS
Crankcase 8mm nuts	13 or 14 mm	2.0	14
Crankcase 10mm nuts	17 mm	3.5	25
Crankcase 1500 plastic insert	17 mm	2.5	18
*Cylinderhead nuts	15,16,17 mm	3.7	23
Rocker shaft nuts			
1500	13 mm	2.5	18
1600	13 mm	2.0	14
1700 IV	13 mm	1.4	10
Flywheel Gland nut	36 mm	30.0	220
Conrod nuts	14 mm	3-3.5	22-25
Crankshaft/prop hub	30 mm	6.0	44
**Spark plugs	21 mm	2.5-3.0	18-22
Oil screen nuts	10 mm	0.7	5
Oil pump cover nuts	10 mm	1.0	7
Type IV	13 mm	2.2	14

*Aluminum cylinders should be torqued to 2.5 meter Kilograms or 18 foot pounds.
**NEW INFORMATION!!

GENERAL ENGINE NUTS & BOLTS

BOLT SIZE	SOCKET SIZE	METER KILOGRAMS	FOOT POUNDS
6 mm	10 mm	0.7	5
7 mm	11 mm	1.0	7
8 mm	12 mm	1.5	10
8 mm	13 mm	2.0	14
8 mm	14 mm	2.5	18
10 mm	17 mm	3.0	22
12 mm	17 mm	3.0	22

Many have experienced problems with oil flow and cooling. Try removing the core plugs and clean out the oil galleys and tap for pipe plugs. To save weight install dural or light alloy plugs. Be sure all swarf or drilling/tapping garbage removed with air or steam pressure. Use a wire brush like a rifle cleaner to clean and brush narrow passages. Remove sharp edges before re-assembly as they can break off later.

The outside of the engine should be rough and unpolished surfaces. No polish or chrome except on hardware not touching the engine. An anodizing in black or a coat of flat black will cool the engine better. No paint on the oil radiator or a thin coat of flat black. Then check your operating temps.

We also recommend sand blasting cylinder heads and thorough cleaning. Paint before assembly and protect all surfaces that mate from paint. There's better rounding of electrical circuits and less static from clean mating parts....Minature Metrics, 7801 14th St., Westminster, CA 92683

TIPS FROM OTHER BUILDERS (cont.)

Here's a tip for builders frustrated by those little triangular glue blocks in the frame. Before you start, make a set of "measuring blocks". Cut a strip of 5/8" material into 1" lengths, changing the miter 1^{0} each end. Ten blocks with twenty angles should serve. To use, just find the measuring block that fits and you can cut the glue blocks perfectly on the first try. Saves a lot of trial and error.....Tom Hoopengardner, 1658 Primrose Lane, NW, Washington, D.C. 20012.

"I found my Posa carb performed much better if I installed a velocity stack or tube (not ram air) 6" to 8" long over the intake. Longer is OK. You can use flexible wire reinforced airduct and incorporate a remote air filter in the system".....Dan Diehl, 4132 E. 72nd St., Tulsa, OK 74136.

"When mixing Rand's epoxy for gluing I use two of those disposable plastic glasses, scribbing a line around each at equal heights. Fill each to line the pour part "A" into part "B" to mix. Note...part "A" will pull up the sides of the glass a small amount, part "B" will pull down.....Don La Moreaux, P O. Box 13, Sand Point, ID 83864.

KR CLUB BULLETIN

New KR Club members were sent a list of the club members in their area. This was done in hopes that they would take it upon themselves to meet and get to know each other. I'm happy to say this has proved very successful, regular meetings have been set up where the members could compare notes, building hints, and flying tips. If you and the members in your area have set a regular scheduled meeting date please notify the Newsletter so the time and place can be published.

Regular meeting dates have been set up in the following places:

First Tuesday at 7:30 pm every month. Contact Lisle Knight, 36 Margaret Ave., San Francisco, CA, 94112 for more info.

Second Monday every month at 7:30 pm at 6141 Choctaw Dr., Westminster, CA 92683. Phone 714-897-2677.

Wisconsin area members should contact Robin Butler, 1841 Michigan Ave., Manitowoc, WI 54220. Phone 414-684-3007.

***Leon Self, 404 Standish Dr., Bloomington, IL 61701 is claiming the title of "USA Largest KR-1 Pilot", at 6'3" tall and 225 lbs. Any other claimants to this title? Leon also sent the following report on his KR-1: "On May 27th I made a gear-up landing (forgot to lock the gear down on landing). The only damage was to the tips of my 2-blade prop. I have replaced it with Rand's 3-blade ground adjustable prop. The ship will cruise at 140 MPH, at present pitch setting, at 3400 RPM. Rate of climb is 1100 to 1200 ft/min. This is fantastic considering my size. I intend to set prop to run 2900 RPM static, this should give faster cruise. I have 25 hrs. time in this little bomb. From my gear up experience I certainly would recommend anyone having an emergency landing do it with wheels up. Especially if on a rough field. If I had been able to rotate prop there would not have been any damage. Of course I didn't know what I had done until after I got out, walked around and mentally flew the pattern. Five of us picked the plane up, I looped my belt over the gear lever, popped the gear down and locked and pushed the KR-1 to the hangar. My Rand had rolled on wheels extending out of wings and skidded on lower part of bottom cowl. I told the FAA I planned to demonstrate wheels up landings at airshows. He really wasn't interested in issuing a waiver!"

*CORRECTION notice: Last issue of the Newsletter had an article about the three different tricycle gear systems available. The article said that a complete tri-gear system was available from Finellis Machining and Welding. New information brought to my attention reports that this is not the case. Completed assymblies will not be sold by Finellis, only plans. The address for more info is 5327 West Ave. L10, Quartz Hill, CA 93534.

RAND/ROBINSON UPDATE

Due to the increasing amount of allergic reactions to Shell Epon 815 (R/R epoxy Type A) the Dept. of Consumer Affairs is suggesting the use of an alternate. R/R Type A will be Shell Epon 813, a less toxic, more costly product. Price will be increased to $21.50 per gallon.

QUESTIONS & ANSWERS

Q. What are the front & rear CG limits of the RAF 48 with reference to the wing leading edge as a datum?

A. Forward limit is 15%, rear 40%. On a 48" airfoil this is 7.2" and 19.2" respectively.

Q. Does air come in or out of the opening around the main gear spring?

A. Since the bottom of the wing is a high pressure area and this is where the opening eventually leads, air will enter the fuselage thru the spring bar opening. How much air actually comes in will depend on how much gets out at various other cockpit and fuselage openings.

Q. I've installed the dive brake shown in Newsletter *#12*. Should I remove it and put on flaps? How about both?

A. The dive brake was devised as a system for glide path control and as such worked very well. Flaps generally have the advantage of lowering the stall speed. I think either system is effective enough to use without the other.

Q. What system is used to mount drive pulley to the magneto? Is impluse used on the mag?

A. The belt drive pulley is bolted to the impulse coupling of the magneto after first removing the drive lugs on the coupling.

Q. Do the heavier KR-2s (600 lbs +) require the use of 1" rather than the 3/4" spring bar?

A. Some builders are shortening the 3/4" spring bar 1" on each end. This stiffens the spring action and has no extra weight penalty.

Q. Are most KR-2s sensitive to elevator imputs? Should the elevator be shortened?

A. All KR-1s and 2s are sensitive to control imputs, especially elevator. If you want less sensitive controls change the bellcrank geometry, not the size of the control surface or their degree of travel.

Q. Rotorway's new engine weighs approx. 160 lbs dry. Will that cause weight and balance problems in a KR-2?

A. Some KRs are flying with heavier engines, if cooling and electric systems on the Rotoway don't add too much weight, I don't see any problem.

Q. Have you heard of the foam, that when covered with fiberglass and resin, you could cut a hole in it and use it for a fuel tank?

A. I haven't heard of a specific foam made just for that purpose. However, styrofoam blocks can be shaped to any disired configuration, covered with cloth and resin to form the tank (or anything else) and then the foam is easily removed with solvents or gasoline.

Q. Will Rand be marketing the "flap kit" as a separate item soon?

A. There is no intention of doing so in the near future.

Q. You said you were building a "KR-1½. Is this something new from Ken Rand?

A. "KR-1½" is my term, basically its a single place KR-2. (Maybe a stretched KR-1.)

Q. What pitch do you reccommend for a fixed pitch cruise prop on a KR-2 with a Revmaster 2100 D engine (no turbo)?

A. Ask your prop maker what <u>he</u> recommends. If you are making your own I would suggest trying a 54" prop with 60" pitch and go from there.

Q. Can you give me any performance figures on Frank Walker's fixed gear KR-1?

A. Not at this time. Frank sold the aircraft and it was later involved in an accident because of engine failure due to overheating.

***Along with the other questions I received the following short letter.....

Dear Ernest,

I'm sending $15.00 for another year of your good KR Newsletter. Have enjoyed it and saved many times the cost. A couple of questions you could answer in the Newsletter: 1. Where can I get a Xerox of the blue print for machining the VW cyl heads for the dual spark plugs? 2. How about some more info from the Continental C-65 guys on their installations and problems.

The first homebuilt airplane in Ecuador flew two weeks ago. I began mine almost two years ago and it caught on. One of the Catholic missions on the airport here built one also and beat me!! So the first airplane ever built in Ecuador is a KR-2!!! I'm still working on mine. Happy New Year.....Bill Clapp, Alas de Socorro, Shell, Pastaz, Ecuador.

If any one out there can help Bill with his questions he would be very happy to hear from you. Or you could write to me and I will forward any info. E.K.

BUY SELL TRADE

TRADE for Lyc. 135 HP O-290D2.....KR-1 project on gear, ready to cover. Center control stick, cables run. Custom white leather seat. Everything to finish including engine (73 VW already rebuilt, converted & running on test stand) and instruments. Will sell outright for $2500 or trade for Lyc....John Schmidt, 802 N Main St. Elkader, IA 52043.

SELL.....40 HP VW case and 83 MM jugs, all new parts. Ran 15 hrs. Phone 717-393-5928 eves. (no collect) or write....Jim Peris, 129 Crest Ave. Lancaster, PA 17602.

DESK MODEL of your own KR-1 or KR-2, painted to your style or plain.....Jim Peris, 129 Crest Ave., Lancaster, PA 17602.

KR-2 Project....Fuselage on gear, wing, spars, tail. Revmaster engine mount. Controls are in. Materials to finish...$1000.00. KR-1 or-2 trailer..$325.00. Phone Don Dobbins, 11742 Glencove Dr., Garden Grove, CA 92643 at714-530-3812 or Paul at 213-569-2908.

FOR SALE....Rand KR-2 cowling. New, never used...$75.00. Tom Loftin, 3675 Noland Rd., Suite 150, Independence, MO 64055 or phone 816-836-1414.

WANTED.....Converted VW engine for KR-2...D. Richardson, North Court St., Irvine, KY 40336.

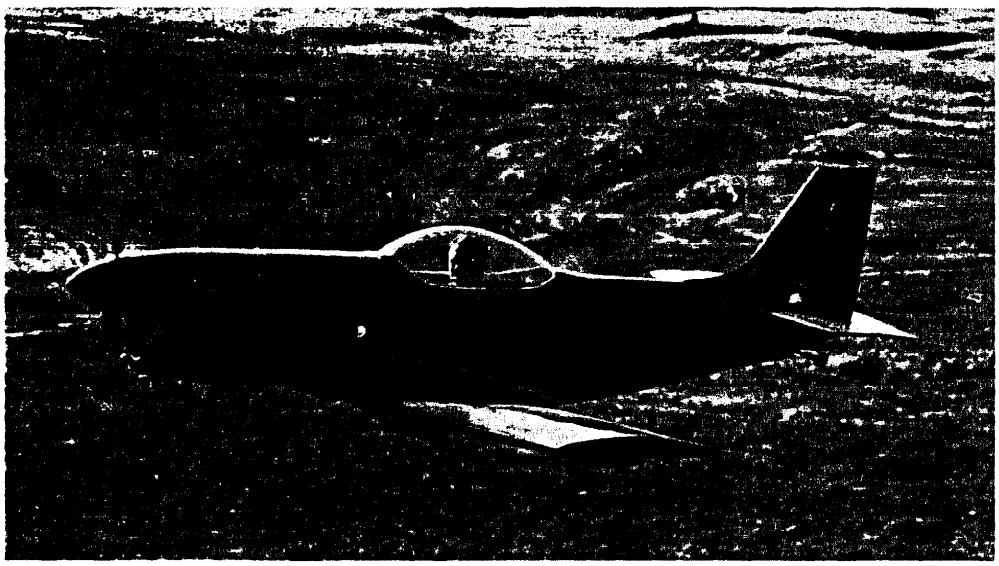
"SUPERCASE" adapts your VW engine to aircraft use. Starter, alternator and magneto are bolt on items. Send S.A.S.E. to Dan Diehl, 4132 E 72nd St., Tulsa, OK 74136.

KR-1 FIBERGLASS COMPONENTS...cowling, fuel tank, instrument panel, turtle deck. Send S.A.S.E. to Danny McCormick, 16902 Happy Hollow, San Antonio, TX 78232.

TRI-GEAR PLANS, uses Rand's parts..$20.00. Bill Defreze, 7530 Ironwood Dr., Dublin, CA 94566.

TRI-GEAR PLANS and stress anylsis....$40.00...Don Land, 906 Manzanita, Los Angeles, CA 90029

FROM A LETTER TO RAND ROBINSON.....Here is a photo of a KR-1 built by myself from your plans. Power is an inverted, inline 4, Walter Mikron motor, 62 HP at 2600 (about 38 yrs. old). Prop is 55" x 60" from Ray Hegy. Performance is just about as stated in plans and it is real nice to fly. Building time was 12 months and a further 8 months to satisfy our Aviation Dept., mostly over engine change. I fitted nylon wheels with larger tyres and used your early type drag brake but operated (one to each wheel) by a motorcycle hydraulic brake unit. I can run-up 2,000 RPM and hold with brakes. I have owned nine other aircraft from a Taylor Cub in 1949 to a Cessna 336 push/pull, EKT is about the nicest to fly and the first retractable. Thank you for a nice design, easy to build for a 52 year oldie.



R. G. "Bob" Maisey
P.O. Box 392
Taupo, New Zealand

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
ISSUE #44

Issue No. 45
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KR NEWSLETTER

RATES
1 Year $9.00
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Back Issues .75 each

** A monthly publication for communication between KR builders and pilots world wide.**
Edited & published by Ernest Koppe, 6141 Choctaw Dr., Westminster, CA 92683 714-897-2677

With the loss of Ken Rand, sport aviation has lost one of its brightest stars. The void left behind seems unfillable.

What happens now? True, Ken has gone on, but he has left behind his ideas, his friends, and....his family. It's like what happens when a bright light is extenguished. We have to take a moment to adjust to the dimness and then continue as well as possible. And continue we will!!! Ken showed the way and we can use his path as a guide. He built an airplane that was simple, didn't cost a fortune and performed better than any other aircraft made with comparable horse power. Then he said we could do the same thing and showed us how. We listened...right now there are more KRs under construction than any other home-built aircraft.

The business of supplying the builders of KRs with parts and materials will also continue. Tho Ken was the major force in its' development, his business will not stop because he is not there to take charge. His family will carry on Ken's work, his friends will build his designs. He will be remembered.

A few of us have set up a memorial fund in Ken's name, a fund to be used to finance awards or trophys at fly-ins around the country. Donations to this fund have already begun so an award to be presented at Oshkosh each year is a certainty. I feel sure there will be one at Lakeland and Chino also. Some have asked to be allowed to contribute to this fund and they are certainly most welcome,as is anyone else that wishes to contribute. ALL monies received will be applied to the awards.

* * * * * * * * *

We wish to express our appreciation for the sympathy and concern that has been shown for our family since Ken's accident. Most of all, thanks for the friendship you had for Ken.

Sincerely,
Jeannette Rand
and girls

* * * * * * * * *

Letter from Warren R. Aiken from Ohio...."Have just passed the 2nd anniversary of flying the KR-2, N48161 with GA(W)-1 airfoil. Most recent flight was with a load of 445 lbs. including pilot, co-pilot, gas, oil & baggage for total gross of 915. The 1800cc VW swinging my own 51 x 48 carving at 3200 rpm had us off in about 700 ft., temp 50, elev. 700. Landing control is even better with the extra weight on the tail, but there is a substantial trim change. 110 landings have made the tires nearly smooth. The FAA engineer advised that 4130 thick wall steel tube spacers should be used over the four main spar wing bolts. Be sure to cut a hair long and file to fit. Torque the nuts to about 15 ft. lbs. Inboard and outboard fitting will thus be brought together in a friction fit rather than placing the total load in shear on the bolts. It also tends to make the 3 piece spar more integrated in any twisting moments and should prevent sloppiness from wear. Won the Chapter balloon break last month, even beating the Breezy. Also have volunteered to participate in aerodynamic tests for the Ohio State University Aero Engineering Dept. research for NASA on the GA(W) airfoils toward application on light aircraft. I have flown Jim McCoy's with the RAF 48 airfoil, so am able to compare. The GA(W) is markedly higher lift at slow airspeeds so can be flown nose up and in turns without stalling to much slower airspeeds."

Advertising rates are as follows: Newsletter subscribers seeking or selling parts, materials, etc. for their projects are not charged. Other ads, including completed aircraft for sale, will be charged according to size. . . "business card" ads. . . $6.00, ⅛ page. . . $10.00, ¼ page. . . $18.00, ½ page. . . $35.00, full page. . . $65.00. prices are per monthly issue and may be raised without notice. Ads should be camera ready. Typesetting and halftones available at extra charge.

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FOR SALE....KR-1, flown 10 hrs on Rands' original 36 hp VW. Now installing rebuilt 36. Rand 3-blade, excellent workmanship. Too many airplanes. McLay, 1206 Cheyenne Ct., Boulder City, NV 89005, 702-293-4644.

FOR SALE....KR-1 project N89AM, registration complete, 50% of construction. Fueselage, spars, horizontal stab & elevator signed off. Cockpit widened 2" (O.K.'d by R/R), center mounted joystick, R/R 3-blade prop, airpath compass, magneto and harness, 1600cc VW dual port, many extras. Nees only prop hub, instruments and 6 gal. epoxy to finish...$2200.00

PDQ-2 Model "C", latest version for VW. Fuselage, seat, landing gear, some fittings..$250.00

Unused Volksplane VP-1 plans...$40.00

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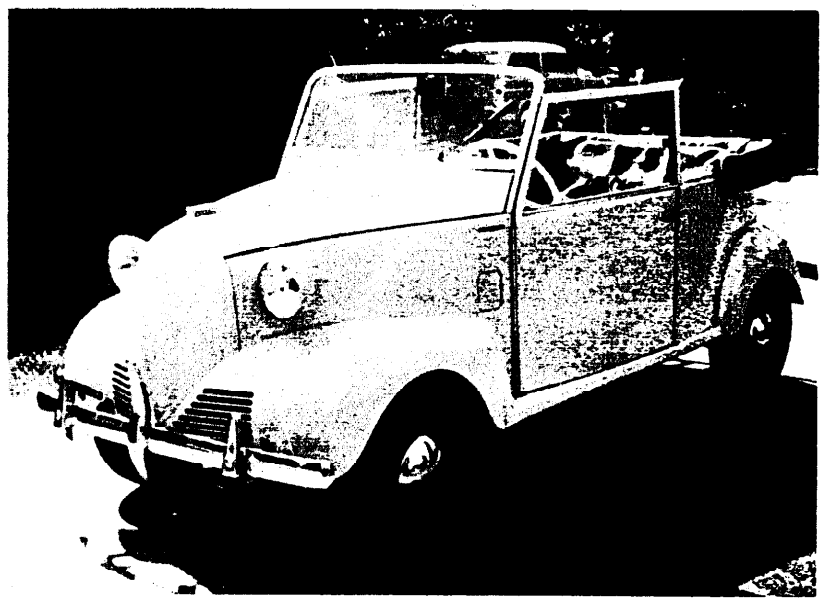


TRADE.....Want KR-2, flying or very close to flying. Have mint original '42 Crosley Convertible Sedan (see picture on right) trade up or down. No phone calls. Write: L. Roberts, Box S 23A, Rte. 2, Waupaca, WI 54981.

WANTED....Revmaster with or without add-ons for KR-2. Cost secondary for right engine. Curtis I Wilson, Box 118, Clarkfield, MN 56223 or phone 612-669-4883.

FOR SALE....KR-2..flown 12 hrs, flies beautifully...$4000.00. Have girl friend, no time for plane. Jack Aldrich, 2404 Emory Ave., Bradento, FL 33507 or phone 813-755-2738.

FOR SALE....KR-2 project. Fuselage complete, main spar signed off, most metal fittings completed. 1834cc engine professionally rebuilt, with accessories. Everything except prop...$1600.00. Stan Boyd, 48239 Arcadian St., Fremont, CA 94538 or phone 415-651-1900.

FOR SALE....Complete plans, instructions and photos of retractable tricycle gear as pictured in Newsletter #35....$20.00. Bill DeFreze, 7530 Ironwood Dr., Dublin, CA 94566 or phone 415-828-2111.

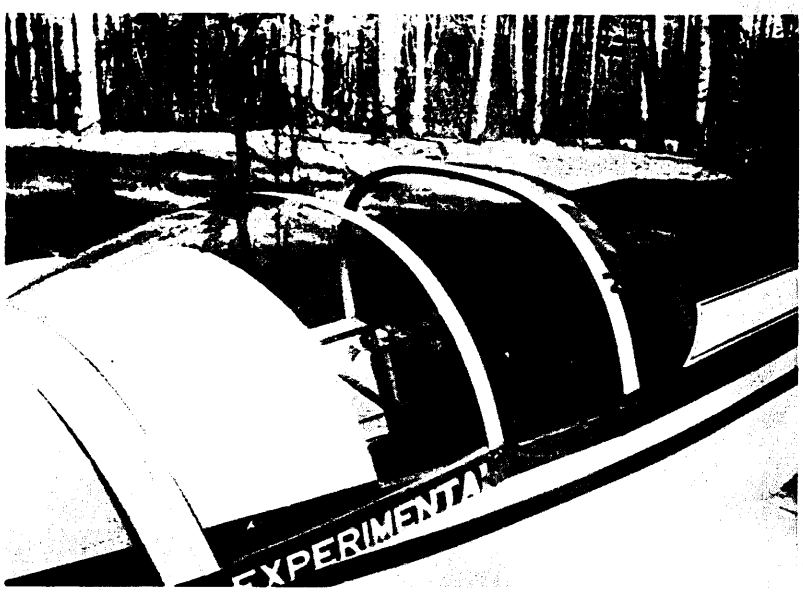
* * * * * * * * * * * * * * *

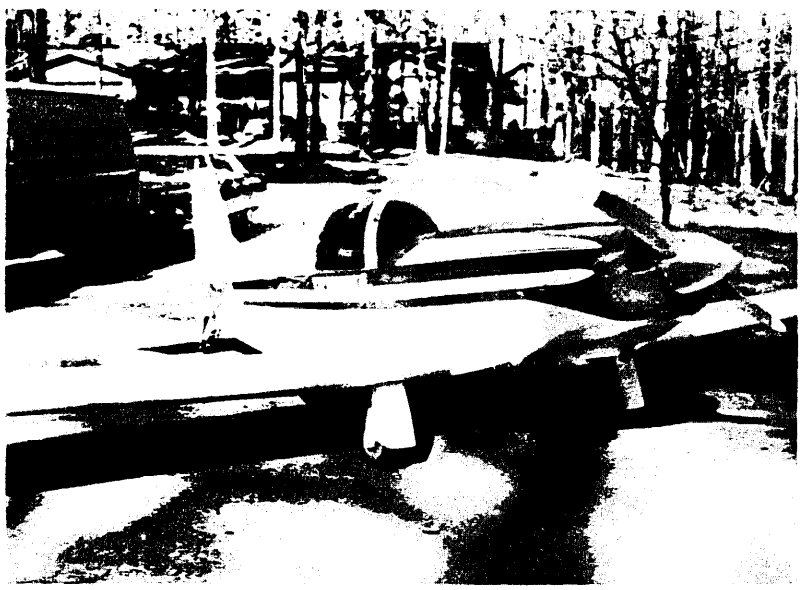
Bill DeFreze has given substance to an idea that is long over due. "Why not have certain qualified people named as designees, inspectors, or whatever so other KR builders could contact them for advice on any problem they might encounter?" Now this idea is sound, its' success tho' will depend on two things....1. selecting qualified people and 2. getting them to volunteer. What qualifications do you think are necessary? I think to be really qualified to give meaningful advice the person volunteering should have built and flown a KR-1 or -2. There are already three people, counting myself, that have volunteered and here is how the idea will work.

If you have a problem or question you need help with, contact the person nearest you. Where possible, we will come to you to help resolve whatever is bugging you. Where it is not possible to make the trip out to your place, the next best thing is for you to contact us in person or by telephone. By talking to a person that has already encountered all the problems related to building and flying a KR, your questions can be answered by someone that understands what you are up against. If telephones are a hang-up then we resort to the pestal system. While not the best of late, the mail usually gets through. We ask that questions be stated so there will be no mis-understanding and room left on your paper for the answers. Also include a self-addressed stamped envelope (SASE) for the reply. It doesn't take but a few minutes this way and we can usually answer the questions(s) by return mail.

My address and phone number is on the front of this Newsletter. The other two guys are: Bill DeFreze, 7530 Ironwood Dr., Dublin, CA 94566 Phone 415-828-2111 and Dan Diehl, 4132 E. 72nd St., Tulsa, OK 74136 Phone 918-492-5211. I know more guys around the country that are qualified to offer help to the new KR builders. I'm hoping they read this and volunteer their knowledge and experience. I'll list their names in the Newsletter when they do.

HAPPENINGS.....5th Annual So. Calif. Regional EAA Fly-in at Chino, Calif. on April 28 & 29.
VW Fly-in at Mojave Airport on May 19 & 20 at Mojave, Calif.





Here are some pictures of my KR-2 with the sliding canopy, hope you can use them in the Newsletter.

Not much to my first flight report. First and only flight so far around the Sunday before Thanksgiving '78, it was an accidental take off lasting 30 min. I had just meant to do some taxi runs since it had been 22 yrs since flying a stick control and 9 yrs since flying a tail dragger-- she was off the ground before I knew it so I took her up. She felt terriffic except for the sensitive elevator which I had been warned about. I had no trouble getting her down, made a perfect landing (luck). I didn't keep her up longer because the engine was running a little rough. Ken told me at Lakeland to change my carburator from a 32mm to a 29mm which I have done but haven't had weather to check it out again.

My KR-2, N28RL took me 2½ yrs to complete, has Duty's 1834 cc single mag. engine with 52"x43" pitch prop. Aluminum gas tank, sliding canopy and Dan Diehl cowling is only changes made. She weighs 603 lbs empty. Overweight is due partially to canopy and the rest I quess is too much epoxy.

Hope to have a better report on performance in the near future.

Ray Lawson
1849 Lake Lucerne Way
Lilburn, GA 30247

FLIGHT REPORT

by Steve Bennett

I started building my KR-1 in 1973. It was completed in 1977 being flown the first time on July 21. To date the plane has approx. 220 hrs. Power is a 1600 cc VW turning a R/R 3-blade prop. Empty weight is 463 lbs. Fuel capacity is 11 gallons. Pilot dimensions are 6'3" and 200 lbs.

I received my flying ticket in 1971. Between 1971 and 1977 my total time was 86 hrs, 36 hrs being in the first 3 months of '71. That being what it is I believe the KRs are a safe plane for the low time pilot. Please remember several items though. The elevator is very, repeat, VERY sensitive. I built my elevator control with 6" spacing for the cables. I think 4" would be more than adequate. Acceleration and torque will also give the first time KR pilot a surprise.

For N31123 I use the following...increase power gradually but firm. Apply needed amount of right rudder, raise tail slightly (one doesn't have to be level but just get the tail up enough to see). Lift off occurs at 60 mph indicated. I hold it level until speed builds to 100 mph and then climb. Climb rate is about 1000 fpm (3100 rpm), cruise is 3200 rpm and gives the plane an indicated airspeed of 152 mph. Actual ground speed is a little slower. Before the R/R 3 blade prop I had a Hegy 50 x 40. This gave me a cruise of 120 mph at 3200 rpm - quite a big difference. Landing the KR is somewhat harder than take-off. I use an approach speed of 80 mph and carry approx. 1800 rpm all the way to the black top, touching down at 65 mph. Slower landing speeds can be used but sink rate is very high. On my plane 70 mph power off, works good when landing over an obstacle and applying power when close to ground to slow the sink rate. Contrary to belief, my KR does not float long in ground effect. The stall speed on it is around 40-45 mph and to date highest altitude has been 9,500'.

The last year has put the major time on the plane. The first year was spent working out the bugs such as having your landing gear fold up on take off. This incident caused the firewall to be completly torn off the front of the aircraft. I made extensive mods in repair of firewall and re-design of gear hold down latches. The ¼ AN bolts are, in my opinion, insufficient for the gear system. I used 5/16 bolts with 3/8" o.d. bushing pressed in pivot points so bolts do not rotate on pivots but rather inside the bushing. After 80 hrs. they are still like new.

The CG of my plane was in limits but only by 3/4 of an inch. In the re-vamp I spaced the engine out 3/4 of an inch which moved my CG a little better than 2 in. Also the 3-blade prop and prop extension were added. At the time I was worried about damage to the crank so a dial indicator was run out on the crank <u>without</u> taking the engine apart. This was a mistake. I'll explain later. By coincidence on July 21, 1978 I flew the plane for the <u>second</u> "first" time. With the new cowling on, I found I had cooling problems. After this was corrected I was ready to go again. I made trips to MN, NE, IL and Oshkosh but one day after all the above while flying over Boone, IA, my oil pressure dropped and a very audible clang developed. The crankshaft broke...in the <u>back</u>. So please if you happen to dig dirt at 3000 rpm ....tear your VW down and check thoroughly. Also if your gear folds up, take the castings off and have them fluxed. I had one break off several months later while hardly moving.

The weather being what it is in Iowa has caused several cracks to develop on the A/C mainly in the wing root area. My KR does not have a heater installed as of yet. However, with the addtion of a snowmobile suit I have been able to keep flying. Condensation on the canopy only occurs at slower speeds. Contrary to what I have read in the Newsletter, the air flowing through the cockpit at <u>cruise</u> speed exits through the gear openings. I can document this with my breath but when I get ready to land, put the gear down and slow up to 80 mph the air flow reverses and air exits to the rear there by flowing up over the canopy and fogging up somewhat. How cold can you fly 'em? I made an attempt to go to the Sun n Fun Fly-in. On the morning I left Ames, IA it was -8°. I left about 8:30 am by 4:30 pm I was in Chattonoga. The next day Atlanta was as far as I made it because of weather. Because of conditions along the route I opted not to go on to Florida. The A/C performed very well during its longest C/C. When your light bulb burns out and your A/C won't start when its cold, just get a piece of flexible tubing and hook one end over the exhaust of your car and put the other end in your cowling. All you have to get warm is the intake manifold so the fuel will atomize. Speaking of fuel, I have ran mine on no lead, low lead, regular, premium and avgas. I found that when I use car gas the engine will quit when it

FLIGHT REPORT (cont.)
is hot and I have to carry 1200 or better rpm to keep it running. This is next to impossible to do and taxi the A/C. AVgas cured the problem. Now it will run as low as 400 rpm and not quit when hot. I think the reason for this is the difference in atomization of the fuels.

Over all the KR has been a very enjoyable A/C to own and operate. Please just remember to use common sense in your approach to its operation cause you've never flown anything like it!

N31123.....engine 1600cc with Posa 28mm
Empty weight.....463 lbs.
Take-offs.....65 mph ind.
Cruise.....152 mph ind.
Top.....162 mph ind.
L/S on touchdown....65 mph ind.
Stalls.....40-45 mph ind.
Cht.....350°F

Oil temp.....150°F
Oil pressure.....22 lbs.
Max. rpm with 50 x 40 Hegy.....3900 rpm
Max. rpm with R/R 3-blade set at
15°.....3300 rpm
12°.....3500 rpm
10°.....3800

Steve Bennett, 1135 - 58th, Des Moines, IA 50311

QUESTIONS & ANSWERS

The questions from everyone lately is "What caused Ken's engine to lose power?" The answer to this question isn't an easy one. We can only guess at the reason for the power loss and base our guesses on the information available. Examination of the engine, a turbocharged 2100 Revmaster, proved the engine was mechanically sound. Guess #1. Ice...Ken reported as being "on top" and was probably clear of the cloud tops. But...could he have picked up impact ice that would block the 2" air scoop that led directly to the Posa carb? Guess #2. Fuel exhaustion....to the best of our knowledge Ken's last fuel stop was in Texas. 30 to 40 knot head winds reported along his course could have depleted his fuel. Guess #3. Fuel contamination....a possibility but not likely. A problem here should have shown much sooner. I suppose we could keep on guessing. There isn't any way of knowing if we come across the right answer though. We can only guess.....

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
ISSUE # 45

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NEWSLETTER

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** A monthly publication for communication between KR builders and pilots world wide.**
Edited & published by Ernest Koppe, 6141 Choctaw Dr., Westminster, CA 92683 714-897-2677

Most of the KR-2s now flying are routinely flown at 1000 lbs gross weights and do so with no apparent problems. Climb performance suffers, naturally, but the aircraft still handles well. Extra caution is advisable during landings at these high gross weights however. A hard landing will give you a week-end or so of repair, as well as a damaged ego when the spring bar pops a couple of holes in the top of each wing.

Recently a KR-2 was flown at a total weight of 1120 lbs. Empty weight of the aircraft was 640 lbs., fuel in main tank was 50 lbs., pilot 240 lbs., passenger 185 lbs. and approx. 5 lbs. for miscellaneous papers, etc. The flight was not un-eventfull. Full forward stick was required to raise the tail on the take-off run, but this was expected. What was not expected was the aircraft entering the air before the tail had completely reached a level attitude. Here the aircraft was, several feet above the runway, nose high and full forward stick being held. Airspeed at this point was 55-60 ind. and increasing ever so slowly. To cut power now would surely invite a stall so the decision was made to continue the climb.

The aircraft reached a top speed of 80 mph ind. in the gear down configuration, still full forward stick, still in a nose high attitude. It had also begun a phugoid oscillation that seemed to decrease as the airspeed increased. The problem facing the pilot now was how to increase the airspeed and reduce the oscillations to bring the aircraft to a more stable attitude. Retracting the landing gear brought the desired effect. With the reduced drag the airspeed increased immediately, as it went past 100 mph ind., the oscillation became more manageable. At 120, it had ceased altogether but the KR-2 still required forward stick to maintain level flight. When trimmed for level flight with the elevator trim tab, the oscillations would begin shortly after the pilot removed his hand from the stick. This effect was noted all the way thru airspeeds reaching 145 ind., fastest reached during the flight.

Landing the aircraft was the next task to accomplish. Entering the traffic pattern at 120 mph ind. and turning downwind was non-eventful but when slowed to 100, the aircraft would again begin to oscillate. To keep the aircraft under control would require an airspeed in excess of 100 mph ind. on the final approach. This is not the way to make a short landing, but in this case, flying the KR-2 right down to the runway seemed the most prudent course of action. As expected, when the aircraft neared the runway surface, ground effect took over. The airspeed bled off very slowly and the wheels didn't touch down until half of a 3800 ft. runway had passed underneath. They didn't stay down. There were three more points of contact with the runway before the KR-2 finally settled down to the roll out. Unfortunately, the last contact point coincided almost exactly with the end of the runway with the speed still around 35-40 mph. The landing gear hit some ruts just off the end of the runway with force enough to bend the 1/4" latch bolts. This allowed the down latches to release, in spite of a safety catch, and the landing gear to fold. The remaining skid was over quickly as tall grass on the other side of the ruts finally brought the aircraft to a stop.

There were no injuries to the occupants of the aircraft, damage to the aircraft itself was minor and will soon be repaired. Looking back at the whole incident, there are probably some things that could have been done to avoid any damage at all. Maybe, maybe not. The one sure way to avoid this kind of incident is to not tempt fate by flying with your KR-2 in an over-gross, aft C.G. condition. It can be dangerous to your health!!

BUY SELL TRADE

FOR SALE....Rand/Robinson KR-2 cowl, never used...$75.00 shipped to your door. Kurt Kannwischer, 2785 Lake Capri Rd., Lithonia, GA 30058 or phone 404-482-1827.

FOR SALE....KR-2 plans plus many EAA How-to Manuals...$40.00. Unused KR-2 R/R kits, aluminum extrusions, wheels, brakes, axles, tailwheel, AN bolts, cables and pulleys, cowl camlocks, easy eye canopy, latches, seat, 7 gal. Wicks epoxy shipped new 11/27/78, 4130 steel for wing attach. Materials cost me $580.90 plus shipping, yours for $500.00. Buy it all and I'll pay shipping. Joe Ed Pederson, 217 Roberts St., Seward, NE 68434 or phone 402-643-6290.

FOR SALE....KR-2 project. Fuselage and center spars made and drilled. Outer spars aligned by engineers transit. Gray canopy, fiberglass fastback and wing tips, foam to complete project...$1200.00. 50 yards of Kevlar...$450.00. Vic Kaaria, 1034 N. San Rafael "B", Glendale, CA 91202.

FOR SALE....KR-1 project. Fuselage on gear and ready for foam work. Most materials to complete...$900.00. T. H. Ratliff, 502 Red Oak Dr., Severna Park, MD 21146 or phone 301-647-1265, no collect calls, please.

QUESTIONS & ANSWERS

Q. Will the R/R 3-blade prop match un with a Revmaster 2100 D engine on a KR-2?
A. Certainly, the adjustable feature of the prop lets you set the pitch that will work the best with your airframe/engine combo.
Q. There are rumors of a KR-1 or -2 on floats. Could you give me more info on this?
A. I've heard the rumors too, but have no real facts. If some of the Newsletter readers could offer more information it would be appreciated.
Q. Can you tell me why earlier KR-2 plans show an empty weight of 400 lbs while the newer plans show 450 lbs?
A. While a 400 lb KR-2 is definitely an achievable goal, 450 lbs was considered more realistic. Most builders are not satisfied with a "basic"airplane and will insist on adding such things as upholstery, electrical system, i.e. starter, alternator, battery, etc. and assorted radio gear.
Q. Is "Devcon 5 minute" epoxy equalivent to Rand/Robinson's 1/2 to 1/2 epoxy?
A. The 5 minute epoxies are similar but their use should be confined to non-structural applications, such as glueing foam. The slower curing 1/2 to 1/2 epoxis are better suited for the dynel and wood.

TIPS FROM OTHER BUILDERS

From Don Chisholm, 124W Manville Rd., Scarborough, ONT....."I've just recently had my first experience with M.O.T. here in Canada. My KR-1 passed its' first inspection with not too much hassle but I did find out what they look for. First off he inspected just about every glue joint on the plane, he inspected the fittings and how well the control surfaces worked. Up here they seem to be very fussy on mods. The only recommendation he made is that what they want to see when they inspect fittings is that when you use any bolts and lock nuts is that there should be a thread and a half protruding past the fibre on the lock nuts. Right now I'm just planning how to do my main gear and waiting for new gear attach castings. Also I'm building up my engine, a 1679 cc VW utilizing all new parts. Please mention *Claudes Buggies, Inc., 28813 Farmersville Blvd, Farmersville, CA 93223 as an excellent source for VW parts, new engine cases $119.95, machined stroker cranks (not cast), forged pistons, etc. good service, as I imagine a lot of people who build KRs can't afford to buy a built up engine or out of orneryness (both cases myself) build it themselves. Keep up the good work.

From Ron Hillsden, 1760 Green Oaks Tce., Victoria BC, Canada V8S 2B1....We have a KR-2 (actually my Father's) C-GlWS which has been completed sinch spring of 1978. We did taxi tests on it and got three flights in before the ring gear cam adrift on his Revmaster 2100. We sent the engine back to Revmaster at their request. Apart from this, the only problems experienced were the stock brakes being out of round and rubbing (one of them seized before we got them turned true) and engine cooling. Hope to let you know more when we get some more time on it. I also have a KR-2 just about finished and my brother bought a project which is about 1/2 finished, so we are going to have three of the things around here. Here are a few ideas you can put in future Newsletters to help out the troops (I hope).

1. Turn the stock brakes and drums in a lathe. As I mentioned earlier, we had a brake seize due to friction heat generated in taxi tests.

2. If electric trim is used, put the trim tab on the pilot side so it can be set to neutral before entry.

3. For all the wiring going to the back of the fuselage, scrap 1/8" ply cut about 1"x1½" and with three or four holes drilled along the edge and glued to the vertical longerones keep things neat.

4. Nylon shoulder washers (used in electronics to insulate bolts going through electrical chassis) can be used in all the aluminium fittings (such as aileron bellcranks) where a moving bolt is attached or used as a pin. This will prevent the bolt from elongating the hole in the aluminium.

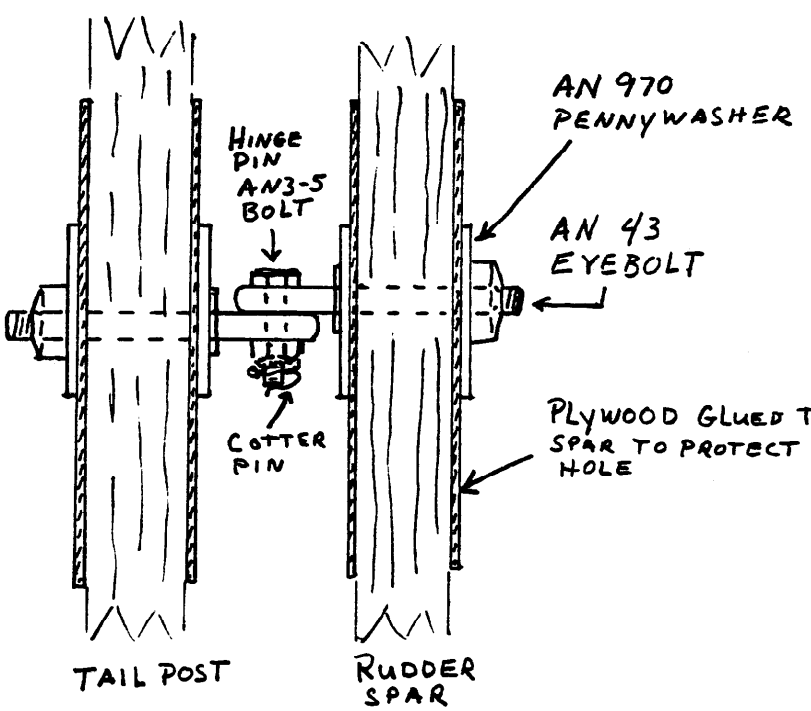
5. Liquid foam can be kept in plastic squeeze bottles for easy dispensing and storage. It is also important that first time users be advised of the dangers of the stuff. A can subjected to direct sunlight may explode. This little charastic can cause fun for an unsuspecting person prying off a tin lid. Point out to your readers, please, the hazard to their eyesight. Liquid foam is considered a toxic material in Canada and vendors keep it in a vault under controlled conditions.

6. Stits covering people manufacture an ultralight fibreglass filler (like Bondo) under the name "Stits MicroBalloon Putty". Excellent stuff.

7. For painting your new 3" registration numbers or a logo like in number 8, an excellent mask can be made by using self sticking shelf paper, cutting out your design with an xacto knife, sticking it to the airplane, and painting. When the paint has gelled, the shelf paper can be removed. Note..this is not the normal decorative Mac Tac but shelf paper.

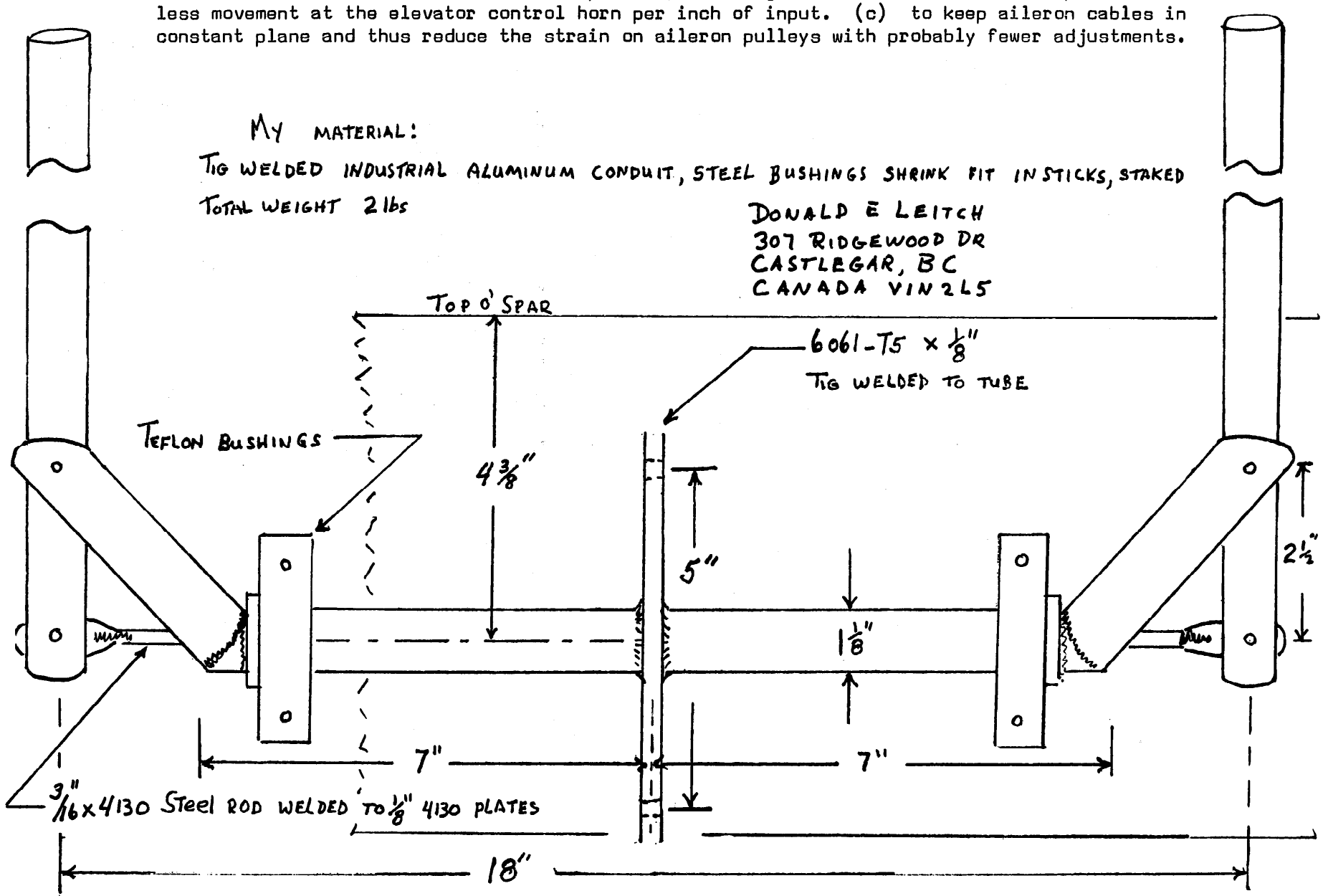
8. Cooling tin for engines. Remember Mr. Volkswagen was no dummy. We used stock cooling tin for the top and front, cut back a bit at the front to allow more air to enter since the "pancake" engine is a "bolt on" for our purposes. On the bottom side, we used "super-tin" from *Claude's Buggys in Farmersville, CA. We now have a tight cowling around our cylinders and heads where it is needed most and next to no weight penalty. This makes the rest of the baffling easier.

9. Finally, instead of using Rand's hinges for rudder and elevator, we stole an idea for for an item that is a little tougher and won't wear itself out. We used AN43 eyebolts bolted through the spars, with a AN3-5 bolt and pined castellated nut for each hinge location.

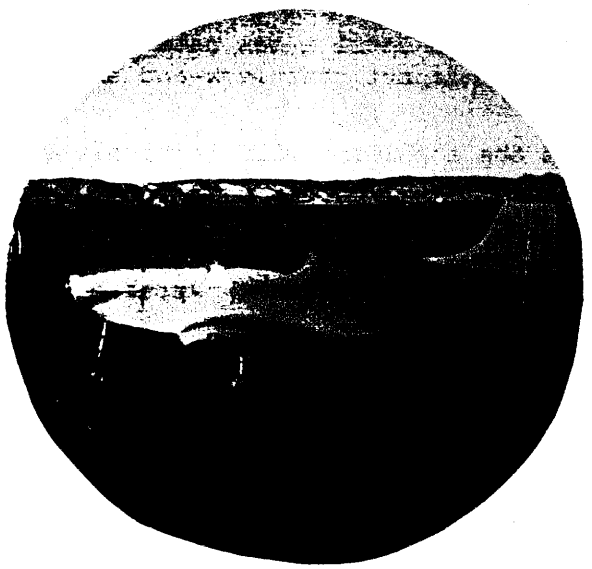


CAUTION...the eyebolt should be tacked with a welder to the large washer behind it, a small screw put in the edge of the washer to prevent the eyebolt from turning and binding. We used epoxy in place of weld and screw.

From Donald E. Leitch, 307 Ridgewood Dr., Castlegar, BC Canada V1N 2L5....Hints: (1) Use round toothpicks to: (a) to join foam planks together and to formers. They can if need be sanded along the foam and even remain in. (b) to act as permanant dowels when assembling fuselage sides together. Locate transverse 5/8" pieces, drill 5/64" hole through longeron into cross piece, glue and drive in 2/3 of the toothpick with tackhammer and clamp up. Then the clamping pressure won't squirt them out of position. (2) As regards overcontrol sensitivity I feel that with the center stick, center retract, center throttle and being right handed in writing, I just had to build dual sticks, my philosophy as follows; (a) to lower the control column so there would be less interferance with the seat and so that I could use fairleads to take the elevator cables under the rear spar. (b) to lengthen the stick for more input travel and thus less movement at the elevator control horn per inch of input. (c) to keep aileron cables in constant plane and thus reduce the strain on aileron pulleys with probably fewer adjustments.



THE SAFE TRI-GEAR



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Gerhard Carlsson
15541 Producer Lane "J"
Huntington Beach, CA 92649

KR CLUB HAPPENINGS

Donations to the memorial fund for Ken have assured that there will be an award presented at the Chino, CA EAA Fly-in and at Oshkosh "79". Many thanks are in order to the people who sent the funds that made this possible. Those who still wish to contribute can make their checks payable to the Kenneth C. Rand Memorial Fund. Mail them to the KR Newsletter or to Rand/Robinson. With enough support these awards will be presented annually.

The VW powered fly-in at Mojave on May 19 & 20 has been cancelled until a new date can be established. There is an aerobatic competion sheduled at the airport that week-end so the VW fly-in will be re-sheduled.

Work on the KR-3 is progressing slowly but it is felt that the amphibian will be completed in time for Oshkosh.

News from Australia indicates that progress is being made toward certification of the KR-2 as a factory built aircraft. Ray Creed of Raylin Pty. Ltd was here in the States gathering suppliers etc. with the idea of turning out KR-2s on a "ready to fly" basis. Apparently the Australian D.O.T. approves and is working closely with Mr. Creed.

All eyes are turning toward Chino for the EAA fly-in on April 28 & 29. I've talked with KR builders hundreds of miles away who are planning to attend. Be there if you can, there should be a record number of KRs on the flightline.

The designee idea outlined in the last Newsletter appears to be working well. Bill DeFreze phoned to say that he is getting calls every week-end for advice and information. I haven't heard from Dan Diehl yet but I'm sure he is getting a similar response. The phone listed for Dan in the last Newsletter was off one digit. Apologies to whoever it might have inconvenienced. Should you wish to discuss a problem in building/flying your KR just contact Bill, Dan or myself....we want to help.

Bill DeFreze, 7530 Ironwood Dr., Dublin, CA 94566. Phone 415-828-2111.
Dan Diehl, 4132 E. 72nd St., Tulsa, OK 74136. Phone 918-492-5111.
Ernest Koppe, 6141 Choctaw Dr., Westminster, CA 92683. Phone 714-897-2677

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
ISSUE # 46

MAY 1979 ISSUE NO. 47

KR NEWSLETTER

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** A monthly publication for communication between KR builders and pilots world wide.**
Edited & published by Ernest Koppe, 6141 Choctaw Dr., Westminster, CA 92683 714-897-2677

CHINO 1979

Ken Rand Memorial Award Winner Photo by Jarold Barnett

Chino does it again! For the second year in a row there have been ten or more KRs displayed at this EAA fly-in. To my knowledge there has been no other fly-in draw as large a turn-out of KRs in consecutive years...not even Oshkosh.

The KRs in attendance this year were.....

KR-2 N52WV Warren Vincent, 10848 Sunnybrae, Chatsworth, CA 91311 built this KR-2 with care, attested to by the fact that it received the KR Club sponsored Ken Rand Memorial award for "Best KR" at Chino. Warren is short on taildragger time and is wisely being checked out by Brad Hummel before soloing the KR-2. Brad has flown four different KR-2s, and is willing to assist anyone desiring help on that 1st flight. His address is 14161 Chestnut St., Westminster, CA 92683 or phone 714-898-3888.

KR-2 N19FW Fred Whitcomb's KR-2 has an electrical system (starter, alternator, etc.) and a turbo-charger on a 1600 VW conversion that he built up himself. The overall appearance of Fred's KR is good but what makes the aircraft outstanding is how light it is. Would you believe only 410 lbs? When asked how he was able to obtain such a light empty weight, Fred said, "I just followed the plans."

KR-2 N24BD Bill DeFreze was on hand to demonstrate his retractable tri-gear system to all comers. If you're looking for the least expensive, quickest to build, retractable tri-gear, Bill has it. He's selling plans to the system, one that utilizes many of Rand/Robinson's existing parts. A twenty dollar bill will get you the easy to follow drawings and construction photos. Bill's address is 7530 Ironwood Dr., Dublin, CA 94566 or phone 415-828-2111.

KR-2 N51998 Murray Rouse gets around! No hangar queen this KR even tho it appears to have been just finished. Murray's KR-2 is one of the higher time KRs around. There are a minimum of deviations from the plans in this KR-2 and Murray says thats the secret of getting a homebuilt project finished quickly.

KR-2 N???? Don Land had his retractable tri-gear KR-2 on hand for its first public showing. The sliding canopy and tri-gear gave the appearance of a miltary fighter in miniature. Don plans on starting taxi tests within 30 days and will have more information then. Meanwhile, he does have plans and drawings available for the complete system. For those of us who don't weld, he plans on offering the gear as a ready to install kit. You can get an isometric drawing from Don with just a S.A.S.E. that shows the system in detail. Plans are $40.00. Write to Don Land, 906 Manzanita St., Los Angeles, CA 90029.

KR-1 N1436 Ken Rand's original aerial hot rod was displayed by Jack Moell of Rand/Robinson.

KR-1 N47186 Butch Grafton was back again this year but then Butch attends all the fly-ins around here. He went to eight different fly-ins in 1978 and is well on the way to matching that total this year. A super sharp KR-1 and a great guy, if you see them at your local fly-in be sure to say hello.

KR-1 N78HM This was my first chance to see Harold Middleton's KR-1 tho I had heard about it before. Harold's home base is in the San Diego area, along with Butch Grafton and Murray Rouse. Harold plans on flying his KR-1 a lot this summer so watch for him. The aircraft has obviously had some thought and effort go into it and its well worth looking over.

KR-1 N???? Robert Apdahl did not actually attend the fly-in as a participant but his KR-1 was hangared in the same hangar the awards banquet was held in. The KR appears to be completed but with only taxi time on it so far. Hope to have more info on this aircraft shortly.

KR-2 N??? Gary Boyd makes the fiberglass parts sold by Rand/Robinson and naturally encourages their use. His KR-2 has a fiberglass <u>fuselage</u> as well as using the rest of the ready made parts R/R has in stock. Eventually this option will be offered to other KR builders <u>after</u> a full series of flight tests are run. The KR Newsletter will have more on this as the info comes in.

KR-2 N??? Garth Hess brought his KR-2 as a static display last year and was back again this year....as a static display. Garth has modified almost every part of the aircraft in some way, going to a laminar flow airfoil & a canopy of his own design. A real innovation was the use of a venturi, built right into the wing fillet, that he made himself and tested by mounting it on his car and measuring the vacuum delivered. Garth should be flying his KR-2 by the end of this year and I'm looking forward to the first flight of this sophisticated KR-2

Well, there you have it. Eleven KRs to look at, compare, admire or criticize. Regardless of what you thought of each particular aircraft, you have to give these guys credit. They took the time to bring their KRs, finished or not, to allow the rest of us a chance to look. They have my thanks and the appreciation of all who came. See you at the next fly-in

Next fly-ins are:

May 18-20	Conroe, TX, Houston Sport Aviation Fly-in, Montgomery County Airport.
May 25-27	Watsonville, CA Antique Fly-in.
June 2 & 3	Mojave, CA, VW Fly-in, Mojave Airport.
June 2 & 3	Merced, CA Antique and Homebuilt Fly-in.
June 21-24	Springfield, OH M.E.R.F.I.
July 28 thru Aug 4	Oshkosh, Wisconsin 27th Annual EAA Fly-in Convention
Sept 26-30	Tullahoma, Tenn. Lst Annual EAA Fall National Fly-in Convention

KR CLUB HAPPENINGS...While at the Chino Fly-in I had the opportunity to meet several KR Club members, some for the first time, some were old friends. Bill DeFreze qualifies as the latter and is probably the most enthusiastic of all the club members. He is really the one responsible for our KR Designee program in which free assistance is given to KR builders in the form of questions answered, advice and occaisionally, a little skilled labor. Anyway, from Bill DeFreze, KR Designee #3, (Ernest Koppe #1 and Dan Diehl #2) "I would like to strongly suggest that all builders of KRs make it a point to obtain all of of the back Newsletters and use these as your 'bible' in building these beautiful planes. In the early Newsletters, the problems with the plans were discovered by the builders and so noted in the Newsletter by Ernie. Later, and as the construction continued, the builders came up with ideas to improve constuction and techniques. I personally found these Newsletters really answered my many questions. There are those out there that think this and other homebuilt airplanes are under or over designed. This is good, because it is good stimulus to listen and see. But one has to evaluate each suggestion on its own merit. Is is really necessary, will it add weight, is the modification itself under or over designed, is it what I want in my airplane??? After you have asked yourself these and other questions, you can then make your judgement. As we all know, Ken built the airplane and then developed the plans. If anyone out there thinks this is easy....try it. You will be amazed. Case in point is my own tri-gear plans. Due to demand after Ernie printed the pictures of my 'baby', the phone jumped off the hook from all over the country. I'm sure Don and Gerhard had the same experience. It took me 3 months to get my plans ready and I still found where it could have been done better. Remember, Ken was only human. It is very difficult, no impossible to think of everything. That,in a nutshell, is the value of the Newsletter and the work and effort that goes into putting it in your mailbox once a month. Put them in a looseleaf binder and protect them. Adding this new designee service by phone or visit will really help you to complete the dream machine safely and with efficency so you can move on to the next project. Ken proved it was not only a fun plane but a reasonable cross country ship. We all know the different air shows and just side trips he took. So it's a great airplane, lets get them finished and form 'squadrons' in our own areas and have some fun. Believe me, there is nothing to be afraid of in building this plane, I don't care if you have never built anything in your life. Yes, it requires some work-WORK! and persistance, but let me tell you publicly, that after all the work and patience I put into N248D, I had a close friend test fly it while I chased along side in the bed of my El Camino taking movies of its first flight. As he broke ground and flew into the blue, at 45 years old, I was so overwhelmed with emotion, happy, excited, thrilled, overjoyed, proud, that I broke down and bawled! Like a little child, I cried. The last time I can remember that kind of joy was when my bride blessed us with a healthy little girl 23 years earlier. Believe me guys, it is an exciting experience to look forward, too. So let us help you over your problems so you can continue on and get them flying. I would like to ask a favor of all you Newsletter readers. Would you submit on a postcard or letter to Ernie the status of your project so we who are interested can get a census of KRs. As an arbitrary scale, lets use this kind of table, 1%...Have plans, 5%...Have all or some parts or kits, 10%... Fuselage built, 20%...Tail feathers, 30%...on gear, 40%...wings completed, 50%...wiring, rigging, instruments and plumb., 60%...needs engine, 70%...detailing toward finish, 80%... need paint and trim, 90%...taxi testing, 100%...flying. If you know of others who don't get the Newsletter, ask them if they would mind helping us with this census. Just make the percentage of completion on a post card and mail it to the Newsletter and we will compile it and let you know the status in the next Newsletters."

**Not only is Bill a KR designee he is now an E.A.A. designee and a founder of E.A.A. Chapter 663. Now that is involvement!

Speaking of KR Designees, the list of KR club members who have volunteered to help you with your problems is growing. Here is a listing....(1) Ernest Koppe, 6141 Choctaw Dr., Westminster, CA 92683 714-897-2677 (2) Dan Diehl, 4132 E 72nd, Tulsa, OK 74136 918-492-5111 (3) Bill DeFreze, 7530 Ironwood Dr., Dublin, CA 94566 415-828-2111 (4) Ray Ellis, 2416 E. Douglas, Des Moines, IA 50317.

The KR Forum at Oshkosh this year will be on Monday, July 30, 12:00 pm to 1:15 pm in forum tent #2. Answering your questions will be Dan Diehl and myself.

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Parts available include flywheel, alternator, and magneto drive.
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Dan Diehl
4132 E. 72nd
Tulsa, OK 74136
ph. 918-492-5111

Retractable tri-cyle landing gear conversion plans by Bill DeFreze. Uses many of Rand's parts, including gear legs & spring bar.
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Bill DeFreze
7530 Ironwood Drive
Dublin, CA 94566
Ph.415-828-2111

Retractable tri-gear for KR-1 or KR-2. Stress analyzed to 3x gross by Marshall Wood, senior design engineer at Rocketdyne. Plans are now available @ $40.00 for complete system. Material kit, excluding wheels $250.00. Ready to install assemblies $800.00. Free isometric view with S.A.S.E.

Don Land
906 Manzanita
Los Angles, CA 90029

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Long Beach, CA 90803
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11741 Reva
Garden Grove, CA 92642

Advertising rates are as follows: Newsletter subscribers seeking or selling parts, materials, etc. for their projects are not charged. Other ads, including completed aircraft for sale, will be charged according to size. . . "business card" ads. . . $6.00, ⅛ page. . . $10.00, ¼ page. . . $18.00, ½ page. . . $35.00, full page. . . $65.00. prices are per monthly issue and may be raised without notice. Ads should be camera ready. Typesetting and halftones available at extra charge.

BUY-SELL-TRADE

FOR SALE....KR-1 fuselage, empennage, and latest plans, $250.00. Wheels, brakes, tires, and tubes, $65.00. Axle kit, epoxy, dynel, etc.....Karl Sheldon, 2614 S. Noche de Paz, Mesa, AZ 85202 phone 602-839-6877.

WANTED....KR-2. Finished or nearly so, less engine. State price and particulars.... Gary Turner, 5136 Pickford Way, Culver City, CA 90230 phone 213-838-5762.

WANTED....Complete 1834 or 2100 cc Revmaster engine in good condition for KR-2. State price and history....R. W. Jones, 8609 NW 10th Ct., Vancouver, WA 98665.

FOR SALE....1 each Wag Aero VW pressure cowl and 1 each fiberglass fuel tank for KR-1. Reg. $160.00 value, will sell for $70.00....Dan Scharf, 9564 Hwy BB, Campbellsport, WI 53010 phone 414-533-8720 after 6 pm central time...no collect calls.

FOR SALE....KR-2 project. Fuselage ready for inspection, spars almost complete, all wood necessary to finish, epoxy, plans, catalogs, Newsletters and E.A.A. "how-to" books. All for $600.00....Bill Logan, 11940 Old Orchard Dr, Indianapolis, IN 46236. phone 317-823-6779...no collect calls.

WANTED....KR-2 project, prefer fuselage wood work completed, and on gear if possible. Further completion OK, but have engine and instruments to complete. Jim Mack, 1670 Van Patten St., Reno, NV 89503 or call callect 702-747-3505.

PAINTING & INTERIORS...Metro East Airport, St. Jacob, IL....contact Darwin Roach, 1158 Wanda Dr., Granite City, IL 62040

FOR SALE....KR-2 project. Fuselage complete, on gear, ready for foam. All R/R fiberglass parts, 1834 VW conversion with R/R 3-blade prop, hub and spinner, several instruments and other goodies. $4000.00....Bob Hamill, 3967 6th Ave., Los Angeles, CA 90018 or phone 213-296-5294/

AN INTAKE & EXHAUST SYSTEM FOR YOUR VW CONVERSION

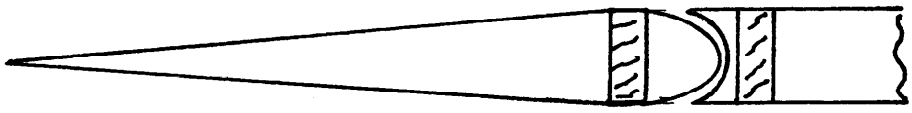
When I began putting together an engine for my KR, I discovered that an intake/exhaust system that suited my needs was not readily available. What I wanted was a compact, efficient, easy to install system that would give me some of the benefits of a tuned exhaust and still fit inside a KR-1 cowl. I reasoned that if it were compact enough to fit a KR-1 it would easily fit inside a KR-2 or other VW aircraft cowling.

After looking at several high perfomrance systems made for VW cars and dune buggies, I decided something similar could be used for aircraft. I have located a shop that specializes in custom exhaust design and they are currently fabricating an intake/exhaust system to my specifications. Should this set-up prove out, I will have several more made using the original as a pattern. These intake/exhaust systems will be for sale as soon as I'm satisfied there are no problems with the design. Both single and dual port heads are in the works so the systems will fit all VW conversions 1300 thru 2200 cc. No price has been set, nor will there be until the design is finalized but total for both systems should not exceed $150.00. They will, of course, be available separately. Write me if you're interested.....Ernest Koppe.

Now that the KR-2 is an "Approved to Build" aircraft in Australia they are finding good props are hard to come by. Seems as tho props also have to have the approval of the Australian D.O.T. So....again they need your help. If you are using the R/R 3-blade adjustable prop on your aircraft, and have 100 hrs or more, please send me your name and any thing noteworthy regarding performance of the aircraft/prop combination. This information is vital to our Aussie friends as they don't have the freedom to use just any prop, it must be approved. In order to obtain this approval they have to have proof of at least seven aircraft utilizing the prop for the required 100 hrs. A post card to the KR Newsletter with our name, kind of aircraft, size of engine, amount of hours on the 3-blade prop will get things started. Send it today...

QUESTIONS & ANSWERS

Q. Do the rudder cables go over or thru the main spar? Where do they exit the fuselage?
A. The rudder cables go over the spars thru fair leads or pulleys. They exit 3 1/2" from the bottom of the fuselage, 17" forward of the vertical stabilizer.
Q. Will the KR-3 be finished in time for Oshkosh "79"?
A. Work on the KR-3 is progressing but no target date for completion has been established.
Q. Where can I get conversion parts for a type IV VW engine?
A. You can get your machine work, parts, etc. from Custom Aircraft Engines, Route #3, Box 427, Sanford, NC 27330.
Q. I've heard rumors of a KR-1 or -2 on floats, are these rumors based on fact?
A. I've heard the rumors too, but I don't know that such an aircraft actually exists. If anyone can substantiate these rumors for us, I'll get it in the next Newsletter.
Q. How are other builders closing the gap between the stabilizers and control surfaces?
A. Best way is to continue the foam/dynel beyond the spars thus.....



Q. What batteries are being used in the KRs to crank over the Revmaster 2100 D?
A. Battery requirements seem to vary among homebuilders using starters but I feel this is more a matter of proper size wiring and adequate grounding then anything else. Rules to keep in mind when wiring for a starter are: (1) mount battery as close as possible to starter and starter relay. (2) use adequate size cable for positive and negative connections...when in doubt use automotive battery cables and connections. (3) have an adequate ground directly to the starter housing or to one of the bolts that attach the starter to the accessory case. (4) be sure the alternator is keeping the battery fully charged. Install a voltmeter in your aircraft, it will tell you more about the condition of your battery than an ammeter. (5) The battery offered by R/R is adequate for starting a 2100 Revmaster.

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
ISSUE # 47

JUNE 1979 ISSUE NO. 48

KR NEWSLETTER

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** A monthly publication for communication between KR builders and pilots world wide.**
Edited & published by Ernest Koppe, 6141 Choctaw Dr., Westminster, CA 92683 714-897-2677

EDITORIAL.....

The freedom you enjoy in constructing homebuilt aircraft is due largely to the efforts of one organization...the Experimental Aircraft Association, better known as E.A.A.

Recently the F.A.A. came up with some proposed rule changes that would have made it almost impossible to enjoy flying that homebuilt or any other light airplane, unless you were among the very well-to-do builders who are putting in IFR equipment in their projects. The E.A.A. was again at the fore front in urging for a more sensible approach to a very real problem. Thousands of E.A.A. members wrote the F.A.A., their state and national elected officials, protesting the high-handed way the F.A.A. was treating our freedom to fly. It got results. A bill, HR 3480 has been introduced in Congress that would restrict the F.A.A. from making rules that affect U.S. airspace without first satisfying Congress for their need and applicability. Let your Congressmen know you want this bill passed.

The E.A.A. needs your support!! I know at least half the KR Newsletter readers are E.A.A. members, it is the other half I am now appealing to. Stand up and be counted!! Join the E.A.A., be a part of an organization that truly represents YOU!!

Membership in the E.A.A. is $25.00 annually, and this includes 12 issues of Sport Aviation, the finest publication of its kind anywhere. The friendship and co-operation among fellow E.A.A. members is something that has to be experienced to be believed. Don't be left out, help out. Join TODAY. Write E.A.A., P.O. Box 229, Hales Corners, WI 53130.

The survey suggested by Bill DeFreze in the last issue is bringing in some response. I'm going to list names and percentage complete as the info becomes available. If you haven't sent in your answer to the survey, use the outline in the last issue. Send it in and we'll get it in the next issue.

KR-2	30%	Gerald Davis, Ft. Meyers, FL
KR-2	40%	Winton Lowery, Manassas, VA
KR-1	35%	John Andre, Virginia Beach, VA
KR-2	80%	L.A. Frouws, Oranjemund, SW Africa
KR-2	55%	Fred Richen, Puyallup, WA
KR-2	10%	Michael Hull, Redford, MI
KR-2	20%	Ron Jones, Vancouver, WA
KR-2	30%	Edward Ham, Sandy, OR
KR-2	10%	Richard Palmer, Portland, OR
KR-2	1%	Joe Ambrose, West Point, VA
KR-2	100%	L.C. Davison, Canyon, TX
KR-2	65%	Walt Nettle, Huntington Beach, CA
KR-2	8%	Al Boyd, Tucson, AZ
KR-1	40%	Arden Reiman, Perry, IA
KR-2	40%	Bill Lee, Tavernier, FL
KR-2	30%	Mark Kaufman, Shelocta, PA
KR-2	1%	Clayton Howe, Bryant Pond, ME
KR-1	30%	Frank O'Brien, Willingboro, NJ
KR-2	30%	Dennis Harms, Newton, KS
KR-2	40%	Milford Moss, Logansport, IN
KR-2	40%	Bill Ayers, Tracy, CA
KR-1	70%	Don Pearsall, Klamath Falls, OR
KR-1	15%	Gary Swanson, Edmond, OK
KR-2	30%	T.N. Skiles, Cedar Park, TX
KR-2	20%	Mike Ballard, Niangua, MO
KR-1	75%	Laurence James, Fairmont, IN

SPECIAL REQUEST.....Fred Richen, 9917 152nd St. E., Puyallup, WA 98371 was the fellow that introduced me to liquid foam. He is helping in organizing a reunion of WW II pilots stationed in England. If you, or someone you know, might qualify have them contact one of the following addresses....

8th Airforce Clearing House
c/o E.A. Fessler
3911 N.W. 173rd Terrace
Opa-Locka, FL 33055

91st Bomb Group (H)
Western Division
Geo. W. Parks M/Sgt (Ret.)
109 Wilshire Ave.
Vallejo, CA 94590

**Ron Sorrell reports that the 1st flight of his KR-2, N78RS went off without a hitch. He plans on flying the hours off and getting it to Oshkosh '79 so look for him there. Ron has promised more info on performance figures for his KR so watch coming Newsletters. Other club members around Ron can benefit from his experience as he has volunteered to be our newest KR designee...Ron Sorrell, 6505 Sassafras Dr., Independence, KY 41051.
**I need an update for KR Club meeting dates around the coumtry (or countries). The local meet here is at my place, 2nd Monday every month at 7:30 pm.
**I liked the "super tin" mentioned by one of our Canadian builders in a previous issue so I set out to buy a set for myself. These baffles are already formed to fit the lower half of a VW engine and will direct airflow in a manner to avoid "hot spot" areas. I found a shop that will sell these baffles in quanities at a good savings. Price per set is $12.50 plus shipping. California add 6% tax. Send orders to Ernest Koppe, 6141 Choctaw Dr., Westminster, CA 92683
**Development of the tuned intake/exhaust system has progressed nicely. Design is finalized and the prototype is at a tube bender for copying. Hope to have photo and prices in the next Newsletter.
**Ron Jones, a KR Newsletter subscriber in Washington, read of Brad Hummel flying an assortment of KR-2s and wrote for a few pointers on what to expect from his KR-2 on the first flight. Ron's KR will be powered by a Revmaster 2100 turning a Rand 3-blade prop. He wants to widen the fuselage 2" and install flaps. Here is a copy of Brad's reply to Ron, I thought it worth repeating....

Dear Ron,

I think your idea of widening the KR-2 fuselage by two inches is a good one. My own KR-2 is widened 2 1/4 inches over the rear spar and it really makes a big difference. Ken used to tell builders that it would probably slow the plane down two or three miles per hour but that is all. No one has ever had any C.G. problems from a wider fuselage. If you could make the bottom a little wider at the same time your seat room will improve your control ability with two people and your gear hinges will be farther apart and you probably won't have the gear spring bar problems.

Keep it light. Every ounce is directly related to your rate of climb. Squeeze all excess glue out of your wood joints and put it back in the can. Carve your foam and sand it to as close to perfect as you can get it. Take the time now and you will save double time later. Apply your epoxy and dynel so that it is totally soaked in epoxy and then squeegie it as dry as you can get it without breaking the foam. Then let it harden for a few days and take a disc or belt sander to it. Knock off the rough tops of the dynel until you can see clearly the weave of the cloth. Don't go through the cloth. If you do, carve out a small dish in the spot and repair with a small round patch of dynel and epoxy. After sanded you can lay a light layer of epoxy over the cloth, (to be sanded almost off totally later), to fill in any dry spots. Or, just fill with a light coat of feather-fill polyester paint. This method of glass work will really keep the weight down.

Also, don't be afraid to grind or sand down your spars to conform to wing contour. Be sure the dynel contacts the spar as it crosses over it. Don't fill with foam as it will separate in flight. O.K.?

From the KR-2 you described to me I would say you will have pretty much a normal KR-2. Ground visibility will depend on how much angle you put on your tail wheel, (more down angle, less top speed, more visibility). When you add full power for take-off, the tail will come off the ground as soon as you want it to. Take-off roll will be about 800 ft. Climb at 90 to 100 mph will be about 1200 fpm alone and 550 fpm with a passenger. Your engine will probably overheat if you try to climb out with your gear down and there is about a 40 mph difference in top speed with it down. Your cruise will be about 160 mph with a top speed around 175 mph. With the R/R 3-blade prop you can set it for a much faster top and cruise speed (probably 190 and 175). But your take-off roll and rate of climb will suffer.

Once in the air you will find your KR to be a fast, touchy, quick reacting little airplane. Don't let it scare you. Control movements are slight. An inch one way or the other on the stick will do what a full control movement used to do in a standard airplane.

(cont.)

DON'T TRY to go around the pattern on your first flight if you can help it. Climb out to about 5000' AGL and fly it for about an hour. After 45 minutes you will notice that the KR seems to have lost most of its sensitivity and you will begin to feel more comfortable. Now you can try a landing or two if you want. You're getting used to the airplane.

Downwind between 90 and 100, (don't forget your landing gear at this point). Once below 80 mph you can lower your flaps. You probably could lower them at a higher speed but Ken never did.

80 mph usually gives me a good rate of descent and a good constant view of the runway. Then as I am coming up on the numbers at around 50 feet I will pull the power and level off. Slow the plane down to around 60 and push the nose over and dive on the numbers. At 10 feet or so I level off in ground effect and then land normally. This is the way I like to land but it can seem scarey at times.

With flaps you can probably come in at 65 or 70 down to the runway and just land normally. As a rule the rate of descent can be controlled with power, but, under 75, without flaps, you're in such a nose-high attitude that you can't see the runway until you're on top of it or side slip. I have flown a KR-2 as low as 28 mph I.A.S. without a loss of altitude. Stall is gentle and gives you lots of warning.

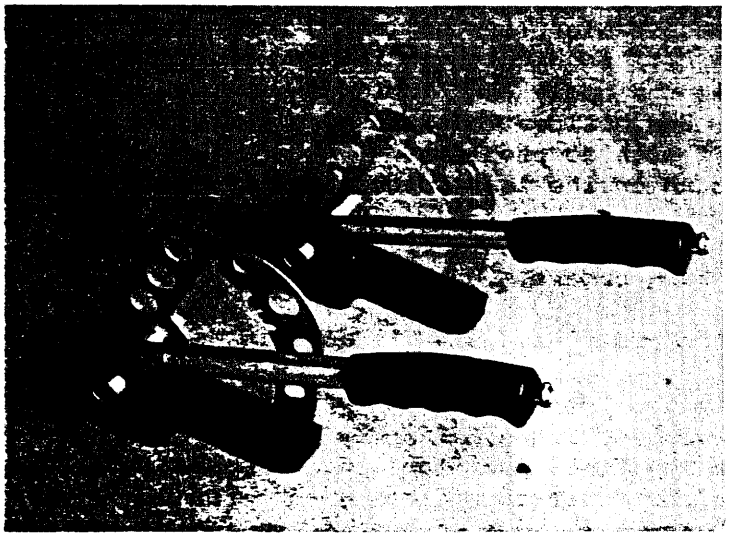
If you should get the airplane in a very slow stall (like 20 mph) and it rolls off on you, bring your controls to neutral and wait for 60 mph to recover. Any earlier attempt can cause a secondary accelerated stall and maybe even a snap roll, but this is rare.

The posa-carb does not require a carb heat or mixture control to fly in normal conditions. However, in extreme conditions it can and has iced up on me and you will lose some power from 10,000' on up without some sort of mixture control. So, you will have to decide. Keep it light! Ken used his on/off needle valve as a mixture control.

I don't think you will have many problems flying the KR-2 but I would suggest some touch and goes in a fast tail-dragger, like a Citabria before you go up. Maybe two hours of touch and goes and some air time in a Grumman TR-2 trainer. The TR-2 will give you a little preparation for the sensitivity.

I hope to be in your area in the next year but if not, I will definitely be at Oshkosh for the fly-in this year. Please feel free to contact me in the future if you have any further questions or want a check-out ride in a KR-2 before you fly yours.

Sincerely,
Brad Hummel
14161 Chestnut St.
Westminster, CA 92683
Ph. 714-894-3888



GET A HANDLE ON IT!

Your flaps that is. Rand/Robinson now has available flap handle assemblies that require no welding to install. Machined from aluminum with a wood base. Ready to install.....$19.50.

HAPPENINGS.....

June 9 & 10.....E.A.A. Chapter 135 is assembling an indoor display of homebuilt aircraft, 20 to 30 display aircraft expected, 4 KRs for sure and the possibility of 4 more. Its at the Merle Hay Mall, Des Moines, IA. Contact Arden Reiman, 1418 Highview Dr., Perry, IA 50220 or phone 515-465-2490.

June 21-24.....M.E.R.F.I. at Springfield, OH. Contact Bernie Yeates, 200 Countryside Dr., Enon, OH 45323 or phone 513-864-1728.

QUESTIONS & ANSWERS

Q. Can the KR-2 fuselage side frames be assembled without first putting on the plywood skin?

A. Yes, but I would do it in a jig to assure perfect alignment.

Q. I built the wood portion of my KR using Weldwood Plastic Resin. Is this acceptable?

A. Yes, the prototype KR-1 and -2 were built with Weldwood Plastic Resin.

Q. Is it normal for the KR-2 fuselage sides to bow at the center top longeron when curved to the proper dimensions?

A. Yes, there may be as much as 3/4".

Q. Will this curvature present special problems when determining the angle of incidence of the wing or the horizontal stabilizer?

A. The wing spars will rest on the bottom longerons and will not be affected by the curvature. The fwd spar of the horizontal stab can be raised 1/8" above the top longeron but to select the ideal angle of incidence for the horiz stab. use the table in Newsletter #40.

Q. Will the intake/exhaust system you mentioned in the last Newsletter (47) fit a 1200 cc (40 HP) VW?

A. No, it is designed for the larger VWs, 1300 to 2200 cc.

Q. Are the AN4 bolts thru the axles really strong enough?

A. I have seen landing gear castings broken from potholes, runway lights, hard landings, etc. I have yet to see a properly fit axle bolt fail.

Q. Where do I position the pitot tube and static air outlet?

A. Position the pitot tube out of the prop slipstream on the leading edge of the center section wing. Positioning of the static port requires experimenting with locations on <u>your</u> aircraft. Most builders leave the static vent open to cabin air but some have found that the area on the side of the fuselage about 12" aft of the cabin 6" below the top longeron is an acceptable site for a static port.

Q. Do you have all of the back issues of the KR Newsletter? What is the costs for all?

A. I try to keep a full supply of back issues at all times and reprint issues as it becomes necessary. Normal price of the back issues is 75¢ each but due to reprinting of several large amounts lately I can lower the costs to 50¢ each in orders of 24 or more.

Q. My hands have become sensitive to epoxy (Rand's two years ago). I've tried vaseline, gloves, etc. to no avail, has anyone found an effective barrier to the epoxy fumes?

A. I don't know of anyone that has found an acceptable glove or lotion once they have become sensitive to epoxy. I hope someone will read this and let me know if they have found something that works. Meanwhile the epoxy Rand/Robinson supplies has been changed to a less allergenic formulation. One builder that was <u>very</u> sensitive to the previous blend is able to use the new stuff with no problems.

Q. Is Revmaster still in business? I ordered an engine last October and it still hasn't been delivered.

A. Revmaster is very much in business. The increasing popularity of VW powered aircraft has kept them from catching up with their back orders.

Q. Has anyone used Kevlar on their KR?

A. Yes, Don Land is using Kevlar exclusively on his KR-2. See his ad this Newsletter for his address.

Q. How is the fiberglass fast back attached to the fuselage on a KR-2?

A. Position the fiberglass piece to suit the desired lines. You may trim or add to get the desired shape. Tack glue the piece in the final position and configuration. After this has set up, run a strip of Dynel or fiberglass cloth 4"-6" wide along the seam, overlapping wood and fiberglass part equally. Run another strip inside the fuselage (about arms length) from each end. Allow to cure then fair in with a microballoon filler.

Q. Has anyone tried a CB in a KR? Would it work?

A. I don't know about a KR but I know it has been tried in other aircraft. Transmissions are loud and clear for miles from a 5000 ft. altitude. Unfortunately, your reception is equally as good. You pick up all transmissions for miles around. Very difficult to pick out any one signal.

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7530 Ironwood Drive
Dublin, CA 94566
Ph.415-828-2111

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Don Land
906 Manzanita
Los Angles, CA 90029

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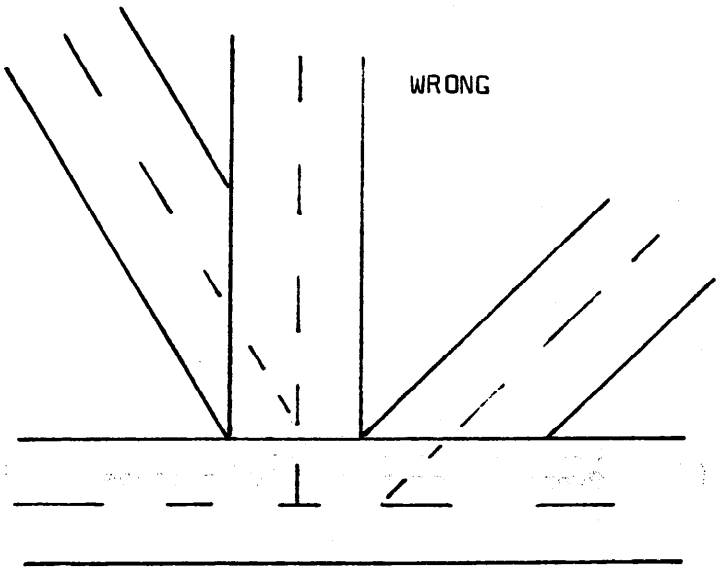
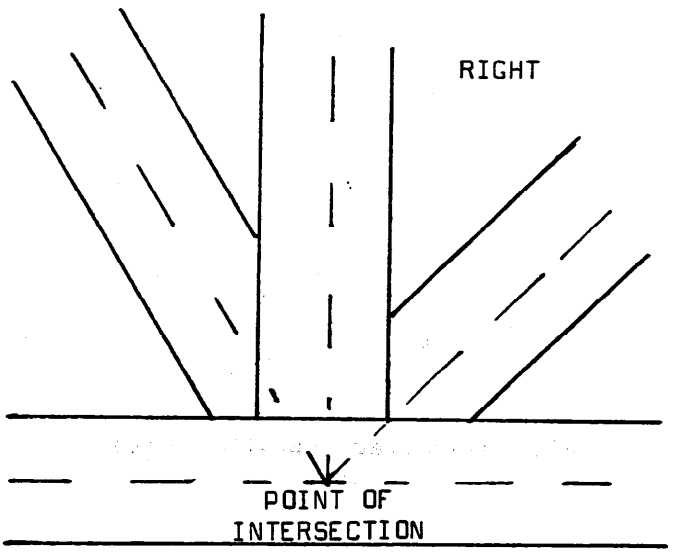
Tips From Other Builders

Good building practice dictates that the centerline of all fuselage longerons, uprights, cross members, and angular braces intersect whenever possible. D.O.T. inspectors in Australia insist on this practice and will not accept otherwise. Keep this in mind when you are laying out the fuselage side frames for your KR.

Ray Creed
Australia





ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
ISSUE # 48

July 1979 Issue #49

NEWSLETTER

RATES
1 Year $9.00
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** A monthly publication for communication between KR builders and pilots world wide.**
Edited & published by Ernest Koppe, 6141 Choctaw Dr., Westminster, CA 92683 714-897-2677

Have you looked at the long, long list of fly-ins happening everywhere this summer? Pick up any aviation magazine and take a look. Remember when four or five fly-ins would be a great year? Now there just isn't enough time to read about 'em much less get to all of them. How does it feel to be a part of this almost unbelievable world of "grass roots" aviation? You are a part of it you know, and it should give you a sense of pride in what you are doing. Homebuilt, custom, antique, classic, ultralight, whatever you want to call it, are part of "grassroots" aviation and it needs your support to continue growing. Take your aircraft to a fly-in this summer. It doesn't matter if it is "show quality" or not. It doesn't even have to be a finished aircraft. There is an abundance of interest in how to build an airplane as well as what they look like ready to fly. Encourage your non-flying neighbors to come to a fly-in in your area. The more people that become interested in our sport, the stronger grassroots aviation will become.

You've heard the term "Golden Age of Aviation", it is usually referring to the mid 1920s and 30s era when there were so very many aircraft manfacturers. It was a good era, no doubt about that....but...look around. There is more interest in "grassroots" aviation right now than any time in the relatively short history of flight. The "Golden Age of Aviation is NOW and you are a part of it. Be proud of it, nurture it, share it with your friends.....it could even be better.

The Chino airshow had a good turn-out earlier this spring. There was one KR-2 expected that didn't arrive, however. The following letter explains what happened:

I would like to thank Frank Smith and James Demick both of Alburquerque for their help. On a recent trip to Chino, CA fly-in, I had an engine failure in my KR-2. A very successful forced landing was made on an airport. A call to Frank Smith put the entire KR population of Alburquerque into action. I put my engine in the right seat of Frank's Cessna 150 and flew it back to Tulsa. I pulled the engine out of my other plane and returned to Alburquerque with it in Frank's plane. Put the new engine in my KR and returned to Tulsa; safely. I might add that the entire incident took nearly three weeks due to weather back in Tulsa which kept me from returning to Alburquerque and also a stomach flu that kept me in bed for several days. Jim Demick and his wife, Anne, took excellent care of me and also loaned me one of their cars to run around town. Frank Smith had his KR-2 ready to fly and signed off but hadn't flown it yet. After a few modifications I was given the honor of flying it for the first time. It flew well. He is now flying it himself. The Alburquerque EAA Chapter let me keep my plane in their hanger. It's good to know that there are still people around who will help the way these people did me. On the return trip to Tulsa I ran the turbo 2200 CC at 3200 rpm and 25" manifold pressure. At 11,500 ft. I was able to average 185, 190 mph ground speed and burned only 3.85 gph. On studying the engine it was found that the crankshaft had broken at the center main. The crank was a welded stroker, without counter weights. I feel certain that this is what caused the failure at 450 hrs. I have ordered a forged 4130 crank from Scat to replace this one. I am now installing wing tanks to give me 6 hrs. range. At present my main tank holds 13 gal. The wing tanks will hold 6 gal. each.

Dan Diehl 4132 E 72nd St. Tulsa, OK 74136
Phone 918-492-5111

***Request from people up in snow-mobile country. Rand/Robinson is out of the 12 volt starters used on the "Supercases" and most other conversions. The starter is a Bosch unit #0-001-160-002. It is used on snowmobiles with Sach or JLO engines. Some of the Artic Cats use this with the Nipendenso engine. If you will please ask around for these please contact me about price and quantity you are able to find. There are many guys looking for these now and down here we don't have snowmobiles. Thanks, Dan Diehl

QUESTIONS & ANSWERS

Q. I read in Dan Diehls info sheet that R/R sells the 4016 magneto but the R/R price list only shows a 4216 magneto. Is there a difference in these two mags?

A. R/R informed me that Slick is not longer manufacturing the 4016 model. The 4216 is the replacement and will fit where the 4016 did before. The 4216 model is rebuildable, the 4016 was not.

Q. Can I make the vertical pieces in the spars full width?

A. Yes. You are adding needless weight however. I would use the sizes advised in the plans. Just make sure there is full contact with the spar web.

Q. I noticed the flap handle in Issue #48. Who has the plans to install flaps?

A. The flap drawings are in Newsletter #42.

Q. The Posa carb doesn't have a spring for slide return and it has an extra outlet. Is this for a vacuum line? What is it connected to?

A. The cable that operates the slide can be replaced with a push/pull rod, a return spring is not necessary. The outlet you refer to is a drain to alleviate flooding the plenum chamber.

Q. What is the ideal angle of incidence for the horiz. stab on a KR-2, 2100 turbo with a R/R 3-blade prop?

A. Level your fuselage <u>exactly</u>. Your horiz. stab. chord line should also be exactly level. This will give you an 0^{o} angle of incidence for the stab., or about a -4^{o} in relation to the wing <u>if</u> you installed the wing spars per your plans.

Q. Is the aileron spar covered with dynel or is epoxy all that holds the spar in place?

A. Epoxy is all that is needed. The spar must fit as well as possible, contacting the skin along its full length. This means <u>all</u> the foam must be removed in the 1/4" recess you make for the spar so there is good spar to skin contact.

Q. Does the trim control cable go thru the elevator spar? I hope so because that is how I have drilled mine!

A. The trim cable should go over (or under) the elevator spar. Not only do you weaken the spar by going thru it, up and down movment of the elevator can cause the cable to rub against the rear horiz. stab. spar and cause damaging wear. I recommend you plug the hole in your elevator spar and possibly cover the area with a plywood web, then re-route the trim control cable. There is ample area in the fillet area of the empennage to conceal the cable.

Q. Does the brake cable run thru the I sections for undercarriage locks? What type of fair lead should be used?

A. The cable does go thru the I section. A nylon or teflon fairlead would be satisfactory.

Q. Is it necessary to have the cut-out in the fiberglass fuel tank? I presume it is for fitment of radios.

A. The cut-out is for radio clearance but it does provide some stiffening to the tank construction. If you block off the cut-out to add more capacity to the fuel tank I suggest you leave it in place to serve as baffling. This can be done simply by putting holes in the sides of the cut-out to allow fuel to flow through it, then covering the outside of the cut-out with three to four layers of glass cloth and epoxy to match the contour of the back of the fuel tank.

Q. Has anyone tried using the urethane foam dust mixed with epoxy and used as a filler?

A. Several builders have reported trying this method with good results. I doubt if it would be as easy to work as microballoons but it would certainly cost less.

**Questions directed to the Newsletter editor by mail will be answered in the following issues of the Newsletter. Questions requiring an immediate answer should be made by phone to 714-897-2677 evenings 5 p.m. til 11 p.m. Pacific time. Overseas subscribers are the exception.

The lower cylinder cooling shrouds (Supertin) in the last issue was well accepted so I've ordered another dozen. Cost is $12.50 U.S. per set and $2.00 shipping as long as I can get them at this reduced price. (Canadian shipping $3.00 and overseas shipping $4.00)

I've ordered a vinyl stick-on KR patch, 2" x 4", KR Club members can get one free by sending me a S.A.S.E. They are 50¢ each to everyone else.

Ernest Kopec

HAPPENINGS

Oshkosh is just around the corner and from here it looks like a good turn out of KRs will be there. I've had great expectations before but this year it doesn't look as tho' I'll be disappointed. The KR Forum this year will on Monday, July 30th, 12 noon to 1:15 P.M. in Forum tent #2. Look for all your KR Designees to be there.

July 13-15 Orillia, Ontario, Canada Annual E.A.A.C. Sport Aviation Convention. Contact George Jones, 246 Renforth Dr., Etobicoke, Ont., Canada M9C 2K9. Phone 416-621-0381.

Aug. 10-12 Arlington, Wash. 10th Annual Fly-in. Contact Dick Baxter, 15845 8th NE, Seattle, WA 98155.

Sept. 14-16 Kerrville, Texas 15th Annual EAA Southwest Regional Fly-in. Contact Dave Beckett, 5103 Village Row, San Antonio, TX 78218. 512-653-4710

Oct. 20 & 21 Copper State Fly-in at Marana Air Park. KR builders and pilots contact Ray Backstrom for further info. If there's enough interest there will be a KR Club meeting. Ray's address is 7721 N. Soledad Ave., Tucson, AZ 85704.

SURVEY

The mail really poured in this month, mostly survey response from Issue #47. You can see it is quite a list and takes up a considerable amount of space so next issue will be the last time it is published. If your name hasn't appeared in the survey list yet, be sure to get a card or letter mailed soon

KR-1	1%	Dale Walker, Houston, TX
KR-1	5%	Laurel Jone, Houston, TX
KR-2	40%	Bob Hilliard, Houston, TX
"	5%	Sid Irby, Houston, TX
"	40%	John Well, Houston, TX
"	1%	Dave Turner, Houston, TX
"	30%	John Dowdy, Houston, TX
"	20%	Geoff Jones, Houston, TX
"	30%	Bill Wafford, Houston, TX
"	5%	Chuck Borne, Houston, TX
"	30%	Rex Ellington, Houston, TX
"	20%	Bob Patlovany, Houston, TX
"	10%	Pete Gandy, Houston, TX
"	20%	Mark Mitchell & Ed Taylor from Houston, TX
KR-1	75%	Brian Benjamin, Spartanburg, SC
KR-2	30%	Gene Elletson, Cartwright, ND
"	40%	Richard Nichols, Corpus Christi, TX
"	80%	Don Hunter, Ontario, Canada
"	50%	Steve Makish, Ft. Lauderdale, FL
"	5%	Hamilton Ryder, Cupertino, CA
"	100%	Paul Venne, Long Beach, CA
"	50%	George Holt, Granada Hill, CA
"	60%	Emmett Dignon, Campbell, CA
"	80%	C.S. Jackson, Sterling Hts, MI
KR-1	100%	Bruce Bateman, Phoenix, AZ
KR-1	50%	Frank Magyar, Cottage Grove, MN
KR-2	45%	Joseph Maas, Naranja, FL
KR-2	45%	Gilles Ducharme, Terrebonne PQ Canada
KR-2	60%	Johnny Hinton, Florence, AL
KR-2	20%	Floyd Koppehaver, Millersburg, PA
KR-2	5%	Ted O'Dell, Milan, MI
KR-2	5%	Martin Luker, Austin, TX
KR-2	70%	Curtis Wilson, Clarksfield, MN
KR-2	20%	W. Doxsee, Ont., Canada
KR-2	25%	Charles Edwards, Sapulpa, OK
KR-2	30%	Dennis Harms, Newton, KS
KR-2	35%	Roger Reese, Kearns, UT
KR	40%	Bud Shanks, Ohio
KR-2	25%	H.S. Talton, Jr, DeLand, FL
KR-2	60%	Bob Schlaegel, Florida
KR-2	90%	Ken Ranta, Omaha, KS
KR	30%	Rod Troyer, Wooster, OH
KR-1	35%	Jim Snyder, Hesston, KS
KR-2	80%	Richard Narber, Glendale, AZ
KR-1	50%	CJ Soboleski, Riverton, VA
KR-2	30%	Mike Hein, Griffin, GA
KR-1	78%	Ray Backstrom, Tucson, AZ
KR-2	7½%	Robert Steffens, Rutherford NJ
KR-2	50%	Jeanette Dobias, Minneapolis MN
KR-2	68%	Bruce Gilinsky, Lakeview, OR
KR-2	45%	Don Smith, Uvalde, TX
KR-1	30%	C H Bliss, Rockledge, FL
KR-2	25%	J Milligan, Blauvelt, NY
KR-2	75%	Garth Hess, Upland, CA
"	90%	Ed Nelson, Pinehurst, ID
"	40%	Gus Sabelino, Huntington Beach, CA
KR-2	15%	Jaques Carbonneau, Que.Canada

Some of you guys questioned the percentage of completion as outlined by Bill DeFreze in Issue #47 but I think you will find that is a reasonable estimate. It is all relative anyway, what counts is getting it to that final 100% complete and flying stage. The schedule just gives something for the builder to look at, point his finger to, and say "My KR is at this stage."

TIPS FROM OTHER BUILDERS...

I subscribe to the *EAA Designee Newsletter, a month publication with all sorts of ideas, building tips, and other information a homebuilder would find valuable. This month's Designee News came just as I was sending the KR Newsletter to the printer but contained an article that should be spread around. So....stop the presses!

Dear Ron:

The Designee Newsletters have been great and our Chapter (#498) find it a truly valuable source of information. Keep up the good work.

My reason for writing is the posa or injector carburetor and adjusting same. I have had three of these to play with, the first on a 1700 CC Volksplane which I flew for 200 hrs., the second on my Sonerai II's first engine which was 1700 CC and now the third on my new engine which is 2180 CC Volks conversion. This gives me a total of 350 hrs. to use as an experience background...not much, but enough.

First thing I would like to say about this style of carburetor is that although the FAA wants to see carb heat boxes installed, I have yet to get any carb ice and I fly year round. This is probably because the posa is really just a mixing valve and does not have a true venturi such as found in normal carbs.

It seems that when you try to adjust these as the posa directions tell you, about the time your max rpms are lean enough for a nice light grey stack color, the engine will not idle as it is too lean on the low end. The situation reverses itself when you go the other way; if the engine goes good it will be too rich at cruise rpm.

After putting up with a rough idle and having it stall on roll out a couple of times I decided to do something about it and it worked. My 2180 with a 32 MM posa now idles beautiful and cruises fine with no elaborate mixture controls as others have done.

This is how I did it and maybe someone else can benefit by it.

First establish the carb setting for a good max rpm mixture, write down no. of turns with which needle.

Second, find the setting at which your engine idles best at, write it down.

Next, remove the carb and set it up on your work bench with a make shift gravity feed fuel tank.

Set the carb in the updraft position on a tin can to collect the fuel and hook up the gas. The fuel supply does not have to be the same height above the carb as in the aircraft as long as it is kept at a constant height so all measurements are with the same head of fuel.

Adjust carb for setting which gave you a good idle, close carb air shutter or slider and turn on fuel for six minutes and measure amount of fuel in the can. This amount times 10 will tell you how much fuel your engine needs to idle properly per hour. Now change adjustment to the one which gave you a good max rpms and check the flow again with slider closed as before. My particular situation worked out to be 25 ounces per hr. desired flow and only 15 ounces flow in the good max rpm setting.

Now that you know how much flow is needed, open the slider and looking down into the carb from above (this is the reason you can't do this on the engine), take a sharp instrument and lightly scrape some of the brass away from the flat area of the needle at the root which effects idle flow. After doing this several times you can gradually increase the flow to the desired amount and you now have a good running engine with a custom adjusted carb just for your aircraft.

This whole procedure sounds very time consuming but only takes about an hour or so and is well worth the effort.

Jim Wright, Designee #942
80 Evans Street
Osterville, Massachusetts 02655

*The Designee Newsletter is available from E.A.A., P.O. Box 229, Hales Corners, WI., 53130 @ $7.00 per year.

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Retractable tri-cyle landing gear conversion plans by Bill DeFreze. Uses many of Rand's parts, including gear legs & spring bar.
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Bill DeFreze
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Retractable tri-gear for KR-1 or KR-2. Stress analyzed to 3x gross by Marshall Wood, senior design engineer at Rocketdyne. Plans are now available @ $40.00 for complete system. Material kit, excluding wheels $250.00. Ready to install assemblies $800.00. Free isometric view with S.A.S.E.

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906 Manzanita
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Tips From Other Builders

From Don Smith, P.O. Box 1644, Uvalde, TX 78801....I started using excess two-part epoxy on wood parts for a sealer. It made a good sealer and covered well but took too much for a practical sealer. I started looking for a thinner. COPON, which is a two-part epoxy paint thinner does the trick. Mix epoxy first then add thinner at a rate of two parts epoxy and one part thinner. It makes an excellent sealer. The wood soaks it up extremely well and two coats gives a good total seal. It can be brushed or sprayed. The thinner is good for cleaning utinsils and hands. Obviously, the thinned epoxy should not be used for any structural application. It doesn't appear that the thinned epoxy is any heavier than an ordinary sealer and varnish.

I would be interested in forming a Texas KR club if the Texas builders would care to write to me and express their interest.

BUY SELL TRADE

WANTED...Flight instructor building KR to trade instruction for parts/service. Must be checked out in a Piper Tomahawk or Grumman "American"....Paul Venne, 3811 B Livingston Dr., Long Beach, CA 90803. Phone 213-433-0520 eves.

FOR SALE...KR-2 project. Fuselage complete, on gear, ready to foam. All R/R fiberglass parts. 1834 VW conversion with R/R prop, hub and spinner. Several instruments and other goodies....$4000.00. Also have another KR-2 wood kit w/plywood, fuselage partially complete....$300.00 and a R/R landing gear ready to install (less wheels).. ..$150.00.....Bob Hamill, 3967 6th Ave., Los Angeles, CA 90018, phone 213-296-5294.

KR-1 FIBERGLASS COMPONENTS...Cowling, fuel tank, instrument panel, fast back. Send S.A.S.E. to Danny McCormick, 16902 Happy Hollow, San Antonio, TX 78232.

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
ISSUE #49

AUGUST 1979 ISSUE NO. 50

KR NEWSLETTER

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** A monthly publication for communication between KR builders and pilots world wide.**
Edited & published by Ernest Koppe, 6141 Choctaw Dr., Westminster, CA 92683 714-897-2677

I'm packed and ready to go, all last minute preparations made (I think) and waiting impatiently for the annual Oshkosh adventure to begin. The EAA Convention and Fly-in gets bigger every year and in spite of the "fuel crisis" is expected to again bring record breaking attendance.

There is going to be something missing for some of us though...Ken Rand won't be there. The enthusiasm he generated will be present however, via the hundreds of KR builders carrying on his ideas.

The KR forum is on Monday, July 30, 12 noon to 1:15 p.m. Dan Diehl and I will ride herd and try our best to answer your questions. See you there!

SURVEY

The survey is now officially closed (at least til next time). Below are the final listings to date.

KR-1	25%	Bryan Bossart, Racine, WI	KR-2	90%	M Raymond Juste, Jonqueires France
KR-2	30%	Tony Winstead, Ewa Beach, HI			
KR-2	30%	Charles Collins, Jacksonville, FL	KR-2	80%	M Paul Planel, Thionville, France
KR-2	70%	Frank Lovko, Huntington Beach, CA			
KR-2	10%	Paul Semco, N. Providence, RI	KR-2	90%	Ed Nelsen, Idaho
KR-2	15%	C Prentic, Ganges, BC Canada	KR-2	90%	Fred Wegner, Des Moines, IA
KR-2	5%	Larry Oppegaard, King, NC	KR-2	80%	B.E. Larson, Beaumont, CA
KR-2	18%	Larry Zepp, Bowling Green, OH	KR-1	30%	Homer Sanders, Decatur, IL
KR-2	80%	Richard Narber, Glendale, AZ	KR-2	70%	Darrell Bosely, Marietta, OH
KR-2	15%	M Marc Pichot, Mimizan, France	KR-2	15%	" " " "
KR-2	70%	M Roger Boucheix, Biarotitz, France	KR-1	100%	Melvin Boggs, Columbus, OH
KR-2	50%	Carroll Brooks, Columbia, SC	KR-1	95%	Kurt Kannwisher, Lithonia, GA
KR-2	40%	Harold Bates, PawPaw, MI	KR-2	40%	Charles Cooke, Felton, CA
KR-2	85%	Merv King, Bird-In-Hand, PA	KR-2	30%	Kenneth Brown, Naples, FL
KR-2	95%	Jes Thomsen, Sonoma, CA	KR-2	12%	Vernon Cheney, Scottsdale, AZ

TIPS FROM OTHER BUILDERS

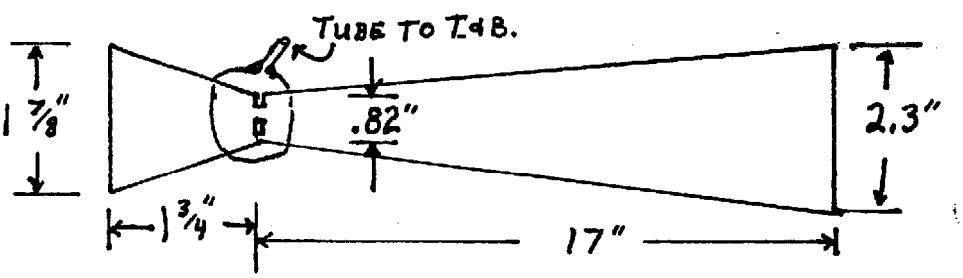
I have a special problem I ran into hooking up my control cables. I had my KR-2 perched on a box when I swaged my cables on. I aligned everything up and checked them three times before the swage job. After the swage job it looked perfect...until I took it OFF the box! With weight on the tail wheel, the cables from the tail wheel became slack! At the present I am trying to locate a set of compression springs such as used on a Stinson L5. I ordered a set of springs from A/C Spruce & Spec. but the springs were too large. If you have a line on a smaller spring let me know...Bruce Gilinsky, Box 989, Lakeview, OR 97630 Phone 503-947-2575 after 5:00.

P.S. If anyone in my area would like help with their KRs, come down, call, or write!

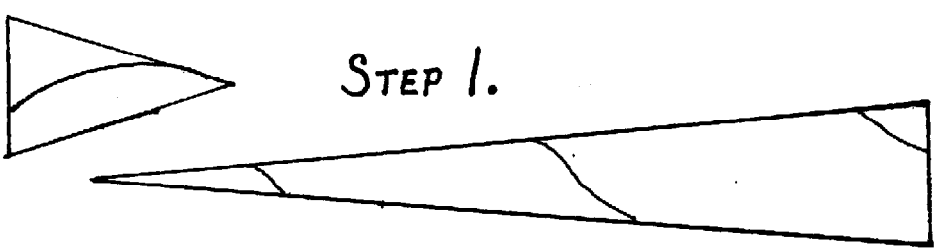
* * * * * * * * * * * * * *

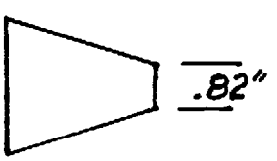
When shaping the elevator, I tried three (3) times to get a perfect trailing edge. On my third try, I made a trip to the local hobby shop and bought two sections of Balsa Trailing Edge and worked it into the foam and now have a perfect straight and level trailing edge. The big thing that I have found is in the shaping of the foam but a trip to your local shoe repair shop will enable you to buy the kind of sandpaper he uses on his shoe grinder. It's about 1 1/2" wide and a roll is 25 yds. long. It's just the right size to put on a good 2 x 4, thus you do not get any high or low spots in the foam. If anyone cannot find it, I will be glad to get it for them as I can buy it wholesale...Jack Spring, P.O. Box 1234, Gulfport, MS 39501.

Garth Hess wanted a turn bank in his instrument panel but without an unsightly venturi hanging out and without the high cost of an electric instrument. So....with some research and handiwork, he fit the following system to his KR-2.

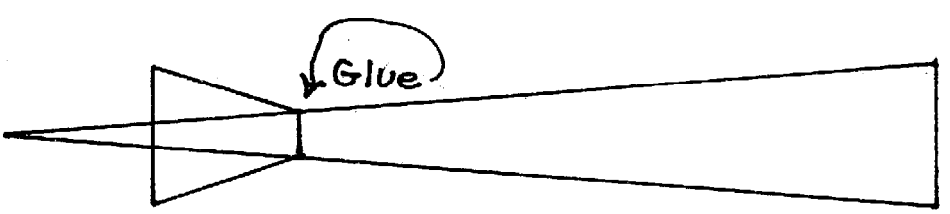


STEP 1. Roll two cones of plastic (drafting Mylar best).





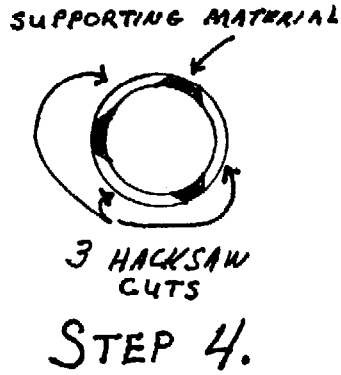
STEP 2.



STEP 2. Cut tip off input cone and slip over outlet cone. Coat with release agent

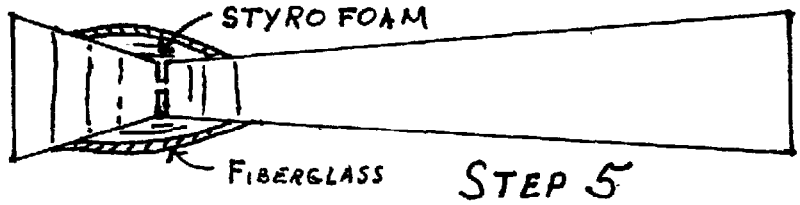
STEP 3. Cover with two layers of approx. 12 oz. 1 sq.yd. fiberglass cloth and Rand/Robinson epoxy.

STEP 4. Remove plastic form, cut 3 hack saw slits at narrow neck as shown. Clean up rough edges.

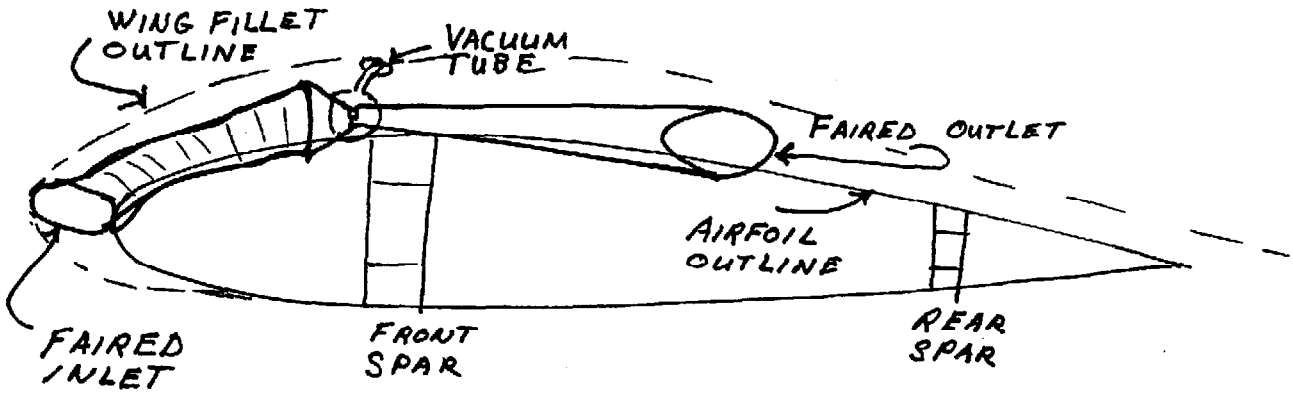


STEP 5. Wrap thin strips of styrofoam around throat on top of slits (urethane foam will not work). Cover it with two layers of fiberglass cloth forming an airtight pouch over the saw slits.

STEP 6. Drill hole in pouch to accept plastic tube that leads to T. & B. indicator. Pour lacquer thinner into hole to dissolve out styrofoam. Epoxy in place.



LOW DRAG VENTURI WING ROOT INSTALLATION



Shaped styrofoam cylinder covered with two layers fiberglass and epoxy to fit inside wing fairing. Styrofoam then dissolved out with lacquer thinner.

The same type of fairing could be used with a store bought venturi but would be considerably heavier.

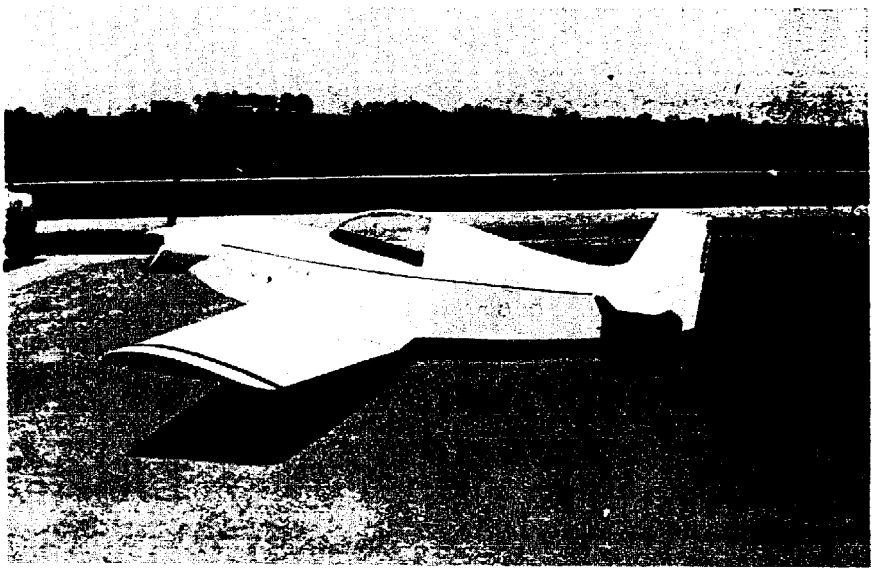
It may be necessary to use a vacuum regulator to limit the vacuum to the required amount. With the venturi I constructed for my KR-2 the required two inch Hg vacuum will be reached at appoximately 102 mph.

Garth Hess
881 Emory Court
Upland, CA 91786

FLIGHT REPORT

The KR-2, N78RS was built by Ron Sorrell, 6505 Sassafras Ln, Independence, Ky 41051. The power plant is a 1600cc VW turning a R/R 3-blade prop set 82° at the tip (only a few degrees from full low pitch). The max static rpm was 2950 rpm, in flight max rpm was 3150, max oil temp 220°F, oil pressure at 45 psi, #2 cylinder (hot one on the VW) 375°F.

After a thorough pre-flight examination of the aircraft by Ron Sorrell and the flight test pilot, the 1600cc VW power plant was fired up. Taxi out from the hanger area was normal and the brakes worked very well to hold N78RS up to 2400 rpm (Ron turned his own cast iron rib cooled brake drums for the R/R furnished brake assembly). A check list was used from end to end and everything given a double check. Power plant was run up from a 300 rpm idle to 2400 (brakes holding) with a burst to 2950 rpm. KR-2 N78RS was taxied to runway 29 with a chase plane close behind. When all was clear, N78RS took the runway and full throttle was eased in, as airspeed increased the tail was lifted. A quick look at the airspeed indicator at lift off was 65 mph, 80 mph climb was established and climb was 800'/minute at full throttle of 3150 rpm. CHT 325°F and going up, oil temp 190°, oil pressure 45 psi. After turnout on cross wind leg the pilot pulled on the left gear latch (cable cross tied to the right gear latch) and kicked the gear handle down with the right foot and gear locked in the up position, airspeed jumped to about 95 mph still climbing. The pilot established 100 mph (CHT steady at 375°F) in a climb to 3000' with chase plane in sight as arranged, the purpose being to take movies of N78RS while establishing the power off stall speed. The landing gear was dropped * and N78RS was positioned to the right side of the chase plane so that movies could be taken, stall speed was 48 mph ind., stall buffets were noted prior to stall and the KR-2 fell through with wings level and nose back to the horizon full power (3150) back on. After the stall speed was learned (48 mph) and while the landing gear was still down, N78RS returned to the pattern at 90 mph(the pilot figured his maneuvering speeds and pattern speeds on a rounded up stall speed of 50 mph..1.7 x 50 =90 mph, downwind at 80... 1.5 x 50 =80, base leg at 75 mph...1.4 x 50 =75 and approach at 70 mph...1.3 x 50 =70. On crossing the "fence" airspeed came down to 60-65 mph and N78RS touched down on the main gear and stuck, no bounce, no float and the tail was held off until the tail just dropped to the runway. No brakes were required at the turnoff and N78RS was taxied to the hangar and shut down..flight lasted 20 minutes.



*NOTE..Know the landing gear lowering sequence, it is important! I attempted to lower the landing gear by pulling on the up latch (pilot side) first -the gear DID NOT unlatch. I tried again by pulling up on the up latch HARDER -this time the pulley block (routing the latch cable to the right side down latch) came "unglued" gear still in up position - need less to say, I had visions of this beautiful KR-2 belly landing on the runway and prop blades going all over the place but a KR-2 gear hanging up? Impossible (I am a KR-2 builder)! I visualized my plans, kicked the long gear handle with my right foot and "lifted" the left gear latch, gear swung down part way and I jerked it in all the way and the rat trap springs snapped both latches into place. So, kick the gear handle gown first, lift the pilot side latch and pull the gear handle back all the way and your landing gear is down and locked in position for landing....it is easy. KR-2, N78RS has 10 hrs flight time on it now and we hope to have it at Oshkosh '79!.....Eugene T Muzynski, 6680 Daly Rd., Cincinatti, OH 45224.

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QUESTIONS & ANSWERS

Q. What is the minimum travel necessary for the elevator and rudder?
A. Rudder 30° each way, elevator 30° up, 20° down. While we're at it, aileron travel should be 3/4" down, 1 1/2" up, measured at the inboard trailing edge.
Q. Where can I get the landing lights for wing leading edge and the leading edge cover?
A. You may order landing light assemblies from most of the aircraft supply houses or from the parts dept. of the major aircraft manufacturers. This can be an expensive way to go though ($100.00 or more). With a little effort you can make one yourself,using a high intensity lamp from an auto parts store and a thin sheet of plexi-glass.
Q. Do the 4130 steel parts have to be hardened or may they be used as is?
A. The 4130 steel parts do not have to be heat treated but they should be painted with a rust inhibitor.
Q. I'm using the belt drive Slick magneto but I've never seen the completed assembly. Do you mount the pulley to the mag drive or remove the drive on the mag first?
A. Remove the drive lugs on the mag drive and bolt the pulley to the mag drive.

BUY SELL TRADE

FOR SALE...KR-2 project, fuselage ready to come off the table. Spruce kit, plywood kit, landing gear castings, axle kit completed. Two gallons Rand epxoy, rudder pedals, tinted windshield, plans....$650.00. Howard Bohl, 13822 Marquette, Westminster, CA 92683 or phone 714-897-1854

FREE...KR-1 fuselage layout form on very long solid core door. Saves lots of layout work. Wanted...a used or workable prop to be used to run in a 1700cc engine. Nothing fancy, just cheap. Bryon Bossart, 147 Lakefield Ct., Racine, WI 53402, phone 414-639-3049.

KR-1 fuselage, on gear, almost all parts to complete incl. new VW engine for sale due to death of my husband. Cost...$2830.00 and asking $2300.00. Doris Reiman, 1418 Highview Dr. Perry, IA 50220 phone 515-465-2490.

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
ISSUE #50

SEPTEMBER 1979, ISSUE NO. 51

KR NEWSLETTER

RATES
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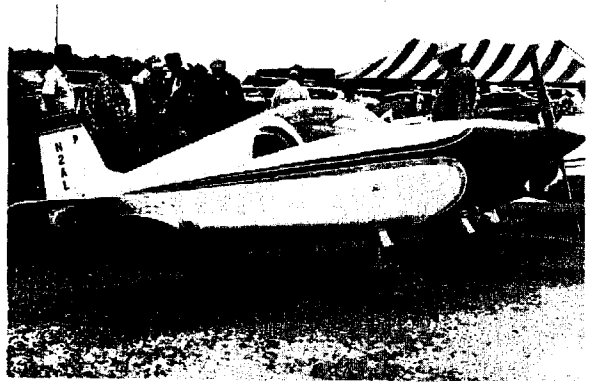
** A monthly publication for communication between KR builders and pilots world wide.**
Edited & published by Ernest Koppe, 6141 Choctaw Dr., Westminster, CA 92683 714-897-2677

Oshkosh has come and gone again and with it a gathering of friends old and new. Never have I seen such enthusiasm and optimism generated by a single group of people as was demonstrated by the KR followers. The camaraderie enjoyed by the KR group all during the fly-in but expecially at the gatherings at the campgrounds was fantastic. Many thanks are in order to Lofton Leland, a north Carolina KR builder and Larry Zepp, an Ohio KR builder for organizing the get to-gethers.

It's hard for me tc point out any particular thing that happened at Oshkosh and say "this was the highlight of the fly-in". There was so much to consider. There is something I'll never forget though...during the "Homebuilt Revue", a procession of home built aircraft starting with the earliest and progressing thru the latest composite, three KRs flew by in formation. Steve Bennett in a KR-1 was flying point, Dan Diehl and Brad Hummel in KR-2s were flying wing while the air show announcer gave tribute to Ken Rand and his designs. That one moment is worth more to me than I can tell. My one regret is Ken wasn't there to see it himself....but then...maybe he was....



KEN RAND MEMORIAL AWARD

Due to crossed signals or something, there was no award presented at Oshkosh for best KR. This situation is in the process of being rectified. After much discussion by the KR Designees, all of which were at Oshkosh, Al Starkes' KR-2 was selected to receive the Ken Rand Memorial Award. The selection was not an easy one. There were several in contention, but the final choice came down to one of three KRs...Melvin Boggs' "Super KR-1", a beautifully done aircraft powered by Lycoming G.O. 75, Keith Campbell's "Lil Pretender" a KR-1 in P-51 clothing, fine workmanship and attention to detail, Al Starkes' KR-2 was clean, simple and basic to the point of being outstanding. This plus the fact it was flown in from Montana decided the award in Al's favor. The other two finalists had also flown, a pre-requisite for receiving the award but had not yet flown off the FAA restrictions. This is not to take anything away from the rest of the KRs at Oshkosh. Their builders and pilots are to be congratulated on the fine efforts that went into getting them to the fly-in and to the encouragement they offered to all still building. I'm already making plans for next year. See you there!!

PILOT REPORT

I am happy to report that a new KR-2 joined the already growing fleet of KRs. C-GVHB officially flew on July 30-79 and everything went very well, the same as described on many ocassion in your Newsletter. Field inspection passed with fairly good results on July 23-79 and a friendly 8 point list was given to me for completetion, all minor. As an example, signs in cockpit, acrobatics prohibited, passengers prohibited.

At this time I can not give you any performance reports since the plane has only 1 hr 15 min on it and figures could be wrong.

However my wings have the original aerofoil and is not changed to the later one which R/R sent out later. The plane flys very well with an 1834 cc Ted Barker conversion and an R/R 3-bladed prop on a 4½ prop extension. The fuselage plywood cover is 1/16" 5 ply birch, full electrics except starter, removable gas tank, removeable instr. panel. I am 5'11" - 207 lb which puts 55 lb on the tail wheel when I am sitting in it and 11 lb when empty. Total empty weight checks out at 565 lb and gross weight checks out a shade short of 820 lb. There is not much modification done on the plane except a 4" tail wheel instead of the 3" sold by R/R. The replacement is due to 2 hrs of slow-high speed taxi tests on gravel and the R/R wheel simply split. The other modification is the Wicks Organ seat arrangment with full cockpit covering, and the plane is built to be flown in the middle of the seat. In other words..a tube passes through the rear spar from the sticks under the seat and this way the seat can be fully utilized.

The plane is parked at St. Lasare Airport in Montreal and after 4 years and 3 months I was happy to tow it there. During construction I piled up a lot of info which I am willing to share with any KR builder.....Arpad Lehoczki, 653 -2nd Ave., Fabreville, Laval M7R 4H7 Quebec, Canada phone 514-627-1395 and no collect calls please.

ACCIDENT REPORT

Ernest, I have 2 KR-2 projects, 1 of which is for sale. But in response to your survey recently, please list me as having 1 KR-2 95% complete. Actually it was flown once and landed gear up the second time around.

So I am rebuilding the damage. For your information the KRs stand up to rough treatment very well taking all into consideration. The wrecked one that I bought was slammed into the runway out of control and gear up. It sheared both wings at the attach points, broke the engine off at the firewall and ejected the fuel tank. But the pilot simply opened the canopy and walked away. Except for a broken tail wheel mount and minor dings to the main fuselage and tail was undamaged. And only the right trailing wing spar had any damage. New wings, a new nose and tail wheel repair and she will fly again.

All people building KRs need to realize that the plane is a very sleek and fast plane and quick on control response. Add all these factors together, blend in a pilot, slow on response and you can have big problems come landing time or take-off. In this case the pilot realized at 70 ft attitude that the gear was still up can tried to kick the right side release with foot. His leg crossed over the joy stick and the plane did a wild right bank and when he jerked his leg back, of course the plane dipped left. He then hit the throttle abruptly, the engine coughed and died and the plane dropped like a rock....end of story. Robert Perry, 2950 Churn Ct., Redding, CA 96001

KR CLUB NEWS

Kansas Chapter of the KR Club meets Sept 22nd, Saturday, 7:30 pm (4th Sat. each mon.) 111 W. Vesper St., Hesston, KS 67062. Home of Jim Snyder. Phone 316-327-4053.

I purchased the slide/cassete program on composite construction that was advertised in the EAA "Sport Aviation". It will be sent to any group of KR Club members desiring to see the program (no charge) on a 1 week use basis. With the program will be a list of who gets it next after you have shown it, mail it to the next one on the list. This will keep charges down to a buck or so for mailing. If your group is interested, write to me and give me your meeting dates and I will compile the lists. This could work as well for other items, let me know your ideas..E.K.

QUESTIONS & ANSWERS

Q. What is the status of the KR-3?
A. The KR-3 is expected to be completed by the end of this year. Plans will be offered as soon as a thorough flight test has been completed.
Q. On my plans, dwg #5 (KR-2) center section fwd spar, the spacing doesn't add up to 83". What is the correct spacing?
A. Change the $7\frac{1}{2}$" measurement to $9\frac{1}{2}$" and this will bring the total spacing to 83" which is correct.
Q. I'm 16 yrs old and 50% complete on my KR-2 and would like to know if anybody is is building a KR who is younger? Cam Brown, 29 Lee Ave. Penticton, B.C. Canada V2A 3V7
A. You're the youngest to my knowledge,Cam, but I know at least a couple more builders started when they were 16. Maybe they will contact you.
Q. Where is the thrust line in relation to the top longeron. How critical is it?
A. Thrust line is approx. .8" (+ -.2") below top surface of the top longeron. I would try to keep it as close as possible.
Q. I have a 1700 cc engine and want a 4 blade prop. Any ideas on diameter and pitch?
A. Each prop maker employs his own formula to arrive at optimum diameter and pitch. Best thing to do is to tell a prop maker your needs and have him suggest the best prop for you.
Q. I plan to purchase the fiberglass KR-1 parts from Danny McCormick (NL #49), any Any ideas on this?
A. I've talked with a couple of KR-1 builders that bought the fiberglass parts from Danny and they were very pleased.
Q. In Newsletter #41 there is a picture of a KR being built in a house trailer. How is the horizontal stabilizer installed with the vertical fin foamed in?
A. The horizontal stabilizer spars can be fitted but not epoxied into place. The assembly can then be slipped into, or out of, place as needed.
Q. Does the rudder have to be offset from fuselage center line and if so, how much?
A. The prototype KR-1 and KR-2 had no rudder offset and flew with a variety of engines. Rand felt that an offset rudder was unnecessary in the power range of the VW engine.

From Larry Zepp, 230 Liberty St., Bowling Green, OH 43402.....Aug. 8, 1979.....
I had the thrill of my life on Aug 3 when Brad Hummel gave me a KR-2 ride at Oshkosh '79. With my 6'3" and 200 lb. we were certainly well loaded but we had little problem taxiing in the rough grass. The widened fuselage of Brad's KR-2 made shoulder room nice but we lacked elbow room near the control stick. Until we were away from the airport I kept my arm on the seat back. The take-off roll was smooth and the climb was quick and steady. I couldn't believe how stable the KR-2 climbed despite the noon thermals at Oshkosh. My big thrill was when Brad let me take the sensitive but completely natural control stick. After a couple of initial oscillations, I used steady light pressure and had no further problems. Never before had any airplane given me the feeling that the plane was a perfect extension of myself. No rudder pedals were required, cruise visability was excellent and noise was fairly low. The visability was so good, in fact, that I kept climbing because the nose was so low already! As we headed toward the airport, Brad took the controls and did a couple of near 90° banks. The KR-2 was quick, stable and had no tendency to slide out of the bank. I liked the way Brad operated the gear. To retract, he pulls back on the gear handle and releases both latches by cable. The air then keeps the gear from relatching. Retraction is done by simply throwing the gear handle foreward to latch. To extend, the process is reversed using a pull instead of a throw. This seems much easier and less awkward than using your foot, etc. Landing was great until the tail wheel touched, then I could have swore our tail was being chewed off it was so loud! Maybe a fibreglass spring or rubber mounted tail spring would help. I started building in 1975 and for the past two years Pam and I have worked on our house instead of our KR. My first ride was the biggest single motivation possible, followed by the great fellowship and KR parties of Oshkosh "79. Even if we haven't flown off the restrictions, WE WILL HAVE OUR KR-2 AT OSHKOSH '80. For the many still waiting for your first ride; read Brad Hummel's letter in issue #48, close your eyes, grab a broom, and you're there!

From Bill "Reverend Billy" DeFreze, 7530 Ironwood Dr., Dublin, CA 94566....If you will print this in the Newsletter, I would be deeply apprecative.

I am taking this opportunity to say "thanks" to some of the greatest people I've had the privilege to meet and know. I went to Oshkosh for the first time in my life this year and I don't have to go into the splendor of the "Big Airshow in the Sky", there has been enough written and spoken about it. One of the hardest things in one's life is "acceptance" by other folks in this world. Being the "World's Biggest Egotist", this acceptance has always been hard to come by for me. You can analyze the above statement any way you want but I am here to say the the most beautiful people in the world are KR folks. I know that I have never met a group of more concerned and sincere people for each other. Start with Ernest Koppe our Newsletter editor, he has so much feeling for us the builders, that he busts his butt to get the best information possible from us and any other available source to make our personal project or "dream", if you will, easier and safer to build and fly. Then, for a mere pittance, edits, corrects our spelling, re-draws our napkin sketches so they are easier to understand and then prints it, and mails it right to our front door. I observed him at Oshkosh spending coutless hours talking to everybody, taking notes and pictures of anything and everything he thought may be of interest to us, the KR builder. I, myself, will never again take the Newsletter for granted. If I submit anything more to the Newsletter, I'm going to try and make my presentations a lot more clear and detailed in black ink and wording and spelling are going to be more precise. Anything to help! I know Ernie will appreciate it.

I met the other KR designees, Dan Diehl, Ron Sorrell, Ray Ellis and his lovely wife. All great concerned people. Brad Hummell, the most "fearless" KR pilot I've had the pleasure to fly with. He really knows how to fly the KRs. Steve Bennett, who came down sick, spent a day to two in the hospital and still didn't let it spoil his stay in Oshkosh. Keith Campbell, the "fighter pilot extrodinaire" with his "Lil Pretender" KR-1. I never could get him to confide in me how or where he obtained the 4 swastika "kills" painted along the canopy. Then there was Merv, Bill, John, Larry, George, Rex and Phyliss and many, many, more fantastic folks that came by dedicated to the task of blackening the sky with KRs. Even had the pleasure of meeting a very nice young lady that is building a KR-2! Yes, Jeannette tells us she is well along with her KR-2. I could probably go on and one naming names but I am sure you folks all know who you are.

Dan Diehl....now here's a young man I would hope my son would grow up like. Sharp, witty, ambitious with plenty of feelings for other people. Why, he and Brad, I don't think, were on the ground more than a total of three out of the seven days. Just giving as many of the KR builders some stick time as the fly-by time would allow. All were deeply appreciative. And all this was set up by Dan and Brad...that's dedicated!

Well, guys and gals, in closing, I again would like you to ask around your towns and cities and try and find the other KR builders and introduce them to the Newsletter and KR Club. Put up notices on your job and church bulletin boards asking them to get in touch with you. You may be able to help each other over the humps. I've received many letters from people who saw my picture in the EAA magazine asking about my trigear conversion and asking very basic questions pertaining to building KRs which tells me they don't receive the Newsletters where all these questions are answered. The importance of the Newsletter was brought home to me by one of these same letters. The questions asked were so basic, I decided I would call the writer long distance and ask him some questions. His letter to me was mailed Friday...Saturday he had destroyed his KR-1 and was lucky to be alive! Banged up his bod quite a bit but with further conversation, stated "that he just wished he had of known what to expect".....*Newsletter Flight Reports, there is no reason for these things to happen. My test pilot read every flight report in the Newsletter prior to test flying my KR-2 and he will tell you, if asked, how much help they were in knowing what to look for. Sure, each plane is different and some of someone else's problem may or may not show up in your plane...but isn't it nice to know what to expect even if it does not happen? I would sure think so! So let's push those Newsletters and help get these birds in the blue.

BUY SELL TRADE

FOR SALE....50 yds "Kevlar 49" $450.00. Heavy duty engine mount $125.00. Vic Kaaria, (213) 242-2211.

FOR SALE....KR-2, on gear all controls installed. Rudder and elevator signed off and ready for dynel. Center section closed. Has smoked tint canopy, R/R seat, fuel tank ready for closing..$1500.00. Robert Perry, 2950 Churn Ct., Redding, CA 96001 or phone 916-244-0925.

FOR SALE....KR-2 30% complete, signed off and ready to close. Beautiful workmanship! Gear kit, aluminum kit, wing attach kit, plans, notes and asst. info. KR Newsletters from Issue #1. All for $800.00. Call (201)449-3327

FOR SALE....KR-2 95% complete. Retractable tri-gear. Turbo charged Revmaster, throw-over control wheel, sliding canopy, 3000 mi. range, 500 lb empty wt., Kevlar construction, trailer...$7000.00. Don Land, 906 Manzanita, Los Angeles, CA 90029 or phone 213-666-2869.

FOR SALE....KR-2, fuselage built, excellent workmanship, all Rand parts. $1650.00 invested...best offer. 312-690-1393 Ken, evenings, Chicago suburb.

FOR SALE....Flying KR-2, Revmaster 1834, dual mags, full electric, radio, lights, starter, Warnke prop, oil cooler, FAA restrictions removed...$6500.00 FIRM. Will trade for Cessna 170, 172, 182. John J Kerekes, 5794 Calle del Ciervo, Tucson, AZ 85715 or phone 602-299-9098.

WANTED....Corvair turbo-carburetor assy., distributor and/or shop manual. Any condition. Narco VHT-3 Radio crystals 120.5, 121.9, 118.5, 121.6 and others. Cash or will swap parts/services. Paul Venne, 3811 "B" Livingstone Dr., Long Beach, CA 90803.

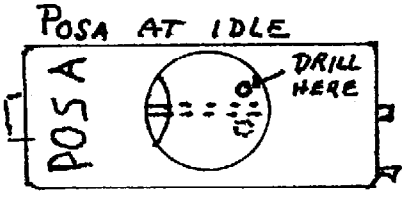
FOR SALE....Complete KR-1 landing gear (new) and KR-1 cowling (short type). Dale Strissel, 1428 Ave. C, Billings, MT 59102.

FOR SALE....KR-2 project. Fuselage complete,on gear, ready to foam. All R/R fiberglass parts. 1834 VW with R/R prop, hub and spinner. Several instruments and other goodies...$3000.00. Bob Hamill, 3967 6th Ave., Los Angeles, CA 90018 or phone 213-296-5294.

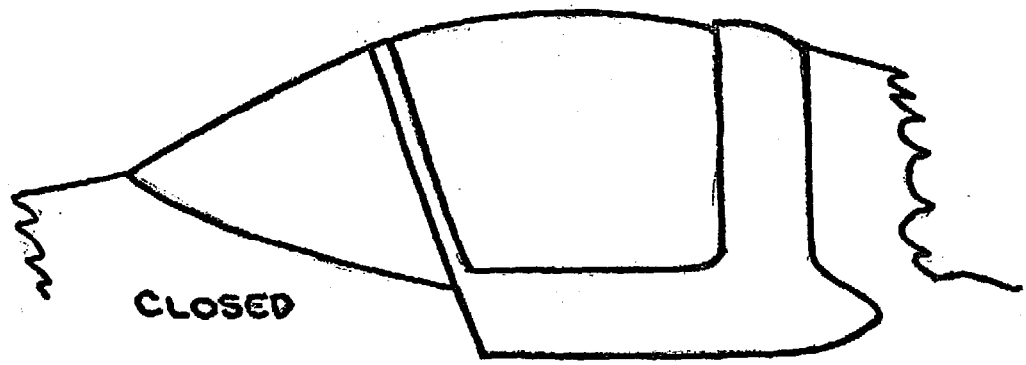
KR-2 PROJECT for sale....Fuselage woodwork complete; center section spars finished and installed; on gear; engine mount in place; most metal fittings completed; most materials needed to complete (including canopy) but no foam or epoxy resin, instruments or engine, 650 hours and material cost invested; exceptional workmanship. Have little spare time in foreseeable future.....$1750.00. Hubert Talton, Jr., P.O. Box 842, De Land, FL 32720 Phone 904-734-0330

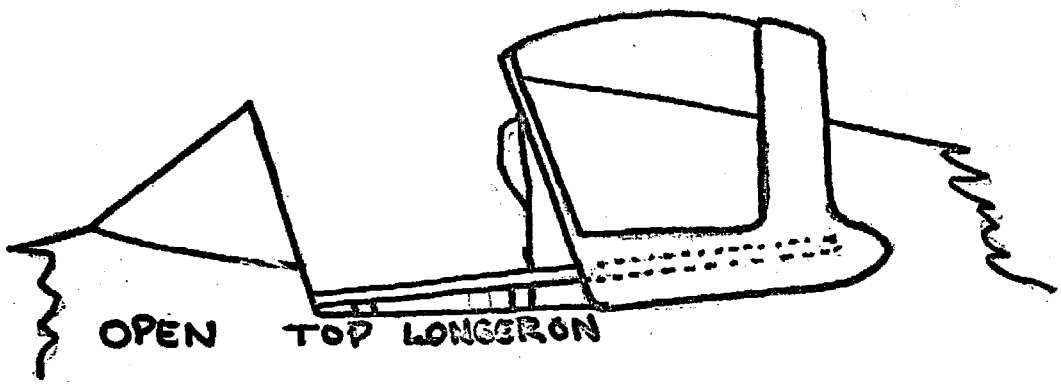
TIPS FROM OTHER BUILDERS

The KR forum at Oshkosh covered many questions and ideas but the one that received the most interest was Dan Diehl's solution to the Posa problem. Namely the fact that if the darn thing ran good at idle it was rough at top end, and if top end was smooth, idle would be too rich. Dan's solution is simple; set the Posa for best top end performance then close throttle to the idle position. Leave the engine running at idle then turn the fuel off. If the engine speeds up before it quits (90% of the time) your idle mixture is too rich. To increase the air to fuel ratio drill a 1/16" hole in the slide on the opposite side from the half moon opening (above or below the needle) then try the idle performance again. If the engine is still running too rich, enlarge the hole to 1/8" or larger up to 1/4" as needed for a smooth idle. If larger than a 1/4" is needed, repeat the proceedure on the opposite side of the needle. Be sure all drill shavings, etc. are removed before the engine is started each time!!



KR-1 SLIDING CANOPY





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OCTOBER 1979 ISSUE #52

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Edited & published by Ernest Koppe, 6141 Choctaw Dr., Westminster, CA 92683 714-897-2677

ACCIDENT REPORT

Fred Palmatier, 21 Minnacote Ave., West Hill, Ontario, Canada M1E 4B2 is recuperating from an accident in his KR-2 and took some time to relate the incident to me. He had just purchased the KR-2, an award winner at the Orilla fly-in, with 50 hrs on the aircraft. Fred's first flight went well, he was up for an hour and twenty minutes and thoroughly enjoyed it. His next flight, a week later, did not go so well. At about 150 ft., just after take-off...."there was a loud "Bong!" and the right wing dropped"... left stick and rudder wouldn't correct it. Still at full power (Revmaster 2100) the KR-2 could not maintain altitude, even though Fred was able to gain some pitch control. The impact came at about 80 to 90 mph, right wing down, fuselage level. The right wing tip imbedded into the ground and broke off and the aircraft cartwheeled another 75 ft. before coming to rest. Cause of the accident?...6" x 10" metal inspection plates were installed on top of the wing, over the gear legs. The one on the right wing popped loose along the forward edge and acted like a spoiler, it also blanked out a good portion of rudder control. Result...a totaled aircraft. Fred had another KR-2 under construction when he bought this one and now says he will sell all....very reasonable. The moral to this story is this...minor modifications are not always minor. Be sure you examine all the possibilities before you modify your KR in any manner. A seemingly innocent change here or there may have drastic consequences.

TIPS FROM OTHER BUILDERS

Since the KR-2 was placed on the "approved to build" list in Australia it has probably become the most popular homebuilt there. I receive regular correspondence from many of these builders and I find they are as enthusiastic as their counterparts here in America. Occasionally we will get a visitor from Australia who wants to get a look at how we build the KR here in the States. Bob Rawlins of Kirrawee, Australia is going to be in the U.S. in October and November and would like to talk with someone with a flying KR. He will be in the following cities during his stay: Los Angeles, Calif., St. Louis, MO, Billings, Mont., and Prescott, AZ. If you live in one of the aforementioned cities and would like a chance to compare notes with a builder from "Down Under", please drop me a line.

I just finished reading Rex Taylor's book on VW aircraft engine conversions. It is the most complete, concise, easy to follow book on this subject I've seen yet. Should be considered mandatory for you guys building your engine. The book takes you thru, from start to scratch, with pictures. It is $10.00 from H.A.P.I., Box 5951, Calexico, CA 92231, phone 714-357-6342.

BUY SELL TRADE

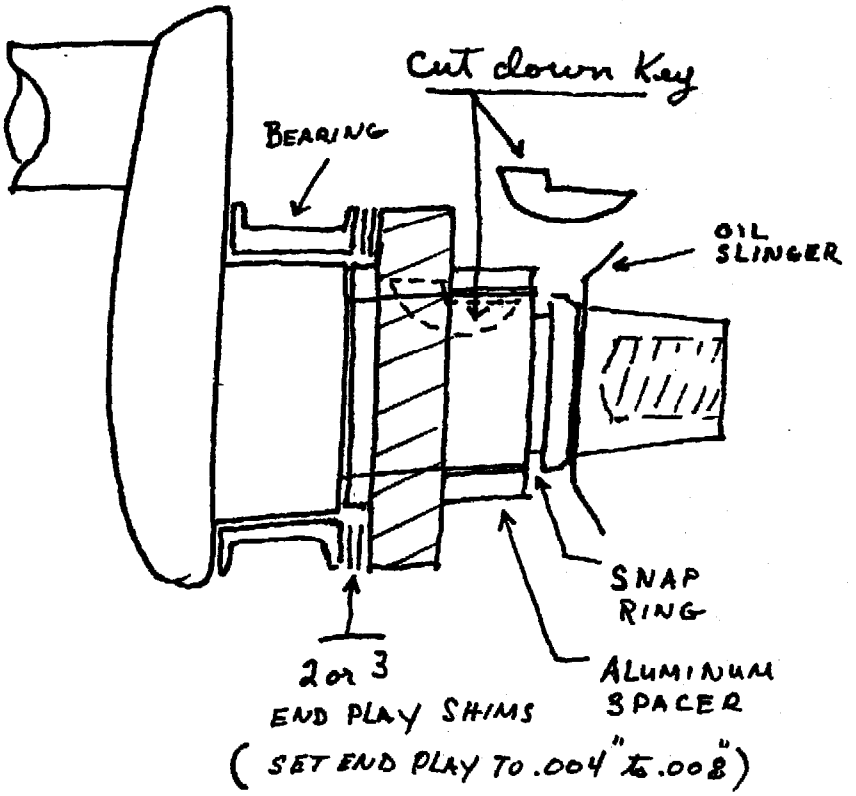
FOR SALE...Tri-cycle gear KR-2, throw-over control wheel, Kevlar construction, sliding canopy, turbo-charged Revmaster, Maloof prop...$6000.00. '75 Traveler (4 place) "0" S.M.O.H., full IFR panel, encoding altimeter...$14,000.00. Don Land, 906 Manzanita, Los Angeles, CA 90029 or phone 213-666-2869.

WANTED.....KR-2 cowling and canopy, also prop hub with 3° taper. Robert Spaulding, 125 W. Hickory, Canton, IL 61520. Phone 309-647-7797.

FOR SALE...KR-2, fuselage built, excellent workmanship, all Rand parts...$1650.00 invested....best offer...312-690-1363, Ken, evenings, Chicago suburb.

HAPPENINGS.....Oct 27th and 28th, Ramona, Calif. EAA Chapter 14 fly-in. Homebuilts, antiques, and warbirds.

Front Thrust Bearing Installation for VW



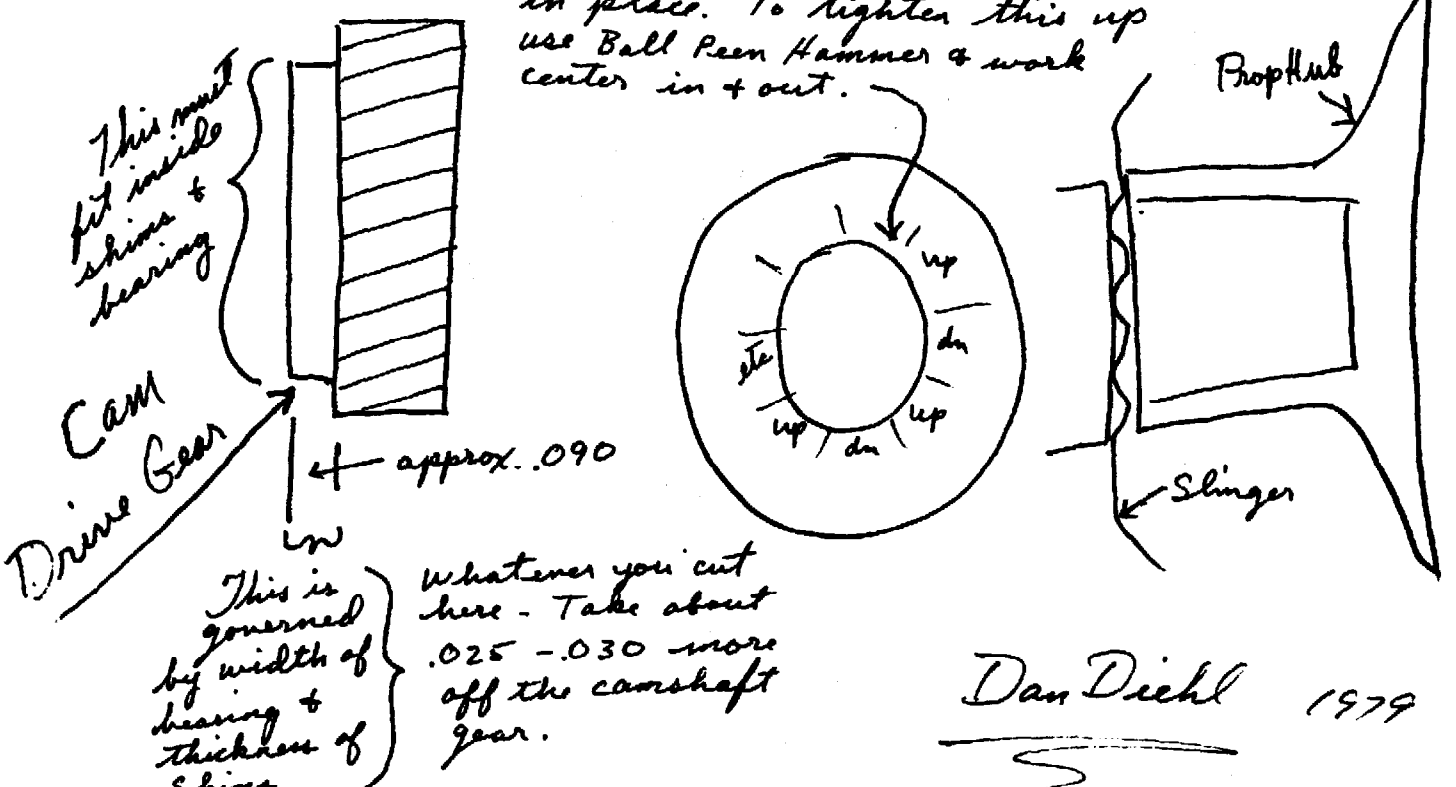
By exchanging the #1 & 3 bearings & with a little machine work you can pick up the thrust loads on your crank up front.

Dan Diehl sent in these drawings & did his own machine work. Mine cost me $35.00 at my friendly neighborhood machine shop

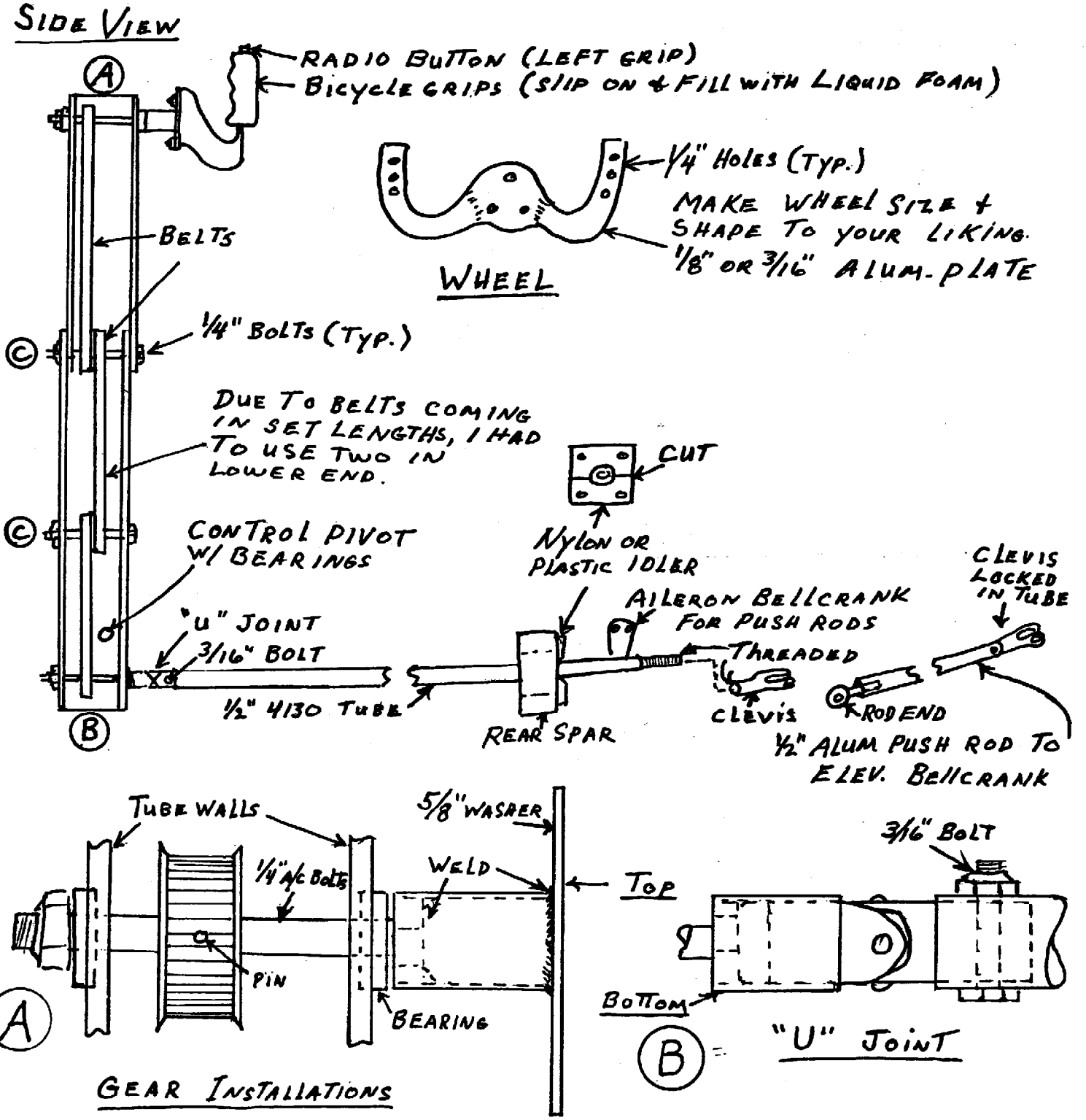
EK

Drawings not to scale HA!

The oil Slinger may want to turn when the Prop Hub is put in place. To tighten this up use Ball Peen Hammer & work center in & out.



Dan Diehl 1979



All gears are the same size <u>except</u> the bottom gear so I could have more "feel" on the ailersons, so I used one 1.4 larger.

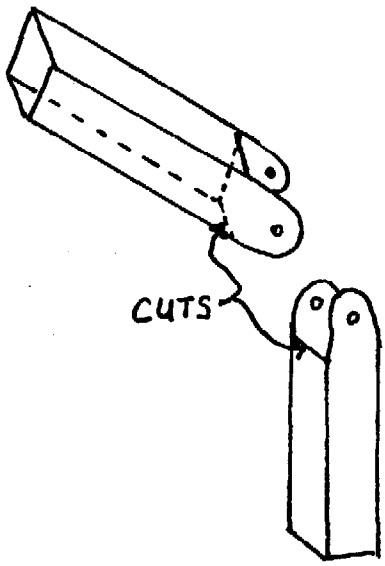
Due to there being no belt tightener, the dimension between gears must be <u>exact.</u>

Install in "your baby" and have at it,

Good luck,

Bill

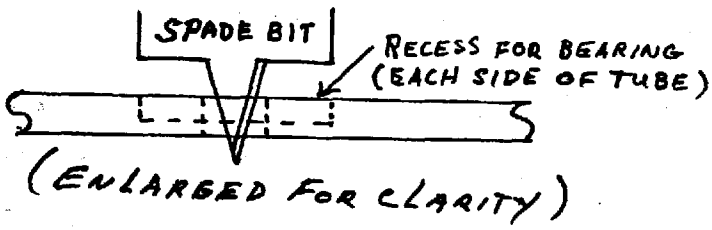
A THROW OVER CONTROL WHEEL



While at the Chino fly-in with my KR-2 on tri-cycle gear, I got quite a reaction to my throw-over control wheel. Many builders asked me to draw up plans. After the expense and hassle of drawing up the tri-cycle gear, I decided I would do it anyway. But not as a "plans for sale" situation, but an article for the Newsletter. So here we go.....

The source I used for the gears and belts is an outfit called Hoffmeyer Corp. located in San Leandro, San Jose, and Modesto, Calif. The belts and gears are referred to as "mini pitch" units. You may be able to find the belts and gears through a local source that sells UniRoyal belt products.

First of all, I will only note critical dimensions so you can adapt and measure for your own need. All the bearings are from your local hardware store. They are from sliding glass door, screen and window replacement rollars, which, by the way, are very good cable pulleys. And they come in some very nice small and light sizes. I cut away the nylon wheels to get at the bearings.

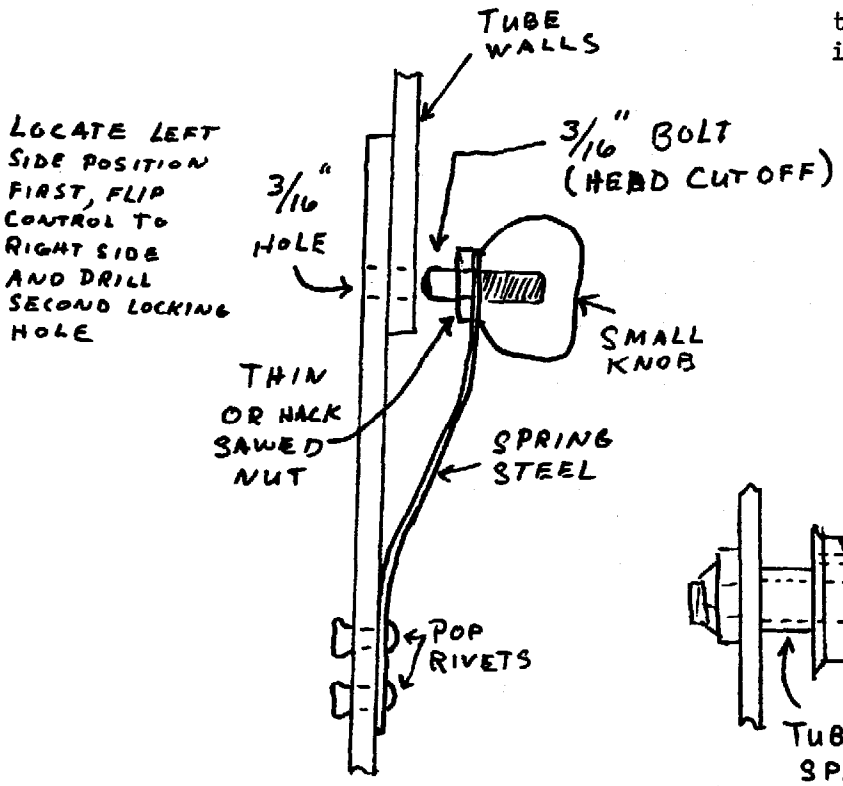


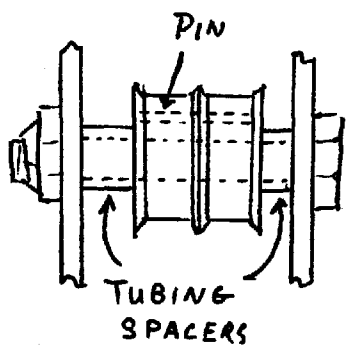
I obtained a square tube of 6061 aluminum 2" x 2". Cut and fit aluminum tube to fit each other and file or cut to get desire angle.

To make bearings stay in place, I drilled a 3/16" hole in exact locations and used a spade wood bit the size of the bearing to recess it into the aluminum tube.

Hardware stores also carry the small roll pins for anchoring the gears to the shafts or anchoring the gears together.

LOCKING SYSTEM





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Retractable tri-cyle landing gear conversion plans by Bill DeFreze. Uses many of Rand's parts, including gear legs & spring bar.
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Go to an auto wrecker and ask if you can have some broken off antennas. The antenna is chrome-plated brass. Take the largest section, cut with a tubing cutter and deburr. The cutter leaves a nice rolled edge. Fill the tube with buck-shot (solid) seal ends with bolt and tape.

You can now hand form to desired shape, making some nice smooth bends. Allow the tube to extend below the spar 3 inches and clamp in place.

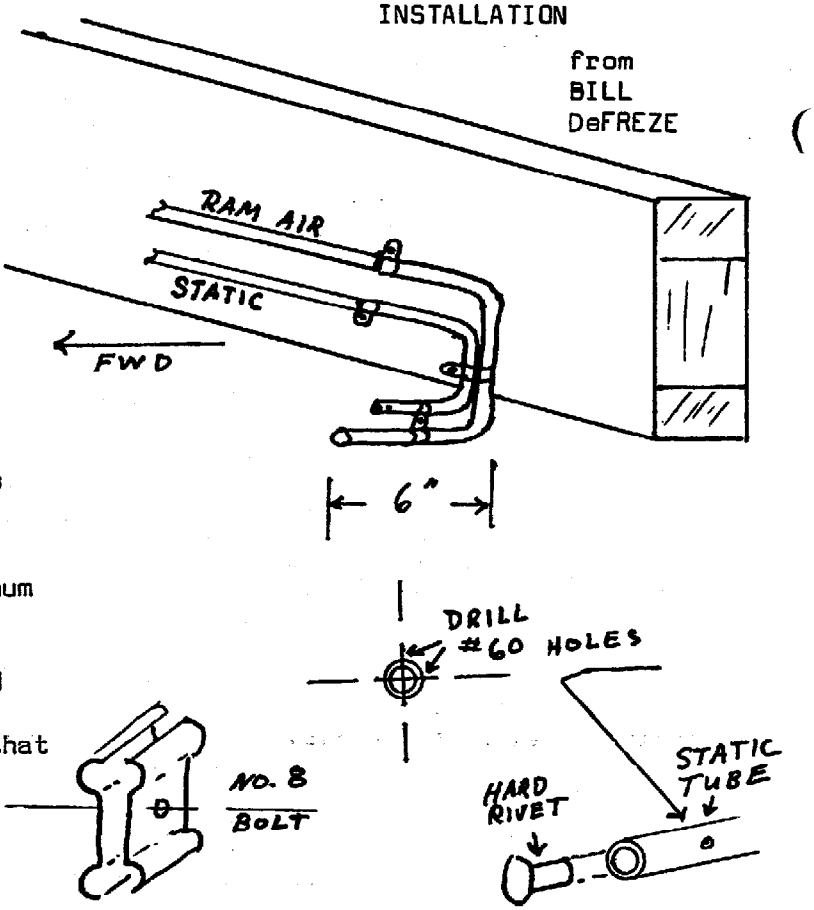
Take smaller section of antenna and bend similar to first piece. About 1/2" from leading end, drill #60 holes straight through the tubing. Jam hard rivet in this end after you deburr the inside. Dress up rivet to be flush all around.

Make a clamp out of two pieces of aluminum 1/2" X 1 1/4". Drill center for a #8 bolt. This will clamp the ends together. Clamp both units to spar, epoxy tubes to ends and run to instruments.

You now have a pitot and static system that is out of the way under the wing. A clean installation and all chrome plated.

A SLICK PITOT TUBE INSTALLATION

from BILL DeFREZE



ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
ISSUE # 52 OCT. 1979

Issue No. 53 November 1979

KR NEWSLETTER

RATES
1 Year $9.00
O/Seas Airmail $15.00
Back Issues 75 each

** A monthly publication for communication between KR builders and pilots world wide.**
Edited & published by Ernest Koppe, 6141 Choctaw Dr., Westminster, CA 92683 714-897-2677

November already!! Winter is here in many parts of the U.S. and the fly-in season is coming to a close. There are still a few get-togethers scheduled around the country though so make it to one if you can. I was fortunate to get to a couple of good ones in the last few weeks and gained a little knowledge at each one.

TULLAHOMA "79" First annual happening of this event and it showed. Many unforeseen problems made themselves apparent, due largely to rainy weather and muddy fields. It rained buckets and buckets the night prior to the fly-in and the resulting soft and muddy fields made parking aircraft, cars and campers a real problem. Luckily, Tullahoma has numerous runways and taxiways, these were used for parking show and transportation aircraft alike. There were four KRs at Tullahoma, however I talked to several builders that had planned to fly their KRs in but had to give up because of the weather. The KRs that did make it were:

Ron Sorrell KR-2. A super slick aircraft, Ron has one of the smoothest finishes on his KR I've seen. You can see your reflection in the wings.

John Shippey KR-1. A red, white and blue fun airplane. Powered by a 1200 VW makes for some inexpensive flying.

Steve Bennett KR-1. Now here is a KR-1 that is really getting around! Steve is from Iowa and seems to make all the fly-ins.

Dan Diehl KR-2. Dan's KR was the third KR-2 to fly (Ken Rand's prototype and Wick's KR-2 were one and two). He has accumulated well over 500 hrs in N4DD, highest total I know of to date.

Tullahoma "79" will have to be considered a success in spite of the weather related problems. There was good participation by all of the sport aviation community and the effort put forward by dedicated E.A.A. volunteers point toward a great 2nd annual happening. Don't miss it.

RAMONA "79" Sponsered by E.A.A. Chapter 14 and the San Diego chapter of the Antique Airplane Association, this is a local fly-in here in So. Cal. and is one of the last fly-ins of the year. As such, it is usually well attended and this year it was bigger than ever. Seven KRs were present, six flew in and one static display:

Butch Grafton KR-1. Butch goes everywhere in this fine looking KR. He's at most of the So. Cal. and Arizona fly-ins.

Murray Rouse KR-2. I saw this KR-2 at Ramona for the first time two years ago. Since then Murray has put the KR to regular use and it still looks as good now as it did then.

Fred Whitcomb KR-2. Still the lightest KR-2 around! 410 lbs. empty, that is lighter than some KR-1s. Fred is using the "opera windows" now available from R/R.

Will Power KR-2. Just finished flying off the restrictions. A super clean KR-2 with a turbo Revmaster 2100 and Maloof c/s prop.

Robert Osborn KR-2. Completed two years ago and flown regularly. New paint job since I had seen it last, complete with R.A.F. markings.

Harold Middleton KR-1. Brought lots of good comments from all viewers.

George Peters KR-2. A 25% complete static display. George's project drew as much interest as a completed KR. Everyone wanted to see an example of what's under the foam. He talked himself almost to the point of laryngitis answering all the questions.

Now, to discuss a couple of things I learned at these fly-ins. Most of the initial problems in flying a KR-1 or -2 seems to stem from the fact that it is very sensitive to small elevator imputs, resulting in a possibly serious over control situation. This can be a minor thing at cruising altitudes but a definite problem on take-off. While talking this over with Dan Diehl, Brad Hummel, and other KR pilots, this solution was sugested.....

(Cont.)
When your KR has been completed and is ready for taxi tests you can start getting the feel of the elevator before the first lift-off. Try this...find an area on the airport (or at home if you have understanding neighbors) where you can run the engine up safely. Chock the main gear firmly to prevent the aircraft from rolling. Tether the tail wheel with a length of rope or chain that will allow the tail to raise until you have about 3 inches of clearance between the prop and the ground. When you're satisfied everything is secure, start the engine. Be sure the stick is tied back if you are hand propping alone. Sit in the aircraft and do a couple of engine run-ups. If you are satisfied the engine is running properly and the oil pressure and temperature are normal, run the engine up to about 75% power. Now, slowly move the control stick forward, the tail of your KR will come up accordingly. You are now flying the tail. Notice how slight movements of the stick cause an immediate reaction via the elevator. Make your control imputs smooth and the KR will respond smoothly. This is almost exactly how your KR is going to feel when you make that first flight. Do this "fly the tail" technique until you are satisfied with the feel of the stick, the response of the aircraft, and with yourself. You and your KR become a team in the air. The sooner you understand each other the better.

The other thing I want to talk about was brought to my attention by Murray Rouse of San Diego. He, like most of us had heard that a "sure" way to increase cruise speed was to adjust the ailerons on your aircraft so they were slightly up when in the neutral position. Murray had been flying his KR-2 for a while and was open to ways to increase his cruise speed. Adjusting the ailerons looked like a sure thing so, why not? Well, in Murray's words, "I took a good flying airplane and turned it into a monster. I was flying along about 90 I.A.S. when the right wing started dropping. Opposite aileron had no effect, the wing kept dropping. I gave it forward stick and the aircraft immediately righted itself." This happened at a time when Murray had plenty of altitude so the forward stick "cure" could be applied without problem. It also happened a few flights after he had adjusted the ailerons so the cause of the wing dropping was not realized right away. Realization came a few flights later...on take-off. "I had about 15 to 20 ft. of altitude when the wing started dropping, that doesn't leave much room for lowering the nose. I'm still not sure how I got off without scraping a wing. As soon as I landed I got out and just looked at the airplane. The only thing I could find out of the ordinary were the ailerons. Both were slightly up at the trailing edge." Murray re-adjusted his ailerons and has now made several flights. No problems. Don't turn your KR into a "monster"! Check <u>all</u> your control surfaces for proper alignment and full travel.

RAND/ROBINSON UPDATE

Finally, a selection has been made of a fabric to replace Dynel in KR construction. It is a 5.9 ounce fiberglass cloth that has the charactistics deemed necessary by R/R for your KR. Price is $2.65 a yard at their shop.

The KR-1B is being flown regularly and should have the restrictions flown off soon. Performance has been good as expected and plans for the long wing and spoiler flap system should be in process after the 1st of the year. Some of the figures arrived at to date are as follows:

KR-1B MOTOR GLIDER

Length	12'10"	Cruise	125 mph @ 3200 rpm
Wing Span	27'	Stall	38 mph power off
Empty Wt	484 lbs.	Stall	45 mph w/spoilers
Gross Wt	800 lbs.	R/C	1500 FPM
Engine	VW 1834	Glide Ratio	21.12 to 1

The KR-1B is a variation on the popular KR-1. The basic fuselage is the same, as are the center section spars and landing gear. A slightly larger rudder is used. The center section airfoil is the same RAF 48 that is on every other KR-1 flying but the outer wing panels are GA(W)-2 inboard and GA(W)-1 at the tip. Idea of the KR-1B is to have two sets of wings, short RAF 48 for getting places quick, long glider wings for fun and economy. With a L over D of over 21 there is bound to be some thermals out there.

The KR-3 is still progressing ever so slowly. Basic aircraft is complete but wiring and plumbing is currently being worked out. First flight is not expected until after the 1st of year. (1980 ought to be some year!)

BUY SELL TRADE

FOR SALE....KR-2 fuselage on gear, all controls installed and rigged. Wing spars complete, hardware attached and signed off for closing. Horizontal stabilizer and rudder signed off for closing. Rudder has been covered and elevator is being covered now if weather holds to permit completetion. Front cowl tank complete ready for bottom closing. Has smoke tint canopy. Center wing section has been finished. Has Rand sling seat. Price is $2150.00....Robert Perry, 2950 Churn Ct., Redding, CA or phone 916-244-0925.

FOR SALE....Canadian KR-2--60% complete. All wood and mechanicals done, foam work, canopy and cowl to do.)-time A75, instruments, gear plus materials to finish. All for cost of parts.....Jack Anderson, 14736 Oxenham Ave., Whiterock, B.C. Canada or phone 531-5712.

FOR SALE....KR-2, woodwork, controls, gear, all complete. R/R cowl, 2100 Revmaster, prop, panel, all engine, instruments. Needs covering....$3500.00...James Lessel 501-225-5368 or (office) 666-8290.

FOR SALE....KR-2, fuselage construction complete, rear spars ready for closing; includes also, wood kit, birch plywood kit, marine plywood (for firewall and floor), 4 gallons R/R epoxy, KR newsletters and plans. Must sell, have another project. $400.00 or best offer.....Mike Hull, 9043 Wormer, Redford, MI 48239 (Detroit area) or phone 313-531-2213.

FOR SALE....Unused R/R parts: KR-2 cowl..$80.00, VW engine mount..$65.00, slick 4016 Mag and harness..$110.00....Dan Houseman 815-623-6332.

FOR SALE....Dynel--supplied by Rand for KR-1. 30 yards by 48 inches wide....$50.00 C.O.D. 515-782-8190 after 5:00 p.m. or write to Joe Wallace, c/o Vanmark Corp., Industrial Pkwy., Creston, IA 50801.

FOR SALE...Scavenge pump...$70.00. One pair of new dual port heads. New valves, bored and cc'd for 7.5-1 turbo 1834 cc. Heads are machined for dual spark plugs for dual ignition...set $240.00.....Dan Diehl, 4132 72nd St., Tulsa, OK 74136.

WANTED....Corvair turbo-carburetor assy., distributor and/or shop manual. And condition. Narco VHT-3 radio crystals 120.5, 121.9, 118.5, 121.6 and others. Cash or will swap parts/services. Paul Venne, 3811 "B" Livingston Dr., Long Beach CA 90803.

FOR SALE....KR-2 project, fuselage, wing fittings and controls 90% complete. Rand fiberglass cowling and canopy. All materials to complete airframe including spruce, slywood, foam, dynel, gear, airspeed ind., and all AN hardware. Over $1625 invested, asking $1550.00. Call Jack...home 213-575-4601 or work 213-943-6703.

FOR SALE...All R/R kits to build KR-2. Many fiberglass components. Going into Air Force. Price negotiable, asking $1500.00....Larry Oppegaard, Rte. 3, Box 414, King, NC 27021 or phone 919-994-2142.

FOR SALE....Super KR-1, 3 hrs, 75 hp Lyc. Warnke 3-blade adjustable prop, beautiful finish.....$4500.00. Send S.A.S.E. for details and picture. Also KR-1 canopy 20" wide by 47" long by 14½" high...$50.00.....Melvin J. Boggs, 1141 St. Agnes Ave., Columbus, OH 43204.

FOR SALE....TYGON tubing for fuel transfer lines and sight-glass tubing. Transparent. Formulated for lab use. 3/16" ID 3/8" OD. $1.00 per foot, postage paid, USA and Canada.....Jim Snyder, Box 696, Hesston, KS 67062 or phone 316-327-4053.

Good News!! Those who have waited patiently for the intake/exhaust system I described in earlier Newsletters can now order one for yourself. I just received the first bunch off of the production jigs. For those who are new to these pages the intake/exhaust system has been under development for almost a year now. The intake manifolds, dual or single port heads, will fit most all VW conversions from 1300 to 2200. It is designed around the Posa injector but other carbs could be used. The exhaust manifold is a tuned, split "Y" system. All pipes are equal length and designed to fit inside a KR-1 or KR-2 cowling. Price of the intake /exhaust system is $180.00 single port, $185.00 dual port. I've had many request to separate the systems and will do so. Price separate is single port intake $60.00, dual port $65.00, exhaust manifold $130.00. California residents add 6% sales tax. There will be a shipping charge of 10%. All overages will be refunded.

Dear Ernie:

The info and drawings on moving the thrust to the #3 main bearings in V.W. conversions in last months newsletter were very good, but perhaps not completly correct in all instances. We have found at H.A.P.I. that most cases will not accept a #1 main bearing in the #3 saddle due to web misalignment as shown in figure #1.

Both sides of the #3 bearing saddle are not machined with the cases bolted together at the factory, and in most cases while a #1 bearing may fit either side of the case, the cases will not mate with a #1 bearing in the #3 position due to this condition. What must be done is to remachine both sides of the saddle (see figure #2) and remove metal in shaded areas. This will leave the saddle with both sides parallell, but a smaller width than the standard .866 dimension. (see figure #3) So you purchase a set of bearings, ask for oversize thrust, which are made for engines with a damaged thrust and have a extra thick flange on one side to allow for fitting to a recut saddle. These bearings are only made in oversize align bore sizes, so even if you have a new case you will have to align bore it oversize when making this thrust change.

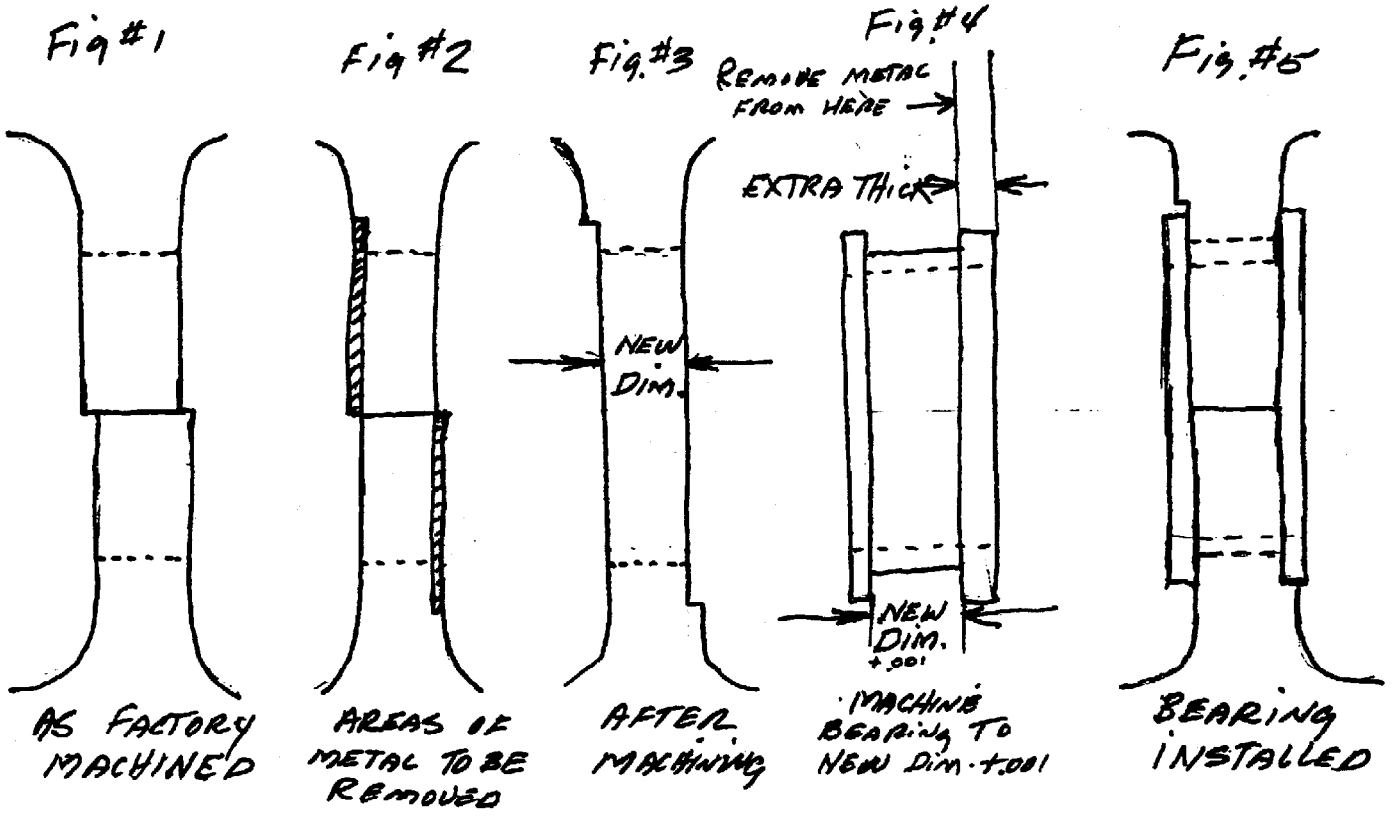
Now you machine the distance between the flanges (see figure #4) on your #1 bearing to the same dimension as the thickness of the #3 saddle and, now everything will fit and go together properly. (See figure #5) I have never seen a thrust bearing failure regardless of location that originated as a thrust problem, ususally the failure is due to low oil pressure, no oil, or contamination in the oil. The front thrust is no better or worse in my opinion, they both work very well if done right. H.A.P.I. can supply all the machining necessary to do this thrust conversion including the align bore and facing the #3 bearing saddle.

Sincerely,

Rex Taylor

H.A.P.I. Engines
rt

HAPI
HOMEBUILT AIRCRAFT PRODUCTS INTERNATIONAL
HANGAR 4, CALEXICO INTL. AIRPORT
BOX 5951 CALEXICO, CA. 92231
714-357-6342



"THE SUPERCASE"

Bolt on conversion for your VW 1300 to 2200 cc Type II & Type III engines.
Parts available include flywheel, alternator, and magneto drive.
Send S.A.S.E. for more info.

Dan Diehl
4132 E. 72nd
Tulsa, OK 74136
ph. 918-492-5111

Retractable tri-gear for KR-1 or KR-2. Stress analyzed to 3x gross by Marshall Wood, senior design engineer at Rocketdyne. Plans are now available @ $40.00 for complete system. Material kit, excluding wheels $250.00. Ready to install assemblies $800.00. Free isometric view with S.A.S.E.

Don Land
906 Manzanita
Los Angles, CA 90029

MINATURE METRICS

Special length bolts for your VW conversion. Extra length studs, long prop hub bolt. We can suppy your special needs in a variety of materials, from aluminum to stainless steel.

Minature Metrics
7801 14th Street
Westminster, CA 92683

Retractable tri-cyle landing gear conversion plans by Bill DeFreze. Uses many of Rand's parts, including gear legs & spring bar.
$25.00

Bill DeFreze
7530 Ironwood Drive
Dublin, CA 94566
Ph.415-828-2111

NOW FROM VNE KR

Jig built wings....
KR-1 $686.00
KR-2 $870.00
Wet wings....
KR-1 $59.50 (1/3 capacity)
KR-2 $75.50 (1/3 capacity)
Send spars (signed off), plywood ribs, attach fittings, & bolts U.P.S. Specify Hi or Lo speed tip or send photo. VNE wings have straight sharp trailing edges and contour accurate to +/- 1 M.M. Crated wings shipped FOB Long Beach.

MASTER-SLAVE electric trim... $125.00. Meets or exceeds KR-2 prototype specs. 2" x 1 5/8" x 2 3/4" master unit sets and holds position of remote mounted servo. Will remember setting if trim moved while plane hangared. Kit includes servo, hardware, wire & directions.

"TRICKS"...A builders suppliment, only $15.00. Many other services. S.A.S.E. and $1.00 for lists.

VNE

Paul Venne
K R CONSTRUCTION
3811 "B" Livingston Dr.
Long Beach, CA 90803
213-433-0620

ENJOY THE BIBLE

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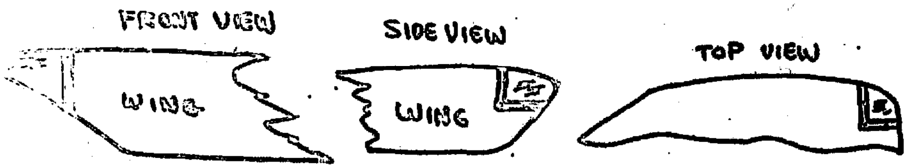
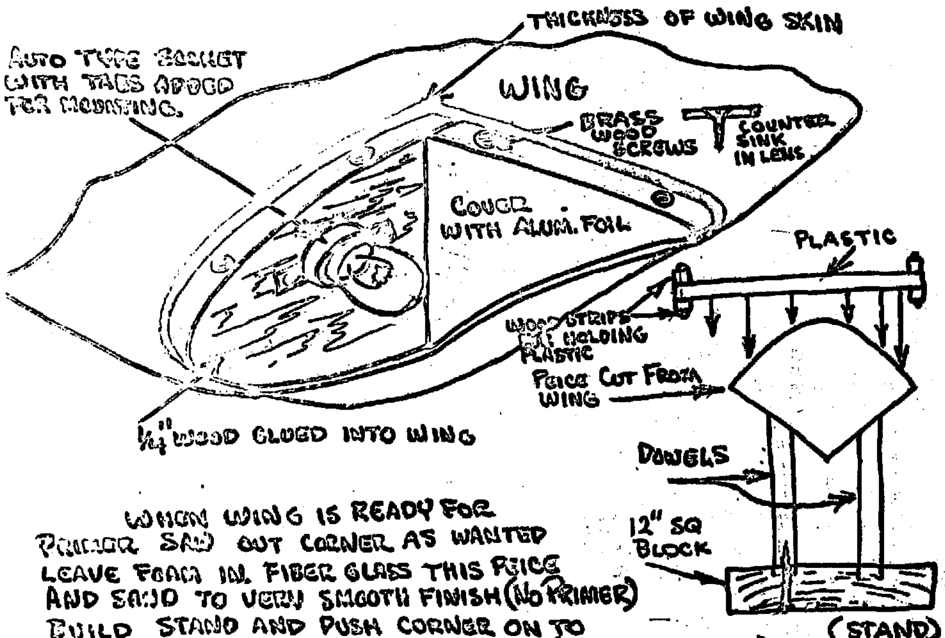
WING TIP NAV. LIGHT

MAT. 3/32" LEXAN PLASTIC
1/4" SOLID WOOD
BRASS SCREWS





WHEN WING IS READY FOR PRIMER SAW OUT CORNER AS WANTED LEAVE FOAM IN. FIBER GLASS THIS PIECE AND SAND TO VERY SMOOTH FINISH (NO PRIMER) BUILD STAND AND PUSH CORNER ON TO DOWELS. ATTACH STRIPS TO PLASTIC (SIZE AS NEEDED) PLACE IN OVEN AT APROX 350° OR JUST WHEN EDGES (3 MIN) START TO BUBBLE, REMOVE AND PUSH DOWN OVER CORNER, HOLD TILL COOL (USE GLOVES - IT'S HOT) MARK EDGES AND TRIM. [illegible] SIDES ON 1/4" WOOD MARK FOR CUTTING. (ALLOW FOR THICKNESS OF PLASTIC) PAINT INSIDE OF LENS WITH A CUSTOM [illegible] - CANDY RED. USE ALUM. FOIL OVER WOOD FOR [illegible]

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ERNEST KOPPE
6141 CHOCTAW DRIVE
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Issue #53

DECEMBER 1979 ISSUE #54

NEWSLETTER

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** A monthly publication for communication between KR builders and pilots world wide.**
Edited & published by Ernest Koppe, 5141 Choctaw Dr., Westminster, CA 92683 714-897-2677

There have been four KR-2 accidents reported to me in the last two months. Three of these accidents claimed the lives of five people and the other involved serious injuries to the pilot.

Two of the KR-2s had engine failure. Engine failure is suspected in a third but its not yet verified. The pilot and passenger can't tell us...they're dead. The fourth accident happened just as the aircraft was leaving the runway on take-off. The pilot was unable to keep the plane under control and hit an obstruction just off the side of the runway.

All four of these accidents had one thing in common....they did not attain or maintain flying speed....they stalled and they crashed.

How long is this going to go on until we realize it takes sufficient airspeed to keep a KR or any other aircraft in the air? Just using the basic training every pilot gets as student could have avoided these accidents! Answer these questions...I know you already know the answers but do it anyway. What is the stall recovery proceedure? Easy question, right? Right! So how come we can sit right here and glibly rattle off the answer and so many of us seem to forget when it really counts? How about this question.. You're climbing away from the airport, three to four hundred feet of altitude and the engine sputters and dies. What is the first thing you should do? Turn around?...of course not. So why do we continually hear and read of pilots that tried it and didn't make it? Try this sometime in your plane.....get some altitude, say three to four thousand A.G.L. over your favorite out-of-the-way airport. Pick a heading into the wind and start a normal climb-out. Note the altitude you start the climb and when you reach 400 feet above this altitude, cut your engine. I don't mean just throttle back, I mean shut it off. Now....see if you can make a 180° turn without losing that 400 feet. Be prepared for the stall/spin because this is where it happens and it is the #1 killer in general aviation.

Our light KRs are especially susceptible to a stall when the engine quits for this reason: they are light. They lose momentum rapidly without the engine pulling them and if you don't get the nose down you are going to lose airspeed just as rapidly.

I hope I've made my point. When I heard of these accidents I was saddened. And then I became angry. Angry at such a senseless end for the pilots, for their passengers, for their KRs. This year is almost over, 1980 will start a new decade. Lets make it a good one.

KR CLUB NEWS

Eddie Taylor sent me a copy of the Newsletter of the KR group in the Houston, TX area and they've undertaken a worthwhile project. They are compiling a record of the weight of individual assemblies and parts of the KR. With over 20 members participating they should arrive at a pretty comprehensive figure on what the ideal KR should weigh. Maybe they'll send us the results as they come in.

In Australia, my hat is off to Tom Harrison, 10 Allwood Cres., Lugarno, 2210 NSW. He has taken it upon himself to help the Australian KR builders thru their many problems with the plans and with D.O.T. Tom is obviously very knowledgeable regarding composites and should be a boon to the "down under" KR group.

Closer to home is the KR Club in Kansas. Organizer of this group is Jim Snyder, 111 W. Vesper, Hesston, KS 67062. Jim's group meets at his place bi-monthly.

Here locally, we have taken a page from the San Jose, CA KR group and have decided to meet at different members house each month so we could all volunteer comments and criticism to the lucky (ha) host. We meet the 2nd Monday every month and you can call me for the location. I haven't heard from the San Jose area group lately but I understand they are still active. Contact Emmett Dignon, 2975 Walgrove Way, Apt. 2, San Jose, CA 95128.

* * * * * * * * * * * *

I just re-read a letter from Steve La Manna, it's sort of a double flight report and it did much to restore my usual optimism. I'm sure it will do the same for you.

Dear Ernie,

If you recall I met you at Oshkosh and got a demo flight from Dan Diehl and was in the finishing stages of my KR-2. Well, it is finished and certified--got my first flight off 11 Oct. 1979.

What an excellent flight! The plane took off straight, true, steady climb--very steady and gave a feeling of absolutely positive control. All the butterflies in my stomach stopped flying and crashing into each other and settled down from the moment of take-off. From there on in it was easy street. The plane was so responsive and accurate that I felt like I could carve my own line in the sky to a fraction of an inch. Scanning the instruments everything was operating smoothly except for the Tachometer which was forever nailed on 800 rpm. So I flew it by ear. Although I had not planned to retract gear on first flight, things were going so well that there was not too much to do except retract gear and try it out. So I did.

I must have flown 20 to 30 planes so far but the KR-2 was by far the most enjoyable. No trim corrections were required during or after flight. Just as well as I did not install trim tabs anyway!

What a trip!!--Neat-O---all right!!! My admiration and thanks to all at Rand/Robinson Corp.

Techinical Data — 29SL First Flight (20 min.)

TAKE OFF

Take off run	500 ft. (est.)
Rotation	65 mph
Take off speed	65 mph
Climb out speed	80 mph I.A.S.
Climb rate	800 fpm
Tachomter	(not functioning)
Oil	60 psi 140° F.
Cylinder Temp	#3 320°F others 220°F

LEVEL FLIGHT

Cruise	75% to 95% power estimated
Cruise-wheels down	120 I.A.S.
Cruise-wheels up	140 I.A.S.
Ammeter, Voltmeter	15 amps (max) 13.5 V
Oil	40 psi @ 120°F
Cylinder temp #3	300°F

GROUND TRACKING

Take-off run and landing roll out--straight and true
Brakes--poor. Only effective at slow speeds.

CONTROL RESPONSE

Elevator, pitch response	Sensitive but accurate-goes exactly where you want.
Ailerons, roll response	Pleasant-docile like a Cherokee or 150

LANDING

Pattern speed	80 mph
Flare to stall	70 55 (estimated)
Landing Technique	Hold off on float, let plane settle in by itself-nose just above the horizon. Results very smooth landing-used about 3000 ft. of runway.
Building time--2 yrs	

Steve La Manna
122 Shady Cove Rd.
North Kingston, RI 02852

IMPRESSIONS OF FIRST FLIGHT--29SL
11 Oct 1979 5:15 p.m.

29SL, engine idling--waited. The runway extending in an endless taper ahead--waited. The air--hushed and waited. Friends waited by the hangar.

Prayer completed, the throttle was advanced. Responding to the throttle, the runway eased into a backward slide. Intermittent lines on the runway advanced, gained momentum and darted below the fuselage. Faster and faster the lines came, accellerating and bursting into light-dark flashes which were flickering at a quickening beat. On came images of all kinds, rushing up and parting to both sides, disappearing rapidly behind. The runway unrolling as a tape from a huge reel raced by, sweeping the adjacent landscape by until all was in motion. Suddenly the end of the runway appeared, then dropped below as the horizon started a steady descent and the sky took my plane in a firm embrace.....29SL was flying!

Whoof!! How can you just sit there reading this Newsletter after reading something like that? Makes you want to go out and fly that KR-1 or -2 doesn't it?

By the way, if you haven't read it yet, a KR-2 received national coverage in one of the better magazines. Look on page 74 of the December "Popular Mechanics" for the story.

QUESTIONS AND ANSWERS

Q. Where can I get the 3/8" alum. to make a fixed landing gear such as the one in the Oct 76 KR Newsletter?

A. That KR-1 used a VP type landing gear. I understand it was made by the same company, Metal Masters, 5599 University Ave., San Diego, CA 92105. They have an info sheet for 50¢.

Q. Is the KR-1½ you mentioned in an earlier Newsletter a narrow KR-2?

A. Basically yes.

Q. What should the prop hub bolt be torqued to?

A. 44 ft. lbs.

Q. Getting ready to do my wings and I've already varnished the spars. Do I need to sand them or will liquid foam be adequate for attaching foam to the spars?

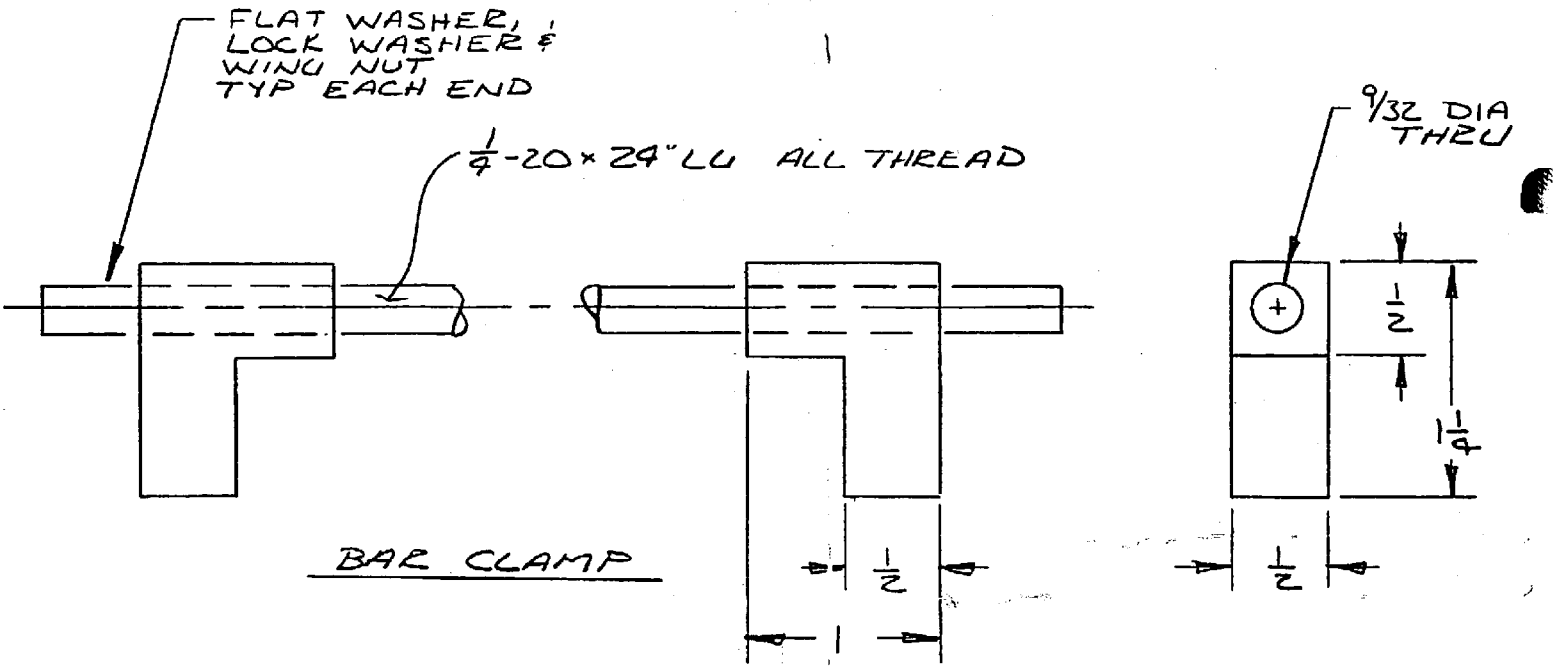
A. The top and bottom of the spar should be free of varnish so that the skin can make full contact with the spar. The liquid foam will give an adequate bond along the forward and aft sides of the spar without sanding. It would be a good idea to rough up the varnish in this area though.

BUY SELL TRADE

FOR SALE...KR-2 fuselage on gear, controls in, spars and horiz tail...$1200.00. Grey canopy, uncut...$60.00. Two sets KR-2 wood kits (spruce). Birch plywood 1/8" ½ sheets....$10.00 ea. Green foam for three airplanes. White 3 lb styrofoam -3 to 5 airplanes. Paper face foam ¼" thick for No Sand wing skins. 4' x 8"...$15.00. Ass't hardware. VW 411 block- set up to complete as Revmaster, 102MM bore, stock stroke, modified crank for Revmaster type prop flange...$1200.00. Tools, glass cloth, resin, alum. to steel hinges. Also have Vari-eze kit - 90 HP Franklin, 75 HP Continental - propellers - Volmer amphib project - Cub wheels, other instruments, tools, radios... Lou Sauve, 11989 Telephone Ave., Chino, CA 91710 (714) 628-7028.

WANTED....KR-2 project or spruce, plywood, foam kits and other parts. Southeast U.S. only.....John Shaffer, 604 Langley, Robins AFB, GA 31098.

FOR SALE...KR-2 project, fuselage done and spars installed, assorted instruments, three wheels....$2000.00.....Jim Boyer, 2021 Ocean Ave., Santa Monica, CA 90405 213-870-8122.



Here are two aids I used when gluing my fuselage sides together that made the job easy and accurate.

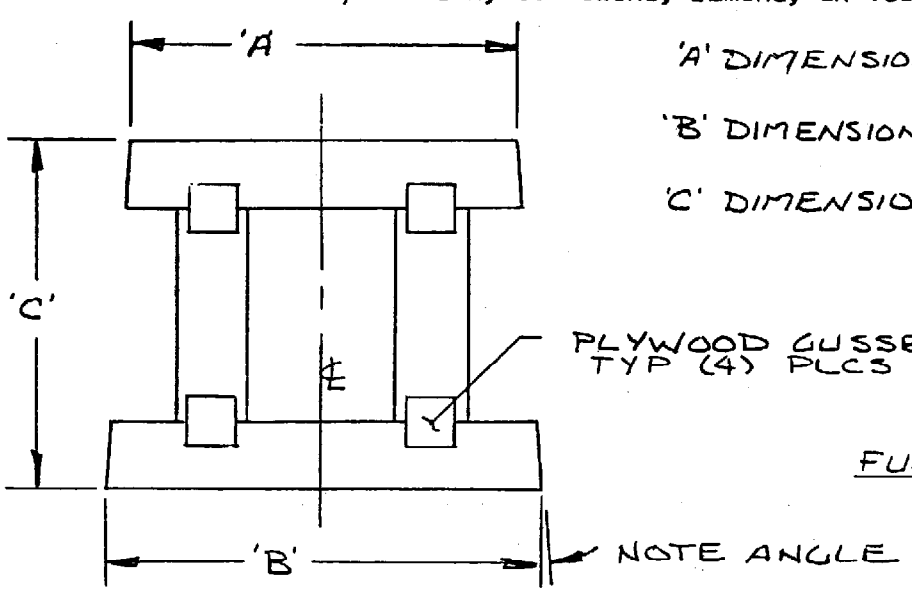
The first drawing is for a fuselage assy fixture I built to hold and align the fuselage sides. I made mine with 1 x 4 boards, built to the dimensions of the fuselage at the point where the fixture is to be placed. I used three fixtures to assemble my fuselage, one at the firewall, one at the main spar and one at the first cross-piece behind the aft spar (place them behind the actual cross piece location so that the cross piece can be fitted and glued). I attached the fixtures to my work table with some small shelf angle brackets lining up the fixture center line with a straight harlk line on the table.

(Hint: If you cut the angle on the ends of the horizontal pieces of the fixture, the fuselage will lift off the table when all gluing is completed. I glued both top and bottom pieces in before removing the fuselage from the fixtures.)

The second drawing is for a simple bar clamp to be used for clamping the fuselage sides to the assembly fixtures. I used steel for the angle pieces but wood reinforced with plywood sides should work also (only light clamping pressure is required).

These two aids will hold the fuselage sides very rigid and square to glue together. My spars rest in the fuselage square and parallel without any shims.

Hopefully these drawings and explanations will help someone else as much as they did me.....Gary Swanson, 600 Owens, Edmond, OK 73034, 405-348-0785.



'A' DIMENSION - BOTTOM CROSS PIECE LENGTH

'B' DIMENSION - TOP CROSS PIECE LENGTH

'C' DIMENSION - HEIGHT OF FUSELAGE

FUSELAGE ASSY FIXTURE

REMINDER.....There are five KR Designees... all willing to help you with your problems. We've all built and flown at least one KR and we've helped on dozens of others. Below are our names, addresses and phone numbers. Call or write the designee nearest you (or all of us for that matter). We can help!

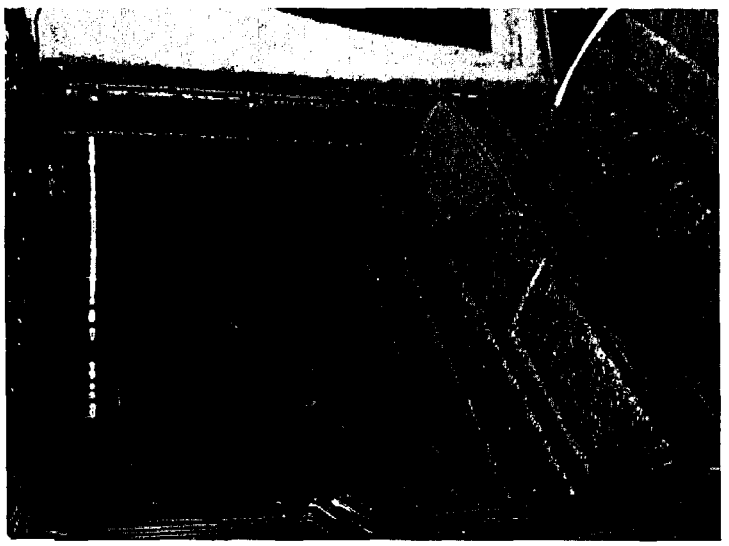
Bill DeFreze
7530 Ironwood Dr.
Dublin, CA 94566
(415) 828-2111

Dan Diehl
4132 E. 72nd St.
Tulsa, OK 74136
(918) 492-5111

Ray Ellis
2416 E. Douglas
Des Moines, IA 50317
(515) 265-3007

Ron Sorrell
6505 Sassafras Dr.
Independence, KY 41051
(606) 356-6242

Ernest Koppe
6141 Choctaw Dr.
Westminster, CA 92683
(714) 897-2677



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1 seat back.....33"x 17"
1 boot for turtle deck.....35"x 13"

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ERNEST KOPPE
6141 CHOCTAW DR.
WESTMINSTER, CA 92683
ISSUE #54 DEC. 1979

MERRY CHRISTMAS !!!

JANUARY 1980 ISSUE #55

KR NEWSLETTER

RATES
1 Year $9.00
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Back Issues .75 each

** A monthly publication for communication between KR builders and pilots world wide.**
Edited & published by Ernest Koppe, 6141 Choctaw Dr., Westminster, CA 92683 714-897-2677

HAPPY NEW YEAR!!

The past year has been an emotional one for me, starting out as it did with the passing of Ken Rand and continuing with the loss of other wonderful people. There have been highlights too, like the acceptance shown by the KR builders for the KR Club and KR Designee idea, the camaraderie and good fellowship at Oshkosh that just has to be experienced to be believed and the flight to Tullahoma with Dan Diehl in his KR-2. Mostly tho, it has been knowing of all the the friends I have made thru the Newsletter.

1980 is here and is ours to do with as we will. Lets make it the best ever, so we can look back with satisfaction this time next year.

Last month's Newsletter article about the KR-2 accidents brought a lot of response by phone and mail. Most of the questions were repeated each time so I thought it would be a good idea to print them so all of the KR pilots and builders could benefit. The answers are mine and are open to comment.

Q. What type of engine was it that failed?
A. One was a homebuilt, one type unknown, and two were Revmasters.

Q. Why did they fail?
A. This is very difficult to determine after an accident. We know that one turbo-charged engine had a broken crankshaft when it was disassembled but the cause of the fracture is unknown. Almost all of the VW engine failures I have seen can be traced directly to one of two causes....fuel system failure or improper engine cooling. I can't stress enough how critical these two factores are in the safe operation of a VW conversion. I have seen KR builders spend hours of time and hundreds of dollars on their engine and then be reluctant to spend an extra couple of hours or $20.00 to properly install it in his KR. You explain it, I can't.

Q. Is there someting in the design of the KRs that cause them to stall or spin when the engine quits?
A. No. The cause of a stall/spin in a KR is the same as any other homebuilt or factory built aircraft.

Q. Why, then, do the KRs seem so likely to stall after a power loss?
A. This is the point I was trying to make in the last Newsletter. KRs and other very light aircraft tend to slow down rapidly when the engine quits. If the engine quits when the aircraft is in a steep climb configuration (full power, low airspeed), the airspeed loss is critical. The only sure way to avoid a stall is to get the nose down to maintain airspeed. DO NOT try to make a turn until a glide is established, 80-85 IND. A.S. usually, and then make the turns gentle, 30° or less angle of bank.

KR CLUB NEWS

KR Club members in Kansas will be meeting at 7 pm, Jan 12 at the El Dorado, KS airport. Host will be William Churchman who has recently completed his KR-2.

Chicago area builders interested in getting together should contact Jon Freund, 2 S 514 Iroquois Ct. W., Warrenville, IL 60555 or phone (312) 393-2354.

New Zealand KR builders can keep in touch thru Anthony Chaytor, Marshland, Blenheim R.D. 3, New Zealand. Anthony is very involved with building and restoring aircraft and appears to be well qualified to offer advice to N.Z. homebuilders.

Locally, the KR Club members here in the L.A. area are going to meet at Carey Anderson's, 7801 14th St., Westminster, CA 92683. There is going to be a buy-sell-trade table so bring your surplus parts, maybe someone else can use them. I'll have a slide projector and screen available if anyone wants to bring slides (please do). See you there.....

FLIGHT REPORT

From Robert Wood M.D., 14136 Oak Knoll Rd, Sonora, CA 95370.....I started my KR-2 in November of 1976 and finished it in January of 79. My friends think it a little odd when I tell them I really enjoyed building it, but its true anyway. Its a good way to let off steam after a hard day in the office and it sure beats watching T.V.! I probably should have kept a work log of time, but I get too much paper work to do in the office as it is. I can't think of any major problems in the construction. The main thing is to try to get something done every time you can even if its just a little bit. That way the project moves along steadily. I owe much to my wife who complained very little about the continual cloud of dust out in the garage, not to mention other annoyances such as dirty hands and clothes. I think my next project will have to be somewhere else though!

Testing program started the first of January. I think that everybody around the airport thought I was the biggest chicken around as I spent about 15 hours just taxiing. Also did a lot of lift-offs and found it quite manageable. Had to do a little hitching up of the tailwheel cables as they were loose. The engine is a 2100 D turbo-charged Revmaster with a two speed Maloof prop. After my initial FAA inspection, the moment of truth arrived and I found out that I had been doing the hard part all the time on the ground! When you're in the air there's no problem. I have found the craft so stable, that you can fly it hands off. Just lean in the direction you want to go. I was apprehensive that overcontrol was going to be a problem but I have not found this so at all. I have noticed, however that 150s, etc. handle like trucks now!

As of now I have about 80 hours total KR-2 flying time and have had a few exciting interludes. The first time I lost oil pressure and had to get down fast. Sheared copper tubing was the culprit. Don't lead off the engine with copper tubing, it won't last long. Oil temperature became my most pressing problem and it was finally solved with Revmaster's oil cooler and that has never been a problem since. Then cylinder head temperature gave me fits. That was taken care of when we finally found the right baffle arrangement. I didn't think I would ever get it to quit throwing oil out the vent pipe! It was using a quart to a quart and a half per hour. Finally, with advice from Joe Horvath of Revmaster, we got that one licked at last and now a quart will last several hours.
To top it all off, the crank-shaft broke while I was over Turlock at 6000 feet. With the fine glide ratio and the abundant supply of altitude I was able to glide into the airport without incident. Revmaster kindly replaced the crank and now, 30 flying hrs later I am beginning to relax more while flying although I still like to keep a prospective landing strip within view. At this point I have not attempted to probe its maximum performance. At 29 inches manifold pressure, it trues out at 165 mph. Climbs quite easily at 1000 fpm. Stalls at about 50 mph. Controlability is good all the way down. Its hard to get used to slowing down so much for landing after cruising along so fast. It seems that you will fall out of the sky!
I have been flying light planes now, for about 17 years and always enjoy the experience regardless of what kind of aircraft I happen to be in but this little KR-2 is just about the nicest and most enjoyable of them all. I guess that is why I keep coming back for more.....Bob. P.S. Passed final inspection last month and can now go anywhere. See you at some fly-in when it gets prettied up a bit!

REMINDER.....There are five KR Designees... all willing to help you with your problems. We've all built and flown at least one KR and we've helped on dozens of others. Below are our names, addresses and phone numbers. Call or write the designee nearest you (or all of us for that matter). We can help!

Bill DeFreze	Dan Diehl	Ray Ellis	Ron Sorrell	Ernest Koppe
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Dublin, CA 94566	Tulsa, OK 74136	Des Moines, IA 50317	Independence, KY 41051	Westminster, CA 92683
(415) 828-2111	(918) 492-5111	(515) 265-3007	(606) 356-6242	(714) 897-2677

QUESTIONS & ANSWERS

Q. Should I use wedges between the gear legs and spring bar to avoid the splay effect? If so, what size? Where can I get them?

A. Using wedges has been recommended by several builders, I haven't used them myself but they do look like a good idea. The size will depend on the weight of your KR but I would say a ¼" wedge would be the minimum size to be really effective. As to where to get them, try a wheel alignment shop that specializes in large trucks, they have a variety of sizes.

Q. I just installed the flap system from Newsletter #42 and called the FAA to inspect the completed system. They were impressed overall but had one reservation, they feel the inboard hinge bracket should be attached to the aft spar rather than just thru the fuselage skin. Have there been any problems in this area?

A. There have been no problems reported but this is still a relatively new modification. However! The inboard hinge bracket should have a back-up block glued to the inside fuselage skin. Your letter seemed to indicate no back-up block was installed.

Q. As you know, Rand/Robinson installation instructions supplied with their fiberglass parts are minimal. Many builders don't know where to start. For instance, which component is installed first?

A. All the fiberglass parts can be trimmed or added to as needed. The cowling should be installed first since it dictates the lines of the rest of the aircraft.

Q. Should the fiberglass tank be built separately so that it can be removed in case of leaks?

A. No. The top of the tank should be fit to the fuselage and cowling. The filler cap should be installed, then the bottom of the tank should be trimmed to fit the top half. Then epoxy the two halves together, cover all cracks, joints, and holes with at least two layers of epoxy and cloth. Now check carefully for leaks and install on the fuselage.

Q. Is the instrument panel re-inforced with foam, wood or both?

A. I used ¼" plywood but other builders have used foam, plywood or aluminum, each with good success.

Q. Does the canopy frame require stiffeners?

A. Yes, a semi-circle of ¼" plywood at the back and ¼" plywood rails down each side to attach hinges and latches should be installed.

BUY SELL TRADE

WANTED....Local Thorp T-18 or Vari-eze owner /pilot to test electric trim. Contact Paul (213) 433-0520 Long Beach, Ca.

WANTED....Revmaster R-2100 D turbo-charged. Call collect to Martin Rowe (214) 376 2739.

FOR SALE..KR-2 project, fuselage 30% complete, wing spars signed off, complete R/R KR-2 kit including 3 blade prop, engine mount for Revmaster and all R/R fiberglass parts. $1500.00 or best offer. Phone Mike at (404) 227-0357 Atlanta, GA.

WANTED....KR-2 project or kits for 6'3" pilot. Enlarged cockpit preferred. Bob Thompson, 14735 Amberwood Ln., Morgan Hill, CA 95037. Phone eves or week-ends (408) 779-2054 for fast response.

FOR SALE..High performance exhaust for your KR....$130.00...Intake..$65.00. Both for $180.00. Ernest Koppe, 6141 Choctaw Drive, Westminster, CA 92683.

FOR SALE..KR-2, fuselage on gear, all wood spars complete, dynel, foam, some controls installed, rudder pedals, R/R wingtips dynel and eopxy on rudder and elevators..... $1500.00 or best offer. Arden Adamson 715-394-5104 Superior, WI.

KR-2 PROJECT.....On gear, tail covered, controls installed. Dual, flaps, Arc gear lock. Approved to close. Many instruments, new Revmaster 2100 D, new Maloof prop. Less than cost....$5950.00 firm.....G. Davis, 2349 La Salle Ave., Ft. Myers, FL 33907 or phone 813-939-4162 (no collect calls).

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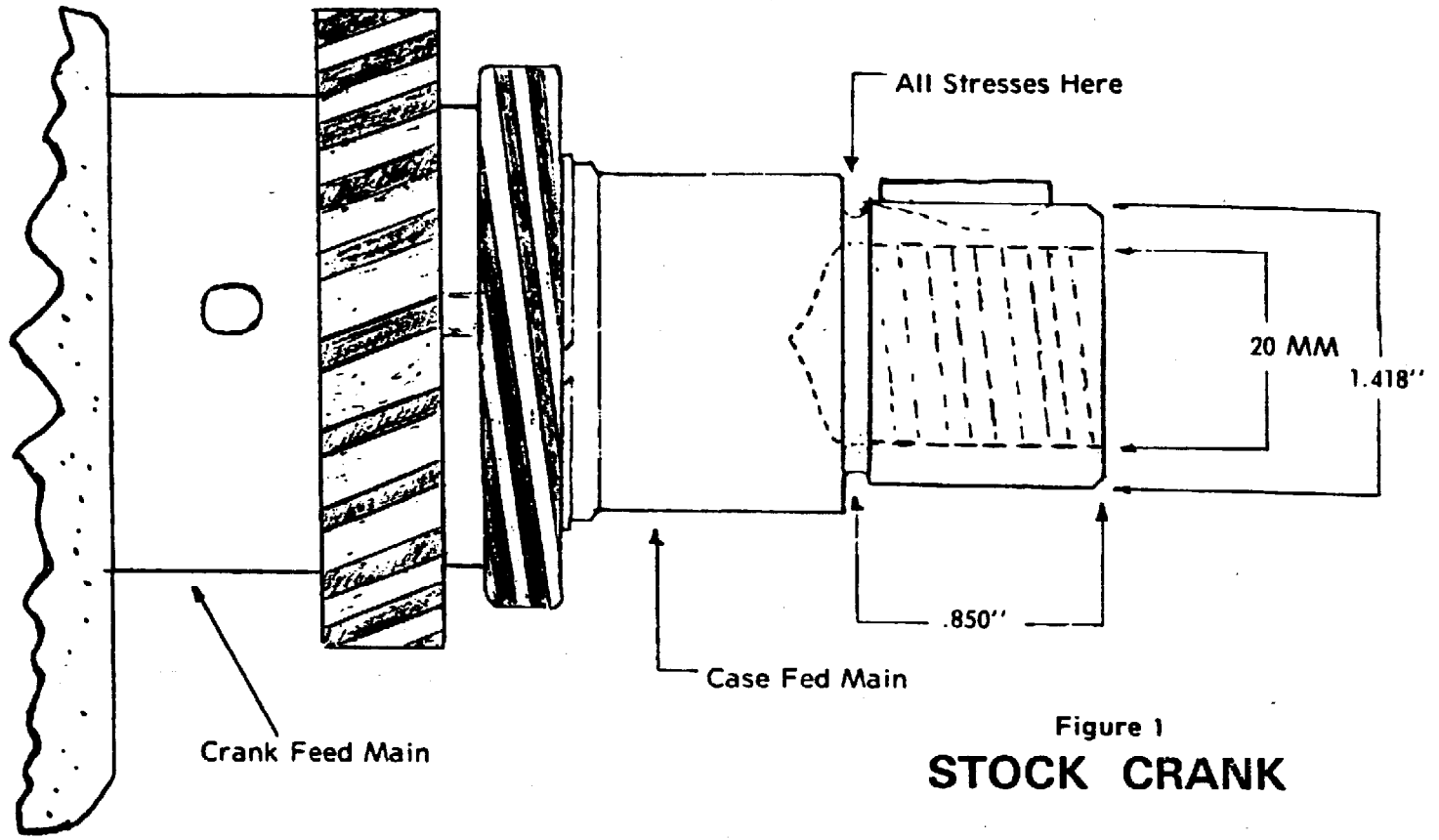

Figure 1

STOCK CRANK

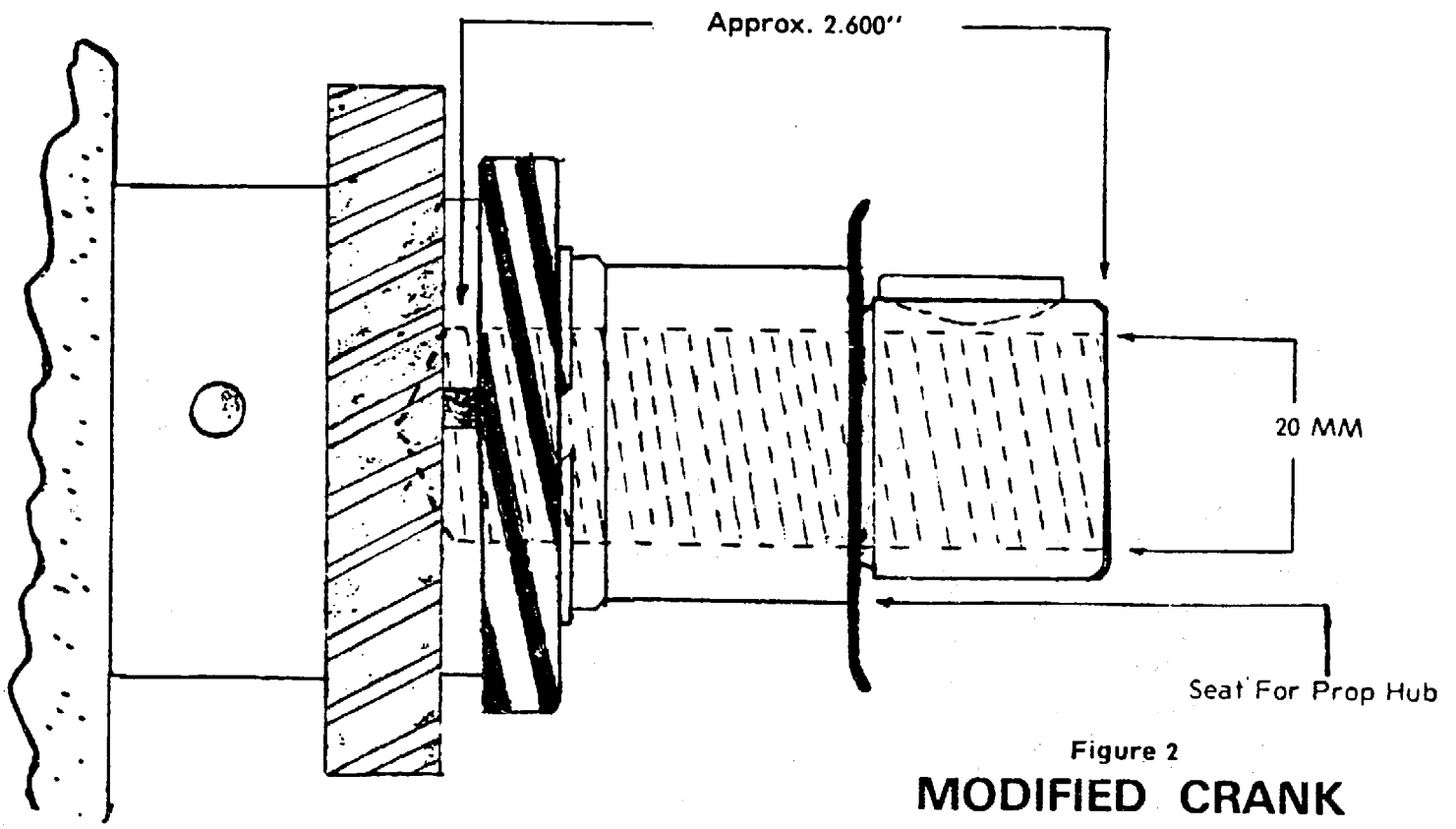

Figure 2

MODIFIED CRANK

TIPS FROM OTHER BUILDERS..... The drawings on the preceeding page were lifted from the EAA Designee Newsletter (Oct. 79) which lifted it from EAA Chapter 345 Newsletter which lifted it from someplace else....Now that is real information circulation!!!

"As you can see in figure 1, the stock VW crank is hardly what you would call beefy. The moment the prop hub is tightened down, the oil slinger groove is under stress from the bolt pulling and the edge of the prop hub pushing against the first main bearing edge....

From what I gather, the first inclination of the average builder is to up the recommended torque values because 60-70 lbs. doesn't seem tight enough to him. In this particular case, it makes matters worse. The methods of improving the crank are, on the most part, expensive, heavy and time-consuming.

After reading the December '78 issue of PRF, I called a friend of mine, Alf Hardwick, to find an easy cure for this problem. After a couple cups of coffee and inspecting the crankshaft and crankcase, numerous ideas were discussed, including additional bearings with a housing, but proved too expensive or too much work. Figure 2 is what we came up with.

First of all, don't get excited about taking the engine apart because it's not necessary. When the engine is put on the table of a radial arm drill, the crank is inline with the spindle (double check this). Inside the stock crank there is already a center to go by. Depth of drill is approximately between cam and distributor drive gears. Drill size is as large as possible without damaging existing threads. After the hole is carefully tapped, a new retaining bolt is made on a lathe. The threads are cut to mate as closely as possible to the crank threads. The bolt material is a personal choice, but I am using normalized SPS.

Ron Babos, 286 Kendall Ave., Woodstock, Ont., Canada N4S 2B5.

(Ron's crank mod is a worthwhile improvement. Prop bolt can best be made by re-machining a 7/8" diameter grade 8 or, better still, L9 bolt. A tapered stud, with the taper extending past the oil slinger, would be the best mod of this type..... Chuck Beaty)

ERNEST KOPPE
6141 CHOCTAW DR.
WESTMINSTER, CA 92683
ISSUE #55

HAPPY NEW YEAR!

February 1980
Issue No. 56

KR NEWSLETTER

RATES
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Edited & published by Ernest Koppe, 5141 Choctaw Dr., Westminster, CA 92683 714-897-2677

I am excited! You know the E.A.A. fly-in at Chino is coming up soon (Apr.26-27). Well, this year it is going to be special. KRs from across the country are planning on attending the Chino show en-masse. Flight planning is being worked out by Ray Ellis, Steve Bennett, and Dan Diehl, all planning to make the trip as a group. Others are planning on joining them along the way. There will be more KRs at Chino than ever before!

Bill DeFreze is driving his motorhome to Chiro and has offered his extra bunks to the KR pilots looking for a place to stay. If everyone shows up that said they would Bill's RV might get a little cramped....so I approached Jeannette Rand about having a second motor home available. Affirmative! Not only will we have the additional bunks, she has also promised to buy banquet tickets for all the KR-owner/pilots that fly their KRs to Chino.

This is the tentative flight plan so far....Ray Ellis, Steve Bennet and anyone else who wants to make the trip from that area will leave Ames, Iowa Wednesday, April 23rd, destination Tulsa, OK. At Tulsa they will spend the night and Dan Diehl will join the group along with any other KRs from his area. Thursday morning the KR group will leave Tulsa, destination Albuquerque. A fuel stop is planned at Amarillo, TX.

Arriving at Albuquerque the KRs will settle in for the night. Next morning (Fri.) our intrepid airmen will leave for an as yet undecided airport in Arizona, probably in the Phoenix area due to lower terrain. There they will re-fuel & re-group as needed and hopefully pick-up another KR or two. Then on to California! Next stop is Corona airport, about 6 miles southeast of Chino. Corona is a 3200 ft paved strip and has fuel available for those who want to get to the fly-in with full tanks. It also is an uncontrolled airport w/unicom (122.8) so KRs with no radio can get in and call ahead to Chino if needed. I plan on being at Corona to meet the group and help make any last minute arrangements if needed, then its off to Chino.

Let me say again that this schedule is only tentative and will be finalized later. If you want to get in on the fun, contact Ray Ellis, 2416 E. Douglas, Des Moines, IA 50317 phone (515)265-3007 or Dan Diehl, 4132 E. 72nd St., Tulsa, OK 74136 phone (918) 492-5111 or myself at the address and phone number of the Newsletter. Lets get it going!

KR CLUB NEWS

Ron Bath sent the following letter....."My home town is Lakeland, FL and I plan on having my KR-2 at the Sun & Fun. If any KR club members are interested in camping while at Lakeland I can arrange for some camping tents, and cooking utensils for those on a tight budget and for the affluent I can arrange for several motorhomes to be set up at the campground, the deposit and rental would be paid by the user. If anyone is interested they can contact me." Ronald Bath, 658 Pleasant Loop, Fayetteville, NC 28301 phone (919)488-7422.
How about that? Now....if someone can do the same at Oshkosh please send me a note.

The Kansas area KR builders are having their next meeting at the home of Robert Brice-Nash, 324 Kansas Ave., Kutchinson, KS 67501. Phone (316)663-6554. Time 7 p.m., March 8th.

LA area club members will meet at Richard Shirley's 636 Balboa, Seal Beach, CA Phone (213)431-7407. Meeting time is 7;30 p.m., Feb. 11th. Richard has almost completed the re-building and re-styling of a fixed gear KR-1

From Emmett Dignon, 2975 Walgrove Way #2, San Jose, CA 95128..."The group here is San Jose is still going strong. Looks like our group will have approx. three aircraft in the air by mid-summer. After reading your item about, shall we call it "departure stalls", in Dec. Newsletter, I felt I should add my "two cents" on this matter. Too many of our pilots today are not pilots for our homebuilts, higher speed aircraft. If you haven't had training in tail draggers, done spins, rolls, loops, etc., you best get with it. I don't say you have to be good at this type of flying but at least you would realize when a stall is near. Also I feel that too much training is in using meters and radios. Don't use the airspeed instruments to tell you if your aircraft is flying...feel it!! Go up and do stalls, power on and power off. If you will do power off stalls you will get the feel of the stall. Sometimes this feel gets covered by the running of the engine which is the condition on take-off, but its still there. Don't feel that each take-off has to be a "max climb-out." Forget about noise abatement and climb out easy. This is what the first fly off hours are for. Don't be a hot shot and don't retract your wheels on climb out until you have a few hrs in your KR. Try it at higher altitudes. Remember you will be pushing the gear retract handle forward which will make you push the stick forward. Try it one the ground and you'll see what I mean. I hope to beat this problem with an electric motor for the retract. I know this will add weight but feel it will add to the safty of my craft."

From Robin Butler, 1841 Michigan Ave., Manitowoc, WI 54220....."Forgive the delay in answering your letter. I was down to Headquarters Dec. 19, and in the press of other matters, completely forgot to ask Tom about a KR tent at Oshkosh '80. I'll send him a copy of this with a ring around this paragraph as a reminder and get back to you as soon as possible on this. While I was at Headquarters, Ron Scott showed me the broken-off side of a KR landing gear casting. I don't know whether it was a KR-1 or -2, nor who the pilot/builder was, but apparently there had been an accident and Ron said that first "blame" seemed to be the casting itself. I looked at it closely and disagreed. The axle hole was $\frac{1}{2}$ inch in diameter--twice the design dimension--leaving about an eighth of an inch of metal between the hole and the bottom edge of the casting. There was also a gouge of about 1 inch diameter circling the hole, where something turning had worn away the metal deeply on one side only.. I think it was the forward side. The point I made is that the axle installation was sloppy and not square, which means the casting was subjected to a "twist" force at all times, aggravated when the weight of the airplane was on the gear. Sooner or later the casting had to snap. The break showed good metal all the way. I would caution builders in the Newsletter to make sure the axle installation is at least square, preferably the way the plans have it. I suspect the Rand gear casting is getting blamed for poor axle installations more than we are aware. Its' not the casting's fault the builder bungles the axle!"

Ray Ellis just put me on to a new item that seems to be made just for our KRs. Its a Stewart-Warner Mini-Panel, a cluster of gauges (oil temp, oil pressure & voltmeter) that fits in the same space as a $2\frac{1}{4}$" single instrument, the quality of this cluster is the same as the standard size instruments. Price is just under $60.00 at your local S/W dealer. Ask for the "Mini-Panel".

REMINDER.....There are five KR Designees... all willing to help you with your problems. We've all built and flown at least one KR and we've helped on dozens of others. Below are our names, addresses and phone numbers. Call or write the designee nearest you (or all of us for that matter). We can help!

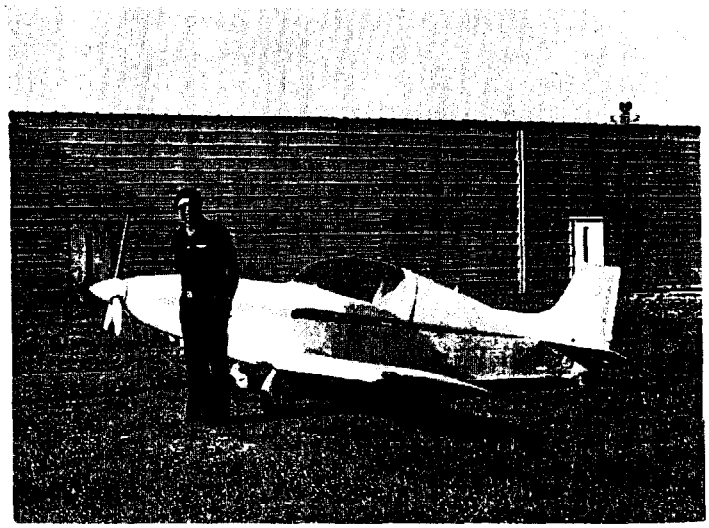
Bill DeFreze	Dan Diehl	Ray Ellis	Ron Sorrell	Ernest Koppe
7530 Ironwood Dr.	4132 E. 72nd St.	2416 E. Douglas	6505 Sassafras Dr.	6141 Choctaw Dr.
Dublin, CA 94566	Tulsa, OK 74136	Des Moines, IA 50317	Independence, KY 41051	Westminster, CA 92683
(415) 828-2111	(918) 492-5111	(515) 265-3007	(606) 356-6242	(714) 897-2677

TIPS FROM OTHER BUILDERS

From Keith Campbell, 1617 14th St., Boone, Iowa 50036..."Here is a few lines on winter flying of the KR-1. My aircraft is N21KC "Little Pretender" and I would like to let people know that you can fly KRs in winter. Steve Bennett and I made a 50 mile trip and back in 8° above zero and had no trouble other than cold feet. We stopped and had a cup of coffee and they were warm again. Our latest trip was about 40 miles. We ran into bad weather about 3 miles from the airport of destination and turned back needing fuel. I landed at an airport which had not had the runway cleaned of snow. There was approx. 1½ inches of snow and the temperature was 35°. It was wet and slushy. When refueling, I cleaned wheel wells of slush built up. I then taxied to runway in slush and made normal take-off. The slush had built up again in wheel wells and I could not retract gear. I left the gear down and started to make a turn and the ailerons wouldn't move. With light tapping on the stick, I broke ice and got my ailerons working and made a normal landing. When looking at the plane on the ground, the center sections of the wings and wheel wells and ailerons and push rods were covered with ice. I would guess there was about 20 lbs of weight. Everything worked out O.K. this time so I wanted to let other KR pilots in snow areas to know what to expect. I now have 58 hours on "Little Pretender" and I'm having a ball with it. I would like to thank Steve Bennet of Des Moines, Iowa for getting me over the hump on flying my KR-1."

From Don Pearsall, 2039 S. Cherry St., Cornelius, OR 97113...."My KR-1, N74DP, "The Albatross" was completed in August of 79 after 2 years of frustrating but ultimately rewarding work. It could have been flying sooner but I just could not resist the temptation to add a few of my own modifications to make it more of a personal airplane. Among those mods are: 1. converted 2100cc VW myself. 2. added alternator and battery. 3. 100 channel radio 4. one handed camlock gear retraction mechanism. 5. used wing tanks only (12 gal.) and made header tank into storage. 6. retained distributor ignition and mech fuel pump. 7. used automatic mixture adj. S.U. carburator. 8. heel braked. 9. under seat storage. 10. used BID fiberglass cloth throughout. The day of the first flight, I skidded sideways in a crosswind and broke off the left gear leg. This resulted in a broken prop, cowl and center section skin. Although I now find after 50 hrs the KR-1 is an easy aircraft to fly in wind, I urge all first flights to be done in a calm wind only. It is a very quick handling plane and must be flown with quick responses. The first successful flight was three weeks later and was without a doubt the most thrilling, incredibaly high point of my life. To all you builders out there, that first flight is more than worth every penny spent, every hour labored and then some. Get busy and make it happen to you. In flight, the KR-1 becomes an extension of your own self. The response is instant, and the visibility is fantastic. Only the hanglider pilots are closer to the birds themselves. Some statistics as follows: 1. empty 406 lbs. 2. TOP 178 mph 3. Cruise 150 4. 3.2 gph 5. CHT 350° 6. oil temp. 190° 7. oil pressure 45 lbs."

From Ken Ranta, 11030 Jones St., Omaha, NE..."I have a KR-2 in which I have made 2 flights. On the first one I ground-looped it and broke the prop. Probable cause was the hard rubber used on the tailwheel so I changed it to the Homebuilder special from Aircraft Spruce and change the brakes. On Dec 8 while taxiing, ran into a hole on the grass and broke the prop again. I am still waiting to get it back from R/R. I am working on a heater system at this time as Neb. is very cold at this time of year. N49849 was started in Feb of 76 and finished Aug 79. First flew Sept 79 Will send flight spec. when flown more.



QUESTIONS & ANSWERS

Q. I think the August 79 revision of the KR-2 plans show the wrong angle for the wing rib in relation to the front and rear spars. If I install it as shown on the rib template the forward spar would have to be positioned approx. 1/2" above the bottom longeron. What is the correct position for the spars?

A. The front and rear spars should rest on the bottom longeron. This will give you an angle of incidence of 3 1/2°, not the 5° shown on the rib drawing.

Q. Drawing 22 page 22 of the Aug 79 plans show a doubler between the center elevator ribs. What is this piece made from?

A. 3/8" spruce, same width as the elevator spar.

Q. I'm interested in building my own engine, where can I purchase the special crankshaft with prop flange?

A. The prop flange (or hub) is a separate part from the crankshaft and can be purchased from Rand/Robinson or a number of other suppliers. H.A.P.I. has a very good book on VW conversion that includes a chapter on crankshaft selection. See their ad this issue.

Q. I've heard there is a tandem seat KR-2 in California. Any details?

A. I'm afraid what you heard was just a rumor. To my knowledge no one has built a tandem KR-2.

Q. Can you give me any information on using a Lycoming or Continental engine in a KR?

A. There are a couple of KRs flying that have used these engines but performance hasn't improved over the VW. This fact is due mostly to the problem of getting a prop that would match both the engine and the airframe.

Q. What size staples (depth wise) are used for the skins?

A. 5/16" works best.

Q. Could you give me the address of Revmaster?

A. Revmaster Aviation, Chino Airport, Chino, CA 91710.

Q. Can the KR-1 or -2 be used on a dirt strip?

A. I know of several KRs that use dirt strips. Main problems have been chuck holes and occasional prop damage due to pebbles picked up while taxiing.

Q. Are detailed plans available for effective cooling baffles?

A. Dan Diehl sends out baffle templates (full size) with his fiberglass cowling as does R/R. You can buy the templates separate from Dan. His address is 4132 E. 72nd St., Tulsa, OK 74136. Cost of the templates are $5.00.

Q. I'm interested in the KR-1B long wing. When will there be plans available and how much?

A. Plans for the long wings are going to be supplement to the KR-1 plans and will sell for an additional amount, approx. $30.00. The plans are being printed up now. A point I would stress....these long wings are <u>not</u> for the KR-2.

Q. I want to purchase a battery for my 1600 VW conversion using R/Rs Bosch starter. Will a motorcycle battery work, if so what size?

A. A 1600 VW could get by with a 15 amp battery with a good installation. Larger engines will need 18 amp (or larger) batteries.

Q. Last July the right gear casting of my KR-2 broke on a "greased" landing. A month later a friend's KR-1 had the same problem. Is this common?

A. There was a problem with some of the early castings but was remedied with an impoved design about 2 years ago. New castings are recognizable by the flat forward face.

BUY SELL TRADE

FOR SALE...KR-2 project, on gear, tail feathers complete, all controls in. Excellent workmanship. Outer spars complete & signed off. New 1834 engine, prop hub, R/R 3-blade prop, spinner and cowling. Dynel and some foam to finish...$2900.00 invested. Best offer. M.D. Maraulja, P.O. Box 785, Eaton Park, FL 33840 phone (813)665-0829.

KR-2 PROJECT...Fuselage sides together, main spars complete. Foam, alum. Dynel, canopy and hardware to complete....$800.00 (or trade ???) Stan Rutiz, 1008 7th St. #15, Santa Monica, CA 91403 phone (213)274-6786 office or (213)394-5661 home.

FOR SALE...R/R fiberglass KR-2 forward deck and fuel tank, never used...$75.00. William Rosman, Rt. 1 Box 150, Palmyra, WI 53156 phone (414)495-4370.

KR STUFF

Embroidered KR patches for hat and jacket..$1.50 ea or 3 for $3.50.
Vinyl patches, stick anywhere....
50¢ ea or 3 for $1.00
KR belt buckles....$5.50
T-Shirts..med, large, extra large
cotton/polyester blend
$6.50 ea or 3 for $18.00

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6141 Choctaw Dr.
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TRI-GEAR PLANS...Retractable system that uses Rand's parts, wheels, gear legs and spring bar. Conversion plans..$25.00. Bill DeFreze, 7530 Ironwood Dr., Dublin, CA 94566 phone (415)828-2111.

KR-2 UPHOLSTERY

Six piece, custom designed, light weight upholstery kit. Avialable in most colors of naugahyde. Kit includes all snaps and fasteners to install.

Price $180.00
Delivery UPS (or best way)...4 to 6 weeks
Send cashiers check or money order to:

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2250 Judith Lane
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FOR SALE...Bolt on conversion parts for your VW engine. Starters, flywheels, magneto drives and alternators. Over 120 "Supercases" delivered, many flying!! ***New item...transistorized fuel pump for fuel transfer, light, efficient & safe. ***Send S.A.S.E. for more info. Dan Diehl, 4132 E. 72nd St., Tulsa, OK 74136 phone (918)492-5111.

FOR SALE...R/R gearlegs, spring bar, H sections, tailwheel & spring...$160.00. John Shaffer, 604 Langley St., Robins AFB, GA 31098 phone (912)922-0976.

New .003" polyethylene wing tape 250 lb. tensile strength, tested to 185 MPH. 55 yard rolls in white and many other colors.....$10.00 post paid.

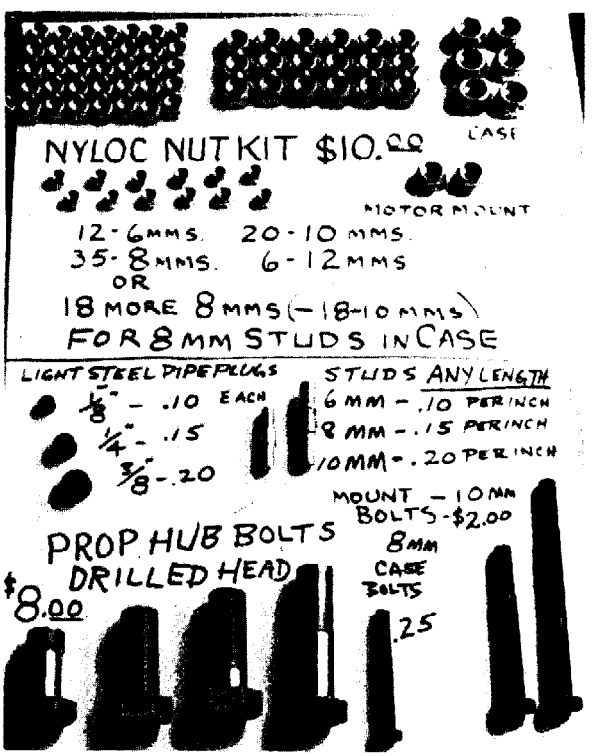
VNE KR CONSTRUCTION
3811 "B" Livingston Dr.
Long Beach, CA 90803
Phone (213)433-0520

Last issue of the Newsletter had an ad by G. W. Davis for a KR-2 project. His address was right but the phone number was wrong. Sorry about the error. Here is the corrected ad.

KR-2 PROJECT...On gear, tail covered, controls installed. Dual, flaps, Arc gear lock. Approved to close. Many instruments, new Revmaster 2100 D, new Maloof prop. Less that cost $5950.00 FIRM. G.W. Davis, 2349 LaSalle Ave., Ft. Myers, FL 33907 or phone (813)936-4162 (no collect calls).

FOR SALE...Complete kits for KR-2 (less Dynel) with new Revmaster turbo 2100 still in crate. Make offer. Contact Orin Carder, 1555 Ridgeview Dr. #10, Reno, NV 89509 phone (702)331-4912 or (702)826-5176.

KR PROJECT...Approx. 2/3 completed. Remaining material included except for instruments. Excellent, balanced 1700cc VW engine minus carb & prop. Will sell for money invested...$2075.00. Douglas Borst, 519 Union St., Niles, MI 49120 phone (616)684-0246.



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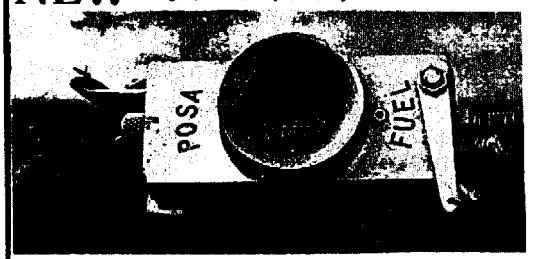
HAPI ENGINES

HOMEBUILT AIRCRAFT PRODUCTS INTERNATIONAL
HANGER 4 CALEXICO INTERNATIONAL AIRPORT
CALEXICO, CA. 92231 714-357-6342

NEW-"SUPERCARB"



AIRCRAFT ENGINES NEED COCKPIT ADJUSTABLE MIXTURE CONTROL FOR BEST PERFORMANCE AT ALL ALTITUDES. THE STOCK POSA CARBURETOR LACKS THIS FEATURE. THERE HAVE BEEN VARIOUS GIMMICKS USED TO AFFECT THE MIXTURE BY RESTRICTING THE FUEL FLOW EXTERNAL OF THE CARBURETOR, BUT NOW HAPI HAS DEVELOPED A TRUE IN FLIGHT ADJUSTABLE MIXTURE POSA WE CALL "SUPERCARB". THE ADDED LEVER SEEN IN PHOTO MOVES THE RECEIVER SIDE OF THE MAIN JET FOR TRUE MIXTURE CONTROL. WE HAVE ALSO ADDED A LOW SPEED AIR CONTROL VALVE TO ADJUST THE IDLE MIXTURE PROPERLY. THE RESULT IS VERY SMOOTH CARBURETION IN ALL RPM RANGES FOR MAXIMUM POWER OUTPUT. THE "SUPERCARB" PICTURED HERE IS THE ORIGINAL PROTOTYPE, NOT PRETTY ANYMORE, BUT TESTED AND PROVEN IN SERVICE "SUPERCARBS" ARE AVAILABLE NOW, AND MANY HAVE ALREADY BEEN SHIPPED. AVAILABLE IN ANY SIZE THROUGH 29MM.....$99.50. 30MM AND UP $119.50. COMES WITH EXTRA METERING RODS, TOOLS AND INSTRUCTIONS. YOUR POSA MODIFIED TO "SUPERCARB" THROUGH 29MM ...$50.00. 30MM AND UP $70.00. "SUPERCARB" USE INSTRUCTIONS INCLUDED.

-NEW- TUNED EXHAUST SYSTEM FOR 1835 CC VW CONVERSIONS! HAPI'S TUNED EXHAUST SYSTEM TOOK A YEAR OF DEVELOPING, AND IT WORKS! 6 TO 9% MORE POWER INSTANTLY! TYPICAL EXAMPLE, STATIC RPM ON 8" STRAIGHT STACKS 3000, CHANGED TO HAPI'S TUNED SYSTEM, NO OTHER MODS, 3250 RPM OR 250 INCREASE. READY FOR DELIVERY NOW. FITS INSIDE KR-1 OR KR-2 COWLING AND DESIGNED TO CLEAR UNDER FIREWALL. EXHAUST NOISE IS GREATLY REDUCED. WEIGHT 9 LBS. IN STOCK NOW ONLY.....$159.50

-NEW- DUAL IGNITION ENGINES. HAPI NOW HAS DUAL IGNITION ENGINES. USING TWO SLICK MAGNETOS AND R.F. SHIELDED HARNESS. WE ALSO HAVE AVAILABLE THE DUAL IGNITION HEADS AND DUAL MAG DRIVE ACCESSORY CASES FOR YOU WHO "BUILD YOUR OWN".

-NEW- WE ARE ABLE TO FURNISH CERTIFICATES OF MAGNAFLUX INSPECTION AND MATERIAL SOURCE FOR CUSTOMERS IN UNITED KINGDOM COUNTRIES. HAPI ENGINES CAN BE BUILT TO COMPLY WITH THE REGULATIONS CONCERNING HOMEBUILTS IN ANY COUNTRY. WRITE HAPI FOR DETAILS!

WE HAVE SOLD HUNDREDS OF COPIES OF "HOW TO BUILD A RELIABLE VOLKS AERO ENGINE" AND BUILDERS EVERY WHERE ARE CALLING IT "THE BEST THING EVER WRITTEN ON VW ENGINES" FOR AIRCRAFT. STEP BY STEP CONSTRUCTION PROCEDURES WITH LOTS OF PHOTOS AND DIAGRAMS. $11.00 POSTPAID IN U.S. $13.00 OVERSEAS. WE STOCK EVERY PART OF HAPI ENGINES AND CAN SUPPLY HOMEBUILDERS OF CONVERSIONS WITH THE FINEST IN PARTS AND ACCESSORIES. WE ACCEPT MASTERCHARGE, VISA PHONE ORDERS. MOST PARTS SHIPPED UPS.

THESE ARE JUST A FEW OF THE THINGS HAPPENING AT HAPI. SEND FOR OUR 40 PAGE CATALOG, $3.00 IN U.S. $5.00 OVERSEAS (REFUNDABLE ON $25.00 PURCHASE) HAPI STOCKS ALMOST EVERYTHING YOU NEED FOWARD OF THE FIREWALL IN YOUR KR. BEING KR BUILDERS WE SHARE YOUR PROBLEMS AND CAN SPEAK "KR". TRY US, YOU'LL BE HAPI YOU DID!

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
ISSUE #56 FEB. 80

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** A monthly publication for communication between KR builders and pilots world wide.**
Edited & published by Ernest Koppe, 6141 Choctaw Dr., Westminster, CA 92683 714-897-2677

How reliable is the VW when used as an aircfaft engine? I can't count the number of times I've been asked that question recently. The answer....? It hasn't changed. A good VW conversion is a very reliable engine when, and only when it has been properly installed. I don't mean just bolted to the firewall safely, I mean installed so that the engine gets a continous supply of air, fuel and is adequately cooled.

All of us are aware of how important the inside of our engines are but I am finding a large number of builders that think its only what's inside the engine that counts. This is a very short-sighted viewpoint and will lead to an engine failure sooner or later, most probably sooner.

Where does a reliable engine installation begin? It begins with the systems that supply that engine and the first system built into our KRs is the fuel system. Many builders think the fuel system is simply a matter of a tank with a fuel outlet to the carburetor. This is basically true but we want to insure the fuel reaches the carburetor in a continous manner.

My first concern is placement of the filler, vent and sump. All probable attitudes of the aircraft should be considered when locating these three items.

We all know fuel expands and contracts with temperature changes so this must be kept in mind when installing the filler. Ideal spot in a KR is top center, about 3" from aft end of fuel tank. This will leave an "expansion chamber" on the forward portion of the tank that allows for temperature changes when the tank is filled with the aircraft in a 3 point attitude.

The vent should be located as far forward and as high on the tank as practical. I usually put them on top, center, about 1" from the forward tank wall. A 1/4" thin wall tube works very nicely for the vent when bent 90° to face forward about 1" above the outer surface. Gary Boyd used the water pick-up off a R.C. motor boat for his vent pipe. Its' all chrome and gives a "finished" touch to the vents appearance.

The fuel sump/outlet should be located at the lowest point of the fuel tank. All flight attitudes must be considered when placing the fuel outlet but special emphasis should be placed on the climb configuration. We don't want to be starved for fuel in a nose down attitude though. I form the fuel tanks to take these factors into account but many builders are using the pre-molded fiberglass fuel tank. The sump in this tank is approximately in the center and slightly aft. At the bottom of the sump I epoxy a brass tank flange (available at hardware or plumbing supply stores) to accept a brass pipe thread reducer with a finger strainer.

A finger strainer should be considered mandatory for any fuel tank outlet. To make one, roll a 3"x 1½" piece of brass or copper screen into a cylinder. Crimp one end and solder along the seam and the crimped end. Solder this to the pipe thread reducer and screw into the tank flange.

The fuel shut-off valve screws into the assembly you just completed. (Double check to make sure it is accessible from the pilot's seat. Starting a VW engine that has a POSA carb is difficult without a fuel shut-off valve to prevent flooding.) Should you elect to use an aircraft fuel valve, make sure the fuel line fittings are aircraft type also. Combining automotive and aircraft fittings is asking for fuel line leaks due to the different angles of the flared fittings. Use a 5/16" soft aluminum tubing (5052-0) from the fuel valve to a gascolator mounted on the firewall. Always use a gascolator!! I mount the gascolator at the lowest possible position on the firewall and still be inside the cowling. (Make sure it is well away from exhaust pipes.)

The fuel line from the gascolator to the carb should be a flexible, fuel resistant hose. Vibration will "work harden" a metal fuel line installed between these two points.

Well, there is your fuel system, or at least my version of a fuel system. It is basic and contains what I consider the fewest possible parts without jeapordizing safety and dependability. We'll discuss cooling the engine in a following Newsletter, meanwhile if you have anything to add to this article on fuel systems or ideas on cooling the engine, drop me a line. Ernest Kayga

TIPS FROM OTHER BUILDERS

Just a note on Coninental powered KR-2s. My C-75 is "on the mount".

The engine weighed 130#s as it was bolted on, it was pretty well stripped though. Two Slick mags add 10#, prop hub 5#, induction system 6#, Carb 4#, oil sump 7#, and exhaust system 10#. In any case it weighs somewhat close to what a VW weighs. A belt drive is going to drive my generator.

Reason for going Continental? Compare the power curves, time between overhaul, cost to acquire, and reliability. I hope to use a Maloof ground adjustable prop.

I feel the mount is critical and that builders should beware. If any of the KR builders have inquiries, you may give them my address. The info is free, but send a S.A.S.E. please.....Duane Aspengren, 81 E. Whitney St., Chula Vista, CA 92010 (714)420-9791.

BUY ◇ SELL ◇ TRADE

HAVE SOMETHING TO SELL?
Advertise it in the KR NEWSLETTER
25 words FREE to NEWSLETTER subscribers seeking or selling parts for their KRs.
Other rates are as follows:
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Display ads are charged according to size.
1/8 page...$12.00 1/4 page...$22.00
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Typesetting and halftones extra.

FOR SALE...KR-2 project. Value over $1730.00. Excellent workmanship. Asking $1495.00. Jack Montague, 5609 Cochin, Arcadia, CA 91006, or phone (eves) (213)575-4601 no collect.

'64 Cessna 150. New annual. Will swap for KR-2 flying or nearly so. John Burford, 432 Anita June Ct., San Diego, CA 92011 (714)426-7562.

FOR SALE...KR-2 project. On its wheels, all controls installed, some fiberglass work done, have all instruments including Genave Beta/5000 transponder and GA/1000 Nav Com plus 2100 Revmaster. Have put over $7400.00 in parts and materials. Gilbert F. Shue, 1372 Kitchen Rd., Pinconning, MI 48650 or phone (517) 697-5183 after 5 pm.

FOR SALE...Control stick bearings, flanged for easy installation...$3.00 each. Minature Metrics, 7801 14th St., Westminster, CA 92683.

FOR SALE...Transistorized fuel pumps for fuel transfer. Weighs one lb. $22.50. Dan Diehl, 4132 E 72nd St. Tulsa, OK 74136 (918)492-5111.

Complete KR-2 landing gear system, minus wheels and tires...$150.00. Bob Hamill (213) 299-1434.

Tri-pacer..160 hp, 120 S.M.O.H. full updated IFR panel, strobes..$10,000.00 firm. Jim Bowyer, (213)870-8122.

KR STUFF

Embroidered KR patches for hat and jacket..$1.50 ea or 3 for $3.50.
Vinyl patches, stick anywhere....
50¢ ea or 3 for $1.00
KR belt buckles....$5.50
T-Shirts..med, large, extra large
cotton/polyester blend
$6.50 ea or 3 for $18.00

Ernest Koppe
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* Will fit 1600cc to 2200cc conversions. It's ready to bolt on your engine, nothing to fabricate.
*"The Sting" is designed specifically for Revmaster, Diehl, and HAPI VW conversions as installed in a KR. Will fit most other VW powered aircraft also.

$150.00 ppd. in U.S.

Ernest Koppe
6141 Choctaw Drive
Westminster, CA 92683

KR-2, 10 hrs TT, 1700 VW, KX 150 radio (not installed) $4,000.00 (813) 747-2428. Florida

FOR SALE...KR-2 project, fuselage 80% complete, wings 80% complete. 1600 cc VW engine w/turbo hung. Magneto, starter, primer and some wiring done. Custom trailer hitch for towing plane. Will sell for cost or $3500.00. Bob Law, 1045 Emerald, Broomfield, CO 80020 phone (303)466-3413.

FOR SALE...KR-2 project. Woodwork 98% complete, much hardware..$950.00. Paul (213)433-0520.

HEY GUYS!

Do you buy parts & supplies from a business that the rest of the KR builders might benefit knowing about? Would it benefit that business to have the thousands of KR builders as potential customers?
Of course it would!
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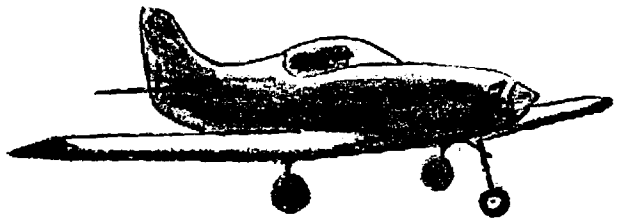
FOR SALE...KR-2 project. Fuselage built, on gear, spars signed off. Stab/elev. covered, Rand Engine mount, canopy, all foam, fabric and epoxy to complete..$1200.00. Gary Thompson, 235 Ben St., Williamson, WV (304)235-1653 eves.

FOR SALE...KR-2 project, 60% completed. Major part of controls installed. Outer wing panels to be constructed, outer spars finished and all has been certified, excellent workmanship, tinted canopy, new 2100 Revmaster and mount, Dynel and foam to finish...$4000.00 invested. Contact Mike (416)922-6091, Toronto, Ontario Canada.



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HELP!

I want to rent a motorhome in the Oshkosh vicinity during the E.A.A. Convention this summer. Prefer within 25 mile radius of Oshkosh but Milwaukee area O.K. If you have a motorhome for rent (or know of one) please send the information to me. Many thanks.

Ernest Koppe
6141 Choctaw Drive
Westminster, CA 92683

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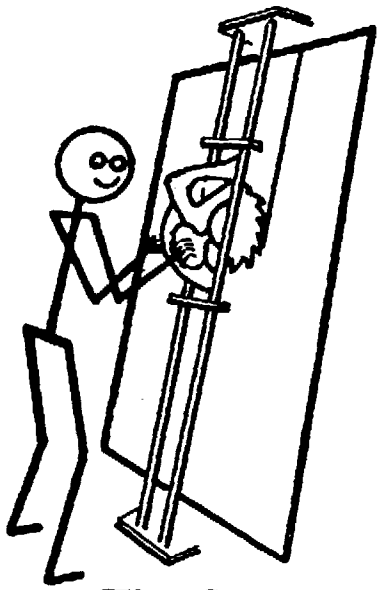

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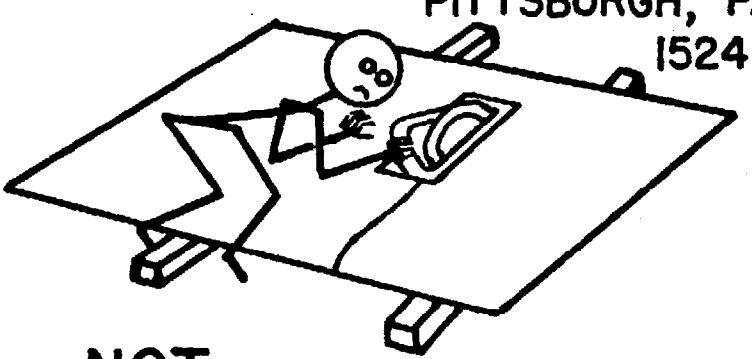


NOT THIS

KR CLUB NEWS

Good news! The KR Club in the San Francisco area is alive and well. Right now they are gathering slides of KRs under construction and will assemble them in a "how to" slide program on building a KR. If you have some slides of your KR under construction you could share...send them to Lisle Knight, 33 Farnum, San Francisco, CA 94131 or phone (415)239-0536. Meetings are on the 1st Tuesday each month, call Lisle to get the location.

The L.A. area KR Club meets this month at Steve Collins, 9131 Healey Dr., Garden Grove, CA 92641, 2nd Monday at 7:30 pm. Paul Venne says he is bringing some slides and I'll bring the slides of Gary Boyd's airplane at 4000' over Corona.

The Kansas KR Club meets Saturday, March 8th at the home of Bob Brice-Nash, 324 Kansas, Hutchinson, KS 67501. They meet every two months at a different member's project.

I hear Ron Sorrell is trying to get a group of KRs to make the trip to the Lakeland Florida "Sun-N-Fun" Fly-in. Contact Ron at 6505 Sassafras Dr., Indepence, KY 41051 phone (606)356-6242. Rand/Robinson is going to have the KR-1B and the KR-3 at Lakeland (March 16-22) so there should be something for the KR buffs to see.

Chino, (April 26 & 27) has always drawn more KRs than any other fly-in and this year promises to be the greatest KR gathering ever. Ray Ellis, Steve Bennett, and Dan Diehl are flying their KRs here from the east and are looking for more company. If you want to join the flight, contact them at the addresses below. There will be 15 to 20 KRs at Chino this year, an amazing turnout for a two day show. Oh, yes, Bill DeFreze will be coming to Chino from up north by motorhome. He is bringing his tri-gear KR on a trailer. Contact him if you wish to join the caravan. Don't forget..free banquet tickets to all KR owner/pilots flying their KRs to Chino.

Rialto California is having their 2nd annual airshow, etc. at the Rialto Airport on May 31-June 1.

REMINDER.....There are five KR Designees... all willing to help you with your problems. We've all built and flown at least one KR and we've helped on dozens of others. Below are our names, addresses and phone numbers. Call or write the designee nearest you (or all of us for that matter). We can help!

Bill DeFreze	Dan Diehl	Ray Ellis	Ron Sorrell	Ernest Koppe
7530 Ironwood Dr.	4132 E. 72nd St.	2416 E. Douglas	6505 Sassafras Dr.	6141 Choctaw Dr.
Dublin, CA 94566	Tulsa, OK 74136	Des Moines, IA 50317	Independence, KY 41051	Westminster, CA 92683
(415) 828-2111	(918) 492-5111	(515) 265-3007	(606) 356-6242	(714) 897-2677

QUESTIONS & ANSWERS

Q. Could you list the engines other than VW KR builders are using and the amount of success they're having? How about the RW 100?

A. I ran a survey some few issues back and was really surprised at the varied selection of engines. There were several Corvair and Mazda conversions planned, many Lycoming and Continentals from 65 to 100 hp and a few McCulloch drone engines. None of these engines have performed any better than a good VW conversion however.

Q. How do you adjust the R/R 3-blade prop for a faster cruise?

A. Loosen the clamps on the prop hub, and the bolts holding the hub to the prop flange. You will need a protractor level and a straight flat stick to gauge the position in a manner you can repeat exactly with each blade. Twist the blade clockwise slightly and check this new angle with the protractor on the flat side of the blade. Tighten the clamp to hold the blade in this position. Repeat this proceedure with the other two blades, then re-torque all bolts and clamps per instructions with prop. The static rpm for best cruise will be approx. 2900. You will have to experiment to find what is best for your engine.

Q. Where can I get a larger spinner and back-up plate for the Maloof prop?

A. Most supply houses listed in "Sport Aviation" carry spinners, I know Aircraft Spruce & Specialty does. Their address is Box 424, Fullerton, CA 92632.

Dan Diehl probably has more hours in a Turbocharged KR-2 than anyone else at present and is in a position to compare the turbo performance with an engine that is normally aspirated. He wrote this article to help answer the many questions he gets about his Turbo KR-2 performance. Dan has also promised a full "how to" article on installing a turbo on the VW conversions, complete with photos, hopefully in the next Newsletter.

TURBOCHARGING--IS IT FOR ME?

There has been a lot of talk lately about turbocharging. Many questions have been asked, many answers are given. With over 600 hours on N4DD, over 100 hours since installation of the turbo, I will try to give some comparative comments on performance that may help you decide whether or not you want it. In your decision making process. you should ask yourself these questions: 1. What do I want to do with the airplane? Do I want it for a lot of cross country flights or simply fly around the patch on 100-150 mile trips or less? 2. Do I plan to fly at 3000' or 10,000'? 3. Am I after a high initial climb or high cruise speed? 4. Do I usually take off from my home base at 600' or 5,000'? 5. How complex do I want the airplane to get and am I experienced enough for it? And finally, 6. How much money do I want to spend on the power plant?

These were the questions that entered my mind in March '79. I had flown the KR-2 for four years with the normally aspirated 2180 cc VW. I became very familiar with its handling characteristics and performance. A number of long distance trips were made as well as many 15 minute short hops to shake off the dust. One one hot 105° day, I even took the KR-2 up to 16,000' to find cooler air and found that the plane was still climbing at 300' per minute! As my barefoot toes became brittle and my teeth began to rattle, I pulled the power from 30 miles out and still crossed the airport at 5500'. Loops and rolls became routine. Diving high speed passes were made for the many spectators.

As time went on I found I was going on more and more cross country trips and less and less on the 15 minute hops. It was then I decided to try turbocharging to learn and experience a whole new type of flying. After some research I realized that my engine would require some modifications before installing the turbo. The engine was torn down after nearly 500 hrs. of trouble free service. The welded stroker crank (thought to be better than a cast one as forged cranks were not available in '75 when the engine was built) showed less that 2/10 wear, bearings looked good, case journals in fine shape, pistons and cylinders good. I felt I had a good engine. In putting it back together all I would do would be reduce the compression from 8.5 to 7.0 -1, install stainless exhaust valves, change the cam from .410 lift and 285° duration to .390 lift and 275° duration, install new rings and bearings and I would be in shape. With the engine and turbo installed, I ran into some problems while test running the engine...primarily with oil in the turbo. Oil kept coming out of the exhaust pipe. After I finally thought I had the problem solved, flight testing showed I did not. More research! Because of the low mounting position of the turbo and internal pressures within the engine the oil just would not drain back into the engine. Consumption (or loss) of about one quart per hour was common. I've been told that if I had given the turbo more time to break in it would reduce this amount. After discussing the problem with the guys at Revmaster and Scat I learned that a scavenge pump was necessary to put the oil back in the engine instead of on the bottom of the airplane. The pump solved the problem. About another ten or more hrs. were flown before I headed for Chino. The prop was left as was before the turbo. I found that at altitude I could only run about 20-21" manifold pressure to avoid over revving. While cruising at 12,000' 20" m.p., the crank broke and most know the rest of the story. Obviously at this power and 3300 rpm, the turbo played no part in the fracture. I returned home in a borrowed Cessna 150 with the bad engine in the passenger seat and returned with a spare engine from my new airplane. This engine is still running fine. Now with over 100 hrs. I have had time to experiment with prop settings, oils, power settings and can supply a good set of comparative performances. I might add that I change the oil and adjust the valves every 25 hrs. A chemical oil analysis has been run on each oil change to get a comparison with the original engine. After the first oil change and break-in wear, the results showed at 100 hrs. about the same as the original at 400 hrs., so less wear is showing up. On the next page is a comparative list showing both engines' performance:

2180 cc VW in KR-2 at 800 pounds

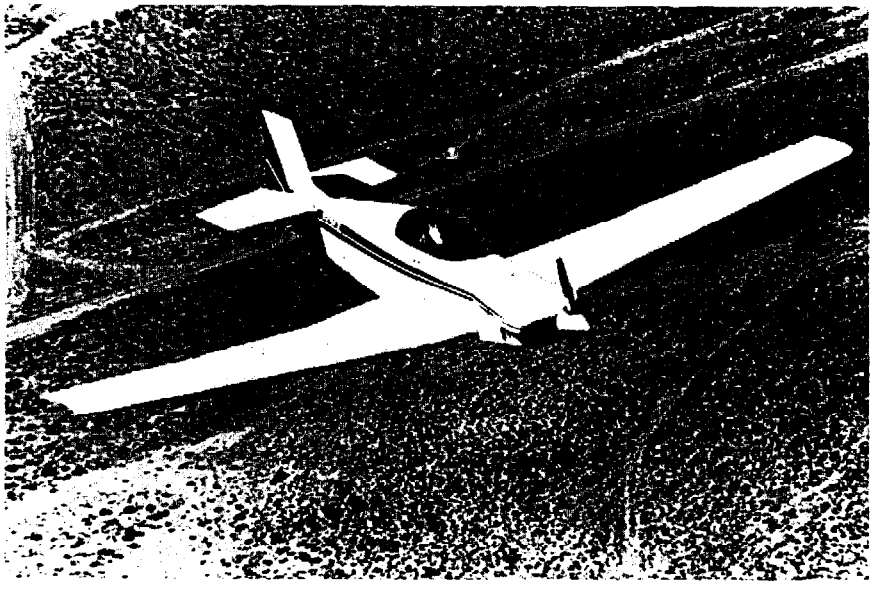
	NORMALLY ASPIRATED	TURBO CHARGED
R/C 600' alt.	1800-2000 ft/min	1200-1300 ft/min
R/C 5000" alt.	800-900 ft/min	1100-1200 ft/min
T/O dist. 600' alt.	Somewhat less than turbo	
T/O dist. 5000' alt.		Almost half non turbo
Cruise spd. 3000'	160 IAS 3400 RPM	160 IAS 3100 RPM
Cruise spd. 10,000'	125 IAS 3400 RPM	160 IAS 3400 RPM
Fuel consumption at cruise	3.9-4.0 g/hr	4.4-4.5 g/hr
Oil temp. at cruise	190°	195° - 205°
Cyl. head temp at cruise	350°	375° - 400°

It should be noted that my airspeed has been found to be slow. So figures should be used for comparison only and not for actual speed. Note the decrease in climb at lower altitude. This is due to the much greater pitch in the prop for high altitude performance. Also, these figures are for 30"m.p. Similar climb rates are possible for VERY SHORT duration with 35-40" m/p/ By overboosting, the engine will put out more power than the non-turbo. These burst should be limited to emergency obstable clearance only for about 15 seconds maximum. Climb from Colorado Springs or Albuquerque is far better with the turbo. Note the difference between cruise at 3000' and 10,000' and also the RPM. The higher pitch prop comes in handy up high. The difference in the prop setting is at full throttle non-turbo static RPM is 3000, at 30"m.p. with turbo, static RPM is 2750. It was also found that a 1" shorter prop on the turbo version let me increase the pitch much higher.

In summary, I would have to say that the turbo has taken some of the fun from the low altitude loops and rollsa and 15 minute hops to the loca grass strip, but since I don't do this much anymore, the great performance increase at cruise has really been appreciated on the long trips to Oshkosh, Tennessee, Indiana, Colorado, south Texas, Nebraska, etc. Actual cost of the turbo installation will run around $500-600 depending on your cost of the plating on the pipes and type of oil lines used on the turbo and scavenge pump. I hope these comments will interest you and draw to your attention the advantages and disadvantages of the turbo. Please feel free to call or write if I can answer any more of your questions.

Dan Diehl, 4132 E. 72nd St. Tulsa, OK 74136 (918)492-5111.

The KR-1B has been sign-off by the FAA to give demo flights anywhere in the country. This photo was taken by Don Dwiggins over Mojave, CA. Pilot is Jim Loudon, a KR-2 builder currently employed by R/R to work on the KR-3.



Plans for the long wing modification to the KR-1 are $30.00 from R/R. They're to be used with the regular KR-1 plans which are $55.00.

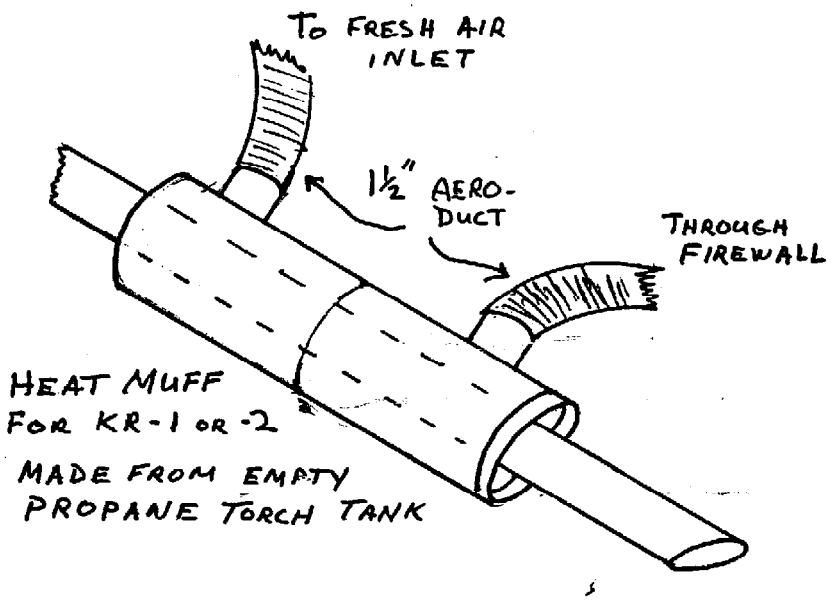
TIPS FROM OTHER BUILDERS

Ray Ellis
2416 E Douglas Des Moines, IA 50317

I'm sending along a couple of ideas for the Newsletter. They may help someone to fly a little more in winter weather.

I've got my KR-1 home in the shop this week. Installed the pump and plumbing for the wing tanks. I've never used them since the plane was finished but have ad idea they'll be put to use on the trip to Chino.

We're flying here in weather even below 0° and stay warm. Try and avoid the inlet blowing directly on your feet as it is hot.



Pre-heat. Try a 1200 watt hair dryer such as the Pro Mac or the like. Scoot it in through one of the inlets on top of the engine and stuff a shop towel in each opening. 15-20 minuntes will do the job. We're really looking forward to the Chino fly-in. The trip ought to be fun.

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
ISSUE #57 MARCH 1980

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Issue no. 58
NEWSLETTER

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Back Issues .75 each

** A monthly publication for communication between KR builders and pilots world wide.**
Edited & published by Ernest Koppe, 6141 Choctaw Dr., Westminster, CA 92683 714-897-2677

This month is the month! April 26th & 27th will mark the dates of the largest KR gathering yet, Better known as the Southern Calif. Regional E.A.A. Fly-in, Chino 1980, this fly-in will have the largest group of KRs ever. KRs are being flown in from all over the country, tho' most of them will be from S. Cal.

Dan Diehl, Ray Ellis, Steve Bennett and an unknown number will be making the trip from back east. There are reportedly KRs joining the group at Amarillo, TX and Tucson, AZ. Write to the guys for more details.

There are going to be several interesting modifications to the KR-1 and -2 at Chino. Bill DeFreze will have his tri-gear there and I'm expecting at least one other tri-gear to show. Conventional gear fans are not forgotten, Paul Richards will have his KR there as a static display, it uses 500 x 5 tires on a gear that retracts like the F4U Corsair. I'll get more info on this at the show. See you there!!!

Remember Dan Diehl's article on the turbocharging question last month (Issue #57)? This month begins a multi-part series on "how to" turbo charge your engine, written by Dan. His turbo KR-2 is the most successful version to date and Dan is going to share the knowledge gained thru much trial and error. The article is long, more than I could squeeze into one or even two issues. Several items I had ear-marked for this issue have been postponed until next month so I could get this first installment of Dan's article complete in this issue. More next month!

Hexcel makes a fabric impregnated with a release agent call Hecel "Peel Ply". It is added to your lay-up as the very last coat. I used some of this on the reworking of my KR-2 that was given to me be a fellow foam builder and was amazed at the results. I believe I could have finished my KR at least three weeks ahead of time, if for no other reason, the filling and sanding I had to do. Here is what it does for you.....

1. It fills in your glass voids perfectly. 2. When applied with a roller, it allows epoxy to force out all the air bubbles. It takes a little bit more epoxy to lay up the peel ply. 3. As we all know, the by product of epoxy lay-up is wax. When fully cured, the peel ply is pulled or peeled from the surface, and a very fine fuzz is left. 4. Lightly sand, and you can either lay-up again or prime and paint. No more filling and sanding with micro or body filler. 5. Finished surface will be lighter and smoother and stronger.

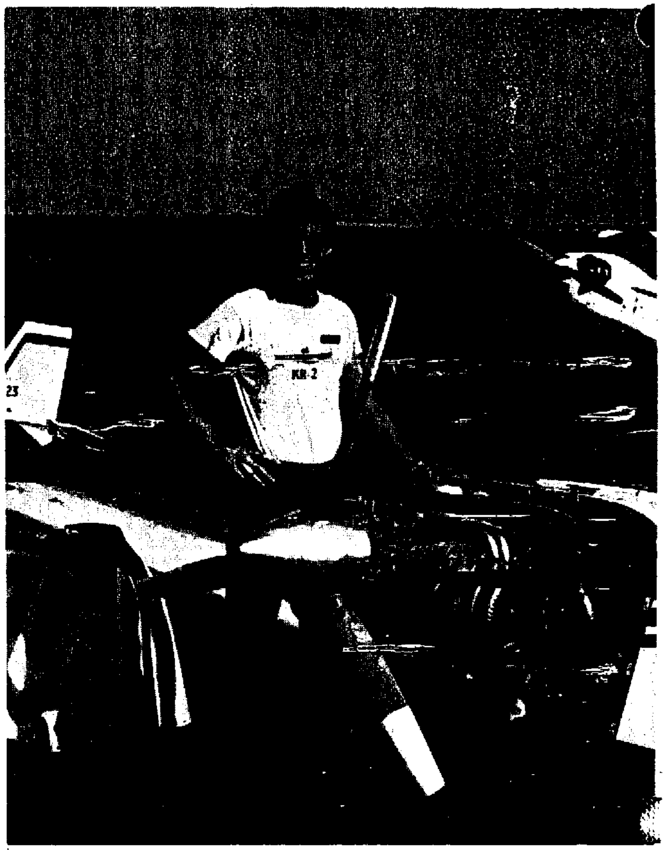
I really wish I had known about this peel ply a year or so ago. As I said, it takes a little more epoxy to lay it up but it absorbs all the wax and more than the extra epoxy that you apply. It really, in my opinion, is great stuff.

Now the rub!! In order to get some of this Hexcel Peel Ply, it must be purchased in roll lots. The rolls run any where from 250 yds or more. I purchased a roll that has 284 yds. on it and I must sell the rest of it. The roll cost me $2.70 w/tax per 38" yard. I need 50 yds for myself. The rest is for sale at exactly my cost plus freight. UPS is best for under 50 lbs. Anyone interested, please call or send money.

Also, I have purchased the drill and tap for the crank modification as appeared in the KR Newsletter (#55). My cost was $47.00. I will loan these to anyone interested for a $30.00 refundable deposit, less freight. We did my engine totally intact on a large drill press. I also have what we called "Dum-Dum" in the service. It is a dry type putty that we used to protect the slinger ring opening from chips and everything worked great. I got the drill in a ½" shank. I got the dum-dum free and I'll include it in the package; enough to do one engine. The reason for the deposit is to replace either unit that a user might damage. I think this is only fair. If anyone wants to borrow the drill and tap...write to: BILL DEFREZE, 7530, Ironwood Drive, Dublin, CA 94566, Phone (415)828-2111.

INSTALLATION MANUAL FOR THE RAND TURBOCHARGER SYSTEM FOR THE VW ENGINE
By Dan Diehl

This manual will be broken down into separate divisions for clarification. These are: 1. Engine modifications. 2. Plumbing kit. 3. Oiling system including scavenge pump. 4. Instrumentation and 5. Operation and limitations.



It should be pointed out from the start that the information contained in this manual is based upon my own knowledge and experience as well as the information gained from other experts in the field. I should also add that there is always more than one way to do something, so if you feel as though you have a better way of doing it, be my guest. This is simply one way that works.

PARTS LIST AND SOURCES:

Rand/Robinson turborcharger kit
Rajay Model B-25 for 1600-1834cc
Model B-40 for 1900cc and up
available at:

Rand/Robinson Engineering
5842 "K" McFadden Avenue
Huntington Beach, CA 92649

* *

SCAT Enterprises
1400 Kingsdale Ave.
Redondo Beach, CA 90278

Or

Dynomite Products
4125-A South 68th East Ave.
Tulsa, OK 74145 Phone 918-664-2147 evenings and Saturday.

are sources for:

Scavenge pump....Model 50-053
Camshaft......... Model 20-004 C-25
Oil cooler adaptor....Model 50-012
Crankcase breather....Model 50-061

* *

Dynomite is also a distributor for all the engine parts, i.e. aluminum cylinders, bearings, cases, etc.

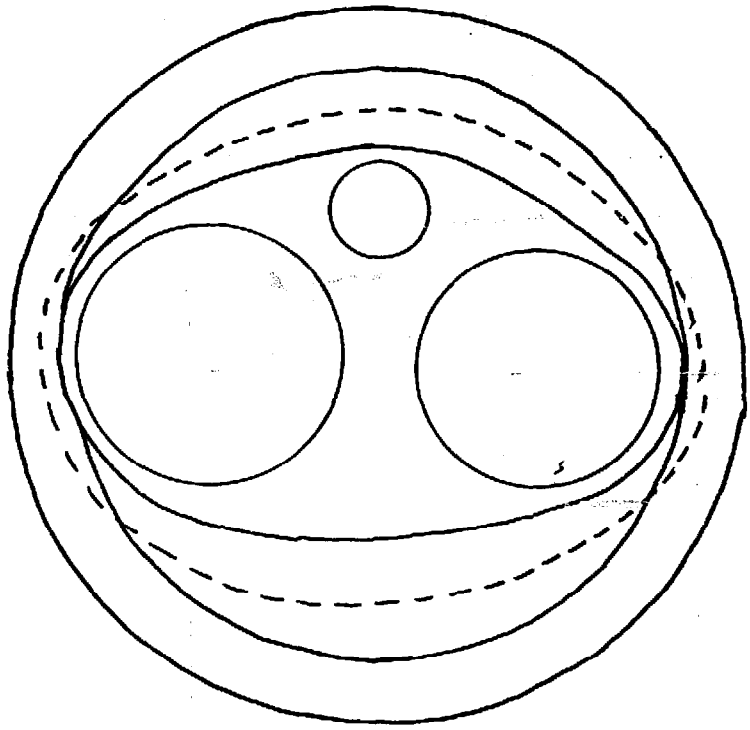
You may find one of the truck or hose supply stores in your area will have the hoses. I can supply the hoses for $80., the scavenge pump, converted and ready for installation for $70.

There may be several questions still unanswered regarding the installation. If so, please feel free to call or write me (S.A.S.E. please.)

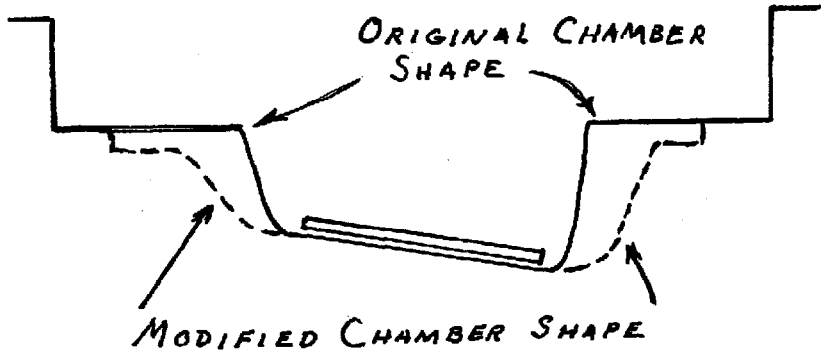
Dan Diehl
4132 East 72nd St.
Tulsa, OK 74136
918-492-5111

I. ENGINE MODIFICATION

There have been several excellent books written on building a VW for an airplane. This piece will deal only with that part which concerns the turbo installation. The Volkswagen is a prime candidate for turbo charging. The little engine works very well in an aircraft installation and with the high performance designs such as the KRs, high altitude performance is easily accomplished with the aid of the turbo. Primarily, the engine in its stock form needs little modification. However, whether the engine is a 1600, 1834, or 2180cc we do need to keep in mind several important factors. These are...(A) compression ratio, (B) exhaust temperatures, (C) camshaft selection, and (D) oiling system provisions.



(A) Compression ratio.....ideally the compression ratio for a turbo charged VW should not exceed 7.5:1. A ratio of 8.0:1 or higher will limit boost pressures, increase head temperatures and raise the possibility of predetonation. In short, hgih compression ratios are bad on a turbo'd engine. My own 2180cc is set at 7.0:1. The 1600cc is fine in its stock form. The 1834cc will require cutting a compression step in the head and some unshrouding around the valves to reduce the ratio. The 2100 and 2200cc will require an increase in deck height either by shaving some off the piston or shimming the cylinders. I personally don't like the shims as this will require additional attention to valve train alignment as well as providing for one more place for oil to leak. Very roughly speaking an 1834cc with .055 deck height will require an .080 to .100 deep flycut on a diameter of 3.375". (Deck height is distance from top of piston to top of cylinder at T.D.C.). This can be done while the head is still in the mill when boring the head for the larger cylinders. By hand grinding, the area between the valves and the cylinder seat can be cut back (see drawing). This will increase the combustion chamber as well as providing a better flow to spread the burning fuel out over the top of the piston.



As far as the larger engines are concerned, the same head work is applied but the deck height must be increased. The 2180cc will have a standard deck height of about .055 using the pistons designed for the 82mm stroke. This engine will require an additional .100 deck height to get the compression down to 7.0:1. A shim of .100 can be used but this moves the combustion very far down into the cylinder. Cylinder warping is common. Longer push rods will also be required to keep the valve train in alignment. I prefer cutting the piston. This is a simple matter in the lathe. On my own engine, I made one cut of .050 straight across the top of the piston. Then another

cut of .070 was made on a diameter of 4.000". This keeps the valve train in its stock form. Combustion is kept in the upper part of the cylinder and piston weight is reduced to relieve some of the pressure on the rod bearings. It should be pointed out that the pistons now need to be balanced. I recommend the use of the NPR brand cylinders as they have plenty of meat in the top of the piston to do this cutting. I also strongly recommend the use of the aluminum finned cylinders. These have a cast in steel sleeve which seems to wear better than the cast iron. With the aluminum dissipating the heat, the head temp will run about 60° to 90° cooler per given power setting. The biggest advantage is the 11 lb. per set weight savings. It should also be made clear that all cylinder heads should be cc'd before installation. The chart from NPR included with each set of cylinders will help you decide what you need to do to the head to get the ratio you desire.

(B) Exhaust temperature.....one sure thing about turbocharging is that the exhaust temperatures will be higher than without one. The non-turbo will run about 1100-1200 at cruise and the turbo'd engine will reach 1450 at 35 in. mp on take off. This increase in temperature can cause problems. The 100 octane av-gas or premium car gas will help the detonation problem and help to cool the temp a bit. The main problem at this point however, is the weak link in the VW. It seems that the stock VW has a tendency to pop the head off the no. 3 valve around 50,000 to 60,000 miles. If you increase the exhaust temp you will shorten this time. We all know the terrible destruction that a valve will do to an engine when it's bouncing around on top of a piston.

The installation of stainless steel valves will greatly reduce the chance of this happening. Manley makes a good valve for about $40. per set. These are one piece and will hold up very well to the heat. Valve adjustment every 25 hrs. with the oil change is a must. I have found that in this 25 hr running time the exhaust valves will usually tighten up a bit. This is due to the valve seating itself deeper into the head. The intakes will usually get looser. I set all my valves at .006".

(C) Camshaft selection.....this is a subject which draws a great number of differing ideas and opinions. To begin, we should realize that the stock VW is designed to produce optimum torque and power between 3,000 and 4,000 RPM. This is precisely the range we will run in our aircraft. Obviously one would assume that this would be the ideal camshaft. This is where the subject gets touchy. The stock camshaft was designed for the 1600cc engine. It works well with this engine in the car and aircraft. However, as the engine becomes larger with the installation of big bore cylinders or longer stroke crank shaft, we find that the engine will have a hard time getting the air it needs through the stock size valves to realize full benefit from the larger engine. Especially in the case of the bigger engines, I recommend a special cam whether the engine is turbo'd or not. The main thing to remember here is to be sure not to overdo a good thing. Cams with more than 285° duration and over .410" lift are not recommended as they will reduce torque below 4,000 RPM. These are commonly referred to as "Hot Rod Cams". I recommend a cam selection in the range of 270° to 285° duration and .390"-.410" lift. This will give good torque and horsepower for engines 1600cc and up. I personally installed a cam made by Scat of 275° duration and .385" lift.

(D) Oiling system provisions.....there are many different ways to run the oil on the Volkswagen engine. It seems everybody and his brother has a "better way" to do it. In the case of the turbocharged VW, I have found only one way to do it safely and simply. To begin, one thing the VW needs is an oil separator or "puke box" on the crankcase ventilation system. The 1600cc engine can get along without it, but as the engine gets bigger, the volume of air needing to escape from the crankcase increases bringing with it more oil. The 1834 engine can sometimes get by but the 2100 and 2200cc engine definitely requires one. Often you have seen a VW powered airplane with oil all over the bottom of the plane and cowl. This is usually due to internal pressures within the engine blowing the oil out the breather hub. This is also due to crankcase pressures. (It can also be due to an improper fit of the prop hub.) Most 1600's can get by with only one breather tube ½" in diameter exiting the case from the plate covering the generator mount. I have found this to be inadequate

I. ENGINE MODIFICATION (cont.)

for 1834cc and larger engines. One more vent is required. I don't recommend venting from this area as the oil concentration is high in the crankcase.

I prefer a ½" line from each of the valve covers. These lines can be hooked to a tubing fitting tapped into the top center of each cover. From here the lines run to the separator (mounted on the firewall). The separator has two side ports which allow for these lines. From the bottom of the separator is another outlet. This is for the return line to the engine sump. We must tap the case with a 3/8" N.P.T. for this connection. I put mine in the bottom, right side (of the airplane) under the number 3 cylinder. This should be below the oil level. Air exits the separator via the top through an air filter. Thus oil is retained and air pressure released. The separator I use is made by K & N Filters, SCAT Ent.

The other two holes to be placed in the sump section are for the oil temperature sending unit and the oil return line from the turbo scavenge pump. The oil temp sending unit can be mounted on either side in the oil sump. Mine are 1/8" pipe taps on the left side to the rear.

The scavenge pump return line is a 3/8" N.P.T. to the front of the engine sump. The right side, under the no. 4 cylinder is most convenient and will allow the shortest line from the pump to the case sump. Installation of the scavenge pump will be discussed later.

The main oil galley should be drilled and tapped with a 3/8" N.P.T. This galley has an expansion plug at both ends. The front needs to be tapped so as to receive the return line from the oil cooler. This sends the oil directly to the bearings. The rear of this galley (flywheel end) should be tapped on all engines whether turbo'd or not, if big bore cylinders are used. This, in my opinion, is one of the most important areas for attention on the larger engines. The reason is this: when the case is bored out for the big jugs, the case becomes very thin, about 1/8", behind the number 3 cylinder. If the older style 10mm head studs are used, they can pull the case so as to crack it in this area. As the crack develops, at first there is only a small oil seepage under the back of the engine. If the crack is allowed to develope further, it will run into the oil galley, letting it expand, thus allowing the plug to pop out. An immediate loss of total engine lubrication happens and the engine will seize. Now if a threaded plug is installed, even though the crack runs into the galley, the plug will stay in place, giving you time to notice the problem and get it fixed. The use of the smaller spring steel head studs, 8 mm in diameter, and sinking the top stud into the case 1 1/8" on the back cylinder, will help relieve this problem.

In summary, the areas needing to be drilled and tapped are a 3/8" N.P.T. in the top of each valve cover, a 3/8" N.P.T. at the front and rear in the engine sump on the right side, and whatever is required for the oil temp sender you use. The two holes in the top of the case get 1/4" N.P.T. Each end of the main oil galley gets a 3/8" N.P.T.

The area on top of the case where the original oil cooler was mounted will be covered by the intake system. I recommend drilling and tapping the holes with a 1/4" N.P.T. so they can be plugged. A new cooler system will be discussed later.

**continued next month

An Australian KR builder sent me a copy of my KR Newsletter (Issue #54) recently. At least it used to be my KR Newsletter.....an outfit in Australia, Raylin Pty Ltd., took my name and address off the heading and replaced it with their own. They blanked out Tom Harrison's name and address where I referred to him as someone to contact in Australia and replace it with Ray Creed's name. There were other changes too, but these two examples really upset me. I have given certain people permission to reprint items from the KR Newsletter, <u>never</u> to change it to suit themselves, never to use the logo or claim the KR Newsletter as their own. I urge the KR builders in Australia to use caution when dealing with Raylin Pty. Ltd. or using items purchased from them. Could be you might do better someplace else.

BITS & PIECES

**KR Club meeting is April 14th 7:30 pm at my new workshop at 1424 N. Harper in Santa Ana. Come by if you're in the newighborhood. Phone number at the shop is (714)554-7932.

**Haven't heard from anyone from Wisconsin about a motor home yet. Will someone in the Oshkosh or Milwaukee area please send the classified ad section dealing with motor home or camper rental? Appreciate it.

BUY ◇ SELL ◇ TRADE

FOR SALE.....KR-2 project 60% completed, major part of controls installed, outer wing panel to be constructed, outer spars finished and all has been certified excellent workmanship, tinted canopy, new 2100 Revmaster and mount. Dynel & foam to finish...$4000.00 invested Contac Mike..(416)922-6091 Toronto, Ontario, Canada

FOR SALE.....Custom Aircraft Accessory case, flywheel, magneto drive, starter, starter switch, 35 amp Nippondense alternator, regulator. Very good system...cost $400.00, sell for $350.00 or best offer.... Frederick P. Wegner, 6215 Pleasant Dr., Des Moines, IA 50312

HEY GUYS!

Do you buy parts & supplies from a business that the rest of the KR builders might benefit knowing about? Would it benefit that business to have the thousands of KR builders as potential customers?

Of course it would!

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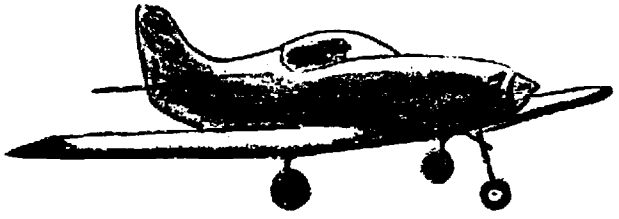

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FOR SALE.....1600 VW engine, with dual Slick mags, prop hub (3° taper), intake and exhaust manifolds and carb. 8 hr. total time, test stand running, ready to go. Asking $950.00.....William J. Rosman, Rt. #1 Box 150, Palmyra, WI 53156 Phone (414)495-4370.

FOR SALE.....KR-2 project. Fuselage on gear, all wood spars completed, dynel, foam, some controls installed, rudder pedals, R/R wing tips, dynel & epoxy on rudder & elevator..$1200.00 Arden Adamson, (715)394-5104 Superior, WI

FOR SALE.....KR-1 canopy, mounted on slides...$50.00...George Andrew, 1834 S. 10th St., Milwaukee, WI 53204, (414)645-3409 **KR builders in the Milwaukee area please call, I'm rebuilding my KR-1 and want to compare notes.

FOR SALE...Transistorized fuel pumps for fuel transfer. Weighs one lb. $22.50. Dan Diehl, 4132 E 72nd St. Tulsa, OK 74136 (918)492-5111.

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TRI-GEAR PLANS...Retractable system that uses Rand's parts, wheels, gear legs and spring bar. Conversion plans..$25.00. Bill DeFreze, 7530 Ironwood Dr., Dublin, CA 94566 phone (415)828-2111.

FOR SALE...Bolt on conversion parts for your VW engine. Starters, flywheels, magneto drives and alternators. Over 120 "Supercases" delivered, many flying!! ***New item...transistorized fuel pump for fuel transfer, light, efficient & safe. ***Send S.A.S.E. for more info. Dan Diehl, 4132 E. 72nd St., Tulsa, OK 74136 phone (918)492-5111.

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MINIATURE METRICS

REMINDER.....There are five KR Designees... all willing to help you with your problems. We've all built and flown at least one KR and we've helped on dozens of others. Below are our names, addresses and phone numbers. Call or write the designee nearest you (or all of us for that matter). We can help!

Bill DeFreze
7530 Ironwood Dr.
Dublin, CA 94566
(415) 828-2111

Dan Diehl
4132 E. 72nd St.
Tulsa, OK 74136
(918) 492-5111

Ray Ellis
2416 E. Douglas
Des Moines, IA 50317
(515) 265-3007

Ron Sorrell
6505 Sassafras Dr.
Independence, KY 41051
(606) 356-6242

Ernest Koppe
6141 Choctaw Dr.
Westminster, CA 92683
(714) 897-2677

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APRIL 1980
ISSUE # 58

MAY 1980
Issue no. 59
NEWSLETTER

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CHINO "80"

Once again Chino has fielded more KRs than any other fly-in. 16 KR-1s and KR-2s and the KR-3 were on hand to welcome the thousands of people attracted by the promise of interesting sights and sounds. They weren't disappointed, there was pleny to see.

Steve Bennett deserves special recognition for flying the greastest distance in a KR, all the way from Des Moines, Iowa. Steve flew to Tulsa, met Dan Diehl and they flew the rest of the trip together. Ray Ellis was expected to fly his KR-1 along side Steve from Des Moines but busted a prop a couple of days before departure and couldn't get a replacement so....he came anyway! Ray flew right seat with Dan after getting to Tulsa commercially.

Weather was a real problem for them all during the trip and delayed their arrival by a couple of days. They came in just in time for the awards banquet Saturday night. Steve left about noon Sunday but Dan stayed over and was able to give rides to a couple of KR builders who had their KRs ready for the first flight.

Butch Grafton's KR-1 was selected for the Ken Rand Memorial award and Richard Shirley's KR-1 was awarded a trophy for static display. Richard's KR won't be static much longer. As soon as he completes the engine baffles it will be moving.

We continued a tradition started at Oshkosh last year, a KR party in the campgrounds. Everyone pitched in for garnishments to excellent steaks furnished and barbecued by Rex Taylor of H.A.P.I. Rex barbecues as well as he builds engines. Them steaks were great!!

The pictures of the KRs are mostly by Patty Helton. Mine didn't get back from the photo shop soon enough for this already late issue (late on purpose, just had to get the Chino stuff in the Newsletter as soon as possible). If you count only 16 pictures, it is because Paul Richard's KR-2 project was on another roll of film and its not back yet. All in all, it was a great turnout. Already we're making plans for Oshkosh. See you there!!!

BUY ◇ SELL ◇ TRADE

FOR SALE..R/R ground adjustable 3-blade prop, unused...$225.00. Delford Roth, Warroad Clinic, Warroad, MN 56763. (218)386-2631 home (218)386-2160 office.

FOR SALE..KR-2 125 hrs TT. Revmaster 2100 with Maloof prop, digital tach, electric system. KX 145 720 CH with remote VOR. Dual stick controls, 160 cruise. (714)462-6048.

FOR SALE..KR-2 recently completed. Excellent workmanship supervised by EAA designee/judge. Revmaster 2100 Warnke prop, Nav com, many refinements. Must sell this beautiful airplane..$8000.00 (816)353-2622 or (816) 836-1414.

WANTED..Completed KR-2. Contact Terry Lister, 1210 Steven Dr, Hays, KS 67601.

FOR SALE..KR-2 project. Fuselage & metal work 80% complete. All materials to finish airframe including canopy. Rand cowl & some instruments..$1450.00. Jack Montague, 5609 Cochin, Arcadia, CA 91006 (213)575-4601 eves & wk-ends.

FOR SALE..KR-2 project. All wood completed, signed. Fuselage on gear, controls complete. Ready to foam. Excellent work..$1300.00. Don Leadley, Box 121, Speculator, NY 12164.

FOR SALE..KR-1 project. Plans, fuselage, main spars, spruce to complete. Steel & alum kit, bolt kit, wheels, brakes, & tailwheel. Some metal work done...$500.00. Bradley A. Hummel, 15872 Puritan Cir., Huntington Beach, CA 92647 (714)894-3888.

WANTED..Fellow KR builders to share driving, gas, etc to Oshkosh in my 29' self-contained motorhome. Can take 3 or 4 guys. Bill DeFreze, 7530 Ironwood Dr., Dublin, CA 94566 or phone (415)828-2111.

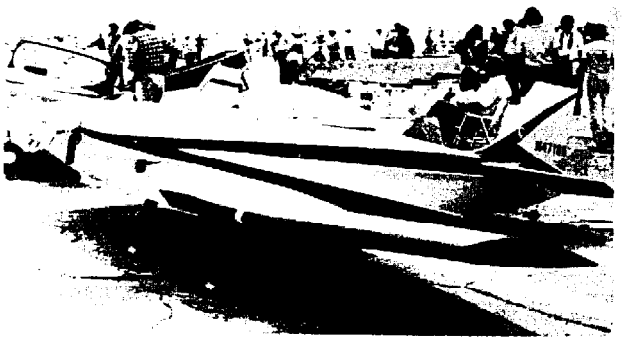
FOR SALE..4130 steel tubing inventory for a Bakeng Duce, round & streamlined..$1200.00 '79 catalog price for $900.00. John Wester, 1841 Cumberland Tr., Plano, TX 75023 or phone (214)422-2176.

FOR SALE..Approx. 28 yds 48" wide Dynel, $2.25 per yd. Wish to sell entire lot as a whole. Tom Rafliff, 8150 Lakecrest Dr. Apt. 818, Greenbelt, MD 20770 (301)344-8565.

FOR SALE..KR-2 project, brand new Revmaster 2100D w/dual Bendix mags, alum. cylinders, full electrics, & oil cooler. Woodwork nearly complete, spars finished. Set-up for DeFreze tri-gear & flaps. Top quality work in temp controlled conditions. All materials to finish except foam, prop, & instruments. Less that cost $4000.00 FIRM. R. W. Jones, 8609 NW 10th Ct., Vancouver, WA 98665 (206)574-5001 10 a.m. to 1 p.m. only.

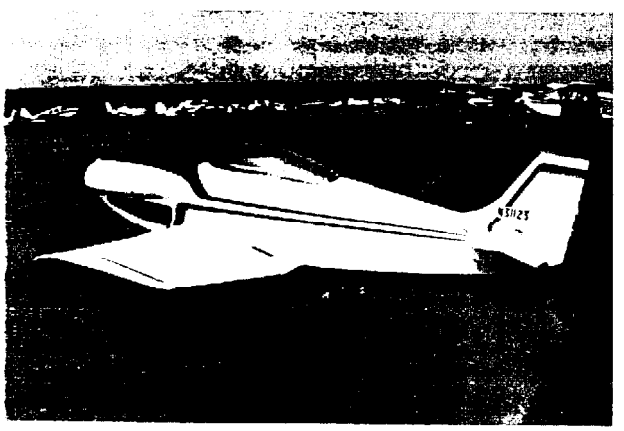
FOR SALE..KR-1 spruce kit, R/R mag drive & engine mount..$200.00. Alum. kit..$175.00. Bill Higdon, 2154 S. 19th E., Salt Lake City, UT 84111.

FOR SALE..KR-1 completed, never flown, six hrs on 1500 VW in taxi time only. Ground looped on first flight attempt, slight damage to left wing tip. Will sell with an extra 1500 engine... $2000.00 FIRM. David Hendry, Box 1056, Cochise, AZ 85606 (602)384-3618.

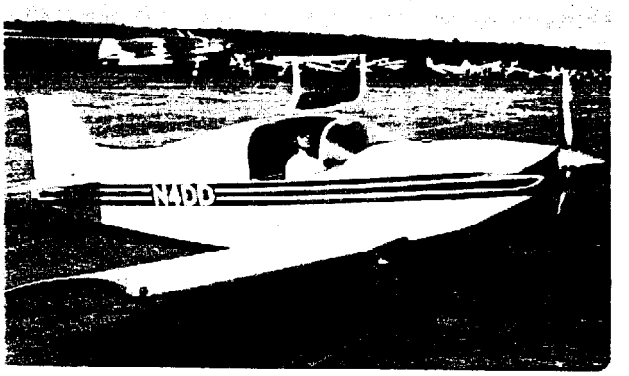


BUTCH GRAFTON KR-1

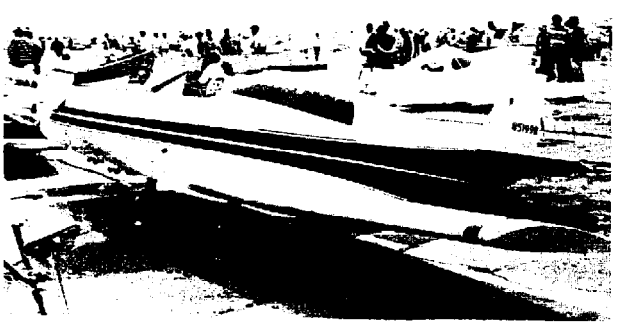
RICHARD SHIRLEY KR-1



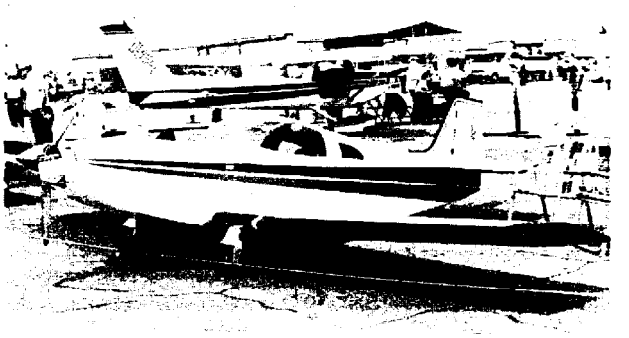
STEVE BENNETT KR-1



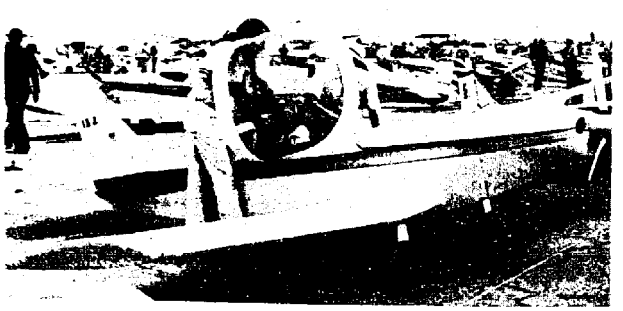
DAN DIEHL KR-2



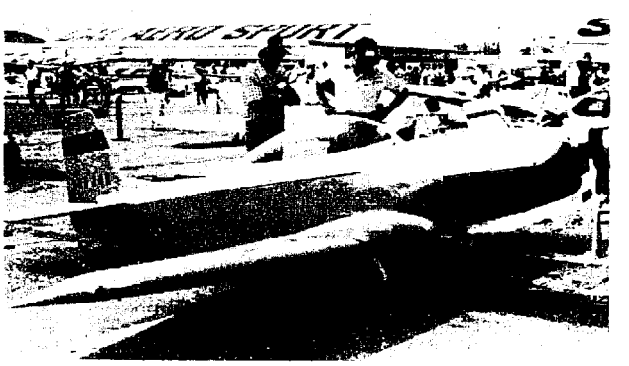
MURRAY ROUSE KR-2



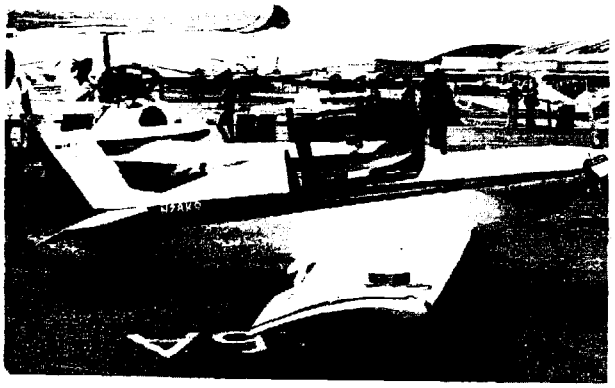
FRED WHITCOMB KR-2



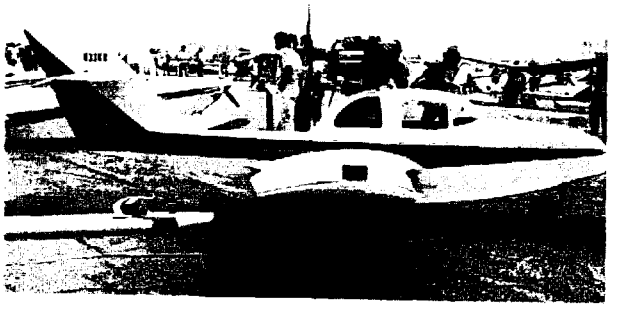
JIM LOUDON KR-2



JIM EVANS KR-1

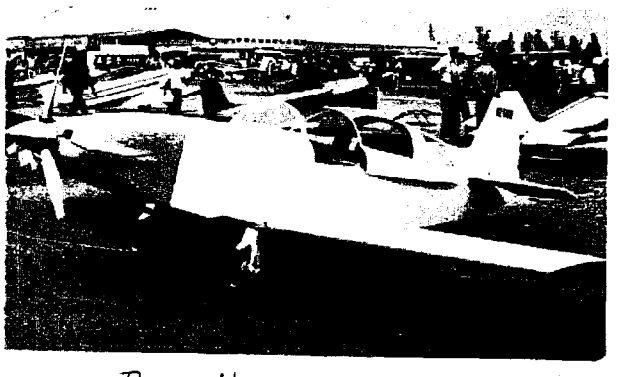


R/R KR-1B



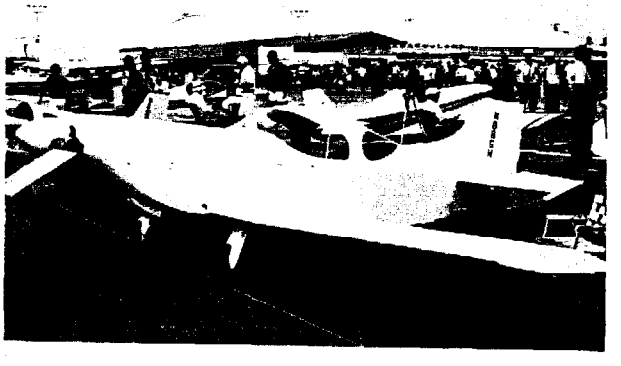
RR KR-3

BILL DEFREZE KR-2

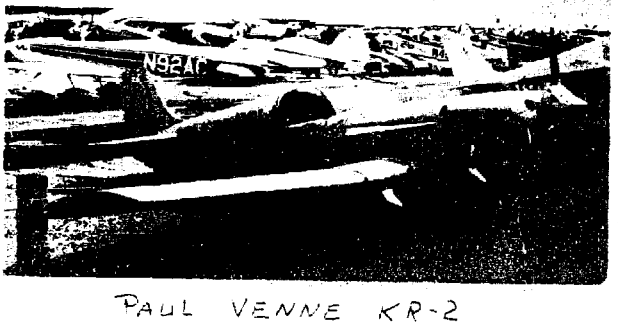


BRAD HUMMEL KR-2

TOM CRISS KR-2



GARTH HESS KR-2



PAUL VENNE KR-2

MIKE LAMB KR-2

FLIGHT REPORT

Thought I would send you a picture of my KR-1 and an experience I had with it. As you can see from the picture it is painted silver, with a chrome yellow band around the fuselage, also in the middle third of the horizontal stabilizer and elevator and the tips are yellow and red. This paint scheme came off a P-51 that served in the European Theater in WWII. The Roman numeral IV stands for my 4th homebuilt. And there lies the story.

I had finished it last July '79 and found the wings on the underside were blistering so off came the wings, strip them down and replace the center portion between the spars on the under side. Back on the ship and start my taxi testing. I had about four hours of both high and slow speed taxi-ing and was not getting a good response from the Posa carburetor. I was able to run on one test about 55 indicated with 2250 on my 1600 VW engine. At this speed and RPM it still felt solid on the ground. Anyway our designee out here, Ed Rogers (T-18 owner) decided we should take the carb off and go through it. After this we put it back on and it ran smoother and seemed to have better response. It was a Thursday afternoon the first week of Nov., the weather was beautiful so I decided to make a run down our long runway (9500'). Tower was called for permission to make a high speed taxi. After clearance I lined up on 31 & applied power. I was holding 2250 and about 50 mph ind. & it really felt good. The next thing I knew the little sucker came off the ground and before I knew it I was about 30 ft. in the air. It felt fine and real solid but since I didn't feel like I was ready yet I throttled back and set up for a landing. It was at this point that I got behind it. Due to such a short time in the thing I still did not have my perspective yet and I flared too high, stalled it and dropped in on one wheel. When it hit it broke the gear leg and the wheel tore through the trailing edge tearing that out.

At this point, I was just hanging on til it stopped. I found that I had also got the prop and had a couple of minor cracks in the turtle deck. Most of the damage came from several air guardsman who helped me get it off the runway so they could recover two of their Jets that I was holding up. That damage was to both leading edges of the wing root when we picked it up and put it on the truck. I think the reason the gear leg broke was because I had the early type with all the holes and it broke right through the part that had the least amount of metal. I now have the new gear on, the new prop is ready and I just received my fresh supply of epoxy so I am ready to start repairing the rest. I want to openly thank Ray Ellis, the KR designee out here, Steve Bennett and Keith Campbell. When these guys found out about my incident they jumped in an airplane and flew up from Des Moines to look at the damage and most of all gave me a large amount of support and encouragement. Ray has also sent me information on how to fix the broken longeron on the bottom that the wheel damage on the way by. I really was impressed by their concern and it does one good to know there are people like this in the homebuilt movement.

I wish that I could have blamed this all on the KR but that is not the case. It is a solid little ship, albeit quick, but I am sure it can be tamed. I felt pretty stupid that I let it get away from me but I was so surprised I just sat there, fat, dumb, and

FLIGHT REPORT (cont.)
not so happy letting things happen. Why it upset me was that I have been flying for about 35 yrs., have a few thousand hrs. in everything from light to moderately heavy military and to let this happen! I am not sure that there is any advice I can give as a result of all this but maybe someone out there can benefit from this.

I am looking forward to starting all over again as soon as weather permits. I don't know if this is the type of thing you are looking for in the Newsletter but feel free to use all or part if it will help someone else avoid the dumb mistake I made. All my friends said I should have kept going once it became airborn and I agreed with them. After all, hindsight is always 20/20...Carl Noltze, 2802 Marquette Ave., Sioux City, Iowa 51110

This is part II of Dan Diehl's installation manual for the R/R turbo-charger kit. This is probably not the only way to install the turbo but it is one way that works. More next issue.

II. THE PLUMBING KIT

The plumbing kit as supplied by Rand/Robinson is a masterpiece of bent tubes welded together and to flanges for mounting and hook-up. However, there are several areas which require some attention before trouble free service can be attained. First, all welds should be inspected and if any "weld berries", "dingle berries", etc. are on the inside at the flange area, they should be ground out with a small die grinder. These welds or rough areas will restrict the flow of air through the pipes. Any sharp edges should be removed from the flanges also. I have found in many cases that the tube is not in contact with the inside of the flange except where welded. These should be ball-peened against the flange. Not only will this restrict the flow of air, but more importantly, it will hold heat. In time this would burn out on the exhaust side resulting in ultimate destruction of the system.

Once flanges are filed flat, a trial assembly should be made. Often the nuts cannot be bolted tightly as they will interfere with the weld on the flanges. Grind the weld for clearance. Many times the intake tube connecting to the outlet side of the turbo needs to be cut to fit. Also, at this time you should check for clearance on the cowling. I have found that modifying the exhaust tube on the no. 2 cylinder (front left) will enable you to fit the cowl much tighter. A provision should be made for the exhaust temperature probe. I recommend putting the probe just after the union of the pipes before entering the exhaust side of the turbo. This will give an average temperature for all cylinders. Do not put the probe after the turbo as a low reading would occur. After all fit-up is complete I would strongly recommend a plating of electroless nickel, then heat treatment to prevent hydrogen brittleness. If the tubes are not plated, the exhaust section will soon rust out and just plain look bad. I have found the electroless nickel is not so subject to hydrogen brittleness as chrome or other materials and it will stand up to the heat very well. You will find that the intake section will remain shiny almost as though chromed and the exhaust section will turn dark gray.

One other thing never mentioned is the fact that the exhaust outlet from the turbo will not clear the engine cowling. The fix for this is to remove the clamp holding the two halves of the turbo together, put the exhaust section in the milling machine and remove .500" from the face the exhaust pipe bolts on to. An alternate method is to tip the section so more is taken off the bottom. This allows the pipe to be bolted on at an angle that moves the bottom of the pipe towards the center of the plane, away from the colwing. The three mounting holes are drilled deeply enough but a plug or bottom tap must be run in to deepen the threads. Studs should be installed in this section with fine threads brass nut used. Under NO circumstances should bolts be used here as they will either vibrate out or rust in so that their removal may twist them off. Also, removal of the material here will result in the reduction of turbo weight by about one pound.

* CONTINUED NEXT MONTH *

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25 words FREE to NEWSLETTER subscribers seeking or selling parts for their KRs.
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TRI-GEAR PLANS...Retractable system that uses Rand's parts, wheels, gear legs and spring bar. Conversion plans..$25.00. Bill DeFreze, 7530 Ironwood Dr., Dublin, CA 94566 phone (415)828-2111.

FOR SALE..Bolt on conversion parts for your VW engine. Starters, flywheels, magneto drives and alternators. Over 120 "Supercases" delivered, many flying! **New item...transistorized fuel pump for fuel transfer, light, efficient & safe.. $22.50 plus $2.00 postage. Send S.A.S.E. for more info. Dan Diehl, 4132 E. 72nd St. Tulsa, OK 74136 (918)492-5111.

HEY GUYS!

Do you buy parts & supplies from a business that the rest of the KR builders might benefit knowing about? Would it benefit that business to have the thousands of KR builders as potential customers?
Of course it would!
Talk to the owner or manager about taking out an ad in the Newsletter. Results are guaranteed. The business benefits, the builders benefit & you will get a free three month extension on your Newsletter subscription for every paid ad you send in! One year for full page ads! Advertising rates are listed in the Buy*Sell*Trade section.

Quality bolts for the Diehl Supercase.. $10.00 per set. Control stick bearings and other hard to find items. Send S.A.S.E. for more info.

Minature Metrics
7801 14th Street
Westminster, CA 92683

MINIATURE METRICS

REMINDER.....There are five KR Designees... all willing to help you with your problems. We've all built and flown at least one KR and we've helped on dozens of others. Below are our names, addresses and phone numbers. Call or write the designee nearest you (or all of us for that matter). We can help!

Bill DeFreze
7530 Ironwood Dr.
Dublin, CA 94566
(415) 828-2111

Dan Diehl
4132 E. 72nd St.
Tulsa, OK 74136
(918) 492-5111

Ray Ellis
2416 E. Douglas
Des Moines, IA 50317
(515) 265-3007

Ron Sorrell
6505 Sassafras Dr.
Independence, KY 41051
(606) 356-6242

Ernest Koppe
6141 Choctaw Dr.
Westminster, CA 92683
(714) 897-2677

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
MAY 1980
ISSUE # 59

QUESTIONS & ANSWERS

Q. Is the KR-1 aerobatic?
A. The KR-1 was not designed to be aerobatic although several builders report it does "recreational style" aerobatics very well. It is not an aircraft to learn aerobatics in because the possibility exists that you may get yourself into something you can't get out of.
Q. Is the fiberglass R/R is now using instead of dynel unidirectional or bidirectional?
A. Biderectional.
Q. Does the use of the larger VW conversions (i.e. H.A.P.I. 60 turbo & Revmaster 2100 turbo) with the welded steel tube mount adversely affect a KR-1s weight & balance?
A. There are several KR-1s with the larger engines and, according to the builders, they handle well. I personally feel that an 1834 is as large as should be used.
Q. Are there plans available for a conventional landing gear that completely hide the wheels?
A. At one time Bob Ladd, an EAA trustee was selling plans for this type of landing gear. Bob can be contacted thru the EAA H.Q., P.O. Box 229, Hales Corners, WI 53130
Q. .How is the rudder post attached? Does it rest on the bottom longeron or does it extend past?
A. The rudder post may be installed either way but I installed mine on top of the bottom longerons.
Q. If I use the Rand pulley/belt mag drive as shown in the plans with the alum. channel and plates, do I still use the tubular engine mount?
A. Yes. Use the R/R steel tube mount not the Revmaster style.
Q. Is it safe to hand prop a VW engine?
A. It is as safe to prop a VW as it is any other engine.
Q. What is a good ballpark figure for a two blade wooden prop for an 1835 VW on a KR-2?
A. That choice should be left to the prop maker. If you're building your own though, try for a 52" prop 48" pitch.
Q. The R/R plans do not give any information on how to build the seat back. What is it made of and where does it attach?
A. The seat back in a KR-2 is made of 3/32" plywood. It is glued to the top of the rear spar at the bottom, the top location is left to the discretion of the builder. A plywood shelf is glued in place across the fuselage at the seat back location. Spruce stringers 5/8"x 5/8" are glued in place at the sides, top & center to add support.
Q. How many bolts are used to attach the horiz. stab hinge to elevator hinges, what size and how should they be placed?
A. Two 3/16" bolts are used in all the elevator and rudder hinges. I drilled mine diagonally.
Q. What is the the KR Club and what is it supposed to do?
A. A new member of the KR Club receives a membership card and a list of other club members addresses. There is also a slide program on composite construction circulating to groups of KR Club members who wish to see it. Basically tho' the club idea is an effort to get the KR builders communicating with each other.
Q. Dan Diehl's baffle templates call for the use of Supertin. What is it and where is it available?
A. Supertin is a formed metal baffle made to conform to the lower half of the VW cylinders. It keeps the flow of cooling air close to the cylinders as it passes through the engine. The Supertin comes in pairs and sells for $15.00 per pair plus $2.00 shipping. Order from Ernest Koppe, 6141 Choctaw Drive, Westminster, CA 92683.
Q. Why can't I put a simple shutter on the firewall instead of an elaborate heat muff as per Ray Ellis in Issue #57?
A. The first and foremost reason is the danger of carbon monoxide poisoning. Ray's system ducts in fresh air from outside the cowling to avoid this very real hazard. The second reason is a shutter on the firewall is not as efficient as a heat muff.

Questions & Answers (cont.)

Q. Can't a vented filler cap be used for the fuel tank?
A. Yes, it can as long as the vent rises at least 1" above the cap and faces forward.
Q. In Newsletter #56 it is stated the angle of incidence of the inner rib must be $3\frac{1}{2}^{o}$. With a washout of 3^{o}, this will result in an angle of $\frac{1}{2}^{o}$ at the wing tip. Is this correct?
A. Yes.
Q. Where can I obtain measurements or a template for the GAW-1 airfoil?
A. A complete report on this airfoil was released in December 1973 and was available as NASA TN D-7428 from N.T.I.S., U.S. Dept. of Commerce, Springfield, VA 22151. I am not sure of the cost.

Q. The starter on my Revmaster engine will not turn the engine over due to the high compression of the engine. Will the new "HITORK" starter from H.A.P.I. do the job?
A. I'm sure the "HITORK" starter from H.A.P.I. is capable of turning most VW engines, however...since you have a Revmaster engine I would check with Revmaster to see what they have available.
Q. I have raised my front spar about 3/16", the rear spar is sitting on the bottom longerons. I did this trying to get 5^{o} angle of incidence and everything is fixed in position, ribs, etc. Would you advise me what to do now?
A. I'm not sure how the 5^{o} angle of incidence was ever introduced, but it is wrong. Actual incidence is $3\frac{1}{2}^{o}$ when both spars rest on the longerons. Since you have already permanently fixed your wing angle on incidence at 5^{o} you may install the horizontal stab. and a $+1^{o}$ angle of incidence. Flight attitude will be slightly tail high but not enough to be uncomfortable or cause problems.

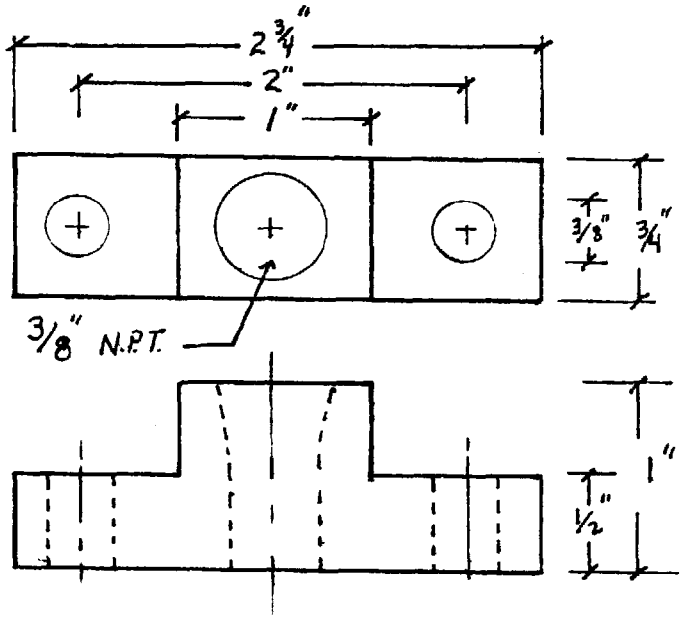
ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683

JUNE 1980
ISSUE #60

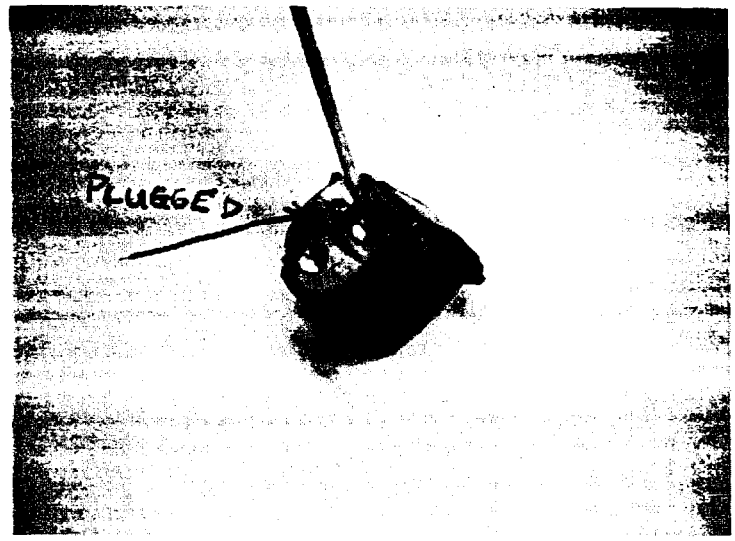
III. Oiling System and Scavenge Pump (cont.)

Since the two holes have been plugged on top of the case to give clearance and simplicity to the turbo system, the pressure release piston at the front end of the engine must be modified. To do this, simply leave out the spring. Place the piston directly on the screw plug and re-install. This allows oil entering the main oil galley to be directed to the bearings without being sent up to the old cooler mounting area,...a very simple modification. Note...This can be done on the later model engine cases with dual bypass valves only. If the older style case is used on your engine, the line from the pump will run directly to the main gallay and an adapter is bolted on at the standard cooler mounting position and lines run from here to the cooler and back.

In summary, run all lines 3/8" or 1/2" I.D. except the 1/8" line to the turbo. Since temperature may run high, I would recommend the steel braided teflon oil lines. These are expensive, around $80 for an engine complete, but they will hold up well and look professional. The oil breather lines can be neoprene.



TURBO OIL DRAIN ADAPTER



Scavenge pump showing new port drilled and tapped. Also showing is the plugged outlet.

— CONTINUED —

KR HAPPENINGS

June 1st....Allentown, PA, Queen City Airport, EAA Chapter 70 Fly-in. Free transportation and lodging for any KR in attendance. Contact John Szabo, Rd 2, Coopersburg, PA 18036. Phone (215)967-2009

June 14-15..Owosso, MI, EAA regional fly-in sponsored by the Michigan EAA Chapters.

Aug. 2-9...."OSHKOSH" 28th annual EAA Fly-in and convention. Be there!!

Oct. 1-5...."Tullahoma" 2nd annual EAA national fall fly-in. Don't miss it!

KR NEWSLETTER INDEX
ISSUES 1 THRU 57

Having problems? Don't know where to turn? To locate the information you seek, use this index to back issues of the KR Newsletter.

Much thanx to Homer Sanders, 1926 Roberta Drive, Decatur, IL 62521 for making up the index.

JUNE 1980
Issue no. 60
NEWSLETTER

RATES
1 Year $9.00
O/Seas Airmail $15.00
Back Issues .75 each

** A monthly publication for communication between KR builders and pilots world wide.**
Edited & published by Ernest Koppe, 5141 Choctaw Dr., Westminster, CA 92683 714-897-2677

Issue #60!!! This issue marks five full years of the KR Newsletter!! When the Newsletter began five years ago it was going to be a page or two each month just to keep builders abreast of new developments and to answer whatever questions they may have while building their KR. Never did I suspect that it would last this long or that there would be so many questions. The modifications you guys come up with have been, for the most part, well thought out and of a very constructive nature. Most have seen their way into the Newsletter and many more are on file waiting their turn for available space. These modifications, by the way, are not necessarily approved by Rand/Robinson or even myself. It is just one way the builders have found that works for them. The building tips you send in to share with other builders are really appreciated Not only by me, but by all the builders that are able to save time and money because of the experience you had in construction your KR. And the flight reports.....even the reports of the flights that didn't turn out all that well are an immense benefit to the guy just about to make that first flight. He now knows what to expect from his aircraft and that makes a successful first flight more certain. There is another benefit to all of us, you, me, sport aviation in general.....we are friends, even tho' KR builders are separated by miles, continents, or oceans, we have something in common with each other. A love of flying, a desire to build our own aircraft, and a willingness to share our hopes, frustrations and finally the exhilartion of flying the aircraft we worked so hard and long to build. I'm looking forward to the next five years. You guys are all right!!!!

KR CLUB NEWS

Have you made your Oshkosh plans yet? We have a couple of possibilities in the works right now. Bill DeFreze is driving his twenty umpteen foot motorhome back and will pull his KR-2 behind it. Bill is looking for someone (s) to go along and share expenses, gas, camping, etc. Write him a note or call him if you're interestd in going along. His address and phone number is 7530 Ironwood Dr., Dublin, CA 94566 or phone (415)828-2111 (after 6 pm).

Ray Ellis meanwhile is making plans to fly his KR-1 to Oshkosh along with Steve Bennett and Keith Campbell in their KR-1s plus there are a couple of KRs in Ray's area that will be joining in. Dan Diehl will probably join them also along with Brad Hummel and Tom Criss for the L.A. area. Should you desire to join the group at Ray's or any place along the route, write to Ray Ellis, 2416 E Douglas, Des Moines, Ia 50317 or phone (515)265-3007, Brad Hummel, 15872 Puritan Circle, Huntington Beach, CA 92647 or phone (714)894-3868, Dan Diehl, 4132 E. 72nd St., Tulsa, OK 74136 or phone (918)492-5111.

Last time I talked with Ron Sorrell he was planning on flying his KR-2 to Oshkosh & may be looking for other KRs to join up. If you're in the eastern U.S. you might want to check with Ron. His address: 6505 Sassafras Dr., Independence, KY 41051 phone (606) 356-6242.

On a more down to earth note, Bill DeFreze has purchased a 23/32" drill ($\frac{1}{2}$"chuck) and a 20MM tap to make the crankshaft modification KR Newsletter #55. These tools are expensive and to save other builders from having to purchase these items for a one time shot, Bill will make the drill and tap available for free. There will be a $30.00 deposit in case of damage though, and the builder would pay postage each way.

I plan on renting a travel trailer in the Oshkosh area and have made arrangements thru another KR builder in Wisconsin to reserve a trailer for me...Unfortunately I have misplaced his name, address, and phone number. Would he please write,or call me collect with this information? I shall be eternally grateful. See you at Oshkosh...

INSTALLATION MANUAL FOR THE RAND TURBOCHARGER SYSTEM FOR THE VW ENGINE
BY DAN DIEHL

III. Oiling System and Scavenge Pump

The oiling system for the turbo'd engine has drawn a larger range of opinions than any other area of the installation. I have tried most of the methods and found only one to work satisfactorily. It will be discussed here.

The heart of the system is a modified dry sump pump built by Scat Enterprises. It is a two stage pump with two completely isolated sets of gears. In its original form, the first stage was designed to pump the oil out of the engine and into a holding tank. The second stage or section was to carry the oil out of the holding tank to the cooler and bearings. The first section will be used to pump oil out of the sump through the cooler, and then to the bearings. This puts cooled oil to the bearings. The second section will suck the oil from the turbo and put it back into the engine sump. I have found through personal experience that all of the turbo oil will not gravity feed back to the engine sump. Although most of the oil does get back where it belongs, a small portion will be blown through the seals in the turbo, seeping into the intake and exhaust sections of the turbo. It is common to lose one quart of oil in 3 hrs. Operators of engines not equipped with a scavenge pump should pay very careful attention to oil level and carry a wiping rag and extra quart of oil on any extended trip. I have found that through the use of the scavenge pump and oil breather separator that no oil is needed to be added on my own 2200cc engine between its 25 hr. oil changes. I hope this clarifies the need for the scavenge pump.

To modify the pump, it must first be disassembled. Next, the port designed to run oil to the bearings must be plugged with a 1/4" pipe plug. Once screwed in tightly, grind it off flush with the pump body. Now, a new outlet must be put in the second stage. Place this hole so that it intersects the outlet side of the second stage pump body. A 3/8" pipe tap is recommended here. The outside ports are tapped for an S.A.E. straight "O"-ring thread. This fitting is often hard to find. By running a 3/8" pipe tap into the ports it will just clean up the threads and open them up a bit so a 3/8" pipe fitting can be installed. Once all ports are cleaned and the gears lubricated with 50 wt. oil, the pump can be installed on the engine.

The next step is to run the oil lines, assuming that the turbo charger, intake and exhaust system is also bolted on. First hook up the turbo. A 1/8" "T" fitting is screwed into the engine case in the hole provided for the oil pressure sensor. The sensor is screwed into one of the holes and a 1/8" I.D. line into the other. This line will run to the top of the turbo. From the bottom of the turbo, make a plate, (see drawing) for the hose connection. At least a 3/8" I.D. line is needed from the turbo. This line will run to the outside port on the left side of the second stage pump. From the outlet side just drilled and tapped, run a 3/8" line to the tapped hole on the lower right front side of the engine sump. This puts the oil from the turbo back into the sump. If you are wondering why only a 1/8" line into the turbo and 3/8" to 1/2" out, remember nearly any pressure you want can be run on the pressure side of a hydraulic pump but the best suction pump will only pull a vacuum of about 14 pounds at ideal conditions. The VW pump will produce between 25 and 45 pound at cruise so the 1/8" line is used to limit the amount of oil going to the turbo. Once the oil gets into the turbo it is cooling the bearings, thus in carrying away the heat it may reach a temperature of 500° turning into a milky foam. This foam does not flow as easily as it would in its liquid state and therefore is sucked out by the scavenge pump. Thus the oil in this less than ideal condition needs the larger line for proper flow.

The next step is the engine oil system. The primary or first stage of the pump will suck the oil from the engine sump in the same manner as the stock pump. From here it is discharged through the outlet side of the pump on the right side. The oil is routed through a 3/8" I.D. line to the oil cooler. I find the stock type III VW cooler to be very effective. A common remote filter cooler adapter will bolt to the cooler to allow for the 3/8" hose fittings. From the cooler the oil is routed to the main oil gallery that has already been drilled & tapped for this purpose. Now cool oil is being sent directly to the engine bearings.

JULY 1980
Issue no. 61
NEWSLETTER

RATES
1 Year $9.00
O/Seas Airmail $15.00
Back Issues .75 each

** A monthly publication for communication between KR builders and pilots world wide.**
Edited & published by Ernest Koppe, 6141 Choctaw Dr., Westminster, CA 92683 714-897-2677

Safety is the watch word this issue and I have some very important information on flying your KR from Ron Sorrell and Eugene Muszynski. Ron's KR-2 has been flying for about a year now and the guys have discovered a couple of potentially disasterous problems. These may be applicable to your KR so...listen up! Lets fly <u>safely</u>!

A vented fuel cap on the main fuselage tank is pretty much standard practice with most KR builders. Normally, this is fine. The problems begin when attempts to lower the ven or fair it in to offer less wind resistance are made.

The vents stck up for a reason...to get the end of the vent into a static or high pressure area of air. Shortening the vent, or especially fairing it in, can actually cause the vent to be a <u>low pressure</u> area. This is <u>not</u> conducive to good fuel flow and can cause the engine to starve for fuel with a half tank or more of fuel on board. The weight of the fuel might overcome a low pressure situation for a while but as the fuel is used up you are creating more low pressure area in your tank and less fuel weight to overcome it. Lets all take a tip from Ron and Eugene and do ours the safe way.

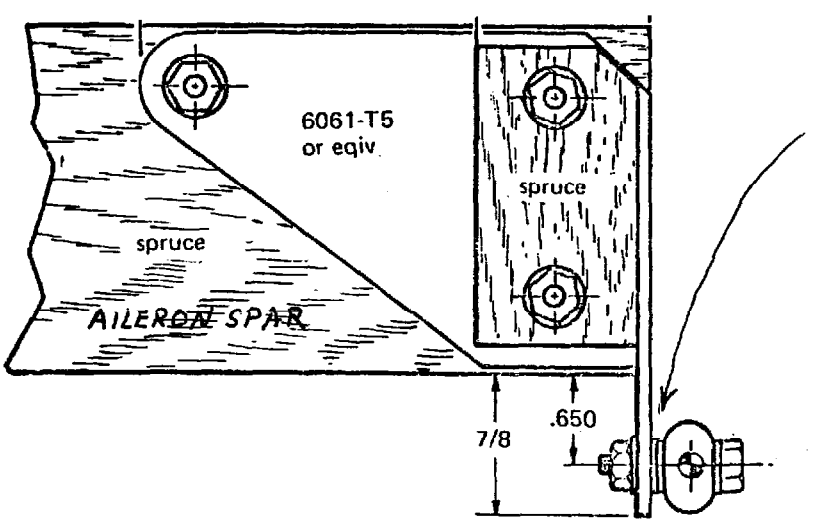
I'll let Eugene tell us in his own words the other problem he discovered. Here is his letter.....

"I am suggesting you publish this info A.S.A.P. as a bulletin. I found (on an annual inspection of a KR-2) that the aileron push rod was bending during deflection of the aileron....and would you believe the rod snapped during the inspection!

The rod was observed from the rear as aileron travel was being checked. The unibal bady was found to <u>bind against the aileron horn</u> and the push rod was forced to bow each time the aileron was deflected.

Flying time on the KR-2 I inspected was 60 hours when the push rod snapped. Ron Sorrell observed a KR-1 with less than 1 hour flight time to be binding for 1/2 of the aileron travel!

Have the KR builders check both ends of the push rods through out the aileron travel and make <u>bushings</u> to move the unibal out from the bellcrank and out from the aileron horn. Washers won't do it, the diameter is too big.....Eugene T. Muszynski, 6680 Daly Rd., Cincinatti, OH 45224"



Place 1/4 O.D. x 1/8 long bushing between unibal and aileron horn, unibal body binds against aileron horn on some installations and pushrod bends and breaks. If required, do same at other end.

I heard a report of a KR-2 crash a couple of months ago. Cause has been determined to have been inflight separation of the ailerons due to flutter. After the ailerons separated they flew back and knocked off a large portion of the elevator and rudder. The flutter occurred because the ailerons had not been balanced.

There are two things that can cause flutter that are easily remedied in our KRs. One is always balance your ailerons. Two, NEVER allow your control cables to become slack through wear or stretch. I don't mean they should be tight enough to hum but they SHOULD NOT SAG!

Ken Rand always said the elevator and rudder did not need to be balanced because they would not flutter up to the 200 mph red line. This may be true in most instances but there are known instances of elevator flutter as low as 140 mph I.A.S. No damage occurred but the possibility is there. Unbalanced ailerons can flutter at speeds as low as 120 I.A.S.

The pilot of the KR-2 that crashed surived the accident and has since recovered from his injuries. His aircraft was totally destroyed. I don't like to read or write about accidents, I especially hate to write about accidents that could have been so easily avoided. Do me and yourself a favor...check your controls carefully, for free unbinding travel, make sure your ailerons are at least partially balanced and check the tension on all the cables. Lets be safe.....not sorry.

Bill DeFreze has another slant on safety. One that many of us have not considered. We should!!

"Ernie, I guess by now you have heard that I brought Brad up to fly my "Baby" last weekend. We put 6½ hrs on her and other than a little more tuning on the carb, she seems to handle and fly pretty well, but I think I'll let Brad write a flight report. If you want to print the following statements from the "Reverend Billy"...I think it might be a lot of help.

When building our dream machine, we don't think twice about the money we spend on parts and props and engines and radios and instruments and oh, that beautiful final paint job. We now have a gorgeous piece of achievment sitting in our driveway just itching to reward our efforts of the last 1, 2 or 3 or 5 years. BUT it is still not complete. There is one more "part" to get!! A major part of the whole project! Lets go back to when we learned to fly. Some of us were taught in 150s, we got our ticket, after a few hours the 150s were too tame so we go get an instructor, check out a 172 Cherokee, Mooney, Bonanza or so on. What makes the KR any different?? I put a lot of time into building me a plane that I can enjoy and have some fun inexpensivly. So lets go buy that other "part" and get someone who knows how KRs are supposed to fly. Up to my plane, Brad Hummel had flown eight different KRs and he is still here to talk about it. So, I called Brad in So. Cal and we talked. I was ready!! Oh, yeah?? Saturday morning, Brad started his inspection. Needless to say we never got to the airport til 2:30 that afternoon. Brad made the first flight at 7:59 pm. He came back 28 minutes later, we needed a little more tuning on the carb. 8:30 am Sunday...more tuning and more fixes! Is it ever going to be right? This guy is sure picky! But patience will out....around noon, the world started to look rosier. He took off and was gone for 2 hours. When he came back, he had power on and power off stall figures, had control comments, had top speed numbers, had slow flight numbers and several other comments that helped me to "understand" my baby when she talks to me. The sky was blue, the winds gusty to 25-30, he turned to me and said, "You get in the right seat and we'll go for a ride".....ME? Get in that plywood and foam and glass thing-a-ma-jug?? (Well...you built it, don't you trust it?) You bet your backside, I trust it. Let me in!!!

Going down the runway, I said to myself, Thank you, Lord, for letting me accomplish such a feat. Then she lifted off. Never being in the plane when she was flying before, was a experience I know I will never have again.

The high winds and gusts and a big bird to catch 50 miles away, by mutual agreement, we will try another day to check me out. If it takes me three or four or more hours to feel totally comfortable in my KR, I don't care what it costs, I'm doing it MY way and as you have heard me say before....KNOWLEDGE IS POWER.

(cont. next page)

So think about that one more "part" for my airplane, one each KR instructor...Brad or Dan or whoever has the experience to help put you and your ship in the air safe and in one piece. Drop the "proud one" attitude, or "I am the best"..."I built it, I'll fly it", and let someone show you how to enjoy your dream that you have worked so hard and long on. Don't be afraid of what people will think...thoughts can't hurt you. I love everyone of you KR builders out there and I want to meet and visit with all of you. Can't you just see a squadron of these little dolls all swarming into Oshkosh like a flock of P-51s there to take control of the whole airshow and show them who the boss of the air is in these United States of America.....line up the wierd looking planes and strafe them to smithereens....sorry, I guess I let my imagination carry me away.

But, lets have some fun anyway. If we don't dream...what is there left in life?"

Sincerely & from the heart,
"Reverend Billy" DeFreze

INSTALLATION MANUAL FOR THE RAND TURBOCHARGER SYSTEM FOR THE VW ENGINE

IV. INSTRUMENTATION

by DAN DIEHL

About the only three instruments required that are not on a non-turbo'd engine are exhaust gas temperature, manifold pressure gauge, and cylinder head temperature. The manifold pressure gauge should have a range of about 20" to 35"or 40". Turbo boost gauges will not work as they are non compensating for altitude. They work fine on a boat or car but are useless on an aircraft. The hook-up for this instrument should be in the large tube between the turbo and the 4 way split to each cylinder.

The E.G.T. is used for careful monitoring of the exhaust temp and should be watched while long climb outs and high power settings are being made. Naturally the E.G.T. helps in obtaining proper mixture settings. The sender location has been discussed earlier but the most effective location is between the 4 pipe union and the turbo.

The cylinder head temperature is important to avoid excessive head temps that lead to detonation and warpage of the head itself. The standard hook-up is for the thermocouple sending unit to be installed under the #3 cylinder spark plug (right rear). This is the hottest running cylinder and can be used as an indicator of excessive heat.

One other thing that is nice is a primer. While starting the engine has to pull the fuel air mixture a long way up the intake tube, through the turbo, and from the turbo to the cylinders. The primer discharge nozzle is placed in the center of the four way split in the intake system. From here it can vaporize and each cylinder draws from this area. One squirt is all that is needed to get the engine started.

V. OPERATION AND LIMITATIONS

The Rajay turbo charger is a very simple to operate and a very low maintenance piece of equipment. However, there are several things to keep in mind while operating a turbocharged VW engine.

The first phase of operation is engine start up. This is easily accomplished with the use of the primer and electric start. The important thing is to remember here is that the oil is thick when it is cold. So one should not exceed a fast idle for at least one minute. Use only that RPM which is required for taxiing until 140^{o}oil temp is reached. At this point we are doing the run up. I prefer to start my take off roll while the oil is at 140^{o} so, as high power and climb increase the oil temp, it gives me a longer time before near redline temperatures are reached.

The second phase is to carefully monitor manifold pressure. This system is not equipped with a wastegate. The natural tendency to firewall the throttle for take-off must be avoided. A full throttle setting would result in a manifold pressure of around 70" to 80" and would destroy the engine in seconds. For take-off I recommend 32"-34" m.p. This will give a good climb rate and short ground roll. In an emergency where obstacle clearance is needed 40" will give you a boost. A short burst at 40" of about 5 seconds will not severely harm the engine. As altitude is gained during climb out I would recommend a m.p. of 30" keeping an eye on cylinder head temperature. If it

(cont. next page)

V. OPERATION AND LIMITATIONS (cont.)

reaches 450° you better pull back on the power and/or lower the nose to get more speed. As altitude is gained you will find that you will have to occasionally increase the throttle to maintain your desired m.p. Once the cruise altitude is reached, a m.p. of 27" will give good speed and relieve the engine of undue stress. Also, something to remember is that on descent you will have to keep coming back on the throttle or else m.p. will slowly climb. During climb out and cruise, oil temp should not exceed 250°. Normal cruise should range between 180° and 205°. Cylinder head temp should not exceed 450°, normal cruise between 350° and 410°. Exhaust temp should not exceed 1450° and normal cruise between 1150° and 1300°.

The third phase of operation is shut down. To insure proper lubrication of the turbo always let the engine idle for al least one minute. This will let the turbo cool and more importantly, let the turbine slow down. During operation the turbine may reach speeds of 80,000 RPM. You can imagine what would happen to the bearings in the turbo if the oil supply were suddenly cut off.

As mentioned earlier, the oil should be changed and the valves adjusted each 25 hours of operation. The oil I use in my own engine is 40 wt. White Can Aeroshell. The new Phillips oils have even a more promisng use as break down of lubricity does not occur until a higher temperature. I recommend a 50 wt. oil be used in very hot areas and cold winter should require a 30 wt. If properly maintained, these turbos should last at least 2,000 hours before requiring an overhaul.

This is the last of Dan Diehl's manual on turbocharging a VW aircraft engine. Other installments were in Issues 57 thru 60 with a list of parts and sources in Issue #58. DO NOT try to short cut the steps outlined in the article. They are flight tested and proven for hundreds of hours in Dan's KR-2 N4DD.

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Ernest Koppe
6141 Choctaw Dr.
Westminster, CA 92683

WANTED: KR-1 project. Call or send details to Ken Knight, P.O. Box 2247, Hemet, CA. 92343. Phone (714)658-8469.

FOR SALE: KR-2 project. Fuselage woodwork complete, main spar signed off, all spruce wood construction, ready to install gear. Complete R/R parts to finish, including canopy and motor mount, many extras...$1350.00. Tim Denning, P.O. Box 766, Standish, CA 96128 or phone (916)254-6688.

FOR SALE: KR-2 project, 50% finished. Fuselage and wing spars signed off, controls in, on gear. Revmaster 2100 D engine with Maloof oil controlled prop. Dynel, wood and foam to complete plus all KR Newsletters. My cost....$3,500.00 (602)836-2818.

WANTED: KR-2 project preferrably in or near Florida. Send details to H.B. Borges, 5048 10th Ave. So., Gulfport, FL 33707.

FOR SALE: One handed gear handle plans, light weight handle, easy to make, no machining....$9.50. Fred Bogardus, Box BH, Anthony, NM 88021.

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FOR SALE: Revmaster 2100 turbo with all the goodies...$4,200.00. R/R landing gear, ready to install....$100.00. Bob Hamill (213)299-1434.

WANTED: KR-2 project, advanced stage. Contact Doug Zeissler, 2168 Country Place, Escondido, CA 92026.

PEEL PLY: $3.18 per 38" yard delivered. Cashiers check or money order with order. K.W.S. Company, 111 North Mines Rd., Livermore, CA 94550 (415)443-2555.

FOR SALE: R/R KR-2 fiberglass tank. Flush cap and fittings installed. Can deliver to Oshkosh...$120.00. Gary Blagaich (216)856-3303 (no collect).

WANTED: KR-1 or KR-2, any stage of construction, cash on the spot. Ed Rhodes, 1823 Parsley St., Apt.802, Pascagoula, MS 39567 (601)769-1343 after 5.

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
JULY 1980
ISSUE #61

AUGUST 1980
Issue no. 62
NEWSLETTER

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** A monthly publication for communication between KR builders and pilots world wide.**
Edited & published by Ernest Koppe, 6141 Choctaw Dr., Westminster, CA 92683 714-897-2677

I have been knee deep in work, trying to prepare for the coming E.A.A. gathering at Oshkosh. Trying to get caught up with my job, the Newsletter and making preparations for the trip, have really had me running. I'm not complaining, tho', Oshkosh '80 will be worth every minute. This year there is to be a KR workshop every day! It will be headed up by Rex Taylor of H.A.P.I. with help from myself and others with something to contribute. The KR forum is Thursday, August 7th at 3:00 pm in forum tent #2. Several KR builders plan on camping at the campgrounds so I'm sure there will be nightly meetings there. Look for notices on the bulletin boards and around the KRs on display. Robin Butler had made repeated efforts to get E.A.A. to allow us to have a tent like that of the War Replica group but to no avail. H.Q. feels that if they allow a tent for one type of aircraft they would have to allow a tent for each type. The display area would possibly be turned into a "Big Top" rather than a flight line... O.K., I'll accept that....for now. Many thanks to Robin for trying. There should be a record number of KRs at Oshkosh this year. The Chino fly-in is usually the indicator and there were 17 KRs there this year. At least 7 of those plan on attending the Oshkosh bash. Rex Taylor is going to fly Fred Whitcombs KR-2, Paul Venne plans on flying his, Tom Criss will get his there one way or another, Bill DeFreze is flying his tri-gear KR-2, Jim Evans will take his sleek turbo 2100 KR-1, Jim Loudon's KR-2 will be going as will R/R KR-1 and KR-18. Now thats just the ones I know of from California. Steve Bennett, Ray Ellis and a group from Iowa and surrounding states plan on flying in together. Dan Diehl will be there (what would the forum be without Dan?) and several others have said they will get there one way or another. If you are flying your KR to Oshkosh contact Bill DeFreze or Ray Ellis if you're interested in going as a group. See you there in any case.

Those of us getting there by car and camper have a friend along the way. KR builder Ken Dahle has an overnight campground in Nebraska on the northeast corner of exit 382 off of I-80, (about 18 mi. west of Lincoln). Ken offers an invitation to all KR builders to stay FREE anytime they are passing thru to Oshkosh or any where else. Ken just flew his KR-2 for the first time, a flight report will be in a following issue. See you at OSHKOSH!!

Sometimes things happen that takes the fun out of writing the Newsletter. True, it doesn't happen often, but even one time is too many. We lost two good friends recently, Ron Sorrell and Gene Muszinski, in the crash of Ron's KR-2. Gene died in the accident, Ron later in the hospital. An eyewitness to the accident reported the following....."the aircraft was landing and then made a go around and came back for another try. They didn't land this time either and apparently were going to go around again. The engine quit qhen the aircraft was about 200' up while they were climbing out. It looked like they were going to turn back to the airport because the aircraft started a turn...then they went into a spin."

They say bad news travels fast. I think this is especially true when there are good friends involved. The sounds of the crash had not faded when the news of it began spreading across the country.

We can't bring back Ron and Gene. We can't change the course of events that occurred that day. We can try our best to avoid a similar accident. Think about what you would do if your engine quit. Be prepared. We lost two friends....please...lets not lose any more.

??CARB ICE??

Received my first copy of the Newsletter yesterday and was looking over some of the old ones I received when I bought 9241A, my little KR-2.

I was reading the questions and answers on #33 about carb heat on the Posa. I thought I'd better relate an experience I had last Sunday, a.m., June 22.

First though, before I was able to obtain my airworthiness certificate for the KR, my FAA inspector made me build a carb heat set-up before he would issue my certificate. I explained the Posa carb to him in detail and all about the hot air that was already being used and that it COULD NOT ICE! He said fine, put a carb heat box on and make sure it works. Not wanting to waste time getting that piece of paper, I complied. The heat box was a Mickey Mouse set up but it worked and the heat muff was a Dr. Pepper can I found setting close to the plane. I slipped it over an exhaust stack and secured it with clamps on top and bottom, ran a hose to the heat box. I fired the VW up, pulled the carb heat and got an RPM drop. That satisfied the FAA.

Sunday morning after some rain showers passed, I was putting the cowling on, after having to put a new set of cylinders on the Monnet 1700 VW engine. Seems the engine came from them with bent push rods and the wrong pistons (I have the parts that came off and plenty of witnesses to this fact) and was ready to see how the plane would fly with an engine that would run instead of putt at 3100 maximum RPM (in a slight dive that is). I warmed the engine up earlier and checked for leaks and was ready to go.

I rolled the KR out of Brownwood Muni hangar, propped the engine, hopped in and taxied to 35. After the traffic cleared, I took off, gained 500', made a left turn & watched the RPM start dropping. I double checked everything and made a quick downwind turn as the engine kept slowing down. I reached for the carb heat and pulled it full on while telling myself <u>it ain't ice</u>. When I pulled the knob, the little VW sounded like all heck had broken loose. The RPM fell to about 1300-1500 and spit and sputtered for 7 or 8 seconds, then all of a sudden it wound up full throttle. The ice that wasn't there had melted. I could have kissed that FAA inspector then and **immediately** took back all those bad thoughts I had about him.

I flew 1.2 hours Sunday morning and picked up carb ice 3 times before finally leaving the heat on for the rest of the flight. The temp was about 83° to 85°, and the humidity was very high I'm sure, even for central Texas.

I would probably have banged up my baby as I wasn't where I could have come around to the runway very easily, if I hadn't had the little box. You can rest assured I am now building a <u>better</u>, <u>sturdier</u> unit right now and will design it for ram air with an air filter on it.

The moral of this story is "Who are these so called experts?" Their fallacies are going to get someone killed. Of course they will probably say...it can't happen. Brother, it can.

If anyone has a Monnet engine that will not perform, pull the heads (one head) and see if the pistons come to the top of the cylinder when in the TDC position. I'm not a VW expert but my pistons liked 10 mm coming to the top of the cyl. and compression was mighty weak when hot. Also these push rods in my engine were not a standard length. Took some aluminum push rods and cut them down to 76 mm and they worked perfectly. The ones in the engine were chromaloy and bent (6 of them). The engine had 3 hrs. flight time on it when I bought the plane and I am the only one to work on it. Also, one rocker cover casting is cracked in both bolt holes. You people check your engines REAL GOOD if you don't know what inside. Some people's name don't mean a thing. It is your life....PROTECT IT.....Clyde E. Graham, Jr., P.O.Box 645, Brownwood, Texas 76801.

KR CLUB NEWS

A new group of KR builders have formed on the east coast. Don Lewis reports the forming of KR squadron 339 E.A.A. There will be monthly meetings and interested parties should contact Don Lewis at (804)467-7737 or by writing him at 1856 Old Ridge Road, Virginia Beach, VA 23464.

The L.A. area KR group will meet at Rich Seifferts, August 18th, one week later than usual due to several members being away for Oshkosh. Rich's address is 5306 Lucky Way, Santa Ana, CA 92704. Mark the date on your calendar, we'll have Oshkosh pictures.

QUESTIONS & ANSWERS

Q. I would like to build my KR-2 in a tandem seat arrangement. Is there any information available on this modification?

A. I don't know of anyone that has built or started to build their KR-2 as a tandem seater. The prototype KR-1, N1436, was originally designed as a tandem seat aircraft and, indeed, had a jump seat installed. It was never flown with two people on board but did make several taxi runs. Whether or not the KR-2 could be flown as a tandem would naturally depend on the c.g. of the modified aircraft. If it falls with the envelope...it should fly.

Q. May I use plastic (poly-ethylene) sheet instead of wax paper? Will it seriously affect my lay-ups?

A. Several different items have been used successfully, the plastic you mention is one. I personally prefer no wax paper or substitute on large lay-ups because it uses additional epoxy, leaves ridges that have to be sanded and adds weight.

Q. What are the performance difference with various size engines (1600 to 2180) in the KR-2?

A. The performance of a KR-2 with different engines will vary according to weight as much as to size of engine. A basic 450 lb. KR-2 (is there really such a thing?) will do nicely with a 1600cc engine, i.e. a 700-800 R/C and 135-140 mph cruise. This same KR-2 with a 2180 cc and no other added weight will have a R/C of 1500-1700 FPM and a cruise of 165-175 mph. These figures are not absolute and will vary with prop, workmanship, etc. A 550 lb KR-2 will fly with a 1600 VW. I would be very careful before carrying a passenger in it tho. A KR-2 this heavy would need a minimum of 1835cc for adequate performance. You can interpolate the performance of various weight KR-2s using these figures and arrive at a reasonable guesstimate.

Q. Should the firewall be reinforced in a KR-2 if an 1834 cc engine is planned?

A. The firewall area in a KR-1 or -2 will support a VW engine 1300-2180 as long as standard aircraft practices are used in making the glue joints i.e. 90% or better contact in all joints and well controlled glueing practices.

Q. Is it possible to use fuel resistant plastic or neoprene fuel lines in place of metal ones?

A. Plastic and neoprene hoses are used regularly to carry fuel in our KRs. They do require close inspection as time goes by since they harden and crack with age.

Q. Could I get Brad Hummel's address? I would like to get some information on his sliding canopy.

A. Brad's address is 15872 Puritan Circle, Huntington Beach, CA 92647 phone (714) 894-3888.

Q. I've used Don Land's tri-gear in my KR-2 and I understand the Newsletter has information on a control system that will work with this system.

A. I think you are referring to a sketch of a control system using push/pull tubes rather than cables. It was only a sketch and there were no dimensions. This does bring a point I've made many times...modifications lead to modifications lead to modifications, etc.

xxxxxxxxxxxxxxxx

A note to purchasers of Bill DeFreze's tri-gear plans.....a correction sheet is available. Send him a S.A.S.E. and he will send you one.

xxxxxxxxxxxxxxxx

Ed Nelson, Box 858, Pinehurst, ID 83850 has flown his continental A-75 powered KR-2. First flight was just before the Mt. St. Helen eruption and the drifting ash has kept flying to a minimum. We'll have more info on Ed's KR-2 in a later issue.

xxxxxxxxxxxxxxxx

Jerry Russell, 5600 Albright Dr., Virginia Beach, VA 23464 is making a full length aluminum wing tanks in his KR-2 and will price a set to anyone interested. After reading the following letter I might be writing him myself.

From Brian Benjamin, Rte. 6, Knollwood Acres, Spartanburg, SC 29303....Some cars have operated satisfactorily with gasohol but some have had problems. Disintergrated hoses, plugged fuel filters and damaged carburetor floats are some of the problems encountered. Of greater interest to homebuilders is the fact that some types of epoxy can be affected by gasohol. For example, Epon 815 epoxy resin and Versamid 125 curing agent worked very well on my KR-2. However, when I used two gallons of gasohol for ground testing, my epoxy fuel tank was severely affected. The epoxy was softened and even flaked off in small globs. I may have mixed a bad batch but so could a lot of other people. In view of my experience I checked with a couple of epoxy suppliers who recommended the use of polyamine curing agent such as DETA. This apparently provides a much more chemically resistant epoxy. (The polyamines are also more toxic that the polyamides.) I have begun some testing of epoxies and hoses in gasohol, 100 L.L. and 80 octane fuels. So far, the results of my tests (at up to 150°f indicate that the polyamine cured epoxy is very good in 100 L.L. and 80 octane. There was a very slight softening in gasohol but apparently no further degradation. Some clear plastic tubing such as polyurethane and certain vinyls appear to be OK. However, I strongly recommend that all homebuilts have tests done on the materials used in their fuel systems.

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FOR SALE...KR-2 project. Complete minus cowling, outer wings & engine. Set up for 2100 Revmaster...Dill Henderson, 816 E. Edna Pl., Covina, CA 91723 or phone (213)331-3307 (work) or (213)964-1917 (home).

WANTED...Complete KR-2 landing gear system with or without wheels & tires. Will pay in the $150.00 range minus tires and wheels. Contact Herb Spies, Painter Hills, Middlesbury, VT 05753 Phone (802)388-7443 after 6:00 pm.

FOR SALE...KR-2 project. Lower fuselage & all controls finished. Tail & center wing fiberglassed, outer wing spars finished. All R/R molded parts to finishe. New boat trailer with deck for hauling. Excellent workmanship. $1500.00 for all....Bill Speyer, 867 Rockcreek Dr., Dayton, OH 45459 or phone (513)433-9915.

FOR SALE...1600 cc VW Barker conversion Test run but never used...$1000.00 or best offer....Delford Roth, Warroad Clinic, Warroad, MN 56763 or phone (218)386-2631 or 386-2160.

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FLIGHT REPORT

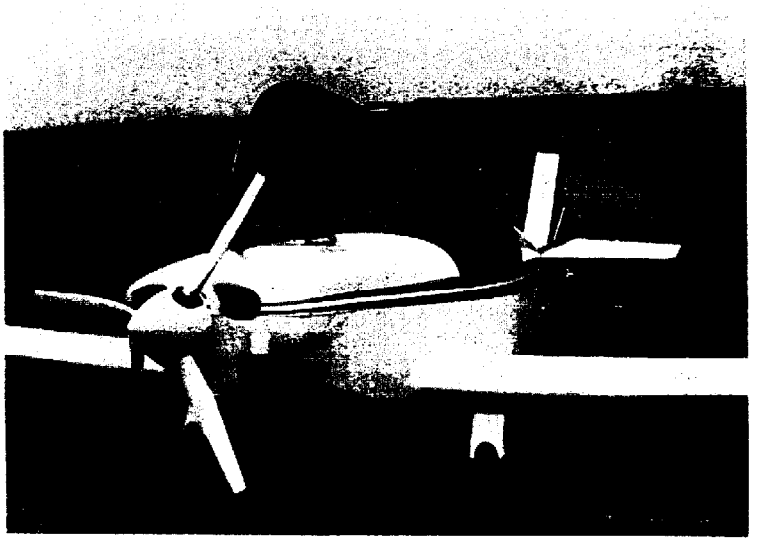
First Flight Report KR-2 (Modified) N88GH Garth Hess
Date: July 11, 1980
Location: Chino Airport, Chino, CA, Runway 21

Experience: Total time 125 hours, about 45 hours in a Taylorcraft, five years ago. Balance in Cesna 150 and 172. For the last three years have averaged about 10 hours in the 150 and 172.
KR-2 Experience: Approximately four hours of taxi runs (no wings) up to 55 mph. About 15 minutes inflight practice with Dan Diehl in N4DD at Chino fly-in in April. One hour elevator sensitivity tests on ground (blocked wheels on 5" high chocks, tied tail to eliminate prop striking ground and "flew" with tail in level attitude).
Weather: 96° in shade; wind approximately six knots at 240 degrees; medium smog level.
Aircraft Condition at Take-off: Oil temperature at 210° (start of yellow caution area).
Take-off: I opened the throttle possibly faster than in previous taxi tests. The torque caught me by surprise and we started veering to right; reduced throttle, straightened out, added power, veered to right again, reduced throttle, straightened out, added power, stayed straight, wheels got light with a few little bounces. Next thing I knew I was up about ten feet. Bobbled slightly in roll and pitch, settled down for climb-out. Due to high oil temperature, pulled back power and climbed slowly.
Flight: Flew around slowly getting the feel of the plane and trying to cool the oil. After about 20 minutes, I remembered the wheels were still down, up they came, with an increase of about 15 mph and smoother flight. Next I remembered I hadn't touched the elevator trim. The light elevator force on the stick had essentially masked a slight nose down tendency. The trim worked well (my trim tab area is about 70% larger than shown on plans). I made some fairly steep turns and found that the plane handles beautifully. Dan Diehl told me not to consciously move the stick, just sort of think about it and the plane responds. It does. I used a laminar airfoil section instead of the RAF-48 so that the stall behavior is no doubt different but I found that a very gentle more or less level attempt to stall resulted in a slightly nose high mush with all controls still effective but a descent rate of 500 to 700 feet per minute. Adding power slowly reduced the descent to a climb. A more pronounced nose high stall resulted in sharp and heavy buffeting before the final drop.
Landing: Due to the mushing characteristics previously noted and not being too sure of its effects in a full stall three point landing, I elected to try a wheel landing. I, therefore, made the approach a little high (in case engine quit) and fast (80 to 85 mph to stay away from mush). Touchdown was surprisingly and exceptionally smooth after a good deal of nervously jockeying it down for those last 20 feet. Because I landed on the wheels with the tail up, I did not have the feeling of skidding on the runway with the seat bottom that I had expected. Point of touchdown was about one-third down the 6200 foot runway. I wandered a bit back and forth across the runway while slowing down, but the plane answered very quickly to the rudder. Practice should reduce the wandering considerably. I must have touched down at about 75 mph because it seemed to take forever for the tail to drop. I didn't want to apply brakes until the tail was down for fear of nosing over. Also, due to the excessive speed, I didn't want to force the tail down for fear of becoming airborne again. The end of the runway was approaching. Happily the tail lowered, and I applied the brakes (I have individual heel brakes). Forward motion stopped sufficient to turn on the last taxiway, which is about 75 yards from the end of the runway. The taxi back to the tower where the family waited was pure pleasure.
Conclusion: I must say that never in my life have I experienced such extreme exhilaration and stark terror in such a satisfying, ego building culmination of five years of building and dreaming.

From Charles Grassie, 55 Evergreen Rd,Attleboro, MA 02703.....Here is a picture of my KR-2 and flight impressions. The airplane is very responsive to elevator imputs, but after a few hours flight time, it seems natural. The restriction was lifted after 26 hrs. The only problem encountered has been with wearing out R/R tailwheel. I solved this problem by installing a Pober Pixy spring and tail wheel assembly. Now I have great forward visisbility as the airplane sits higher on the tailwheel. I also installed a flap-dive break combination at the center of gravity under belly. The landing distance has decreased dramatically from 3000' to under 1500'. The more I fly this airplane the more I like it!

TACHNICAL DATA

Airplane.....KR-2 N9038X
Engine.....Revmaster 2100D
Radios.....Nav. & Com.
Empty Wt.....605 lbs
Take off Run.300-500 ft. est.
Take off Speed...65 mph
Climb out Speed..80 IAS
Climb Rate...1000 fpm
Oil.....60 psi at 3000rpm 160°F
Cyc. Temp....300°-340°F
Cruise.....70-75% power
RPM.....3000
Cruise wheels down...125 IAS
Cruise wheels up.....145 IAS
Ammeter.....15 amps
Oil, level flight...50 psi-60 psi
160°F
Cyc Temp, level flight...300-340°F
Landing pattern speed...80 mph
Landing technique...Hold off on float
Keep straight with rudder
& it will land itself



Landing distance...3000' w/o dive break
1500' with dive break

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
AUGUST 1980
ISSUE #62

SEPT. 1980
Issue no. 63
NEWSLETTER

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** A monthly publication for communication between KR builders and pilots world wide.**
Edited & published by Ernest Koppe, 6141 Choctaw Dr., Westminster, CA 92683 714-897-2677

OSHKOSH "80"

The 1980 EAA Fly-in and Convention has come and gone. As usual, there was so much happening, it was impossible to see it all. Planes of all types and sizes, ultralights, and rotor craft were on display and there just isn't enough time to completely sate your curiosity. New designs were present, like the new "Glassair" a super slick, full size, fiberglass aircraft, and the "Dragonfly" a two place version of the foam/fiberglass Quickie. Of course the Vari-ezes were there in overwhelming numbers, I think someone said there were fifty of them, each like the other as peas in a pod. If it weren't for different paint schemes you couldn't tell one from the next.

But, oh the KRs! There were 16 at Oshkosh this year and each as individual as the builder wished to make it. Each had two wings and a tail where it should be but there the similarity ended. Never has there been an aircraft design that encourages so much modification and tinkering as do the KRs! Some may call it lack of design but that isn't really true. The KRs are designed to be simple! And the basic design criteria for the KR-1 and KR-2 was simplicity. It is you and I, the tinkerers changing this and modifying that, that have given our KRs their individuality. And for that I am grateful to Ken Rand and his marvelous designs. Through them I am able to share some of the joy of creativity, of being able to point with pride at my aircraft and say...I did it!

The KRs at Oshkosh aptly demonstrated this phenomena of individuality, ranging from basic beauty to magnificently modified and all the areas in between.

Unfortunately, due to liability laws and other various and sundry reasons Rand/Robinson Inc. does not recommend or encourage these modifications and departures from the plans...so if we want to change anything we are on our own.

Appearing at Oshkosh were the following KRs.....

KR-1 N80208 Pilot.....Jim Evans
Jim flew this sharp turbo charged aircraft in the LBF 500 and would have finished very respectably except that he missed a pylon and was disqualified. Jim's average speed for the 500 miles was 166 mph. Not bad for a 560 lb. KR-1!

KR-2 N2AL Pilot.....Roger Phillips Builder.....Al Starke
Another entry in the LBF 500. Roger had to drop out when his spinner decided to part company from the prop. Damage was minor but further participation in the race was out. This was the 2nd appearance at Oshkosh for this very nice KR-2. Last year it was awarded the Ken Rand Memorial Award.

KR-1 N31123 Pilot.....Steve Bennett
If you haven't seen this KR-1 you just haven't been looking. Steve has been from Tennessee to Texas and from California to Kansas. E.A.A.'s "Sport Aviation" magazine has pictured Steve's KR-1 in two or more issues and also in the 1980 EAA Fly-in and Convention program.

KR-1 N21KC Pilot.....Keith Campbell
The "Lil Pretender"...an economy size warbird. It is not a replica of any particular aircraft but is reminiscent of all the WWII fighters you've ever seen. An excellent example of a fun aircraft.

KR-2 N612W Pilot.....Jim Dexter
A tri-gear KR-2, one of a kind and no plans exist. Jim flew in with two other KR-2s from Kansas City, MO. Last year he made the trip alone and said this year was much more fun.

KR-2 N78TG Pilot.....Tom Claeser
A very nice KR-2! This KR was a definite contender for the Ken Rand Memorial Award. An interesting modification on Tom's KR was the use of welded 4130 gear struts instead of the aluminum castings. According to Tom they are working very well.

KR-2 N8068Y Pilot.....Take Takenouchi
Turbocharged! That was the only visible deviation from the plans on this KR-2. Take (pronounced TAH-KEY) had built a VP-1 previously and decided a little more performance was in order. His was the fastest of the three KRs flown in from Kansas City.

KR-1 N2263D Pilot.....Randy Hebron
I heard of this KR-1 from the people who had attended Lakeland earlier this year. Definitely an aircraft to see in person. Randy modified almost everthing! I don't have room here to repeat the fine article in the August issue of "Sport Aviation" but I'll give you a parital list of the mods: updraft cooling, Bendix-Zenith carb., engine driven fuel pump, tuned exhaust, no fuselage fuel tank, 12 gal. capacity tank in each wing, heel brakes, center control stick, full length flaps (no ailerons), spoilers, a roll-over structure and a tail wheel made from a snow mobile bogey wheel. On top of all this Randy used Imron paint for a beautiful finish. An outstanding aircraft.

KR-1 N2MH Pilot.....Mike Howard
4½ years went into the construction of the beautiful KR-1 and it was obviously time well spent. Mike arrived at Oshkosh with his "cold weather" canopy installed dut to the many summer thunder storms. Normally, an open style cockpit is installed to really taste the sheer joy of flying.

KR-1 N31227 Pilot.....Don Dole
You have to look twice at this KR-1 to confirm it is actually a KR. Fixed landing gear with wheel pants and a full windscreen and canopy give Don's KR a more conventional appearance. Named "Quicksilver" by its owner, it is as slick as the name would imply.

KR-2 N4DD Pilot.....Dan Diehl
No KR has accumulated as much time as N4DD. Over 600 hours have been logged and Dan was at the stick for everyone of them. The addition of a turbocharger over a year ago and the recent addtion of Warnke's new "almost constant speed" prop has boosted the performance of N4DD by approx. 20%. Dan has been a KR Designee since the idea was hatched by Bill "Reverend Billy" DeFreze and has been a constant contributor to the KR Newsletter. Look for his article on "How to Turbocharge the VW Engine" in the recent back issues of the Newsletter.

KR-2 N29JW Pilot.....Joe Weber
I can't count the number of times I've been asked the following questions: Can you operate a KR from a grass strip? How much runway do you need? Joe could answer both questions better than I, he flys his KR-2 from a 1300 ft. grass strip behind his Wisconsin home! There are no flaps, divebrakes, or over-size wheels on N29JW. Its stock KR all the way. A fence looms at each end of his strip so Joe doesn't carry passengers there. A short hop to a neighboring airport is made if the right seat is be occupied. Anyway, now when someone asks those questions....I'm ready.

KR-2 N36J7 Pilot.....Buck Buchanan Builder.....Jim Loudon
Its a long way from California to Oshkosh, even by air. Jim's KR has made the trip twice, both times without him. This year, Buck Buchanan and his wife, Jo, borrowed the KR-2 to use as vacation transportation. Other than some bumpiness over the Rockies and waiting out some thunderstorms, the trip out was uneventful..."Just a great way to travel," said Buck.

KR-1 N25170 Pilot.....Ray Ellis
Ray's sliding canopy of his KR was the fore runner of many more. This KR-1 was finished five years ago and Ray sent pictures and descriptions of the sliding mechanism for the rest of the Newsletter readers to share. Ray has since become one of our KR Designees and is constantly aiding a fellow KR builder thru one of the many ambiguities in the plans. A recent change in engine mounts has produced a more stable aircraft, Ray reports. The original Rand aluminum channel style mount was exhanged for the welded steel tube type.

KR-2 N47JJ Pilot.....Jere Rosser
"Tweety Bird" is Jere's name for this beautiful, yellow KR-2. It fits. The plane just oozes with a light hearted, happy-go-lucky feeling you would associate with such a name. There are no modification to catch your eye but the aircraft still stands out as an example of what the KR idea is all about...fun flying. You can bet the excellent workmanship in Jere's KR-2 was noticed by others. The announcement at the KR forum that Jere's "Tweety Bird" was to be awarded the Ken Rand Memorial Award surprised only him. Jere Rosser was asked to become a KR Designee and replied that he would be delighted. Jere's address is: 2305 Wilderness Way, Marietta, GA 30066. Phone (404)977-0843. Look him up, give him a call, or write him a note. He is ready to help.

KR-1 N1436 Pilot.....Ken Rand
The progenitor of all the KRs, the pioneer of homebuilt composite construction, much changed since its creation as a 36 hp VW powered oversize model, the latest modifications were turbocharger, constant speed prop, sliding canopy, flaps, electric trim, and auto pilot. Jeannette Rand asked me to deliver N1436 to Oshkosh where it was presented to the E.A.A. Museum. As the presentation was being made all other aircraft cleared the skies and three KRs took to the air in a tribute to Ken Rand and his designs. Paul Poberezny, founder and president of the EAA accepted the aircraft from Mrs Rand as Jim Evans, Jere Rosser and Dan Diehl flew their KRs by in formation.

Well, there they are....the KRs at Oshkosh. Now let me say a few words about all the wonderful people. My wife and I stayed at the campground this year in a group with Ray & Dorothy Ellis and family, Joe Wallace and his son Pat, "Reverend Billy" DeFreze, Don Thompson, Dan and Tom Diehl. Each night, after the airshow, groups of KR builders and pilots would drop by for an informal get-together to compare notes and exchange ideas. These gatherings were the icing on the Oshkosh cake and were worth the trip even if there hadn't been an airplane in sight!

Next year we're trying to arrange accomodations in the University dormitories for anyone interested. If we get enough people, the University will reserve a whole floor (hopefully!) for the KR group. Price is very reasonable, $9.00 a day for singles and $14.00 a day for doubles. If you think you would like to be a part of the group, make out a check to the University of Wisconsin-Oshkosh for $9.00 or $14.00 as a deposit (refundable if requested in writing by July 15th) along with your phone number and the name of who will be with you if want a double (two single beds). Food at the University is excellent and very reasonable. There is parking space for those with cars and a bus runs regularly between the fly-in and the dorms for those without. So, send me your checks and I will forward them to the University. The sooner we get the applications in, the better chance we have of getting a floor set aside for the KRs. So reply as soon as possible as I will be mailing the applications in on Oct. 15, 1980. See you at Oshkosh 81!

SAFETY NOTE Rand/Robinson reports some builders have reported finding cracks emanating from the area around the hole in the center of the prop hub. Make this area one of regular inspections. Do not use the propeller if you discover these cracks.

HAPPENINGS

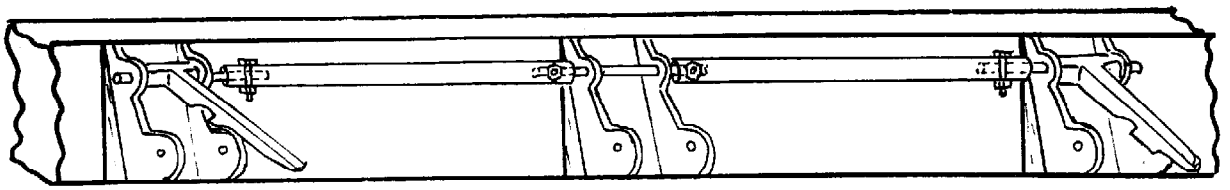
Sept. 19-21, Kerrville, Texas. 16th annual Southwest Regional Fly-in. Contact Bob Reese, Rt. 4 Box 305, San Angelo, TX 76901 (915)658-4194 or 949-2886

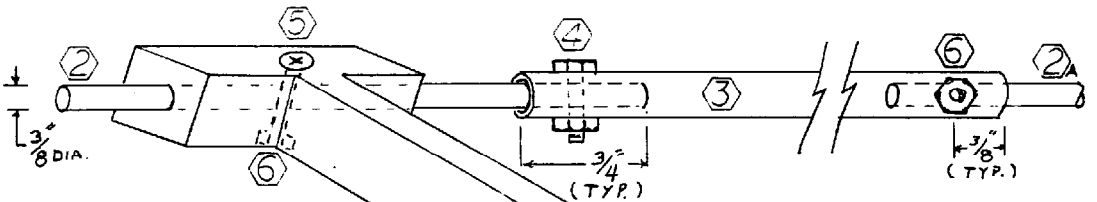
Sept. 19-21, Baltimore, MD. 11th annual East Coast Regional Fly-in. Martin State Airport. Contact Gene Brown, 9028 Hickory Hill Ave., Lanham, MD 20802 (302)577-3070.

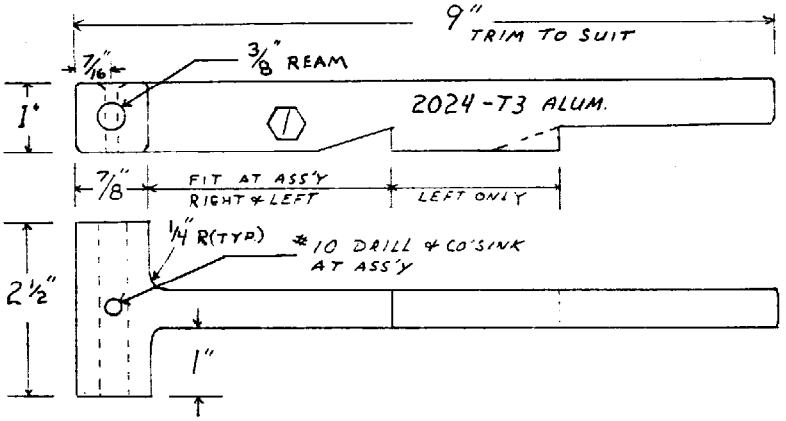
Oct. 1-5, *TULLAHOMA* 2nd annual E.A.A. Fall Fly-in. Don't miss it.

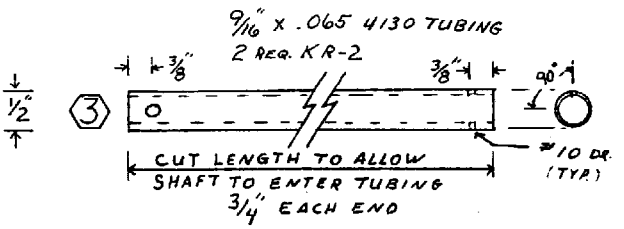
Oct 4-5, Redding, CA. 9th annual Octoberfest and Fly-in. Contact Curly Medina, 1156 Lake Blvd., Redding, CA (916)241-7737.

POSITIVE ONE HAND LATCH SYSTEM



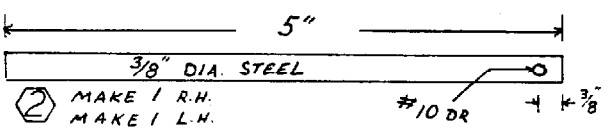


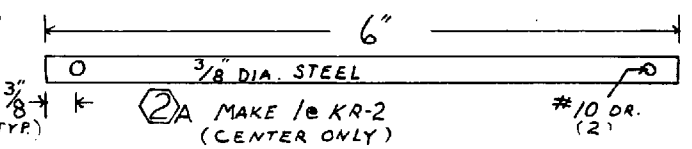




INSTRUCTIONS

1. DRILL & REAM 3/8" HOLES IN CASTINGS IN LINE. (1/4" HOLE IS INCREASED TO ALLOW ENOUGH SHAFT DIAMETER TO BOLT THRU WITH #10 BOLT).
2. DRILL #10 HOLE IN 3/8" DIA. SHAFTS PER SKETCH. CUT TUBING LENGTH TO FIT BETWEEN CASTINGS WITH 1" CLEARANCE EACH END. DRILL (2) #10 HOLES IN TUBING. DRILL HOLE IN ONE END AT 90° TO OPPOSITE END. CTUBING I.D. IS 1/16" LARGER THAN SHAFT TO ALLOW FOR MISALIGNMENT OF HOLES IN CASTINGS.
3. MACHINE LATCH LEVERS PER SKETCH. DO NOT DRILL #10 HOLE OR CO'SINK LATCH LEVER UNTIL THE ENTIRE UNIT IS ASSEMBLED.
4. INSTALL SHAFTS IN CASTING & FIT LATCH LEVERS. WHEN YOU ARE SURE NOTCHES FIT, BOLT TORQUE TUBES TO SHAFT & CENTER SHAFT ASS'Y. MAKE SURE THAT BOTH LEVERS ARE IN FULL CONTACT, GEAR DOWN. DRILL #10 THRU LATCH LEVER & SHAFT, BOTH SIDES. CO'SINK #10 HOLES IN BOTH LEVERS, INSTALL FLATHEAD SCREWS.
5. FASTEN SPRING TO FRONT END OF LATCH LEVER, EACH SIDE. ADJUST TENSION TO SUIT.





MATERIALS LIST

ITEM	QUAN.	DESCRIPTION	TYPE	WHERE USED
1	2	1 x 2 1/2 x 9	2024 T3 ALUM	LATCH LEVERS
2	2	3/8 DIA. X 5	STEEL	LATCH LEVER SHAFT
2A	1 (KR-2 ONLY)	3/8 DIA. X 6	STEEL	CENTER SHAFT
3	2 (KR-2) 1 (KR-1)	9/16 X .065 X (VARIES)	4130 TUBING	TORQUE TUBE
4	4 (KR-2) 2 (KR-1)	AN 3-14	BOLT	TORQUE TUBE TO SHAFT
5	2	AN 509-10 R21	FLAT HEAD SCREW	LATCH LEVER TO SHAFT
6	6 (KR-2) 4 (KR-1)	AN 365-1032	NUTS	

BUY ◇ SELL ◇ TRADE

HAVE SOMETHING TO SELL?
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25 words FREE to NEWSLETTER subscribers seeking or selling parts for their KRs.
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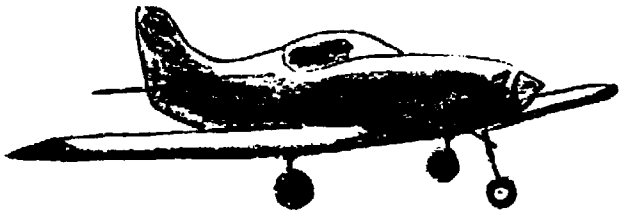

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FOR SALE: R/R 3 blade prop, Slick magneto 4016, shielded harness, drive pulleys and belt for VW, Posa Carbureto. All for $400 or will sell seperately. Glenn Solomon, 147 S. Woodrow, Battle Creek, MI 49015 or phone (616)963-6330.

FOR SALE: KR-2 project on gear, some foam work done. Bill Henderson, 816 E Edna Pl. Covina, CA 91723 or phone days (213)331-3307 or home (714)594-7787.

TRI-GEAR PLANS...Retractable system that uses Rand's parts, wheels, gear legs and spring bar. Conversion plans..$25.00. Bill DeFreze, 7530 Ironwood Dr., Dublin, CA 94566 phone (415)828-2111.

FOR SALE...Bolt on conversion parts for your VW engine. Starters, flywheels, magneto drives and alternators. Over 120 "Supercases" delivered, many flying!! ***New item...transistorized fuel pump for fuel transfer, light, efficient & safe. ***Send S.A.S.E. for more info. Dan Diehl, 4132 E. 72nd St., Tulsa, OK 74136 phone (918)492-5111.

FOR SALE: KR-1 project. On gear, ready for foam/fabric. Outer spars ready to install, fighter style controls, complete hardware, dynel (enought for 2 planes), all plans, parts receipts, drawings, logs, & Newsletters. Superb craftmanship, FAA inspected. Must sell. Contact Jim Linville, 612 Glenrose Ln., Cincinatti, OH 45244 or phone (513)528-2523.

FOR SALE: KR-2 project. Basic fuselage spruce work completed. Center spars complete and signed off. All woodwork done by professional cabinetmaker..$700.00 D.A. Engel, Rd #2, Parkesbury, PA 19365 phone (215)593-5274.

FOR SALE: KR-1, 85 hrs total time, 1700 cc VW, Great American prop, Radair 10, well instrumented. Pictured in Dec "79" Sport Aviation....$4500. Contact Danny McCormack (512)494-6832. Also have R/R 3 blade prop for $260.00.

FOR SALE: KR-2 project. Fuselage, controls, flaps, gear, empenage, built. All wood, foam, fiberglass, epoxy, some instruments, engine mount, AN hardware, R/R fiberglass parts (except cowl) plus most ot finish. Best offer over $1,500.00 Also RayJay 1340 new turbo-charger $200.00. Moving, will deliver almost anywhere. Mike Brezner (216)564-5472.

The landing gear latch system drawing in this issue in one used by Ron Sorrell in his KR-2. Duane Hensly, a friend of Ron's brought the drawings to Oshkosh to give to us. We appreciate them. Several friends of Ron's and Eugene Musynski's were at the Convention, all expressed a deep sense of grief at the loss of these two friends.

The modifications and tips appearing in the KR Newsletter are from builders like yourself. Rand/Robinson Inc. wishes to go on record as not approving of any construction method or device not appearing in the KR plans and that the KR Newsletter is not a publication of Rand/Robinson Inc.

While we are on the subject: Always use discretion and common sense when making any modification. Remember, you are probably going to pay a weight penalty for every change you make in your KR. Think ahead! What other changes will have to be made to accomodate that *BRILLIANT IDEA*! You might want to reconsider.....

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
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KERRVILLE "80"
EAA SOUTHWEST REGIONAL FLY-IN

Texas is a BIG state! Especially when you are driving. I've had the experience before but you tend to forget just how far it is from one end of the Lone Star state to the other. My memory was refreshed last week when I drove from L.A. to attend the EAA Southwest Regional Fly-in at Kerrville, Texas. Whoof...what a drive! Original plans were to bring the KR-3 to Kerrville and then to Tulsa where water operation and flight testing would be carried out. However, propeller problems were not solved before the fly-in date so the KR-3 remained in California and I made the journey via my Datsun. Long drive or not, it was a great trip. I had a chance to see first hand some of the KR activity I had been hearing about. Dave Baker, president of EAA Chapter 35 in San Antonio, had his KR-2 project on hand for static display. The center spars were finished so Dave was just past the "boat" stage of construction. Good workmanship so far, should be a nice KR-2.

Al Campbell, newsletter editor for Chapter 35, is obviously a perfectionist when it comes to his KR-2 project. Al's KR was on the gear, with the rudder, horizontal, and elevator foamed. I <u>really</u> want to see this one when it is finished.

John Wells had the remaining KR project. John's KR-2 N37JW was almost complete, with only some cowling work to be done. An interesting modification to 37JW was the fabric over stringers fast back and a gull wing canopy. John had a Daily Tubbs 1800cc VW conversion and ran it during the KR forum to demonstrate its easy starting and smooth running.

KR-1 N44EH, a continental 65 powered, built and flown by Ed Hart. I was never able to catch Ed around his KR so didn't get a chance to question him about the performance of his aircraft. A spec sheet with the KR listed the empty weight as 600 lbs, gross 900 lbs and a cruise speed of 120 IND. This is somewhat slower than other Continental powered KRs so I suspect a propeller change would improve Ed's cruising speed, however it would probably decrease his rate of climb.

KR-1 N90537. Danny McCormick has been flying this quick little KR-1 for over a year now and enjoying it more each day. He recently put a Great American prop on the KR-1 and increased his top speed by 35 mph. Dan was obviously pleased with this boost in performance and made several low level fly-bys to demonstrate the speed & climbing ability of the 1700cc KR-1 to the very appreciative crowd. When asked how fast he was going, Dan reported a fly-by speed of 175 mph indicated. The KR forum was hosted by Dan (also a member of EAA Chapter 35). Good Show!!

KR-2 N4DD. This blue KR-2 is a familiar sight at any fly-in around the Southwest and other gatherings around the country. Next time Dan Diehl is at a fly-in, take a close looke at the engine installation. Clean and neat, no loose ends. There-in lie the reasons for the hundreds of trouble free hours Dan gets out of his 2180cc turbocharged VW engine. This same philosophy is carried out thru the whole of N4DD from the spinner to the tail. Dan and N4DD was selected to receive the Ken Rand Memorial Award for the KR most representative of Ken Rand's ideas.

It is always a "high" to attend a fly-in but the Kerrville gathering was especially enjoyable. The most descriptive word that comes to mind is "friendly". The whole fly-in was characerized by an air of informal efficiency that made everyone feel they were a part of the event. This was my first time to attend this particular fly-in, it sure won't be the last.

OSHKOSH 81

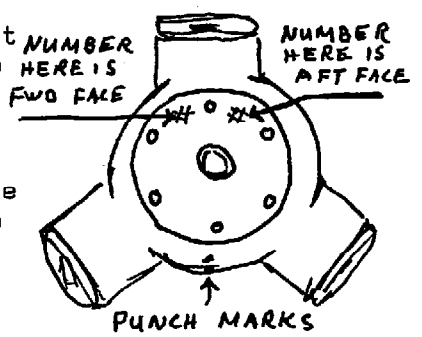
The note in the last Newsletter about staying at the University dorms has drawn some response. Reservations for 10 people have been received so far. I'll repeat the note just to make sure you don't miss out. If we get enough people, the University will reserve a whole floor for the KR group. Rates are very reasonable, $9.00 per day for singles and $14.00 a day for doubles (two single beds). The food is good, there is ample parking for those with cars and a regular bus run to the fly-in for those with out. Make out a check to the University of Wisconsin-Oshkosh if you would like to be a part of the group. A one day deposity ($9.00 or $14.00) is all that is required plus name, address, etc. This is refundable if requested in writing by July 15, 1981. Mail your check to me and I will send it along with the others. The Oct. 15th deadline is going to be extended to Oct. 19th to allow week-end mail to be received. Any reservations received after that date will be forwarded immediately to the University with a request that they be added to the KR group. See you at Oshkosh 81!

KR FLY-IN

While we're on the subject....Bill "Reverend Billy" DeFreze has come up with a perfect location for a KR fly-in for next year. It is a large private airport in north central California and the whole airport would be turned over to the KR group. Tentative plans are to have an early fall week-end as the dates but we want to hear from you before we finalize anything. The fly-in is planned as a West Coast event but naturally KRs and KR builders from all over the country are invited.

Drop "Reverend Billy" a note if you're interested in attending or if you just have some ideas on the subject. This will be <u>your</u> fly-in so we want to hear from you. Write to Bill DeFreze, 7530 Ironwood Dr., Dublin, CA 94566 or phone (415)828-2111.

PROPELLER NOTES FROM R/R...A problem discovered by R/R is that prop owners were not sure which was the front half of the two piece huband some were not installed properly. Here is how to check yours...There are two punch marks on the edge of the prop hub, one each side. Make sure these marks are adjacent each other. Now...There is a production number scribed on the forward and aft face of the prop hub. This number will be to the bolt hole thru the top blade when the punch marks are at the lowest point. The number willbe on the right side of the hole on the aft face. An "out of track" condition may exist if your prop is not installed correctly.



I was talking with Rex Taylor the other day about some of the new parts and accessories H.A.P.I. has available. You guys having trouble with the Posa carb will be pleased to know H.A.P.I. is now selling a Bendix Zenith float type carb made especially to H.A.P.I. specs. Along with this they have gascolators and other fuel system parts. Eventually H.A.P.I. expects to handle everything ahead of the firewall so if at all interested in flying behind a VW engine, stay tuned to H.A.P.I.

Rex also had some thoughts on the fuel starvation problems experienced by some KR builders. The probable cause is a poor vent to the fuel tank. If you are having a problem and you suspect fuel flow is the culprit, could be the vent. A fuel tank vent must allow air into the tank as fast as fuel leaves it, in all flight attitudes and air speeds. The vent must <u>never</u> be positioned in such a manner that it is open to a low pressure area. Air moving over the cowling can create a low pressure zone in certain areas. These areas vary from KR to KR so it is up to each builder to make sure his fuel tank vent is adequate.

There are a couple of ways to check the airflow around and to the vent. One is our old stand-by, tuft testing in which three or four pieces of light knitting yarn (2" to 3") is taped to the area around the vent. Airflow over the surface should be smooth and the tufts of yarn will lie straight and flat. If they dance, you might have to pay the piper.

Another method, and one suggested by Rex, is to hook a vacuum gauge to a tee at the top of the sight gauge, if you're using one as most KRs are. A vacuum reading of any amount while the engine is running indicates a vent problem. Check yours out now. Could save you some embarrassment or worse later.

FLIGHT REPORT

Well, I've finallly flown my KR-1, although not as soon as I would liked to have flown it but patience paid off in that several high speed taxi runs acquainted me with the plane.

The following is a flight report and conditions existing at the time:

Time:	0930 Saturday Aug. 23, 1980
Weather:	Clear, warm, about 80F, no wind
Runway:	Paved strip, Redding Sky Ranch 2400 ft. with 50 ft. obstacles at each end (pine trees).
Engine:	2100 Revmaster
Prop:	3 blade R/R
Empty wt:	450 lbs.
Carburetor:	Used Mikuni instead of Posa which allowed idle speed of 750-800 rpm with 3000-3100 static.
Oil:	Temp 170-180 at 50 psi
T.O.:	Distance about 350 ft., no idea of speed, too busy on climbout to notice
Cruise:	Gear down 125 at 75%

After several days of high speed taxiing, a date for the initial flight was set for Friday, Aug. 22. However, because of winds, the date was moved to the next morning. The next day proved perfect for the test and after preflight I inteded to make one high speed taxi to refresh my feel of the plane's ground handling and to insure a good warm up. I rolled up to the ramp and did a quick cockpit check and proceeded to start my taxi run. Then about halfway down the strip, when the tail was up nice and high, I said to myself, "fly it or park it" and gave it full throttle. There exists a good amount of torque difference between high speed taxi power and take off power and since its to the right, is easy to misjudge, I misjudged it and almost made the 50' obstacle a 54' obstacle pine tree with a KR-1 top ornament. Therein lies the reason why I failed to notice the climbout speed.

After initial climbout, everything settled down a little and I started to get the feel of the plane. I know all of you have yet to fly your KR have heard it before but the flying capability of this design is beyond description, it is almost an extension of your own body and just as controllable.

I never did retract the landing gear and only used 75% power on the initial flight. I was just trying to learn the plane which turned out very easy indeed. I then set up a downwind and glanced at my airspeed opposite the assumed touchdown point, which read 125. Well, with that much speed I wound up too high on final and flew another pattern with downwind at 100. This put my final at about 85-90 and after I cleared the trees I chopped the throttle and was over the numbers at 70. It floated about 1/4 of the way down the strip with me holding the stick as still as possible and finally settled in a 3 point attitude with a 6 inch initial skip (according to my ground observer because I didn't feel it). Rollout went great and I turned off active with 350' of runway left.

Observations: first, do not wait to apply power halfway down a 2400' strip, not enough margin for error even with the climb rate we have available. Second, watch that right torque all you Witchita Spam Can Flyers, instinct says right foot, KR says left foot. Third, whoever says a KR needs a long runway to land on, i.e. greater than 3000' doesn't know what the KR is capable of (the late Ken Rand flew his KR-2 in and out of the same strip at our local EAA Chapter's Oktoberfest giving demo rides). Fourth, get some tail dragger time in a Champ, Luscomb, or T-Craft or similar, I learned in a T-Craft and only once before have I flown anything else (a 140 Cherokee). Fifth, and I hesitate to make this statement because I do not want someone to try to fly their KR without sufficiant experience, but I will include it only to set aside fears some of you low time pilots have of your ability to fly a KR. At the time of my flight, I had less that 50 hrs total flying experience, including instruction time. But please be sure of your familiarity with your KR and get some taildragger time, it ain't that hard. Finally, and KR owner's flyers who attend the Redding Chapters EAA Oktoberfest have a place to stay at my home or I'll provide any and all transportation to any hotel in town if you prefer. This invitation remains open at all times, just drop me a line or call. Incidentally, there are three other strips here in town, all longer than the Sky Ranch if 2400' makes you nervous.....Maynard Gary Brower, P.O. Box 15, Whitmore, CA 96096 or phone (916)472-3757.

QUESTIONS & ANSWERS

Q. What type of instrument would best be used to measure dimensions such as 20.12" or .87"?

A. Use a standard inch rule or tape measure and convert the decimal measurements to the nearest large fraction, i.e. 20.12 would be 20 1/8", .87 would be 7/8".

Q. Where does one get an 8 ft. sanding block to sand the wings as per plans?

A. There are several ways of making a long sanding block, here are some of the ways other builders have used. Use two pieces of 1"x 3" (straight naturally), glue & screw to form a long "T". Glue sandpaper to the flat side and sand away. Another method is to use the rails from a suspended ceiling, there are light, straight, & cheap. The one drawback is that they are fairly narrow. The last method I've heard about is to use a piece of 1" PVC pipe with a strip of 1" non-slip tape (as found in 12' rolls for the bottom of tubs and showers). All reportedly work well.

Q. Is there anyone in the KR fraternity who would be willing to spare some time in his KR-2 with a person like myself (low time pilot) in order to help insure the investment made in building or buying a KR does not disappear on the first flight attempt? Even if the KR-2 flight experience only lasts 10 minutes the experience gained could quite possibly mean the difference between a successful first flight and a tragic ending.

A. There is not a formal program to train KR pilots but there are at least two guys who have made themselves available to someone needing KR flight experience. Brad Hummel, 15872 Puritan Cir., Huntington Beach, CA 92647 is one. Brad does not have his own KR-2 finished at this time but has made several KR-2 first flights and has demonstrated flight techniques in KRs that have received their final inspection. Dan Diehl is the other KR-2 builder/pilot and has given an uncounted number of familiarization rides to KR builders ready to make their first flight. Dan's address is 4132 E. 72nd, Tulsa, OK 74136 phone 918-492-5111. These guys work for a living and are not rich so arrange some compensation for their time and expenses. Whatever the costs, it is cheaper than a big repair bill or a totaled aircraft.

Q. Can an outboard motor (2 cycle) be used on a KR-1 or -2? How large?

A. Outboard engines are fine engines....on boats. I'm not sure how well one could be converted to KR use. Size would be more of a weight factor than horsepower. 160 to 190 lbs is what the aircraft is designed for.

Q. Did R/R incorporate the corrected dimensions, as they were observed and reported in the KR Newsletter, into subsequent plans?

A. Most of the errors in the original plans have been corrected, not all however. Check your plans against the Newsletter to be sure.

Q. Is it OK to undercut the wing ribs about 1" and then lay in one large, continous piece of foam? This would eleminate the often found "washboard" effect found on some KRs.

A. Several builders reccommend this method. I haven't tried it yet but fully intend to.

Q. The plans call for 6061-T5 for hinge and control arm material. Can 6061-T6 be substituted?

A. Yes.

Q. The dimension given for the tip of the rudder spar is 3/8" yet the cap is given as 5/8". Which is correct?

A. 3/8" is correct, however, you may want to use a larger size cap to allow for the rudder taper.

There have been many and various cost increases suffered by all of us. I am sorry to report one more is in the offing. Subscription rates to the KR Newsletter will be raised as of 11/1/80 to the following: $12.00 per year in the U.S., $15.00 (U.S.) per year in Canada, $20.00 (U.S.) per year for overseas air mail. The annual dues to the KR Club will remain $3.00 per year. I am sorry to increase the Newsletter rates to people I know are already feeling the effects of runaway inflation. Unfortunately, the KR Newsletter is a victim too, with costs more than doubling in the last two years.

Many of you cherish the Newsletters and have let me know of your appreciation thru your letters. I will continue to offer whatever assistance I can to all KR builders, thru the Newsletter, by telephone and in person. Future KR Newsletters will continue to seek tips and techniques from the people who know KR aircraft best of all....you the builder and the pilot. I will continute to answer any questions regarding KRs as long as there are questions to be asked.

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FOR SALE....KR-2 almost complete. Need canopy repair (damaged in storage) & minor glass work repair. Includes new canopy, 1834cc VW engine w/Monnett conversion accessories, Posa carb & Warkne ground adj. prop...$3000.00. Jim Wilson Rte. 5 Box 515, Mucatine, IA 52761 (316)263-5180 no collect calls please.

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FOR SALE....R/R 3 Blade prop & spinner. $200.00 or best offer. contact "Captain Jack" at (714) 898-3811 days or 894-4908 after 5 pm. No collect calls please.

FOR SALE...KR-2 complete Rand kit with all optional fiberglass pieces. Woodwork is 80% complete...$1500.00. Phone (414)227-0357 Griffin, GA.

FOR SALE....1835VW. Magneto, Posa carb, Revmaster starter, alternator, access. case, R/R Lyc-type engine mount, extras $2000.00. Also a JLO snowmobile engine model 2F-400-1 for $300.00. C.J. Soboleski, P.O. Box 238, Riverton, VA 22651 (703)636-2250 no collect calls please.

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HEY GUYS!

Do you buy parts & supplies from a business that the rest of the KR builders might benefit knowing about? Would it benefit that business to have the thousands of KR builders as potential customers?
Of course it would!
Talk to the owner or manager about taking out an ad in the Newsletter. Results are guaranteed. The business benefits, the builders benefit & you will get a free three month extension on your Newsletter subscription for every paid ad you send in! One year for full page ads! Advertising rates are listed in the Buy*Sell*Trade section.

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Ernest Koppe
6141 Choctaw Dr.
Westminster, CA 92683

TRI-GEAR PLANS...Retractable system that uses Rand's parts, wheels, gear legs and spring bar. Conversion plans..$25.00. Bill DeFreze, 7530 Ironwood Dr., Dublin, CA 94566 phone (415)828-2111.

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KR NEWSLETTER

RATES
USA $12.00 Yr
CANADA $15.00 Yr U.S.
OVERSEAS $20.00 Yr Funds

A basis for ideas and food for thought only. Use of any of the idea material is at the user's discretion. Not affliated with Rand/Robinson Engineering Inc.

There are as many opinions on how to fly a KR-1 or -2 as there are pilots! This sage observation was prompted by the several and varied flight reports sent to me by KR pilots after the first flight or two in their KRs. All of the information contained in the flight reports are important to the builders that haven't yet made that memorable first leap into skies in their KR. With that thought in mind I felt it important to print all the flight reports so each potential KR pilot could learn from them. This issue of the KR Newsletter will contain as many flight reports as I can squeeze in... enjoy.

From Joe Gilewski, 43 Davenport Ave., Roseland, NJ 07068....."Enclosed you will find several photos of my KR-2 which I had showed you in Oshkosh recently and I'd like to inform you and the Newsletter readers that I flew for the first time on Aug. 16..last Saturday and on the following day made two more flights. The airplane is a beautiful flying machine, as sensitive as a nervous redhead and it really loves to fly. Im so elated that my feet aren't even touching the ground. After almost five years of diligent work, the expenditure of an absurd amount of money and persistence when things looked grim....was all worth it. It wasn't really necessary to have the kind of instrument panel I have but I had to do it. You will see a gyro horizon, directional gyro, turn and bank transponder, 720 channel navcom, ADF marker beacon and provision for more. Not yet installed is a Narco Nav 122 (glide slope, etc) and I have a Com 120 in mind. You see, I almost killed myself one day in Nov. 1963 at 1 a.m. over Ohio because I accidentally flew into a cloud without a gyro panel. It made a mark on me. The airplane was moved to the airport on July 4, 1980, the airworthiness certificate was issued on July 30..then I went to Oshkosh and next was able to work on the plane on Aug. 9, when I installed the oil seal that Dan Diehl and Bill Elliot suggested to stop the prop leak and added seals to the bypass plate on top of the engine to stop oil leaks. I had spent several hours in taxi tests and as a result beefed up my compression springs on the tailwheel and made numerous minor changes. The RPM on taxi was never allowed to exceed 2000, and the tail never came up. On Aug 16, I was at the airport at daybreak and so were my good friends to help. One more taxi run at 2000 RPM confirmed that everything was OK. On the second run, it occurred to me that all these guys expected me to fly. I wondered if they knew how scared I was. I decided to make one more taxi run at 2500 RPM to see if the tail would come up. I set the throttle at 2500 RPM and the plane really started to go. In about ten seconds the tail came way up and I was looking down that runway at what seemed like more that flying speed. When I saw this picture I knew that I would be safer aloft than running along here, so I pushed the throttle all the way in and did what I thought would ease the plane up. It jumped ten feet high so fast I reacted to drop the nose and of course, dropped it too much. Then, thank God, I steadied my hand and held it at about ten feet for several more seconds to build up speed...then lifted the nose and climbed out. What a feeling! I prayed for the engine to keep running for at least one more minute to give me a good chance at least if it did quit and run it did. I climbed out to 2500' over Caldwell airport and stayed there for about 15 minutes. The engine ran smooth and steady, but the temperature seemed rather high. Cylinder head #3 at 400°, oil at 260°. I decided to come back and land then, throttled back, dropped the nose, and a minute later the temperatures dropped way down. The approach was at 80 MPH over the fence,but the plane stalled and dropped in from about five feet,causing my tail wheel to knock a dent in the bottom of my rudder. No other damage and a very happy time...many congratulations. On my subsequent flights I crossed the fence at 90 MPH and made good (?), better landings. The plane weighs 570 empty and I weigh 230 and when you add 80 pounds of gas, this is a load. Furthermore, the instruments are not calibrated and I don't think my static source in the cabin is a good one, so I must connect the one I have installed

next to the pitot tube per Bill DeFreze. The landing gear has not been retracted yet because I'm so green in this very sensitive airplane that I dare not put my head down yet for fear I'll be upside down when I lift it. Time for that soon. Maybe I'll hook up strings so I don't have to look down. Many thanks to you, Ernie and to designees who spent time with me and shared their experiences. I am especially grateful to the builders who wrote about their first flights because it helped me to realize that I wasn't the only klutz that could overcontrol and put me on my guard against dangerous mistake. It's a beautiful airplane and the experience of building it and flying it for the first time is a significant part of my life. I wouldn't trade if for anything. I hope to bring it to Oshkosh next year."

From Donald Moore, 12138 Hines Ct., Plymouth, MI 48170...."Just a note to tell you of the successful first flight of KR-2 N514AJ. A picture is included. You may remember the picture from Oshkosh. I would like to mention that, thanks to the efforts of Dan Diehl and his father, I was able to get a ride with Dan in his KR-2 the first Sunday of Oshkosh. These are fine people and willing to assist in any way. Although I do not have any performance figures to report at this time, everything seems similar to other KR-2s of my weight. Empty weight is 572 lbs, power 1834cc with full electric, which I built. Prop is a Hegy 52 x 45, Posa carb with carb heat. No flaps and a few very minor modifications from Rand plans. Prior to my KR my experience is, private pilot with less than 200 hrs since 1963. All my experience is with tricycle gear Cessnas. Naturally I was concerned about flying N514AJ. The first thing I did was take five hrs tailcragger instruction in a Citabria from a qualified instructor. This got me the basics for taildragging but did not prepare me for the quickness of my KR-2. Next I tethered the tail as suggested in the KR Newsletter and flew the tail for pitch feel. When I started high speed taxis, pitch did not bother me, but did I sweat trying to keep it straight. On the fourth attempt I lost control and the wing tip hit a runway light. Two weeks later after encouragement from my wife I was back on the runway. After about 20 more high speed runs I felt better about ground control. My problem with the high speed taxis was after reducing power I was not prepared for the loss of solid rudder control and not quick enough recognizing the airplanes intentions. Next was to overcome the concern of landing the first time on a 2600 ft. runway. Thus the trip to Oshkosh and the familarization ride with Dan Diehl. I came back and flew my KR on Aug. 16, 1980. I had a written procedure to follow prior to attempting a first landing. All went as written and the landing was the best I've made. Currently I have seven hrs on N514AJ. Only problem was a collapsed tube on my oil cooler hose attachment which caused an excessive oil leak before I could land. The cause was over torqueing the hose clamp. Be careful on clamp loading aluminum tubing. In summary, I can say the cost of 5 hrs dual instruction and a trip to Oshkosh (I hadn't planned to attend this year), a summer's practice was money and time well spent. Please keep up the good work and keep urging people to take each step slow and fight the urge to rush the first flight. Thanks again for your hard work and dedication."

From Ed Nelson, Box 858, Pinehurst, ID 83850...."My KR-2 was test flown by me on May 13, 1980 and then by a million plus mile pilot and good friend of mine. I'm a very low time pilot with all of my time in tricycle gear 150 and 172. I sold myself the idea of teaching myself to handle my KR as any taildragger which I could rent would be a high wing and slow. So after about three hours of high speed taxi runs, I took it for a ride and it went beautifully. The controls are quick but very easy to handle. This great little plane does flat go where you point the stick and it doesn't take all day to do it. It's a dream come true for me and Ernie, you shared in it with me with help through the Newsletter. I can't even think of much of anything else to carry on a conversation about except my KR and to add to that, our local newspaper covered almost half the front page with a great picture and article. I have some performance figures for you, however some are not perfect, as I intended to get everything down in black and white for you on my next flight but we are now covered with volcanic ash and I don't know when I'll be able to take it up again. To date, I have about three hours of flight and five landings. I made a few changes in the plans which are a lot of the reasons for my 615 pounds empty weight. I sandwiched all of the foam between the spars so I wouldn't lose my airfoil (Ken Rand's flattened out a lot), change the tail wheel to Wag-Aeros 4" and a drop leaf spring which raised the tail about 8" and didn't hurt the handling at all, installed

the positive locking gear pins as in Issue #19, wing tanks and hand operated wobble pump, King 720 channel nav-com, and a Continental A-75 engine. I also installed flaps which make a tremendous difference on landing. Also in reference to Carl Noltze's 20-20 hindsight, I believe he's 100% correct to say that when your KR and you are ready for that first flight, don't try to take it up and set it down again in the middle of the runway. Do take it up, get the feel of it and make a few approaches, then land it on the end of the runway where you have the entire distance to work with it. Here are a few of the figures: Empty weight...615 with oil and battery, Engine...Continental A-75 with Posa carb, Prop...St. Croix 56 x 68, Cruise...150, Top...165-has been let down over 200 but have established a 200 red line, Stalls...45 approximate, and very stable. I will get back to you when I get more figures."

From Ernest Stumpf, 31801 Pudding Creek Rd., Ft. Bragg, CA 95437..."I finally have my KR-2 flying after five years of building. I have about 12 hours on it at the present time. I'm a low-time pilot, about 160 hours with about 120 of that in a VP-1. The KR flys great, it is responsive but as easy to fly in the air as a Piper Cub. The only problem I have is in landing. I use up about 3000' of runway on every landing. Landing pattern about 80 MPH, over the numbers at about 75, practically no float but once the wheels touch it seems to roll forever. Brakes are lousy and I'm afraid to use them until she slows to a walk."

I realize the next letter isn't exactly a flight report but it is from our resident KR-1 race pilot and is a first hand report on flying a KR in the "Oshkosh 500".

A ROOKIES'S IMPRESSIONS OF THE "OSHKOSH 500" AIRPLANE RACE

It was a thrill for me just to think about flying in an air race with a group of legendary pilots and their supersharp airplanes. I had never raced in anything, much less an air race. Yet here I was in a homebuilt airplane "running the race" with guys like Steve Wittman.

Steve is a tall, slender, ramrod straight man who is 78 years young. He is as spry and energetic as people half his age. "Bonzo" was the name of his plane, a tiny, yellow Formula 1 racer. Steve has designed several planes, one of which was on display at the EAA Convention, a long sleek and slender racing plane of a very advanced design...for the '30s. And here is this same guy in an over powered hotrod of an airplane racing against me. If I felt a bit in awe, it's understandable. Steve Wittman helped start EAA. The airport at Oshkosh is named after him. He is literally world famous. But he wasn't the only celebrity.

There was Chuck Campbell with a five man (and woman) support team. He is a professional pilot with a winning record and he had the right machine. He was flying another Formula 1 racer, polished to a high sheen with a racing prop that looked like a polished sword.

Chuck's airplane arrived in an enclosed trailer which was bigger than my motor home. He and his crew were tinkering and tuning until the last minute to get the last bit of performance out of the plane. Chuck went on to set two new world records in the C-1-a class (under 1100 pounds gross), the 100 kilometer and the 500 kilometer distances. However, he burned too much fuel to qualify for the Oshkosh 500 prize money.

Then there was Jerry Coughlin, last year's winner, in a blue streak of a Cassut racer that was polished to a mirror brightness. Jerry is not very tall and can't weigh more than 150 pounds. Which is apparently the best size and weight for Formula 1 race pilots, Chuck Campbell was about the same size. Jerry goes around winning races and making friends, a cheerful, likeable, ordinary guy.

There was also Ralph Wise from Agoura, Calif. in a yellow Owl racer that had been tweeked up to maximum efficiency. Ralph helped me to install my wings and we became good friends in the few days we were together. Ralph may have had the fastest racer in the bunch. It was named the Wise Owl.

And there was Dick Rutan of the RAF (Rutan Air Force). He brought along a co-pilot to help him fly the Long Eze. She and his airplane were both beautiful. Dick is a retired Air Force fighter pilot who presently holds a world's record for distance and endurance. He flew the Long Eze almost 5,000 miles nonstop in 33 hours and 33 minutes. Besides being Burt Rutan's brother, he is world famous in his own right.

George Mead was there in his Adventure ship, an original design that looks neat and goes very fast. Unfortunately, his engine swallowed a valve after a lap or two and George was lucky to land without bending anything. He flew one lap at 177.39 mph, which was right up there with the Formula 1 racers.

There were 17 pilots in all, in various and sundry souped up planes including several VariEzes. There was only one plane I figured to beat...a KR-2 from Missoula, Montana piloted by Roger Phillips.

Finally Monday arrived, race day and after I had got myself all psyched up for the race, it was scrubbed on account of thunderstorms. But Tuesday dawned bright and clear and the race was on.

We finally got all the airplanes reweighed and the pilots weighed (to insure that none of them gained any illegal weight during the race) and the airplanes were pushed to the starting line, runway 27 at Fond du Lac Airport.

I was in a sweat, worrying about whether my plane would start. I was worried about cutting the string (a five foot high barrier 1,200 feet from takeoff position). I was worried about my starting position...dead last, so I was a bit nervous...this being my first race and all.

The planes ahead of me all seemed to jump into the sky and streaked for Oshkosh on the first leg, that is all except one VariEze which came back in to land...so as to latch his canopy.

Joe Horvath of Revmaster Aviation was standing by to help me with a jump start, just in case but the engine started right up. I pulled up the the starting line and got a wave off before I was all set, however, I did remember to latch the canopy. I used 40 inches of manifold pressure at 3500 RPM for takeoff and sailed over the barrier with room to spare.

Maybe combat was more exciting during World War II, but not for a long while have I been so hyped up as I was at the start of this race. I went roaring away towards Oshkosh on the first leg of a long ordeal but it was FUN!!

Things seemed good, the engine was smooth at 33 inches, so I decided to fly the race at that setting so as to get some benefit from my turbocharger. At 2900 RPM, I was indicating 170-180 mph. When I passed the pylon at Oshkosh and headed south, I dived to a speed of almost 220 mph. What a supercharged thrill to actually be at Oshkosh in a race with Steve Wittman in my own creation. I was overwhelmed...and somewhere along there on the five minute leg back to Fond du Lac, my brain shorted out.

I began thinking I could do some good in the race when I passed the KR-2 and a VariEze in the first ten minutes. I would have to cut the pylons close and play the wind for all it was worth. That is when I clean forgot about the second pylon on the south side of Fond du Lac Airport.

I went roaring around the west pylon at about 200 mph and did a 4-G turn and headed for Sheboygan. There was only one problem. I should have also gone around the south pylon. It wasn't until the last lap, almost three hours later that I remembered the south pylon. So I was disqualified.

But I didn't run the race for nothing. I had the greatest time buzzing the pylons and skimming over the cornfields to stay down out of the wind. On the last leg from New Holstein to Fond du Lac, the wind was head on about 20-25 knots. The last half of that leg was over Lake Winnebago and I had great fun flattening out about 50 feet above the white caps. It was the only smooth part of the flight.

The low level turbulence was terrible. I bounced around like a kernel of corn in a popcorn popper. Once I bounced my head against the canopy so hard, I thought I had cracked either my head or the canopy. And, it was hot! When I weighed in after the flight, I had lost almost three pounds.

But I ran the race, in my homemade plane and figured it wasn't too bad a performance for a country boy from Orange County, Calif trying to make it into the big time racing game. And I didn't break my plane. Of 17 planes which started, four failed to fly the distance. Ralph Wise lost about half of one prop blade. By doing everything exactly right from that point on, Ralph saved the Wise Owl to race again. First he zoomed the airplane almost straight up and stopped the prop. Then he glided down at a slow airspeed to keep the prop from windmilling. He landed on a narrow country road and had to cross a bridge which cleared his wingtips with only inches to spare. He rolled to a

stop in a farmer's yard just as the farmer was coming out the front door with a beer in his hand. Without a word, he handed the beer to a grateful Ralph Wise.

George Mead blew his engine and the KR-2 lost a prop spinner and had to drop out. However, there were no injuries or serious damage to any of the race planes.

In trying to reach the finish line a bit sooner, I landed on the north-south runway with a direct cross wind. I had a tough time getting my KR-1 to stay on the ground but I finally made it to the finish line and cut the engine. This ended three hours and one minute of high adventure for which I had worked two years and traveled 2,000 miles. It was worth it.

I learned some lessons which I think I can put to use next year. I need to do more testing to figure out the most efficient power settings. I flew the race at about 75% power. I know now that I can make some modifications which cut down on drag. And I need to lose some weight. Who knows, maybe I can give those pros a run for their money next year....now that I am no longer a virgin.....Jim Evans, 16956 Edgewater Lane, Huntington Beach, CA 92647

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"I am writing in regards to the estate of our deceased President of EAA Chapter 534, Cliff Swigart. I am the designee for this chapter & have been asked to help find a buyer for his KR-2 airplane. The plane was built from kits purchased from R/R and the workmanship is excellent. The plane is approx. 90% complete. He has the Revmaster R-2100 D engine & controllable prop assy. If you could help us find a buyer for his widow we would greatly appreciate it. If you have any questions regarding this you may contact me anytime at (904)357-8355 or write to me, Cecil Pentecost, P.O. Box 92, Eustis, FL 32726. Thank you very much."

FOR SALE..unused KR-2 plans pkg. Marital problems forces sale..$50.00 postage paid. W. Warren, 1844 Park Ave, San Jose, CA 95126 (408)288-8515/(408)289-3016 no collect please.

FOR SALE..KR-2 80% complete, includes Revmaster 2100D, R/R 3 blade prop, most material to finish. Inspection complete up to now..$5500.00. Ted Nelson, (916) 873-0587.

FOR SALE..KR-1 project 2/3 complete, 36 hp VW, all instruments except altimeter and tack. Needs cowling and wings foamed. Built per plans..$1700.00. Fred Hosier, 423 Soule Ave, Pleasant Hill, CA 94523 (415)934-5040 (parent's phone)

FOR SALE..KR-2 project 85% complete, all controls, landing gear etc..$1700.00 Revmaster Engine, 2100cc dual ignition, turbo charged, Maloof prop..$3000.00. In Southern Calif (805)524-1676.

FOR SALE..KR-1 2 hrs TT, 1600cc Custom Aircraft engine, Genave alpha 200, Joyce headset, pretty blue & white color. Minor damage to landing gear and prop when gear collapsed on landing. Give away price.. $3400.00 (404)482-1827.

FOR SALE..KR-1 N747DP VW 2100cc 100 hrs. wing tanks, heater, 100 ch radio, alt., battery, one hand gear operation. Great shape, flies beautifully. Don Pearsall, 2039 S. Cherry St., Cornelius, OR 97113 (503)640-3398 $4100.00 or best offer.

ANOTHER KR CONVERT FOR "REVEREND BILLY".....With my busy schedule, it is not very often that I take the time to write letters but in this case I feel compelled to do so. I'm totally amazed at the energy, help, encouragement and support of the KR designee in my area/ Over the last year since I started building my craft I have run into problems, or had questions regarding the plans, or where to get material, how something worked, etc. etc. When he came to my house to look at my plane, there were some problems with my hinges. The next night I was at his house, taking his time, helping me correct these problems. What motivates him? I speak of "Reverend Billy" DeFreze.. If all the KR designees are as good, generous, and knowledgeable than they are truly a special breed of cat. I hope you print this Ernest, because I think you can't thank the KR designees enough for their (especially Bill) consistant input of time, money, knowledge to the KR and the homebuilt movement. Rick Todd, 462 Lassen Dr., Martinez, CA 94553.

* *

The Newsletter has received several letters in which one designee or another was mentioned because of their willingness to help but Rick's letter is the first written entirely for that purpose. It is fitting that it should have been prompted by the actions of Bill DeFreze, the whole KR Designee idea originated with him.

Should you reach a stalemate in the construction of your KR, call on one of the Designees. They are as near as your phone and willing to help.

Bill DeFreze
7530 Ironwood Dr.
Dublin, CA 94566
(415)828-2111

Ray Ellis
2416 E. Douglas
Des Moines, IA 50317
(515)265-3007

Jere Rosser
2305 Wilderness Way
Marietta, GA 30066
(404)977-0843

Dan Diehl
4132 E. 72nd Street
Tulsa, OK 74136
(918)492-5111

Ernest Koppe
6141 Choctaw Drive
Westminster, CA 92683
(714)897-2677

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
ISSUE #65 NOV. 1980

Issue no. 66
December
1980

KR NEWSLETTER

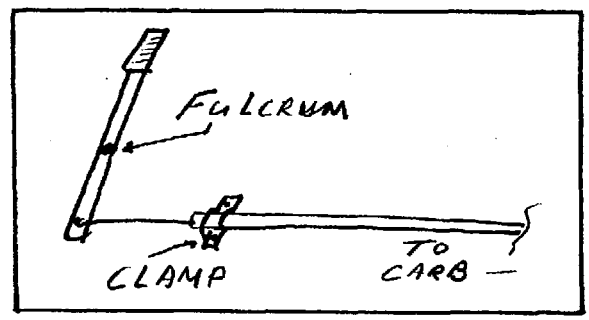
RATES
USA $12.00 Yr
CANADA $15.00 Yr U.S.
OVERSEAS $20.00 Yr Funds

A basis for ideas and food for thought only. Use of any of the idea material is at the user's discretion. Not affliated with Rand/Robinson Engineering Inc.

Judging from the mail and phone calls, the last Newsletter was one of the more popular issues. I guess everyone likes to read flight reports. This month the Newsletter is going to deal with another aspect of flying our KRs, one with a somewhat less successful outcome.

Accident reports aren't as much fun to read but they are every bit as important. Hang on group, here we go.....

From Wayne James...."Sub title: "Hain't all fun". Whils't conducting high speed taxi trials preportory to leaving the ground in the week of last, faulty engineering raised its morbid head. I had raced down the runway, tail erect. Everything was fine. Power back, tail returned to ground. Suddenly the craft (KR-2) began to veer to the left. Opposite rudder had no effect. Went into a skid which the right landing gear bolts took exception to by declaring an illegal strike. After the dust had settled, the tailwheel axle bolt, undamaged but minus nut, was found near the wreckage. Part of the mount bracket was found where control was lost. No tailwheel to be found. Conclusion: tailwheel axle bolt came undone allowing tailwheel to go its own way. Reason: inadequate locking of bolt. R/R lock washer was used. For my throttle linkage, I used a throttle cable from a Cockshutt 137 SP combine. This is a heavier cable than that available from a high performance shop (choke cable). After the return spring for the Posa carb was replaced, it worked beautifully. Spring appeared to reduce binding of slide. Mechanism: control is a lever which is placed along left side of fuselage. A special thanks to you, Ernest, for the Newsletter and to all who contribute to it. A great supplement to the original plans."



From Jim Evans, 16956 Edgewater Ln., Huntington Beach, CA 92649....."I feel it is appropriate to warn KR builders about rudder pedal hinges. I used aluminum piano hinge on my KR-1 and suspended the pedals from the shelf behind the fire wall. I have big feet and a tendency to over control on landing. On Sunday, May 25, 1980, I kicked right rudder to stop a swerve to the left and the rudder pedal hinge came apart. With no rudder control, I rolled off the runway at Chino and nosed up in soft dirt. The damage was limited to one bent prop blade, some crumpled skin on the engine cowl and the top of the wing roots where the spring bar fashioned two new inspection holes. I remounted the pedal hinge (steel) on the floor. I think this is a better location anyway since it allows for inspection at the hinge during preflight. The carburetor was plugged with dirt, and I was afraid that I had ingested some into the intake manifold. However, I disassembled the turbo and found no damage. As the aircraft left the runway at about a 45° angle, it impacted a soft dirt berm about 8 to 12 inches high. The right wheel rolled over the berm, but the left wheel dug in and the strut collapsed. This sounds serious but the only damage was to the four nuts which stripped off the bolts attaching the strut to the spring bar. It also bent the bolts holding the down latches to the down latch bracket. Outside of some body and fender work, the damage was surprisingly minor. We recovered the aircraft by putting a dolly under the left wing attach fittings and pulling it back to the hangar behind a pickup truck. I balanced the plane on the right gear and the dolly by holding up the prop. We got it back with no additional damage. I owe many thanks to the airport crew at Chino for helping me."

From Kenny Ranta, 11030 Jones St., Omaha, NE 68154..."This is not the kind of letter I want to write but it is necessary. Accident report on N49849....On 6-17-80 I took off from Millard airport on a routine flight which turned into a disaster. After about five minutes flying time I lost power at 1300 ft. AGL. Tried several restarts but no luck. Picked out a corn field to land in and made a normal landing attempt with the wheels up. On the second bounce the aircraft stuck in the mud and threw me out through the canopy. I received a broken nose and facial lacerations. The aircraft sustained app. $1000 to $2000 damage. Apparent damage was to left wing tip, canopy, right wheel well came through top of wing, battery box pulled loose in rear of plane, and seat belt eye bolt straightened out. I was in the hospital for three days for observation and when I returned to retrieve the aircraft I found the locat. sheriff dept. had allowed the general public into the landing area. They had, in turn, destroyed my airplane. All that remains are some parts at this time. I estimate they did $5000 damage and totaling my airplane. I don't know who is responsible to protect downed aircraft but in OMAHA, NEB., nobody does it! The farmer claimed $500.00 crop damage also which was done by others but I was held responsible. Since then I have checked the aircraft and found that the probable cause of the engine failure is due to the needle orifice separating from the solid fuel line and sliding up the metering needle allowing a large amount of fuel to enter the carb throat through the open fuel line and flooding the engine out. This connection was brass to steel using silver solder and probably wasn't clean to start with. Thanks for the Newsletters. I hope this doesn't happen to anyone else."

From Carl West, 1208 Vine St., Girard, OH 44420...."After four and one half years, my KR-1 was signed off on July 22 and flown July 25, 1980. I had intentions of making the first flight all along. However, after reading Bill DeFreze's letter in the Newsletter, I swallowed my pride and allowed my good friend Bill Reentz to do the honors. Bill has over 400 hours on his KR-1 so is very qualified. I felt like an expectant father as Bill taxied to the end of the runway. As he slowly fed in the throttle, my little plane rapidly picked up speed and lifted off. I couldn't believe my eyes as it flew by and climbed out to about 2500'. Bill flew around for about 20 min., checking control reponse and slow flight characteristics. I was thrilled as I stood on the ground and watched. I know Bill pretty well and he could not resist the temptation to make "missed approaches". Sure enough, he brought it down the runway at 140 mph ind. (found out later it wasn't wide open). A beautiful wheel landing came next. This is where our luck ran out. As he passed me, the tail came down and I saw a puff of blue smoke. The tail wheel came apart, sending pieces flying into the air. The wheel was a 3" dolly castor as per the plans. Bill held it straight as long as he could but just when I thought he had it made, it veered into a ditch on the right side of the runway. Bill was not injured but the plane did take some damage, one prop blade, smashed lower cowl, crack in left inboard leading edge, left gear leg bolts stripped, tailwheel bracket and the oil temp bulb broken off! This was a blessing in disguise as I will explain later. The <u>very</u> first thing I did at Oshkosh was buy a tailwheel from Dan Diehl. After returning from Oshkosh, I began by repairing the lower cowling. When the temp bulb broke it saturated the cowling with hot oil. As I cut away the damaged sections, I observed brass flecks of metal where the oil had been. My worst suspicions were confirmed when I checked the oil screen in the engine. A lot more brass particles. Well, needless to say, the engine was torn down. When I originally built the engine (1700) I had failed to remove the small gear that used to drive the distributor. With nothing to hold the gear down, it began floating and chewed up the brass worm gear on the crank. I don't recall ever seeing anything at all mentioned about the removal of this gear in any of the conversion instruction manuals, newsletters and etc., so I feel it is well worth mentioning so that someone else will not make the same mistake. Luckily, the case, crank, and associated parts were not damaged. However, new rod, main and cam bearings were required. At this time, the engine is being re-assembled, and most other damage has been repaired. My turn is next and I can hardly wait. My thanks to Bill Reentz and Bill DeFreze."

From Jim Dexter, 7325 Flora, Kansas City, MO. 64131...."After reading the accident reports of the last two issues, I was prompted to share my experiences. A couple of months ago I had an engine failure resulting in a successful forced landing. Although the KR-2 is more responsive than most factory built planes, the same principles apply to handling the KR. About two minutes after take-off the engine quit. I was about 1000' AGL and beyond reach of the airport. Suspecting fuel starvation I attempted to re-start the engine (VW). After a few fruitless seconds, I turned into the wind and set up a normal glide; exactly like a routine power-off approach. I sat down in a pasture approximately 60 seconds ater take-off with no damage. The engine failure was due to the magneto coupler breaking in half. The point I'm trying to make is a forced landing in a KR is flown just like any other airplane. Also, it would be a good idea to stay proficient in forced landings, especially in any experimental aircraft."

These accident reports were sent in by the people that experienced them. Happily, except for Ken Rantas, the accidents were relatively minor. There was one other report sent in, one with a more tragic ending. A KR-2 in South Africa crashed and the test pilot (very experienced) was killed during the second flight of the recently completed aircraft. The first flight had exposed a few small problems, i.e. slightly low left wing in flight, high oil temp, insufficient climb rpm, and poor taxi due to weak springs at the tailwheel. These problems were dealt with and the following day the second flight took place. All seemed to be going well as the observers on the ground saw the pilot execute a couple of stalls about 2000' over the airport. Then a barrel roll...and then after 10-15 seconds of level flight the pilot put the aircraft into a spin to the right. Two and a half turns later the pilot apparently attempted to recover from the spin. The nose came up and the aircraft went immediately into a flat spin and continued in this manner all the way to the ground. The pilot was killed on impact.

Investigation of the wreckage found no visible malfunction of any controls. A weight and balance sheet showed a slightly forward position (approx.1½") well within limits and not enough to be considered a cause for the flat spin. Perhaps the pilot might have recovered with more altitude...perhaps not. We can't ask him.

I know other KRs have been spun without the drastic consequences of the KR-2 in Africa so I am at a loss to explain the flat spin. I do know this....any spins attempted in <u>any</u> aircraft should be done with plenty of altitude. This first spin in a new aircraft should be done with several <u>thousand</u> feet of air between you and the ground and with a parachute.

Any comments on these accidents or your own experiences are appreciated. We want to avoid accidents and the best way to do that is through knowledge of their cause.

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Vinyl patches, stick anywhere....
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Ernest Koppe
6141 Choctaw Dr.
Westminster, CA 92683

FOR SALE: Complete KR-2 spruce kit for $250.00. Has never been touched. Herbert Hostetler, 121 Lake Hill Dr. Oak Ridge, TN 37830 phone (615) 483 3954.

TRI-GEAR PLANS...Retractable system that uses Rand's parts, wheels, gear legs and spring bar. Conversion plans..$25.00. Bill DeFreze, 7530 Ironwood Dr., Dublin, CA 94566 phone (415)828-2111.

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Special this month on wing attach fittings..$100.00 per set, ½ sets available.

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FOR SALE: R/R 3 blade prop, unused.. $245.00 U.S. funds. Don Chisholm, 124 "W" Manville Rd., Scarborough, Ontario, Canada M1L 4J5. Phone 690-5369 no collect.

FOR SALE: KR-2 project, was purchased from Rand/Robinson. 50% complete, all construction was done by the R/R staff. Work to date has been signed off by FAA. Paid $2000.00 for plane Moving, must sell fast. Asking $1700.00 but no reasonable offer refused. Lee Biancur (714)963-7376.

FOR SALE: Fiberglass KR-1 cowl, forward deck, & fuel tank by Danny McCormick. Never used..$150.00 or best offer. Also aluminum welded engine mount and aluminum extrusion and mounts for the original KR-1 engine installation...D. Roth, (218) 386-2631 or (218)386-2160.

HEY GUYS!

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Order now from.....

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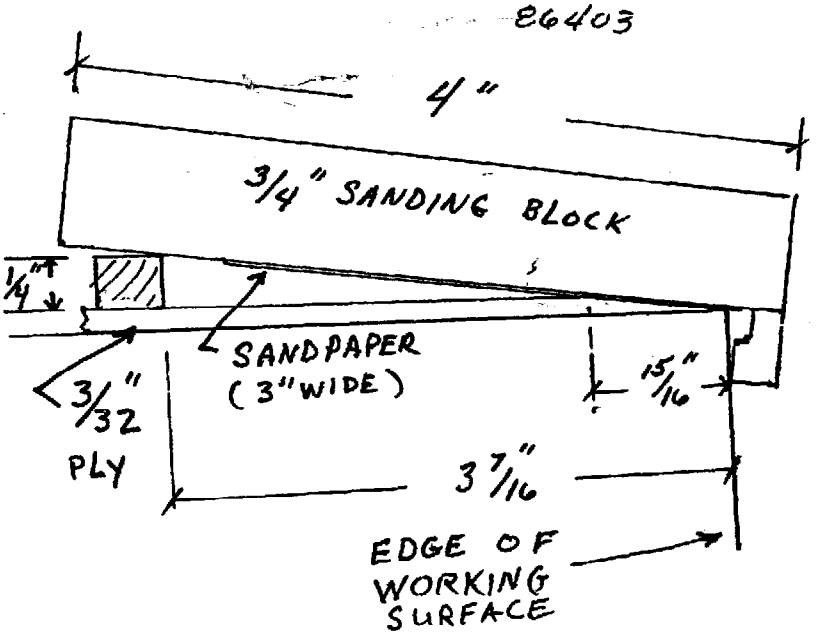
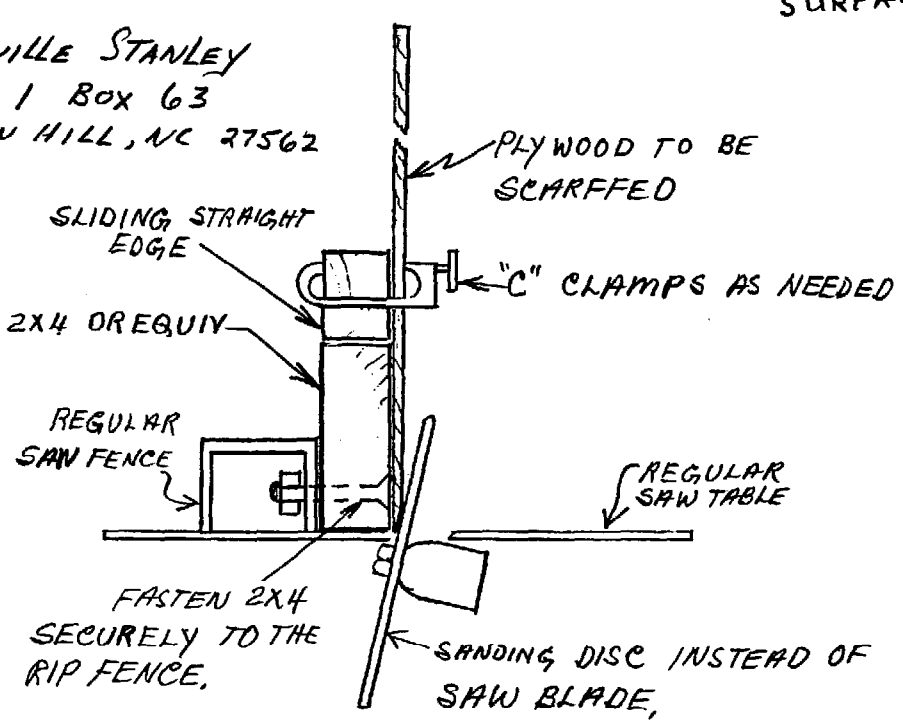
Westminster, CA 92683
phone (714)894-4875

There is a note in the KR Plans book to check the Dec. 1973 "Sport Aviation" for a scarfing device. You may not believe this, but not everyone has a 7 year old copy of E.A.A.'s fine magazine. So.... here is a couple of methods for making accurate scarfs.

FROM: GRANT FOLEY
1625 AVALON AVE.
LAKE HAVASU CITY, AZ
86403



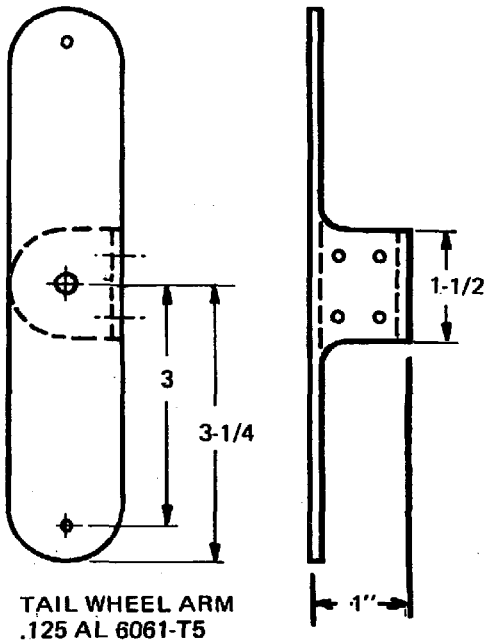
FROM: ARVILLE STANLEY
RTE 1 BOX 63
NEW HILL, NC 27562



PLANS ERRORS AND CHANGES

Most of these errors and omissions have been noted in earlier KR Newsletters. Recent questions I've received show that you guys aren't getting the information so I'm repeating a few of the more recurring problems along with a new glitch or two.

**KR-1 and -2 drawing #21, Part "B" of the aileron bellcrank should have a 1/2" radius instead of 5/8".



TAIL WHEEL ARM
.125 AL 6061-T5
3 each req'd also,
rudder & elevator
arm

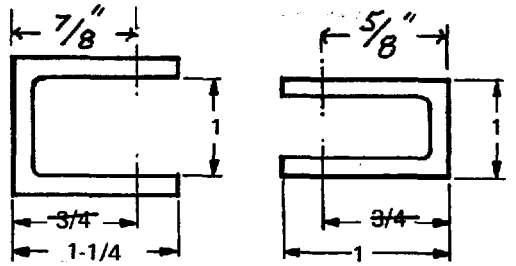
KR-2 DRAWING NO. 15

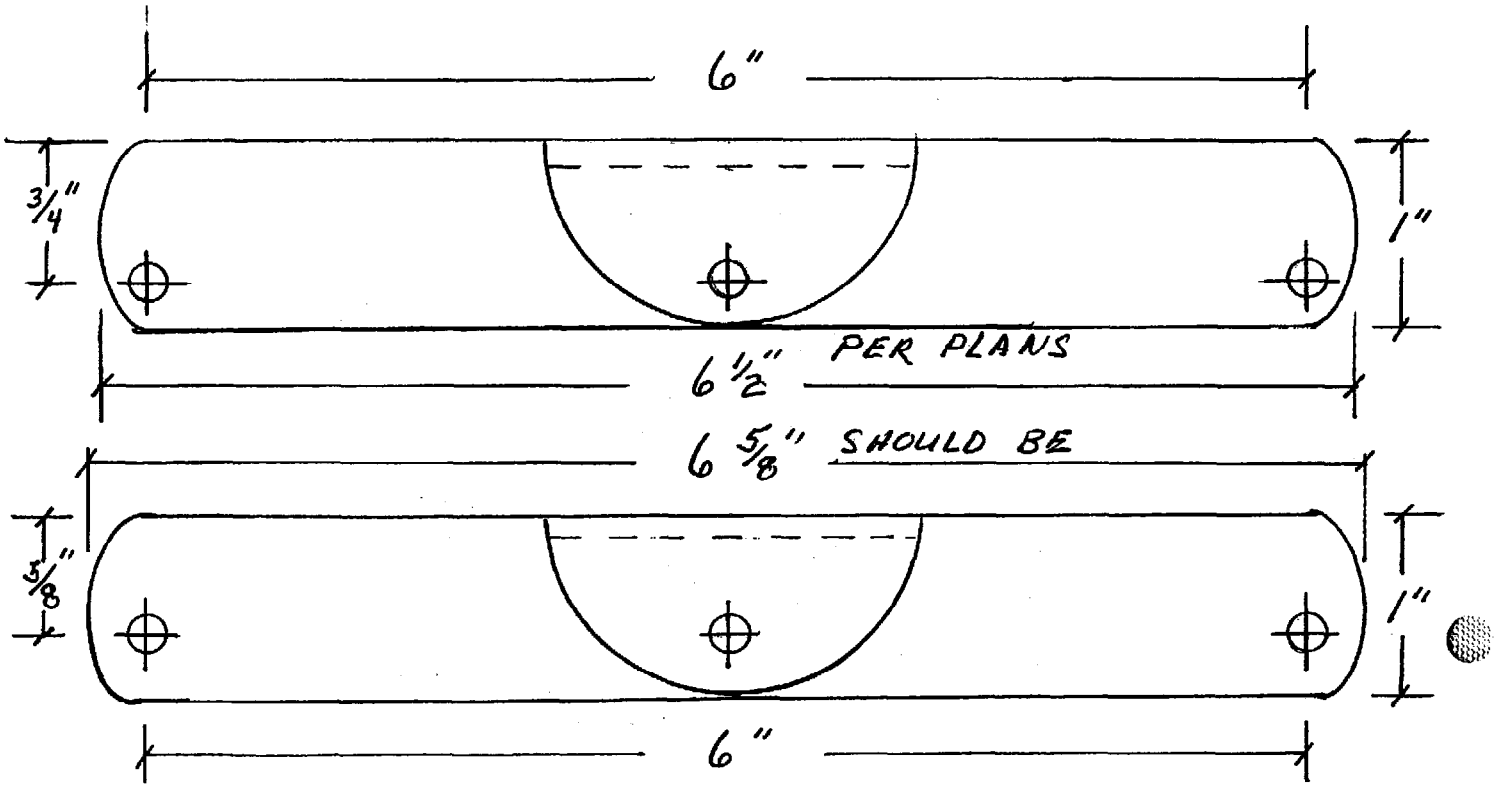
**KR-1 and -2 drawing #8 has a side view drawing of the rudder and elvator hinges showing a measurement of 3/4" to center of the hinge hole. This should be changed to 7/8" on the 1 1/4" hinge half and to 5/8" on the 1" hinge half. See drawing.

**KR-1 and -2 drawing #15 shows 2 views of the tailwheel arm, with a notation of 3 each required. The hinge hole for rudder and elevator bellcranks must be drilled in line with the other hinges, i.e. 5/8". The holes will then be "in plane". Overall length of the bellcrank should be increased to a minimum of 6 5/8". See drawing.

KR-2 DRAWING NO. 8

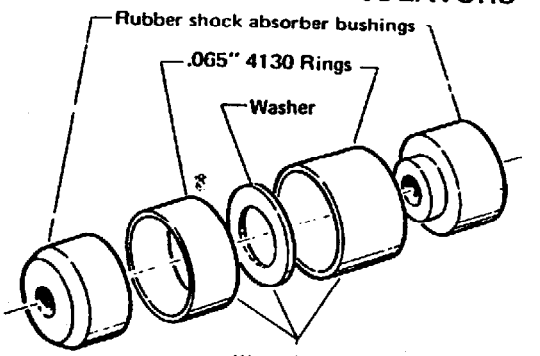
rudder &
elevator hinges
.125 6061-T5 or
equivalent



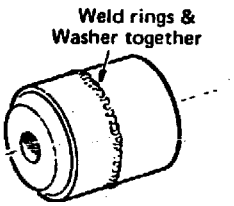


Paragraph 14.9 on page 49 of the KR-1 plans book has a note to "see drawings #13 and #14". Unless you have a KR-2 plans book you don't have these drawings. They are details of the welded type engine mount and if you bought one you don't need the drawing. But...if you want to weld your own engine mount, here are the drawings. Note, the 16" spacing of the plates is for a KR-2, this measurement is 12" for a KR-1.

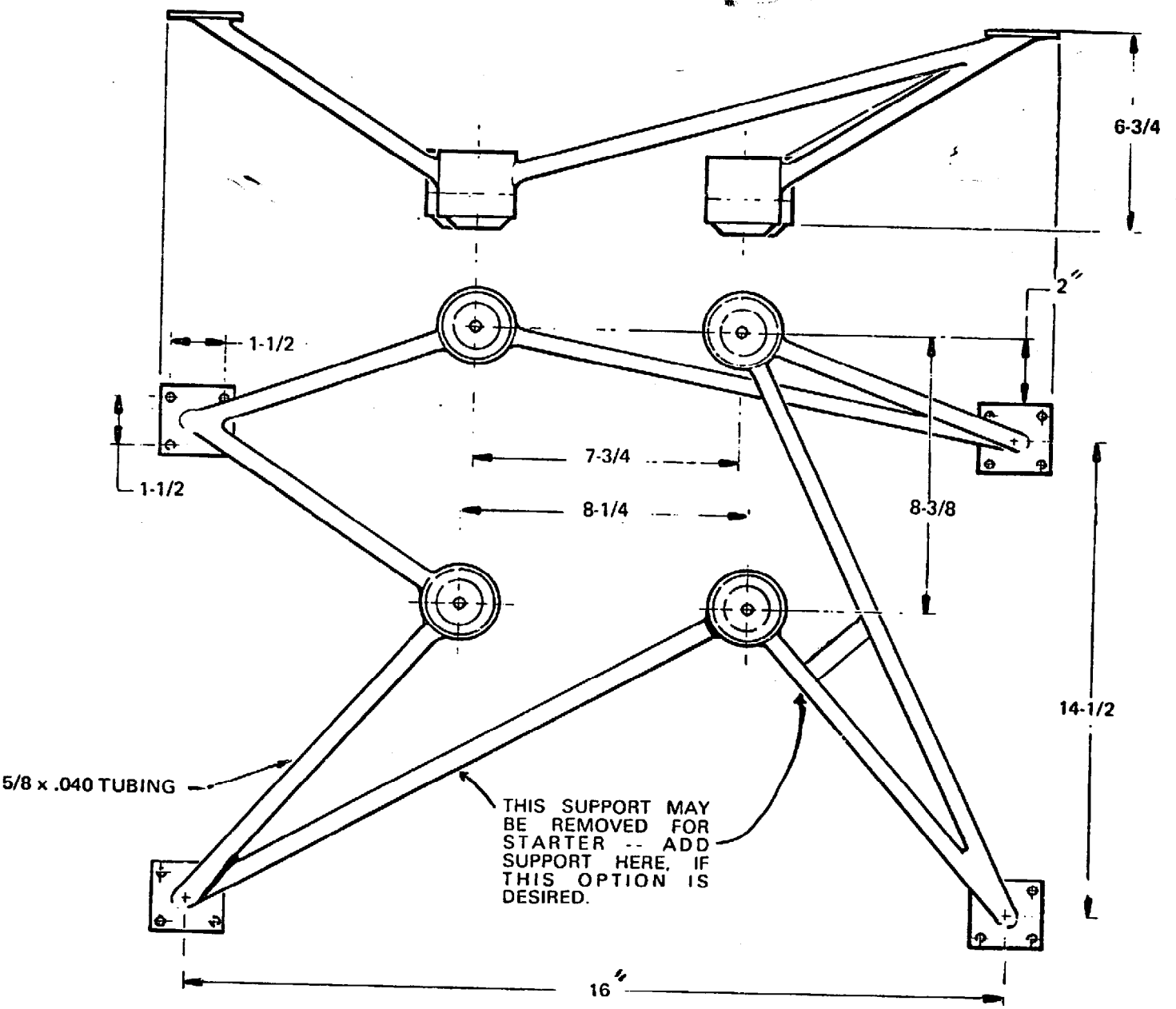
ENGINE VIBRATION ISOLATORS



TYPICAL SHOCK HOUSING BEFORE WELDING TO MOUNT (RUBBER BUSHING SHOWN)



DRAWING NO. 14



KR-2 DRAWING NO. 13
ENGINE MOUNT DETAILS

Several builders have reported an allergy to the epoxy resins we use in our composite aircraft. A recent phone conversation with a KR builder brought a new possibility into the picture.

From Carl P. Laetare, 804 Daisy St., Escondido, CA 92025...."As you requested, I will try to give a run down about our (Mr Forbing and myself) difficulty with fiberglassing or resin reaction?? I'm building a KR-2 with R/R supplies, while Mr Forbing is working on a Long-eze with Safety-Pox. And may I also say, when I describe my experiences, the same thing happened to Mr Forbing in every way. At first no protection at all was used with no problems but after repeated warning, it was decided that maybe we better take heed. Ply #9 Gel was purchased but then set aside in favor of Latex Medical gloves (Arbrook Micro-Touch brand). It was at this point the problems erupted. Twelve hours after the first wearing, overnight, I had what looked like pin-head size blisters all over my hands including the palms. And they itched like blazes. After peeling, I finally healed. It took about three weeks. The second wearing was a repeat of the above. Except that Ply-9 was applied before putting on the gloves...no help. After comparing notes and talking to others, who assured us that it was a resin reaction, we decided on one more try with only Playtex Living Gloves for protection. EUREKA, Mr Forbing and I have had no further reaction at all, after doing several lay-ups each on our birds. So, Ernest, it boils down to a reaction to either the powder in the gloves or to the gloves themselves. A doctor said this is not common nor is it extremely rare. My son (Air Force medic) had the same trouble. Rex Taylor's daughter said he was wearing the medical gloves when he had his problem (H.A.P.I. engines). She didn't think he had trouble before than. Any others, I wonder? For what it is worth, the doctor said some use Covicone cream by Abbot before putting on the gloves.

And for healing the hands, he recommended Hydrocortisone .5% ointment. Both available over the counter. As for me, the idea of putting on medical gloves makes me cringe. I'll use the Playtex, thank you just the same. Hope my experience will help someone else."

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
ISSUE #66 DEC. 1980

SEASONS GREETINGS!!

Issue no. 67
January
1981

KR NEWSLETTER

RATES
USA $12.00 Yr
CANADA $15.00 Yr U.S.
OVERSEAS $20.00 Yr Funds

A basis for ideas and food for thought only. Use of any of the idea material is at the user's discretion. Not affliated with Rand/Robinson Engineering Inc.

HAPPY NEW YEAR!!

Well its that time.....time for New Year's resolutions again. Wouldn't it be nice if we could have kept last year's and wouldn't have to make new resolutions all over again this year? Maybe if I list mine here for all to see it will help me keep them a little better this coming year. A little prod from the Newsletter readers from time to time should do the trick.

RESOLUTIONS 1981

#1. I will accomplish some work on my KR everyday this year, even if it is only a few minutes.

#2. I will make parts and pieces to the best of my ability so I will have confidence in each and every part of my KR.

#3. I will not change a part or design in my KR without knowing all the other changes necessary to accomplish the change.

#4. I will not add gussetts, parts, or pieces to my KR that will increase the design empty weight unless these items are directly related to the safe operation of the aircraft.

#5. I will have my KR inspected and examined by E.A.A. designees, F.A.A. inspectors and KR designees to insure I have not "built in" a flaw or defect in my KR.

#6. When it is time to fly my KR I will go over every inch of it personally to see that each system is working properly and that there is a comprehensive safety check list for the pilot to follow.

#7. NO ONE will fly my KR until they are familiar with every operation on the check-list.

#8. Because so many first flights have engine related problems I will not allow the aircraft to be flown unless all temperatures are normal and static run-ups are perfect.

#9. I will not fly the KR until I have been checked out by a competent pilot in a comparable aircraft.

#10. I will always deport myself and my aircraft in a manner to be a credit to KR builders, EAA and all of sport aviation.

Now that is some list of resolutions! You can see why I could use a little help in keeping them...right? Right! There is also no doubt in my mind that I've left something out. If you have any thing to add to the list (or subtract) drop me a line. The idea is to get our KRs flying and flying safely!

I want to clear up a couple of things that appeared in the last Newsletter regarding the accident reports. First off, the POSA that failed in Ken Ranta's accident had been modified by Ken to include a mixture control. The part that failed was one he had silver soldered.

Jim Dexter's forced landing was due to a broken magneto coupling. This item was on the engine when the aircraft was purchased and its origin is uncertain. It was made of a phrenolic like many other couplings now in use so be aware it can happen.

Some builders have complained about a delay in getting parts from Rand/Robinson and I thought I would take this opportunity to offer a couple of reasons....personal checks being the first. Previous R/R policy had been to ship the parts when ordered and accompanied by a personal check. At least two individuals cancelled payment on their check before R/R ever received them. One check was for a very large order and of course the shipment was sent before the check came back from the bank. Since this happened, policy at R/R has been to ship after the checks have cleared. If you're in a hurry for your parts, send a cashiers check or money order. The other problem and one R/R has no control over is back order items from their suppliers. You can't ship what you can't get.

HAPPENINGS

EL MIRAGE.....most of you have heard that the Chino Fly-in is being moved. Reasons for the move were financially motivated. Seems that almost every city, county, and state agency involved had their hands out for a cut of the gate receipts....very little left for the EAA Chapters who put the fly-in together. This year the fly-in will be held at El Mirage airport at El Mirage Dry Lake in California. This is good news to the many, many people who have tried to attend the Chino Fly-in in previous years and could not because of the haze that is so prevalent in the L.A. basin this time of year (April 25th and 26th). El Mirage is located in the California high desert about 45 miles north of Chino. The really good news is this years fly-in is being dedicated to the memory of Ken Rand and his contribution to homebuilding and sport aviation. Be there if you can, should be a great fly-in.

FIRST NATIONAL KR FLY-IN....Bill "Reverend Billy" DeFreze has done it! The date isn't set for sure but either the second or third week-end in June will be the date for the 1st National KR Fly-in. Place is Pope Valley airport, 24 miles from the Santa Rosa omni on the 55° radial, San Francisco sectional. Beautiful area for a fly-in, lots of grassy area for camping. All the arrangements have not been made and "Reverend Billy" has put out a call for volunteers to help make this 1st National KR Fly-in one to remember. If you can spare an hour or two on a week-end in June give Bill a call at (415) 828-2111. Several KR builders from close by states have promised to fly-in or bring projects so we're looking for a good size turn-out. Watch for details here in the Newsletter. See you there!!

A "Round the World" KR-2! Mark Price, 2107 204th St. SW, Alderwood Manor, WA 98036 had built a KR-2 he has named "Wanderlust". Known to the FAA as N13MP, Mark's KR-2 has 27'2" wings and a 4000+ mile range via 64 gallons of usable fuel. The flight around the world is expected to take place this spring. Stay tuned for more info as it becomes available.

QUESTIONS & ANSWERS

Q. Has anyone tried Kevlar and Thornel 300" in building their KR? If not, what do you think of the idea?
A. A very few KR builders are utilizing Kevlar in constructing their KRs but I am unfamiliar with the properties of "Thornel 300". I assume it is one of the graphite fibers. The fellows using Kevlar do report lighter weight assemblies <u>before finishing</u> but I'm unaware of any real weight saving on a completed aircraft. Possibly an entire KR, fuselage, spars, and all could be built using graphite re-inforced Kevlar, but at today's prices the cost would eliminate all but the most dedicated builder.
Q. Does the Revmaster 2100 engine have a forged or cast crankshaft? Is one as safe as the other?
A. As near as I have been able to ascertain, the Revmaster 2100 utilizes a cast crankshaft unless the forged crank is specially ordered. As for safety..I don't think the cast crank should be used in an aircraft. The failure rate of this item has led me to believe it would serve best as a boat anchor.
Q. I have heard that there are "counterfeit" aircraft bolts being circulated. How can we tell these "bogus bolts" from the real thing?
A. Unfortunately, unless you have sophisticted test equipment, it is impossible to tell the fakes from the real thing. Our only hope is to buy bolts from a reputable supplier and hope that they know the quality of the bolts they are selling.
Q. Who do I see about insurance on my KR once it is finished?
A. Contact any independent aviation insurance underwriter in your phone book. They will shop around for the best price for your aircraft and experience.
Q. Does anyone have a fixed gear modification for a KR-1 or -2? I operate from a very rough, short strip and think those little wheels will get me into trouble.
A. I have seen several KRs with fixed gear and all looked very capable of handling rough fields. What I haven't seen is a set of plans designed specifically for putting a fixed gear on a KR. Any attempts along these lines should be taken with the usual precautions but the most important thing to check out is the geometry required for a good <u>safe</u> installation. A landing gear that is strong enough to handle the terrain you want will also have to be designed with positive handling in mind.

Q. I'm installing the trim tab and the control rod end seems a little flimsy. Has any builders had a problem with this unit?
A. I don't know which type control end you have but I used a Quik-link from a R/C model kit. Never had any problem at all.
Q. Are the spruce landing gear shims glued or or just bolted on? The R/R book doesn't say.
A. Glue them on. Just bolting them in place will allow problems to develop in alignment and support.
Q. Where can I get my A/C serial numbers? I purchased my project already started.
A. The serial number on your plans book is a Rand/Robinson designated number and should appear on on any paper work you become involved with the FAA in your area. Contact the FAA, make sure all your logs and papers are in order and they will have all the information you need.
Q. Has anyone really installed Don Land's tri-gear in a KR-2 and did it work?
A. Don Land's tri-gear system for the KR-2 is strong and well thought out. The plans Don sold are not clear however and has caused some builders to give up on using his system. There are two builders that struggled thru the plans and have a good strong landing gear for their trouble but it has added <u>years</u> to the building time of their KRs.
Q. If tri-gear on a KR is so safe and desirable, why doesn't R/R come up with their own version.
A. The folks at Rand/Robinson have been through much since Ken Rand died. Without Ken's vitality to spark the progress of several ideas he left behind there has been somewhat of a lag in the "new products" department. This could have proved the demise of many companies but due to the the appeal of Ken Rand's basic designs, the KR-1 and KR-2, Rand/Robinson is still very much involved in supplying orders for these two models. The KR-3 (amphibian), long reported finished, is still waiting to begin anew flight test plans that ended with Ken's death. Hopefully, this spring should either let the KR-3 take its place along side the 1 and 2 or if flight tests don't prove out...go the way of many ideas whose time is not yet. Now to answer you question.....A R/R developed tri-gear ? You bet! Ken knew that the KR-2 would have to evolve into a tri gear to become an "everymans" aircraft and had planned to get a good cheap system on the market. These plans are being carried out at R/R today, as a KR-2 fuselage is being built around the tri-gear concept. It is to be a bolt-on system that can also be retro-fit to the 1000s of KR-2s already being constructed. It will take your encouragement for this tri-gear to become a reality. While the system does exist as a proto-type, firm orders would have to be forth coming before tooling could be set up for a large production run.

BUY ◇ SELL ◇ TRADE

WANTED...Used prop hub and Diehl Supercase for VW conversion. Also starter, magneto, etc. D. Lewis, 1856 Old Ridge, Virginia Beach, VA 23464 phone (804)467-7737.

FOR SALE...KR-2 on gear, tail feathers signed off, controls in, fuel tanks built, turtledeck foamed, spars built & ready for attachment. Includes canopy, Dynel, foam to finish, also altimeter & compass...$1200.00 firm. (415)931-7429 week-days after 1 p.m. (Calif)

WANTED...New Revmaster 2100. Please note Mfg. date & accessories with price (no premium). Call or write John H. McClain, Jr., 7175 Salineville Rd NE, Mechanicstown, OH 44651 phone (216)768-2481 after 6 p.m. Eastern.

FOR SALE...R/R 3 blade prop. New, never used..$250.00. Gera Warstler, 311 Oak Georgetown, IL 61846 phone (217)-662-8509

FOR SALE...KR-1 85% complete, HAPI engine, Warnke prop, instruements installed, wiring & controls almost complete..$4000 FIRM...Connie Lauber, 502 N. Rodehaver, Oberlin, KS 67749.

FOR SALE...Revmaster 2100 D turbo and Maloof constant speed prop. All accessories. Still in shipping containers. $4185.00 ...Tony Zeringue, (318)667-6385

Now you can get your aluminum parts precision machined. In addition to our large supply of hard to find bolts and lock nuts, we now supply ready-made aluminum hinges and bellcranks. Our 11 piece "starter set" consists of one (1) tailwheel arm, two (2) bellcranks (elevator & rudder) and two (2) corresponding hinge halves, top rudder hinge (2 pieces) and outer elevator hinges (4 pieces). Total price for all 11 pieces is $53.00. We can make these parts from your material for $35.00. Order now from..

MINATURE METRICS
7801 14th STREET
WESTMINSTER, CA 92683

*include $2.00 shipping per order
**prices subject to change due to fluctuations in material cost.

FOR SALE...one Continental 4 cyl, 4 cycle O.H.V. air-cooled engine, 32 cu.in., mfg. 2-63, rebuilt 7-71. Does not run, but could be rebuilt. And...one Chrysler Outboard Corp. 4 cyl., 4 cycle O.H.V., air cooled engine 32 cu.in. Runs fine. Both engines are rope start but could be electic, have fuel pumps, mags, oil filter, oil pumps & pans...$250 for the pair. Clyde Wetherbee, 817 Evans, Waupaca, WI 54981 phone (715)258-5191 after 5.

FOR SALE...all KR-2 kits and R/R fiberglass parts, R/R 3 blade prop, Revmaster engine mount, all KR Newsletters, DeFreze tri-gear planes... $2400. Will deliver up to 600 miles. Bill DuRee, 6461 Macleay Rd.SE, Salem, Or 97301 phone (503)399-1703 days.

FREE...one KR-2 canopy (clear). New, never used, just come pick it up. Robert Sawyer, 1140 W. Ovington, Lancaster, CA 93534 phone (805)942-5144.

WANTED...KR-2, flying or not. Rebuildable wreck, construction stage, kits, engine, parts, etc. Send details to Ted, Box 8981, Strongsville, OH 44136.

HEY GUYS!

Do you buy parts & supplies from a business that the rest of the KR builders might benefit knowing about? Would it benefit that business to have the thousands of KR builders as potential customers? Of course it would!

Talk to the owner or manager about taking out an ad in the Newsletter. Results are guaranteed. The business benefits, the builders benefit & you will get a free three month extension on your Newsletter subscription for every paid ad you send in! One year for full page ads! Advertising rates are listed in the Buy*Sell*Trade section.

KR STUFF

Embroidered KR patches for hat and jacket..$1.50 ea or 3 for $3.50.
Vinyl patches, stick anywhere....
50¢ ea or 3 for $1.00
KR belt buckles....$5.50
T-Shirts..med, large, extra large
cotton/polyester blend
$6.50 ea or 3 for $18.00

Ernest Koppe
6141 Choctaw Dr.
Westminster, CA 92683

"THE STING"

A Performance Tuned Exhaust
for the VW Aircraft Engine!

*"The Sting" will give you a 5 to 15% increase in engine performance over the customary "straight pipes"!
*Fuel economy is increased! You get more power from less fuel due to the efficient design.
*Exhaust valve life is prolonged due to the long tubes creating a "buffer zone" between the valves and rapid temperature change.
* Will fit 1600cc to 2200cc conversions. It's ready to bolt on your engine, nothing to fabricate.
*"The Sting" is designed specifically for Revmaster, Diehl, and HAPI VW conversions as installed in a KR. Will fit most other VW powered aircraft also.

$150.00 ppd. in U.S.

Ernest Koppe
6141 Choctaw Drive
Westminster, CA 92683

BUY ◇ SELL ◇ TRADE

HAVE SOMETHING TO SELL?
Advertise it in the KR NEWSLETTER
25 words FREE to NEWSLETTER subscribers seeking or selling parts for their KRs.
Other rates are as follows:
15¢ per word for typed ads.
Display ads are charged according to size.
1/8 page...$12.00 1/4 page...$22.00
1/2 page...$42.00 Full page...$80.00
Typesetting and halftones extra.

TRI-GEAR PLANS...Retractable system that uses Rand's parts, wheels, gear legs and spring bar. Conversion plans..$25.00. Bill DeFreze, 7530 Ironwood Dr., Dublin, CA 94566 phone (415)828-2111.

THE DIEHL SUPERCASE

The only accessory case on the market designed to fit either of Rand's engine mounts. Provides electric starting and 20 amp solid state alternator. Now available with starter on top to allow clearance for tri-gear.

Current Prices

ACCESSORY CASE.....	$125.00
RING GEAR ASSEMBLY....	85.00
20 AMP ALTERNATOR.....	100.00
MAGNETO DRIVE.....	40.00
STARTER.....	65.00

We also have the special tailwheels for the KRs. These are $15.00 and will fit the Rand fork. And... TRANSISTORIZED FUEL TRANSFER PUMP for $25.00. Price on wheels and pumps include shipping...Dan Diehl, 4132 E. 72nd St., Tulsa, OK 74136 Phone (918)492-5111.

HANGER 4, CALEXICO INTL. AIRPORT

BOX 5951, CALEXICO, CA 92231
714-357-6342

Dear KR Builders:

Three years ago nobody had ever heard of H.A.P.I. INC. Ernie Koppe saw our first test engine at the Ramona Fly-in in 1978 and mentioned it in this newsletter. We delivered our first customer engine just 2 years ago.

Since that time we have grown to now produce and deliver more V.W. aircraft conversions than all our U.S. competitors combined.

Our engine philosophy has always been simple, build them from the very best new parts to be reliable above all else, deliver them quickly, and follow up with after sale service and advice for the builder. We are proud of the fact that our customers are our best salesmen.

H.A.P.I. engines are designer recommended on AeroSport Scamp & Quail, Flaglor Skyscooter, VP-1 & VP-2, Der Kricket and have just been chosen to power the "DragonFly". Rand Robinson has approved our engines for KR-1 & KR-2. We manufacture KR-1 & KR-2 motor mounts & tuned exhaust systems, designed to fit, & bolt it on. We will release an engine installation kit Feb. 1, 1981 for KR's that will include engine controls, fuel strainers, lines, gascolators, fuel valves, and drawings showing how to install everything to be airworthy on that critical first flight.

H.A.P.I. engine models range from our basic "E" engine, without starter or alternator to the -2TDM Engine that has (-2) starter and 20 amp alternator, (T) turbo charging, (D) our own new solid state dual ignition, (M) mechanical fuel pump, allowing the tank to be anywhere. All our engines can be equipped with the "Vari-Prop", a cockpit adjustable pitch propeller, available from H.A.P.I.

All H.A.P.I. engines have forged steel crankshafts, are electronically balanced, built by A & P mechanics and completely test run before shipment.

H.A.P.I. is now delivering a special export engine, designed to comply with all the D.O.T. regulations in Australia and New Zealand. This will help our foreign builders to get into the air with a lot less red tape.

H.A.P.I. stocks propellers, instruments, every engine part, 4 different carburetors, in fact more goodies for the V.W. aircraft conversion than anyone, anywhere!

Send for our 40 page catalog $3.50 postpaid in U.S. only. $3.00 refundable on $25.00 purchase. See what we have to offer! H.A.P.I.'s engine building manual, "How to Build a Reliable Volks Aero Engine" has sold over 3000 copies and many novices have built fine engines following these step by step instructions, $11.00 postpaid U.S. only, $14.00 overseas.

H.A.P.I. Engines, ask the man who flies one!

Sincerely,

The H.A.P.I. People!

Did you know the most popular homebuilt aircraft in South Africa was the KR? It's true, at last count there were 8 KRs flying there. Pitts Specials were next with 7 in the air. I'm sure fuel prices have something to do with the KR's popularity at $3.50 and higher per gallon, an aircraft that gets 35 to 40 miles or more per gallon is bound to be popular.

Leon Coetzee, from S. Africa, was a visitor here in the States and brought some pictures of KRs flying there. Unfortunately, the photos of the KR-2 built by Leon and Peter Eich were not clear enough to reproduce well...but not to despair! A photo of what Leon described as one of the nicest KRs(or any other aircraft) ever built should be clear enough to make your mouth water. The KR-2 was built by Sakkie Halereen and is see flying regularly in the Johannesburg area. Obvious modifications are the external balances on the rudder & elevator and the 13 gallon capacity each tip tanks. The not so obvious include a turbo charger on a Type 4 VW and a dive/speed brake. The tip tanks were sculpted from solid styrofoam, covered with glass & epoxy then the foam was melted out with a solvent. Sakkie's KR-2 has been flown at an indicated 200 MPH with no problems with the tanks or balance weights. The dive brake works very well. A 500 FPM glide can be turned into a 1500 FPM elevator ride without a change in airspeed.

Leon and Peter have been distributors for Rand parts and kits in S. Africa for years and the popularity of the KRs there reflect the enthusiasm of these two men. I have asked Leon to become our first international KR Designee, since he qualifies on all counts. O.K. guys, lets welcome our newest KR Designee, Leon Coetzee. You can reach him at 10 Lark Str., Meredale 2091, Johannesburg, Rep. of South Africa.

THE KR DESIGNEES

There will probably be several times during the construction of your KR that you will reach a point you must have some more information before you can continue. The guys listed here have each completed a KR and have volunteered to help get you over these humps by passing along information they have gathered while building and flying their KRs. Need some help? Get in touch with a KR Designee!

Bill DeFreze
7530 Ironwood Dr.
Dublin, CA 94566
(415)828-2111

Ray Ellis
2416 E. Douglas
Des Moines, IA 50317
(515)265-3007

Jere Rosser
2305 Wilderness Way
Marietta, GA 30066
(404)977-0843

Dan Diehl
4132 E. 72nd St.
Tulsa, OK 74136
(918)492-5111

Ernest Koppe
6141 Choctaw Drive
Westminster, CA 92683
(714)897-2677

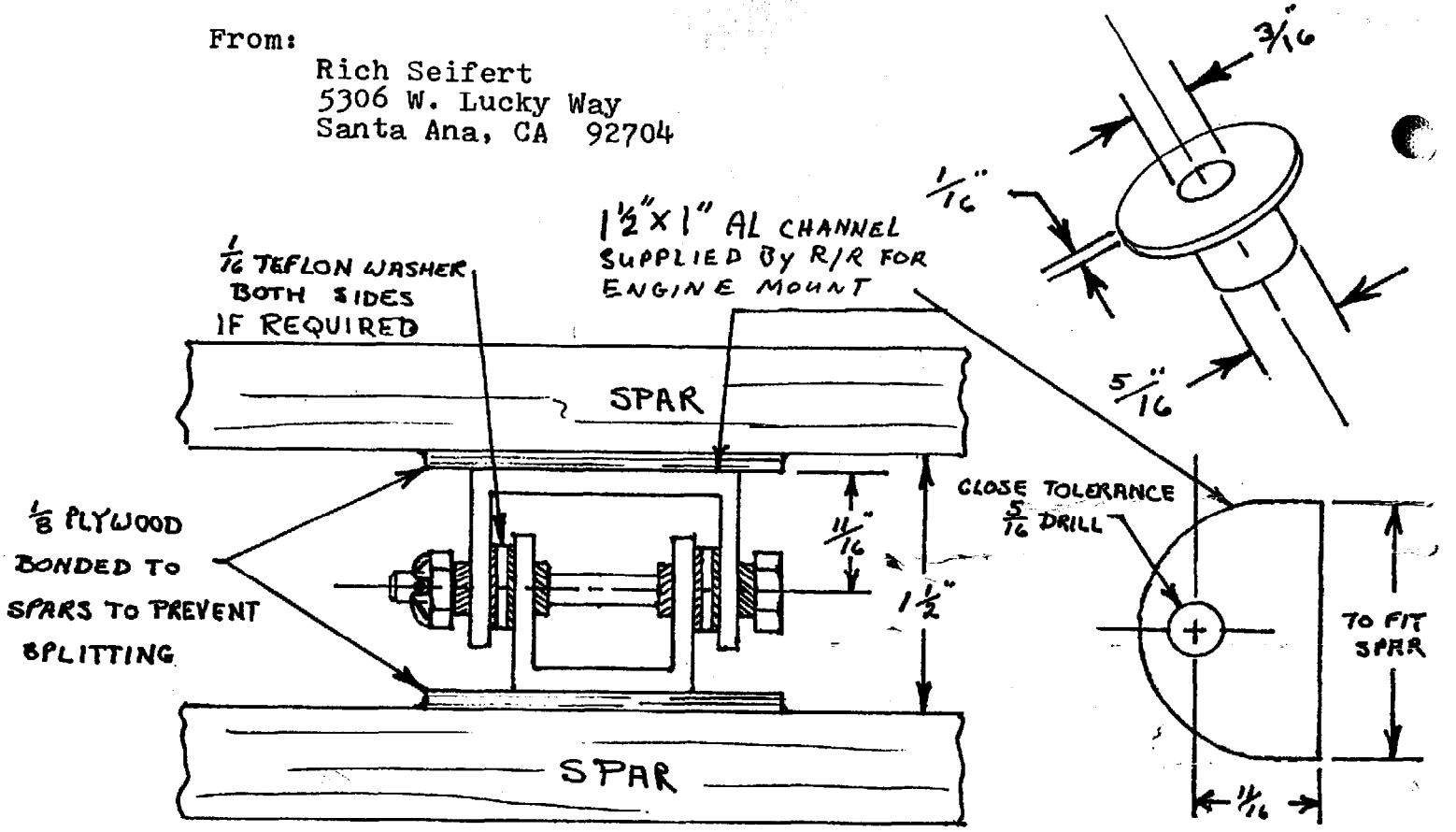
Leon Coetzee
10 Lark Str.
Meredale 2091
Johannesburg
Rep. of So. Africa

Most current KR builders have already completed their rudder and elevator hinges. When the notice appeared in the last Newsletter about the change in hinge hole location, they wanted to know if the parts built to the original dimensions were safe. The answer is yes.... But I would make the empennage hinges a mandatory inspection point on my preflight checklist. Excessive wear means immediate replacement!

The drawing on the back page of this Newsletter is one builders answer to getting around this problem. Rich has a few more of the bushings shown if you want some. They are 50¢ each.

From:

Rich Seifert
5306 W. Lucky Way
Santa Ana, CA 92704



ERNEST KOPPE
6141 CHOCTAW DR.
WESTMINSTER, CA 92683
ISSUE #67 JANUARY 1981

Issue no. 68
February
1981

KR NEWSLETTER

RATES
USA $12.00 Yr
CANADA $15.00 Yr U.S.
OVERSEAS $20.00 Yr Funds

A basis for ideas and food for thought only. Use of any of the idea material is at the user's discretion. Not affliated with Rand/Robinson Engineering Inc.

It's final! The First National KR Fly-in is set for June 13th & 14th. Bill DeFreze has been the spark plug in arranging the details for this event, but he is going to need some help in setting up the facilities and display areas. A couple of hours of your time will really be appreciated. Call or write Bill today....let him know you want to help. The address is: Bill DeFreze, 7530 Ironwood Dr., Dublin, CA 94566 or phone (415)828-2111. The fly-in location, in case you missed it in the last Newsletter, is at the Pope Valley Airport. It is 24 miles from the Santa Rosa omni on the 55° radial, San Francisco sectional. Be there!!

I have recently seen KR projects, in varying stages of construction, exchange owners. A few of these projects were in such poor condition that a knowledgable buyer would not have even considered buying it. Unfortunately, we are not all knowledgable buyers. If you're in the market to purchase a KR project that has been started by someone else, take the time to have an experienced builder to look it over first. He may be able to point out unacceptable workmanship and unsafe construction. This could save you a lot of money now and maybe even your life later on. Some builders have had major assemblies such as fuselage, wings, or other sections of their KR built by someone else. This works out fine if the fellow doing the building is competent. Experience is not enough if the experience gained by the proxy builder was not up to aircraft standards. I recently pointed out sub-standard work on some wings and ailerons to a fellow that had finished them (for someone else). His excuse was that he was given poor assemblies to work with and the work he had done was "good enough". Now this remark came from a guy that should know better. He has worked on several other KRs and has been trusted by the owners of these projects to do competent work. If a job is not done right it is not "good enough".

Was talking to Rex Taylor of H.A.P.I. on the phone last night and (surprise) the subject of engines came up. Really, we were discussing the safety aspect of engine installation and the recent incident in which a metal blade departed the rest of the aircraft. Metal prop blades have been known to do this sort of thing before and Rex urges anyone using a metal prop to use a 1/8" safety cable to secure the engine to the airframe at some other point than the engine mount. This will prevent the engine from departing the aircraft and leaving you with a horrendous aft C.G. situation. Racing aircraft using metal props always use this safety device.

Rex also told me that H.A.P.I. is going to sponser a trophy for the best engine installation at Oshkosh this year. Judging will be done by EAA officials and is open to any VW conversion, not just a H.A.P.I. model.

There will be H.A.P.I. representation at the coming El Mirage Fly-in April 25 & 26, as well as the KR Fly-in June 13 & 14. See them there.

A few subscriptions to the Newsletter have been sent in at the old rates. I'm sending out the Newsletter anyway but the subscription will expire according to the amount of money sent...i.e. a U.S. subscriber sending $9.00 will get nine months of the KR Newsletter, etc. One Canadian builder wanted to know why they had to pay an extra $3.00 per year since postage rates are the same. Fair question. The reason is that, according to the U.S. Postal service, 1st class mail or air mail leaving the U.S. must be sealed. This means I must put the Newsletter in an envelope, stamp it, and address it. Which involves triple the time per Newsletter as the U.S. counterpart. This is also true of overseas mail....that's why the price increase.

I have been sent copies of a publication called the "Canadian General Aviation News". It is a small, yellow newspaper, much like the kind we get in the mail that usually ends up in the trash. What prompted the senders to forward the newspaper to me was an article titled "How safe are the KR-1 and KR-2?". The article was written by Reginald P. Lukasik, a self-proclaimed expert on sport aviation accidents. I don't believe Reginald is a government employee...yet. He probably will be soon tho'. Reginald seems to have the typical governmental attitude that they know what's good for you and is all set to pass rules and regulation to protect us from ourselves. Mr. Reginald P. Lukasik has decided that people who sell plans, kits, hardware, etc. are putting a "snowjob" over on us unsuspecting citizens, and "E.A.A. only talks in positive terms about sport aviation because they want restrictions removed".

Reginald decided KRs were not safe and listed some very frightening statistics based on 30 of 50 known accidents. According to Reginald, 12 deaths were the result in 9 of these accidents for an overall fatality rate of 29%. He compared that 29% figure to all homebuilts with 24.48% and General aviation at 16.4% fatalities for the same period. What if someone were to ask about fatalities in the remaining 20 KR accidents? Why do I get the impression Reginald only used the statistics that would prove his case? If I were to apply the number of fatal accidents (9) to the entire accident total (50), I get a figure of 18%. These figures are not really representative because they are incomplete. So are Lukasiks. He admits that the figures he used do not represent the entire KR population.

Let me give you some of the reasons Reginald decided the KRs are not safe:

1. It's a taildragger and most pilots are not familiar with taildraggers anymore.
2. The Volkswagen engine used in the KR turns opposite to more familiar aircraft engines.
3. Pilots don't pay attention to weight and balance. Aft C.G. conditions seem to be common.
4. The aircraft is very responsive and light on the controls. May cause over-controlling.

Reginald has more reasons why he thinks the KRs are not safe. Those, as well as the one listed above, are very hard for me to point to and say that these reasons are applicable only to KRs.

A person can use statistics to prove almost any point he wants to make. Reginald P. Lukasik has shown us his statistics....now maybe he will show us his motives. I expect the next time we hear from Reginald P. Lukasik he will have some official title. The Canadian KR builders have had other bureacratic roadblocks and the aritcle in Canadian Genral Aviation News will undoubtably bring more. Good luck Canada, you're going to need it.

Our Australian counterparts have their own problems to cope with. All the modifications we make on our KRs, as a matter of course, are not legal in Australia. For a KR builder there to deviate from the plans one iota, he has to have proof it has been done successfully by someone else. Can you imagine the mess we would all be in if the Wright brothers had been born in Australia?? Anyway, what they need is proof that the flaps or dive brake work. If you have these (or any other) modifications on your KR, drop me a note. Include a list of modifications and how many hours flying time you have accumulated. I'll forward the info on the right people and maybe we can get some more KRs flying.

Have you been following the articles on Composite Construction in "Homebuilt Aircraft" magazine? Recent issues have included a series of articles on Rutan's Varieze. Much valuable info and some of it applicable to KR construction. The most recent issue (Feb. 81) kicks off a series on the KR-2. It will be a continuing article on alternating months. The Feb. issue also had a pictorial article on the Polliwagen, again lots of good information for foam built aircraft. A future article on the KR-2 will have photos of the new KR-2 being constructed by R/R.

The proliferation of kit aircraft with ready made parts and the F.A.A.'s apparent acceptance of this concept, has prompted R/R to re-evaluate their kit parts with the idea of having the metal fittings ready-made when the homebuilder purchases them. First will be the wing attach fittings, since many builders just aren't properly equipped to machine 4130 steel. The rest of the fittings will follow shortly. For those who can't wait, Minature Metrics has been turning out an excellent, high quality set of hinges and bellcranks at a very reasonable cost. Their address is 7801 14th St., Westminster, CA 92683 phone (714)894-4875.

BUY ◇ SELL ◇ TRADE

FOR SALE...Stitts SA3A Playboy. 1200 T.T. 15 S.M.O.H. Cont. A65, metal prop, in license and flying...$3100.00 or will trade for avionics, radios, etc. or good dual ignition, large cc VW conversion for my KR-2. Paul Scovil, P.O. Box 1487, Battle Mountain, NV 89820 phone (702) 635-2829.

WANTED..Flying KR-1 or -2. Send photo, price and all information to Michael Poulikakas, 3232 Sumter Drive, #318, Dallas, TX 75220.

FOR SALE...KR-2 kits, fiberglass parts, Revmaster engine mount, all KR Newsletters, DeFreze tri-gear plans...$1975.00. Will deliver up to 600 miles. Bill DuRee 6461 Macleay Rd. SE, Salem, OR 97301 phone (503)399-1703 days.

FOR SALE...2100 D Revmaster. Normally aspirated, still in crate...$2400.00. phone (405)223-5544 after 5:00 pm.

FOR SALE or TRADE...KR-2 spring bar. New, has not been drilled...$50.00 or will trade for a R/R aluminum spinner. Phone (503)231-7612 (a.m.)

FOR SALE...Posa injector carb, 32 mm... $45.00. New Volkspower accessory case with 25 amp alternator...$150.00. Warnke 3 blade ground adjustable prop... $225.00. Mike Lamb, 5327 West Ave. L-10, Quartz Hill, CA 93534.

TRI-GEAR PLANS...Retractable system that uses Rand's parts, wheels, gear legs and spring bar. Conversion plans..$25.00. Bill DeFreze, 7530 Ironwood Dr., Dublin, CA 94566 phone (415)828-2111.

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*"The Sting" will give you a 5 to 15% increase in engine performance over the customary "straight pipes"!

*Fuel economy is increased! You get more power from less fuel due to the efficient design.

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* Will fit 1600cc to 2200cc conversions. It's ready to bolt on your engine, nothing to fabricate.

*"The Sting" is designed specifically for Revmaster, Diehl, and HAPI VW conversions as installed in a KR. Will fit most other VW powered aircraft also.

$150.00 ppd. in U.S.

Ernest Koppe
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THE DIEHL SUPERCASE

The only accessory case on the market designed to fit either of Rand's engine mounts. Provides electric starting and 20 amp solid state alternator. Now available with starter on top to allow clearance for tri-gear.

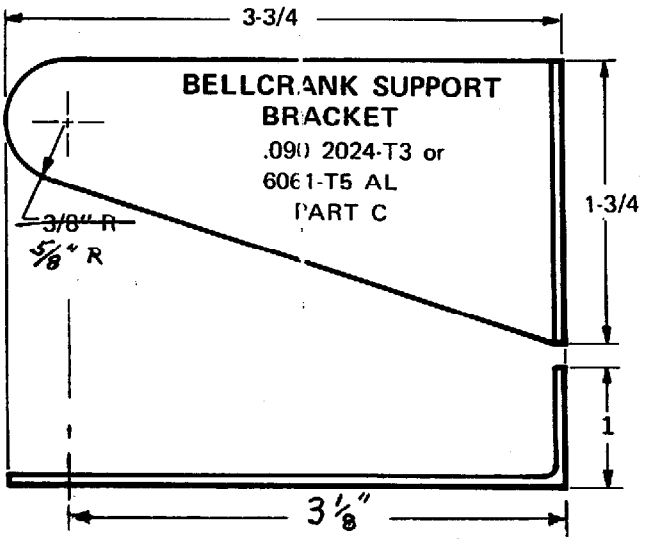
Current Prices

ACCESSORY CASE.....	$125.00
RING GEAR ASSEMBLY....	85.00
20 AMP ALTERNATOR.....	100.00
MAGNETO DRIVE.....	40.00
STARTER.....	65.00

We also have the special tailwheels for the KRs. These are $15.00 and will fit the Rand fork. And... TRANSISTORIZED FUEL TRANSFER PUMP for $25.00. Price on wheels and pumps include shipping...Dan Diehl, 4132 E. 72nd St., Tulsa, OK 74136 Phone (918)492-5111.

PLANS ERRORS-KR-1 ONLY

Drawing #21 on page 26, lower left corner, in the KR-1 plans book shows a drawing of a bellcrank support bracket. The 3/8" radius should be a 5/8" radius. This will give a dimension of 3 1/8" from the base of the bracket to the center of the 5/8" radius. All other dimensions are correct.



BUY ◇ SELL ◇ TRADE

Now you can get your aluminum parts precision machined. In addition to our large supply of hard to find bolts and lock nuts, we now supply ready-made aluminum hinges and bellcranks. Our 11 piece "starter set" consists of one (1) tailwheel arm, two (2) bellcranks (elevator & rudder) and two (2) corresponding hinge halves, top rudder hinge (2 pieces) and outer elevator hinges (4 pieces). Total price for all 11 pieces is $53.00. We can make these parts from your material for $35.00. Order now from..

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*include $2.00 shipping per order
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KR STUFF

Embroidered KR patches for hat and jacket..$1.50 ea or 3 for $3.50.
Vinyl patches, stick anywhere.... 50¢ ea or 3 for $1.00
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$6.50 ea or 3 for $18.00

Ernest Koppe
6141 Choctaw Dr.
Westminster, CA 92683

HEY GUYS!

Do you buy parts & supplies from a business that the rest of the KR builders might benefit knowing about? Would it benefit that business to have the thousands of KR builders as potential customers? Of course it would!

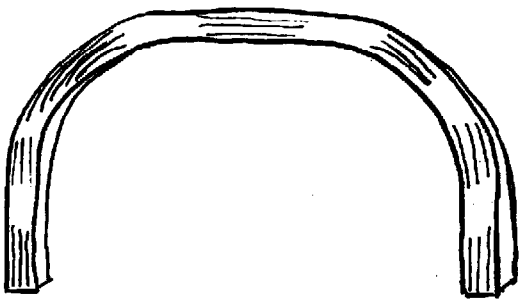
Talk to the owner or manager about taking out an ad in the Newsletter. Results are guaranteed. The business benefits, the builders benefit & you will get a free three month extension on your Newsletter subscription for every paid ad you send in! One year for full page ads! Advertising rates are listed in the Buy*Sell*Trade section.

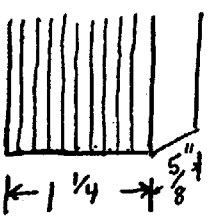
QUESTIONS & ANSWERS

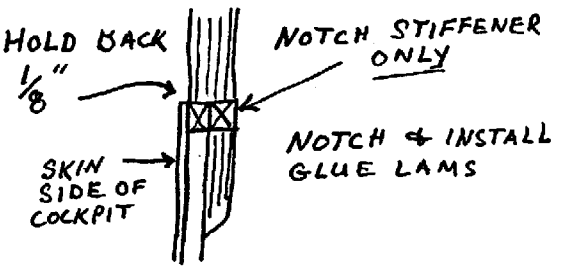
Q. Can I use a fuel injected 72 VW engine in my KR? It is a type III.
A. Yes, the type I, II, III VW engine share basically the same engine block.
Q. Newsletter #56 Q & A mentioned an "Aug 79 revision of the KR-2 plans". What is this and how do I get it? I've never received any info from Rand/Robinson since I purchased my plans.
A. The Aug. 79 revision of the KR-2 plans was more of a re-printing than a revision. Some plans errors were corrected (and some were introduced) and some building techniques. R/R does not update plans already purchased except thru the KR Newsletter or by exchanging current plans for old, plus difference in price.
Q. I have wondered about the feasibility of a type IV VW engine for my KR-2. Is there weight or other problems with this engine?
A. While some builders are using this engine, there is a definite weight penalty of 30 to 40 lbs. South African KR builders are using the type IV VW almost exclusively though because of the lack of the earlier type I, II, III engines.
Q. I am ready to cut off the wings of my KR-1 but am not sure just where would be best. Could you help me out on this?
A. The KR-1 and KR-2 wings should be cut off directly in line with the inboard ends of the outer wing spars. This will leave the attach fittings on the outer wing panel protruding while the attach fittings on the center section will be inset.
Q. Is it a good idea to use a micro-slurry on the foam before the cloth goes on? Would you let it harden before you lay on the cloth?
A. A 50-50 mix of micro-balloons and epoxy spread on before the cloth will save weight. The cloth should be put on while the slurry is still wet enough to soak in.
Q. Could you tell me about the airworthiness of the R/R 3 blade prop?
A. The Rand/Robinson 3 blade prop is no longer in production. This may or may not be a temporary condition depending on an examination of blade separation and/or hub cracks that have appeared in some props. If you are using the R/R 3 blade prop be sure you regularly inspect the center of the hub for cracks. DO NOT continue to use the prop if cracks appear. Blade separation is more readily visible and does not require removing the spinner. Attention to the blades during preflight inspection will expose blade defects.
Q. What about the Vari-Prop from H.A.P.I.?
A. The Vari-Prop has been under development for some years now. It is a cockpit controlled hydraulic actuated, variable pitch prop. It has only recently been adapted to the VW engines and is being put on a KR-2 by H.A.P.I. Soon as I can get some performance figures from Rex Taylor, I'll pass them on.
Q. I notice that Dynel is no longer listed in R/R material lists. Is the reason structural or simply the unavailability of Dynel?
A. Dynel is not longer being manufactured or Rand/Robinson would still be using it.
Q. I want to replace my cast crankshaft with a forged one. Can you give me the address of SCAT?
A. SCAT Enterprises, 1400 Kingsdale Ave., Redondo Beach, CA 90278.
Q. I have started taxi test in my KR-2 and have trouble with directional control. Any suggestions?
A. There are a couple of things you might check. First, make sure there is no toe-in of your main gear. Wheels should either track straight <u>without weight</u> on them or have a slight toe-out. One builder went as much as $\frac{1}{2}$" toe-out in each wheel, but I think that is a bit much. He no longer has directional problems though. The other thing you might check is the location of the rudder cable attach points at the rudder pedals. Many builders are making the mistake of attaching the cables all the way to the foot rest section of the pedals. This translates to maximum movement of the rudder to minimum movement of the pedal. Over control is usually the result. Best location for the cable attach point is <u>approx</u>. $4\frac{1}{2}$"from the hinge point. What you're looking for is maximum rudder movement for maximum pedal travel.

GULL WING CANOPY BY BILL DEFREZE

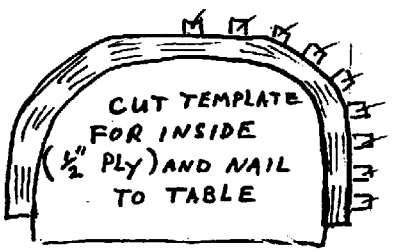
After flying in Dan Diehl's KR-2 with the Gull wing canopy and feeling the extra headroom....I decided to change my canopy. I believe it is much easier to build. So...I set up my table saw, & ripped some scrap spruce 5/8" x 1/8" strips. Epoxy these strips together to make glue lams.



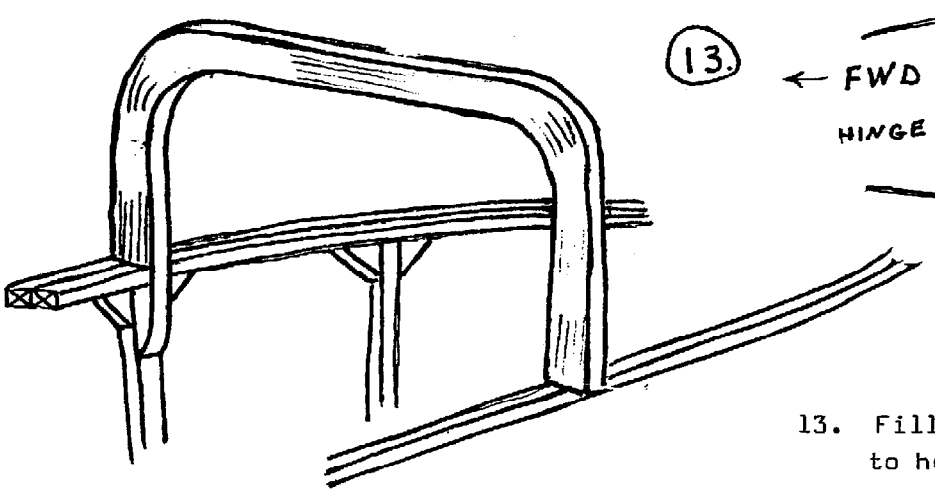




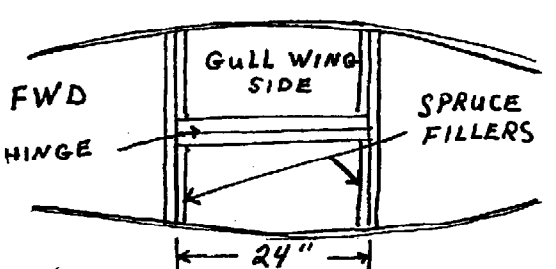
To lay up glue lam bows, determine location and size. Lay out on table.



1. Lay down wax paper & epoxy together.
2. Use approx. 2"x 2" scraps of ply as holders.
3. Be sure to press out excess epoxy. Let cure.
4. Make rear bow first.
5. Take plywood inside template and cut thru the middle and widen out to front of cockpit size bow.
6. Repeat steps 1,2, & 3.
7. Next, lay-up the front bow again. This bow will make the front and back gull wing bows.
8. Make 2 lams 24" + with ½" crown. These are the 2 hinge holders at the top.
9. Make 1 lam to match the fuselage side or sill.
10. After epoxy is cured, belt sand all lams to ½" thick.
11. Fit fore and aft bows to fuselage....I allowed a 24" opening on the right side sitting in cockpit.
12.

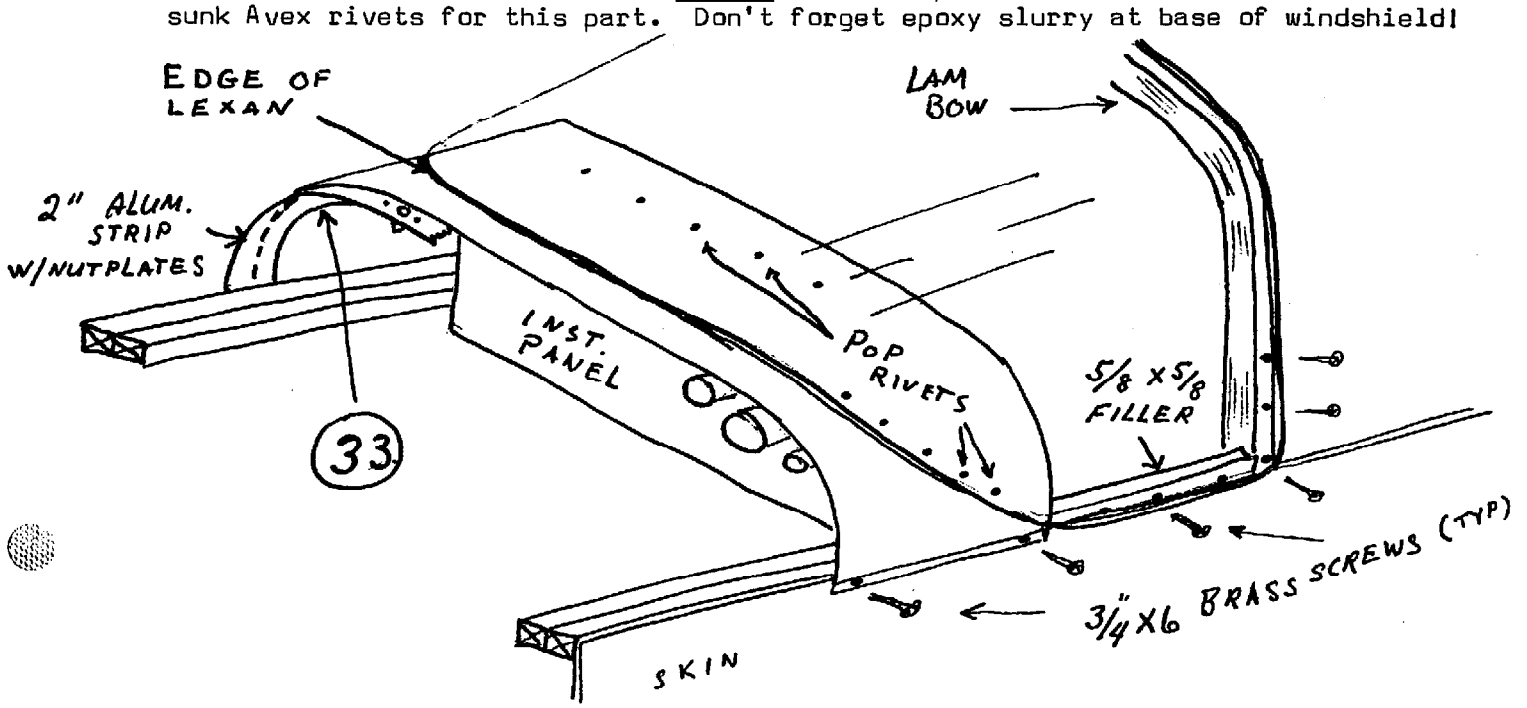


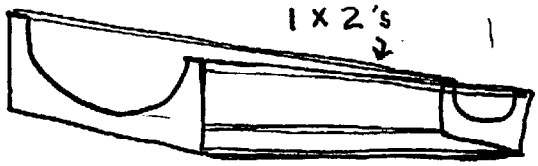
TOP VIEW



13. Fill with ½" x 1¼" spruce to hold side window. Also at sill.

14. I bought 1/8" bronze Lexan as it can be cold bent. The canopy I am describing was all done with no heat or pre-blown plastics.
15. After you have installed and fitted all the bows and fillers and door, mix a slurry of epoxy and micro balloons for your Lexan.
16. Take cardboard and make patterns of the glass areas first.
17. Cut Lexan to shape and size. Leave protective paper on.
18. Using a razor knife, cut paper back 5/8" from all edges and sand glue side. Lexan is very mar resistant, so use coarse sanding.
19. Lay out across top and bottom in center of sanded area's in the middle, 2" on center, and drill for 3/4" x #6 countersunk brass screws. On the sides you only need 4" on centers. Countersink holes for countersunk screws.
20. Spread epoxy on bows and screw to hinge member. Have friend help you roll Lexan as you insert screws.
21. After you set the side window and canopy (use wax paper between canopy and fixed areas to prevent trouble later) the front bow will have to be sanded to fit the windshield angle.
22. The front turtle deck of my plane is four layers of 8 ounce glass laid up on a piece of formica, and using my alum. instrument panel as a former, it is epoxied to the sides of the fuselage.
23. The turtle back is the same as the above process. Both front and back turtle deck are laid up with polyesters....not epoxy. Both were made and installed in one week-end.
24. To make the turtleback, I laid up the 1st layer of glass, the approx size, and thinned the resin about 20% with laquer thinner. You cannot believe how smooth a finish results. Lay up each of the next layers without thinning.
25. To strengthen the now formed "sheet", I took a piece of scrap plywood and made 2 "horseshoe" patterns the exact shape of the rear canopy bow and just forward of the vertical stabilizer. Join with 1 x 2s to hold shape, staple skin to formers.
26. Then using polyurethane wedge shapes, 1" x 1" x 1", I attached them to the skin inside. When I decided to make this change, I cut off the rear deck, made to plan and weighed it.....13½ lbs! New deck...3¼ lbs. As you remove skin, you will notice it kind of holds its' shape.
27. To attach to fuselage, cut raw edges to fit-½" down sides and fore and aft. Sand area to be epoxied. Use Rand staple method for attaching, only difference is make epoxy and micro balloon paste. As you staple to canopy bow, you will notice tight wrinkling. Don't worry...the epoxy slurry acts as bonding and filler, it will all sand out nicely.
28. The windshield worked out a lot easier than I expected. I bought some countersunk Avex rivets for this part. Don't forget epoxy slurry at base of windshield!





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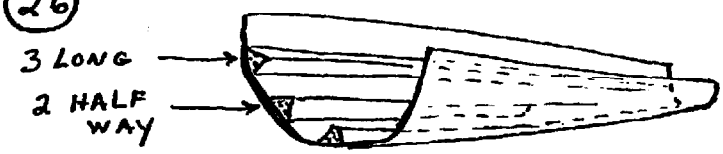
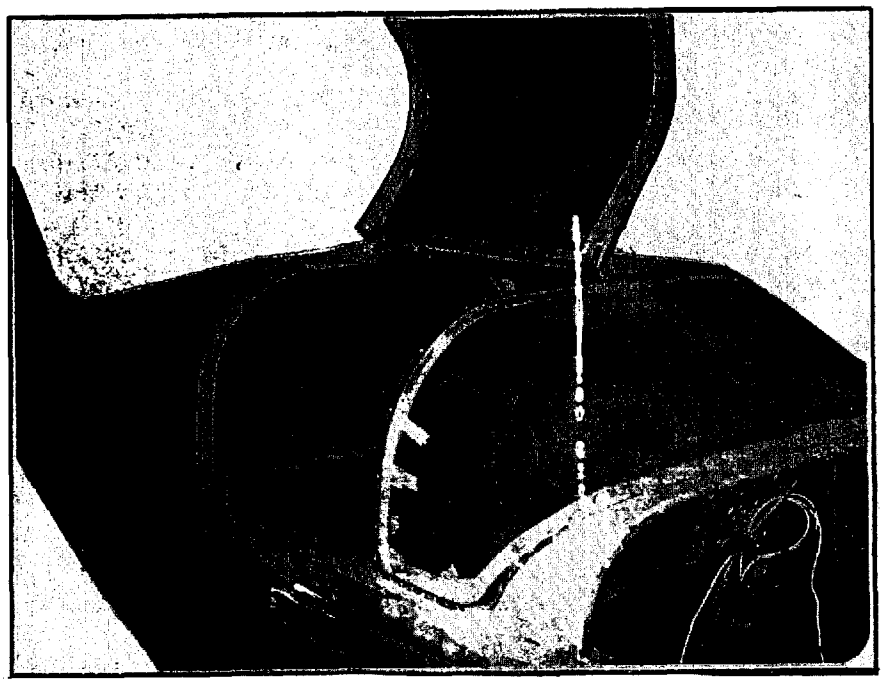




Bill's article will be continued next month. You can see by the photo there is indeed extra head-room. A self addressed, stamped envelope and $6.00 will get you a full set of pictures from Bill. Photos show a lot of detail.

Bill DeFreze
7530 Ironwood Drive
Dublin, CA 94566

P.S. Lots of requests for more flight reports . So...next issue will have'm.

P.P.S. Open House at Fla-Bob on Feb. 22nd. (Hamburger Feed on the 21st.) See you there!!!

ERNEST KOPPE
6141 CHOCTAW DR.
WESTMINSTER,CA 92683
FEB 1981 ISSUE #68

Issue no. 69
March
1981

KR NEWSLETTER

RATES
USA $12.00 Yr
CANADA $15.00 Yr U.S.
OVERSEAS $20.00 Yr Funds

A basis for ideas and food for thought only. Use of any of the idea material is at the user's discretion. Not affliated with Rand/Robinson Engineering Inc.

There is a small town a few miles north of San Diego called Ramona. Ramona has an airport that is used as a base for the fire bombers so important to Southern Calif. during the brush fire season. Many times this airport is the scene of hustling activity as capable pilots and crew fly missions to save lives , property, and watershed in the California hills.

Once each fall Ramona airport is the site of a happier event. An EAA happening that attracts homebuilts, antiques, ultra-lights and classics from all over California. Each year more and more people come to enjoy the crisp fall air and see what their friends have brought. Last October was no exception and, as usual, the KRs were well represented. Eight KRs were displayed, two KR-1s and six KR-2s. Rand/Robinson's KR-1B was flown in by Jim Loudon who, with Fred Whitcomb, M.C.'d the KR Forum.

Back from last year was Butch Grafton, KR-1, Murray Rouse, KR-2, and Bob Osborn, KR-2. The 1st timers were Dick Kuhr, KR-2 (flight report this issue), Ralph Upson, KR-2, and Tom Criss, KR-2.

It was interesting to note the various engine installations in each of these aircraft and the extent the owners had gone to assure safe, cool operation. I believe the recent series of articles by Rex Taylor of H.A.P.I. in "Sport Aviation" had much to do with this.

The highlight of the whole fly-in for me though, was the all out friendship and helpfulness exhibited by Butch Grafton, Murray Rouse, and the other KR pilots to Tom Criss. Tom did what most other KR pilots have done at one time or another, he bounced his KR-2 a mite too hard. Sure enough, the spring bar poked a hole in the top of the wing on each side. Now, Ramona is not Tom's home field so repairs could have been a real problem. Not to worry...Butch Grafton called home, had some patching materials delivered. Murray Rouse and group helped in the repair and Tom's KR-2 was airworthy again. People helping people! Its a winning combination.

Insurance? EAA Aircraft Hull & Liability Insurance is now available. Contact EAA Insurance, Aviation Insurance Unlimited Inc., P.O. Box 19022, Greensboro, NC 27401. Phone toll free 1-(800)-334-0061.

Dan Diehl reports a change of location for his operations, effective immediately. From now on you can reach Dan at 1855 No. Elm, Jenks, OK 74037. The phone number there is (918) 299-4444.

BUY*SELL*TRADE

WANTED- New Revmaster 2100. Please note mfg. date and accessories with price, no premium. Call or write: John H. McClain Jr. 7175 Salineville Rd. NE, Mechanicstown, OH 44651. Phone (216)768-2481 after 6 pm Eastern.

FOR SALE- R/R 3 blade prop. New, never mounted or used. Purchased 1979. $225. Tim R. Gibbs 15920 Uppsala Ct., Woodbridge, VA 22191. (703)680-2969.

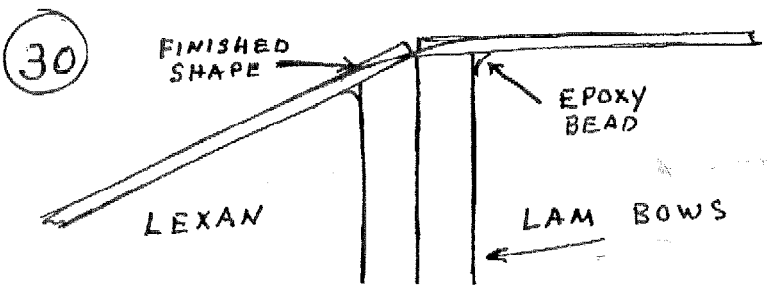
FOR SALE- KR-2 project, tri-gear. Includes Turbo Revmaster w/mixture, and most instruments. $6500.00. Bob Hamill, 37969 6th Ave. Los Angeles, CA. Phone (213) 299-1434

FOR SALE- 2100 Turbo Revmaster with starter, alternator, dual mags, Maloof C.S. prop, and engine mount. Never uncrated. I will ship for $4100 certified check. Al Brown, 70 Bandolina, Los Alamos, NM 87544. (505)672- 3419 days, 672-1384 eves, Sunday, and Monday.

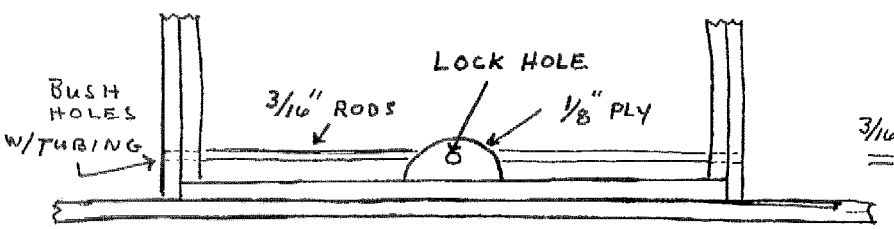
Bill DeFreze reports he has had several requests for photos since his article last month. Evidently you guys are working on your KRs. The following is the conclusion of Bill's article.

GULL WING CANOPY by BILL DeFREZE
(continued from last month)

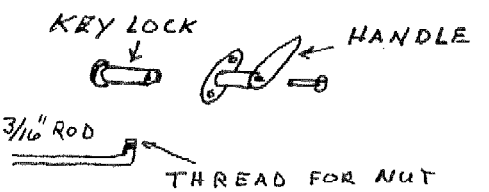
29. After all Lexan is attached, climb inside cockpit with a rag and using your fingers clean away all excess epoxy and it makes a super nice bead inside.
30. At the joint of the windshield and side glass, there will be a sharp edge...using a Stanley "cheese grater" you can shape the Lexan. I was quite surprised.



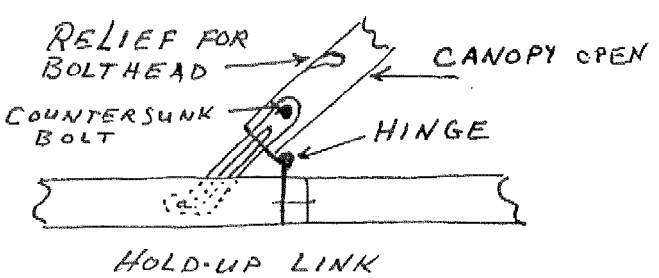
31. Lexan is <u>tough</u>, so work patiently.
32. Fill screw heads and rivet heads, prime, sand, and paint. Good hardware stores carry aluminum tape. Use tape around edges of Lexan where you will be sanding, it resists tearing much better than masking tape when you get on top of it with your sander.
33. The 2" alum. strip with nut plates is to hold the front turtle deck and fuel tank. Makes access to instrument panel back side and rudder pedal area much more accessible.
34. End result...better headroom, much better visability and lot better "feel" inside the cockpit.
35. Hold up link and locking system I used.



INSIDE LOOKING OUT



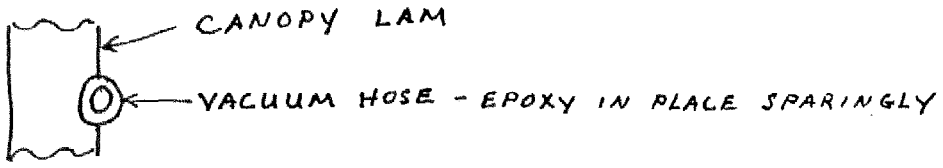
TO DRILL LOCK HOLE, CLAMP 3/4" BLOCKS TO BOTH SIDES WITH 1/8" PLY IN PLACE.



HOLD-UP LINK


FULL SIZE PATTERN

36. Re-inforce back sides of bolts with alum. plate or large washer. In lower link, use round bead bolt and relieve canopy for head. When closed, link <u>disappears</u> between bows.
37. Weather seal...I used ½" rubber vacuum tubing.



There you have it, now you can finish the job you started last month. The photos Bill sent were color and would not reproduce well in the Newsletter. They do show a lot of detail tho' and Bill says he will send reprints for $6 and a SASE. Write to: Bill DeFreze, 7530 Ironwood Dr., Dublin, CA 94566. (415)828-2111.

QUESTIONS & ANSWERS

Q. I am searching for information regarding the moving of the thrust bearing to the #3 main on VW engines. Can you help me?
A. This information was printed in the October & November 1979 KR Newsletters. Back issues to the Newsletter are $1.00 each.
Q. Are there any KRs flying in Minnesota or Wisconsin climates that have had problems with cracks between foam and wood due to extreme temperature changes?
A. Yes, there are ways to alleviate this problem though. First, all the compartments in the wing should be vented to each other. This will let the air in each compartment pressurize equally with the other. Another thing you should watch for is taking your KR from a heated garage or hangar into sub-freezing weather. Wood, foam, and epoxy tend to contract at different rates when subjected to sudden temperature changes. Keep your KR in an unheated hangar or garage, or turn the heat off a day or two prior to moving the aircraft outside.
Q. What is the maximum allowable angle for the aileron pushrod between the bellcranks?
A. This angle should be as near 90° to the aileron hinge as possible. 90° isn't always possible so the bearing in the push rod end becomes the limiting factor. The thing to watch out for here is binding in the push rod due to the bearings reaching their limit of travel before the aileron has moved thru its' full travel. As long as there is no binding and the aileron moves smoothly thru-out its travel, the angle of the push rod is variable.
Q. The R/R price list on item 8, KR-2 side has wing attach bolts and then 3/8" wing disconnect bolts. What's the difference?
A. The wing attach bolts are to hold the steel wing attach fittings to the spars. The 3/8" wing disconnect bolts are used to hold the wing outer panels to the center section.
Q. Will the 1/4" bolt for the axle kit stand the shock of hard landings without shearing?
A. Yes, this 1/4" bolt in combination with the aluminum axle has never been a problem to my knowledge.
Q. Can the "Sting" exhaust system be adapted to fit the Type IV VW?
A. No, modification to the exhaust system would be too extensive. Be easier to start from scratch.
Q. Do you still sell the "Supertin"? I haven't seen it advertised for a while.
A. Yes, price is $15.00 post paid in U.S.

Appreciative comments on the flight reports in previous issues plus the several requests for more have induced me to publish the following articles. The experience gained by the writers of the reports can help you prepare for the first flight in your KR. Or...if you've already made the first flight, to keep your KR flying <u>safely</u>.

Ron Sorrell and Eugene Musynski were killed in the wreck of Ron's KR-2 last year. The aircraft was at low altitude, climbing away from an airport when the engine quit. NTSB investigation of the accident decided probable cause was engine failure due to unporting of the fuel outlet. There were no baffles in the fuel tank and the angle of climb allowed the fuel to expose the fuel outlet. All who knew these two men were saddened by their death but the most grievous loss was to their families. The following letter is from Brenda Sorrell, Ron's wife. It is directed at the wives of KR builders everywhere.

We all know how true is the old adage "Behind every good man is a good woman". We are obviously all good women and our KR men are the best or they wouldn't be ours.

Our men put in many hours of planning, studying, seeking and finding help and advice, and even some beer drinking during the building of these beautiful KRs. There is no KR under construction or flying today that doesn't require large amounts of understanding from a wife and family. Once the construction of the KR begins quite often we become secondary. Trust me, this is not intentional, he is just working toward a goal and sometimes tends to set aside the other important things in his life. This is where our understanding and help makes us an important part of the project.

Many times I felt like a full time secretary. Parts have to be ordered, numbers have to obtained from the FAA and many other equally important things require constant correspondence. I felt as if I had type hundreds of letters and, of course, had to have copies of each. I even asked to be taken out to dinner during National Secretary's week.

My understanding did almost run out many times; you see, N78RS was built in our garage-patio converted airplane factory which was directly under the master bedroom of our home. It was not uncommon to smell epoxy, hear saws or other such noises at two or three in the morning. Then there were the nights that I would awaken at two or three and just hear silence, only seeing the glow of the lights in the airplane factory. I would go down the stairs to see if a problem existed and my answer would be "Brenda, everything has to be just so." The beauty of the finished product of N78RS was a testimony to the hard work and "just so" planning.

KR building is a highly infectious disease. Once it starts there is no stopping it, and besides, which one us would really want to. We have to learn to smile with our KR men at each success and hurt with them at each adjustment. A true KR man never encounters a failure, just an adjustment.

He may not tell you, but it is very important that all his friends and fellow builders know you are a part of the project. At the top of the scale of importance is that you be at the airport to pray, get chills and share the thrill of the maiden flight. According to many great scholars the upper most of man's hierarchy of needs is self-actualization. It is also believed that the normal man never reaches that need. Since KR builders aren't quite normal, they do reach this need. I know my husband reached this need on 5/20/79 when N78RS first flew with the entire EAA Chapter 174 plus many friends and relatives looking on. I luckily captured this look on film as he was shaking the hand of Gene Muszynski, his test pilot, as he climbed out of N78RS after it was taxied back to the hanger.

You must understand that every man must be happy with every aspect of his life to be a total man. I urge you to give your KR man moral support and encouragement as well as a lot of love and understanding.

I had often expressed to my husband the fear that he would be killed flying. His only response to the matter was, "if I die flying, I'll die happy." I know he did die happy. God took N78RS and Gene Muszynski on 7/680 and my husband, KR Designee-Ron Sorrell on 7/7/80 but no one will ever take these happy memories from me.

From Richard Kuhr, 1514 Jade Ave., Chula Vista, CA 92011....."First flight report, 10-20-80 9:00 a.m. 76°F 1835 VW Prop 52 x 47 Plane 549 lbs pilot 215 lbs gas 70 lbs total weight as flown 834 lbs. Pilot experience 200 total hours, 10 in last 10 years, 5 of 10 in tail wheel type. Had about 3 miles of tail up taxi time in type. Pulled out on to the active, slowly applied throttle, established stable tail up high speed taxi, then applied balance of throttle. With 70 mph indicated I moved stick, that was my first mistake, I zoomed (like in Superman) to about 300 agl, I moved the stick again, and saw a whole lot of runway, moved stick again and found semi-level flight, at which point I stopped moving stick and found the remainder of the flight very enjoyable. In regards to the PIO's it should be noted, that my elevator response is 30% slower than the plans show. Found in flight response to be sensitive, but balanced and very desirable after the sensitivity has been adjusted to. Landing(s) were little bouncy, I think I pulled back on the stick after mains touched. Ended up wheeling it on as couldn't get tail low enough without climbing out in ground effect. My plane at the time I flew it, had about 5½ hours on it, accumulated by a veteran test pilot here in my area who looped, barrel rolled, and aileron rolled it at 1½ hours...said the devil made him do it! Rate of climb is 650 fpm at 95 mph, haven't climbed at slower speeds yet. It appears my speeds will be equal to speeds Ken was clocked at during competition at Oshkosh. 160 indicated at lower altitudes, stalls dirty at about 47, and clean at 53. While I have the opportunity, I would like to publically thank Murray Rouse, KR-2 1998, for his technical help and moral support without which I would still have a canoe in my garage.

From Jack Ross, 715 6th, Brookings, OR 97415....."I first flew my KR-2, (N23RP) in Feb. '78 at Crescent City, CA. As soon as I was airborne I scanned the gauges and discovered the airspeed indicated 40 mph! I lowered the nose and it still indicated 40 mph. I was flying level with full power and it still indicated 40 mph. I judged by the passing "scenery" that my speed was much greater than the 40 indicated. I was committed, as the runway had run out, so I eased back on the stick and made a very shallow climbing turn with full power. I stopped climbing when I was 3500 feet over the airport, no matter what I did it still indicated 40 mph. Stick pressure was very light and I found I could keep from over controlling by resting my thumb on the instrument panel and holding the stick in my curved fingers. I carefully raised the landing gear and got more speed and a more nose up attitude. I made a few turns and found I could make a 40° bank without touching the rudder pedal! What a fantastic little airplane! I found that when making turns at slow speed a little "top" rudder was required. I spiraled down to pattern altitude and landed. I had a very long (4000') runway, so no sweat about landing. It was my first landing in a taildragger! The reason for the bum airspeed was my static tube was not positioned properly. I never could get the air speed to be accurate. It always indicated slow. Since Rand failed to tell where to place the static vent maybe someone could tell where it is supposed to be. The next day I moved the KR to its home field, Brookings, Ore. I landed on the 2600' strip OK but, needed most of it to roll out. After a few practice landings I could get by with about 1300' of runway with moderate use of the brakes. I had to true the brake drums on a lathe in order to get smooth braking. A few days later I was flying around locally and all of the sudden I had oil all over my windshield. I managed to get back down OK looking out the side of the bubble with one eye and watching the oil pressure gauge with the other. I discovered that the "number one quality" engine that a local VW expert had converted for the "right price" was nothing but junk. The case was cracked and painted over. Of course, this is where the oil came from. Upon disassembly, the engine was seen to be nothing but junk. I then built up my own 1834 cc engine using N.P.R. pistons and aluminum cylinders. It was a modified Barker conversion. Rimco in Santa Ana, CA did the machine work and it was excellent. After about 50 hrs on this engine I was taking off from Florence, Ore at about 1000'above the airport when I heard one hell of a noise and the engine quit. Fortunately there was about 50 miles of ocean beach ahead of me and the tide was out. I made a beautiful 3 pt. landing and rolled to a stop. Lee Sparks, who runs a flight service and instructs at the Florence airport, spent the whole day with his truck and trailer getting me off the beach. He wouldn't take any money for his efforts. He is a real

super guy doing a super job to promote private aviation. Thanks to him my plane was saved from the incoming tide. The reason the engine quit was that the wrist pin on #1 piston was defective, and had broken. The engine was destroyed. I had some long distance telephone talks with Rex Taylor of H.A.P.I. Engines before building my next engine. Rex was very helpful and very generous with his knowledge. Another super guy. Heeding Rex's advice I built another 1834 cc engine. N.P.R. was very good about replacing the cylinders and pistons. They were truly sorry their product had failed. This engine used Rex's matched connecting rods, Rex's rebuild on my heads and Rex matched all the pistons. All very good work. All rotating parts were electronicly balanced, all ferrous parts magnafluxed and all non ferrous zyglowed. Rex did the machine work on the case and again a good job. I used R/R manifold and exhaust pipes and a Rajay B-25 turbo-charger with a 29 mm Posa carburator and no carb heat. The new engine was smooth as a turbine and the turbocharger worked like a charm. Sea level performance at any altitude was a neat new experience to me. By now most the bugs had been worked out of the airplane and I was making a few cross country trips. Once at altitude and all trimmed out I could fly for miles "hands off". If I wanted to fine trim I would move my arm to the instrument panel or to the back shelf. The nose would go down or up accordingly. On Jan 29,1980 I took off runway 30 at Brookings bound for Crescent City, CA. I was about 200' off the runway when the engine quit! No warning, it just stopped. I managed to find a small spot of brush among the trees and boulders below me and I crash landed there. There was a Cessna 150 taking off behind me and fortunately he saw my engine quit and called for help. Help was on the way before I hit the ground. I shattered both ankles. The right one so bad the doctor had to make a new leg bone with a piece of my hip. My lower face was pushed in, both cheek bones and my upper jaw was broken. (No shoulder harness.) I never would have survived had it not been for the 150 pilot seeing me go down and the expert work of our local E.M.T. volunteers. This is desolate country and very rarely are there two planes taking off at the same time. I am very lucky to be here! I spent 7½ weeks in the hospital and 3½ months off work. I am still on "light duty" status at work. The engine failure was caused by the magneto "P" lead grounding out on the aluminum instrument panel. The screw that held the lead on the mag switch had vibrated all the way out. This screw was secured by a lock washer that did not lock. The KR was destroyed. I managed to salvage the engine, landing gear, spars and , of course, all the hardware. I am going to build another KR-2. I don't think I will use a VW engine. I would feel safer with a "real aircraft" engine. In any case, dual mags would have saved by "bacon".

I would like to hear from some of the people who have used Cont. or Lyc. engines in their KRs. A couple of remarks in closing...1. If you buy a "ready build" engine buy from known quality builder (Revmaster, H.A.P.I., Monett, etc.). They have proven their products and stand behind them. 2. If you build your own engine buy only the best quality components that are made for aircraft use. H.A.P.I., Rimco, etc. Dune buggy parts just don't do it. Have all ferrous parts magnafluxed and non ferrous parts zyglowed for defects. 3. If possible, use dual mags. All magneto "P" lead connections double nutted or use loctite or both. Believe me when the fan stops turning, the pilot starts to sweat. I will gladly help anyone who needs advice or information about building a KR-2."

From Carl West, 1208 Vine St., Girard, OH 44420....."I thought I'd write and let you know how my first flight went in my KR-1. In issue #66, I wrote about the first flight of the plane itself with Bill Reents at the controls. In the middle of November, all damage had been repaired and I ran out of excuses not to fly. I had told Bill that I might give it a try on the following Saturday, the 15th, the weather permitting. I guess I'm typical of the type of pilots that have been sending in flight reports to the Newsletter. I'm a low time private with no taildragger time. I did however get two hours in a Grumman trainer and also an hour of loops, spins, wingovers, and etc. in a 1941 T-craft tandem. I had also "flown the tail", and made many taxi runs. Well, anyway, I got out of bed that Saturday morning and looked out the window. Darn it, overcast but not too bad. I knew it was the day. I drove the 20 miles to the airport in a semi'concious state. Bill had already had his plane up and had landed and was waiting for me. I rolled my plane out, checked and re-checked everything, belted up, and got a prop start from Bill. As I taxied out, I couldn't help but wonder why

I didn't take up golf and bowling or some other hobby instead of this. Run up engine-re-check everything-a practice run-return to end of runway-closed eyes-prayer-line up - scared-1/3 throttle-moving-more scared-this is it-full throttle (mistake)-tail up-very scared-oops!! nose right--nose left oh-oh!!-nose right-going off right side of runway-ease stick back slightly-flying!! (sort of)-wobble-porpoise-porpoise-porpoise-grab stick with both hands and climb out smoothly. I climbed to 2000 ft. and leveled off. My first impression was "Boy, this thing flys just like a real airplane." After a few gentle turns I relaxed a little. I was not as scared as I thought I'd be once I was airborne. Cyl. head temp. was in the red so I eased the throttle back to about 2600 rpm and slowly flew it at about 105 mph ind. I realized later that if I had went faster and put the gear up, the engine would have cooled better. I didn't touch the gear because everytime I looked down, I was either climbing or diving. I looked down at the runway and saw Bill taking off. A minute later I saw Bill approaching at 4 o'clock. His face was clearly visible behind the swirling propeller. Wow, this is just like "Baa-Baa Black Sheep". Bill peeled off to the right and I went after him, "guns blazing". A little voice said "quit horsing around, your not that good yet" so I flew around the airport area for 25 minutes while Bill took pictures. I watched as Bill landed. It didn't look too hard, so I figured I'd give it a try. My first approach just didn't feel right, so at about 50' AGL I made a go around. My next approach was much better. I carried power all the way down to the numbers indicating about 85 mph. I was about 5" from a perfect 3 pointer when I forgot I wasn't in a Cessna and pulled back on the stick. It started flying again so I lowered the nose and bounced it on. After touch down I kind of lost my fine touch and alternated trying to put my left and right feet through the firewall. I finally got it going straight and pulled on the brake cable. It stopped. I had done it!! I gave thanks for my answered prayer. I taxied over to the pumps, shut down, opened the canopy and yelled YAH-HOO!! A small group of spectators offered congratulations. I accepted with no sign of modesty. I wanted to fly again but I talked myself into waiting until I changed the baffling for better cooling. The cyl. head temp. stayed right around red line and I have visions of the engine seizing on take-off. I started re-baffling but a severe winter has settled into NE Ohio and its hard doing anything with numb fingers and feet. The plane flys almost exactly like the Grumman, except the KR elevator is about 5 times more sensitive. The Grumman elevator is ½ the size and spring loaded, thats probably why. "flying the tail" feels just about the same as it does in the air. The airplane is like a little hot rod in the sky. A skilled tail-dragger pilot would have a definate advantage, but I feel that with a little practice I'll be able to tame it, and keep it going straight. You just haven't lived until you've been 2000' above the ground in something you put together out of plywood and styrofoam!!

From Joe Gilewski, 43 Davenport Ave., Roseland, NJ 07068.....I have accumulated 28½ hours on my KR-2 since my first flight on Aug. 16, the account of which you published in the November Newsletter, and have learned many things, most of which are common knowledge or have at least been mentioned somewhere. The one experience I've had which seems uncommon or which I have never heard mentioned, is with my radio transmitter. My plane is equipped with a King KX145, a Narco AT-50A transponder, a King KR86 ADF, and a marker beacon receiver...All those antennas have been installed in the tail cone. I happen to be rather deeply involved in electronics and avionics and have a fairly respectably equipped electronics shop for an amateur. Therefore it was a matter of deep frustration to see that no matter what I did to my radio transmitter, the best report I could get on a radio check was "fair""readable" , and that only when I was on the ground or in the pattern. I fly out ofa controlled airport and sometimes couldn't get off the ground because my transmitter was unreadable. Getting home was always an adventure. I installed mods 6 & 8 into my KX145 which originally had mods 1-4, in order to obtain clearer transmissions--to no avail. The solution was to install an outside transmitter antenna with a good ground plane--which gets me "Loud & clear" reports to 35 miles away. When I had my transmitter antenna among four other antennas and the elevator and rudder control wires, it would'nt work very well.

Dear Ernest,

Enclosed is my renewal for the KR Newsletter and with your permission will rap a bit, for what it's worth.

My project is the KR-2, approx. 75%+ complete. It has wing tanks, flaps, all contols balanced, NASA low drag tips, fully enclosed gear covers, dual controls, positive locking gear, etc.. To speed up the project I ordered and received from Rand/Robinson the fiberglass engine cowl, and turtle deck. Of which, I am somewhat less than ecstatic to say the least.

I was elated to read in the Dec. 80 issue about Mr. Carl Laetare and Mr. Forbings experience with the supposed epoxy reaction. (I started to burn and itch all over again, Ha!) I almost had given my project up because of the very same reaction. Since reading their experiences I recall in the beginning I had a pair of Playtex gloves, everything was fine. They finally went the way of all flesh and I purchased some other brand rubber glove. After two-2 to 3 week battles with the very same skin eruption (hands only) described by Carl Laetare, my good wife got me a box of medical examination gloves. Same routine over again (hands only). I was at the end of my rope. I thought perhaps fumes from the epoxy was getting into the gloves and I tried rubber bands around my wrists with no better results. So was glad to be enlightened. I shall search for some Playtex gloves and continue.

All hail the makers of the (living bra) gloves. (Ha,Ha) I had found that very hot water soaks and the application of Vasoline Intensive Care lotion gave some relief from the throbbing pain and itching. So much for that. Thank God and everyone concerned for the good information.

Oh, yes, my air strip (McClain Field 1800 ft plus) is now on the new sectional for the Ohio area. And Bill Rentz, also mentioned in Carl West's accident report (Dec. Newsletter) has flown his KR-1 in and out at least 4 or 5 times. We have a hanger for five full sized planes. Any and all EAAers are welcome anytime.....John McClain, Jr., 7151 Salineville Rd. NE, Mechanicstown, OH 44651.

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
MAR 1981 ISSUE #69

Issue no. 70
April
1981

KR NEWSLETTER

RATES
USA $12.00 Yr
CANADA $15.00 Yr U.S.
OVERSEAS $20.00 Yr Funds

A basis for ideas and food for thought only. Use of any of the idea material is at the user's discretion. Not affliated with Rand/Robinson Engineering Inc.

We made it!! Winter is officially behind us and it's FLY-IN SEASON again.

The Lakeland Sun-N-Fun has become the lead off show and is taking place as I am writing this. I couldn't get to Sun-N-Fun myself so I'm counting on a report from some of the KR people who did attend.

Coming up real fast is the El Mirage Fly-in April 24,25, & 26th. This will be the first year at this location as previously this fly-in was held at Chino, CA. El Mirage airport is off the beaten path so there probably won't be much of a general public turn out. Fly-ins are for us flying type people anyway. Dedication of the fly-in this year is to Ken Rand and his contribution to sport aviation. This should bring out even more KRs than last year's record breaking number. Jeannette Rand is buying tickets to the Saturday night banquet for all KR pilots flying their KRs to El Mirage. See you there!

Next on the agenda is the 1st National KR Fly-in. Scheduled for June 13th & 14th at Pope Valley Airport. This fly-in is going to be one not to miss. Check out the poster in this issue and then get a post card off to Lisle Knight (or call) and let us know you're coming. This is important! We need some idea of how many people will be there so we can make sure there will be enough facilities for everyone. If you can help out at the fly-in and/or if you're planning on flying your KR there, be sure to get that post card off as soon as possible.

And then....after a suitable period of recuperation....OSHKOSH!! August 1-8, each year the annual EAA convention gets bigger and better and this year should be no exception. Get there if you can, if not, read about it here. I wouldn't miss it for the world.

Later on in the fall is the Kerrville, TX Fly-in, Sept. 18-20 and to finish off a great year...Tullahoma Sept. 30-October 4th. Catch one or catch 'em all. You'll be glad you did.

SAFETY ALERT

A phone call from Bill DeFreze last week whould be passed along. Bill was working on his wings when he discovered a serious problem....dry rot!! The rear spar on one wing was affected about one foot each way from the balance weight hole. "Soft as balsa" was Bill's description. Apparently, the spar was not sealed properly when the hole for the balance weight was made even though Bill had thought it was. The aileron spars were not affected. Check your installation NOW. Make sure there is no place moisture can enter. "Dry rot" is really a fungus that requires moisture in order to spread. This is the reason all wood surfaces should be sealed.

Three or four Newsletters back, I mentioned an engine failure in a KR-2 that was attributed to the failure of a "phenolic" magneto drive. The following letter from Rex Taylor of H.A.P.I. points up some important facts we should all know.

"In regards to the failure of phenolic magneto couplers mentioned in KR Newsletter #67, perhaps I can help clarify the coupler problem. Phenolic is an all encompassing term that covers only the binder or resinous material used in making several different types of products. Most of these products are not capable of tolerating the environment or mechanical loads imposed upon magneto couplers.

In the past, Continental has used a hard rubber coupler and they were found to become brittle and fail after a couple of years' service. The F.A.A. issued an A.D. note requiring replacement at every annual. We have seen two of these hard rubber couplers used on old Barker conversions fail, yet you can still find these things new in the aircraft surplus parts stores. They were not suitable for safe use in the certified engines, and are no more safe in an experimental.

When designing the H.A.P.I. engine, I contacted Slick Electro and consulted with their engineering dept. to get their recommended ideal coupler material. They recommended "mechanical grade micarta". This material is made of many layers of canvas bound together by the phenolic binder. It is virtually impossible to break, and is capable of absorbing shock loads between the crank and magneto. It presents very good wear qualities without the necessity of lubrication in this application. We have built and sold over 300 of these on our engines and mag kits without a single instance of failure reported.

The coupler material is indeed one of critical importance and should be selected with the greatest of care but let's not be confused by the term "phenolic"...Rex Taylor, Box 5951, Calexico, CA 92231 Phone 714-357-6342.

There have been hundreds of VW engine conversions over the past few years and many of them have used the Posa carburetor.

Several of these engines have changed owners and, for one reason or another, instructions for adjusting the Posa have been lost in the shuffle. While the Posa is extremely simple, it does require some knowledge of its mechanism to use it properly. This fact was brought home to me recently while I was watching two fellows (on different occasions) try to adjust the mixture on their Posa carbs. They weren't having much success. Each had aquired the carb second hand, and neither one had received any instructions with it.

There are two adjustment screws on a Posa. One is small and has a spring under it. This screw adjusts idle speed only and does not change fuel/air ratio. The other screw is actually part of the needle valve assy. This screw is located under an aluminum dust cover on the end of the Posa carb. Turning this screw adjusts the mixture or fuel/air ratio to the engine. Mixture adjustments are made by full complete turns of this screw, (clockwise to lean, counter clockwise to rich). Reason for this is that the mixture needle is flat on one side. THE FLAT SIDE SHOULD ALWAYS BE OPPOSITE THE INTAKE OPENING, APPROX. 90° TO THE AIR FLOW. This is easy to check on the Posa as there is a corresponding flat side on the adjustment screw.

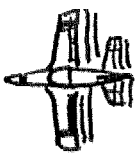
There are five (5) needles available for further adjusting the fuel/air ratio. They are numbered 1 thru 5 and the lower numbers indicate leaner mixture ratios. Our VW conversions seem to operate best on the needles numbered 3 to 5. The needles are changed by turning the adjustment screw counter clockwise and removing the needle assembly. There is an allen head set screw holding the needle. MARK THE NEEDLE SHAFT WHERE IT JOINS THE ADJUSTMENT SCREW BEFORE YOU REMOVE IT.

The length of the needle extending out of the adjustment screw is important. Gauges to measure this length are furnished with the Posa carb when purchased. If you didn't get a gauge with yours, make sure the needle you put in is installed the same depth in the adjustment screw as the one you removed.

This should give you enough information to adjust your Posa. Best bet would be to get the factory supplied instructions and gauges where possible.

Now...if you have a modified Posa, either by H.A.P.I. or by Revmaster, I recommend you contact the company doing the modification for further information...good luck!

AN INVITATION TO ATTEND



KR NATIONAL FLY-IN #1

DATE: JUNE 13TH & 14TH

LOCATION: POPE VALLEY AIRPORT
SAN FRANCISCO Sectional - Lat. 37-38°
Long. 122-3; Runway 10-28, 3700'; 618 msl

SEMINARS!
WORKSHOPS!
FORUMS!

ALL THE ANSWERS, RECOMMENDATIONS, AND PROBLEM-SOLVING TECHNIQUES YOU ASKED FOR THRU THE NEWSLETTER WILL BE WORKED ON, DISCUSSED, SHOWN, FLOWN TO YOUR SATISFACTION.

AWARDS:

OUTSTANDING AWARD
BEST STATIC DISPLAY
BEST ENGINE INSTALLATION
FARTHEST-TO-TRAVEL

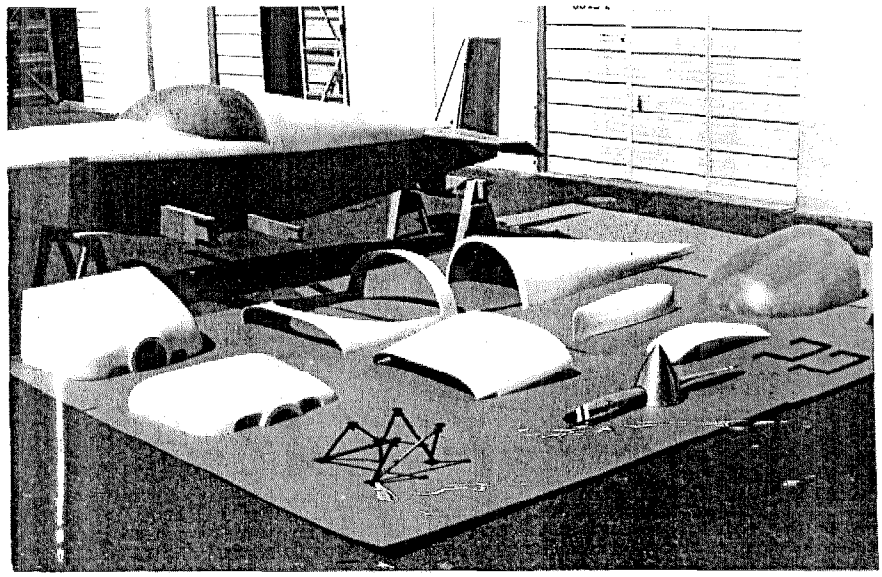
DONATION OF $2.50 WILL BE APPRECIATED.
NOTE: ALL KR AIRCRAFT FLOWN IN TO EVENT WILL BE EXEMPT.

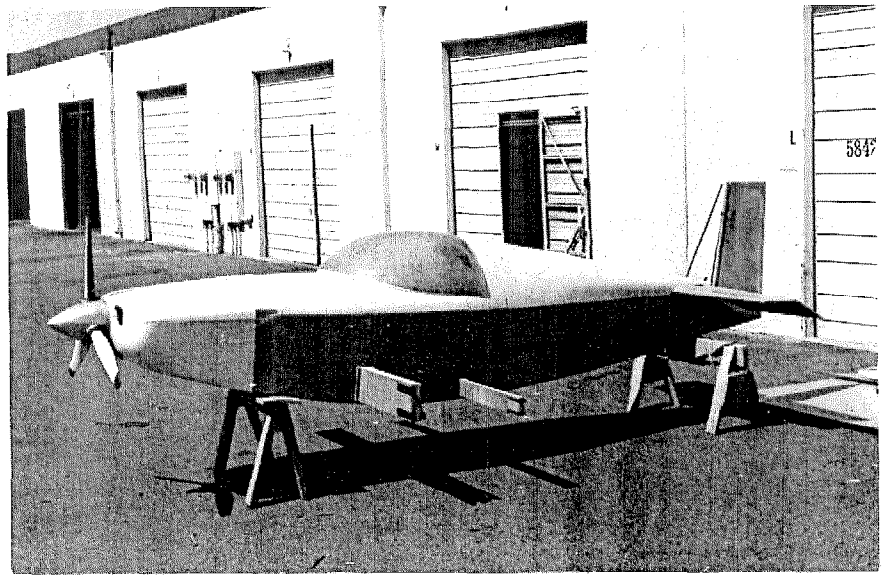
R.S.V.P., PLEASE JUST SEND A POSTCARD TO: LISLE KNIGHT
33 FARNUM, S.F. 94131

THIS WILL HELP US TO ORGANIZE, PLAN, & SCHEDULE MORE EFFECTIVELY. ANYONE WILLING TO HELP OR PARTICIPATE, PLEASE CONTACT:
ERNIE KOPPE (714) 897-2677 OR, BILL DEFREZE (415) 828-2111 OR, LISLE KNIGHT (415) 239-0536

RAND/ROBINSON UPDATE

The long awaited new KR-2 fiberglass parts are finally ready. While similar in appearance to the old parts, they are *not* interchangeable. The obvious difference is the way these new parts fit. They really do! There were some complaints from builders using the old parts (justified) so new molds were pulled off the fuselage R/R is putting the tri-gear on. This fuselage was built per plans so the new parts should fit all other plans built KR-2s as well. Prices for the parts are slightly less (except for the cowl) than the old parts. Approx. cost will be: cowl-$150.00, Forward deck & instrument panel-$110.00 (no fuel tank at this time) canopy frame-$106.00, rear turtle deck-$150.00, & wing tips-$80.00.





You can see by the pictures that the tri-gear system is not yet ready. Original plans were to have the tri-gear installed and the new KR-2 at El Mirage. They are going to be cutting it awful close.

Meanwhile, jigs & fixtures are being made for the various hinges, bellcranks, & brackets. They should be ready soon. Pre-drilled wing attach fittings and the tail wheel spring are available now.

The KR-3 is complete in all but the paper work. Looks as though it will be flying in time for El Mirage. No guarantees, you understand, paper work seems to duplicate and triplicate itself when you're not looking. Seriously, it is ready according to Jim Loudon, who will do the initial testing.

BUY ◇ SELL ◇ TRADE

WANTED...KR-2 already completed, IFR preferred. Contact Mark Stuart 202 E. Daniel, Albany, MO 64402

FOR SALE...Rand/Robinson flap handle assembly...$22.50. Tim Biggs, 15920 Uppsala Ct., Woodbridge, VA 22191.

TRI-GEAR PLANS...Retractable system that uses Rand's parts, wheels, gear legs and spring bar. Conversion plans..$25.00. Bill DeFreze, 7530 Ironwood Dr., Dublin, CA 94566 phone (415)828-2111.

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Prices are low, quality high,
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11 piece hinge & bellcrank set..$55.
8 piece aileron bellcrank and bracket set..$65.
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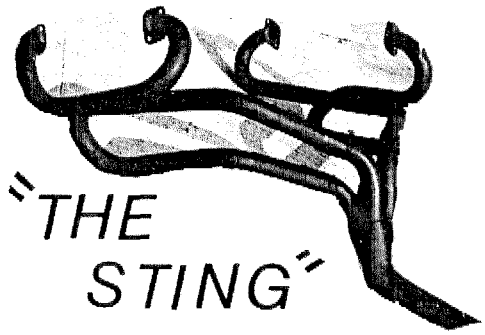

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*"The Sting" will give you a 5 to 15% increase in engine performance over the customary "straight pipes"!
*Fuel economy is increased! You get more power from less fuel due to the efficient design.
*Exhaust valve life is prolonged due to the long tubes creating a "buffer zone" between the valves and rapid temperature change.
* Will fit 1600cc to 2200cc conversions. It's ready to bolt on your engine, nothing to fabricate.
*"The Sting" is designed specifically for Revmaster, Diehl, and HAPI VW conversions as installed in a KR. Will fit most other VW powered aircraft also.

$150.00 ppd. in U.S.

Ernest Koppe
6141 Choctaw Drive
Westminster, CA 92683

THE DIEHL SUPERCASE

The only accessory case on the market designed to fit either of Rand's engine mounts. Provides electric starting and 20 amp solid state alternator. Now available with starter on top to allow clearance for tri-gear.

Current Prices

ACCESSORY CASE.....	$125.00
RING GEAR ASSEMBLY....	85.00
20 AMP ALTERNATOR.....	100.00
MAGNETO DRIVE.....	40.00
STARTER.....	65.00

We also have the special tailwheels for the KRs. These are $15.00 and will fit the Rand fork. And... TRANSISTORIZED FUEL TRANSFER PUMP for $25.00. Price on wheels and pumps include shipping....Dan Diehl, 1855 N. Elm, Jenks, OK 74037.

BUY*SELL*TRADE

FOR SALE...KR-2 spruce wood kit and 3½ sheets of mahogany plywood from Wicks. Fuselage sides completed.... $480.00. Allan, 805-528-1102 (200 miles north of L.A.)

FOR SALE...KR-1, 2 hrs TT, needs some work. 1600cc Duty VW engine, new Great American prop. Please call for details. Toll free 800-255-6518 days or 913-831-1403 in KAnsas, 913-831-1403 nights. Alan Stewart. (plane in Kansas City).

FOR SALE...KR-2 with 1834 Rev-master, full electric, starter, alternator, radio, lights, Warnke ground adjustable wood prop. No FAA restrictions to flight, must sell by June (possible trade).... $5,500.00 or best offer. John J. Kerekes, 5794 Calle del Ciervo, Tucson, AZ 85715 phone 602-299-9098 Tucson or 312-452-8379 Chicago.

FOR SALE...Wicks KR-1 spruce kit, unused...$190.00 F.O.B. Emil Switzer, 1510 Camelia Dr., Lewisville, TX 75067 phone 214-221-3857.

WANTED...KR-2 cowling, also would like to hear from other KR builders in my area. Raymond C Bergeron, 328 Kepner Drive, Ft. Walton Beach, FL 32548.

FOR SALE...Dual intake manifold (Monett) new-for Posi carb. For installation NOT using accessory case. $50.00. Frank Geddes, Box 62 RD2, Tioga, PA 16946 phone 717-537-2288.

WANTED...One pair aluminum wheels, brake drums, brake assemblies with or without tires. Write or call Herb Spies, Pointer Hills, Middlebury, VT 05753 802-388-7443 weekends.

FOR SALE...Heli-arc welded 4130 steel engine mount, complete with rubber bushings (fits VW case) new...$75.00. Kenneth Brown, 449 Seabee Ave., Naples, FL 33940.

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
ISSUE #70 APRIL 1981

Issue no. 71
MAY
1981

KR NEWSLETTER

RATES
USA $12.00 Yr
CANADA $15.00 Yr U.S.
OVERSEAS $20.00 Yr Funds

A basis for ideas and food for thought only. Use of any of the idea material is at the user's discretion. Not affliated with Rand/Robinson Engineering Inc.

The 1981 EAA Regional Fly-in at El Mirage is now history. Dedicated to the memory of Ken Rand, it attracted a crowd of KR-1s & 2s. N42CW owned and flown by Wes Evans was selected by the judges to receive the Ken Rand Memorial Award. An outstanding KR-2 that looks as good up close as it did in the air. My pictures aren't back from the lab yet so we'll have to wait till next month's Newsletter. Or, better yet, see it in person at the KR Fly-in at Pope Valley June 13 &14. Rex Taylor of H.A.P.I. flew in N19FW and promptly took the cowling off to display one of his engines. Steve Bennett and his KR-1 N11123 flew all the way from Des Moines, Iwoa and was in the running for a trophy for furthest distance flown. Dan Diehl and N4DD are probably seen around more fly-ins thatn anyone. It was great to welcome them back this year. The other "out of state" KR was the super nice KR-2 N9028Q, flown from Idaho by Ed Nelson and his son Eric. Powered by an A-75 Continental, Ed's was the only non-VW KR at El Mirage. The other KRs were N12KR - the KR-3 prototype, trailered in. Flight tests are to begin this month with water operation starting at the KR Fly-in. N28KR - the long wing KR-1B flown by Jim Loudon. N5RU - turbo charged KR-2 built and flown by Ralph Upson..very sharp aircraft. N54998 - Murray Rouse's KR-2, a regular at S. Cal. fly-ins. Murray recently switched from a Revmaster 2100 to a H.A.P.I. conversion and says it performs better in climb and cruise hasn't changed. All in all he is very pleased. N557OR - a fixed gear KR-1 owned and flown by Richard Shirley, powered by a 36 hp VW cruise is reported to be about 90 mph. A new 1835 engine will be installed soon tho and I expect a dramatic increase in performance. N8020B - turbocharged KR-1. Jim Evans will compete in the "500" at Oshkosh again this year. A new wing design is expected to improve his already good showing of last year. N24TC - KR-2 built and flown by Tom Criss. One of the first KRs to install Ken Rand's flaps, Tom plans on flying to Oshkosh this summer and wants to make it a group effort. Brad Hummel intends to join him with his KR-2. If you want to go along drop a note to the KR Shop, 1424 A½ N. Harper, Santa Ana, CA 92703. N88GH - a highly modified KR-2 built and flown by Garth Hess. See the article in this Newsletter. N36119 - KR-2. I was never able to find the pilot of this KR-2 so I don't know who he is. The aircraft is one of the first plans built KR-2s and has been flying since'75-'76. Static display KR-2 project by Lanny Creason and David Cook. It attracted more attention than the Dragonfly parked next to it and the Q-2 parked across the taxi-way. Lanny had the new design fiberglass parts from Rand/Robinson on display.

All in all, there were 15 KRs at El Mirage, 4 KR-1s, 10 KR-2s and the KR-3 prototype. A "first for me was the chance to see <u>six</u> KRs flying formation to open the Sunday airshow. It was an emotional scene as they flew over in a "missing man" formation in tribute to Ken Rand.

There were a couple of "almost KRs" at El Mirage also. Gary Boyd brought his GB-1 and Brad Hummel and Rocky Webster astounded everyone when they showed up with their 20 day old project. Registered as a GB-1 it really was a mixture of KR, GB and various other ideas and <u>it was almost ready to fly</u>! They used the old style pre-molded KR-2 parts (now produced by Gary Boyd as GB-1 parts) on a GB-1 fiberglass fuselage, their own ingenuity, and came up with an aircraft in 3 weeks! See Brad's article in this Newsletter.

HAPPENINGS
May 16...Enid, OK EAA Chapter 455 Fly-in.
May 22-24...Watsonville, CA Antiques & Homebuilts
JUNE 13 & 14...1ST NATIONAL KR FLY-IN at POPE VALLEY AIRPORT, Santa Rosa, CA area.
June 19 & 20...C.A.F.E. 250 Santa Rosa, CA the <u>real</u> efficiency race!

There appears to be a good turn-out for the KR Fly-in shaping up. We have received several letters and calls from out of state KR builders who say they will be there. Most of the local KR group has told me they will attend as well. We still need volunteers to help with various jobs, ranging from forums on construction to litter patrol. Your time, even for an hour or two will be appreciated. Write or call Lisle Knight, 33 Farnum, San Francisco, CA 94131 phone (415)239-0536 and offer your your help.

There is space for camping on the airport for those who want to rough it. There are no hook-ups for R.V.s though. Motels and hotels are a few miles down the road for the more comfort conscious. In St. Helena there is: Chalet Bernensis Inn (707)963-4423, El Bonita Motel (707)963-3216, Valley Hotel (707)963-9982, St. Helena Hotel (707)963-4388, Wine Country Inn (707)963-7077 and the Ink House (707)963-3890. If you're flying in and want some creature comforts, the hotels/motels in Calistoga (11 miles distance) are more convenient to the airports. They are: Roman Spa Motel (707)942-4441, Wardway Motel (707)942-6829, Nances' Hot Springs Motel (707)942-6211, Golden Haven Spa Hot Springs Motel (707)942-6793, Calistoga Inn (707)942-4101, Larkmead Country Inn (707) 942-5360 and Mount View Hotel (707)942-6877.

Here is a photo of N9028Q, Ed Nelson's beautiful A-75 powered KR-2. Ed has one of the few KRs that look as good in person as they do in photographs.

The El Mirage Fly-in has provided a side benefit to KR builders. We now have <u>two</u> new KR Designees. Steve Bennett of Iowa accepted the responsibility as did Ed Nelson of Idaho. We welcome these two fine men to the Designee group and encourage you to contact them whenever the need arises.

THE KR DESIGNEES

Steve Bennett
1135 58th St.
Des Moines, IA 50311
(515)255-5741

Leon Coetzee
10 Lark Str.
Meredale 2091
Johannesburg
Rep. of S. Africa

Bill DeFreze
7530 Ironwood Dr.
Dublin, CA 94566
(415)828-2111

Dan Diehl
1855 N. Elm
Jenks, OK 74037
(918)299-4444

Ray Ellis
2416 E. Douglas
Des Moines, IA 50317
(515)265-3007

Ernest Koppe
6141 Choctaw Drive
Westminster CA 92683
(714)897-2677

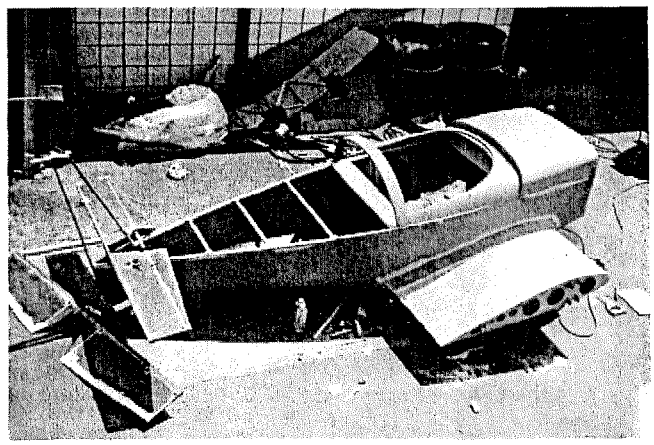
Ed Nelson
Box 858
Pinehurst, ID 83850
(208)682-3375

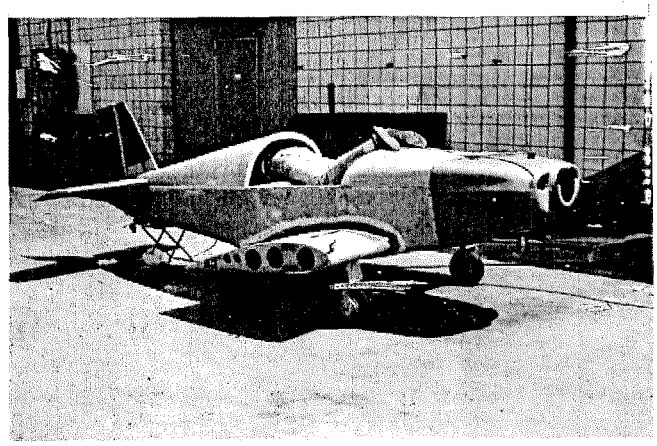
Jere Rosser
2305 Wilderness Way
Marietta, GA 30066
(404)977-0843

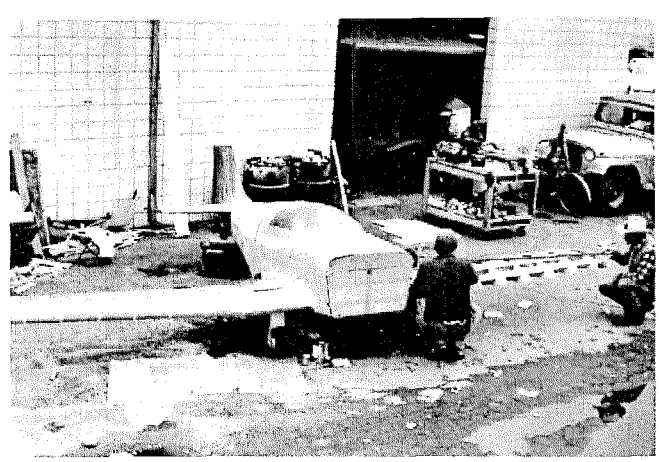
POTENTIAL PROBLEM

I was talking with Jim Wolter recently. Jim is the owner of a Revmaster 2100 and had this information to pass along. "I saw a friend's Revmaster 2100 torn down for repairs. One piston and cylinder had suffered major damage when welding slag inside the intake manifold broke loose and was ingested by the engine. I own a Revmaster and after seeing the damage I pulled the intake off my engine. Sure enough, inside the intake manifold were several little "weld berries", the same as broke loose in my friend's engine. I prodded a couple with a pencil and off they came. It was easy to see how engine vibration could cause them to fall free and into a cylinder. I notified another friend with a Revmaster of my findings but he had already found and cleaned out the slag. Evidently, this situation is commonplace with the Revmaster engines so I recommend anyone owning one to examine the interior of the intake manifold immediately." Jim Wolter, 14700 Mitchell Cr. Dr., Ft. Bragg, CA 95437.

BUILDING AN AIRPLANE IN 20 DAYS
BY BRAD HUMMEL







Well, almost...it started 24 days ago on April 5 when Rocky Webster and I decided that we could build an all fiberglass KR-2 in 20 days and have it flying at the El Mirage fly-in April 25 & 26. We talked about it for hours and realized that between us we had everything we would need to build a plane in such a short time. Ernest Koppe gave us a complete set of spars and use of the KR workshop (there was no room inside for another project so we had to build it out in the back alley). Carey Anderson of Minature Metrics supplied us with a set of pre-made hinges and bell cranks. Guy Hummel donated wing attach fittings, KR-1 landing gear & partially completed tail feathers. Rocky had a complete 1835 VW engine which he had built to be sold at the fly-in & the rest I had in boxes, saved up after years of KR projects.

We called Gary Boyd at his pre-molded Sport Aircraft Parts and arranged to have a complete GB-1 fiberglass fuselage and other pre-molded parts delivered the next morning. April 6th we began working 12 to 17 hours a day, 7 days a week. The FAA was very co-operative and inspections were handled quickly and without any delays. We even managed to get our "N" numbers in 5 days from Oklahoma. But smoothly as things went & using all the tricks I'd learned over the years on other projects, we just were not ready for our April 24 final inspection (two days of rain, working under a makeshift tent and no experience with pre-molded wing skins didn't help). We did trailer our almost complete airplane to El Mirage Sat. evening and displayed in Sunday. Not a bad showing for 18 days of work. All that remained to do was engine baffling, minor cowling fastener work and the final sanding. On Tues. April 28th we got our final inspection & celebrated with a trip to Disneyland with Steve Bennett and Ernest Koppe on Wednesday.

Back again to the real world of airplanes, we loaded up the plane and trailered it out to Corona Airport Thurs. for its first flight. Final preparations took most of the day. The sun was going down as our little GB-1 broke ground for the first time. With a crowd of loyal friends clapping, Rocky crying, and me screaming, we made it! As I flew our 24 day wonder plane for its first flight around the pattern, everything about the plane felt and handled like all the KRs I've test flown. There were no real surprises, only joy and elation. Final weight was 529 lbs. empty so that little 1835 was hardly working. She broke ground at 60, climbed at 80 & 800 fpm. Flew the pattern a little fast at 120 mph. Touchdown was about 45 mph in a three point with one small skip to remind me that I'd gotten a little rusty in the past few months. I really tried to act calm as I taxied back to the ramp but I just couldn't keep from smiling from the excitement. Rocky and I are going to try to put together a construction manual for assemblying the pre-molded fiberglass parts that I hope will answer some of the problems of fitting these parts. It's really not hard to make the parts fit your plane if you just know how. Hopefully, this will be available soon through the Newsletter. We will probably be at coming fly-ins, so we'll see you there.

QUESTIONS & ANSWERS

Q. How do I get the adhesive off the stainless steel firewall sheet that Rand/Robinson sends rolled up and taped? Whatever that tape is, acetone doesn't take it off.

A. Automotive brake fluid is very good for most adhesives including the one on the older paper covered canopies.

Q. Has anyone used the GAW-1 airfoil on a KR-2? I've read the NASA reports but need "CG" info.

A. Warren Aiken of 2323 Farleigh Rd., Columbus, OH 43221 built and flew a KR-2 with the GAW-1 airfoil. I haven't heard from him in two years tho' so he may have moved.

Q. What weight fiberglass cloth is used instead of Dynel?

A. Rand/Robinson is using a 5.8 oz. bi-directional weave fiberglass cloth.

Q. What is the width of the tailwheel fork?

A. 1½" I.D.

Q. What is the height of the instrument panel at the highest point above the longerons?

A. 8"

Q. Can you tell me where I can buy the extruded piano hinge?

A. Most aircraft parts supply houses will sell this item. I buy it at Aircraft Spruce and Specialty in Fullerton, CA.

Q. I glassed my stabilizer and, after peeling off the wax paper, the surface is all wavy. Am I using too much resin?

A. First of all, don't use wax paper. Use peel ply or nothing at all. You probably are using too much resin, most builders do. If the resin covers the weave of the cloth, it is too much. You should only use enough resin to wet the cloth. The weave should still be very evident.

Q. What is the appropriate solvent to use for diluting R/R epoxy for use as varnish?

A. "Copon" has been recommended by some, but I used the epoxy straight and used a squeegee to spread it.

Q. What should be the approximate weight of the rudder, horiz. stab., and the elevator? Mine were 3.4 lbs, 7.3 lbs, and 5.5 lbs respectively, each weighed without hinges.

A. I have never weighed the items you mention but the weights you list seem reasonable. Now would be a good time to survey all the builders that did weigh the various parts of their KRs. If you weighed any part of your KR and kept a record of those weights, drop a note to the KR Newsletter and we'll run the results in a future Newsletter.

Q. Has anyone built shoulder harness attach points in a KR-2?

A. Most builders have not installed shoulder harness and, as you are aware, there is nothing in the KR plans. The buiders that have used shoulder straps usually built in support behind the seat shelf.

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FOR SALE...2 Slick magnetos with sheilded ignition harness. Model 4015, LH Rotation, 25° lag angle. Both mags are new...$150.00 ea. with harness. Contact Bill Rosman, Rte. 1 Box 150, Palmyra, WI 531-56 (414)495-4370.

FOR SALE...KR-2 fixed gear plans with axle, attach brackets & tail wheel drawings...$20.00. All professionally designed. Contact Bill Rosman, Rt. 1 Box 150, Palmyra WI 53156 (414)495-4370. Note gear weight is less than R/R retract.

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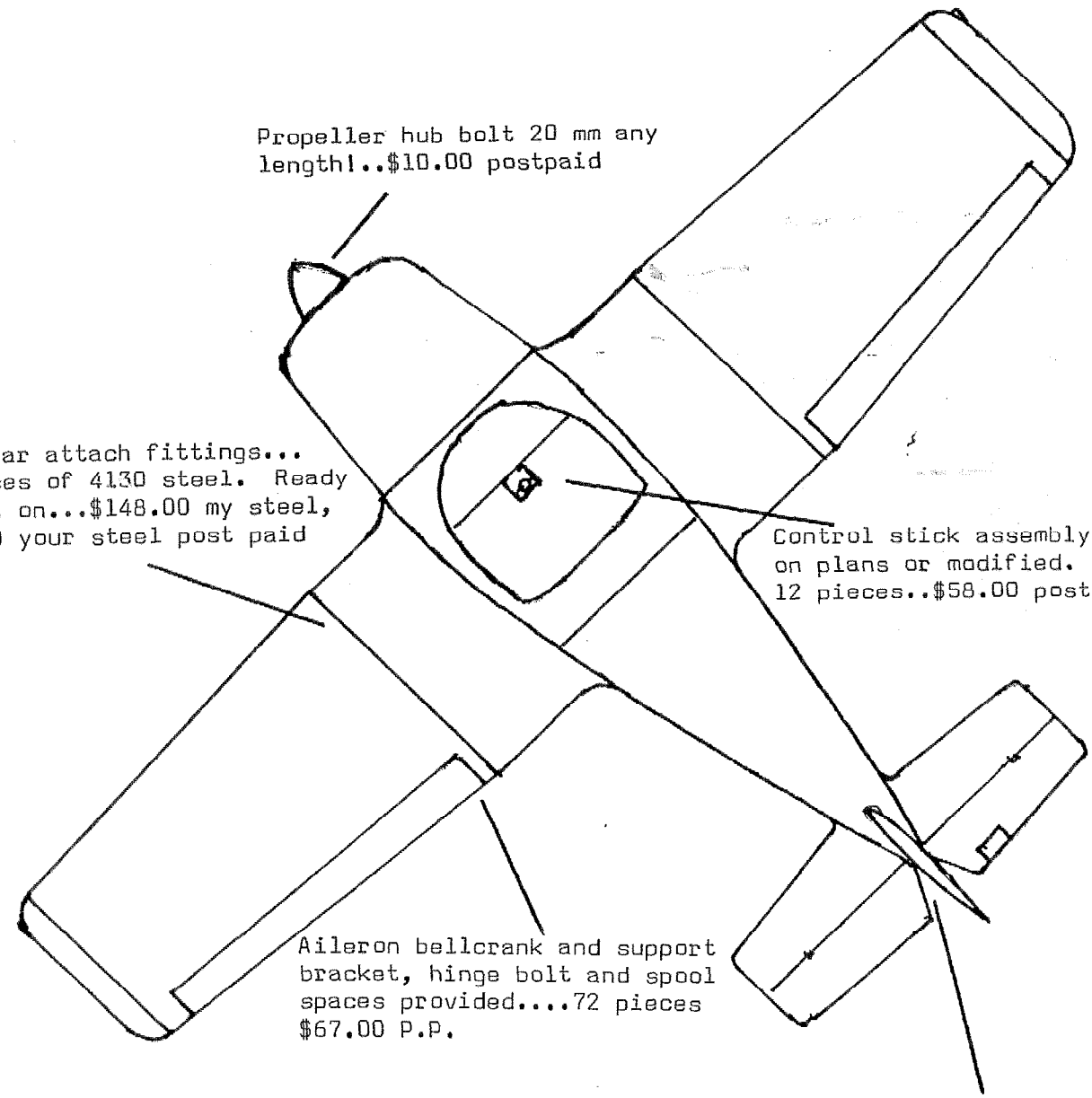
Minature Metrics has several services and products. Send a S.A.S.E. for more info.



Propeller hub bolt 20 mm any length!..$10.00 postpaid

Wing spar attach fittings... 32 pieces of 4130 steel. Ready to bolt on...$148.00 my steel, $105.00 your steel post paid

Control stick assembly as on plans or modified. 12 pieces..$58.00 postpaid

Aileron bellcrank and support bracket, hinge bolt and spool spaces provided....72 pieces $67.00 P.P.

Rudder, elevator, tailwheel horns and hinges...11 pieces. $55.00 postpaid USA

QUALITY...all material is aircraft aluminum/steel as specified in your plans. Milled with precision then deburred, bead blasted, final finish reamed by standard aircraft production proceedures all in the interest of safety.

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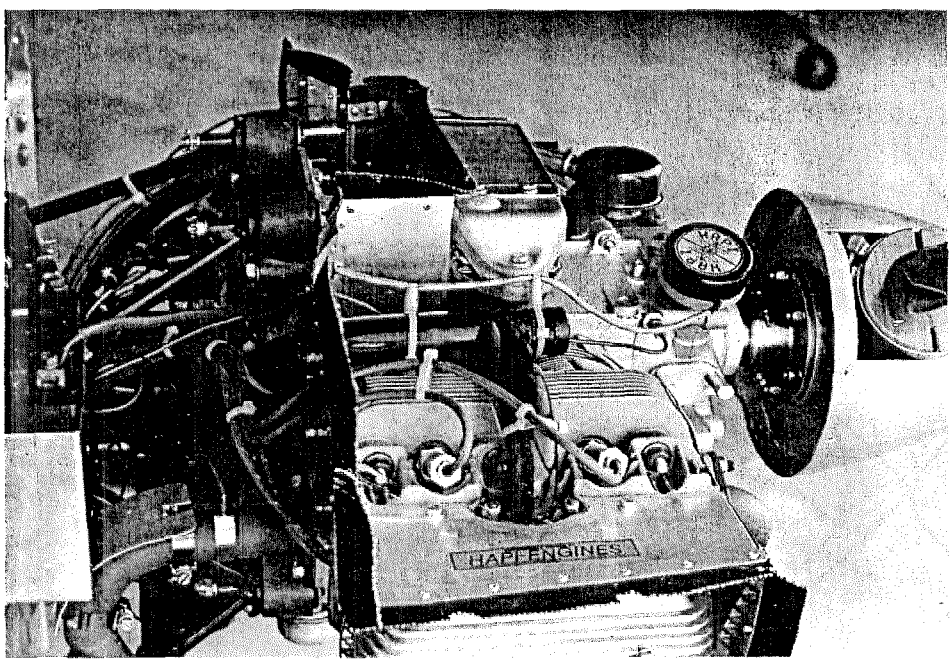


HAPI Inc. has built more V.W. conversions in the past 3 years than all other makers in the U.S. combined. We build quality engines that give proven reliability and top performance. We treat our customers as we would like to be treated, ask any of them! We would like to help you with your engine problems too! You will find that our prices are often much less than local suppliers offer, and since we build and fly KR's, we know your needs. At left is our Model 60-2 with dual ignition installed in Fred Whitcomb's KR-2 with the complete HAPI installation package. We can save you time, money and frustration, Plus being as near as your phone with helpful, knowledgeable advice on engines.

NEW ITEMS— HAPI'S OWN ELECTRONIC DUAL IGNITION

Delivers 44000 volts to the plugs to fire a 035 thousandths spark gap as compared with .016 for the old fashioned magneto. Has no points or other wear parts to change with wear, is timed by "Hall Effect" sensors. It fits in the old distributor hole as shown above and is used as secondary ignition with a Slick magneto as primary ignition. Adds R.P.M. and smoothness to your engine plus the safety of dual ignition. SECONDARY IGNTION SYSTEM. . .$219.00

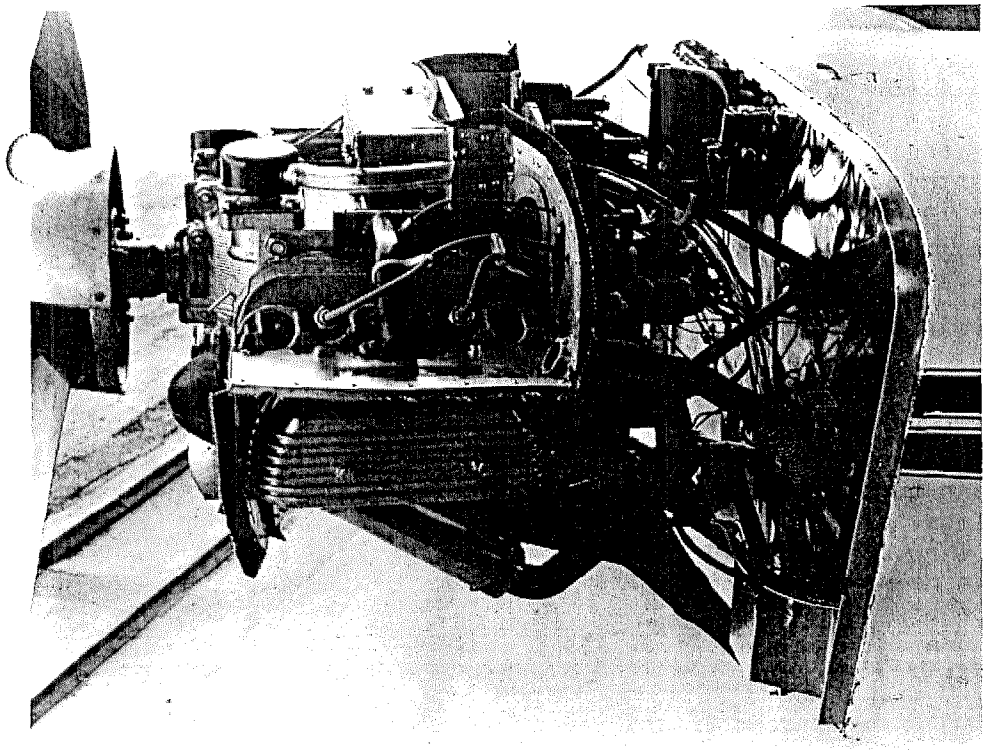
Machine your heads for dual spark plugs, includes plugs and ignition harness, new rocker covers with wire seals. PRICE $200.00

HAPI's PRIMARY IGNITION SYSTEM

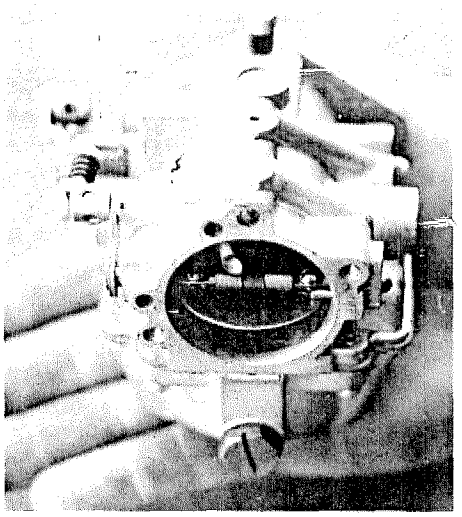
HAPI's primary ignition system has the same features as the above system, but has added automatic spark advance system to allow starting on electronic system. An excellent choice for a low dollar conversion. Needs no other hardware except a very small 8 amp hour motorcycle battery. Much easier starting than magnetos. PRICE $239.50

HAPI'S ENGINE INSTALLATION KIT

We have designed an engine fuel system and baffling kit to meet the demanding standards of the Australian Department of Transportation. It consists of every piece you need, all genuine aircraft parts, hose and fittings, firesleeve, gascolator, fuel valve, finger strainer, plus complete assembly drawings, 29 separate pieces of hardware. With kit you get full size baffling templates, step by step pictorial"how to"tips, drawings for carburetor heat box and muff, KR-2 electrical system, battery box, gascolator cooler box and holder bracket, plus pictures and text. This package has all the missing information you need to install the engine in your KR to meet certified aircraft standards in any country of the world. COMPLETE KIT AND DRAWINGS $99.50



At left is another view of our installation kit fitted engine. Note the tuned exhaust system allows heat muff placement under left cylinder bank. Gascolator is enclosed in cooler box and supplied fresh air by aeroduct tubing. Cylinder head temps will not exceed 420° on prolonged full throttle climb and cruise at 310°F. Oil temp is maintained at 180° or less in any weather. Baffling templates can be used on other cowlings by simply adding to or trimming outside edges to fit. Will fit any V.W. conversion based on 1600cc. All drawings are available separately.



HAPI'S NEW FLOAT BOWL CARBURETOR

This carburetor is built to our specs, specifically for V.W. engine use. It totally eliminates some of the troublesome problems of floatless carburetors. Works well with gravity feed fuel systems or can be fed by fuel pump. Fixed jet, 2mm throat, fits all 1600 to 2100cc conversions. Flange mounted IN STOCK NOW! PRICE $69.50

Matching steel flange, weld to your manifold PRICE $1.75

NOTE: We will soon have mixture control option to bolt on the above carburetor, full mixture change capability and idle cutoff. PRICE $29.50

PRIMER FOR STARTING

Inject a measured amount of fuel directly into the manifold behind the carburetor to prime the engine for easy starts in the coldest weather. Kit contains primer pump, plastic line and "T" fitting, plus instructions. PRICE $9.95 ea.

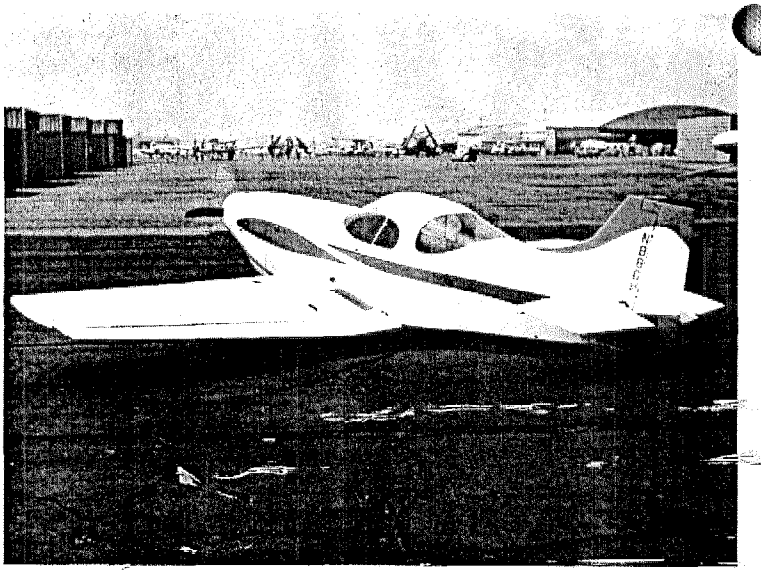
These are just a few of the many new items added to our catalog this year!

HAPI MACHINE SHOP SERVICES

ALIGN BORE CRANKCASES- BORE CASES FOR BIG CYLINDERS- RECUT DAMAGED THRUST SURFACE- INSTALL CASE SAVER INSERTS- GRIND AND RESEAT ENGINE VALVES- INSTALL VALVE GUIDES AND SEATS- C.C. COMBUSTION CHAMBERS- RECUT HEADS FOR LARGE CYLINDERS- "MAGNAFLUX" INSPECTION SERVICE- ZYGLO INSPECTION ON ALUMINUM AND MAG- HELIARC WELDING- CUSTOM MOTOR MOUNTS WELDED.

We stock and sell every engine related part for your V.W. Powered aircraft. We sell ready to fly engines, plus every part you will need to build your own. "How to Build A Relaible V.W. Aero Engine" By Rex Taylor has been used as an engine builders bible for over 2 years now with dozens of sucessful engines built from it by builders who never before worked on an engine. Manual has 140 photos and drawings, step by step instructions, and much more. PRICE $13.00 Postpaid in U.S. $16.00 airmail overseas. Send $4.00 Postpaid for HAPI's 40 page catalog of parts and accessories. You will find everything you need from one source. When you order $25.00 or more you get a $3.00 Catalog discount!

This is Garth Hess's highly modified KR-2. I watched this aircraft take shape as it was displayed each year at the EAA fly-in at Chino. Garth has shared some of his modifications with the KR Newsletter readers, notably the balancing method on the control surfaces and the homemade venturi built into the wing fillet. Both have proved to work very well in flight. The canopy is self made and incorporates a roll over structure. Garth also carved his own prop. The greatest deviation from the plans tho' is in the control system and wings. Full span "flaperons" are used thru a control linkage mixer of his own design. I asked Garth what he would do differently if he had to do the project over again. The list was very small...use fiberglass instead of Dynel, put in wing tie down sockets, and install gear up warning lights. The last item would have saved a prop. Garth noticed a drop in engine oil pressure while flying one day, so he headed directly back to the airport. The oil pressure continued to drop as he entered the pattern and in his concern over the engine, Garth forgot to put the gear down...scratch one prop. N88GH flies regularly out of Chino Airport and you can usually find Garth there.



ERNEST KOPPE
6141 CHOCTAW DR.
WESTMINSTER,CA 92683
ISSUE #71 MAY 1981

Issue no.72
JUNE
1981

KR NEWSLETTER

RATES
USA $12.00 Yr
CANADA $15.00 Yr U.S.
OVERSEAS $20.00 Yr Funds

THE KR FLY-IN

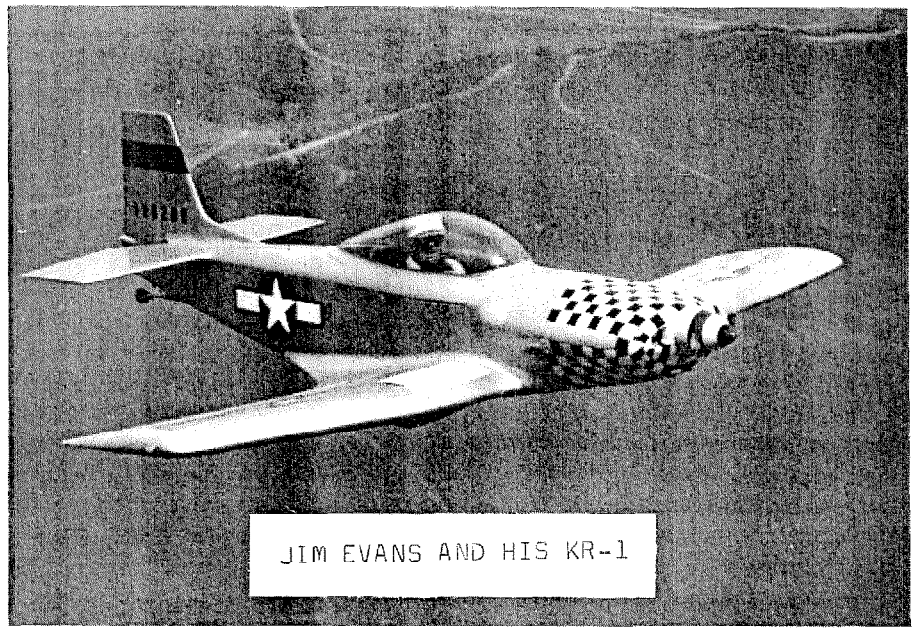
If you haven't made your preparations to attend the First National KR Fly-in you had better start now! It's on the 13th and 14th of this month (June) and judging from the amount of effort put into it by Bill DeFreze and Lisle Knight its going to be a real success.

The majority of KR builders I've talked with have said they will be there so I expect we'll see a good turn-out of people and planes. Just in case this is your first Newsletter, the First National KR Fly-in is being held at Pope Valley airport, a 3700' paved strip in the heart of California's "green country". Pope Valley is on the San Francisco sectional, 23 miles from Santa Rosa VOR on the 55° radial or 68 miles north (true) of San Francisco International. It is a privately owned airstrip that has been turned over to the KR group for the week-end. A "fly-by" pattern will be set up so we can see how well our KRs fly. Forums and workshops have also been planned. We'll all be able to see the latest techniques in building a KR.

If you plan on going but need more information, call Bill DeFreze at (415)828-2111 or Lisle Knight at (415)239-0536. See you there!

THE "C.A.F.E. 250"

The week-end following the KR fly-in will have another "first". The first C.A.F.E. 250 Air Race will be held at Santa Rosa, a few miles from Pope Valley. The C.A.F.E. 250 is not a "wing tip to wing tip" race, but more in line with the Oshkosh 500, where efficiency, as well as speed dictates who the winner will be. The entrants are required to complete a 250 mile course at their most efficent weight, speed, and fuel consumption. Altitude is left to the discretion of the pilot. A KR has a very good chance at winning this competition. Jim Evans has entered his KR-1 and will surprise a few people with a new wing and wing tip he has built. He still uses the RAF 48 airfoil but reports a 20 mph increase in cruise and a 400 FPM increase in rate of climb over the figures he had with his old wing.



JIM EVANS AND HIS KR-1

Rex Taylor of H.A.P.I. had entered a KR-2 but dropped out due to an increasing demand on his time from his ever-growing business.

Brian Seeley, Chairman of the C.A.F.E. 250, tells me he is looking for someone with a KR-2 to enter the competition. It should be fun, and there are cash prizes to make it worth your while. Contact Brian at his home phone (707)526-3925 or office (707) 544-2720. "Gentlemen, start your engines!!"

PROBLEM AREAS

A recent encounter with a sub-par KR-2 project left me with a better grasp of some problems the KR builders are over looking. This particular KR-2 project was not salvageable due to inferior workmanship, poor glue joints and sub-standard ¼' plywood used for the firewall and other sections of the fuselage. The glue used was also suspect. All in all, the whole project was a nightmare of what not to do on a KR. The "not so obvious" problem I want to cover here is the fact that the fuselage was also out of square in relation to the center line of the firewall and tail post. This is a more common problem with the other KRs I've looked at and is usually built-in when the fuselage sides are joined to form the "canoe". Most builders will use a jig to hold everything square while glueing in the tail post and firewall. This is good and as it should be. However, many of these same builders expect the fuselage to stay square until they are ready to install their spars. They assume since everything was straight or square when the fuselage was glued together, it will stay that way. It won't! Unless the fuselage is carefully checked for alignment when the spars are installed, the odds are good that the tail, wings, and firewall of the finished aircraft are going to be pointed in different directions. This can cause problems ranging from a minor trim correction,to an aircraft that is uncontrolable in the air (and sometimes on the ground).

A simple way to check your unfinished project is with a string, a level and a plumb bob. (1) Locate the center of the firewall and the rudder post at the top of the fuselage at the longerons. (2) Stretch a string from center of firewall to center of tail post. (3) Level fuselage across firewall or seat back position. It doesn't matter which as long as the same spot is used each time. (4) Measure to the fuselage on each side of the string at various stations along the top longeron. Each side should equal the other. (5) Now plumb down from the string to each bottom cross-member and mark these points. (6) Measure to the fuselage on each side of the marks. The measurement should be the same on each side at each cross-member. After you're satisfied that the fuselage is correct, now you can check the wing spars. (7) Establish that the center of the spars are on the center line of the fuselage. (8) Use a square laid along the fuselage center line to see that the spars and firewall are square with the fuselage. (9) Measure to the end of each spar diagonally from the firewall, top or bottom doesn't matter, each side should equal the other. (10) Now if you've done all this and your measurements came out correct at each step, you have a perfect fuselage. I have never seen a perfect fuselage yet. Most were within a ¼" or so but some were an inch or more off on the spar measurement. Take your time to do it right at this very critical point in construction and you will be rewarded with a smooth flying, easy handling and fast KR.

QUESTIONS & ANSWERS

Q. I was told that an 1835cc VW conversion did not have enough power for a KR-2. Is this true?

A. An 1835cc engine will be enough power for most KR-2s. Unfortunatly there are a few 600 lb. plus KRs out there and for those an 1835 would indeed be marginal.

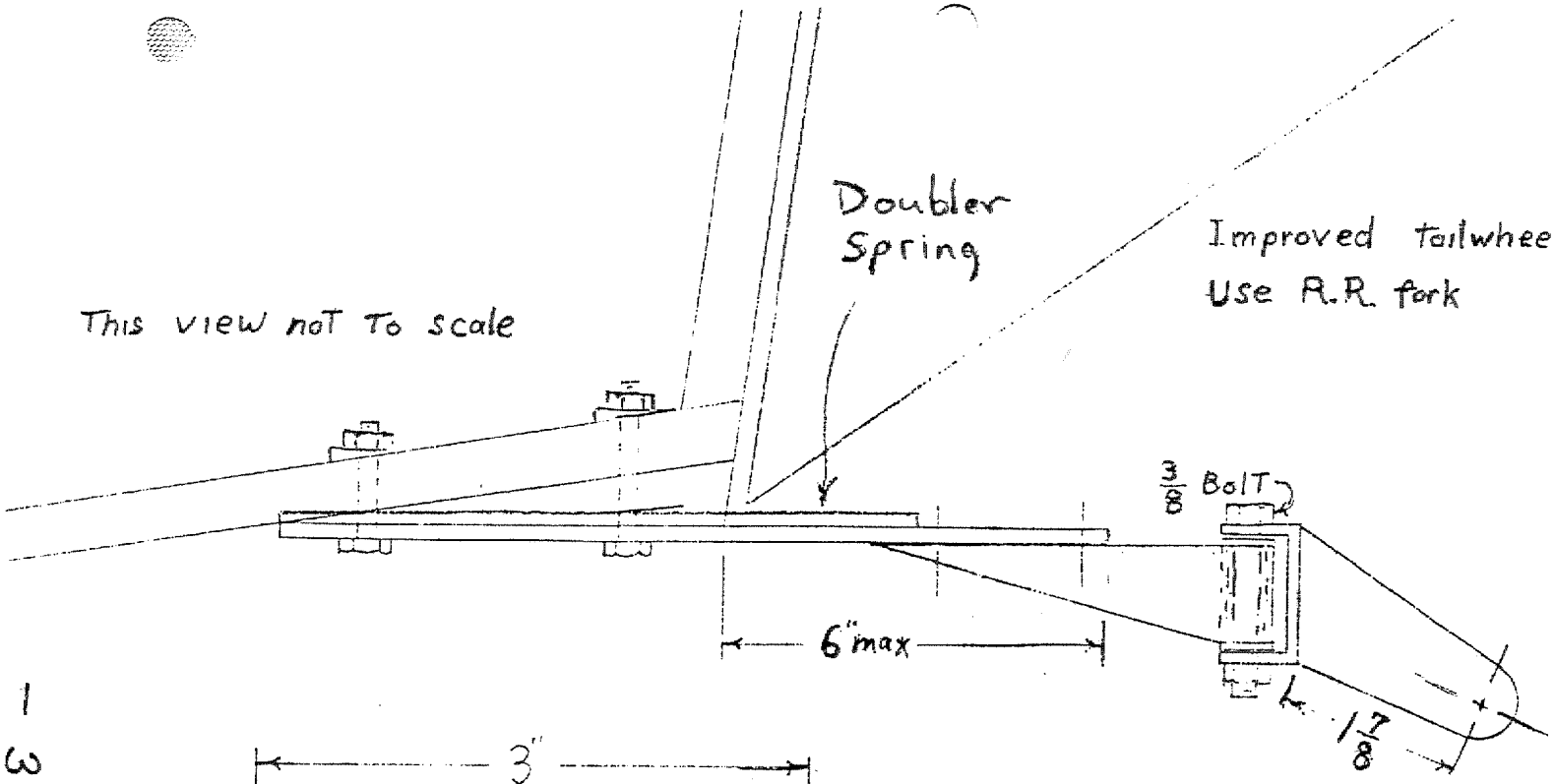
Q. How many subscribers does the KR Newsletter have?

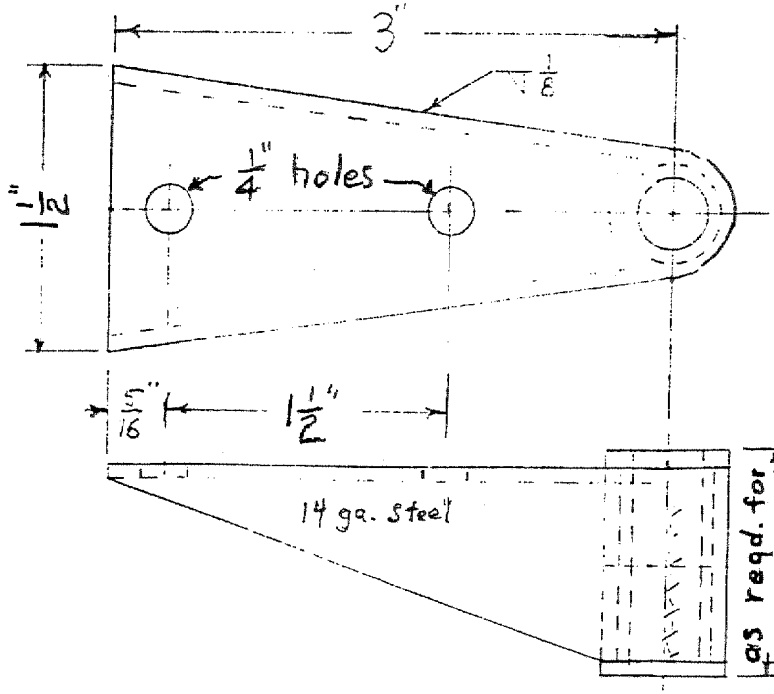
A. The Newsletter started off 6 yrs ago with less than a hundred subscribers. Today there is about one thousand current. There have been just under three thousand subscribers over the six years.

Q. Do you have any idea how many KRs are flying, being built, plans sold?

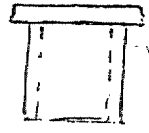
A. I don't have a definite figure on the amount of KRs actually flying but I have heard estimates ranging from three hundred to eight hundred KR-1s and KR-2s. My guess would be closer to the three hundred mark. There are probably three thousand KRs under construction and that is a conservative estimate. Almost twice that many kits have been sold. Over twelve thousand KR-1 and KR-2 plans have been sold.

A quick note from Bill DeFreze.....the peel ply he mentioned in an earlier Newsletter will be available at the KR Fly-in. Get it there and save shipping cost.





I've received several queries regarding a stronger tailwheel spring and bracket. This is the drawing Dan Diehl sends out with the heavy duty tailwheel he sells.



1/2" OD x 3/8" I.D.
Brass Bushing
2 Regd.

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SALT LAKE CITY, UT
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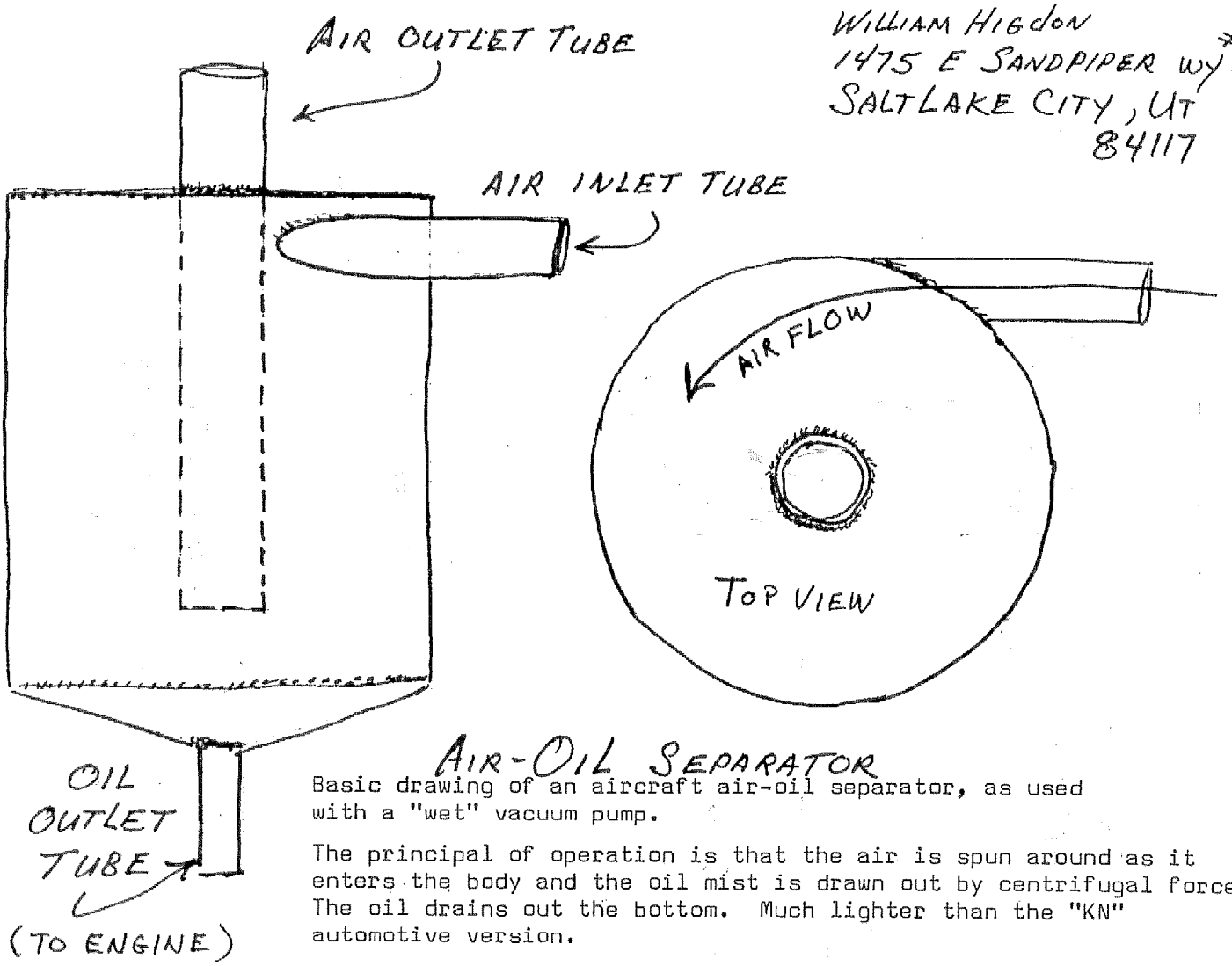


AIR-OIL SEPARATOR

Basic drawing of an aircraft air-oil separator, as used with a "wet" vacuum pump.

The principal of operation is that the air is spun around as it enters the body and the oil mist is drawn out by centrifugal force. The oil drains out the bottom. Much lighter than the "KN" automotive version.

THE DIEHL SUPERCASE

The only accessory case on the market designed to fit either of Rand's engine mounts. Provides electric starting and 20 amp solid state alternator. Now available with starter on top to allow clearance for tri-gear.

Current Prices

ACCESSORY CASE.....	$125.00
RING GEAR ASSEMBLY....	85.00
20 AMP ALTERNATOR.....	100.00
MAGNETO DRIVE.....	40.00
STARTER.....	65.00

We also have the special tailwheels for the KRs. These are $15.00 and will fit the Rand fork. And... TRANSISTORIZED FUEL TRANSFER PUMP for $25.00. Price on wheels and pumps include shipping....Dan Diehl, 1855 N. Elm, Jenks, OK 74037.

Revmaster AVIATION CORP.

CHINO AIRPORT
CHINO, CALIFORNIA 91710

Please print a notice in the KR Newsletter stating that Gerhard Carlsson, who is selling tri-gear plans and using our address is not now, AND NEVER HAS BEEN, associated with Revmaster Aviation. We have been getting mail, including money orders & checks, addressed to him and we haven't heard from him. Thanks...Robert Horvath, Revmaster Aviation, Chino Airport, Chino, CA 91710.

*Ed. Note..Those who wish to contact Mr. Carlsson can write to him at Ringvagen 16, 59042 Horn, Sweden. I don't know if he is still selling the tri-gear plans tho.

KR MERCHANDISE SALE!

I have accumulated a back log of various items and need to make room. A sale is in order. For the next 30 days the following prices are in effect:

Back issues of the KR Newsletter....50¢ each
Solid Brass KR Belt Buckle.....$5.00
KR T-shirts.....$6.00 each or 3 for $15.00
Sting exhaust system.....$150.00, last chance at this price, it will go up $20 in July.
"KR BUILDER" ballpoint pens.....50¢ each.

BUY ◇ SELL ◇ TRADE

TRI-GEAR PLANS...Retractable system that uses Rand's parts, wheels, gear legs and spring bar. Conversion plans..$25.00. Bill DeFreze, 7530 Ironwood Dr., Dublin, CA 94566 phone (415)828-2111.

R. D. WEBSTER AERO ENGINES

Specializing in VW Conversions

Custom built engines to your specifications....1600 to 2180 cc turbo-charged or normally aspirated. Prices from $1595.00

R. D. WEBSTER
1424 A½ N. HARPER
SANTA ANA, CA 92703
Phone 714-554-7932

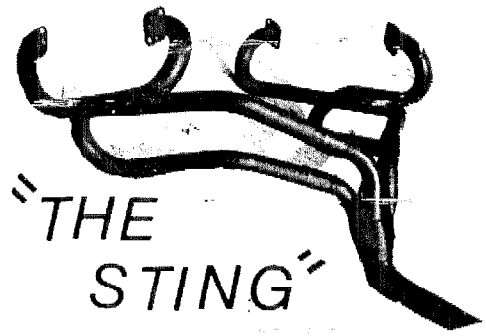
FOR SALE...KR-2 approx. 90% complete, Revmaster 2100D, R/R 3 blade prop, spinner mounted, 3 tanks, all flight instruments in panel, plus wing tips. $5,500.00 (501)666-8290 shop or 225-5368 home after 5, no collect calls.

FOR SALE...KR-2 with 1835 Turbo. 15 hrs. on plane. Needs some work, wind damage to canopy. Must sell, make offer. Paul Eskridge (714)968-3718.

FOR SALE...KR-2 project, Fuse and spars are completed, some forming done. Have all materials required to finish plus gauges, gear, wheels, and more..... $4,000.00 Phone (312)968-1865.

WANTED...Partially finished KR-1. Send particulars to James Hardy, RR#1, Box 268-X, Sanger, TX 76266.

FOR SALE...R/R 3 blade prop,new never used...$250.00 prepaid anywhere in the U.S. Dick Nichols, 6001 Ocean Dr. Corpus Christi, TX 78412 (512)992-2844.



"THE STING"

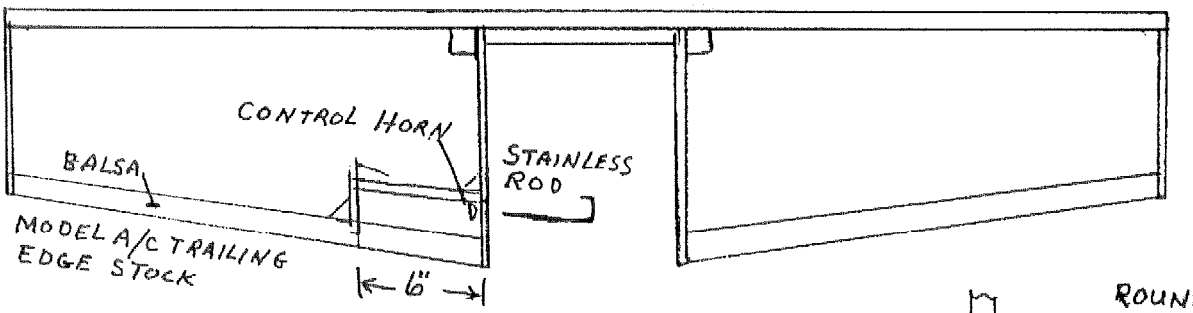
A Performance Tuned Exhaust for the VW Aircraft Engine!

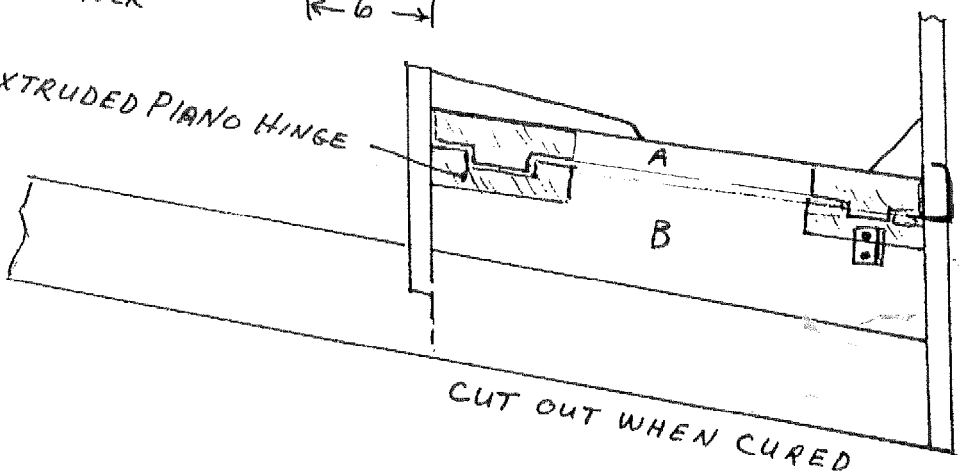
*"The Sting" will give you a 5 to 15% increase in engine performance over the customary "straight pipes"!
*Fuel economy is increased! You get more power from less fuel due to the efficient design.
*Exhaust valve life is prolonged due to the long tubes creating a "buffer zone" between the valves and rapid temperature change.
* Will fit 1600cc to 2200cc conversions. It's ready to bolt on your engine, nothing to fabricate.
*"The Sting" is designed specifically for Revmaster, Diehl, and HAPI VW conversions as installed in a KR. Will fit most other VW powered aircraft also.

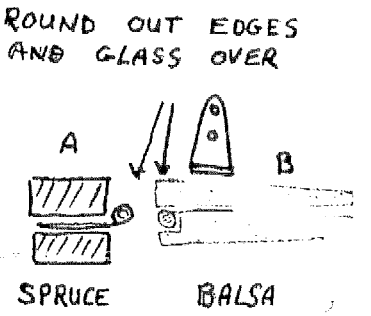
$150.00 ppd. in U.S.

Ernest Koppe
6141 Choctaw Drive
Westminster, CA 92683

FOR SALE...KR-2 project. Over 50% complete. Revmaster 2100D, Maloof prop, fiberglass fuel tank, cowling, and instrument panel....$4,000.00. Tom Zuber, Rt. 6 Box 481, Phenix City, AL 36867 Phone (205)297-4484.







This is how I've done my trailing edges. Prevents warping during glass lay-up. Total cost for elevator and rudder is $1.50. Scrap balsa wood is used for part "B".

By: Joe Beyer

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
JUNE 1981
ISSUE #72

Issue no. 73
JULY
1981

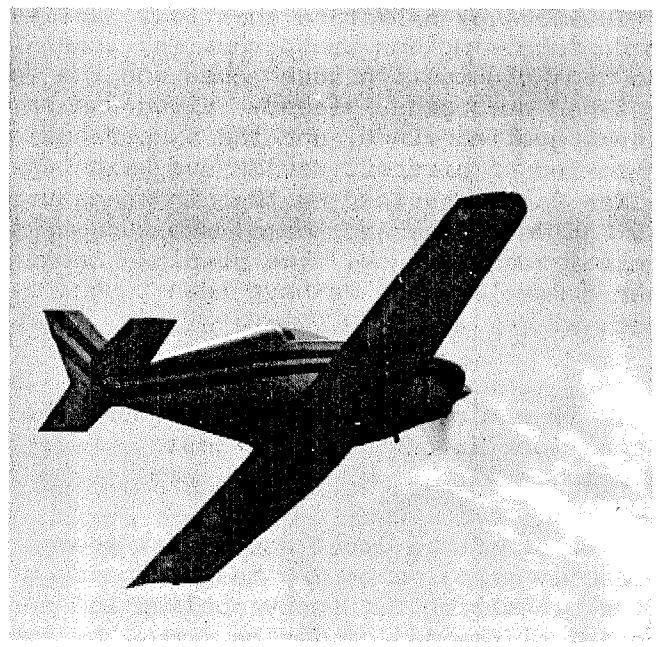
KR NEWSLETTER

RATES
USA $12.00 Yr
CANADA $15.00 Yr U.S.
OVERSEAS $20.00 Yr Funds

THE 1st NATIONAL KR FLY-IN

We came from all parts of the country, from Florida to California and from Canada to Arizona. We came because of a common bond.....KRs and our love of flying. We arrived in good spirits and we bathed in a glow of fellowship and fun as we watched the KRs fly. We marveled at their sleekness and we envied their pilots as they flew through the air.

Saturday night we gathered for the awards presentation, wishing to honor those builders we felt had showed qualities in their KRs we would like to have in our own. There were four awards this year. An award for "Best Static Display" went to Bob Perry, 2150 Churn Ct.,Redding, CA 96002 for his almost finished KR-2. Rex Taylor of H.A.P.I. won two awards, "Longest Distance Flown" and "Best Engine Installation". Rex flew N19FW, Fred Whitcomb's KR-2, from Calexico, CA to get the long distance award and it should surprise no one that Rex would have the KR with the best engine installation. Now that I think about it....its only logical that these two awards go to the same KR.



The top award for "Most Outstanding KR" went to Wes Evans, 384 Sacramento Drive, Ventura, CA 93004. This was almost a foregone conclusion from the time Wes and his wife arrived in N42CW. The clean lines and smooth contours of this fine aircraft attracted us KR builders like moths to a flame. Watching it fly filled us with a resolution to get ours finished and flying so next year our KR would be up there too.

Bill DeFreze presented the awards Sat. night. We had enjoyed a day full of KR building thru the workshop put on by Lisle Knight and comparing notes with other KR builders. We watched the KRs of Wes Evans and Rick Todd fly and some were given the thrill of flying right seat. It had been a great day and the awards banquet was a perfect ending.

Sunday dawned to clear skies and wind 15 to 20 knots and gusting. We were awakened to the sound of engines as Brad Hummel, who had arrived in a GB-1, Wes Evans, and Rick Todd were once again in the air in spite of the windy conditions. Once again we were thrilled to see the reasons we were spending our time and money on seemingly endless projects. They could be finished...they could be flown...here was proof right in front of our eyes...it was indeed a great fly-in.

The Fly-in ended Sunday morning...Brad Hummel and Patty Helton were killed when the GB-1 they were flying seemed to explode in mid-air as they were about to make a high speed fly-by.

Shock and disbelief was the first re-action felt by everyone watching. That such a thing could happen was unthinkable. It took only a few minutes to confirm the worst possible outcome. Brad and Patty were dead, the plane a total loss.

The Fly-in disolved after that. People who had been enjoying themselves so much the previous day were somberly gathering up their belongings and were going home.

Brad and Patty left us a legacy, at least those of us lucky enough to know them well. And if you knew them at all, you knew them well. It is not a legacy of money or material things but rather it is the knowledge of having shared their joy and enthusiasm for life, for love, and for flying. While this legacy seems small compared to having Brad and Patty with us now, we can take comfort in the fact they went doing what they loved, with people they loved, and they were together.

There are lessons to be learned from this accident and its causes. As in any accident it is hard to point to any one thing and say "this caused the accident". Accidents are usually caused by a series of events that culminate into the final outcome. This is true of this accident also. Many people have said the airplane was built too fast (24 days) therefore couldn't be safe. Not true. The plane was built using several pre-made components, hence the shorter building time. Some said the spar broke because it was patched and re-drilled....maybe...but it broke first at new and unpatched holes. The F.A.A. and N.T.S.B. conducted their own investigation of the accident and pre-liminary findings were....pilot exceeded airframe Vne limits in extremely turbulent wind conditions. Flutter apparently developed in the right aileron, as part of the aileron skin was found 200 yds before the crash. The aileron weight broke off and was never recovered. Whether it came off before or after the aileron fluttered is unknown. (It was the angle that held the weight to the spar that broke and not the spar itself.) This happened at an estimated airspeed of between 220 and 240 mph. At this time the canopy must have separated, probably due to vibrations induced by flutter, since it also was found well away from and before the wreckage. Then the center forward spar broke at the landing gear hinge attach point and the aircraft disintegrated. All this took place in a matter of one to two seconds and the actual order in whict events took place are conjecture. The only thing we're sure of is Brad and Patty are no longer with us.

That leaves us with a question. While it was a GB-1 that crashed, could it happen to our KRs? My answer to that is...certainly! The GB-1 and the KR-2 share many of the same constuction techniques and the center spar that broke was from a KR project that had not been finished. Given the same circumstances i.e. a 220+mph airspeed, strong gusting winds, and the exuberance of a pilot in a fast airplane....I'm not sure what kind of aircraft could have held together.

Ken Rand once told me that the maneuvering speed in a KR-2 was 140 mph indicated and the Vne (never exceed speed) was 200 mph indicated regardless of how well balanced the control surfaces are. The possible consequences for exceeding these limits have now been demonstrated. We have been taught a lesson and we won't forget it. We promise, Brad.....we won't forget.

There has been several KR builders who found, much to their discomfort, they were extremely allergic to epoxy resin. Many builders gave up their projects, most just stopped working on them, and some looked for an alternative. Ed Cook wrote the following.

A search for a local economical source of the Epon 813 and Versamid 125 resins currently supplied by R/R has produced good prospects of an alternate type and source. After describing our epoxy application and the specified Shell Epon 813 to a marketing chemist of the Allied Resins Corp., he recommended a Dow epoxy D.E.R. 324 with the Versamid 140 hardener to give better all around performance and safety. The dilutent used in the D.E.R. 324, an aliphatic glycidyl ether is much less toxic or allergenic than the BGE or CGE dilutents used in other epoxies, including the Epon 813, and should be much safer to use, even for those who have already developed an allergenic reaction. Once a person has become sensitized, it may be difficult to avoid increased sensitivity from further contact but it turns out that the dilutent is the most toxic of the epoxy formulation and perhaps a sensitivity will not react to the D.E.R. 324.

Other characteristics of the 324 such as specific gravity, epoxide equivalent weight, viscosity, and various strengths and flexibilities are equivalent to the Epon 813 with the exception that it is almost odorless which is another plus.

The recommended Versamid 140 is half as viscous as the Versamid 125 and makes wetting fabrics and fillers such as microballons easier. The pot life or set time of the 1 to 1 mixture is several hours for small quantitys, down to approx. 1 hour for large batches

due to exothermic heat build up. My experience has been that after a 12 hour 65°F cure it is still flexible and takes about 48 hours for a hard cure that can be sanded. Maximum strength does not develope for 7 days. The proportion of the Versamid 140 to the resin can range all the way from 33 PHR (parts per hundred resin) to 400 PHR and still have a complete cure. It is unusual that the greater the proportion of the Versamid, the greater the flexibility but the less strength. The 100 PHR (1 to 1 mix) would have the best comprise of adhesive qualities and elasticity comparable to the dynel fabric, but you can see that the ratio is not critical. I believe that a ratio of 65 PHR of Versamid 140 would be better that 1 to 1 when fiberglass fabrics were used for a better flexibility match and provide greater strength.

Now for the price...as of January 1981 the D.E.R. 324 is $21/gal up to 3 gallons and $20/gal in 4 to 19 gallon lots. The Versamid 140 is $25/gal., dropping to $24.50 in 4 to 19 gallon lots. Five gallon pails are $19.50/gal. and $24/gal respectively. Prices will probably go up in April. Allied Resins address is: Weymouth Industrial Park, East Weymouth, MA 02189. They have a nice products catalog that includes 2 lb. density liquid urethane foam and lots of other goodies and have assured me that there is no problem shipping anywhere. If anyone would like additional info or has had some other experience with this resin, drop a line to ED COOK, 80 J.B. Drive, Marstons Mill, MA 02648.

A few weeks after I received the first letter this second letter followed:

Ernie, I received this letter from Paul Semco of Providence, R.I. after I sent him a sample of the epoxy I wrote you about. He was so sensitized to the Epon 815 that he couldn't even pick up a sealed container without breaking out, and as you can see, he had no reaction at all to the D.E.R. 324.

"Ed, I glued up a half dozen wood samples, with the Dows D.E.R. 324, last week and tested them yesterday. Not one of the samples parted at the glue joints. I purposely allowed some the the glue to smear on the most sensitive parts of my hand for test purpose. Ed, the glue is great! Absolutely no reaction at all. I'm amazed, I couldn't touch the Epon 815 without breaking into a rash"....Paul Semco

O.K., you allergic types now have an alternative. Looks like the rest of us could benefit by the lower price.

HAPPENINGS

'Bout 3½ yrs ago I met a nice couple at the Ramona, CA fly-in. They were demonstrating their version of what a VW aircraft engine should be. The couple was Rex and Phyllis Taylor and they called their newly formed company Homebuilt Aircraft Products Inc. or H.A.P.I. Now how can you miss with a name like that? Well, Rex must have been right on target. Since that first fly-in Rex and Phyllis have been working night and day to supply homebuilders with engines and related merchandise. All the while their company has been growing. Right now H.A.P.I. is delivering more VW aircraft engine conversions than anyone else in the world. This success has brought some problems, HA.AP.I. is out-growing its currect location. Rex has found a new place, tho. A whole airport! They have leased the airport located at Eloy, AZ, its half way between Phoenix and Tucson, 17 miles from Casa Grande Vortac. The airport is lighted and fuel is available. If you're driving you'll find it just off interstate highway 8. Rex says they expect to occupy the place about the 1st of October and visitors will be welcome. Drop by and say hello.

Oshkosh is next month, 1st thru the 8th. I don't know about you but I'm looking forward to being there. The opportunity to renew friendships especially appeals to me this year. My wife, Maxine, and I are staying at the University along with 30 or 40 other KR types. We're supposed to have the 9th floor of Gruenhagen Hall, so drop by some evening for a visit (days will be spent on the flight line). We're driving this year and intend to swing thru Oklahoma to locate a new place to live. California has been great but its starting to get a little crowded. The KR Newsletter will move with me and will continue from there.

BUY*SELL*TRADE

FOR SALE...KR-2 kits, wood (side frames assembled), foam, metal, including landing gear and pre-molded fiberglass parts...$1200.00. Chuck Stertze, Rt. 1 Box 300, Enterprise, OR 97828 Phone (503)426-4698.

TRADE...Sailboat designer will trade plans for 24 ft. sloop or 32 ft. ketch for old but usable (not dog-eared) set of KR-2 and/or KR-1 with long wings plans. Write to H.B. Borges, 5048 10th Ave.So., Gulfport, FL 33707 or phone (813)321-7875 anytime.

FOR SALE...Complete KR-2 with custom built trailer, to be used for parts only. Has new 1835 engine with Revmaster acc. case, single ignition, generator and starter. Many instruments, incl. G-meter...$2500.00. For more detailed info call (714)633-8811 after 7 p.m. or call Ernest Koppe at (714)897-2677.

WANTED...KR-2, complete and flyable. Contact Bergman Atkins at Baxa International Inc. in Florida. Phone (305)791-4387.

FOR SALE...1678cc VW, built by VW shop foreman. 0 time, has NPR cyl and pistons, Scat oil pump, Rocker buttons on re-manufactured 0 time heads, Rand prop flange, Sonerai intake, Posa carb, H.A.P.I. case, Slick mag w/shielded cables. All on a '75 case....$850, could deliver to Oshkosh. Building a Subaru for my KR-1 and need space and funds. Bud Bossart, 147 Lakefield Ct., Racine, WI 53402 (414)639-3049.

FOR SALE...KR-2 extra wood, fuselage, spars, machined wing fittings, plans, etc. Nice work. Tedious work completed--no time....$425.00 Ft. Myers, FL (813)549-7840.

FOR SALE...KR-2 project....approx. 60% complete. Turtle deck and forward deck foamed. C-65 engine partially overhauled, many extras. Only 50 miles from Oshkosh. (715) 823-2409 no collect calls.

FOR SALE...KR-2 complete kit. Woodwork 90% complete, metal work 95%. 3 blade prop for Revmaster 2100, Revmaster motor mount. Have most all engine and flight instruments. Have extra revised book and plans. All for $3200.00. Kenneth Bristow, Box 33, Tappahannock, VA 22560 phone (804)443-5145.

AIRCRAFT STYLE RUDDER PEDALS
with brakes
FOR YOUR KR

Build them yourself from complete professional plans. Uses Cessna and R/R parts. Complete list of materials. Full size templates.

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TRI-GEAR PLANS...Retractable system that uses Rand's parts, wheels, gear legs and spring bar. Conversion plans..$25.00. Bill DeFreze, 7530 Ironwood Dr., Dublin, CA 94566 phone (415)828-2111.

THE DIEHL SUPERCASE

The only accessory case on the market designed to fit either of Rand's engine mounts. Provides electric starting and 20 amp solid state alternator. Now available with starter on top to allow clearance for tri-gear.

Current Prices

ACCESSORY CASE.....	$125.00
RING GEAR ASSEMBLY....	85.00
20 AMP ALTERNATOR.....	100.00
MAGNETO DRIVE.....	40.00
STARTER.....	65.00

We also have the special tailwheels for the KRs. These are $15.00 and will fit the Rand fork. And... TRANSISTORIZED FUEL TRANSFER PUMP for $25.00. Price on wheels and pumps include shipping...Dan Diehl, 4132 E. 72nd St., Tulsa, OK 74136 Phone (918)492-5111.

SLICK

Aircraft Ignition Parts . . .

[illegible] PARK AVENUE, ROCKFORD, ILLINOIS 61101
PHONE [illegible]

IMPORTANT:
COMPLIANCE REQUIRED.

April 6, 1981

SERVICE BULLETIN 1-81

Possible Magneto Malfunction Due to
Cracking of the Coil Potting Compound

BACKGROUND

There have been magneto malfunctions reported recently that have resulted from a circumferential crack in the orange potting compound of the magneto coil. The crack is observable as emanating from the high voltage output post of the coil.

EQUIPMENT AFFECTED

Only the following magneto model numbers are affected:

4201, 4201R	4252, 4252R	4216, 4216R
4230, 4230R	4281, 4281R	6210, 6210R
4251, 4251R	4250, 4250R	6214, 6214R

The serial number range of these magnetos includes:

9050000 - 9059999
9060000 - 9069999
9070000 - 9079999
9080000 - 9089999
9090000 - 9099999
9100000 - 9109999
9110000 - 9119999
9120000 - 9129999
0010000 - 0019999
0020000 - 0029999
0030000 - 0039999
0040000 - 0049999

It also includes all coils that have been installed in magnetos as replacements between May 1, 1979, and April 6, 1981.

COMPLIANCE

The coil must be visually inspected within the next 25 hours of service, or no later than June 30,1981. No material and/or labor claims will be honored if submitted later than July 31, 1981.

CERTIFICATION OF COMPLIANCE

All magnetos inspected and/or serviced as per this Service Bulletin must have the letter "C" stamped into the metal name plate following the last digit of the magneto serial number.

The following letter from R/R is self explanatory. If you have a Slick magneto, check it now! Rex Taylor of H.A.P.I. tells me he received the same letter from Slick so if you bought a Slick mag from R/R or H.A.P.I. or anyone else check the serial numbers against the list on the opposite page.

Rand Robinson
Engineering, Inc.

5842-K McFADDEN AVENUE
HUNTINGTON BEACH, CA 92649
BUS. (714) 898-3811

June 19, 1981

Dear Customer:

We have just received the following service bulletin from Slick, concerning the Magneto for your engine.

Please check the serial number on your magneto and determine whether this bulletin is applicable.

Should your magneto be found among the affected serial numbers you should return it to Rand Robinson Eng., Inc. for inspection and replacement of magneto coil.

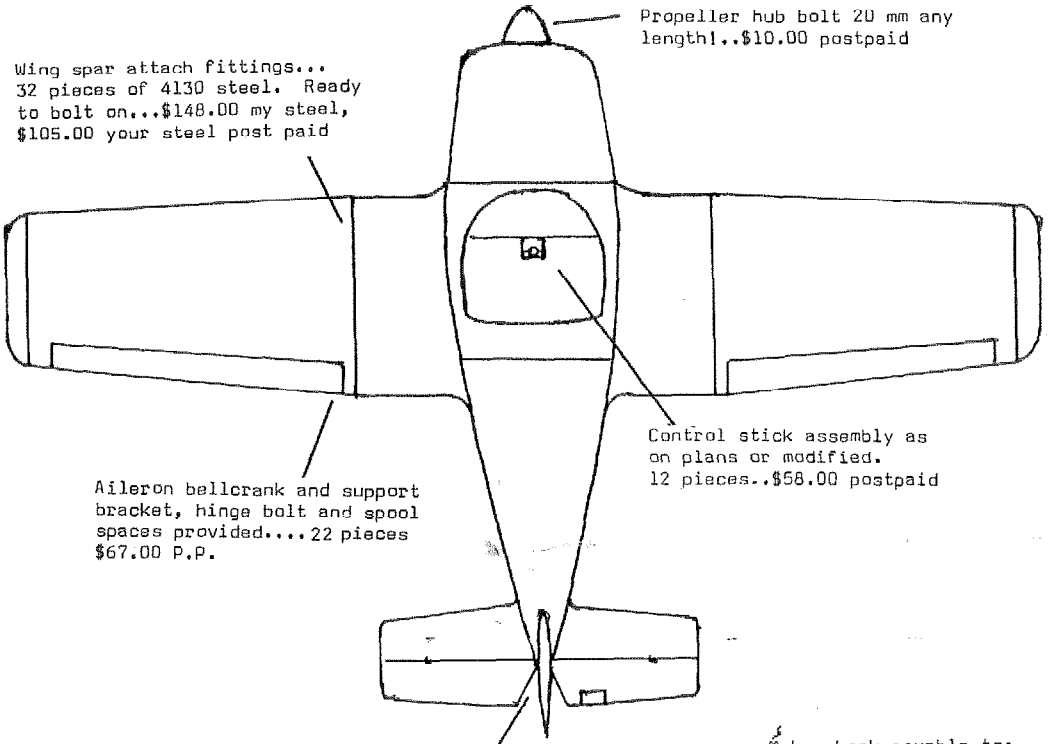
Magneto will be serviced to comply with this bulletin at no charge to you, except shipping charges. Slick will pay a local A & P mechanic 1 hour labor to reinstall and retime the engine. Instructions for retiming will be sent to you with the returned magneto.

Magnetos will be worked on a first come first serve basis only, and returned as soon as possible freight only collect U. P. S., or by best method for foreign customers.

Local labor allowances will be paid by Slick, through Rand Robinson Eng., Inc. upon receipt of billing by your mechanic. We strongly urge that affected customers comply with this bulletin for safety sake. All coils with less than 250 service hours must be replaced.

Please note that no materials or labor claims will be honored unless submitted to Slick before July 31, 1981, so we must have your magneto as soon as possible.

Rand Robinson Eng., Inc.
Jeannette Rand
Pres.



Minature Metrics has several services and products. Send a S.A.S.E. for more info.

QUALITY...all material is aircraft aluminum/steel as specified in your plans. Milled with precision then deburred, bead blasted, final finish reamed by standard aircraft production proceedures all in the interest of safety.

Make check payable to:

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WESTMINSTER, CA 92683

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JULY 1981
ISSUE #73

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Issue no. 74
AUGUST
1981

KR NEWSLETTER

RATES
USA $12.00 Yr
CANADA $15.00 Yr U.S.
OVERSEAS $20.00 Yr Funds

"OSHKOSH" is this month, August 1st thru the 8th. A week long orgy of aircraft and air show to sate the appetite of the most avid airplane bug. The KR activities will kick off on day one (Sat. Aug 1st) with a forum on the KRs, time 9:00 to 10:15 a.m. in forum tent number 2. I don't know how the rest of the convention will be able to follow an act like that but I'm sure they will think of something.

My wife is coming with me again this year. She says Oshkosh is the only fly-in worth going to. I disagree on that. It may be the best, but all fly-ins are worth going to. Anyway, we're staying at the University this year...first time. We usually stay at the campground and have enjoyed the "campfire conventions" each evening. We won't be among strangers, however. A couple of dozen other rooms on the 9th floor of Gruenhagen Hall are ear-marked for KR people and we should have a great time. See you at Oshkosh!!

Two more Continental powered KRs have flown. Konnie Schabackers C-65 KR-2 at Mason City, Iowa airport and Donald Smith's C-75 KR-2 in Uvalde, TX. His flight report follows.

"Am submitting first flight (and second flight) report on KR-2 N801SJ. She was signed off for flight on May 8th after three years and two months into construction. The day after final inspection, I found pieces of epoxy coming off inside my fuel tank. I had run the engine and done some taxiing prior to sign-off so there had been fuel in the tank. I think the problem may have occured because I had test run some gasahol. The alcohol may have an effect on the epoxy. It could also have happened that my tank interior had not cured well enough before I put it together (R/R parts). To make a long story short, I had to cut into my tank, make a cover plate, clean, scrape, put new epoxy inside, blow air in for days at a time to ensure a good cure. Finally, June 5th, cover plate back on, fuel in the tank, praise the Lord no leaks. June 6, 10:00 a.m., Texas skies nearly clear, 85°, calm winds, time to fly.

801SJ has a 75 hp Continental engine with Posa carb and Warnke prop. Total weight is 531 lbs. with 4 qts. oil in the engine. Wings are built with "winglet" tips. Fuel is a mixture of unleaded and regular auto gas.

I taxiied to the runway, prayed for a moment, then onto the runway. Power eased in gradually, speed built up quickly, tail off the ground. Engine rpm up to 2900 so back off the power slightly. It was a nice takeoff, my 400 plus hours in a taildragger made a big difference. I was surprised at how stable this plane is on the ground and how responsive she is to the controls.

The little plane was handling beautifully in the air. Time to retract the wheels.. no effort. Everything went well. Engine temps ran perfectly in spite of high rpm from not quite enough pitch in prop. Flew around for 30 minutes and then the landing.... nothing to brag about there, but acceptable. I made some minor adjustments in rigging, turned prop to max pitch and flew again on June 8th. My speed is running an indicated 140 to 150. I still need a lot more pitch in the prop so I am looking for cruise speeds of at least 150. With very little nose down desent I can get to 170 and 180 in a hurry. So far I have only done climbs, turns, and slow flight. As yet no stalls. It is hard to tell what, if anything, the winglets have done. The plane is very laterally stable and extremely responsive to aileron control. It may improve stall characteristics by directing air over the outboard ends of the ailerons.

I have to get new prop blades with more pitch, make some modifications in my cowling to feed out the engine cooling air. I notice a little "ballooning" of my upper cowling in flight. This means too much air going in and not enough going out. All in all, she is a beautiful machine and lives up to all that has been said by many preceding myself." Donald Smith, 217 S. Crisp, Uvalde, TX 78801.

QUESTIONS & ANSWERS

Q. Do enclosed spaces in the wing spars need ventilation and drain holes?
A. 1/8" to 3/16" holes drilled at the lowest point in each bay is a very good idea. Be sure you use a sealer or epoxy around the edges of each hole to protect the wood from moisture.
Q. Does the firewall shelf come up 3/4" + 1/4" = 1" above main longeron as per drawing #3 or 5/8" + 3/32" = 1 23/32" as per drawing #1? Is this dimension critical with engine installation?
A. The dimension on drawing #3 should be used for KR-1 and KR-2 construction.
Q. Has someone came up with a folding wing mechanism for the KR-2 that would allow trailering from home to airport and back?
A. Not yet. A few builders have attempted something along this line but I haven't heard of any real success.
C. I understand Rand/Robinson has a new tri-gear KR-2. When will there be plans or kits available and at what prices?
A. R/R is indeed working on a KR-2 to have a retractable tri-gear. The tri-gear system itself will be a ready to install unit and can be retro-fit to existing KR-1s and KR-2s with minor modifications. Price has not been established yet.
C. What propellors are available and work best for the KRs?
A. Almost every prop maker in the U.S. has a prop for the VW engine and each have met varying amounts of success. At first there were only a few prop makers making our "backward" props, Ray Hegy the most notable. Then came the ground adjustable props of Warnke, Maloof, and Rand. Performance increased dramatically due to being able to adjust the prop to the individual engine. Shortly after this there was another innovation, the 2 position air adjustable and constant speed prop of Ralph Maloof. Now in development is yet another cockpit adjustable prop....the Vari-Prop, to be adaptable to any VW without machine work. Ironically, the props giving the best performance today are the "new" fixed pitch wood props sold by the Great American Propellor Co., 555 Westmont Dr. #212, San Luis Obispo, CA 93401 and by Bernhard Warnke, Box 50762, Tucson, AZ 85705.
Q. I live in an area where there are very few people, much less KR builders. Why should I join the KR club? I thought all pertinent info would be in the KR Newsletter.
A. The idea behind the KR Club is to get individual KR builders to meet each other, compare notes, and, where possible, lend a hand when needed. I send out addresses of the current KR Club members to each new member in hopes that he will contact them either in person, by phone or, such as your case, by mail. I do try to put all technical info in the Newsletter but it's people out there that send it to me and then it is usually sent at the urging of a fellow KR builder. When you get your KR finished you're going to want to fly it someplace. Why not over to a fellow KR owner in the next county or even the next state?
Q. What are most KR builders doing for a wing walk area?
A. Most KR builders don't have a wing walk, they step directly into the cockpit from the ground. The fellows that do have wing walks have used various methods, usually an extra layer or two of fiberglass over the wing walk area. 3/32" plywood glued over the wing root has been used with good success by some builders.

THE KR DESIGNEES

Steve Bennett
1135 58th St.
Des Moines, IA 50311
(515)255-5741

Leon Coetzee
10 Lark Str.
Meredale 2091
Johannesburg
Rep. of S. Africa

Bill DeFreze
7530 Ironwood Dr.
Dublin, CA 94566
(415)828-2111

Dan Diehl
1855 N. Elm
Jenks, OK 74037
(918)299-4444

Ray Ellis
2416 E. Douglas
Des Moines, IA 50317
(515)265-3007

Ernest Koppe
6141 Choctaw Drive
Westminster CA 92683
(714)897-2677

Ed Nelson
Box 858
Pinehurst, ID 83850
(208)682-3375

Jere Rosser
2305 Wilderness Way
Marietta, GA 30066
(404)977-0843

NOTES FROM ALL OVER....Hugh Joesten, 4405 So. 338, Auburn, WA reports his KR-2 first flight was cut short by the canopy "sliding " out of the R/R latches. Dowel pins have been installed to prevent a similar occurrence.....John Wells, Rt. 5, Box 801J, Canyon Lake, TX 78130 reports his KR-2 is completed and flying. He recommends using a stronger tail wheel fork and the 1/4" gear latch bolts should be changed to 5/16" or larger.... Carl Huckfeldt, 11009 W. Tulane Ave., Littleton, CO 80123 has almost completed his KR-2. Notable modifications: a sliding canopy and fixed gear.

Need a place to stay for Oshkosh? A KR builder in West Bend, Wisconsin nas a place. Call Jim Kinkema at (414)334-5603 for more info.

Garth Hess, P.O. Box 33, Ontario, CA 91761 reports his KR-2 was in an accident at Meadowlark Airport in Huntington Beach, CA. As he and his wife were landing in his KR, a Cessna pulled onto the runway underneath him and out of his range of vision. The wheels of Garth's KR-2 struck the wings of the Cessna. This, combined with the prop blast from the Cessna pitched the nose of the KR skyward and into a stall attitude. The aircraft came down on one wing, cartwheeled, and flipped on its back. Garth and his wife escaped with minor scrapes and bruises and he credits this to the use of shoulder straps and a roll-over structure. The aircraft itself suffered major damage, including breakage to the main spar. The break was in precisely the same area that the spar on Brad Hummel's GB-1 broke, between the landing gear hinge casting and the fuselage side. Garth suggests re-inforcing this area, but I will leave that to the engineers.

As noted in the last Newsletter, I'm moving to Oklahoma. The move will take place the end of August. Now, the time period I usually reserve for getting the Newsletter out is...you guessed it...the end of each month. I'm telling you this just in case the next KR Newsletter is late. I don't know for sure that it will be but I don't want anyone to worry. The KR Newsletter will come thru!

The building tip drawing in this issue is by Frank Walker of Whittier, CA and was prompted by a 500% price increase in a firewall fitting. So..he made his own!

AIRCRAFT STYLE RUDDER PEDALS
with brakes
FOR YOUR KR

Build them yourself from complete professional plans. Uses Cessna and R/R parts. Complete list of materials. Full size templates.

$30.00 Canadian $24.00 U.S.

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Terre Bonne, Que.
Canada J6W 2J3

FOR SALE...KR-2 for parts. 1835cc engine with Revmaster case, Posa carb, starter, new spinner, (no prop). New canopy, easy eye tint. Rand cowling. Instruments: T & B, Alt., A.S.I., M.P.G., Tach, CHT, EGT, Hobbs, oil temp., oil press. 2 fuel gauges, ammeter, & a suction gauge with Venturi & regulator. All with a custom built trailer..$2500.00 For info call (714)633-8811 after 7 pm.

TRI-GEAR PLANS...Retractable system that uses Rand's parts, wheels, gear legs and spring bar. Conversion plans..$25.00. Bill DeFreze, 7530 Ironwood Dr., Dublin, CA 94566 phone (415)828-2111.

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MAGNETO DRIVE.....	40.00
STARTER.....	65.00

We also have the special tailwheels for the KRs. These are $15.00 and will fit the Rand fork. And... TRANSISTORIZED FUEL TRANSFER PUMP for $25.00. Price on wheels and pumps include shipping...Dan Diehl, 4132 E. 72nd St., Tulsa, OK 74136 Phone (918)492-5111.

FABRICATING A THROUGH THE BULKHEAD FITTING

The following instructions are for 1/8" pipe threads but the process will work as well for 1/4" pipe threads.

1. Place the fitting in a vise and run the 3/8-24 die down the pipe threads. (Be sure and start the wide tapered end of the die first) see fig. #1

2. Remove the die, reverse it, and run it down the threads again. This will insure that the new threads are evenly cut all the way to their base.

3. Drill a 1/4" hole in the newly-threaded end to a depth approximating that of the threads. see fig. #2

4.. Cut and trim a piece of tubing 1½" long.
   a. Try and find tubing that is a few thousands oversize (e.g., .252). It is desireable - but not necessary - to have the tubing a press fit.
   b. If you have a flaring tool you can slightly flare one end of the tubing to aid as a hose seal. see fig. #3. The flared end is not absolutely necessary as the hose clamp will do an adequate job of sealing.

5. Press the tubing into the drilled end of the fitting using a vise. (You will have to perform this step only if your tubing is oversize) see fig. #3

6. Using a propane (or acetlyene) torch, heat the fitting and sweat-solder the tube to insure a leak-proof seal.

7. This fitting can be attached to any bulkhead or firewall up to .100" thick if you use two thin AN washers and a thin nut.

There is a difference between the number of pipe threads per inch and the number of National Fine threads per inch but the difference is negligible.

Fitting sizes are changed as follows:

1/8" pipe to 3/8-24 (NF) tubing size 1/4" (OD)

1/4" pipe to 1/2-20 (NF) tubing size 5/16" (OD)

DRAWING ON NEXT PAGE

FIGURE #1

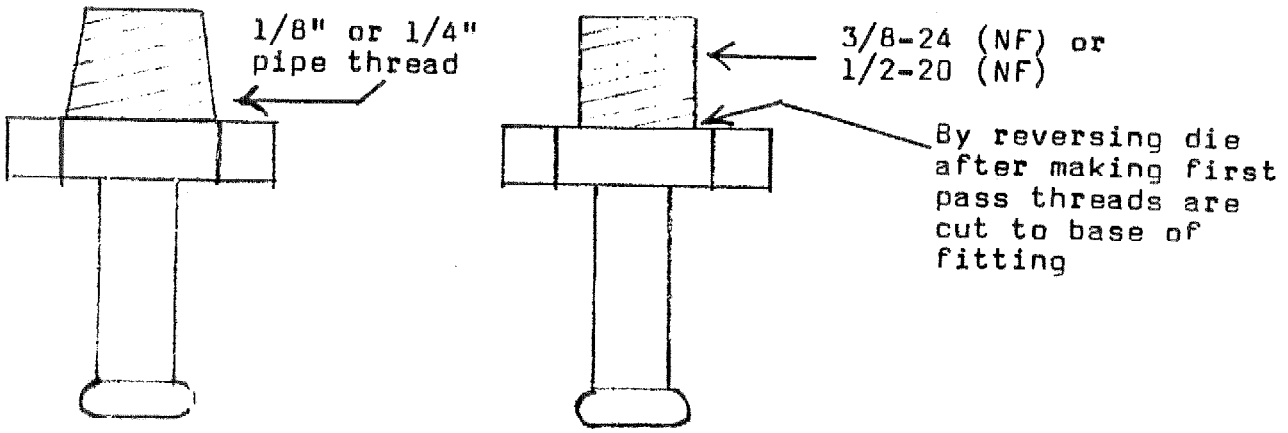


FIGURE #2

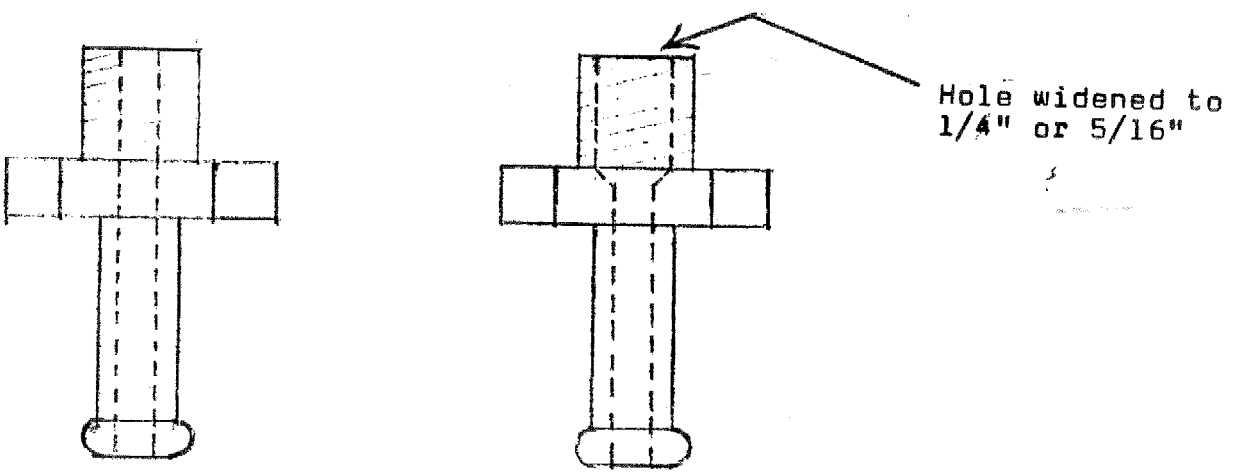
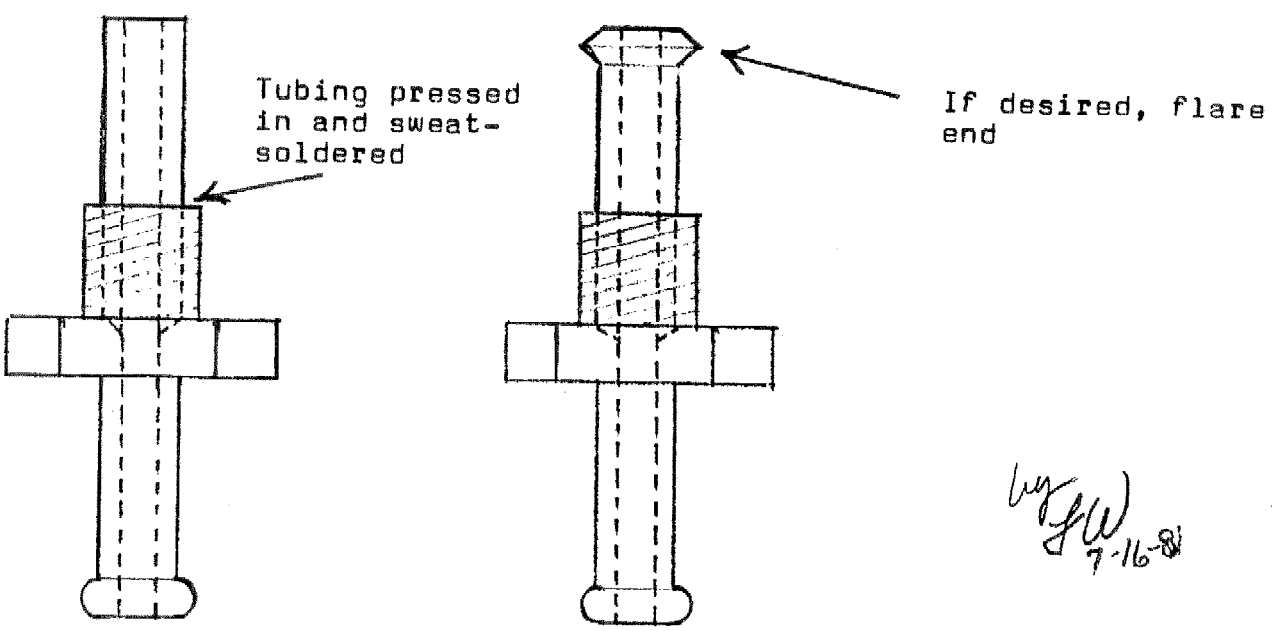


FIGURE #3



by FW 7-16-81

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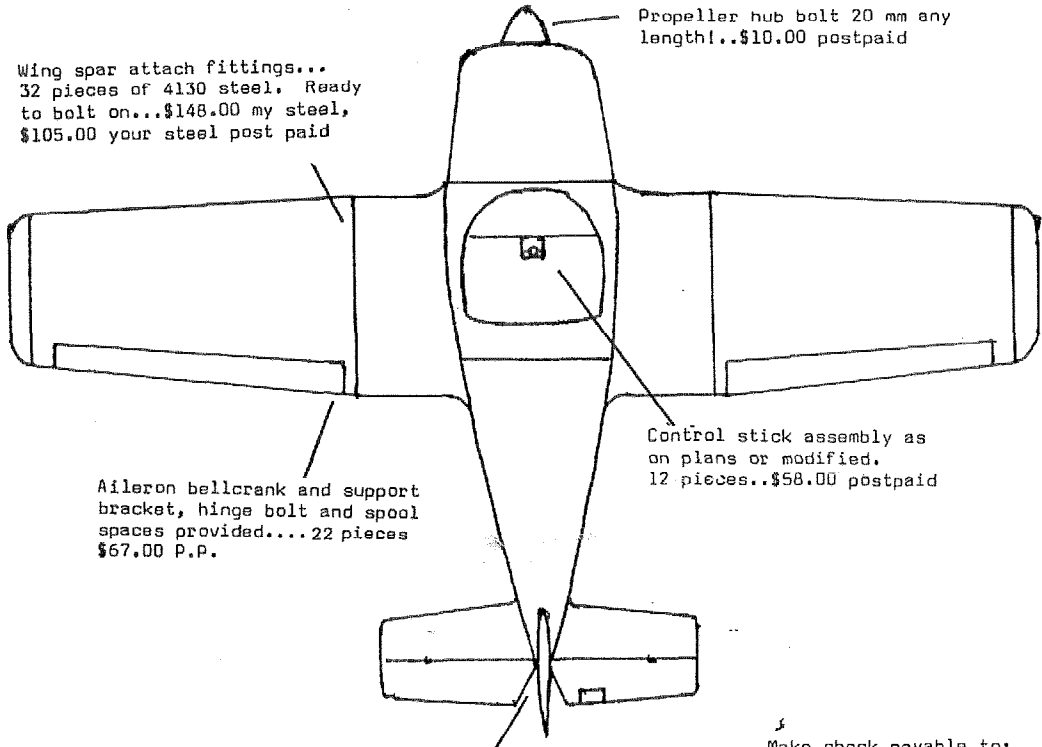

Propeller hub bolt 20 mm any length!..$10.00 postpaid

Wing spar attach fittings... 32 pieces of 4130 steel. Ready to bolt on...$148.00 my steel, $105.00 your steel post paid

Control stick assembly as on plans or modified. 12 pieces..$58.00 postpaid

Aileron bellcrank and support bracket, hinge bolt and spool spaces provided....22 pieces $67.00 P.P.

Rudder, elevator, tailwheel horns and hinges...11 pieces. $55.00 postpaid USA

QUALITY...all material is aircraft aluminum/steel as specified in your plans. Milled with precision then deburred, bead blasted, final finish reamed by standard aircraft production proceedures all in the interest of safety.

Make check payable to:

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AUGUST 1981
ISSUE #74

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SEPT.
1981

KR NEWSLETTER

RATES
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CANADA $15.00 Yr U.S.
OVERSEAS $20.00 Yr Funds

OSHKOSH 1981

Once again airplanes and airplane lovers from all over the world converged on Oshkosh, Wisconsin, Mecca of the sport aviation world!

The annual E.A.A. Convention broke all previous attendance records this year as hundreds of thousands of people came to see the greatest airshow on earth....I was there....and happily, several KR pilots braved the threatening weather and air controller strike to be there too. Back from last year...Dan Diehl and N4DD, still the highest time KR-2 with almost 800 hrs. (I understand Steve Bennett has passed the 800 hr mark in his KR-1.) Joe Weber in his KR-2 and Randy Hebron in his super-modified KR-1. Randy was a participant in the "Oshkosh 500" and finished with a very respectable 2nd place. He averaged 165+ mph for the entire 500 miles and used only 72 lbs. of fuel. That left him a 36 lb. credit for a total efficiency speed of over 200 mph. Congratulations to Randy for a fine effort in a fine aircraft.

The new KRs appearing this year (as of Tues. Aug 4) were: KR-2 static displays by Robin Butler and Fracis Schier. Both attracted crowds of interested spectators who were pleased to see what the basic KR airframe looked like. Robin Butler was getting hoarse from answering questions about the foam and wood method of construction, Rand's new fiberglass parts, his push pull control system and quick change seat installation. Francis Schier arrived with his KR-2 fuselage on Monday and then it was his turn. Everyone wanted to know about the over size gear legs and tires, his fiberglass seats and the Monnett tailwheel and spring. These men are to be complimented on their patience and participation. The flying newcomers were:

KR-2 N20JD by John DeBliek, 5523 Woodview Pass, Midland, MI 48640. John spent 2500 hrs in 4½ yrs. building this KR and the smooth finish and fit shows why. Modifications also added to the building time but the end result appears to be worth it. Some mods were: a 19" increase in fuselage length, fiberglass tailwheel spring laid up with 50 layers of uni-directional glass, a cowl flap that he adjusts seasonally so the 2100cc Revmaster cools properly and a pitot tube mounted on top of the vertical stabilizer. Unfortunately, John left Oshkosh even earlier than myself, leaving many people not able to see the extremely fine craftmanship that went into building this super clean KR-2.

KR-2 N4276L by David Bentley, 109 Leatherbark, Mars, PA. At first glance you would think someone had shrunk a military fighter. This KR-2 really looked like it belonged with the warbird section. The Diehl type canopy and large plexiglass rear windows along with the military paint scheme gave it a WWII fighter appearance. Turning the prop is an 1834cc VW. With a 543 empty weight it ought to be a good performer.

KR-1 N90380 by Randy Dickerson. I was never able to get with Randy to get any real details about this aircraft and thats a shame because it is for sale. It also has a military paint scheme, silver with red and yellow markings. A 1600cc VW turns a Hegy prop...a nice KR-1.

KR-2 N181SR by Steve Rowland, Acre St., Guttenberg, IA 52052. Another attention grabber! The ultra smooth finish and modifications on this KR-2 had people gathered round from the time it arrived. The metallic bronze paint gave the appearance of being molded. Steve has incorporated a squeeze release for his landing gear and also a steel roll-over structure. Good job!

KR-2 N27GS by Glen Schneiderman, Rt. 2, Bittineau, ND 58318. I knew when I saw the upturned wing tips on a Mooney 231 that homebuilders would rapidly adopt the idea. This cream colored KR-2 is the first KR at Oshokosh to incorporate the mod. According

to pilots that have flown KRs with the up swept tips, there is a definite improvement in control at lower airspeeds. Look for more of these tips on KRs in the future. Congrats to Glen for being first!

KR-2 N68C by Charles Tyler, Rte. 34 RD #1, Hannibal, NY 13074. 68C was late arriving at Oshkosh due to a gear latch that failed on landing somewhere in Michigan. Charles has decided safety catches are in order and will build some when he gets home. Meanwhile, damage to the KR was minimal. The only real problem was finding a prop on short notice. This done, Charles flew the KR-2 on in to Oshkosh. I'm glad he did. First off you notice the EAA paint scheme, then some of the modifications, such as 400 x 6 tires and wheels from a mini-bike, a sliding canopy, and an electric gear retract using a Cadillac power window unit. The engine conversion was his own and had dual distributors (belt driven) and dual starters. Interesting to say the least!

Well there are the KRs I looked at. I understand two Canadian pilots flew KR-1s in on Thursday but I had already left for Oklahoma and my new HQ. Maybe I'll get the chance to see them next year.

OSHKOSH 82

The highly successful KR group invasion of the 9th floor of Gruenhagen Hall at the University of Wisconsin this year has encouraged a repeat performance for 1982. Being neighbors with other KR builders and their families was fun and informative. The nightly gatherings in the halls and conference room was a very enjoyable part of Oshkosh this year.

So....if you think you may be at Oshkosh '82, make your reservations <u>now</u>. For $14.50 a night you get a room with two single beds, linens and towels. Send your name, address, telephone number and the dates you plan on being there along with a check for $14.50 (deposit) made out to the University of Wisconsin-Oshkosh and mail them <u>to me</u> no later than Oct. 30th. I will then forward all of them to the University as all applications must be mailed together to make sure we are all on the same floor again.....

Maxine Koppe

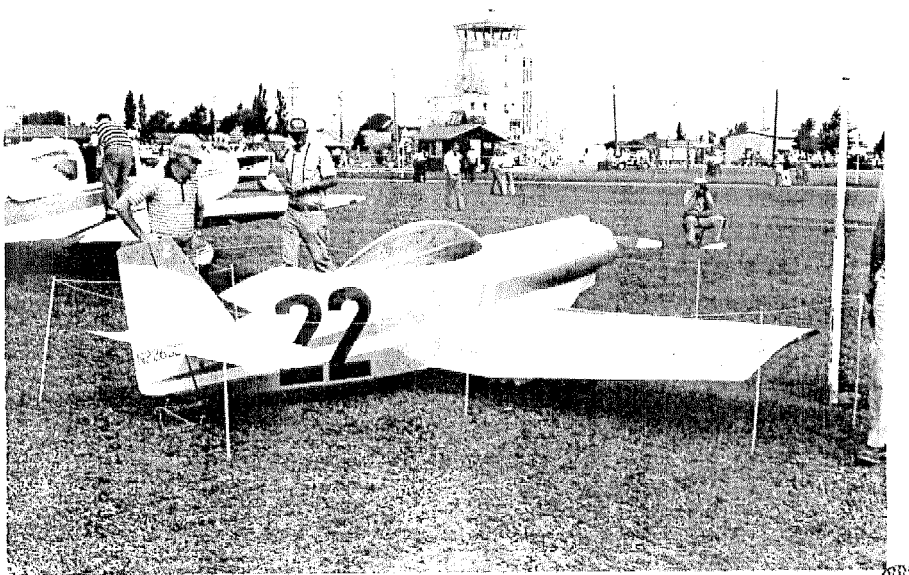
P. S. The rooms are not air conditioned. The University rents fans or you may bring your own. M.K.

KEN RAND MEMORIAL AWARD

As usual, the selection of the KR to win this award was not a "cut and dried" matter. There were many possible receipients. I feel the right choice has been made tho'. This year the Ken Rand Memorial Award goes to Randy Hebron and his KR-1 "Petite Sarah".

Randy's orange and white jewel has proven itself to fly as well as it looks. If you've seen the immaculate little KR-1, you know that is a real accomplishment.

The excellent showing he made at this year's "Oshkosh 500" is an indication of his and his aircraft's abilities. Congrats Randy...you did great!



TIPS FROM BUILDERS AT OSHKOSH

From Dan Diehl: "I put toe brakes on my KR-2 and found this created a problem with the stock Rand rudder control horn. It bends when placed under load from hard braking. Anyone using toe brakes on their KRs should re-inforce the rudder control horn accordingly."

From Ray Bergeron, 328 Kepner Dr., Ft. Walton Beach, FL 32548 phone 904-243-0367: "I used the water level method to level my fuselage and wings. You can get exact measurements for wing dihedral and wash-out. My water level was made from 30 ft. of clear vinyl aquarium tubing. Also, I found a source for sanding rolls 1½" wide by 50 yds long for $5.00. They have other sizes and you can get a catalog of their other products (belts, discs, drums, and cones). Write to Industrial Abrasions Co., 642 8th St., P.O. Box 8611, Reading, PA 19603."

"Points to Ponder" by Robin Butler, 1841 Michigan Ave., Manitowoc, WI 542200....For homebuilders especially, the necessity for establishing a specific routine for pre- and post flight inspections is vital. Remember, our aircraft are "experimental". Among other things, that means each builder invariably "customizes" his creation a little different from the builder of another craft like his. For example, I am using a swivel joint unit I discovered, on the push-pull control system in my KR-2. (I am not recommending it to anyone else at this time.) I am satisfied that the necessary strength is there, at one-fourth the cost of rod-end bearings. However, the unit comes pre-lubricated with no way to add to that capability, hence, it will wear out eventually, which means it should be replaced as soon as wear is detectable. Maybe I'll find the rod-end bearing route the best after all, but I feel it's worth experimenting with. So, since I want to stay alive, inspection access will be made to each swivel-joint, first. Second, inpection of these joints will be a regular routine on my own written checklist. So....what little "insignificant" modifications have you made on your pride and joy? Maybe you're convinced it will never give you any trouble, but can you make sure? Can you inspect it easily? And will you inspect it routinely? Think about it.

From John Shippey.....I recently had a problem which you might like to put in your Newsletter for information to other KR operators. I was shooting a few landings the other evening and my last was slightly short, touching down about 5' from the actual end of the runway on a dirt extension. It was very smooth dirt but what I wasn't aware of was about an inch and half bump where the runway paving started. I hit that, the gear collapsed & I slid down the runway on the gear (retracted) and the nose. It got the prop, of course, and ground a little skin off the lower cowling and a slight bit of plywood off the belly just aft of the firewall. It peeled a little chunk out of and twisted back the aluminum "I" extrusion which the latch lever engages. That let the downlatches release and the gear collapsed. Nothing else was hurt except my vanity. You might be able to strengthen the set-up by using heavier stock but I think I'll stick to what I had. I'd rather have the latch give than a gear leg. Point is, I guess, be sure and land on the runway....and a smooth one at that!

THE BIG MOVE

My wife and I left Oshkosh early in the week and proceeded south to find a new home. We looked for several days and then decided on a town in eastern Oklahoma. Effective Sept. 5, 1981 our new address will be:

Ernest Koppe
1728 W. Teel Road
Sapulpa, OK 74066
Phone (918)227-1529

The KR Newsletter will continue from this location so all correspondence subscriptions, and renewals should be directed to the above address. I may still be reached at my prior address and phone number until the 1st of Sept.

I hope to be at the Kerrville, Tx Fly-in Sept 18, 19, &20 to meet some of my new KR neighbors if I'm all moved in by then. There is a lot of homebuilders in the south and many of them get to Kerrville. I'm looking forward to being there.

Just before I left for Oshkosh last month, I received word of another fatal KR-2 accident. This, like one last year, came after the pilot was observed doing aerobatics and ended with the KR-2 in a flat spin.

I suppose that the quickness and responsivenss of a KR encourages aerobatics ... but...the KRs were not designed to be aerobatic. In fact, they are a very poor aerobatic platform due to the minimum size empennage. The KRs do best what they were designed to do...fly fast on low horsepower. Even this excellent feature can be jeopardized by building the aircraft so heavy that the performance is not only marginal but downright dangerous.

Lets get the most out of our KRs. Build them light! Fly them as they were designed to be flown! Enjoy them...they are an enjoyable aircraft.

Seems as tho' I'm not the only KR Designee making a move. Steve Bennett just called me to let me know he too has a new address. KR builders in and around Nebraska will be pleased to note that Steve's new address is: Steve Bennett, 2606 No. 125th Cir., Omaha, NE 68164 phone (402)496-1507. Everyone knows Steve's KR-1. He has flown it clear across the U.S. and also into Canada. What most people don't know is that he has a KR-2 well along toward completion. This makes him well qualified to answer your building and flying questions. Give him a shout, he can help.

Buy - Sell - Trade

FOR SALE...KR-2 project. Turbo 1834 with electrics & 7" prop extension, 3 blade prop, 360 Nav com, wide canopy & more...$5,500.00 or best offer. Charles Jackson, 41231 Memphis, Sterling Hts, MI 48078 phone (313) 731-5356 after 5 EST.

FOR SALE...KR-1 gear parts; gear attach brackets (1 pair); gear spring bar, gear legs (1 pair). $100.00 for all. Contact Jim Frank, P.O. Box 459, Lynchburg, OH 45142 phone (513)364-2646.

WANTED...Well flying and airworthy KR-2. Write to J. Hillman, KRIKA, 26460 Klippan, Sweden. Include price, photo & description.

FOR SALE...R/R engine mount for VW case.. $50.00. Thomas Horch, 17562 Echo Dr. Marysville, OH 43040.

FOR SALE...R/R fiberglass turtle back. Contact Francis Schier, 2797 Latham Rd. Rockford, IL 61103.

FOR SALE...KR-2 project. 40% complete. All controls and landing gear installed. Dual sticks, R/R cowling, fuel tank, canopy & canopy frame. Have everything to complete except foam & epoxy for outer wings. Empennage complete, center wing closed, all work signed off. Plans, Newsletters, etc..... $1500.00. Contact Jimmy Clepper, 4707 Thomason Dr., Midland, TX 79703 phone (915) 694-5917.

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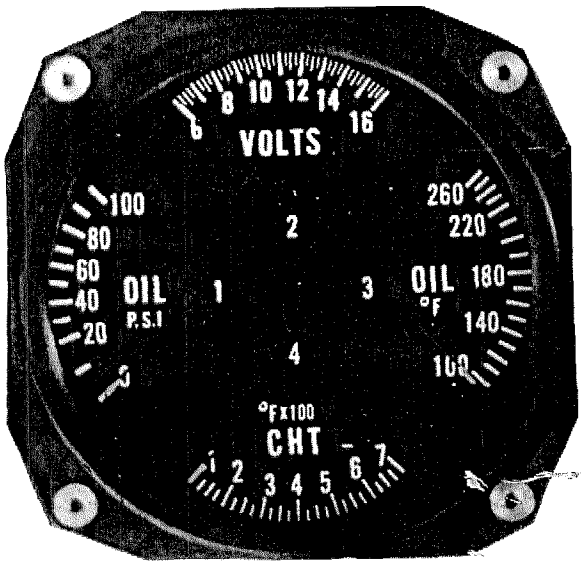

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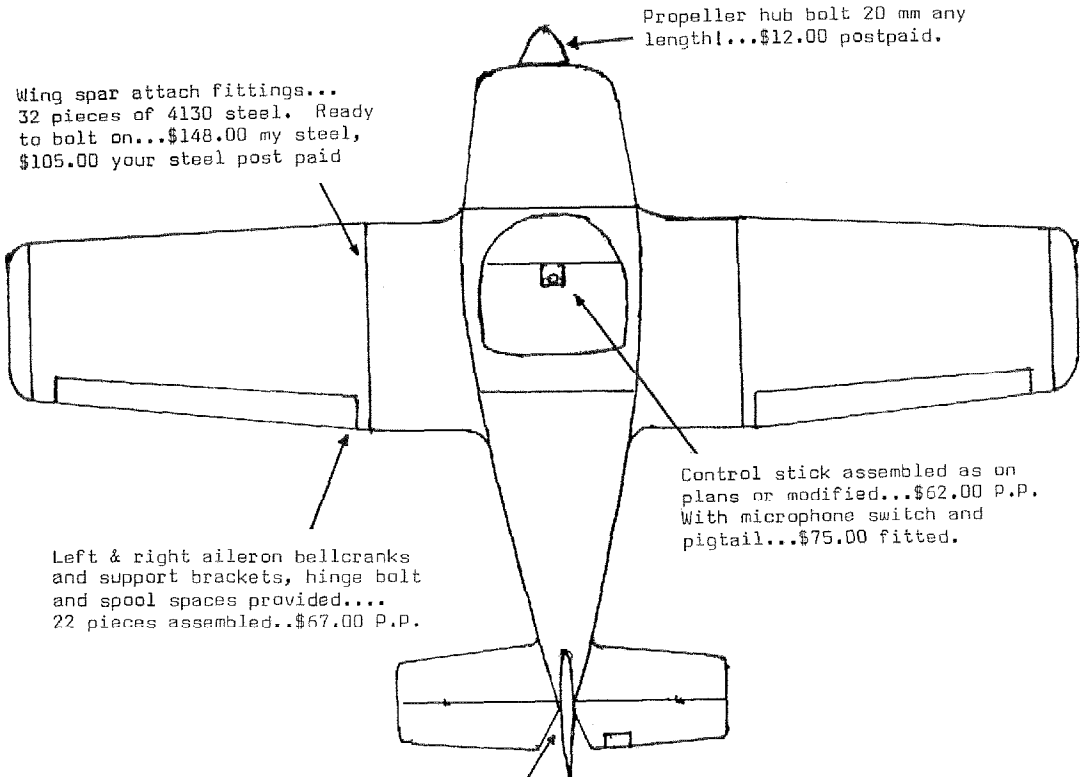
Minature Metrics has several services and products. Send a S.A.S.E. for more info.

No instructions are given which conflict with plans or Newsletter. We prefer you refer to plans or consult Rand/Robinson.

QUALITY...all material is aircraft aluminum/steel as specified in your plans. Milled with precision then deburred, bead blasted, final finish reamed by standard aircraft production proceedures all in the interest of safety.



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Left & right aileron bellcranks and support brackets, hinge bolt and spool spaces provided.... 22 pieces assembled..$67.00 P.P.

Rudder, elevator, tailwheel horns and hinges...11 pieces plus 10 back-up plates H. & H. pilot drilled for mount bolts. $58.00 P.P.

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★ We're Moving ★

Effective September 5th all correspondence should be directed to:

Ernest Koppe
1728 W. Teel Rd.
Sapulpa, OK 74066
Phone (918) 227-1529

Bear with us while we make the move. After we get settled it will be business as usual!

ERNEST KOPPE
1728 WEST TEEL ROAD
SAPULPA, OK 74066
SEPT. 1981
ISSUE #75

Issue no 76
OCT
1981

KR NEWSLETTER

RATES
USA $12.00 Yr
CANADA $15.00 Yr U.S.
OVERSEAS $20.00 Yr Funds

Sometimes "Murphy's Law" seems to get out of hand. For those who have been lucky enough to avoid bumping into "Murphy's Law" I'll correct that omission right now. Briefly, Murphy states that "anything that can go wrong will, and furthermore it will do so at the most inopportune time".

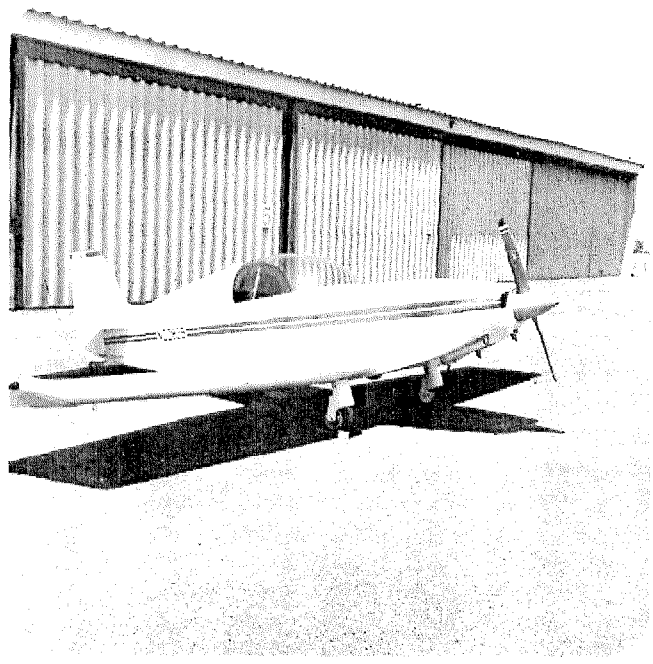
I used to think of Murphy, whoever he is (or was) as just another pessimist with possible and probable tendencies to paranoia. No longer...Murphy was a genius! There is not enough room on this page, or even in this Newsletter to re-count the problems that kept me from making my intended move to Oklahoma. We will let it suffice to say that I am still at the same old address (however temporary) in Calif. I have received some mail that had been forwarded from the Oklahoma address. Evidently some of you didn't get the notice I stapled to Issue #75 to disregard the change of address for me and the Newsletter.

Sorry about the mix-up, and I would like to say it won't happen again. I won't say it though. Sure as I did ol' Murphy would stick that law of his in my face again. See you later.

FLIGHT REPORTS

My KR-2 N2282B was completed on March 1, 1981 after approx. 4½ years work. Moved to the Banning, CA airport and after many hours of taxi tests and minor adjustments made the first flight on June 23, 1981 at 8:30 a.m.

The wind was about 10 to 15 mph down the runway and at the controls was M.M. "Bud" Garner of Huntington Beach, CA.



Ted Larson 1245 Euclid Ave.
Beaumont, CA 92223

As is so many cases, what started out as a high speed taxi and low-level lift-off turned into a full fledged flight. At flying speed the plane dropped back near the runway owing to sensitivity of the controls and after a couple of these, Bud decided he would be better off with some altitude so he opened the throttle and kept going.

After about 30 min. of flying time, a fairly good landing was made and that completed the first flight. The landing gear was not retracted during the flight and the air speed indicated 125 mph at 3000 rpm.

As of this date, the KR-2 shows 5½ hrs. of flying time. With more adjustments and minor changes, the indicated speed shows 140 mph at 3000 rpm. Oil pressure at 40 # and 175°F CHT at 335°. The engine is an 1834 Revmaster with alternator, no starter. Prop is by Wayne Ross, 54" x 44" pitch.

This morning places another mark in the record book for first flights of a KR-2. N81JM was three years in the building and with many thanks to you and the contributors of the Newsletter for building tips and advice about the flight characteristics, we had a beaufiful first flight.

Lined up on the runway, applied power to the HAPI 60, held a little left rudder, eased the stick ahead a little to get the tail up and before I had time to think about it, it was light on the wheels and then was airborne. Speed built up quickly to 90, I porpoised a little and then pointed it into a gentle climb and left it alone. Like some of your contributors have said, you just point it where you want it to go and it does it.

At about 1000 ft. the cylinder temp was approaching 380 so I leveled it off, went thru a few gyrations getting the gear retracted (the cam lock method) and then the head temp retreated to approx. 340.

Then I just flew it around a bit trying turns, gentle turns, etc. to get the feel of it. Man, it flies like a dream. Trim was perfect, flew hands off. Tried a stall holding about 1500 rpm, the air speed dropped to 50 and still no stall!! I made no real attempt to get precise numbers on its performance, just wanted to get the feel of it and I'm sure happy with that.

Approach to the landing was normal, full flaps, I was at 80-90, a little hot but when I closed the throttle she settle in nicely, bounced once, "second landing" I popped the stick ahead a little and she stuck.

Thanks again to all who have shared their experiences...I'll see you at Lakeland and maybe Oshkosh in '82....John Mason, 8700 Deep Passage Lane, Ft. Myers Beach, FL

September 1, 1981

Dear Butch,

At long last, I get to write the flight report letter. I have first flight reports on two KR-2s. I would guess this was the first time anyone has flown two KR-2s on their "Maiden Voyages" on the same day. If not Guinness, maybe I'll make the KR Book of Records!

The flights occurred on Saturday, August 29th at about 6:00 p.m. The sky was clear and visibility was 10 to 15 miles. Winds dead calm, temperature 75°. Who could ask for better test conditions than that?

THIS ONE IS MY BABY

N 8532Y - Started in the summer of 1978. It weighs in at 503 empty. This is not painted, so it will gain some. It has an 1835cc engine, no turbo and a R/R 3 blade prop. I didn't build wing tanks because my top tank holds over 24 gallons. It was much easier to take off than it was to high speed taxi. Lift off was normal except the left rudder must be applied instead of the right. Climb at 90 mph was about 700 fpm. I did not retract the gear this flight. My IAS for cruise was 120-125 mph. She really oughta scoot with the gear up. After about one-half hour posing for photos for an Emeraude chase plane, I reluctantly brought her down and made a fairly uneventful landing. The approach over the fence about 75 mph on the roll out, I managed to swat flies with the rudder to keep it straight.

Friends...there is no feeling to match your first flight in your own airplane. Since it is indescribable, I won't try!

N 81 BH - This ship belongs to Bernie Huseth. It was built over a span of five summers. Since epoxy doesn't cure well at 15° below zero, we take winters off up here. Empty weight is 567. Part of that weight is from a wing tank on each side. Total capacity...26 gallons. 81BH also has an 1835cc and a R/R 3 blade prop. Take-off was normal and I was still breathing, although I'm not sure Bernie was. He was running the camera in the Emeraude. The air speed indicator was not operating properly, as I was indicating about 45 in the climb, and moving out and up well. At about 2500 feet, I leveled out and top IAS was 100. Meanwhile the Emeraude was indicating 125. I did not retract the gear on this one either. After about 20 minutes of flying the throttle decided to stick wide open. By turning the fuel valve off and on, I brought it down by

feel (unreliable A/S indicator), I know I was fast however. I turned it off at about 1/2 mile and 500 feet. No problems landing it on a 4800 foot runway. The ground crew was shook up by the sounds of that engine cutting out tho'.

As dark was approaching, we pulled them back to the hangars and a small liabation was passed around. Then the party began in earnest.

The people I wish to thank are: Dan Diehl for much help and patience, and a little "stick time" in N4DD. There isn't enough good to say about him. Butch Koppe for the Newsletter that fills all the gaps in the plans. Bill DeFreze, Ray Ellis, Steve Bennett and anyone else I have pestered at Oshkosh, and Bernie for having enough confidence in me to choose me as his test pilot.

Believe me everyone....finish your airplane. It is a feeling you must experience to know. Words will not do it.....Wayne Petersen, 3357 Polk St., Minneapolis, MN 55418.

TIPS FROM OTHER BUILDERS

Francis Schiers' KR-2 static display at Oshkosh drew lots of attention. Most of which was directed at the oversize landing gear castings with 500 x 5 wheels and tires. In response to the hundreds of people who wanted to know more about the modification, Francis sent the following letter: "Ernest, I am sending the name and address of the man that makes the gear I have on my KR-2. Also the tailwheel if you approve of it. The gear legs....Silent Wings, Inc., W. 204 N 5022 Lannon Rd., Menomonee Falls, WI 53051 phone (414)252-9992. The tailwheel...Monett Aircraft, Inc., 955 Grace St., Elgin, IL 60120 phone (312)741-2223. The mans name that makes the gear legs is Karl Schaarschmidt. Yours truly, Francis E. Schier, 2797 Latham Rd., Rockford,IL 61103."

An ad appearing in September "Sport Aviation" for The Airplane Factory includes a KR-1 canopy for $62. Effective August 1, 1981 the price is $95, 50% higher. I would suggest anyone wishing to order from The Airplane Factory ad confirm the price and delivery cost first.

I have been asked by many people to expand the KR Newsletter to include other types of homebuilt aircraft. This could be a good idea. More information could be shared such as, new materials, new techniques, and new ideas in aerodynamics. There are now several homebuilts that use the composite type of contruction. Many of them used ideas originated by Ken Rand, then developed them further to come out with their own version of "Everyman's Airplane". So why shouldn't we use their ideas to help us as they used Ken's to help them?

Now, I don't want to be misunderstood on this. My first loyalty is to the KR builders and my personal preference of all existing homebuilts is a KR. Modified perhaps, but still a KR. There just is not another aircraft that provides the opportunity to modify as the KR does. The KR-1 and KR-2 almost demands that the builder modify it in some manner that yet leaves the basic airframe intact. For this reason you will find very few KRs that look alike. There is one definite drawback to modification of your aircraft though whether it is a KR, Polliwagon, Eze, or anything else. Changes from the plans can add hours, days, weeks or months to the building time of your aircraft. It will also add weight (usually) and excess weight detracts from performance.

But there are ideas out there....What matters it if the fellow with the idea is building a KR or a Quickie, or a Dragonfly etc. If he has an idea that could be shared, a shortcut that could save everyone time, or a safety tip that might save your life.... lets give him a chance to share it! There are some ideas on each aircraft that won't apply to another, of course, and how any idea or tip would be used is at the discretion of each individual builder.

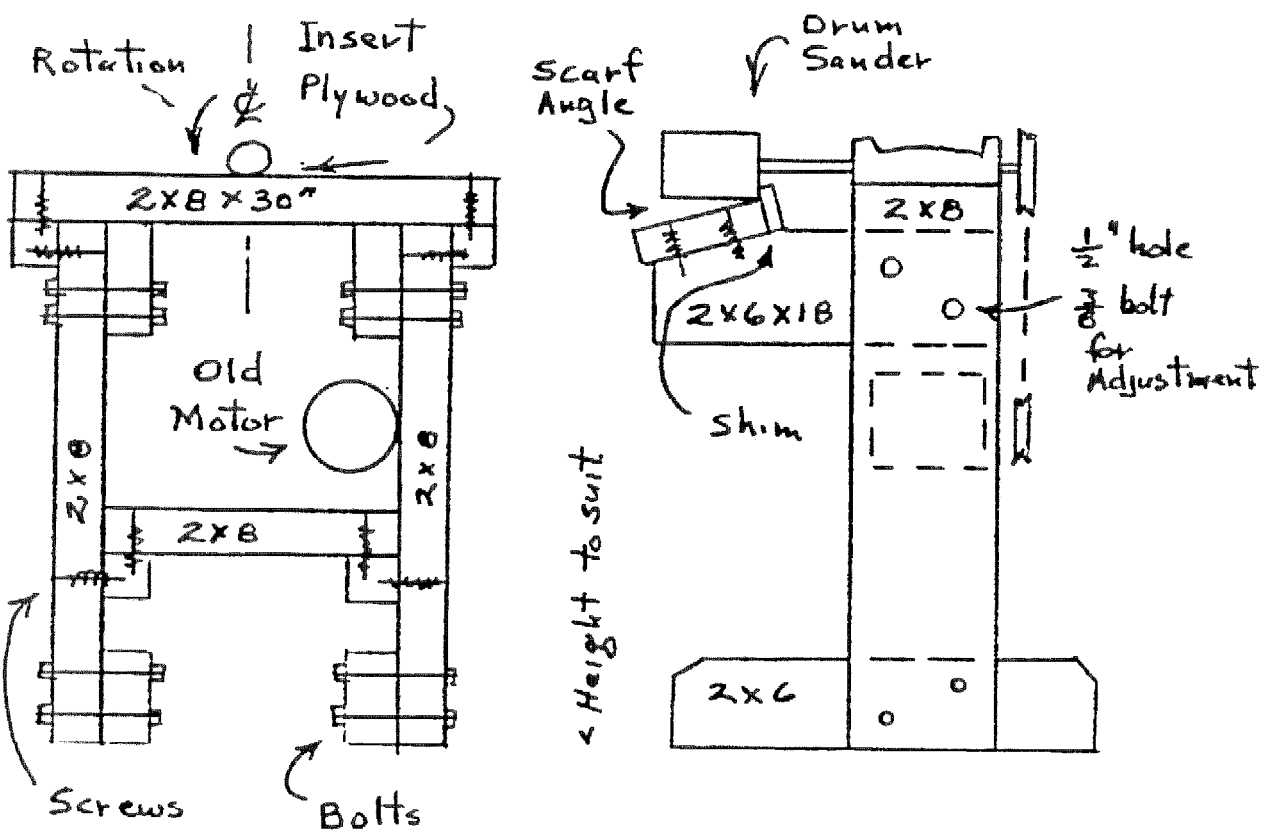
Let me know by postcard, letter or phone call if you think expanding the Newsletter is a dood idea (or bad). I want to hear from you. E.K.

PLYWOOD SCARFER

About a dozen years ago I used to take my plywood for scarfing over to Bob Maxwells place to use his scarfer. Until one day I took over my sketchpad and tape measure and then made my own copy of Bobs scarfer. It is made of fir boards to avoid warping. Inset a metal plate under the sand drum to avoid wear on the board. I used an old salvaged electric motor. Scarf angle is by trial and error on scrap and is adjusted by tapping with a hammer on the board and snugging up the bolts or by thin ply shims under 2x6 scarf board. This makes great scarfs. You may need several progressive passes for thicker plys. Use a mask as there is lots of dust. Glue and screw joints, use 1/4 ply gussets if you like. Put a 1/4 ply fence on the 2x6 scarf board. Good Luck

J Gregg.

Alberta, Canada



Buy Sell Trade

FOR SALE...R/R 3 blade prop. Never used..$250.00 (plus freight to U.S.) or will trade for "Sting Exhaust" J. Jewell, 19 Skerten Ave, Hornby, Christchurch 4 New Zealand.

FOR SALE...KR-2 project, fuselage signed off, spars signed off, fiberglass cowling, panel, fuel tank, new Revmaster R2100, Maloof prop, custom trailer, extras..(919)868-2907 N.C.

FOR SALE...Turbocharged Revmaster 2100 D Break-in time only...$3600.00. Rand/Robinson Eng., 5842 "K" McFadden Ave., Huntington Beach, CA 92649 (714)898-3811

FOR SALE...KR-2 project. Fuselage assembled, spars signed off, fixed gear parts w/tri-gear plans, new turbocharged 1835 VW w/Diehl case and electrics, R/R 3 blade prop and spinner, KR Newsletters. $4350.00 for all or $4000.00 without landing gear. Harry Hermann, 37247 51st St., Palmdale, CA 93550 (805)947-0550 no collect calls please.

FOR SALE...One smoke grey canopy for KR-1 as provided with R/R kit..$57.00 UPS prepaid anywhere USA. Joe Wallace, Industrial Parkway, Creston, IA 50801 (515)782-6575 business (515)782-8190 home.

FOR SALE...KR-2 upholsterey kits. NEW! Available in three colors..lt. brown, dark brown, and blue. Gary Boyd, 2250 Judith Ln., Santa Ana, CA 92706 (714)834-0380.

FOR SALE...Fiberglass parts for KR-2 at ½ of original cost...$200.00 special price. David DeMunbrun, 1818 Cripple Creek, Garland, TX 75041

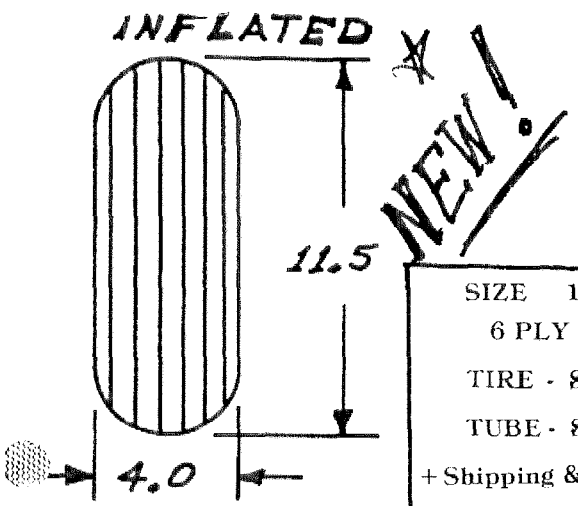
FOR SALE...KR-2 $8500.00. Write for more details. Dan Rohn, 1001 W. Lambert Rd., Space 55, La Habra, CA 90631.

FOR SALE...Completed KR-2. Ready for final inspection. Lost medical. Write or call for details (no collect). Howard Parker, 25 6th Ave. N.E. Oelwein, IA 50662 phone (319)283-3090.

FOR SALE...New Great American Propeller. $220.00 Bob Hamill, 3769 6th Ave., Los Angeles, CA 90018 (213)299-1434.

WANTED...Revmaster 2100 w/forged crank. Send price & specs to Paul Scovil, P.O. Box 1487, Battle Mountain, NV 89820 phone (702)635-2829.

FOR SALE...R/R engine mount, fits VW case..$50.00. G.M. Bates, 4794 San Bernardino St., Montclair, CA 91763 phone (714)626-8779.



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OSHKOSH 82

The highly successful KR group invasion of the 9th floor of Gruenhagen Hall at the University of Wisconsin this year has encouraged a repeat performance for 1982. Being neighbors with other KR builders and their families was fun and informative. The nightly gatherings in the halls and conference room was a very enjoyable part of Oshkosh this year.

So....if you think you may be at Oshkosh '82, make your reservations now. For $14.50 a night you get a room with two single beds, linens and towels. Send your name, address, telephone number and the dates you plan on being there along with a check for $14.50 (deposit) made out to the University of Wisconsin-Oshkosh and mail them to me no later than Oct. 30th. I will then forward all of them to the University as all applications must be mailed together to make sure we are all on the same floor again.....

Maxine Koppe

P. S. The rooms are not air conditioned. The University rents fans or you may bring your own. M.K.

OSHKOSH 82

Last Name _____ First _____ M.I. _____

Arrival Date _____

Street Address _____

Date of Check-out _____

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Deposit will be returned by the University if notified by mail of cancelation by July 1st, 1982.

ERNEST KOPPE
6141 CHOCTAW DRIVE
WESTMINSTER, CA 92683
OCTOBER 1981 ISSUE #76

Issue no. 77
NOV.
1981

KR NEWSLETTER

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CANADA $15.00 Yr U.S.
OVERSEAS $20.00 Yr Funds

This Newsletter is late! Oh, you noticed already. I hope it hasn't inconvenienced too many people and I do have a reasonable excuse (I think). The planned move to Oklahoma is now fact. For better or worse, I'm here.

Actually, I don't have anything but a mailing address while I look for a house. I'm using my brother-in-law's home as a base of operations and should have a place of my own by the time you get this Newsletter. The return address on the front of this issue is permanent and will be used no matter where I eventually find a home. You can address all your correspondence to me and the Newsletter at: P.O. Box 981, Jenks, OK 74037. I will have a phone as soon as possible and will publish the number next issue.

Meanwhile, back to the business of building airplanes!

QUESTIONS & ANSWERS

Q. Main dwg. KR-2, top of firewall, side elevation shows a spruce filler block. OK, also shows end view of a cross piece. Page 6 of notes section C-C shows $\frac{1}{4}$" ply $4\frac{1}{2}$" long but shows no cross piece. Exploded view of KR-2 shows a cross piece but no filler block. I know there is a filler block but is there a cross piece support for the rear edge of the $\frac{1}{4}$" ply?

A. The main drawing you refer to is one of the original drawings, as is the exploded view. Early plans were to use 3/32" ply for the firewall shelves and a 5/8 cross piece was necessary. When the plans were changed to $\frac{1}{4}$" ply for the shelves, a cross piece was no longer needed. Another point I wish to make...DO NOT use the exploded view drawing for anything but a general perspective. The plans have been changed in various areas...the exploded view drawing <u>does not</u> reflect or include these changes.

Q. On section C-C page 6, top of firewall, there appears to be a metal angle. I can't find any specs on it as to material, steel or aluminum, nor size. Is there a metal bracket on the bottom of the firewall also?

A. The metal angle is not needed when the $\frac{1}{4}$" plywood is used for the firewall shelf. <u>No</u> shelf or metal angle is needed for the bottom of the firewall.

Q. I'm going to have my KR-2 at Oshkosh '82. Do I have to send in a request to EAA to park my KR-2 with all the other KRs?

A. The parking of aircraft at Oshkosh is a first come-first served basis. Early arrivals usually watch for those coming later and try to arrange space in or near all the other KRs. This has worked very well in previous years and 1982 should be no exception.

Q. I would like to know if anybody has tried putting a Subaru engine in a KR?

A. At least two builders have planned on using the Subaru engine. One is going to use a geared version, the other direct drive. My files are packed away at present and I can't give you their address. I can print yours tho' and maybe they, or someone else will contact you. OK guys, write to : Kelly Lindblad, 311 16th St. S., Benson, MN 56715.

Q. Has Bill Defreze sent in a flight report on his KR-2 since he added the gull type canopy and fiberglass fuselage? I think it looks better and is much safer than the side opening canopy.

A. No flight reports on that particular modification from Bill yet. There are several builders currently going to this "Diehl type" canopy though and some of them have flown. No reported problems.

Q. How much larger diameter prop may be used if the LAMB tire is used?
A. ½". I recommend using 54" or less regardless of the tire size if you are using a VW engine tho. Most of the more successful KRs are using a 52" prop.
Q. How do you recommend building up a step area on the center left wing for easier entrance into the cockpit?
A. Most successful method I saw was a layer of 1/8" birch plywood over the foam and glass already existing. Additional ribs under the step area would be a good idea.
Q. What is the best method to get accurate cuts for bottom and top cross numbers without wasting a lot of spruce?
A. This is not an easy question to answer in print but I'll give it a shot. The problem, as I'm sure you're aware is that there are two angles to contend with at each end of the cross piece instead of just one. I used a straight edge and a tool called a scribe to find and mark these angles. Here's how. Lay a straight edge across the fuselage at the exact station of the piece you want to fit. Take the scribe (an adjustable angle square) and line up the blade fore and aft with the longeron while the body is held against the straight edge. Mark this angle on the top of your cross member. Now, with the straight edge at the same station and in exactly the same place, use your scribe to find the angle up and down of the side of the longeron. Set this angle on your table saw. Now, carefully, saw the cross member following the mark you made in the first step. Take care that the angles you are cutting are in relation to the fuselage (no backwards angles). The opposite side of the fuselage and the opposite end of the cross member are opposite angles and will require re-marking the cross member and re-setting the saw. The exact length of the cross members can be measured at each station along the length of the fuselage. For this method to work will require a sharp pencil, a sharp saw blade and patience.
Q. The plans say to use epoxy on everything. Does that mean that you can use the same epoxy for wood, dynel, or fiberglass?
A. The Rand/Robinson epoxy can be used in all three applications. There are other epoxies that may be used with wood and fiberglass but not with dynel. It is too brittle. Ask your supplier if there is any question about the epoxy you are using.
Q. May I use "hardware store" machine bolts for elevator and rudder hinges or must I get aviation quality nuts and bolts?
A. Always use aviation quality nuts and bolts in your KR. If you are not sure what sizes you need get a catalog from a supplier that advertises in "Sport Aviation". Most will have a chart for you to use and select sizes from.
Q. My airworthiness inspector (Canada) wants more structural ties holding the firewall to the fuselage. Do you have any suggestions on this?
A. Explain to the inspector that additional structural ties in this area are not necessary, would add weight, and are not in the plans. If he still insists, have him do the engineering to prove the necessity of the modifications he wants. Then tell me or Rand/Robinson so we can notify the hundreds of builders that feel the plans version is adequate.
Q. What is happening with the KR-3?
A. The KR-3 is currently in North Carolina in the shop of Gilbert Duty of Custom Aircraft Engines. Gilbert is installing a type IV VW of 2400 cc and should begin flight tests in December. The KR-3 will be at the "Sun-in-Fun: in March 1982. Come and see it there. P.S. Gilbert expects to have the type IV conversion available by the first of the year. Price tag is approx. $3500.00 with full electrics. Write to Custom Aircraft Engines, Rt. 3 Box 427, Sanford, NC 27330 phone (919) 776-0202.

TIPS FROM OTHER BUILDERS

About 1/10th of the KR Newsletter subscribers are from outside the USA. Most are in Canada but there are quite a few across the oceans. These guys have to really be dedicated! The problems with plans, parts, supplies and suppliers that we have here in the States are doubled and tripled for our overseas counterparts. Added to this is the usually negative reaction of whatever government office is involved. The more

I correspond with these builders the more I appreciate our freedom to use parts, materials, modifications not in the plans and our relatively encouraging FAA inspectors.

Occaisionally, I get letters from these fellows with a problem or question they need help with. These questions usually find their way into the Q & A section of the Newsletter. More rarely, I get letters from overseas with tips for all KR builders. It is always a pleasure to pass the letters on, I hope we get more in the future!

"Ernest, I think I've become an addict: must have your fine newsletter for another year. I don't know if you realise how much it means for us in parts of the world where home builders are scattered over wide areas. Here in Sweden we're eight KR-2 builders and I, for example, have seen only one of them. He is now dead. He and another home builder were killed in a plane crash on their way to our annual EAA fly-in this summer. No, it was not a KR but an old veteran Luscombe Silvaire on floats. Too low airspeed and too much bank I think. Now on to an interesting lay up method that I have used on my wings. As you might remember, I wrote to you about a year ago and asked for your help in getting R/R's approval of PVC foam. They never replied but I decided to use the stuff anyway simply because it is superior to Rand's "dust". I think six out of eight builders over here use this foam. Sure it is more difficult to sand, but due to the strength you can often bend it to shape instead of sand it. Anyway this is a sample of this foam with first the heavier fibre glass and then the lighter top cloth on it. I did my fin rudder and elevator with only the heavier cloth and was impressed with the hard strong surface but did not like the amount of epoxy/micro-balloon filler needed to cover the cloth texture, so I tried this top cloth laid on the heavier cloth while it was still wet. There was only very little additional epoxy needed to wet the top cloth and the smoothness of the surface was super. I think the extra weight added with the top cloth is almost eliminated with the smaller amount of filler needed and it goes without saying that fibre glass is stronger than filler. The top cloth is not nearly as easy to lay on the compounds though, so I left it out in the wing roots. Also I did glue the foam panels flush with the ply ribs not 1/8 above as the plans say and I did not have to sand at all. By the way, try to peel the cloth off the foam. If you have tried this with R/R foam I don't think you'll ever use it again. I can't translate the weight of these kinds of cloth to your ounces and square yards but in metric they are 152 grams/sq. meter resp. 85 grams/sq.m. I'm aware that several other builders have come up with similar or better ways of using the foam/dynel method but I thought I'd give you a report of what we are doing over here....Gunnar Clarfjord, Box 16, 780 64 Lima, Sweden".

The foam Gunnar refers to may or may not be available here in the U.S. I've never seen a sample of it before. Texture appears to be much like extruded 2 lb. density styrofoam but, being P.V.C., it is impervious to fuels. I did try to peel the glass/epoxy layer...might as well try to get the skin off your teeth.

If anyone here in the U.S. is familiar with this foam, please drop me a line. I am impressed by its' qualities and would be interested in using it on my next project. The cloth samples appear to be standard weaves and should be availabe from any fiber-glass supply house.

BUY * SELL * TRADE

FREE ADS! NEWSLETTER subscribers get the first 25 words free! Ads with more than 25 words or ads from non-subscribers are $5.00 up to 50 words. Display or photo ads are charged by size: 1/8 page @ $15.00, 1/4 page @ $25.00, 1/2 page @ $45.00, full page @$80.00. Display/photo ads must be camera ready or include $10.00 for set-up. Charges are per issue, payable with ad copy.

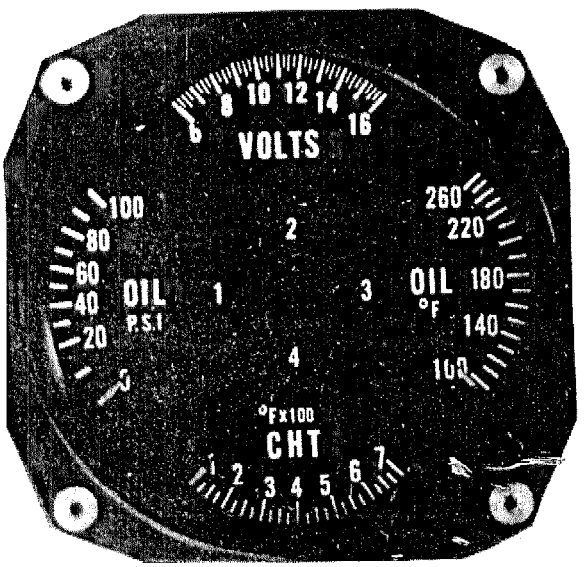
FOR SALE...KR-2 project. Fuselage, spars signed off, on gear. Revmaster 2100, Maloof prop, fiberglass cowl and tanks. $3500.00 or best offer..(919)868-2907 N.C.

FOR SALE...KR-2 wood kit, dynel and a few instruments. Plus 2½ years KR Newsletters, plans #4316. Lost job, need cash. Will deliver within 200 miles. Kenneth Scheiman P.O. Box 7, Grand River, OK 44045 phone (216)255-6926 no collect.

NEW!

Specs.
3 1/8" hole
4 oz.
2" Deep

Specify
VW or other
Engine



NEW

$189.00
w/Senders

+ Tax + ship.

Write For
other
Combinations

Send M.O. or Cashiers Check To:

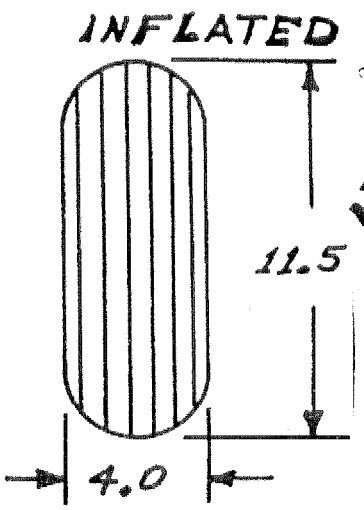
B & J ENGINEERING CO.
7530 IRONWOOD DRIVE
DUBLIN, CA. 94566
(415) 828-2111

Allow 4 To 8
weeks Del.

FOR SALE...oil pressure and oil temp. gauge. Mechanical type with complete hook-up. New...$15.00. Also a complete tailwheel assembly per R/R instructions. All moving parts have teflon fittings and painted with zinc chromate, ready to go..$25.00. Timothy R. Gibbs, 15920 Uppsola Ct., Woodbridge, VA 22191 (703)680-2969.

FOR SALE...KR-2 turbo. Low time, signed off by FAA..$6500.00. Fred Whitcomb, 13502½ Village Dr., Cerritos, CA 90701 phone (213)926-5710.

FOR SALE...KR-1 plans,unused..$25.00. Dane Hillerman, 12773 North Ave., Ballico CA 95303.



NEW!

THIS TIRE FILLS THE SIZE GAP BETWEEN THE 500 X 5 AIRCRAFT TIRE AND THE 3.40-300 X 5" GO-KART TIRE

LOOKS LIKE A SCALED-DOWN 500 X 5,
FITS K-R'S VARIEZE AND MOST OTHER EXPERIMENTALS USING 5" RIMS.

SIZE 11.400 X 5
6 PLY RATED
TIRE - $25.00 ea.
TUBE - $ 6.50 ea.
+ Shipping & Handling
FED. EX. TAX INCLUDED

QUANTITY ____ TOTAL AMOUNT OF ORDER $ ____

MAKE PAYABLE TO MIKE LAMB: CALIFORNIA RESIDENTS ADD 6% SALES TAX
SHIPPING & HANDLING WILL BE SENT COLLECT

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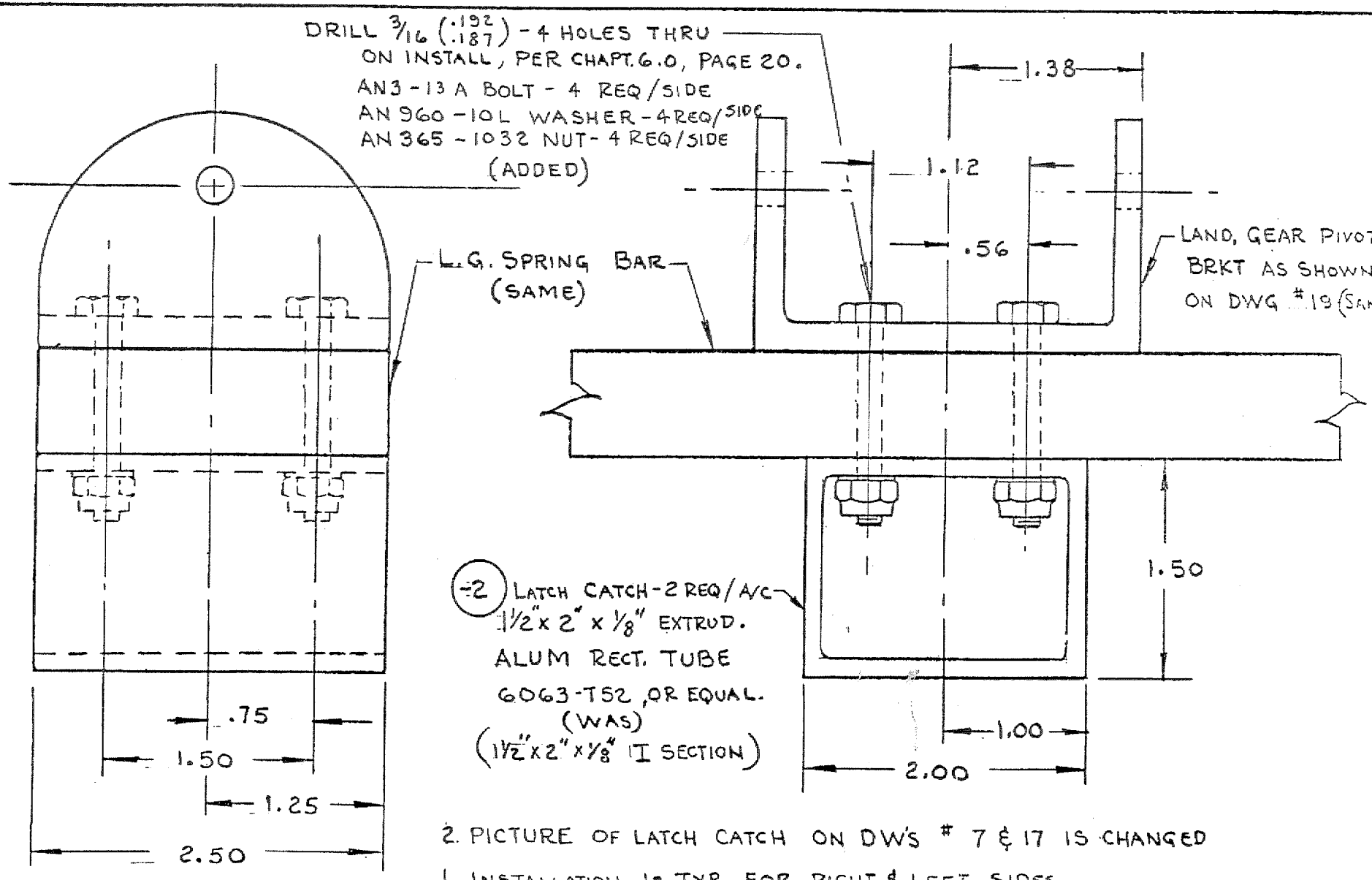
(ALLOW 2 WEEKS FOR PERSONAL CHECKS TO CLEAR)

NAME (PLEASE PRINT): _____

ADDRESS: _____

CITY, STATE: _____ ZIP: _____



NOTE:

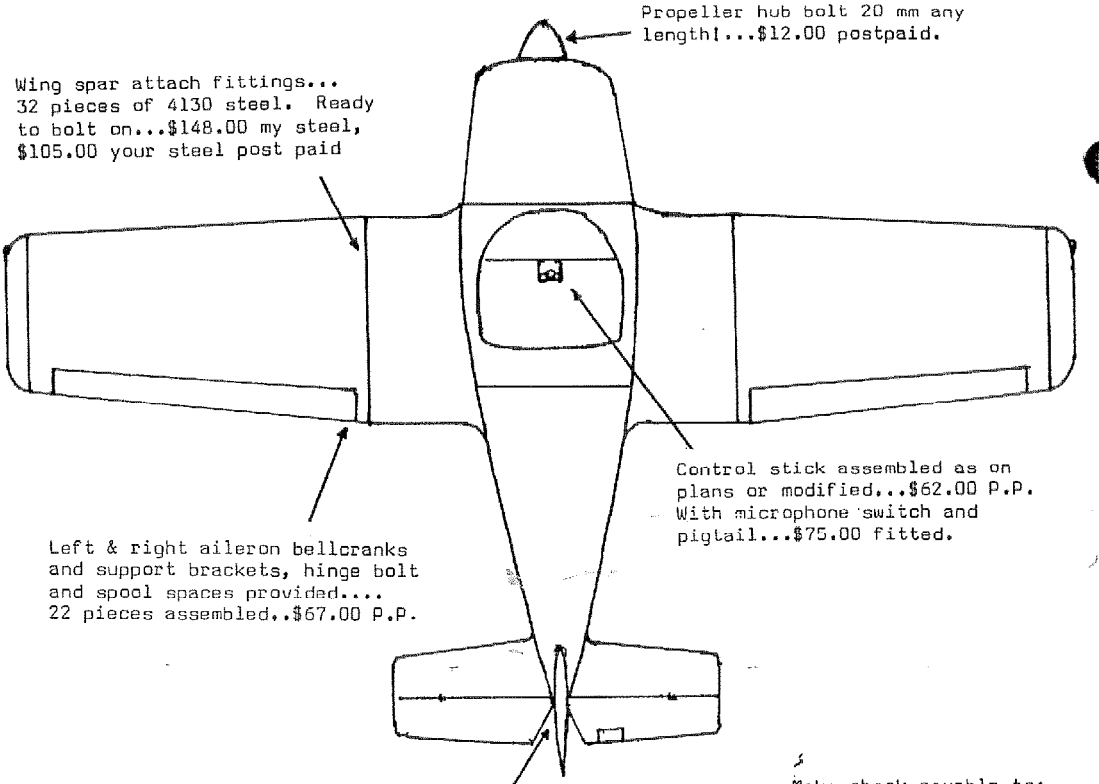
1. INSTALLATION IS TYP. FOR RIGHT & LEFT SIDES
2. PICTURE OF LATCH CATCH ON DW'S # 7 & 17 IS CHANGED

DRAWING CHANGE NOTICE — KR-2 DWG # 19

DATE OF CHANGE - 1-23-81 (OR LAST OF "I" SECTION PARTS)
SERIALS EFFECTED - (INTERCHGABLE ALL SER.)
REASON FOR CHANGE - "I" SECTION STOCK NOT AVAIL.

CHANGE DESCRIPTION - SUBSTITUTED RECT. FOR "I" SECTION AND ADDED BOLT LOCATION & CALLOUT.

RAND ROBINSON ENG. INC.



ERNEST KOPPE
P.O. BOX 981
JENKS, OK 74037
NOVEMBER 1981 ISSUE #77

Issue no. 78
DEC.
1981

KR NEWSLETTER

RATES
USA $12.00 Yr
CANADA $15.00 Yr U.S.
OVERSEAS $20.00 Yr Funds

MERRY CHRISTMAS & HAPPY NEW YEAR

Can you believe it? We are at the end of another year. Where does the time go? I suppose this year went by more quickly for me because of my move to Oklahoma. There was never enough time to get anything done and my Newsletter schedule has suffered greatly. All that is now behind me. I've bought a house, I've got a phone (918-227-2988) and other than the few thousand chores assoicated with settling in a new home, things are getting back to normal. Bear with me while I get things arranged around here.

By the way, my home address is 335 Lynn Lane, Sapulpa, OK 74066 and any of you can drop by if you're passing thru the neighborhood. Newsletter mail will continue to the Jenks P.O. Box, makes it easier on the postman.

I stopped to visit a couple of times on my last trip from California (I've made 5 this year). Rex and Phyllis Taylor of H.A.P.I. in Eloy, AZ was the first stop and Rex was kind enough to take me on a tour of H.A.P.I.'s new facilities. He wanted me to be sure and pass on the following warning on carb ice.

Test stand engines using the POSA carb have developed carb ice in the intake system. Rex advises that all users of the POSA should use some method of carb heat to combat this problem.

My next stop was in Albuquerque, NM at the home of Jim & Anna Demick. Jim has a 99% complete KR-2 that will be flying soon and I figured a look at a KR would provide a nice break in a long trip. Indeed it did. Jim has a KR-2, built mostly to plans except for the empennage. Long an admirer of the Glole Swift, Jim has adapted the lines of the tail of his KR to match that of the Swift. The result is almost a 3/4 size replica of the 1946 classic. Flight tests are to begin in January '82 and we should get some report on flying qualities shortly after.

CORRECTION.....Last month, in the ads section, I ran an ad for Ken Scheiman. He is selling his KR-2 kit and would deliver within 200 miles. Unfortunately there is a typo in the ad. Ken lives in Ohio (OH) not Oklahoma (OK) as the ad indicated. Sorry 'bout that...see the corrected ad in this issue.

QUESTIONS & ANSWERS

Q. What are the degrees of travel for the control surfaces on a KR-2? I couldn't find the answer in my plans.

A. Rudder 30° each way, elevator 30° up 20° down, ailerons 1½" up 3/4" down (measured at the inboard trailing edge). I consider these minimum amounts of travel for safe flight. KR-1 uses the same travel.

Q. I've seen several references to micro-balloons in your Newsletter. Where could I send for some?

A. Wick's Aircraft, 410 Pine St., Highland, IL 62249 phone (618)654-7447. Aircraft Spruce & Specialty, P.O. Box 424, Fullerton, CA 92632 phone (714)870-7551.

Q. Are you still selling the "Sting" exhaust? If yes, how much should I send to get one, if no, where can I get a good tuned exhaust for my Revmaster 2100D?

A. I do still sell the "Sting", price is $180.00 plus shipping. My inventory is currently depleted and I will begin a new production run as soon as enough orders are received.

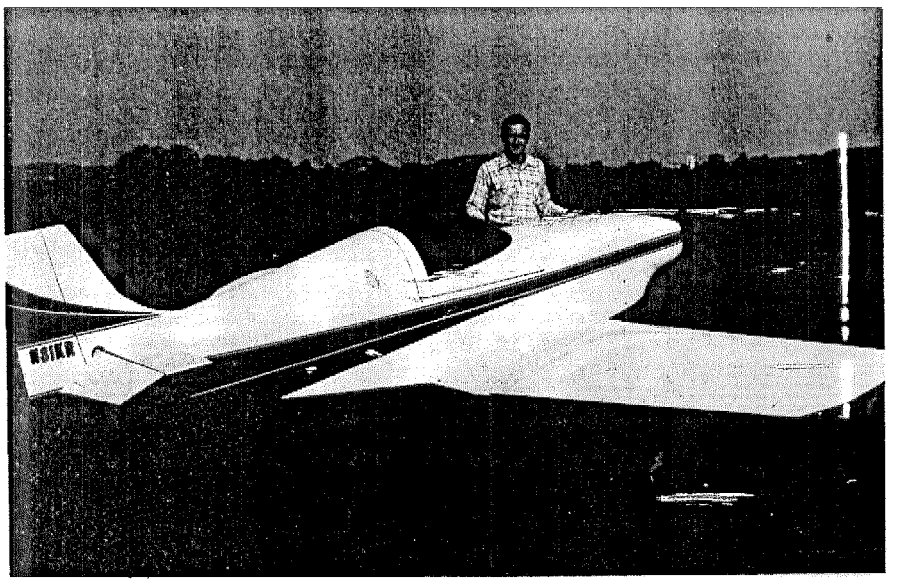
Q. I have just glued foam to rudder, horz. stab., & elevator. Do you apply fiberglass before installing on the fuselage? Are they inspected by the FAA before glassing?

A. Yes, to the first question but when the inspection is made on the parts is up to the local FAA inspectore. The parts can be inspected after fiberglassing if the surface of the glass has not been sanded.

FLIGHT REPORTS

Our Quaker state KR builders have been busy lately. Here are two flight reports from builders in Lancaster, PA.....

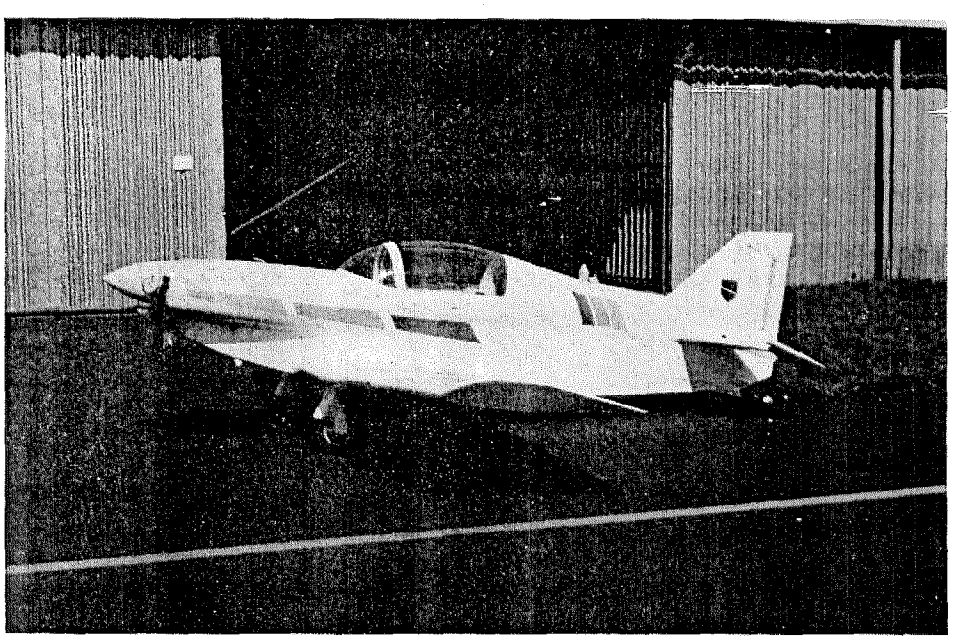
From Mark Kaufman, 2107 Plymouth Road, Lancaster, PA 17603...."The first flight was on Sept. 26, 1981, everything went perfectly with no problems whatsoever. The aircraft presently has 28 hours on it. The only problem experienced has been a faulty airspeed indicator which had a tendency to stick at 110 mph. Empty weight is 552 lbs. It is equipped with a Revmaster R-2100D with starter, alternator, oil cooler, and mixture control. Also installed is a Genave Alpha 200 nav/com with antennas built into the wings and tail surfaces. The propeller is a Great American of 52" diameter and 48" pitch,with this prop the engine will turn up to 3800 rpm static. I never exceed 3500 rpm so full throttle is never used. Rate of climb when flown solo is 1800 fpm and 1200 fpm with a passenger. Cruise speed is 160 mph with a stall speed of 45 pmh. The aircraft flys hands off and has no bad habits. Also the FAA removed the restrictions after 25 hours. The plans were followed except for the use of two layers of 6 oz. bi-directional cloth instead of dynel. I am extremely pleased with the plane and feel that for the time and money invested, you can't beat the KR-2.



From Carl A.O. Huckfeldt, 11009 W. Tulane Ave, Littleton, CO 80127..."KR-2 N8524P signed off 10-20-81. A lot of minor fixing had already been done. I had the aircraft off the runway twice, off the right side and off the left side that is! First time due to inexperience, pilot forgot that right torque (REMEMBER LEFT RUDDER). Second time was a high speed run and was slowing for taxi way, let the stick back too quick and drifted off the runway to left. This time I poked a hole in the bottom of the left wing on a reflector stake. Repairs were made. The inspector showed up on 10-20-81 and signed the aircraft off. He said it was nice looking aircraft, the first KR-2 he had seen in the raw. A lot of taxi tests later to gear alignment fixed and to solve a heating problem. I turned the aircraft over to a 1500 hr taildragger pilot, David Guerriero. He owns and flys the DeJagger homebuilt. A couple of weekends later, after replacing tail wheel (wore out), he was making a high speed run and blew the right main tire. No damage to the aircraft but ended up in the toolies again. That spring steel gear sure is hell for stout. Right then and there I decided to go to stronger tires. I replaced the original sut-up with 500-5 McLearry 6 ply. I now can't see out period. Before was bad enough, time to wedge the tailwheel. GREAT, now I can see over the nose in a tail low configuration. I am very narrow minded about not being able to see where I'm going. 11-14-81 BIG DAY...wind light. Put 9 hrs on rented 152 scouting area for likely landing spots just in case, then made two full stop landings. Now back to the T-hanger and the KR-2. I made 4 power runs down the runway (5000') flying the tail. This darn thing finally feels like an airplane should. Everything felt so right I decided I could fly it. The wind went down to hang-glider weather, so was no problem. I made a full power run-up, everything is green. Full power tail up, 60mph back off stick a bit & we are flying. Now the fun begins (VERY, VERY BUSY). This aircraft

is not a 152. I made about 1½ laps of the airport, realized I was holding forward stick so I tryed the electric trim, one click and pressure is gone. Next problem! Temp is going and oil pressure is going down so I headed for crosswind (dirt) it is a lot closer. Oil showing on the windshield, flew it right on, no time to fool around. On shutdown, discovered oil was being thrown out around prop hub, also found that the needle in the Posa carb had rotated from vibration. Engine wasn't producing full power although it was OK on run-up. NOTE: Be sure and check that needle for proper setting and see to it that it will stay there. The aircraft was very stable, any or all the ossulating due to pilot enduced (lack of experience) 125 hrs tri-gear aircraft. As to the heating problem I personally think I made the intakes just too small and too much oil in engine (heat expands, remember) Well, back to the shop for a few fixes. Should be back in the air shortly. I don't know top speed but was flying 100 mph in pattern and set it down about 60 mph."

From Jim Peris, 129 Crest Ave, Lancaster, PA 17602...."N-31097. We did our series of taxi tests and improved everything we could think of and on July 24, 1981 we decided to test. My KR-1 has about 1300cc VW, empty weight 482 lbs, gross weight 711 lbs. Took off at 2900 rpm's and climbed out about 80 and did one turn around the field . I called (no radio) the tower before and stated one time around. CHT was around 450° oil temp 160 @ 60 lbs. Power approach at 80 and a touch down at 50, straight roll out. Beautiful! I'd say that my KR-1 has a sink rate of a Grumman, but bleeds off very fast. From the first flight to 8 hrs. later we fine tuned the KR...re-ground the valves (more power) re-timed the engine, worked on the prop and cleaned up the plane. Take off..1000 ft., cruise gear down..100, gear up.. 120, cowl flap closed at cruise..128 mph. Power stall, left & right, steep..40. Power off stall steep..50, fell through smooth, landing approach..80, over fence.. 70. Bleed off to 50, touch down (without flaps) I have flaps but did not get a test yet. Cyl. head temp. when gears were up went from 400 to 325 which gave me a chance to close cowl flaps. My flight which was a real thriller, happened a few Sats. ago. I was flying around the field at 800 ft. and was doing a series of turns. I heard a real loud bang!? Everything in the plane shook real bad. I cut the engine and the shaking was so bad, the key fell out of the switch. I had to go for the fuel valve right away. This lasted for 5 to 6 seconds. I was parallel to the field so I did a short S turn and dove to field at 90 to 100 mph to get down fast. I flared out over fence and I heard the gear horn go off. Well...I did not want to try any more close ones, so I landed gears up. Only damage was the cowl bottom. Three guys from the field helped me lift the plane to its feet and pushed it into hanger. Later we found that the prop had bad glue joints and fatigued and broke off 4" from the hub. Spinner then came off and hit the windshield. One bottom bolt on the bell housing at the motor mount was broken off and the flange on the crank case broke off on top mount, a couple of more seconds and I would have lost 150 lbs. in the front...no good at all! I"m now building 1835 and a new prop. I can't wait to fly again...a KR will hook you if you fly any variety of planes..they are slick, clean, quiet and responsive. Lesson to learn...check all props for glue joints (a directive came out on this), put a safety cable on the engine. It will make you feel more secure."



BUY SELL TRADE

WANTED...unused KR-2 kits. Contact Lee Carroll, 3559 Alder Place, Chino CA 91710 phone (714)597-4604, NO COLLECT CALLS, prefer So. Calif.

FOR SALE...KR-2 wood kit, dynel & a few instruments. Plus 2½ yrs KR Newsletters & plans #4316. Lost job, need cash. Will deliver withing 200 miles. Kenneth Scheiman, P.O. Box 7, Grand River, OH 44045 phone (216) 255-6926 no collect.

FOR SALE...KR-2 project, approx. 2/3 complete. Fuselage completed wired, & cables. Elevator & rudder foamed, wings need foam. Also have some instruements; compass, M.P. gauge, & turn & bank. Canopy, gascolator, 4 gal. epoxy, everything to finish... including 2100 Revmaster engine and a $250.00 deposit on a Maloof prop. $4000.00. Randy Elofson, 12542 Manley, Garden Grove, CA 92645 phone (714) 893-1157 no collect.

FOR SALE...KR-2 project. Fuse on wheels, foamed & glassed. Spars signed off, empennage finished, plus instruments & hardware. Will sell for cost. Montreal, Canada area. Call (514)684-1573.

FOR SALE...GB-1 project. Lower fiberglass fuselage, all the spruce for complete plane from Aircraft Spruce and Specialty, all fiberglass matting & cloth, 1 gal. epoxy, 2 gal. laminating resin, foam kit, plans & pictures. $950.00 invested, will sell for $450.00. Arthur Silverman, 872 S. Lucerne Blvd., Los Angeles, CA 90005 phone (213)937-9370.

FOR SALE...KR-1 project. Fuselage with wing studs complete, spars signed off, tank & cowling complete. Needs only wing foam & glass to complete. R/R tubular engine mount. VW converted. E. Rhodes, 3618 14th Ave. North, St. Petersburg, FL 33713 (813)323-3087.

JOIN E.A.A.

Write to:

Experimental Aircraft Association
P.O. Box 229
Hales, Corners, WI 53130
Telephone (414)425-4860
Office hours: 8:30 - 5:00
Monday - Friday

TRADE...have Rajay turbocharger for 2100, 75 hrs TT. Will trade for Rajay for 1800cc engine. Robert Patlovany, 700 Henning, Apt. 37A, Sulphur, LA 70663 phone (318)528-2786.

FOR SALE...R/R engine mount for VW..$50.00 Gerald M. Bates, 4794 San Bernardino St., Montclair, CA 91763 phone (714)626-8779.

FOR SALE...KR-2 kits. All metal, including gear parts & upholstery kit. Make offer. Kenny Ranta (515)262-4122 (Iowa)

FOR SALE...1835 turbo charged engine by Rocky Webster (E. Koppe's brother), with Super carb, Dan Diehl case, alternator, & starter. H.A.P.I. prop hut, 4216 Slick mags, supertin...$3100.00. Also have asst. parts Lyc. engine mount..$100.00, rudder pedals...$22.00, aileron hinges (5) $20.00. Have all KR Newsletters...make offer. Harry Hermann, 37247 Clst St. E. Palmdale, CA 93550.

TRI-GEAR PLANS...Retractable system that uses Rand's parts, wheels, gear legs and spring bar. Conversion plans..$25.00. Bill DeFreze, 7530 Ironwood Dr., Dublin, CA 94566 phone (415)828-2111.

THE DIEHL SUPERCASE

The only accessory case on the market designed to fit either of Rand's engine mounts. Provides electric starting and 20 amp solid state alternator. Now available with starter on top to allow clearance for tri-gear.

Current Prices

ACCESSORY CASE.....	$125.00
RING GEAR ASSEMBLY....	85.00
20 AMP ALTERNATOR.....	100.00
MAGNETO DRIVE.....	40.00
STARTER.....	65.00

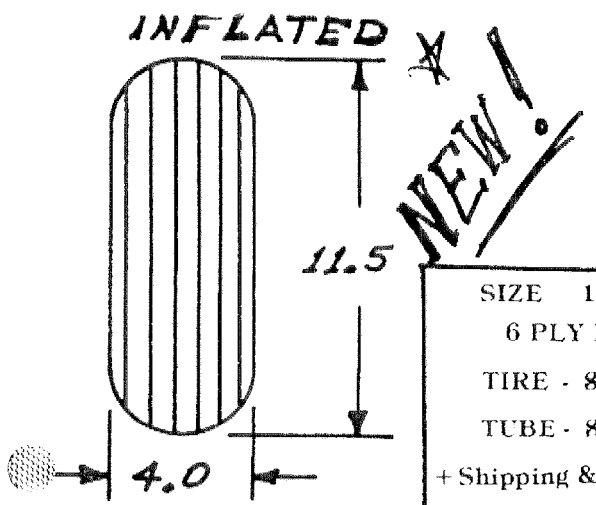
We also have the special tailwheels for the KRs. These are $15.00 and will fit the Rand fork. And... TRANSISTORIZED FUEL TRANSFER PUMP for $25.00. Price on wheels and pumps include shipping....Dan Diehl, 1855 N. Elm, Jenks, OK 74037.

TRI-GEAR REVISITED

Never rains but what it pours! A newly developed tri-gear is being introduced for the KRs and another is under consideration. To date, there have been no tests of either tri-gear on a KR. It is information that should be passed on to all KR builders though. I have seen the prototype of the New Zealand tri-gear (the KR-2 in R/Rs shop is supposed to get the first set). It appears to be a well designed gear. Be sure you correspond with one or both of the following individuals before you order anything. Know exactly what you are getting and when before you order.

HOTLINE FROM NEW ZEALAND....Aero Trading Ltd., a New Zealand company has been manufacturing Air-Oleo landing gears from a large variety of homebuilt aircraft over the last 7 years. Their range covers from Jodel D11, Minicab, Sirocco, Pazmany PLII, Turner T40, Mustang II to Zenith and Tri-Z. At the request of your editor, we have now developed a fully retractable tri-cyle Oleo-landing gear for aircraft with a max A.U.W. of 1200 lbs. The main struts are made from al alloy castings. The main fork, scissors and retract links are milled from solid al alloy 2024 T6. Each gear incorporates its own pressurised hydraulic strut which provides the force for downlock, retract and uplock. The retract cycle is only 3 seconds. The main wheels incorporate disc brakes and the nose gear is either castering or fully steerable. The landing gear can be fitted as a retro-fit on existing KR-2's all ready flying. The complete set including wheels, tyres and brakes sells for U.S. $950.00 Ex Los Angelos. Instruction drawings are available at $25.00 set, re-fundable by purchase of landing gear from: AERO TRADING LTD., 16 CLIFF RD., TORBAY, AUCKLAND, NEW ZEALAND phone 403-9397

KR builders and owners....by now you have probably heard of me. I have been building a tri-cycle landing gear for about three years and have been selling plans to build the gear as a fixed tri gear system. Since then I have developed a new tire that is just perfect for the KRs. Both tri gear plans and the Lamb Tire have been advertised in the Newsletter. Mrs. Jeannette Rand and I have been discussing the possibility of me manufacturing a tri-cycle gear fully retractable to fit or retro fit a plans built KR-1 or KR-2. This will take quite a large investment and extensive testing program. The gear system complete with wheels, brakes, and Lamb Tires will sell for approximately $1200 to $1500. So I need to know how many of you would be interested and whether you have the KR-1 or KR-2. Send your response to Mike Lamb, 5327 West Ave., L-10, Quartz Hill, CA 93534. If you have questions send a self addressed stamped envelope.



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LOOKS LIKE A SCALED-DOWN 500 X 5,
FITS K-R'S VARIEZE AND MOST OTHER EXPERIMENTALS
USING 5" RIMS.

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TIRE - 825.00 ea.
TUBE - 8 6.50 ea.
+ Shipping & Handling
FED. EX. TAX INCLUDED

QUANTITY ____ TOTAL AMOUNT OF ORDER $ ____

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SHIPPING & HANDLING WILL BE SENT C.O.D.

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(ALLOW 2 WEEKS FOR PERSONAL CHECKS TO CLEAR)

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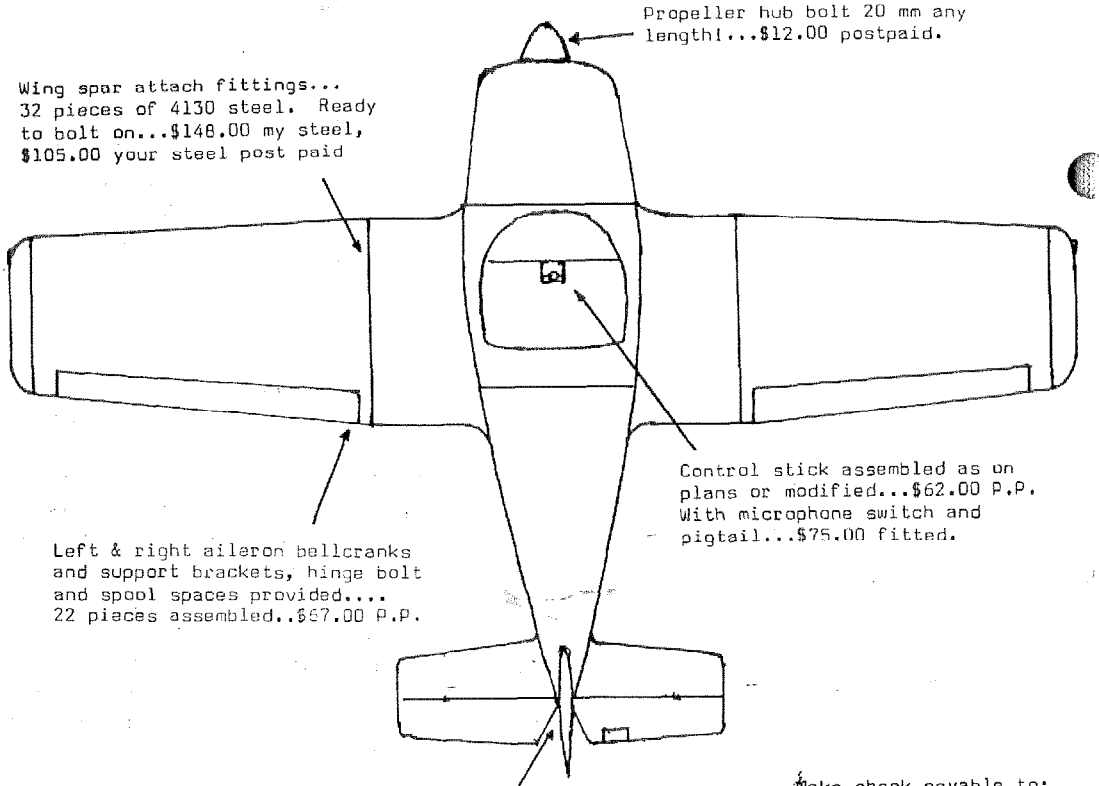
No instructions are given which conflict with plans or Newsletter. We prefer you refer to plans or consult Rand/Robinson.

QUALITY...all material is aircraft aluminum/steel as specified in your plans. Milled with precision then deburred, bead blasted, final finish reamed by standard aircraft production proceedures all in the interest of safety.



Propeller hub bolt 20 mm any length!...$12.00 postpaid.

Wing spar attach fittings... 32 pieces of 4130 steel. Ready to bolt on...$148.00 my steel, $105.00 your steel post paid

Control stick assembled as on plans or modified...$62.00 P.P. With microphone switch and pigtail...$75.00 fitted.

Left & right aileron bellcranks and support brackets, hinge bolt and spool spaces provided.... 22 pieces assembled..$67.00 P.P.

Rudder, elevator, tailwheel horns and hinges...11 pieces plus 10 back-up plates H. & H. pilot drilled for mount bolts. $58.00 P.P.

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ERNEST KOPPE
P.O. BOX 981
JENKS, OK 74037
ISSUE 78 DECEMBER 1981

MERRY CHRISTMAS!

Issue no. 79
JAN.
1982

KR NEWSLETTER

RATES
USA $12.00 Yr
CANADA $15.00 Yr U.S.
OVERSEAS $20.00 Yr Funds

HAPPY NEW YEAR!

I just looked back at my last New Year's resolutions to see if I actually kept any. Glad I did, cause now I'm all set for this year's resolution...I hereby resolve not to make any more resolutions. Now there's one I think I can keep. This time next year maybe I won't feel so guilty. HA! Anyway on to airplanes & stuff.

The flight reports always draw more favorable mail than any other part of the Newsletter. Everybody likes them it seems and several KR pilots have credited them with preparing for their first successful KR flight.

Several of the flight reports I've published haven't ended all that successfully. This unhappy fact probably can be attributed to any one of several reasons but I think there is one major underlying factor...lack of a formal test program.

There is more to testing an aircraft, KR or otherwise, than just taking it around the pattern once, and it starts on the ground. I'm going to suggest the following test guide for you to follow with your KR. It is going to be quite lengthy and it will require you to do some paper work but...when you have completed the form, you will know your KR.

GROUND & FLIGHT TEST REPORT FOR EXPERIMENTAL AIRCRAFT

I. Fill in the blanks or circle the correct answer.

AIRCRAFT TYPE _____ REGISTRATION #N _____

ENGINE TYPE _____ ENGINE MODEL _____

PROPELLOR MFG. _____ DIA _____ PITCH _____

PROPELLOR TYPE...wood metal composite adjustable

ENGINE/PROPELLOR GEAR RATIO _____ CARBURETOR TYPE _____

AIRCRAFT EMPTY WEIGHT _____ EMPTY C.G. POSITION _____

AIRCRAFT GROSS WEIGHT _____ GROSS C.G. POSITION _____

ALLOWABLE C.G. RANGE...Forward _____ Aft _____

II. TEST PILOT DETAILS

NAME _____ LICENSE TYPE _____

NUMBER OF HOURS IN PREVIOUS 12 MONTHS AS P.I.C. _____

ANY EXPERIENCE IN THIS TYPE AIRCRAFT? yes no _____ HRS

III. GROUND TEST

PARK AIRCRAFT 90° TO WIND. NOTE O.A.T. _____ °C WITH FULL THROTTLE (AND ADJ. PROP IN LOW PITCH) RECORD THE FOLLOWING INFORMATION (WHERE APPLICABLE).

STATIC RPM _____ MANIFOLD PRESS. _____ OIL PRESS. _____

OIL TEMP _____ CYL HEAD TEMP _____ EXHAUST TEMP _____

AMMETER/VOLTAGE _____

WITH THE ENGINE RUNNING ON THE GROUND, CHECK THE FOLLOWING:

1. Is the engine apparently developing full power?..... yes no
2. Do vibrations appear normal at all RPM?..... yes no
3. Do the instruments shake excessively at any RPM?..... yes no
4. Does the engine accelerate promptly when the throttle is opened quickly?.yes no
5. Do the following items show signs of excessive vibration and/or distortion due to engine movement?

A. Cowlings.....yes no		E. Manifolds.....yes no	
B. Fuel lines.....yes no		F. Engine controls.....yes no	
C. Oil lines.....yes no		G. Engine mount.....yes no	
D. Instrument lines...yes no		H. _____.....yes no	

6. Engine idling speed_____RPM Is idling speed such that engine functions properly during all ground running conditions?.....yes no
7. Note any problems encountered with engine, controls, instruments, structure....

_____

_____

(use separate paper if needed)

IV. FIRST FLIGHT

1. Flight tests should be carried out only when all ground tests have been satisfactorily completed. Check all controls for proper movement, including freedom from interference with pilots' clothing or aircraft structure.
2. Prior to first take off and climb, several taxi runs should be carried out. Any problems with landing gear, wheel alignment, or rudder control should be corrected.
3. Elevator response may be checked on the ground in some tailwheel aircraft (KR) by the following method:

   A. Face aircraft into the wind and securely chock main gear.
   B. Tie tailwheel with a length of chain or rope that will allow the tail of the aircraft to rise but <u>not</u> enough for the prop to strike the ground (at least 2" of prop clearance).
   C. Sit in the cockpit, start engine and advance throttle to full power. Push the control stick forward slowly, until the tail of the aircraft rises. Practice for a few minutes holding the aircraft steady at different attitudes. This should help prepare you for pitch sensitivity and elevator response.

4. The first flight should be under optimum conditions, wind, weather, traffic, etc. Take-off roll should begin with throttle advanced slowly. Pilots in an aircraft using a direct drive VW engine should be aware that <u>left</u> rudder pressure will be necessary to counter torque on take-off roll and climb.

   First flight should include a brief check of the stall speed to determine a suitable approach speed (1.3 Vs). For instance if the stall is at 50 mph, multiply 50 by 1.3 to get an approach speed of 65 mph.

   Pay very close attention to engine temps on this first flight. Many engine failures could have been prevented with a little more airspeed on climb-out to keep the engine cool. Keep the first few flights short and within gliding distance of an airport. Don't retract landing gear until you are satisfied with performance and handling.

V. FLIGHT TESTS

You should have all mechanical problems well behind you before you start this phase. If you aren't satisfied the aircraft is performing well and the engine is running normally, <u>don't</u> continue testing until you are.

You should be very familiar with the area where the tests are to be made. Possible forced landing areas should be noted in case they are needed. Once you have accomplished all these precautions, you are ready for the following steps.

1. Load the aircraft to gross weight (in C.G. range) record the following:
   TAKE OFF WEIGHT_____lbs C.G. LOCATION _____

2. Take-off
   LIFT OFF SPEED_____ENGINE RPM_____

   MANIFOLD PRESSURE_____inches Hg (if applicable)

   HANDLING SATISFACTORILY...yes no IS ENGINE SMOOTH...yes no

3. Climb
   Set altimeter to 29.92", establish a stable climb at 300 ft. and start timing at 500 ft . Use full power, gear and flaps up, at best climb speed (if this is not known use 1.45 Vs1)

   CLIMB SPEED_____ENGINE RPM_____

   MANIFOLD PRESSURE_____O.A.T. @1000'_____^{0}C

   TIME TO CLIMB FROM 500' TO 1500' INTO WIND_____MIN._____SEC.

   REPEAT DOWNWIND.....MIN._____SEC.

   HANDLING SATISFACTORY...yes no ENGINE OK...yes no

4. Stalls
   A. Power off, Level Stall
   Approach stall by decreasing airspeed slowly (1 mile per second)

   IAS AT STALL (GEAR & FLAPS UP) Vs1_____ALTITUDE LOSS_____ft.

   MAX. RECOVERY AIRSPEED_____BEHAVIOR DURING STALL_____

   _____

   Is there any stall warning?...yes no If yes, record nature of warning (buffet, etc.) and airspeed warning begins_____

   _____

   Repeat test with gear and flaps down...IAS AT STALL Vso_____

   ALTITUDE LOSS_____ft. MAX. RECOVERY IAS_____

   BEHAVIOR DURING STALL_____

   STALL WARNING?...yes no CHARACTERISTICS_____

   B. Power on level stall (Full power)
   Approach stall by decreasing airspeed slowly (1 mile per second)

   IAS AT STALL (GEAR & FLAPS UP)_____ALTITUDE LOSS_____ft.

   MAX. RECOVERY AIRSPEED_____BEHAVIOR DURING STALL_____

   _____

   Is there any stall warning?...yes no If yes, record nature of warning, (buffet, etc.) and airspeed warning begins_____

   _____

   Repeat test with gear and flaps down...IAS AT STALL_____

   ALTITUDE LOSS_____ft. MAX. RECOVERY IAS_____

   BEHAVIOR DURING STALL_____

   STALL WARNING?...yes no CHARACTERISTICS_____

   C. Power on banked stall
   Establish a steady, level, co-ordinated 30^{0} bank turn at cruise power (gear & flaps up) IAS_____

Maintain the 30° bank and stall the aircraft by steadily tightening the turn with the elevator.

STALL SPEED_____left_____right

ALTITUDE LOSS_____ft. left _____ft. right

MAX. IAS DURING RECOVERY_____left_____right

BEHAVIOR DURING STALL_____

Are there any uncontrollable rolling or spinning tendencies?...yes no
Stall warnings...yes no CHARACTERISTICS_____

D. Aborted landing
Establish a glide at 1.3 Vso (gear and flaps down)

IAS_____at an altitude of 25 ft. apply full power and begin climbing.
Is the engine responding satisfactorily?...yes no
Is the aircraft handling satisfactorily?...yes no
Can gear and/or flaps be retracted with safety and without loss of altitude?...yes no

REMARKS_____

This Flight Test Guide will be continued next month. Any comments on the contents, methods, and maneuvers are welcomed.

TIPS FROM OTHER BUILDERS

From Harold R. Daniel, Box 374, Augusta, KS 67010..."This is how I made my drill guide for drilling the spars for the wing attach fittings; Using the dimensions given in the R/R manual, shape two pieces of 3/4" plywood. Then go to your friendly auto salvage yard and get a pushrod from a 66 to 69 240 cu. in. Ford 6 cyl. engine with hydraulic lifters. Cut off the ends and you will find that the I.D. is exactly the right size for a 3/16" bit. Make grooves in the two pieces of plywood where the guide hole should be with a rat tail file. Leave these grooves slightly undersized so that you can compress them together in a vise. Coat the two surfaces with epoxy and clamp in the vise til cured, then remove it and cut out the piece of pushrod in the center. You now have a guide that will never wear as this pushrod is case hardened steel. If you have trouble finding a pushrod, come by my place and I'll give you one as I have several."

From Patrick Russe, Star Route, East Haven, VT 05837..."I have purchased a set of KR-2 plans with a friend and we intend to build two KRs. We managed to find another KR builder and Newsletter subscriber, Herbert Spies. We would like to thank Herb and his wife for inviting us to their home, giving us several hours of advice, good tips on building, and for just being down-to-earth hospitable. We're off to a great start. The first "tip" I have to offer should be credited to Herb, who suggested that local or construction grade spruce from area lumber yards could serve as aircraft quality material. I researched this and found the following...

AVERAGE ALLOWABLE UNIT STRESS IN P.S.I.

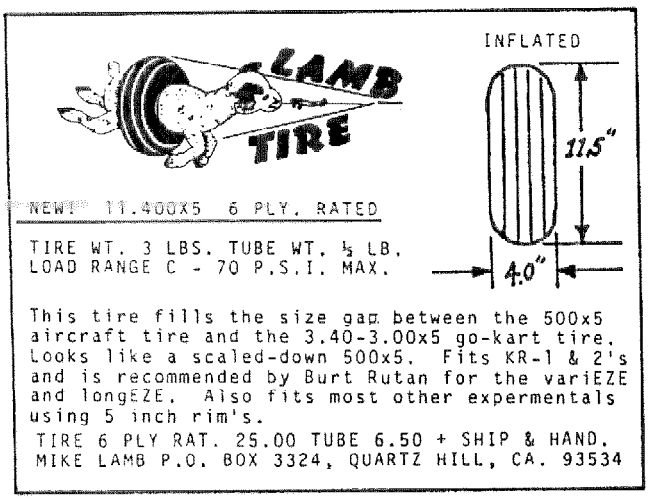
WOOD	wt./ cu. ft.	Extreme fiber in bending	Compression perpendicular to grain	Modules of elasticity
Eastern Spruce Structural grade	28 lbs	1300	300	1,320,000
Aircraft Quality Sitca spruce	28 lbs	975	305	1,320,000

The above figures do not hold if the lumber has defects such as knots. Choose only those pieces that have close, straight grain. I found that many 2 x 10s and 2 x 12s had perhaps 3" of ideal wood. I ripped off the good section and used the remaining 2 x 6s or whatever for various home projects, such as building a layout table for a KR!"

BUY * SELL * TRADE

FREE ADS! NEWSLETTER subscribers get the first 25 words free! Ads with more than 25 words or ads from non-subscribers are $5.00 up to 50 words. Display or photo ads are charged by size: 1/8 page @ $15.00, 1/4 page @ $25.00, 1/2 page @ $45.00, full page @$80.00. Display/photo ads must be camera ready or include $10.00 for set-up. Charges are per issue, payable with ad copy.

KR-1 & KR-2 PROPELLERS
Custom carved, laminated hardwood propellers for your KR. Made of top quality birch, oak, walnut, koa, mahogany...your choice. $150 - $175 fast delivery. Don J. Pearsall, 2039 S. Cherry, Cornelius, OR 97113 Phone (503)640-3398



NEW! 11.400X5 6 PLY. RATED

TIRE WT. 3 LBS. TUBE WT. ½ LB.
LOAD RANGE C - 70 P.S.I. MAX.

This tire fills the size gap between the 500x5 aircraft tire and the 3.40-3.00x5 go-kart tire. Looks like a scaled-down 500x5. Fits KR-1 & 2's and is recommended by Burt Rutan for the variEZE and longEZE. Also fits most other expermentals using 5 inch rim's.

TIRE 6 PLY RAT. 25.00 TUBE 6.50 + SHIP & HAND.
MIKE LAMB P.O. BOX 3324, QUARTZ HILL, CA. 93534

NEW! FROM MINATURE METRICS
A stick switch for your KR. Will fit the plans drawing (3/4" .035 wall 4130) and the KR wiring diagram in your plans book. Only $3.00 postpaid U.S.
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FOR SALE...KR-1 project. Fuselage, center section and tail group wood-work complete. Excellent workmanship. All materials to finish...$3800.00 U.S. Ronald Smith, 61 Durocher, St. Lambert, Quebec, Canada J4P 3B9 (514)671-7526

FOR SALE...R/R fiberglass cowl. Never used..$75.00. Walter Melton, P.O. Box 8176 CR8, Tucson, AZ 85738 phone (602) 825-9730 no collect.

FOR SALE...KR-2 project, fuselage, spars gear, controls complete. Revmaster 2100, Maloof prop, fiberglass parts, trailer, extras...$3500.00 (919)868-2007.

QUESTIONS & ANSWERS

Q. Is the antenna info shown in the plans book used by many builders and how is it working?

A. I have seen several of this type of antenna installation, they work well. Some have reported better results by using an aluminum ground plane for the transmitter antenna tho.

Q. My plans show the pulley bracket for the elevator cable mounted on top of the horiz. stab. spar. Can it be mounted on the front side of the spar?

A. No problems. Just make sure you have good cable alignment thru complete range of movement.

Q. I'm having trouble getting my wing planform to match that of the plans. If I use a straight edge from the plywood outer rib (tip) to the plywood center section rib, I get a shape very different from the drawings. What am I doing wrong?

A. Don't use the center section plywood rib as a guide in making the outer wing panels. Best procedure is to complete the center section through the glass/epoxy stage and then use the outer edge of the center section as a guide rather than the plywood rib.

Q. Is it too late to have my name included with the KR group at the University for the EAA Fly-in at Oshkosh?

A. The KR reservations for Oshkosh have long since been mailed. I recommend you send your $14.50 room deposit straight to the University and request that you would like to be with the KR group. Write to: University of Wisconsin-Oshkosh, Gruenhagen Conference Center, Oshkosh, WI 54901.

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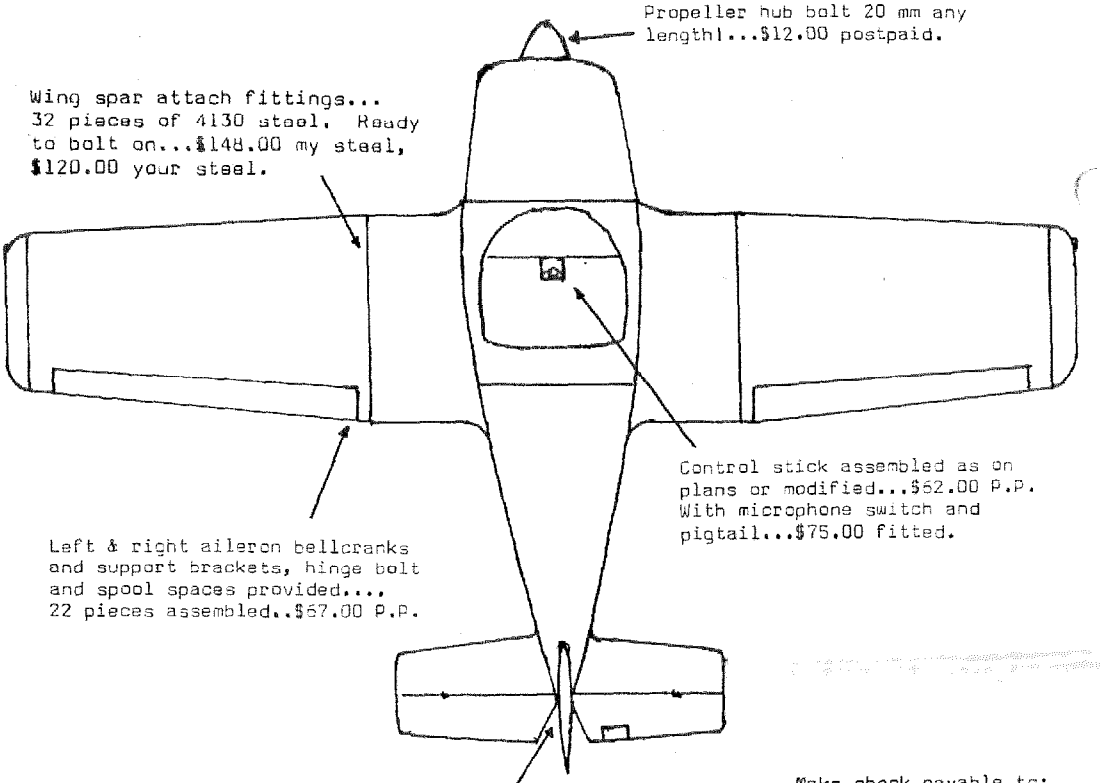

Propeller hub bolt 20 mm any length!...$12.00 postpaid.

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Control stick assembled as on plans or modified...$62.00 P.P. With microphone switch and pigtail...$75.00 fitted.

Left & right aileron bellcranks and support brackets, hinge bolt and spool spaces provided.... 22 pieces assembled..$67.00 P.P.

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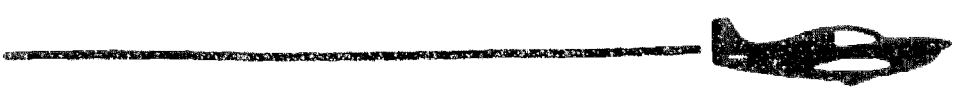


Issue no.80
FEB.
1982

KR NEWSLETTER

RATES
USA $12.00 Yr
CANADA $15.00 Yr U.S.
OVERSEAS $20.00 Yr Funds

A basis for ideas and food for thought only. Use of any of the idea material is at the user's discretion. Not affliated with Rand/Robinson Engineering Inc.

This month we will continue the Test Guide we started in the last issue. The first installment met with approval from all that responded and I have been asked to offer it for sale to builders who have other types of homebuilt aircraft. Actually, this is only one instance where the methods and/or ideas we use are applicable to other aircraft. Several of the construction techniques developed by KR builders have found their way into other aircraft and vice versa.

About three issues back I asked for comments on expanding the KR Newsletter to include tips from builders of other experimental aircraft. All but one reply was all for the expansion as long as the tips or techniques could be applied to the KR aircraft. This one lone dissenter didn't want anything in the Newsletter that wasn't a part of, or referred to the KR plans. Most of you know that my concept of the Newsletter from the beginning was to exchange ideas with other builders and not simply be an extension of the plans.

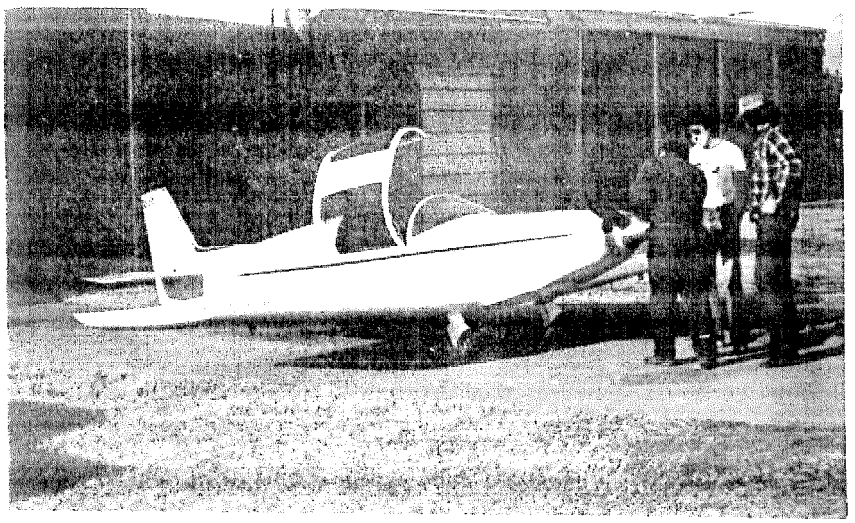
The KR-1 and KR-2 has been evolving from the original design of Ken Rand since the day each of them first took to the air. The fact that Ken is no longer around to guide the changes is not going to stop them, only slow them down a little.

If there is a better way of building a KR I want to know it. Unless I hear otherwise, I'm going to assume you do too.

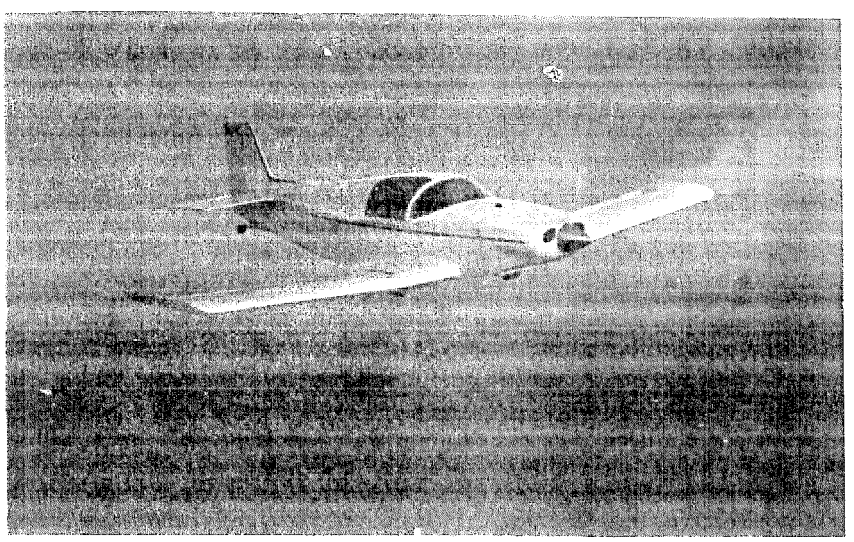
I met a fellow while I was in Tulsa last spring. He was building a KR-2 and was trying to complete it in time for Oshkosh '81. Well, he didn't quite make it to the '81 fly-in but he did get it flying and has put about 100 hrs. on it since. He plans on being at Oshkosh '82 so see him and his KR-2 there. Meanwhile in this issue there is a flight report from him that should peak the interest of any KR builder. The wing tips(see photo) Bob used are not difficult to make and I'm going to have a "how to" article soon. Next issue, I hope.

I'm running out of room! 80 issues of the Newsletter have begun to be a problem in where to keep the back issues. So...I've decided to <u>not</u> keep back issues that are over a year old. What am I going to do with the first 5½ years you ask? I'll tell you. They are going to be condensed, year by year, until I arrive at something a little more manageable, roomwise. The individual copies of back issues I have on hand now are going up for sale on an "as available" basis. When I run out of a particular issue it will <u>not</u> be re-printed. Price for the back issues I have on hand are as follows: single issues over 1 yr old are 50¢ each, any six over 1 year are $2.50, any 12 over 1 year are $5.00. You can choose the issues you want as long as they're in stock. After that I can either send you what I have or your money back, whichever you choose. The condensed version won't be offered until sometime this summer, depending on how long I can keep my wife chained to the typewriter.

From Bob Passmore, 36 S. 119th E. Ave., Tulsa, OK 74128..."First let me say that if you can get a KR-2 test pilot, do so. I was lucky in two respects. I had Dan Diehl's help in building and test flying my KR-2 818P. He also rode with me until I could handle the aircraft myself. Basically 818P is built to plans but there are some modifications. We used two layers of glass on the wings and a single layer on the fuselage and the elevator is balanced. The canopy (see photo) is like Dan's except that it opens like a KR and it uses a KR-2 canopy cut in half. Butch Koppe came up with the canopy idea and it really turned out great. Wing span is 20" longer due to special tips we added. These tips sweep up and back, carrying the highest point of the tip rib airfoil straight back and to a point 3" behind the trailing edge of the wing.



The engine is a Diehl 1835cc with a special cam, 32MM posa, full electrics and a "Sting" tuned exhaust from Butch Koppe. Everything that moved in the engine was balanced and magnafluxed. Prop is a Warnke 52 x 46 "Almost Constant Speed" prop. The radio is an Escort 110, guages are T & B, R.C., alt., oil temp, oil press, cyl temp, tach, compass, fuel gauge and airspeed. Empty weight came to 567 lbs and 818P has been flown at a gross weight of 1050 lbs. Actual construction time was about 12 months and the first flight was in July of 1981.



Flying notes..On take-off the tail comes up at 30, I lift off at 60, and climb out at 110 (1100FPM) Cruise speed is 150-155 at 3400RPM top speed 170-175. The plane has been over 205 mph on a high speed pass with no tendency toward flutter. For slow flight I use 2000 RPM. 818P will hold altitude and have full control while indicating below 45 MPH. Stalls...the plane is hard to stall because of the special tips. With the flaps down and power back, you still have full control at 45-50 IAS at a 1200 FPM rate of descent. To stall the plane the nose has to be in an extremely high attitude and airspeed slowed to about 40. The stall is then straight ahead, with no fall off on either wing. For landing I enter the pattern and put the gear down at 100, turn base at 90, final at 80 and touchdown about 50. With flaps I touch down slower & descent is steeper. I tried one notch of flaps on take-off and the tail came up quicker and lift-off was sooner. The flaps should really help on short fields."

NOTE:

More flight reports and/or photos. Tell us about your KR, whether it's flying or still being built. Pilots completing the test guide that appears in issue #79 and 80 of the KR Newsletter will get a free one year subscription.

Continued from last issue..
This Test Guide is designed as a"tool" for you to use in testing your aircraft. Use it properly.. Don't jump around from section to section, but follow the sequence of manuevers, step by step, until the Test Guide is completed.
Final installment will be in the March KR Newsletter.

E. Dive (smooth air only)
Open throttle to 1/3 power and dive the aircraft until either Vne_____IAS or engine redline_____RPM is reached. DO NOT EXCEED!

Record: IAS_____RPM_____MANIFOLD PRESSURE_____

Comment on:

EASE & RESPONSE OF CONTROLS_____

ANY TAIL BUFFETTING_____

ANY VIBRATIONS_____

ANY CONTROL SURFACE FLUTTER_____

ANY CONTROL REVERSAL_____

F. Longitudinal stability
You may want to use a small fish scale to measure control stick pressures in the following tests.

1. With full power on, gear and flaps up, trim the aircraft at 1.4 Vsi _____ If you do not have elevator trim, record the stick force required to hold this speed_____lb. Without changing throttle or trim, do the following: (engine may have to be throttled back in some instances to avoid exceeding redline) Jerk the stick back quickly and release it. Leave the elevator free for 10 seconds. Describe aircraft movement during this 10 sec._____

_____

2. Pull back to 1.2 Vsi_____IAS. Force required to hold this speed _____lb. Is this a pull force?...yes no
3. Push forward to 1.6 Vsi_____IAS. Force required to hold this speed _____lb. Is this a push force?...yes no

Repeat all of number 1 above for the following configurations.

4. Set cruise power_____RPM and trim for level flight_____IAS Stick force_____lb. (write zero if trimmed) Describe behavior after stick jerk_____
5. Stick force at 1.3 Vsi_____IAS = _____lb. Pull?...yes no
6. Stick force at Vne_____IAS =_____lb. Push?...yes no
7. Trim at 1.4 Vso_____IAS, power off, gear and flaps down. (Or 1.4 Vso_____IAS if no flaps are fitted) Stick force _____lb.(write zero if trimmed) Describe behavior after stick jerk_____

_____

8. Stick force at 1.1 Vso_____IAS (or 1.1 Vsi _____IAS w/o flaps) _____lb. Pull?...yes no
9. Stick force at Vf_____IAS(or 1.8 Vsi_____IAS w/o flaps)_____lb. Push?...yes no

G. Directional and lateral stability

1. With full power on and flaps up, trim the aircraft at 1.2 Vsi _____ IAS Without changing throttle or trim, do the following: Place the aircraft into a wings level skid then release the rudder while holding wings level with aileron. Does the aircraft tend to recover from the skid?...yes no Remarks _____

2. Place the aircraft into a sideslip then release the stick while holding constant heading with rudder. Do the wings tend to level?...yes no Remarks _____

Repeat tests one and two for the following configurations:

	POWER	FLAP POSTION	TRIM SPEED	TEST 1	TEST 2
a.	Full	Up	Level flight _____ IAS	Yes No Remarks	Yes No Remarks

POWER	FLAP	TRIM SPEED	TEST 1	TEST 2
Full	Up	Level flight _____ IAS	Yes No Remarks	Yes No Remarks
Off	Up	1.2 Vsi _____ IAS	Yes No Remarks	Yes No Remarks
Off	Up	2.5 Vsi _____ IAS	Yes No Remarks	Yes No Remarks
Full	Down	1.2 Vso _____ IAS	Yes No Remarks	Yes No Remarks
Full	Down	Vf _____ IAS	Yes No Remarks	Yes No Remarks
Off	Down	1.2 Vso _____ IAS	Yes No Remarks	Yes No Remarks
Off	Down	Vf _____ IAS	Yes No Remarks	Yes No Remarks

Continued next issue:

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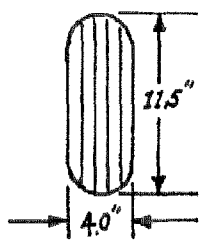

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FOR SALE...Two 4016 Slick magnetos, less than ½ of retail...$123.00 each (includes) freight in U.S.) Steve Bennett, 2606 North 125th Cir., Omaha, NE 68164 phone (402) 496-1507.

FOR SALE...KR-2 N75411, 325 hrs. 2100 Revmaster w/forged crank, Narco Escort 110, 600 mi range. Flown Pacific to Atlantic and back twice. Custom trailer $6500.00 Bob Osborn (714)298-9710 San Diego, CA

FOR SALE...KR-2 project. Fuselage and elevator completed. Spars and gear mounted. Includes foam, wood, epoxy, hardward, dynel, canopy, some fiberglass parts. Good workmanship. Roger Lindeman, 3827 Abbotsford Rd, Rockford IL 61107 phone (815)399-2538.

FOR SALE...R/R fiberglass KR-2 cowl. Never used...$75.00. Walter Melton, P. O. Box 8176CRB, Tucson, AZ 85738 Phone (602)825-9730 no collect.

FOR SALE...KR-2 complete, signed off but never flown. New H.A.P.I. 1835 w/electrics, tuned exhaust, Great American prop...$3500.00 (316)321-6712 no collect.

FOR SALE...1835 turbo charged engine by Rocky Webster(E. Koppe's brother) with Super Carb, Dan Diehl case, alternator and starter, H.A.P.I. prop hub, 4216 Slick mag., Supertin...best offer over $2700.00. Also have Lyc. engine mount..$100.00, rudder pedals..$22.00 aileron hinges (5) $20.00. Have all KR Newsletters...make offer. Harry Hermann, 37247 51st St. E. Palmdale, CA 93550

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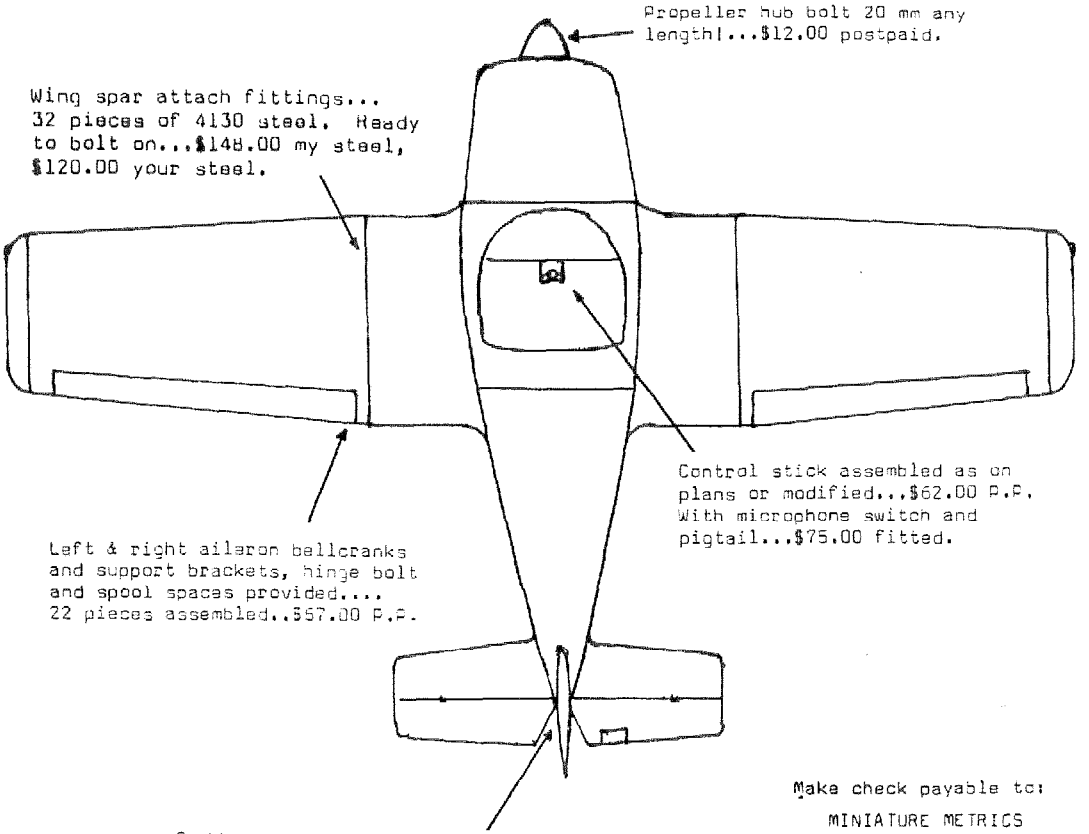

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A "Close Encounter" of the worst kind.

Uh-oh..I thought its happening...a rash on my hands. One of the first signs of an allergic reaction to epoxy. I recalled the things I had read about other KR builders experience with adverse reactions to epoxy and dreaded the thought. I might have to give up using the epoxy/glass constructior method.

The rash first appeared under my watch band...and it itched. I had just finished one side of a wing and had sanded the skin where the next lay-up was to over-lap. I quit wearing my watch, thinking that it could be causing the problem but by the end of the next day the rash was on my other hand...and it itched like crazy. I decided to stay away from the epoxy/glass and just make metal parts and fittings.

The rash continued to itch and was spreading. In fact..the itch had become much worse since I had stopped working with the epoxy and fiberglass and seemed to be most painful as my wrist would rub against my shop apron. That finally tipped me off to the real cause of the rash...my shop apron!! I had worn it thru several weeks without washing and it had collected enough tiny, invisible fiberglass "stickers" to become a blue denim porcupine. Everytime my wrist would contact the apron and everytime I put my hands in the apron pockets I was getting zapped by these tiny stickers. Off came the apron and into the wash. Three or four days later the rash was almost gone and the itch has become bearable. Another three or four days and I should be completely "cured"...whew!!

QUESTIONS & ANSWERS

Q. I put a Genave 200B radio in my KR-2 and I have been plagued with ignition noises in both receiving and transmission. My engine is a Revmaster 2100D with shielded spark leads, etc. Do you have any suggestions on how to stop the ignition interference?

A. This is not the first instance of radio interference I've heard of with this particular radio. Other builders have met with varying amounts of success by using noise filters or suppressors. Contact your local avionics man and see what he reccommends.

Q. Has Rand/Robinson completed their revised plans yet? How much to exchange old plans?

A. There won't be a revised set of plans for a least 6 months. Cost hasn't been figured yet but it will be more than the current price by a good margin.

Q. Do you have Don Lands' address or phone number? I have an almost complete set of his tri-gear and have a few questions. By the way, if anyone needs pictures or answers to his plans, I would be happy to help. Jeff Nelson, 2589 Fisk St., Roseville, MN 55113 (612)484-9027.

A. Don Land moved about a year ago and I don't have a new address for him. There are several people with his plans that would really appreciate your help.

Q. What is the proper control cable tension and how do I measure it?

A. I've found the best way to adjust cable tension is to tighten them just enough to take up any slack. I've never measure the tension on the cables at this point because I don't have the equipment so I rely strictly on feel. You will find there is a definite point where the cables will feel properly adjusted. Not too loose (no flop) and not too tight (no twang).

This is the final page of the Experimental Aircraft Test Guide that began in issue #78. Use it with care and in sequence. There is another opinion on initial flight testing on the following page.

H. General flight

1. Do all controls operate smoothly and with authority in flight?..Yes NO
   Are the controls effective in all attitudes of climb, turns and landing?...Yes No
   REMARKS_____
2. During normal operations are there any signs of the following:
   Siphoning or spilling of fuel.....Yes No
   Excessive engine vibration.....Yes No
   Excessive intrument vibration.....Yes No
   REMARKS_____

I. Landing

Can the aircraft be landed safely without tendency to bounce, nose over, porpoise, or ground loop?...Yes No REMARKS_____

_____

VI. Engine post flight inspection

Do the following items show signs of excessive wear from vibrations, heat, or other stresses?

1. Cowling.....Yes	No	5. Manifold.....Yes	No
2. Oil lines.....Yes	No	6. Controls.....Yes	No
3. Fuel lines.....Yes	No	7. Engine mount.....Yes	No
4. Instrument lines.....Yes	No	8. _____.....Yes	No

VII. General

1. Are there any characteristics in aircraft control, engine operation, or any other feature of the aircraft contruction, or handling that should be corrected?...Yes No REMARKS_____

   _____
2. Does the cockpit lay-out permit clear, undistorted visibility for safe operation of the aircraft in flight and on the ground?.....Yes No

   REMARKS_____
3. This test guide has covered only one c.g. position. For aft c.g. test, load the aircraft to gross weight at the most aft c.g. limit and repeat the tests in section V. Forward c.g. tests may be conducted at less than gross weight. Load the aircraft to the most forward c.g. position and do the tests H. and I in section V.

VIII. Notes

1. Test flights should be no longer than one hour, so it will be necessary to carry out several flights to complete this test guide. The aircraft should be re-fueled between flights to maintain the same take-off weight for tests in section V.
2. Test flights at Vne should be done with caution and in smooth, clear air.
3. New or prototype engine installations may require a cooling climb. Don't overheat or abuse your engine.
4. This test guide does not cover spins as it would double (or more) its already considerable length.

IX. Certification

This is an accurate record of the flight tests carried out. Adjustments made to the aircraft during these tests have been logged and have been checked by subsequent ground and flight tests.

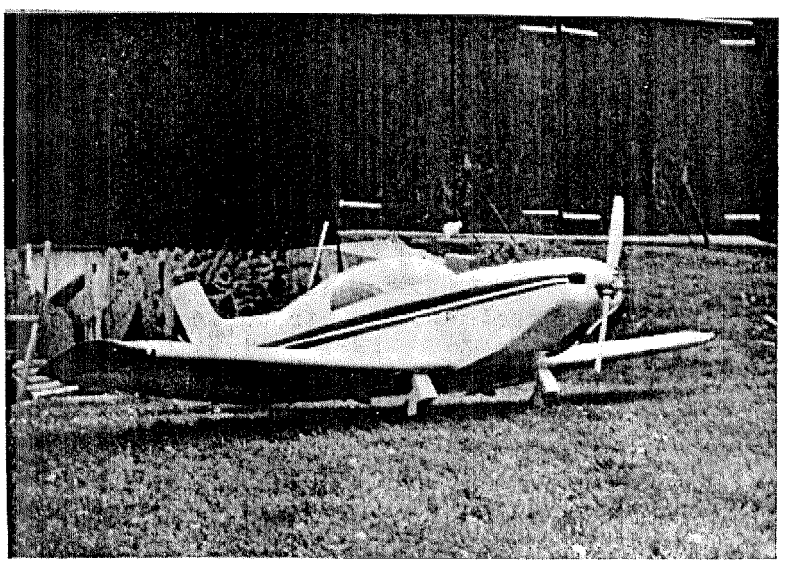
SIGNED_____Test Pilot _____Date

TIPS FROM OTHER PILOTS

From Don Hunter, R.R. #4 Woodstock, Ont. Canada N4S 7U8...."After reading your Jan. issue about flight testing the KR, I thought it was very good and should be strictly followed. I do feel that the part on power on stalls should be modified in the interest of safety. (1) Power on stalls should be done with no more than 75% power. (2) Power on banked stalls should NOT be attempted at all due to possible spin or flat spin that this aircraft has demonstrated. (3) You mention that several ground runs should be attempted. I think several hours of slow and high speed taxing would prevent 50% of all engine failure problems and make real pilots out of the builder. Many flight reports indicate the builder makes a few taxi runs and if he doesn't ground loop or something, he takes it up. Most ground mishaps are a case of the pilot exceeding his ability early in the ground testing. One flight report says...if you find yourself flying while practising high speed taxi tests, to take it up. I think that the pilot in question has already exceeded his ability and the aircraft has run away with him. My ground testing began by flying the tail for 1½ hours total..then low and high speed taxing without the wings for 3 hours. Whenever I approached a speed where I was having control problems I would slow down and practice complete control before advancing to the next step. Next I put the wings on and started over with slow speed taxing. Before long I could advance the throttle slowly, lift the tail and keep the center line of the 4000' strip right between the front wheels. All my high speed taxiing was done with negative attack on the wings and throttle only enough to get you up to the desired speed. After another 4 hrs. of this, I was taxiing at speed well above lift-off speed but always keeping negative or tail high attitude. Next all flap settings were tried and by the time I had 10 hrs. of practice I could handle the KR-2 like a Cessna. My first lift-off was with full flap and about 75% power. She lifted off straight and true, and all I had to do was ease the power back a little and I made a perfect landing on the same 4000' runway. To date I have 12 hours total taxi time and it was time well spent. I have about 136 hours in a C-150 and no tail-dragger time except for the KR during the 12 hours. I had lots of small problems to overcome including two engine failures due to a one way valve that was used because of an electric fuel pump that I installed as a back up system. I'm glad that I was on the ground and not flying before I was ready. Anyone who wants to teach themselves using this method should be careful not to overheat the engine, or get over confident. Set up a schedule and stick to it. Lift offs like this one are close to the stall speed. Keep the power on til you're down. I would have completed a circuit by now but old man winter has kept me grounded.

Don has made some good points about learning to fly your KR and his method will definitly teach you how to land and take-off. But...I still recommend that if you inadvertently find yourself in the air during taxi runs....keep on climbing! As for power on, banked stalls, this is the classic stall -spin situation and you should be aware of how your aircraft re-acts....E.K.

From Bill Clapp, Alas de Socorro, Shell, Pastaza, Ecuador, South America.....
"Greetings to you and yours from South America. This is the letter I've been waiting almost 4 years to write. On Nov. 26, 1981 (Thanksgiving Day) I made the first flight in my KR-2, HC-BJO, the only homebuilt aircraft in the country of Ecuador. My KR-2 was almost 4 years in the building. Those of us in foreign countries have a lot of hassles that the Stateside guys don't have. Importations, getting parts, paperwork, and letters to ask questions on various phases of construction and so on. HC-BJO..the plane is pretty much plans built. Engine is a Revmaster with Maloof prop and full electrics. Reinforced firewall, 24 gallon fuel capacity with header and two wing tanks. I raised the turtle deck about 4 inches for more headroom. Empty weight is 613 lbs. Mark 12 VHF, Bendix ADF, emergency transmitter, turn/bank, and other normal instruments. I use a Cessna engine instrument cluster out of a Cessna 180. I used the two fuel gauges for the wing tanks and the sight tube for the header tank. First flight was delayed almost 3 months because of bureaucracy and getting the Airworthiness Certificate as well as the required insurance. Morning of the first flight was calm and cool. After all the log books were signed by the Civil Aviation inspector and the papers put in the airplane, we were ready to go. As we get 23 feet of rain here on the edge of of the Amazon jungle, the Civil Aviation rolled the gravel strip several times to get the rocks punched back in. The inspector was demanding to go on the first flight. After about 10 minutes of arguing he consented to let me fly it solo. I climbed in and fired up, called the tower and taxied out. As I had done 3 or 4 high speed taxies before with the tail up, the take-off roll was normal up to lift-off at which time a bit of pilot induced longitudinal instability took place. Finally, just holding the stick steady did the trick and climb-out and left turn was normal. I climbed out at about 90 MPH and 35" and 3500 RPM. I leveled out at 5,500 over the airport and just flew for a few minutes to get the feel of things. Finally I got up the nerve to retract the gear and then settled down to trying the plane out. I have a switch for the prop for high and low pitch until I fix some problems with the controller. Cruise worked out to be 158 MPH indicated at 6,500' with 30" and 3000 RPM. I made two low fly-bys at 180 indicated for the troups on the ground and spent some time in slow flight and on the burble of the stall. After 45 minutes I came in and made a normal landing and the flight was over. I taxied back and when I opened the canopy everyone cheered!!! After fixing a slight oil leak and the exhaust stack which had a rust hole in it, I took the inspector for his ride and all were happy. It was truly a great feeling!!! I've put about 10 hours on my plane in the past month and a half and am looking forward to doing some modifications and improving it. A week after the first flight, I flew up to Quito to pick up my daughter from school. Quito is a 9200' above sea level but I had no problem getting up there or back. I find the airplane is much easier to wheel land that to 3-point, especially where visibility is important. I'd like to see a few improvements on wheels and brakes. I'm using a Cessna 180 rudder pedal assy, with the brake pedals cut down to size, also I have toe brakes which are easier to use. Brakes are definitely marginal and I double check each tire before each flight because of the gravel strips we have here. I like the tire size but wish there was something available in a 6 ply that would stand up better. I've got some ideas to improve the performance and will let you know in the future if they work out or not. All in all, it is a great little airplane and a real joy to fly. See ya'll at Oshkosh '82 but probably won't make the 4000 miles in the KR."



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FOR SALE...KR-2 turbo. Low time, signed off by FAA...$6500.00. Fred Whitcomb, 13502½ Village Dr., Cerritos, CA 90701 phone (213)926-5710

FOR SALE...Approximately 28 yards of dynel fabric...$25.00 for all. Tom Ratliff, 3410 Brittany Dr., Ellicott City, Md 21043

WANTED...Operable 360 chan. comm radio. Max. dim.--9" x 5" x 8½" deep. Up to $150.00 ...or..good Nav/comm same dim. up to $300.00 Contact Gen Finamore, 2924 18th Ave., Forest Grove, OR 97116 503-357-5084 after 3:30 p.m. weekdays.

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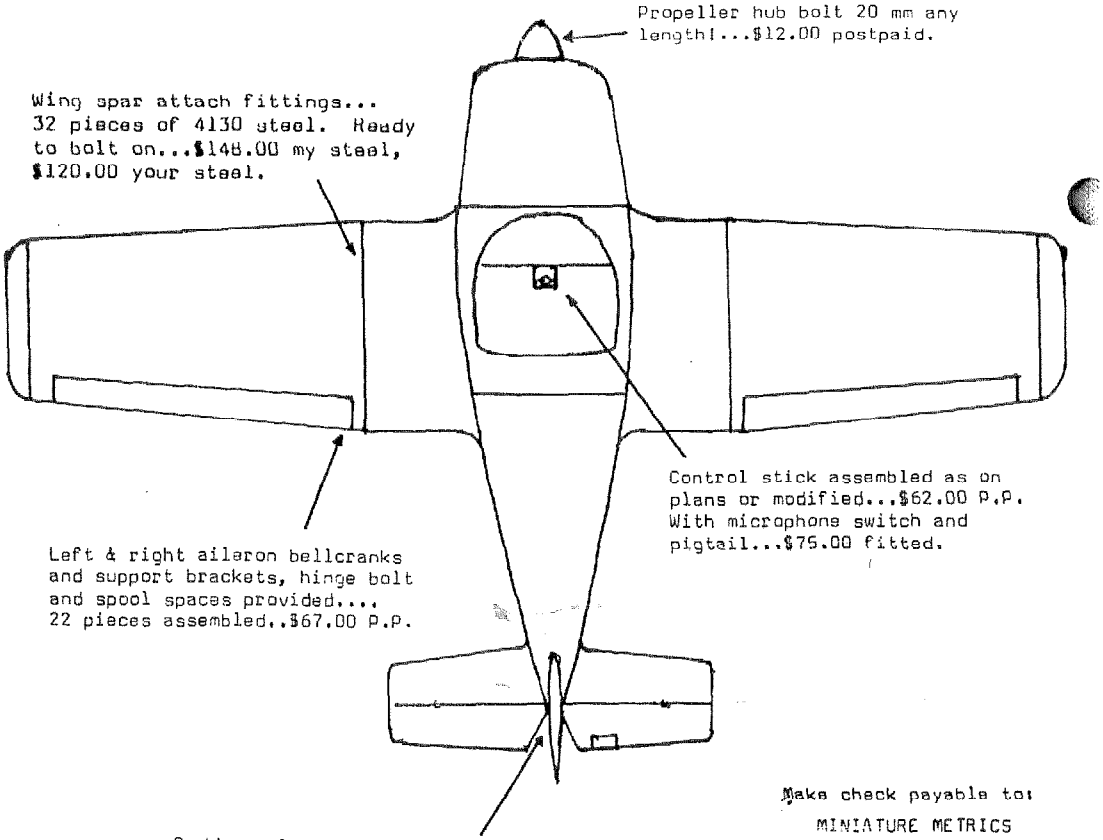

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There were sure a lot of people waiting for the special on back issues I had in Issue #80. Orders for the early issues really came pouring in. The predictable result is what the sale was designed to do, clear out the older issues so I would have some room. The sale is still in effect so if you want to finish your collection of the KR Newsletters you better do it soon. At this time we have sold out of the following issues....1,3,5,22,27,34,37,44,& 46. Prices of the remaining issues are: single issues over one year old are 50¢ each. Any six over one year are $2.50, any 12 over one year are $5.00. Order soon, they're going fast!

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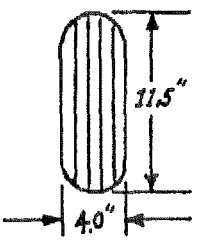

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FOR SALE...KR-2 project. Fuselage and elevator completed. Spars and gear mounted. Includes foam, wood, epoxy, hardware, dynel, canopy, some fiberglass parts. Good workmanship.... Roger Lindeman, 3827 Abbotsford Rd. Rockford, IL 61107 (815)399-7538.

FOR SALE...KR-2 project on gear, controls installed, fuselage and spars signed off, material to finish except engine and instruments..... $1000.00 or best offer (919) 436-5081 N.C.

FOR SALE...Engine mount for VW. Bead blasted and epoxy painted...$90.00., Mike Twombly 602-748-4971 days.

FOR SALE...Completely finished KR airframe. Just needs the engine installed and instruments and its ready to fly. Has passed Canadian D.O.T. inspection with flying colors...$5000.00. Gordon Young,305 Marmont St., Coquiltown B.C. Canada V3K 4P9

FOR SALE...Save $65.00. H.A.P.I. exhaust manifold..NEW, never used. Fits KR-1 and -2...$100.00. Frank Walker, 11226 Kibbee Ave., Whittier, CA 90604 phone 213-943-7658

FOR SALE...KR-2 approx. 50% complete. Passed initial F.A.A. inspection. several components & hardware items included. Priced reasonable, willing to work out installment payments. Call David DeMunbrun, 1818 Cripple Creek, Garland, TX 75041(214)271-8692.

FOR SALE...KR-1 project. Fuselage on gear, controls in. Spars signed off, 1650 VW, all materials to complete.. $3000.00. Wayne Kemp, Rt. 5, Millen GA 30442 (912)982-4901.

FOR SALE...Rand 3-blade prop w/instructions. New, never mounted..$190.00. KR-2 smoke tint canopy..$60.00. Larry Zepp (419) 352-2357 after 6 eastern-no collect.

TIPS FROM OTHER BUILDERS

Over the past few years there has been much pro and con about the need for a carb heat device on a Posa carb. Here is one more vote for heat.

From LeRoy Barnes, 3042 Waterman Ct., El Dorado Hills, CA 95630..."Just a little info on icing with a Posa carb. I had a Jeannies Teenie with 1600 VW and a Posa. On two occasions I had a rough running engine and on landing I found ice melting off the outside of the intake manifold directly behind the Posa. The engine was ground run under similar conditions...40° to 50° temp., clear but high relative humidity and ice formed on the outside of the manifold. Upon immediate removal of the Posa, ice was found on the inside wall of the manifold tubing also. This engine did not have any cowling to retain any warm air around the intakes but I am convinced you could get ice on a cowled engine with the Posa carb. Needless to say, my KR will have carb heat."

The letter from Pat Russo in Issue #79 of the Newsletter prompted some inquirey about the spruce he used. Here is some more info that should be very welcome to east coast KR builders that are just getting started.

From Herb Spies, Painter Hills, Middlebury, VT 05753, phone 802-388-7443...."I would like to clarify a point on the Eastern Spruce I used in my KR. First, it is not available in the local common lumber yards. I bought mine from a wholesale lumber yard that specializes in Vermont native lumber. The proper name for the spruce I used is "Vermont Mountain Spruce". Most of this spruce comes from about 1500 ft. and is found in select sheltered valleys. Due to the elevation and sheltered conditions, you get a wonderful straight close grained spruce. They get about 500 to 800 board ft. of this select spruce out of every 10,000 board feet cut! If anyone here in the east should be interested, it costs about 56¢ a board ft. and lengths up to 16 ft. It is all 1 5/8 in. thickness and is available in 4", 6" and 8" widths, sometimes 10". I will help any KR builder that is interested in buying some. All my spruce cost about $35.00..a large savings."

From Richard Kunc, 7429 Tufts Court, Orlando, FL 32807....."I've found many ways to improve my KR-2 right in the pages of the KR Newsletter over the past few years, and I guess it's about time I began returning the favor!

CORRECTING SPLAYED GEAR LEGS. If your KR-2 is a bit on the heavy side, and has a tendency to ventilate the tops of the wing roots with anything less than a greaser of a landing...if you don't think it's cute that your KR-2 looks like a Messerschmitt Me-109 from the front...there is a cure. Shortening the gear bar has been know to work, but that narrows the tread of your gear and makes the gear recesses in your wing roots useless. You can add wedge spacers between the gear forks and the bar ends, but that won't keep the top of the bar from punching through the wing top. You can go to a 1" thick gear bar, but that's extra weight. Try this: Prop your KR-2 up on whatever you can find that works, so it's in level flight attitude and the gear is off the ground. Now unbolt everything from everything else in the gear assembly so you can slide the gear bar completely out. I had to cut a small rectangular hole in one wing root end to extract the bar, and then sealed it up with cloth and epoxy later on. When I got my bar out it was clearly bent UPwards, probably from hard landings, which aggravated the splayed stance. I took the bar to an excellent machine shop I know and discussed things with the chief. He felt that we could curve the bar slightly without destroying its temper. IMPORTANT: The ONLY part of the bar you can alter is that section between the hinge and the gear fork attach area. All other parts of the bar MUST be maintained flat! If the area where the gear fork bolts into place is curved, the casting will be put under stress and could easily crack! If you curve the part between the hinges, the associated bolts will not line up properly, and stress will be put upon the hinge castings. My machine shop friend did a great job! He curved the bar back to straight, and then DOWN just about 1/4". The results are excellent! The aircraft now sits on perfectly straight gear, taxis like a dream, and looks great! Several landings have not changed the angle perceptibly, and it appears this cure will last for some time. By the way, while you have the gear all apart it's a good time to install Rex Taylor's safer, stronger, lighter gear latch mechanism...and to have those brakes taken care of!

MAKING THE RAND BRAKES WORK RIGHT. You don't have to go the added weight and expense of substitute brakes just to make them work. Try this...assemble the aluminum wheel halves with bearings and brake drums, and bolt them tight. Make punch marks on everything so you can get it all back together in the exact same positions and combinations later. Have your machine shop chuck the WHEEL in his lathe, referencing his center to the bearings, and then have him turn just enough metal from the inside of each drum to true it up. Some guys have the shoes turned to match but I've found that several good solid applications of the brakes produce the same results. Just be sure to put everything back together EXACTLY the same way when you add the tubes and tires and axles.

THE 50-CENT BORESCOPE. I built my own 1835 up, using Rex Taylor's wonderful book and it's a real tiger! One of things I learned while putting it together besides patience, was always double check everything while you can still get at it. Well, I had the engine in the airframe and was just finishing boltin' on the oil cooler when a horrible thought flashed through me. "Did I make sure to install ALL the pistons with their little arrows pointing toward the flywheel end?" I unfroze and grabbed a flashlight, trying to peek into the cylinders through the spark plug holes. There's just no way. Then it struck me! I soldered wires to a very small 12-volt panel bulb, conneted the wires to my battery, and lowered the bulb right into the cylinder through the spark plug hole. With the piston at the bottom of its stroke, you can easily spot those little arrows, or cracks or anything else you'd want to see on the top of the piston.

USE A CHECKLIST! The wisdom of a preflight checklist applies even more strongly to experimental aircraft. If it does nothing else, it makes me feel better about each take-off. Here's the one I worked up. Cut it out, laminate it front and back with clear plastic and keep it in your plane.

Engine mount bolts, nuts, pins
Fuel lines, clamps
Gascolator bowl tight
Intake plumbing clamps
Carb heat mechanism
Plug wires secure
Magneto "P" wire secure
Other wiring secure
Engine controls secure
Oil level; condition
Oil pressure line secure
Prop & spinner secure
Cowling secure
Drain gascolator bowl
Fuel vent uncovered & clear
Fuel level; cap & cover secure
Pitot tube uncovered & clear
Main gear structures OK
Tire pressures
Brake cables secure
Wings: no damage
Wing attach hardware secure
Aileron pushrod hardware secure
Inspection plates secure
Antenna secure
Vertical stabilizer OK
Horizontal stabilizer OK
Trim tab OK
Tailwheel assembly OK, secure
Control hardware secure
Seat belts secure
Seat backs secure
Canopy & hardware OK
Rudder pedals & hardware OK
Gear locks & handle OK
Brake grip OK
Rudder action normal
Elevator action normal
Aileron action normal
START ENGINE
Instruments reading normal
Circuit breakers normal
Radio check
Carb heat normal
Altimeter set
Test brakes

Well, Ernest...that's gonna be it for this time around. There's many more tips to come in future months. I'm also writing a series of KR articles along similar lines for "Sport Aviation". Be sure to look for them. I will send you a shot of my KR-2, N81932, originally built by Jack Aldrich of Bradenton, FL (Issue #32), after I've finally had it re-painted. Right now it's covered with patches of primer and bare epoxy. Incidentally I can't say enough nice things about Rex and Phyliss Taylor and all the people at HAPI. They were always there when I hit a problem, and always had the right answer. And they have some great stuff in their catalog too!

I think the KR Newsletter is an important publication for KR builders and for anyone else involved with homebuilding. Keep it coming!"

DIEHL WING TIP MODIFICATION

Lots of KR builders must have liked what they saw and read in the last issue. Bob Passmore's KR-2 with the Diehl tips is a real performer and several builders have asked for some sketches or plans on how to put the tips on their KR. O.K....here we go. Let's build some Diehl tips.

1. First thing you have to do is decide how long you want the tip to extend beyond the outer rib. Up to 18" is allowable without adding a spar of some kind (dwg #1). This decision is all yours but I find that most KR-1 and -2s could benefit by a little more wing span. Construction of the tips will be the same regardless of length.

2. Glue 3 layers of 2" foam into a 18"(?) x 40" rectangle 6" high (dwg #2). Use liquid foam to laminate the foam block for ease of sanding.

3. Now comes the tricky part. The tips are made <u>on</u> the wings, <u>on</u> the airplane. Level the airframe fore and aft with wings on (dwg #3). Use any point along the top longeron to level the aircraft but mark it carefully so that you are using the same spot each time the aircraft is leveled.

4. Glue the foam blocks you made to each wing tip rib. Leave just enough foam at the top, bottom and front of the tip rib to allow for shaping (dwg #4).

5. Use a long sanding block along the bottom, around the leading edge and back to the highest point on the rib. This should be where the main spar is attached. Move the sanding block with the wing surface so the new tip will blend nicely (dwg #5).

6. Now that wasn't hard, was it? Next we square the tips with the fwd spar (dwg #6a). And we need to level our foam block from the highest point (at the spar) to the rear of the tip (dwg #6b). Now you're ready to "rough-in" the tip from the spar back.

7. First let's get rid of some excess foam. Looking at the tip from the rear, mark a quarter circle from the top to the bottom at the outer most corner (dwg #7a). Next draw a line from the trailing edge of the wing to 6" from the end of the tip, then curve the line aft (dwg #7b). The shaded area of the foam is excess so cut it off and sand to a finish contour. The bottom <u>front</u> of the tip should be rounded slightly to blend to the top. As you get to the highest point of the tip the angle should come to a sharp edge and continue back all the way to the rear point. You haven't removed foam from the top of the fwd spar to the back of the tip yet. So let's get rid of <u>some</u> of it now. Just enough to give a general shape to the top side. Reason for this is that the bottom of the new tip is fiberglassed first.

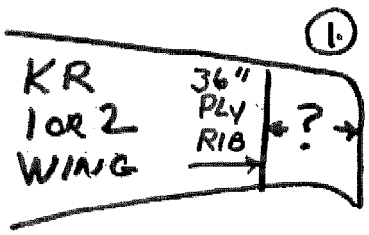
8. Look at the tips carefully. Check for level lines and smooth curves. If you're satisfied with the work you have done so far you can remove the wings for ease of fiberglassing the under side of the tip. Now with the wings off...fiberglass the bottom side of the tip. Let your cloth overlap the wing 2" and the leading edge approx. 2" (dwg #8a). Use one layer of cloth for tips less than 12". Use two layers for tips 12" to 18". The aft tip of the Diehl tips tend to be a little bit fragile so we add some strength. Cut two triangles of fiberglass cloth 3" and 1½" and lay on the tip while the epoxy/glass lay-up is still wet. The 3" piece goes on first (dwg #8b). Don't try to bend them around the tip, just let everything lay flat and trim it later. Let everything cure overnight.

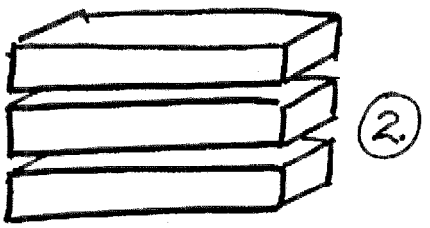
9. Cured O.K.? Good! Now trim the edges of the tip. Make a good straight trim line along the top and the trailing edge. Sand the foam on top of the tip to blend into the wing and to a good sharp trailing edge. This is your final shape so make it nice. Use sandpaper on a round object to get the top inside curve.

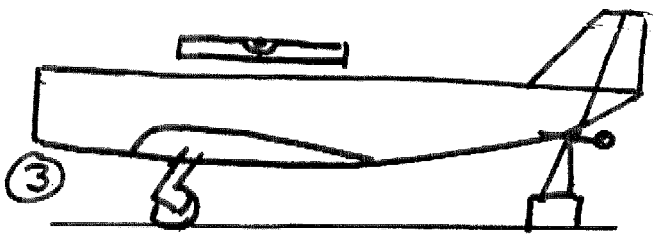
10. Square corners and trailing edges of foam/glass parts aren't very strong and break easily unless they are re-inforced (dwg #10). Excavate foam ¼" against skin and fill with an epoxy and micro-balloon or * flox mixture that is stiff enough to stand without spreading. While this mixture is still wet go ahead and cover the upper surface of the tips with epoxy/glass. Again you are going to overlap the wing 2" and the

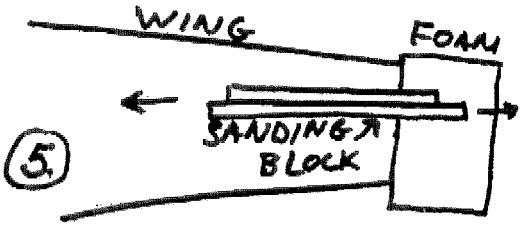
leading edge 2". Also add the 1½" and 3" triangles to the top side of the tip. Now let everything cure overnight. *(finely chopped cotton fiber)

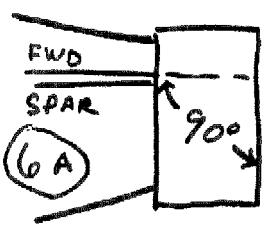
11. You're ready now for the finishing touches. Trim off excess cloth and use a short sanding block to smooth out the edges and overlaps. The Diehl tips should now look like a natural extension of the wing (as indeed they are) and ready for paint. Let's go fly 'em!

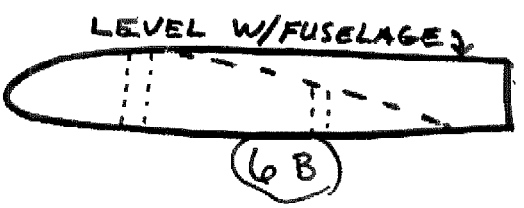


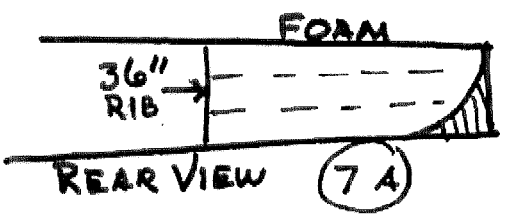


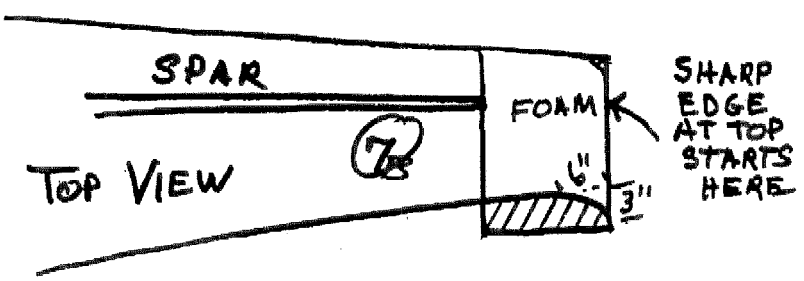


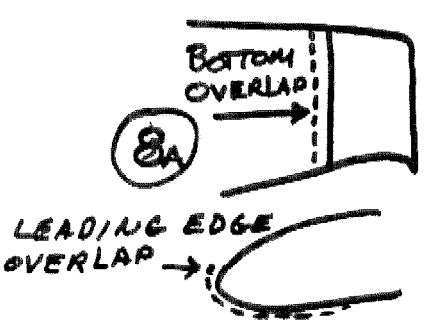


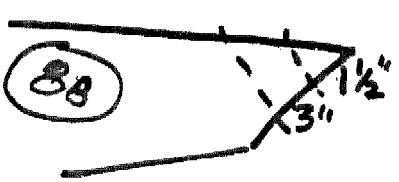


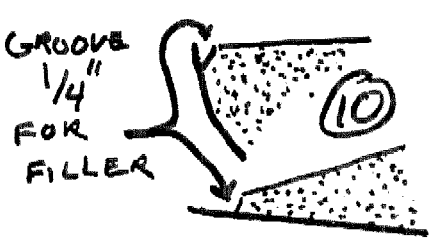












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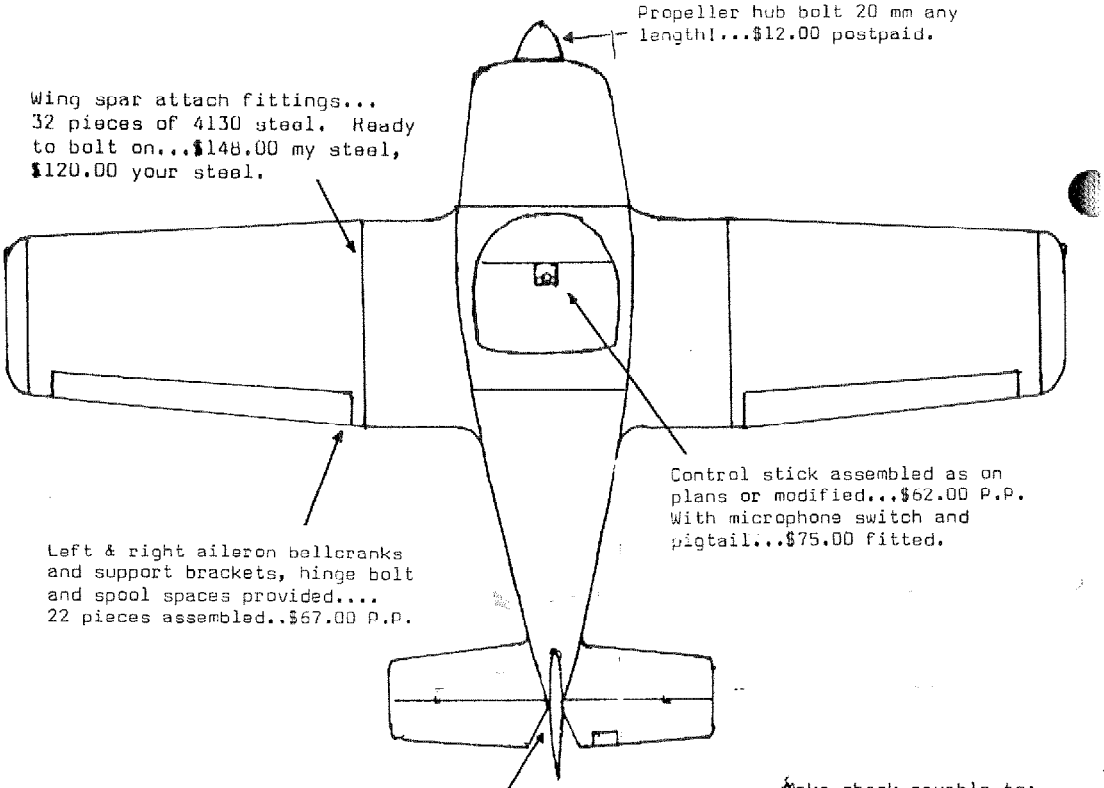

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KR NEWSLETTER

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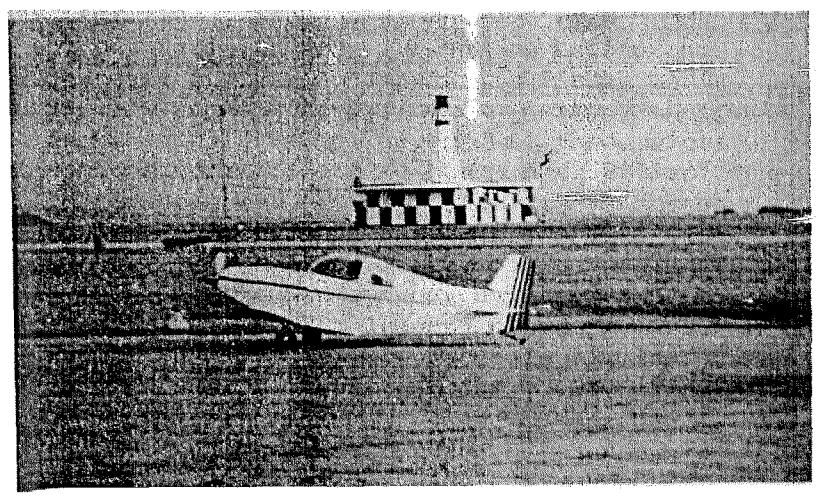
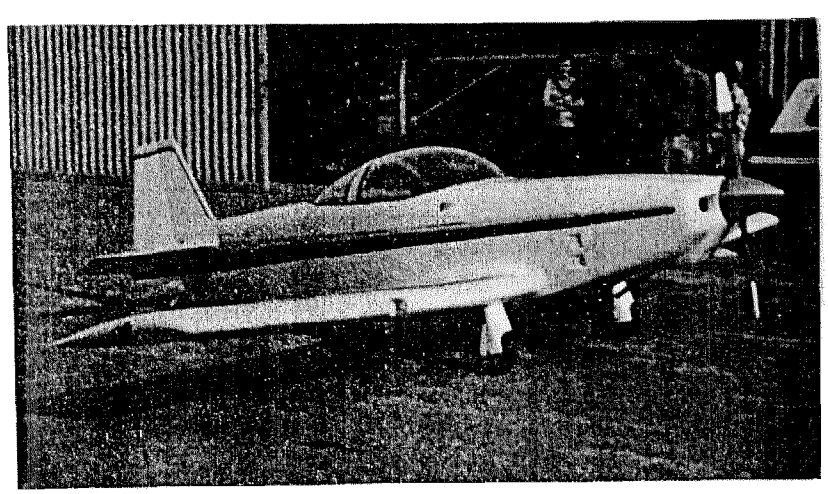
A basis for ideas and food for thought only. Use of any of the idea material is at the user's discretion. Not affliated with Rand/Robinson Engineering Inc.

Spring! Finally...it's fly-in season again. Time to dust off the cap and sun glasses and get out among 'em. Every year brings more and more aircraft to more and more fly-ins. Remember when the Calendar of Events in "Sport Aviation" was only a half a column on half a page? Now the spill over from a full page of events is bigger than the whole schedule used to be. Participation is the reason. The "me first" attitude just does not seem to exist in homebuilders and EAAers. Everybody pitches in to make the happening a success. So get on out to a fly-in this spring. Enjoy the sun, the people and especially the airplanes. See ya there.



I have a flight report in this issue. It's not very long but it is informative. The report was written on the back of this photo and I wish I could tell you who wrote it. The report wasn't signed and I've misplaced the envelope it came in. Maybe the sender can give us a little more details for a later issue.

Flown...Oct. 8, 1981
Lift off...less than 350'
Engine...1834cc Duty. G.A. prop
Cruised at 155 mph, top 175 mph
Max rpm used in level was 2800 rpm
Weight...555 lbs. empty.
Personal feeling?...Never flown anything like it. My partner at building died 10 months prior to flight. His name was Skeek Carney. He was my co-pilot. Was a perfect flight.



Another aircraft I would like more info on is pictured here. Fred Whitcomb sent me this photo of Steve Cogswell's KR-2 but no more information other than it has a HAPI engine and is the best looking KR-2 he's seen. Now Fred has seen a lot of KR-2s and a lot of them have been really sharp. This KR-2 of Steve's must be a jewel. I hope we can get some flight data and a note or two on the full bubble canopy.

Congratulations are in order to KR Designee, Steve Bennett. Steve has left "Ma Bell" and formed his own company, Great Plains Aircraft Supply Co. Also, this June, Steve will be getting married! Good luck and best wishes Steve in both endeavors.

QUESTIONS & ANSWERS

Q. I just received my plans for the KR-2. I'm new to the homebuilt aircraft field and have a few questions...How do I obtain an FAA inspection? How do we as builders obtain plans updates and amendments? What is the criterion for grading spruce wood as "aircraft quality"? Is this grading done by the FAA inspector or can I do the grading myself? May I have a listing of people in my area who are building KRs? Where do I obtain some information on the different powerplants such as HAPI or Revmaster? Is there a system for finding actual performance figures? Could you give me some pros and cons of using turbos? Are FAA inspections required after the aircraft is completed and flying? What governs the homebuilt aircraft circle for safety, etc. That's all I can think of for now, I sure hope you can help me with these questions.

A. Welcome to the homebuilt aircraft movement! The questions you listed are aksed by almost all first time builders and it's time I tried answering them all at once. You've bought your plans, looked them over and now you want to start building. Now is the time to contact the local FAA G.A.D.O. office for your area. They are usually near the larger metropolitan airports and will be listed in the phone book under U.S. Government offices. Tell them you are going to start building a KR and would like to know at what point during the construction they want to inspect it. They usually will want to see the aircraft a minimum of 3 or 4 times during the construction and will let you know at what point these inspections should be made. Next thing you should do is join the Experimental Aircraft Association (E.A.A.) The EAA is a group of people with the same interest as yourself and I'm proud to count myself as a member. EAA headquarters is in Wisconsin but there are chapters all over the U.S. and most parts of the world. To join, send your name, address and a check for $25.00 to EAA, P.O. Box 229, Hales Corners, WI 53130. You will quickly receive your membership card and a list of the EAA chapters near you. You will begin receiving "Sport Aviation", the best magazine you ever read about homebuilt aircraft and is worth the price of membership by itself.
On to your other questions...plans updates and amendments are passed on to the builder thru the KR Newsletter. This is the only method R/R used to notify builders of changes to the plans. Very few lumber yards have aircraft quality materials. Unless you are very knowledgable about selecting the wood yourself, your best bet is order it from one of the supply houses that advertise in "Sport Aviation". The EAA does sell a manual on wood that tells how to select aircraft grade material but most builders will order from one of the suppliers. I have a list of Newsletter subscribers in your zip code area and there is a KR Club you may join. The club dues are $3.00 per year to Newsletter subscribers. New members are sent a listing of KR Club members in their area and are urged to contact each other. There is undoubtably someone building a KR that has came across the same problems you will have and he may live close to you. Engine information is best derived from the manufacturers. Write to H.A.P.I. at Eloy Municipal Airport, RR 1, Box 1000, Eloy, AZ 85231. Their phone number is 602-466-9244. Revmaster is located at Chino Airport, Chino, CA. I'm not sure what you mean by a "system" for finding actual performance figures. Performance varies from aircraft to aircraft but the lightest KRs typically have the best performance. Turbos are great if 90% of your flying is on long cross countries or if you're based at high altitude airport (4000'+). If most of your flying is local (100 mile radius) or from an airport without an altitude problem, you will get much more enjoyment out of a non-turbo KR. Once your KR is completed and flying, you will be doing your own inspections. The FAA(at your request) will issue you a repairman's certificate good only for your aircraft and once each year you will do the annual inspection and sign it off in your log books. Safety is everyones responsibility and it is up to you as a builder and pilot to use good building practices and common sense when contructing and flying your KR. The FAA, EAA, AOPA are all very much safety oriented and can give you an unending stack of pamphlets on safety. In the end though, it all comes back to you...you are only as safe as you make yourself.

TIPS FROM OTHER BUILDERS

The stock KR-2 canopy leaves a little to be desired as far as head room goes. If you are taller than about 5'6" you may want to modify the canopy to a shape that will give you more room. How to do it is outlined very well in the following letter:

From Terry McClain & Rick Whisenhunt, 204 W. Shady Shores Road, Denton, TX 76201

"We decided to use a flat wrap windshield on the KR-2. The first step was to mock up the windshield and window/door bows to check for head room and looks. Templates were made to outside mold line. Two forms were made, one for clamp, one for rubber band clamp. I don't like the clamp type. Too much work and poor clamping. The rubber band form worked very well - easy to load, cheap to build - fast to build. With the rubber band tool the inside mold line of the bow was determined. A 3/4" plywood form was cut, two braces cut and several nails driven in each side around the edge for rubber band. Total tool building time approx. 2 hrs. The wood is Douglas fir ripped approx. .080 x .750 with grain perpendicular to the face. The strips were soaked in water, then loaded on the form and left til dry. Dryness was checked with a multimeter on the highest ohms scale. When the meter wouldn't move they were dry. Probes were approx. 1/4" apart and in full contact. The rubber band is sold for fisherman trot lines. It is 1/2" x 1/32" x 50' for $5.00. We protected the form and the rubber band with plastic wrap.

FORMING THE WINDSHIELD...After reading many horror stories about forming plexiglass I thought I would share our experience with the "Dan Diehl" method for flat wrap forming. I read this method in the KR Newsletter. It seemed simple and low cost. The method would be too slow for factory but I only wanted to form one ship set and 4-5 hrs extra wouldn't matter.

Step 1 is to mock up the windshield or build aircraft to this point. As I wanted to be sure I could build a replacement if required and also make sure the windshield would fit, I chose to mock up the area that would be fuel tank. The windshield bow and side attachments were built and installed. The fwd deck/gas tank were mocked up and installed.

Step 2 using poster board, a pattern of the windshield was made. This pattern was transferred to tin - I now had a tin windshield (.025 2024 would be ok). My tin windshield was cut net on the fwd edge and sides and left 2-3" full on the aft edge. The tin windshield was then installed on the ship. A few clamps, some small nails and a little wire held it in place. Over the tin a draped flannel (thermal liner was used, flannel cost too much).

Step 3 I borrowed a 100,000 BTU space heater (kerosene type). We set the heater on two trash cans and a box about 6 ft. from the plex. I tied a candy thermometer to a stick to check the temperture from the discharge to the plex. I wanted to keep the plex below 200°F. We moved the heat up 3 inches at a time til we ended up with it 3-4 feet from the plex. The plex began to droop. After it took light pressure to cause the plex to form, clamps were applied one at each end of a sood strip on the lower edge. The heater was moved to blow on the formed area. Clamps were then pulled up and plex was heated for another 10 min. The heat was then turned off and the plex allowed to return to room temperature. When the clamps were removed it only took a few ounces of pressure to hold the plex in place. So far, so good...one side done. The other side was done in the same manner. First side took 2.5 hrs. Second side too 45 min. The optics look great. By the way, the plex we used is .125 clear from Handy Dan hardware - they carry clear and heavy smoke in acrylic and styrene. Acrylic is plex, styrene is very brittle and doesn't form well. Cost of the 36" x 72" sheet was $37.00 or about $1.94 a sq. ft. It is not well protected so check for scratches. A little beats $5.00 a sq. ft.

NOTES...Homemade and handy - abrasive wheel. Need a thin abrasive wheel to cut some plex. In the past I had used a Zippidi-do but over the years the Zippidi-do has changed. It is thicker and coarser and not as flexible as it used to be. I had some coarse grit left over from a rock tumbling project. I stretched some 9 oz glass over a one gal. round can with both ends cut out. A small amount of epoxy was mixed and applied to the glass. The grit was sprinkled on the wet epoxy on both sides. The resulting disc has worked very well on plex and wood."

Over the past month one builder has sent me several tips for the KRN. Not all at once but every 3 or 4 days I get a card or letter from him that has a good tip for KR builders. Check them out, they may save you some tim or money.

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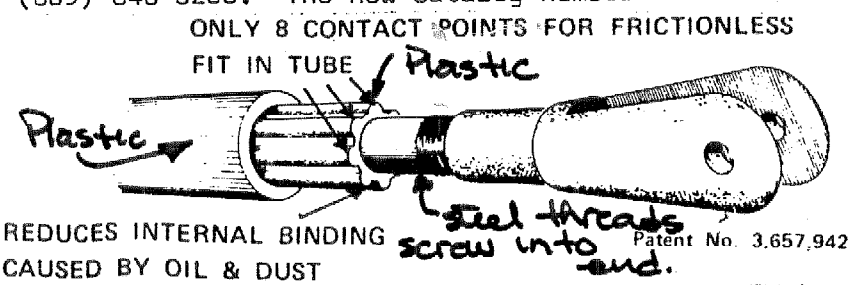
From Richard Kunc, 7429 Tufts Court, Orlando, FL 32807...."For cutting your wings away from the wing roots after glassing, FORGET ABOUT SAW BLADES! Go to your local well-stocked hobby shop or place where they sell Dremel-type stuff and get on of those TUF-GRIND abrasive wheels. No shattering, no teeth to dull, no high expense. This little sucker works GREAT, and makes a clean, smooth, straight cut when chucked in an electric hand drill. I used an 8-32 bolt and nut and some washers for my arbor, but you can also buy a factory made arbor with the tool if you wish.....The Garlock bearings referred to in Issues 7 and 27 are still available, but the manufacturer has moved. The new address is: Garlock, Inc., Bearing Division, 700 Mid Atlantic Parkway, Thorofare, New Jersey 08086 (609) 848-3200. The new catalog number for the DU series is now 781.....When installing elevator trim, use Sullivan #506 Semi-Flexible special plastic tube/rod instead of metal. Lightweight; no rust or corrosion; VERY smooth!"



I'm sorry to report that Richard's KR-2 was hail damaged in a recent storm and that he has decided to sell it. I'm happy to say that Richard is well into a KR-1 project tho so he won't be out of the air long. (Also means we'll keep getting those tips!)

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FOR SALE...R/R wingtips, unused, $50.00. Also KR-2 foam kit from R/R, unopened, $160.00. John Gregory, Star Rt. A, Dripping Springs, TX 78620 (512)858-4419.

FOR SALE...KR-2 project. Fuselage and spars completed. Now installing tri-gear and flight controls. Durward Boyles, P. O. Box 274, Brent, AL 35034.

FOR SALE...Hail damaged 160 mph KR-2 (see Newsletter #82). Needs skin repair, engine & canopy. Smooth hybrid controls, special tailwheel, with engine mount, accessories...$1500.00. Richard Kunc, (305)677-5904 Florida.

WANTED...Unused KR-1 canopy, grey or easy eye tint. Richard Kunc (305)677-5904.

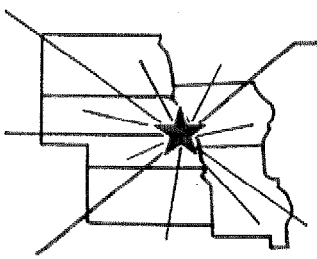
FOR SALE...Revmaster KR-2 engine mount & hardware at 1979 price in Canadian dollar. Brand new, never used..$184.00. Also Hansen Panel Layout KR-2 Overlay. Made of ABS/APVC. Will not fit R/R pre-cast fiberglass forward deck & tank because of Radio indent...$35.00 (Canadian) Michael A. Halsall, 1917 Bass Rd. R.R. 3 Williams Lake, B.C., Canada V2G 1M3.

FOR SALE...R/R flap handle..$35.00, KR-2 canopy & frame..$75.00. I need an engine cowling! Johnnie Bullens, Rte. 2, Paint Lick, KY 40461 (606)925-3248.

WANTED...Engine parts to fit HAPI engine, i.e. Mag, mag coupling, turbo charger, exhaust manifold. Send details to Col. R.W. Moore, P.O. Box 622, Toccoa, GA, 30577.

FOR SALE...New Revmaster 2100D w/forged crank, dual mags, oil filter & cooler system, starter & alternator..$3100.00. For details call or write Jim Wolter, 25051 Ward Ave., Ft. Bragg, CA 95437 (707)964-0076.

FOR SALE...KR-2 project on gear, wood done. Tail, turtleback & wings fiberglassed, finishable 70% off..$500.00 trade. Alan Mackey, 5 Indiana Dr. Nashua, NH 03060 (603)883-8613.



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Some of the items we have in stock are avionics, batteries, hardware, magnetos, tires and tubes. In addition, we are the distributor for the Diehl Super Case. We can also supply you with VW engine parts and even a complete engine.

It is our sincere desire to give prompt attention to all inquiries and orders with efficient service through-out. The basic values of integrity, quality, service, and reliability are what we are striving for, as well as competitive pricing.

We want to help you get your project airborne! If we can supply any of your building needs, our business hours are 8 to 4 Monday thru Friday and 8 to 8 on Wednesday. If you would have an after hour emergency need, give us a call, we might just be around.

Hope to be hearing from you soon and discussing the progress of your project; remember canoes do turn into aircraft.

Steve

Steve Bennett

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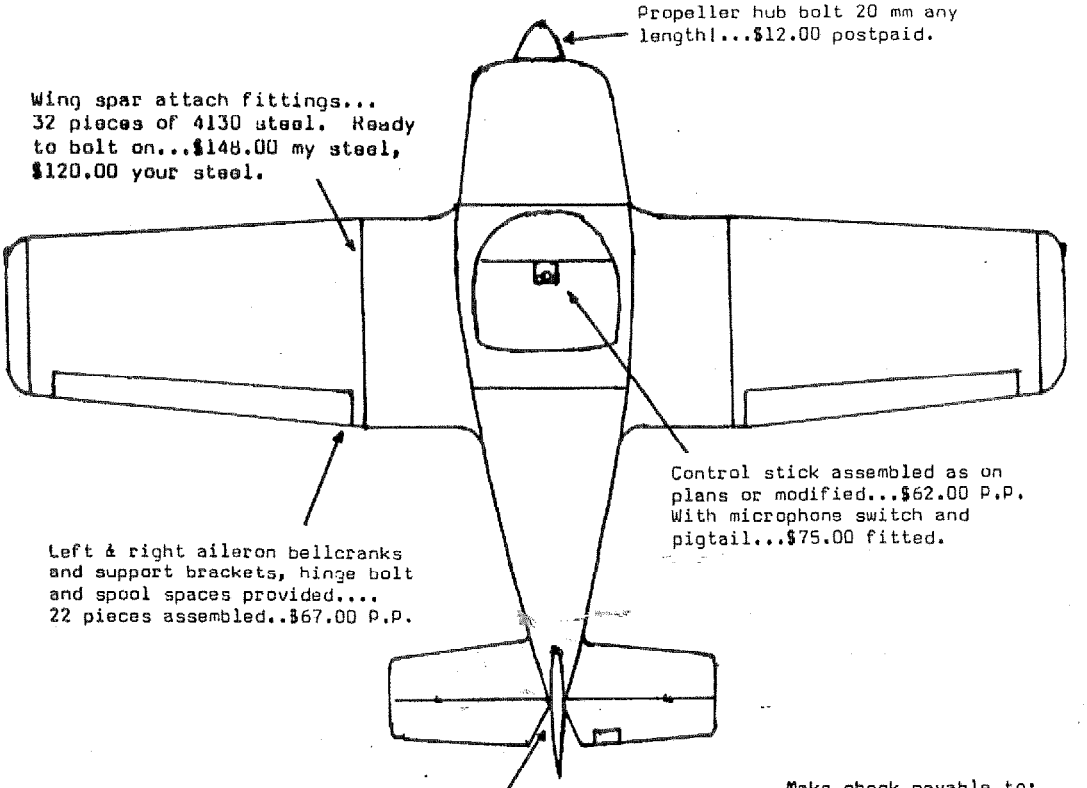
WESTMINSTER, CALIF. 92683

Phone (714)894-4875
Amos, Anita, and
Carey Anderson

Minature Metrics has several services and products. Send a S.A.S.E. for more info.

No instructions are given which conflict with plans or Newsletter. We prefer you refer to plans or consult Rand/Robinson.

QUALITY...all material is aircraft aluminum/steel as specified in your plans. Milled with precision then deburred, bead blasted, final finish reamed by standard aircraft production proceedures all in the interest of safety.



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MAY 1981
ISSUE #83

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Issue no.84
JUNE
1982

KR NEWSLETTER

RATES
USA $12.00 Yr
CANADA $15.00 Yr U.S.
OVERSEAS $20.00 Yr Funds

I like this time of year! Fly-ins are happening every week-end, Oshkosh is just around the corner, it's just good to be alive.

Speaking of Oshkosh, I sure hope you've made your plans to be there. The annual EAA convention continues to get bigger and better every year and this year promises to follow suit. The KR group has reserved a block of approx. 30 rooms at the University and will undoubtably be assigned to the same floor. I don't know which building yet but it will probably be Gruenhagen Hall again.

I am looking for a bunch of KRs to be at Oshkosh this year. My correspondence indicates several KRs will be flown in if the weather permits. Summer thorms, ya know. At any rate, there is a great number of KRs being completed. The past few issues of"Sport Aviation" have had pictures of some nice KRs and I expect some of them to be at Oshkosh. See you there.

***

The folks at Rand/Robinson tell me that they are going to be closed for the first two weeks in August. Oshkosh time, ya know. It's business as usual before and after though so get your orders in. Write or phone: Rand/Robinson Eng., 5842 "K" McFadden Ave., Huntington Beach, CA 92649 (714)898-3811.

***

KR Club News...Was talking with Tom Criss last week. Tom tells me that the L.A. area KR group held a meeting/fly-in at Corona airport. They had a good turn-out, five flying KRs, two projects and a bunch of people. Tom promised to send me a letter and photos on the gathering so look for it in a coming issue.

* TIPS FROM OTHER BUILDERS *

A FOAM SANDING TUBE....Here's an easy way to conform foam planks to wing and tail ribs. Get yourself a STRAIGHT mailing tube, plastic pipe, or other smooth, round thing about 5 feet long and 2 to 6 inches in diameter. (I used a 2 $\frac{1}{4}$ inch mailing tube.) Buy 6 feet of coarse black Scotch Safety Walk, 4 inches wide. It has a pressure sensitive adhesive backing and is easy to apply. Spiral-wrap the Safety Walk around the tube, being careful to keep the edges close together but NOT overlapping. The 6 feet of Safety Walk left about 7 inches uncovered at each end of my 5 foot tube. To use the sanding tube, hold it perpendicular across two or more parallel ribs. Roll the top of the tube away from you as you draw it toward you across the foam and ribs. To avoid deforming the ribs, use just enough pressure to cut the foam with each stroke. Work gradually, and eyeball it often. The tube is also useful for shaping fillets....Richard Kunc.

TIPS...(1) When "gluing" foam into place with liquid foam, use the "two brush" method. Dip brush #1 into Part A and paint the spar or rib or whatever. Then dip brush #2 into Part B and paint the attaching edge of the foam block. Now just stick 'em together, rub to mix if possible, and ZIP! Quaker Puffed Glue Joint! The beauty is that you only use the liquid foam you need, and you don't have the stuff expanding all over the place and going to waste before you can use it. (2) Want a good comfortable stick grip? Go to your motorcycle shop and ask for a pair of Granturismo model EX Rally grips. Black, padded, one's about an inch inside, the other's about 3/4" inside.....Richard Kunc,7429 Tufts Court, Orlando, FL 32807.

FLIGHT REPORT

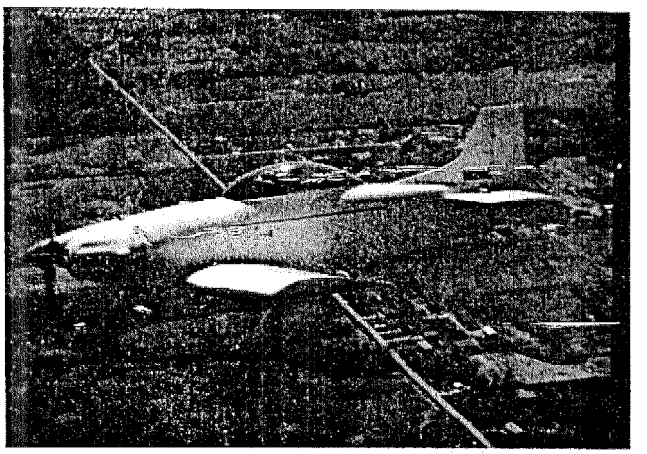
The KR-1s sort of took a back seat when the KR-2s were introducted. Seems everyone likes to have some company when they go flying. There have been over 5000 sets of KR-1 plans sold since its introduction at Oshkosh and several have been built. The fighter plane lines of the KR-1 appeal to the Walter Mitty in all of us. The following report is typical of the enthusiasm generated by flying this little "hot rod".

From Neal Schaefer, 6931 Goldengate Dr., Apt. 603, Cincinnati, OH 45244..."Enclosed are a couple of photos of 12NS, some data follows:

KR-1 N12NS TT 50 hrs.

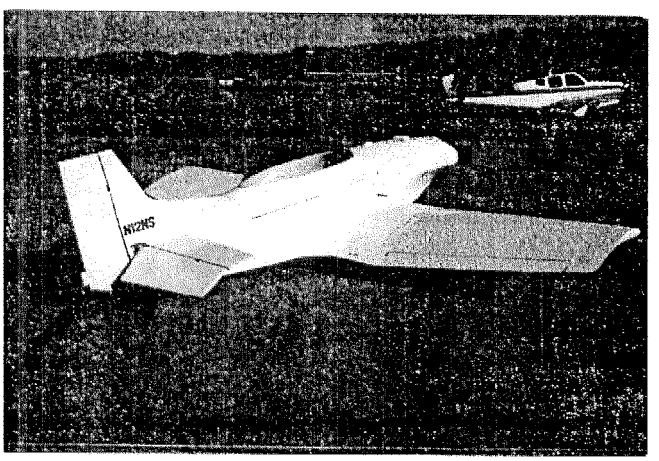
Features: 1600cc VW with Diehl case
HAPI intake & super carb
Koppe exhaust. Electric system
Great American 52 x 42 prop

Signed off for first flight June 14, 1980



Take-off.....Short!!
Climb at 100 MPH/IAS.....900' min.
Cruise at 3500' @ +57°F
3400 RPM 155 IAS = 165 TAS
3200 RPM 140 IAS = 149 TAS
3000 RPM 125 IAS = 133 TAS
Cruise at 10,000' +45° F
3000 RPM 120 IAS = 145 TAS

Believe it or not, my cruise fuel runs from 2.5 to 3.0 G.P.H.



Hope these figures will help some of the KR builders using smaller displacement engines. I found after using a standard Posa and a HAPI super carb, I definitly recommend the latter. Sure makes things easier.

Now have 50 hrs on 12NS and to date have found no bad habits. Flys beautiful in all flight realms and is the easist tail draggers I've ever flown.

In case you're wondering about the lack of color, in 2 years of trying...I still can't come up with a paint scheme I like so..white it stays.

SAFETY NOTE.....from David Hillerman, 12773 North Ave, Ballico, CA 95303. I have a R/R three blade ground adjustable prop that has about 25 hours on it. It has not been in use for some time and was in need of some refinishing work on the blades. As I was taking it apart, I noticed three cracks extending from the center of the hub toward the bolt holes on the inside. I continued the disassembly and found another crack inside the hub around the radius or the blade trough. I have also been working on a KR at the local airport that also has a R/R three blade G/A prop with about the same amount of time on it. When I removed the spinner, it also had the same cracks in the center of the hub and after further disassembly, I found the same type of crack inside. I know that the cracks in the center of the hub has been brought up in a previous Newsletter but I have not seen anything on the other crack and wanted to bring it to the attention of anyone else who owns one of these props. I might be a pretty good idea to take a look at it.

**Editor's note...David makes some good points. The R/R 3 blade prop seems to degenerate rapidly and if you're using one on your KR, take a good long, hard look at it.

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Parts and Services for your KR!

Control stick assembly..as on plans or modified..$62.00 PP, with microphone switch & pigtail..$75.00 fitted.

Rudder, elevator, tailwheel horns & hinges..11 pieces plus 10 back up plates. Pilot drilled for mount bolts..$58.00 PP.

Left & right aileron bellcranks & support brackets, hinge bolt and spool spacers provided..22 pieces assembled..$67.00 PP.

Aileron pulley brackets, left & right, assembled w/pulleys..$30.00 pair PP.

Propellor hub bolt, 20 MM any length..$12.00 PP.

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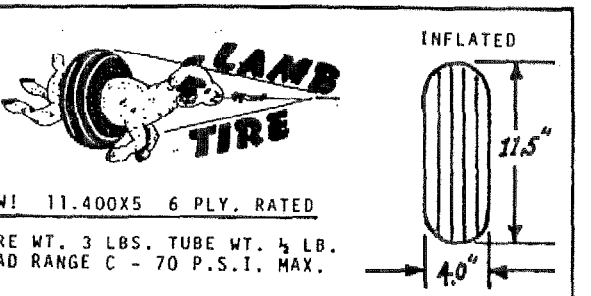
FOR SALE...KR-1 project by professional cabinetmaker. Fuselage woodwork complete, spars ready to close...$500.00, plans & Newsletters. Bill Langdon, Rt.1 Box 1588, Science Hill, KY 42553.

FOR SALE...KR-2 plans, some Newsletters, full size side view drawing of fuselage to be used on worktable when building fuselage, all 32 spar attach fittings precision prepared from 4130 steel in aircraft machine shop and zinc chromated. Save yourself much work and time. All for $150.00. 609-235-3931 after 5 pm EST.



NEW! 11.400X5 6 PLY. RATED

TIRE WT. 3 LBS. TUBE WT. ½ LB.
LOAD RANGE C - 70 P.S.I. MAX.

This tire fills the size gap between the 500x5 aircraft tire and the 3.40-3.00x5 go-kart tire. Looks like a scaled-down 500x5. Fits KR-1 & 2's and is recommended by Burt Rutan for the variEZE and longEZE. Also fits most other expermentals using 5 inch rim's.

TIRE 6 PLY RAT. 25.00 TUBE 6.50 + SHIP & HAND.
MIKE LAMB P.O. BOX 3324, QUARTZ HILL, CA. 93534

CARVE YOUR KR PROPELLER...Ridiculously easy, flight tested, computer generated blade angles, pitches, speed chart. Complete instructions...$6.95 USA..Garth Hess, 881 Emory, Upland, CA 91786.

FOR SALE...New "0" time professionally built 1835 cc turbo charged Aero-conversion VW engine complete with accessory case, prop hub, super carb and H/V H/P Scavenge oil pump....$2700.00. Will send details on request. Harry Hermann, 37247 51st St. East, Palmdale, CA 93550 (805) 947-0550 no collect calls.

FOR SALE...Revmaster 2100D turbo with all extras, even digital Revmaster tach. All are new with "0" time.

Narco Escort 110 radio, new in factory carton.

2 inch gauges, M/P,T&B,EGT,O/P, & O/T. Two each amp. meters, fuel meter, suction gauge, cyl. H/T, Mag. tach, air speed (220), rate of climb, altimeter,compass.

2 R/R 2 blade prop (ground adj.) with hub & polished spinner.

All items are new..$6500.00 firm as package deal. Freight charges C.O.D. (505)294-6100 8:30 to 5 Mon.-Fri. Ask for Gordon. No collect please.

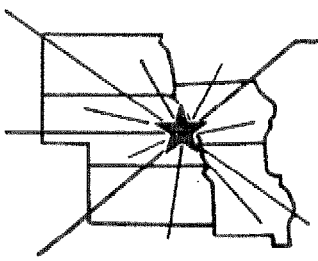
* BUY SELL TRADE* (cont.)

WANTED...KR-2 flying or nearly completed. Have cash and am ready to deal. C.J. Wolf, 9704 116th St. SW, Tacoma, WA 98498 (206) 584-8500.

FOR SALE...NavCom Narco MK10 360, VOA4, cables, power audio and manual..$250.00. Gera Warstler, 311 Oak, Georgetown, IL 61846 phone 217-662-8509.

WANTED...Radio and prop for VW 2100 turbo. Michael Goodman, 7995 Xavier St., Westminster, CO 80030.

FOR SALE...KR-2 project 20% complete, fuselage almost on gear, tri-cycle mod (Bill DeFreze system). Back Newsletters to date. Could be returned to tail dragger w/very little modification...$500.00. John Dameron, 2321 N. Main, Royal Oak, MI 48073 3130585-3850



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QUESTIONS & ANSWERS

Q. What would be a good all around prop for a 550 lb. KR-2 with a 2100?

A. Most of the KRs now flying are using a 52 x 47 or 52 x 48 from Great American Co. (available from R/R) or from Bernhard Warnke, Box 50762, Tucson, AZ 85705. However, don't order a prop from anybody without first getting their recommendation for your particular application.

Q. What angle of incidence should the horizonital stab. be fixed at if my wing spars rest on the longerons?

A. The horiz. stab. should be installed level with the top longerons. This will result in approx. a 4^{0} difference in relation to the center section wing.

Q. Has anyone certificated the KR-1 or -2 for aerobatic maneuvers?

A. No, not to my knowledge. The KRs, due to their small empennage, are not recommended for aerobatics.

Q. Has anyone tried stretching the basic KR-2 design to create a 3 or 4 place aircraft.

A. There are always rumors of this sort and someone may have begun doing this type of modification but none has ever flown.

Q. Three or four years back I read in the Newsletter to put the smaller hinge half on the stationary stabilizer spars. How can this be done if the bellcranks are made out of the smaller extrusions as per plans?

A. It is easy to just reverse the hinges on the ends of the vertical and horizontal stabs., but the bellcrank hinge material has to be replaced with the wider material. You can buy this from R/R or Minature Metrics or there is possibly a supplier near you.

Q. Why aren't there more KR-1 articles in the Newsletter?

A. I'm pretty well limited to what I'm sent as far as articles on KR-1s go. There is a short flight report in this issue on N12NS, a KR-1 built and flown by Neal Schafer. He must have been anticipating your question.

Q. I'm building up a 2180cc turbo similar to Dan Diehls. I have the book from HAPI "How To Build A Reliable VW Aero Engine". Are there any suggested changes in engine assembly when turbo charged?

A. Rex Taylor's book covers assembly of the VW engine very well. The turbo version does require a few modification though and these are covered in five consecutive issues of the KR Newsletter numbers 57 thru 61.

Dear Ernest,

Over the past year or so of working on my KR-2 several ideas and ways of doing things have occurred to me that might be of interest to other builders. Hope they may help convert some work hours into flying hours.

My garage floor is about as unlevel as they come. To help in levelling some components for aligning tail surfaces and wings I have found a plastic tube water level to be just great. I used about 30 feel of 1/8"ID aquarium clear vinyl tube. If you partially fill the tube so the water level is a few inches lower than each tube end, you have a great flexible level with accuracies of better than 1/16". One caution - be sure the ID is at least 1/8" or viscous damping of the water may require you to wait several seconds to obtain a true reading.

Cutting foam on my table saw created a real potential hazard. The foam is too soft to guide the saw blade, and kickbacks happened all too often for my liking. I replaced both the rip fence and miter fence with a wooden strip which fits the miter fence groove in my saw table. I drove brads thru the back side of the strip so they project about 1/2" above the saw table. Now I line the foam up with the intended cut then press it onto the brads and use the wooden strip siding in the groove to guide the foam into the blade. Most of the kickbacks have stopped, but I still find sawing the foam this way is very tricky. Be careful with the fingers.

The business of cutting foam planking to fit areas like the fuel tank top and the rear deck seemed to take forever, and I had trouble getting a good fit. I located some canned polyurethane foam used as weather stripping, and found that if you leave a groove perhaps 1/4" wide between the foam and planks you can fill the gap very nicely with the "foam-in-place" material. Use the hardening foam not"flexible", and the sanding properties are almost exactly the same as the basic foam planks. A side benefit is that the foamed-in-place material is an excellent adhesive and forms good joints with wood, foam, metal, fingers, pants and shoes.

You will also find a couple of photos of the seat belt/shoulder harness arrangement. The cable attach points on the back of the seat are attached to the fuselage tailwheel block, and in the event of emergency, transfer a part of the passenger load from the harness reel and shoulder points to that strong point. If my calculations are right, I should have a 30 "g" forward crash protection cockpit. Incidentally, the belt reel and metal to metal seat belt latches come from a 1972 VW. The belts themselves were replaced with new webbing. Our local FAA inspector was pleased with the installation, and his only question was whether I had checked the reel rachets for wear.

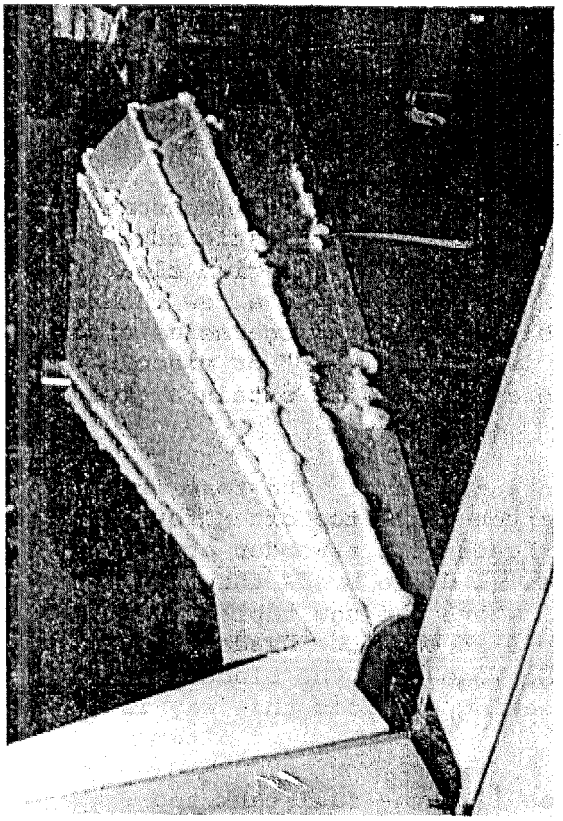
The newsletter is great, and right now the instruction hints are the #1 interest articles. I am hoping that this summer the flight tests will become #1.

Al's photos are on the back. EK

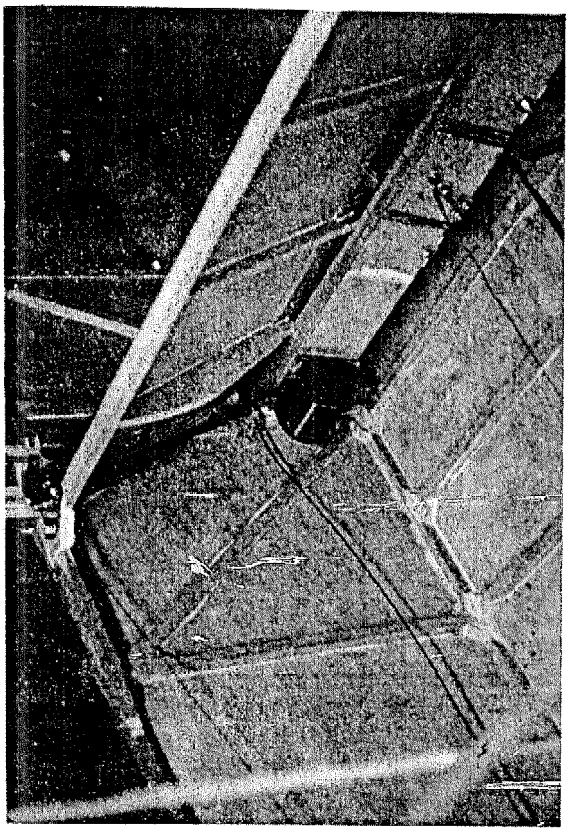
Sincerely,

Al Todd

M. Al Todd
22 Pheasant Drive
Asheville, N. C. 28803



Polyurethane foamed in place



Volkswagen shoulder harness/lap belt take-up reel attachment to rear spar. Top cable is to shoulder harness attach point, middle cable is to rudder, & bottom cable is to seat belt attach point at spar.

ERNEST E. KOPPE
P.O. BOX 981
JENKS, OK 74037
JUNE 1982
ISSUE #84

Issue no.85
JULY
1982

KR NEWSLETTER

RATES
USA $12.00 Yr
CANADA $15.00 Yr U.S.
OVERSEAS $20.00 Yr Funds

A basis for ideas and food for thought only. Use of any of the idea material is at the user's discretion. Not affliated with Rand/Robinson Engineering Inc.

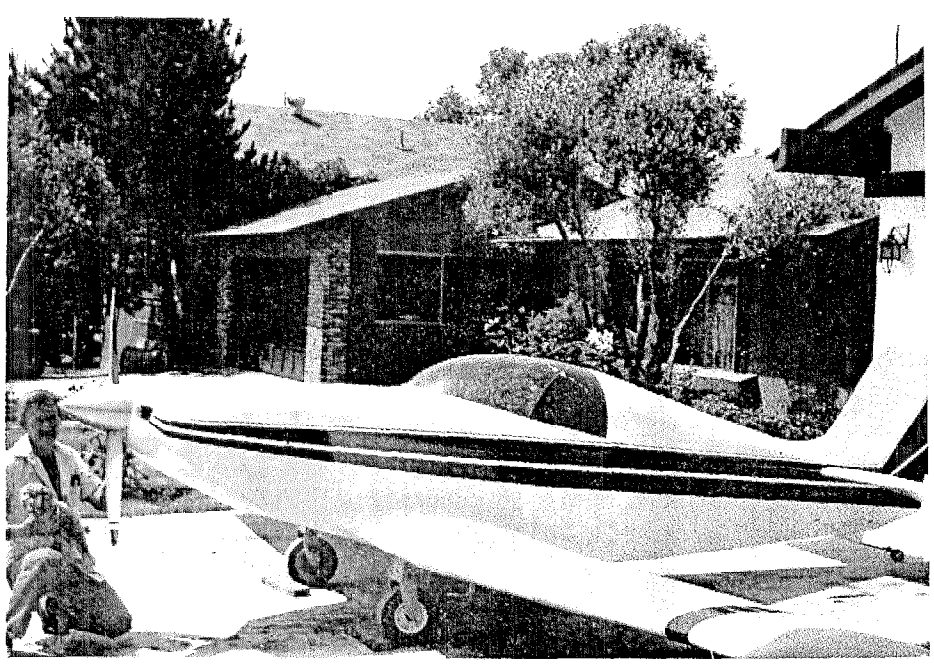
I have been asked hundreds of questions about the KRs, some difficult, some easy, and some that required getting outside help. There is one constantly recurring question that I have not been able to accurately answer...."How long will it take me to build a KR?" Everybody asks it. I don't have an answer that will fit everybody. The new Rand/Robinson ads say the KR-2 can be built in as little as 500 hrs. Maybe so, if the builder is able to get all the pre-fabricated parts. I remember the hours I spent on the hinges, and the bellcrank and the landing gear, and shaping the foam. Now, almost every assembly in a KR can be bought ready made. This can represent an immense saving in time, if not in money.

The new pre-molded fiberglass parts from R/R are much improved over the old pieces and these parts alone can save you a couple of hundred hours of sanding and glassing, and sanding, and sanding, etc. Engines too, are available ready to bolt on. When I built my first KR-1, I also had to build the engine and mount. Now, everything "firewall forward" is readily available.

So back to that original questions, how long does it take to build a KR? Well, the KRs shown in this issue of the Newsletter are typical examples, ranging from one year on a KR-2 to 8 yrs. on a KR-1. Now the KR-1 may not really be typical of all KR-1s, some have been built in a tenth of that time. But...it happens...and I know of KR-2 projects almost 8 yrs old.

What it all comes down to is this. You can build a KR as fast as you will. Whether it is 6 months (possible) or 6 years, you are the controlling factor.

BUILDERS REPORT



Manuel Sparks
10232 Kit Carson Pl.
Santee, CA 92071

Hi, Butch,

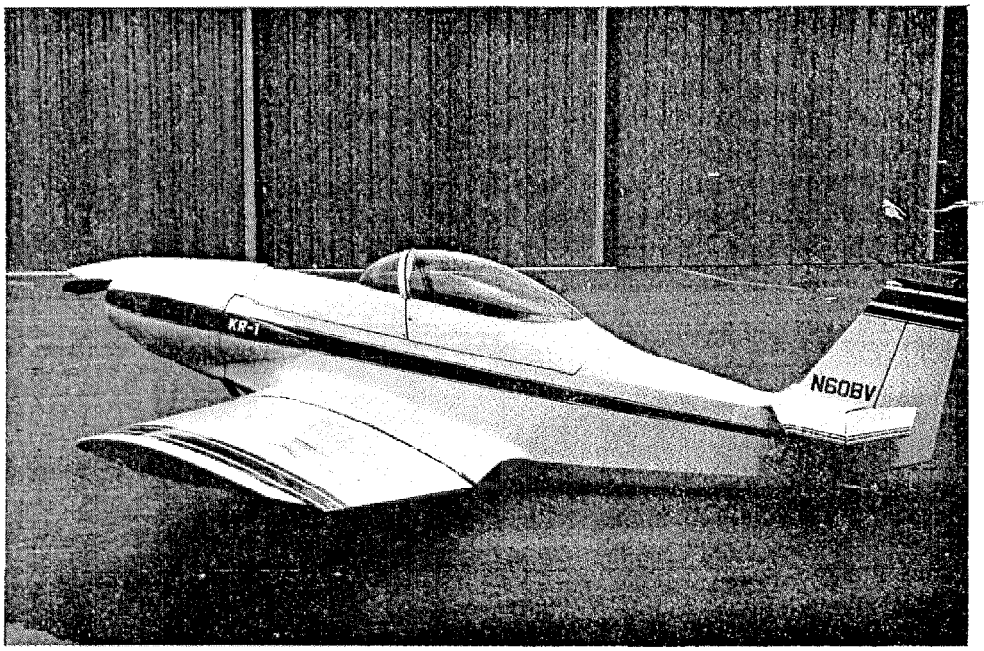
Here is the result of 23 months of blood, sweat, and tears. I'm very happy with the results, thanks to a good friend, Murray Rouse, who really gave lots of help. Murray built one of the first very nice KR-2s.

I stayed very close to blue prints. The canopy is lowered in front and lightly pinched. Made my own fiberglass parts except wing tips (R/R). 20 gal. nose tank only, 1834 VW from H.A.P.I. parts.

Hope to fly it in a couple of weeks, more later.

FLIGHT REPORT

I am very happy to report the first flight of another KR-1. N60BV was flown on June 12, 1982 at 9:30 am from Walker Field at Grand Junction, CO. This was after eight years of construction...that's right..EIGHT years. It is listed in the third issue of the KR Newsletter. My son Brian had completed a hovercraft at the age of twelve and wanted another project. I purchased the KR plans and he started construction May 1, 1974 at the age of 13. I was still building a Starduster Too and supervising his work. The Starduster was completed in two more years. We both did a lot of flying in the Starduster and the KR constuction was slowed, but never stopped. I took on all of the KR three years ago and built the engine and completed the plane. My son completed school, got married and has been very busy with his work. That partially explains the 8 years.



60BV has a 1600cc VW which I built with HAPI how-to book and parts...a Great American prop, POSA with carb heat, no electric but I carry a small receiver on tower freqency. Empty weight is 412 lbs. Changes from plans include the sliding canopy, HAPI type engine mount,NASA air vent, center control stick and heel brakes. A Cessna 172 spinner leads the way. I took off from a field elevation of 4500 feet, temp. 71°, wind 15-20 kts straight down the runway (had previously had four hours slow and medium taxiing and one hour of high speed taxiing). The KR lifted off in a very short distance. Engine temps were...oil-138, CHT-350 degrees throughout the flight. At 2700 rpm, I was indicated 140 kts in level flight...at 6300 feet. I am sure this was not TAS or ground speed, but it was really moving. The tower said it looked like a small jet. I thought the Starduster was sensitive on controls. The KR-1 is something else...very sensitive and a pure joy to fly. With everything going so well, I retracted the gear on the first flight. I flew for 20 minutes close to the field getting the feel of the plane. Landing, I carried 90 on final and held it off til it quit flying. I expected it to float, but with the wind and high altitude, it did not.

It is a real jewel and worth the eight years. Keep at 'em fellows! The Newsletters...from #1...and all the flight reports were invaluable, as was Pat and the folks at HAPI.....Vince & Brian Hostetler, 364 Martello Dr., Grand Junction, CO 81503.

**Editor's Note

Vince's comments regarding Pat and the folks at H.A.P.I. are typical of the comments I receive from people who deal with them. Rex and Phyllis Taylor, founders of H.A.P.I. have constantly strived to provide a reliable product to KR builders and all of sport aviation.

Recently H.A.P.I. engines were awarded the N.A.S.A.D. seal of approval, the only VW engine conversion to achieve this symbol of quality. Congratulations Rex, Phyllis, Pat, Robin and all the family.

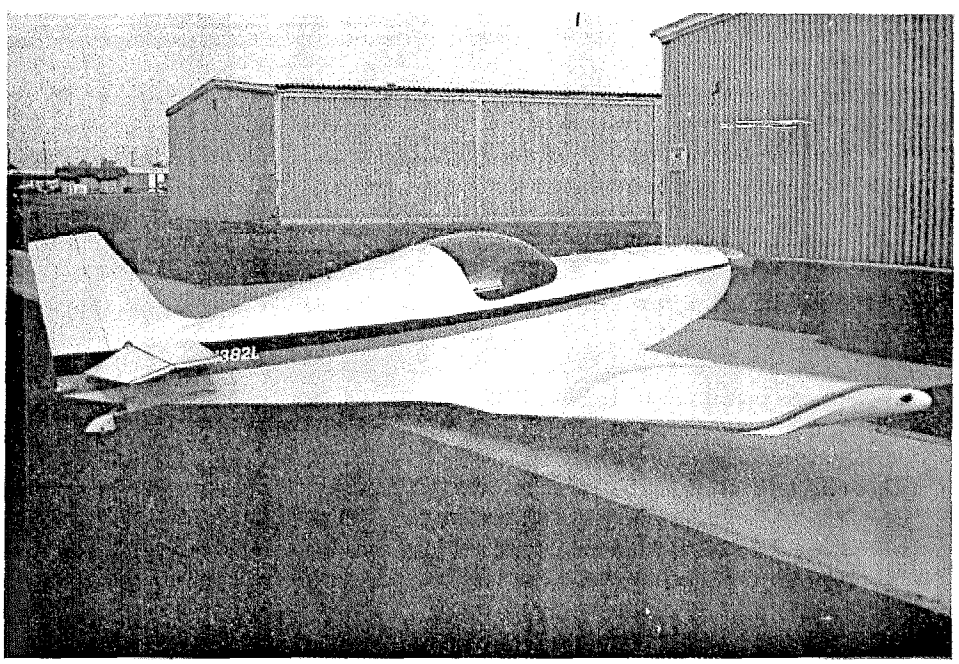
FLIGHT REPORT

First flight was May 18, 1982 at 7:30 pm. I started building my plane one year ago and with perserverence got it finished on Mother's Day, thus its name--Sweet Mildred after sweet Mom.

As to be expected, I made my share of changes...lengthened gear legs, wider fuselage by 2", reshaped turtle top for better head room, added speed brake, cockpit adjustable cowl flap and for the grand finale.....a faired in tail wheel!!

That eventful Tuesday night was really blowing with gusts to 35 mph so I decided to do just a few taxi tests and call it a night. Well the taxi tests (2) went so well and everything felt so right that I decided to go for it. Acceleration was brisk as I started drifting across the runway...had to get used to that left rudder requirement. Once in the air it became a bit reminesent of a circus ride with those winds. I couldn't check much out since it would never hold still long enough but reactions and control inputs were quite predictable. After two passes tracking the runway and the sun going down (but not the wind unfortunately) I decided to land. Well, the first attempt was a bit crude and after being blown off the runway for the third time, I punched the throttle. We went up like a bottle rocket that first 20 feet or so where I re-grouped for a go around. Praise be to that responsive throttle! For some reason the second attempt culminated in a real grease-on 3 pointer the likes of which I'm still trying to match! Thirty-two hours later (June 15th) I'm fully signed off and have a love affair going with Sweet Mildred that makes my girlfriend jealous.

I'm getting more rpm's than most guys with the same engine (Revmaster 2100 D) and prop (3200 static with a 52 x 47) so I went to a meatier 52 x 50. Static is now 3000, cruise at 3000 trues out to 197 mph. Stall is about 47 mph. I run the EGT up to about 1250°, the heads are still a bit hot at 330 cruise so I'm working on that now.



I've had it upside down and into a verticle dive to check the rate of acceleration. Flying 800 lbs. it's easy to pull out and not exceed 2G's and 140 indicated starting from 80 mph. Flying with more weight would be cause for closer concern.

I prefer wheel landings, flying final down at about 80 mph. I also start braking while the tail is up countering for the forward deceleration pitch with elevator input...it works great and I'm stopped in 1000 to 1200 feet.

I also have a patented new prototype exhaust system from Revmaster with anti-reversionary cones inside which appears to be increasing H.P. and quieting the engine. This is by far the quietest single I've flown, much quieter than a 172 or Mooney. All in all I'm JAZZED. Come see Mildred and I at Oshkosh after what will probably be her first long flight.....Lance Neibauer, 2217 Harriman Lane, Redondo Beach, CA 90278.

**Editor's Note....I understand the new Rand/Robinson ads featuring Tom Criss and his KR-2 were the work of Lance. They are apparently working as well as Lance's KR-2, Jeannette Rand says business is better than ever.

QUESTIONS & ANSWERS

Q. Why does everyone seem to be using such a primitive carburetor on VW conversations as the Posa? The original Solex carb had an accelerator pump and could be obtained with automatic mixture control (aneroid operated main yet).

A. Originally, the Posa was selected for its simplicity, lightness and because it did not require carb heat. Lately though, more concern for reliability has prompted modifications to the Posa that, while still light in weight, have added somewhat to the complexity. There has been some "re-thinking" on the no carb heat idea, too. Not because of the possibility of ice in the Posa but because ice has been found in the intake system behind the Posa. As for the Solex, some early VW conversions did use it with varying success.

Q. I was reading in the July '81 Newsletter about the Dow epoxy DER 324. My KR-2 is 60% complete and I need to get some epoxy that isn't so irritating to my skin. Where or who do I see about getting this epoxy?

A. Contact a fiberglass shop in your area and get the name of their resin supplier. He will be able to sell you the Dow/Versamid system or order it for you.

Q. Could you tell me how I can stop the trailing edges of my elevator, rudder and wings from warping? I've already tried sanding the foam on one side, glassing, then repeating the process on the other side but it doesn't work. I'm using Dynel.

A. You're on the right track but you need to add one more step. After you have glassed (or Dyneled) one side of the part and let it cure, sand the other side to contour. Trim the trailing straight and then scrape off approx. $\frac{1}{2}$" of foam along the trailing edge right down to the opposite surface. Now go ahead and glass this side of your part. This will leave a trough in the trailing edge that tends to be stiff and straight. Fill this trough with a very stiff mixture of epoxy and micro-balloons or epoxy and flox. Let cure and then sand to a smooth, straight edge.

Q. Has anyone encountered trim tab flutter using the Carl Goldberg servo (issue 18)? The new servos I bought have enough play in them to allow trim tab play beyond the limits mentioned in later issues. I'm using electric pitch trim on the stick and electric rudder trim beneath the turn co-ordinator.

A. There have been no reports of trim tab flutter to me, electric or otherwise. It is a possibility to consider however, and every effort to keep play in the system to a minimum should be made.

Q. I know the leading edges of the outer wing panels have two layers of fiberglass, do the wing stubs also have a double layer from top cap to lower?

A. Yes, the plans might not specify this but it is important. Many builders are now covering the entire wing surfaces with two layers of fiberglass cloth. When done properly this method makes the wings stronger and lighter than the old dynel method.

Q. Will the "Sting" exhaust fit the Revmaster 2100 D with Revmaster oil cooler and alternate air source installed?

A. Yes, the "Sting" exhaust system was designed around this engine.

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FOR SALE...KR-2, 110 flying hours. 2100 D turbo charged Revmaster engine w/Maloof 2 speed prop. Radio gear with 720 channel transceiver and separate omni unit...$5500.00 total. $4500.00 less radio and omni. Bob Wood (707) 965-9132 (no collect).

MAGNETOS...New Bendix D-2000...$437.00 plus postage. Scintilla (Vertex) with 10 hrs...$350.00. Rex Taylor, R.R. #1 Box 1000, Eloy, AZ 85231 (602)466-9244.

FOR SALE...KR-2 project. Woodwork complete. Rudder and elevator glassed. Assorted materials & hardware...$1500.00 Chuck Borne (713)666-4251 Houston, TX

FOR SALE...R/R motor mount with rubber bushings. Fits VW case, unused..$100.00 Michael Walsh, 279 Claudia Ct., Moragu, CA 94556.

FOR SALE...R/R 3 blade prop for Revmaster VW engine, unused...$170.00 post paid. Rich Neate, (904)761-7261.

FOR SALE...KR-1 project. Fuselage, spars & empennage signed off. Empennage covered. FAA registration completed. Landing gear (aluminum kit), canopy, prop spinner, foam kit, VW block, bolt kit, 6 yds fiberglass, 1 gallon epoxy, most materials to complete airframe. $2400.00 invested, must sell fast for $1400.00. (817) 322-9566 evenings.

WANTED...3 blades for R/R prop hub (206)927-3530 after 9 pm.

FOR SALE...KR-1 project, signed off to finish. Log books, engine parts, etc. $2100 invested, will sell for $1500. Need room for KR-2. Allen Gurbino, 20706 Hillside Dr., Topanga, CA 90290 (213)455-1175.

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Universal computer generated blade angles, usual diameters and pitches. 1" stations, speed chart. How to cut blade angles with ridiculous ease. Easy to follow instructions...$2.95 per set U.S.A. Garth Hess, 881 Emory Ct., Upland, CA 91786

FOR SALE...Revmaster 2100D turbo with all extras, even digital Revmaster tach. All are new with "0" time.

Narco Escort 110 radio, new in factory carton.

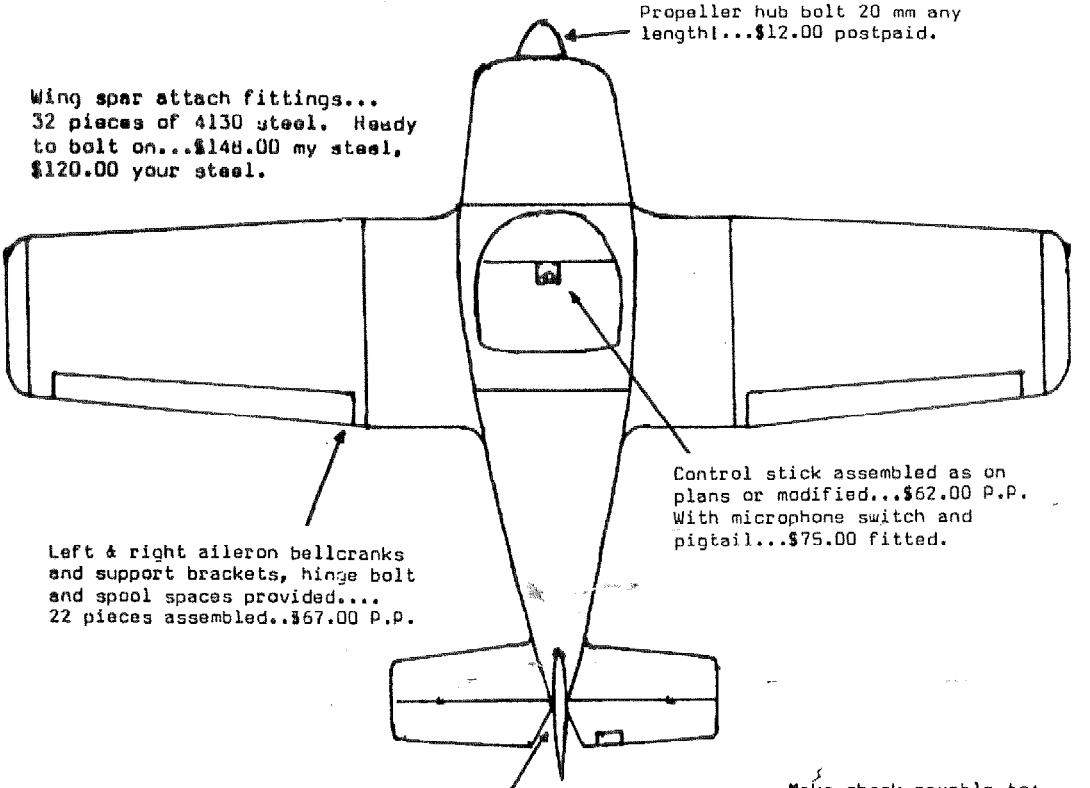
2 inch gauges, M/P,T&B,EGT,O/P, & O/T. Two each amp. meters, fuel meter, suction gauge, cyl. H/T, Mag. tach, air speed (220), rate of climb, altimeter,compass.

2 R/R 2 blade prop (ground adj.) with hub & polished spinner.

All items are new..$6500.00 firm as package deal. Freight charges C.O.D. (505)294-6100 8:30 to 5 Mon.-Fri. Ask for Gordon. No collect please.

Propeller hub bolt 20 mm any length!...$12.00 postpaid.

Wing spar attach fittings...
32 pieces of 4130 steel. Ready to bolt on...$148.00 my steel, $120.00 your steel.



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No instructions are given which conflict with plans or Newsletter. We prefer you refer to plans or consult Rand/Robinson.

Control stick assembled as on plans or modified...$62.00 P.P. With microphone switch and pigtail...$75.00 fitted.

Left & right aileron bellcranks and support brackets, hinge bolt and spool spaces provided.... 22 pieces assembled..$67.00 P.P.

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JULY 1982 ISSUE 85

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Issue no.86
AUGUST
1982

KR NEWSLETTER

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OSHKOSH '82

Once more Oshkosh is behind us. Once more it was bigger than ever before. Despite somewhat less than ideal weather, hundreds of thousands of people from all over the world were on hand to see and be a part of the largest sport aviation event in the world.

And the KRs were there...more than ever that had attended Oshkosh before and all were flown in. No static displays of unfinished projects were in sight, much to the disappointment of the hundreds of people who wanted to see how a KR was built. Sorry guys, maybe next year.

All in all there were 15 KRs on the flight line at various times though I only counted twelve at any one time. One fellow in a KR-2 was in and out in one day and I missed him completely. Also there was a KR-1 whose owners name I never learned. Nice aircraft though, and unusual in appearance because of the small racing style bubble canopy. But then all KRs seem to unusual in one way or another. Dan Diehl flew N4DD to Oshkosh again this year. That's seven straight years in a row. A remarkable record for any homebuilt, and one that won't be matched by other KRs for at least six more years. All the other KRs at Oshkosh had never flown there before. Thats right, with the possible exception of the KR-2 that I missed N4DD was the only KR repeat performer.

There were three KRs from California, all KR-2s, and all arriving on different days. Wes Evans flew his award winning turbo KR-2 from Ventura, Lance Neibauer made his first long trip in his KR-2, arriving from Redondo Beach, and Norm Negus was a late arrival in his KR-2 flying in from Yucaipa, Calif. Lots of thanks are due these fellows for making the long flight. Maybe next time they can arrange to all make the trip together. It sure is a good feeling to look out and see another KR on your wing tip.

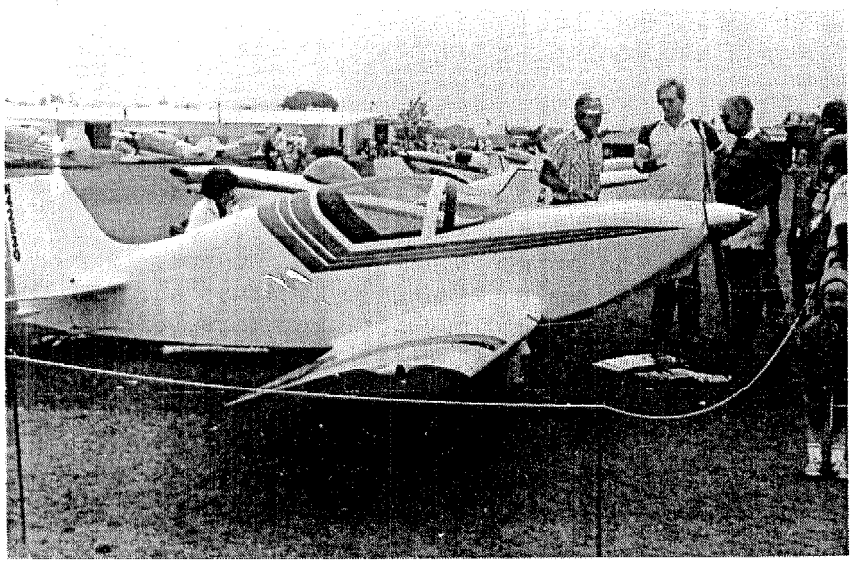
Speaking of wing tips, there were almost as many types of tips as there were KRs. Wes Evans' beautiful KR-2 was sporting a new pair of turned down tips since I had seen it at El Mirage last year. Wes credits the tips and about 3 more feet of wing span for increasing his climb rate by a noticeable margin. Also made the cruise speed a couple of knots faster. Bob Passmore whose KR-2 with the up swept tips featured in a Newsletter earlier this year also has an increase in wing span of almost 2 feet. I don't know if the tips or the increased span contributed to the phenomenal fuel economy Bob was getting on his flight from Tulsa but something was sure working right. Bob flew N818P up with three other aircraft, a "Spam can" (Oshkosh slang for a factory built aircraft), a Vari-Viggen, and Dan Diehl's N4DD. At their enroute fuel stop, 460 miles and 3 hours along the way all four aircraft topped off their tanks. The Spam can took 49 gals., the Viggen took 29 gals., N4DD 15 gals., and Bob ran his tank over at 7.6 gal...let that soak in a bit...only 7.6 gallons! Thats only 2½ gals. per hour at over 150 mph per hour! Bob was surprised even though previous fuel consumption checks indicated an average in the low 3 gph region. The other guys, including Dan, were astounded. For the curious among you, Bob's engine is an 1835 VW using a 32MM Posa that he and Dan built up using Dan's accessory case and my "Sting" exhaust system. It turns a Warnke "almost constant speed" prop.

The East Coast was represented too. Brian Benjamin flew all the way from North Carolina in his turbo KR-2. Brian has been a regular contributor to the Newsletter "Tips for Builders" section and it was good to see him and his aircraft at Oshkosh together. Mark Kaufman and his KR-2 spent a large part of the fly-in down by the aircraft camping area. A KR draws a crowd whereever it may be and Mark's KR-2 is no exception. I found it and Mark by going to see what the people were all looking at.

There was also a KR-1½ at Oshkosh this year. Actually it was built from KR-2 plans but narrower to make a sleek looking single place. N82JS was built by Jim Shrum as his own personal fun machine and it is not a new offering from R/R. It is a beautiful aircraft and I'll bet you'll be seeing more KR-1½s in the near future.

Wayne Peterson and Bernie Huseth brought their KR-2s to Oshkosh for the first time. Remember Wayne's flight report about 6 months ago when he test flew both his and Bernie's KR-2 on the same day? Bernie has since used his KR toward building time and experience for his private ticket and he and Wayne fly together regularly in the Minnesota skies.

There were some really sharp KRs this year and the judges for the Ken Rand Memorial Award did not have an easy choice. There were at least a half dozen KRs that could be considered as finalists. N511JS...a KR-2 with an eye grabbing metallic paint job, N54AJ...a clean, sharp, well built KR-2 by Don Moore, N42CW...A KR-2 that has received an award from every fly-in it has been shown, N382L ...you read about this KR-2 in the July KR Newsletter. It's hard to believe a KR this sharp was built in only a year. Beautiful job Lance. N82JS...the KR-2 after a crash diet. Seriously Jim Shrum has an outstanding aircraft with his KR-1½, N42630 ...August "Sport Aviation" has a full color spread on this sleek KR-2. Brian Henneman has built a KR that looks as though its cruising at 160 while its still sitting on the ground. The judges must have thought so too because Brian is this year's recipient of the Ken Rand Memorial Award and his KR was also awarded the trophy for outstanding VW engine installation Sponsored by H.A.P.I. This aircraft shows what a dedication to craftmanship can achieve. There will be other awards in this KR-2's future, just watch!



Three or four years ago, at Oshkosh a KR-1 was trailered in for display. It was back this year and flying. N80190 was the effort of Harry Chamberlain over a span of 10 years, 1972-1982. Welcome back Harry, you came in style!

Well, there they are, the KRs as I saw them. I didn't get to look as much as I would have liked because of a new business endeavor with Dan Diehl. If you were at Oshkosh you probably got down to the Ultralights and saw our "hydrolight" we call XTC (pronounced ecstasy). Showing our amphibious ultralight demanded the majority of my time at Oshkosh. See ya there next year.

ACCIDENT REPORT

Tom Smith is a designee for EAA Chapter 240 in Wilmington, Delaware. He sent the following report.

"We have 7 KRs in this area, 3 finished, the rest building. One crashed on the third flight. The "O" ring on the mixture sheared and part of it went into the orfice killing the engine. Pilot tried to re-start in the air but the post on the starter was burned off inside the starter shell. As he was gliding in a twin engine aircraft buzzed under him and the resultant vortices caused a loss of control and a crash. The twin continued on.

The KR pilot is asking Revmaster to take some responsibility after the FAA investigated and gave him a deposition as to the cause of the engine failure. When one of these starters gives trouble, it should be checked."

QUESTIONS & ANSWERS

Q. I'm installing the vertical spar in my KR-2 and in checking the 7^{o} angle I find it doesn't co-incide with the measurements for either length of the spar (40") or the distance from the end of the fuselage (4"). Which is correct?

A. The length of the vertical spar is correct. The 7^{o} angle may be adjusted as necessary to get the correct sweepback measurement (4").

Q. Is it true that the pre-moleded fiberglass cowling as sold by Rand/Robinson will not house a 2100cc VW engine?

A. The new R/R cowlings require only slight modification to house any of the popular VW conversions. Lance Neibaur's KR-2 (as pictured in Newsletter #85) has a Rev-master 2100 and uses a R/R cowling.

Q. Can any strength be gained by adding another web over the first on the center wing spars?

A. Certainly, but there are hundreds of KRs with only one web thickness. It seems to be very adequate.

q. Is Safe T Pox 2410 Resin and Apco 2183 hardener suitable for construction of the KRs?

A. I'm sure it would work very well for the fiberglass wing and control surface covering <u>if</u> it is the only type epoxy used. Some epoxies will not bond to another type epoxy.

Q. What is the material used for the aileron balance weight brackets and how are they attached to the aileron spars?

A. It is 1/8" 2024 aluminum or .090 4130 steel. They are attached in the same manner as the aileron control horn.

Q. Is it necessary to move the engine forward to offset a C.G. change with wing tanks?

A. No, the wing tanks are close enough to the C.G. so that there is no problem.

Q. The $\frac{1}{4}$" plywood shelf for the forward bulkhead (Ref. KR-2 drwg #3) is not provided by R/R. Is this aircraft quality plywood?

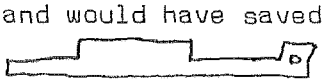
A. I use marine grade 5 ply birch for this shelf as well as the firewall itself.

Q. Does our common goal of a 450 lb. KR-2 include <u>any</u> avionics?

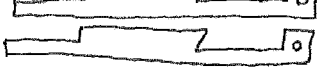
A. Nope, the 450 lb. KR-2 is as basic and unmodified as possible. Knowing KR builders as I do there is a very little chance a 450 lb. KR-2 will ever be built.

Q. Do you recommend the R/R stock landing gear assembly? I've heard of a more easily and dependable operating landing gear but don't know who to contact.

A. The Rand designed landing gear is about as simple and uncomplicated as possible. Unfortunately it is not foolproof and is subject to problems. The first problem can probably be laid to somewhat ambigious instructions (or lack of) in the plans book but if the builder will make sure everything is in alignment and working properly <u>before</u> drilling holes in any of the pieces he will end up with a serviceable landing gear. The next problem is also due to plans and has led to the various types of safety latches that have appeared in the Newsletter over the years. I refer to the notch in the down latch bar that holds the L/G in the down position. The plans show this notch as a nicely squared off 90^{o} cut. This will not stay latched over the "I" channel when the aircraft is taxied over anything but the smoothest surface, even when the coil spring is added "as per plans". The answer to this problem is simple and would have saved many props over the years. The notch now shown as thus:



should be shown as this:



There are KRs flying that use only this simple fix and have never had the landing gear retract unexpectedly. There are other positive latch systems. Some have appeared in the KR Newsletter, most notably is the "Charlie Wells" type system as used by Wes Evans in his KR-2. Another good system is Rex Taylor's modification as used by Brian Henneman in his KR-2. (Plans are available from HAPI for $4.00) Both of these systems are positive latching but are going to require some additional time to build and install. The next problem rests squarely on the shoulders

of the builder...overweight aircraft. The KR landing gear was never designed for the weights some of the flying KRs routinely operate at. If you have beefed up your airframe here and there, added some features here and there, some instruments etc., etc., you will also have to modify or strengthen the landing gear. All this of course, adds pounds and pounds of weight and performance of your aircraft suffers accordingly. Always take a good hard look at anything you want to modify from the original plans.

Q. Are there any temperature parameters I need to know when using R/R epoxy?

A. Ideal conditions for using the R/R epoxy are temps in the 70° to 80° range and humidity below 50%. I try to lay up all my woodwork under these conditions. The foam/glass work is not so critical and I usually mix whatever the current temperatures will let me comfortably use, small amounts (8 oz. or so) in 90° to 100° temps and larger amounts (1 qt. or more) in 50° to 60° temps. All depending on the quanity needed for the job at hand.

Q. If the aft fuselage ply covered with fiberglass cloth?

A. No part of the fuselage is covered with cloth per plans other than areas where wing fillets or pre-molded parts are joined to the fuselage. Several builders have covered the entire fuselage with cloth as a protection from the elements, oils, etc.

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FOR SALE...Rand/Robinson KR-1 canopy. Never used, still in protective plastic. $65.00 plus shipping. Bill Tidmore, 1309 Briar Hollow Trail, Huntsville, AL 35802.

TRADE??..Have a Eiseman mag for my C75-12 engine (doesn't fit). I want to trade or? for a bendix, slick, etc. Ted Medin (714)748-0049 (no collect).

FOR SALE...KR-2 80% done, 2100 D Revmaster turbo charged engine and Maloof prop..$4600.00. Jack Schultz, Box 406, Mesa AZ 85201 phone (602) 834-0702 after 6:30 no collect.

FOR SALE OR TRADE...New R/R landing gear assembly - main gear and tail wheel, never used, $100.00. Also new R/R plywood kit, 3½ sheets, $150.00, plus fuselage sides already complete, $50.00. Excellent workmanship. Glenn Brooks, Rt. @, Hazelton, ID 83335 (208)829-5174.

WANTED...KR-2 project. Prefer in and around the Texas (Houston) area but would consider information on projects in other areas. Contact Lance E. Herrington, 1203 Pinecroft, Sugarland, TX 77478 (713)494-6763 evenings.

FLIGHT REPORT

I'm sending you the standard photo of this guy's version of a KR-1. I never saw one until I built this one so it wasn't influenced by anything other than the KR Newsletter and original plans. However, I saw pictures of "super tips" in "Trade-A-Plane" and made some using the outboard rib profile as a center guide. I built them together on the profile and cut them apart when epoxied in order to keep them equal. I don't know whether they do any good or know the efficiency over a standard tip. I do know that they were on before the new tips came out in the Newsletter. Obvious now, is the fact that they are too close to the runway for a wing down, cross wind landing. Also my flaps are only 1" above the runway for full flap landing. Anyway, my story is the standard one of a high speed taxi check down the runway turning into a flight because once the tail is up and you can see where the rest of the world is you don't want to quit there. However, the engine liked to cough at full throttle so I decided to keep it at 2800 RPM where it was smooth, and I made a closed traffic pattern and landed. Held 80 KTS throughout and searched for that big runway (8000' x 300') as I retarded the throttle over the over run. Landing was standard taildragger and I even drug the tail first! So after taxiing back in with a smile all over my face I felt all the work was worth it. Decided to leave it tied down at the airport and fly for real the next day. Discovered the R/R tailwheel bearing had all but failed after 1.5 hrs. of taxi and one take-off and landing. The next day I richened the Posa mixture one turn and pumped some more grease in the tailwheel and pressed out, anxious to fly more and higher. On the runway I "poured the coal to it" and began to drift right. Tried to be easy on the tailwheel by relaxing backstick and just using rudder but was still drifting right so tried to just get aileron by pulling it off. Hairy take-off by definition! Stall recovery at 10' in the air 30° to runway heading with engine not giving its all is something I don't enjoy doing everyday. Keep that tailwheel planted until you get some speed for the rudder to be effective! So I had to relearn some taildragger techniques. Anyway had a nice one hour flight with one stall series and it flew like any other airplane. One low pass down the runway followed by standard landing with 15° flaps. Must replace tailwheel before it falls off and do something with that Posa!

Noel Dunlap, 100 Dower Draw, Kila MT 59920

TIPS FROM OTHER BUILDERS

From Glenn Brooks, Rt.2, Hazelton, ID 83335..."Nowhere in the plans does it say the staples have to be removed. When stapling, lay heavy carpenter's string down the middle of your stapling line and staple over it. When the glue dries, pull the string and staples fly right out. Caution! wear goggles or protective glasses as some of the staples really fly."

OSHKOSH '83

The KR group at Oshkosh spread thru <u>two</u> floors this year. Get your reservations in now for next year. Steve Bennett's wife, Linda, is co-ordinating the reservations for '83. Send her your name, address, arrival and departure dates and a check for $15.00 for each room you want (each room has two single beds). Make check payable to University of Wisconsin Oshkosh. Linda will need the deposits by Oct. 15. Mail to: Linda Bennett, 2606 No. 125th Cir., Omaha, NE 68164.

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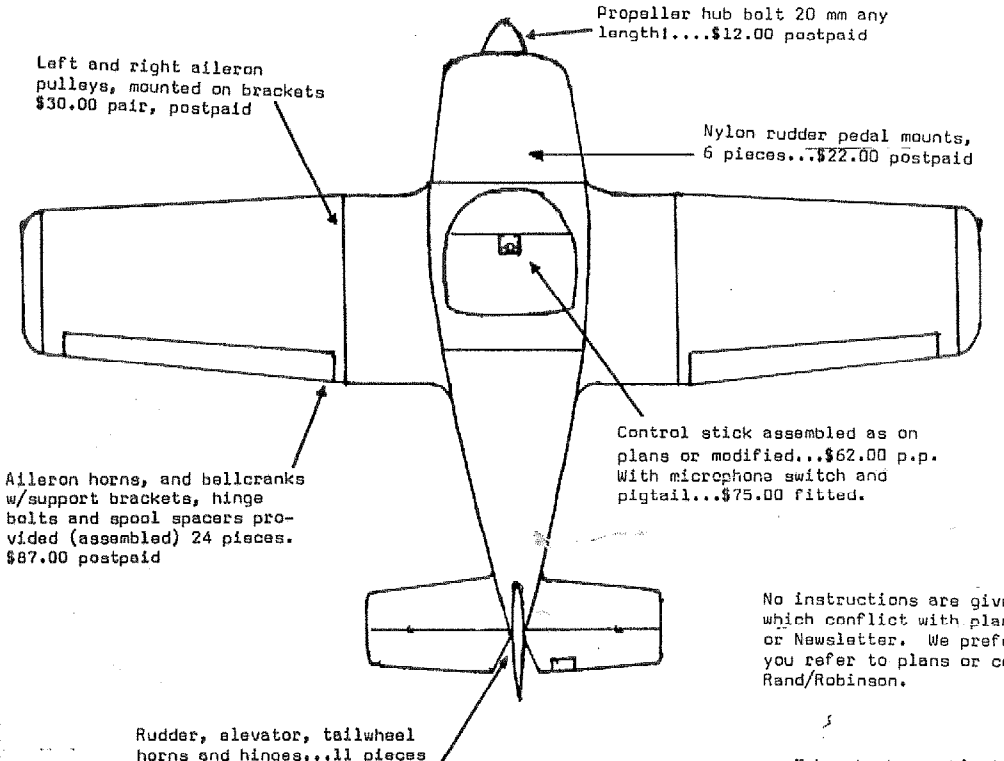

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ERNEST KOPPE
P.O. BOX 981
JENKS, OK 74037
ISSUE #86 AUGUST 1982

Issue no.87
SEPTEMBER
1982

KR NEWSLETTER

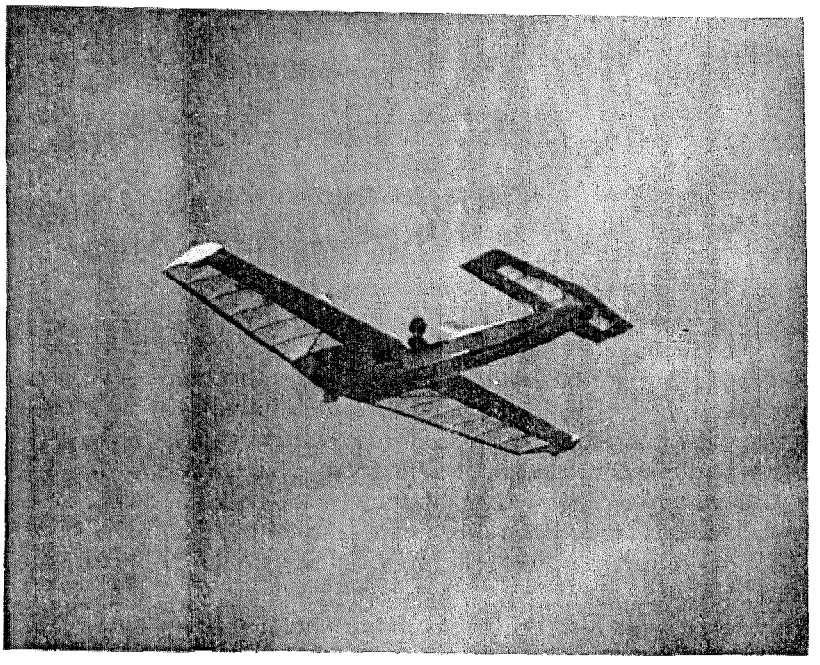
RATES
USA $12.00 Yr
CANADA $15.00 Yr U.S.
OVERSEAS $20.00 Yr Funds

Someone once said that all good things must come to an end. I don't believe it. Good things are forever...like diamonds. They do change however, for without change we stagnate. There have been a lot of good things happen to me over the years. One of them has been the privelege to write, edit, publish, and generally circulate the KR Newsletter.

Now, it is time for a change. You, as a subscriber, deserve the best, latest, and most accurate information on KRs that is available. I can no longer supply the hours that this kind of service demands. It is time for me to turn the KR Newsletter over to someone who can and will devote the time that you and the Newsletter deserve.

It's a tall order. I think that only another KR builder could hope to understand the problems you face in building your KR. There is a KR builder willing to shoulder this responsibility. He has struggled thru the various plans errors and now has an almost complete KR-2. He has not yet flown his own KR but has flown in N4DD. He knows the reasons for which he and you are building. John Forrester is his name.

John lives in the Denver, Colorado area and is a focal point for the local group of KR builders. I have spoken with him many times over the phone and recently had the pleasure of meeting him personally at Oshkosh. He impressed me as a very knowledgeable and capable person and I feel that John can give to the KR Newsletter the expertise needed to continue its prime function...to inform you, the KR builder.



That's enough from me about John. I'll let him introduce himself via his thoughts, impressions, and photos of Oshkosh "82" on the following pages.

Meanwhile, I just have to show you the reason I'm turning the reins over to John. The picture here is obviously not a KR. It is an Ultralight, an amphibious ultralight with retractable landing gear. The XTC as we call it (pronounced ecstasy) was designed and built by Dan Diehl and myself. We've introduced it to the public via the local airshows and Oshkosh and will have it at the Kerrville fly-in. Response has been overwhelmingly enthusiastic so we are tooling up to produce the XTC in kit form. Hence, the neccessity to have someone else do the KR Newsletter. I will continue to submit articles to John for the Newsletter on a probably somewhat irregular basis. The KR aircraft and the KR builders have become a part of me, of my life. I'll always regard the seven years with the Newsletter as some of the best of my life. Thanks to you and to Ken Rand and his dreams for making them possible. Keep 'em flying!

/.

BUY SELL TRADE

FOR SALE...New R/R easy eye tint canopy for KR-2. $80.00 plus shipping. New Dix crossover exhaust for VW (except Revmaster with bottom oil cooler) $150.00 Floyd Koppenhaver (717)692-2572 days.

FOR SALE...KR-2 project. On gear (DeFreeze tri gear) heel brakes. Approved for cover horiz. stab. glassed, have glass cloth, some foam, Diehl cowling, Pollywagon windshield, shoulder harness, belts and fittings. Controls installed. Many extras. Also Revmaster 2100D engine (new). Well over $4,000 invested. Make offer. Call (405) 223-5544 after 5 central time or write to Geoff Jones, Rt. 5 Box 29, Ardmore, OK 73401

WANTED...operable Nav./Com. -Narco Escort 110 - Genave Alpha 100/200 or similar. M. Quintana Gutierrez, P. Rabago, No.3 Torrelavega-Santander, Spain

FOR SALE...KR-1, N52KK. 1600 VW, Great American prop. 2 hrs. T.T. Sign off by FAA & new annual by A & P. Asking $3300. Vern Meyer (816) 741-4778 no collect.

QUESTIONS & ANSWERS

Q. I am considering a free-caster tailwheel rather than a steerable one. Have you heard from any other builders about this?

A. All the KRs I have seen have used the steerable tailwheel as in plans or a modified version of it. A full castor tailwheel would require a very good set of brakes, something the KRs do lack.

Q. What is the maximum weight of a KR-2?

A. You don't say whether you mean empty weight or gross weight so I'll give you what I know of each. There is a KR-2 with an empty weight of 760 lbs. It is flown regularly and often carries two people. This is 300 lbs. over the empty weight the aircraft was designed for. Personally, I think a KR-2 should have a max. empty weight of 600 lbs. Gross weight is listed by R/R as 900 lbs. Many KRs are flown at 1000 lbs gross and some have flown at 1200 lbs. I do not advocate flying over the 900 lb gross weight as set by R/R. The landing gear is usually the first to show the effects of overweight aircraft. Most of you have noticed the splayed gear in many KR-2s. The real hazard tho is in stall and flight characteristics. Stall speeds rise dramatically on the heavyweights and the rate of climb detriorates to something less than what you're builing your KR for.

Q. I've decided to install, in my opinion, a more stout landing gear system. Can the landing gear be bought separately from R/R?

A. All the metal pieces in the aluminum and steel kits including the landing gear are available separately. Check with R/R for prices.

Q. Do you skin the fuselage sides before you put them together?

A. I always have, but several builders have applied the plywood skins after the fuselage framework has been put together.

Q. What kind of wood sealer or coatings do you suggest for the fuselage?

A. I use a sanding sealer of the type available at most hardware and paint stores. Fiberglassing the entire fuselage has been recommended by some and this does leave a very durable surface. It also adds weight.

NEW FROM R/R

Rand/Robinson parts catalog...R/R now has a pictorial parts catalog that shows most, if not all, of the items they keep in inventory. You can get this catalog free by sending in a stamped (two stamps) self-addressed, business size envelope.

OSHKOSH "83"

There was a mistake in the last Newsletter. The price of rooms at the University are $15.50 per night instead of $15.00 as was printed. Several reservations have been received by Linda Bennett already. Will the senders please forward an additional 50¢ per room to cover the discrepancy. Also, many of the reservations that came in did not have arrival and departure dates listed. The University needs this info to schedule occupation of the rooms. If you did not include these dates with your reservation please contact Linda now. The address to send the 50¢ and/or the arrival/departure dates is: Linda Bennett, 2606 N. 125th Cir., Omaha, NE 68164. The deadline for getting reservations to Linda is Oct. 15th so if you haven't reserved your room yet, do it soon!

A Word from the new Editor

KR FEVER! I caught it in 1977 and began construction in 1978. My KR-2 is now getting those last minute details taken care of and should be airborne soon.

My name is John Forrester, and as you now know, I will be publishing the KR Newsletter from now on. I'm sure that this announcement will bring on plenty of questions, so I will try to answer some of them now.

First. Who is John Forrester? I have been a mechanic for 11 years and a pilot for over 10 years. I have logged over 500 hours of flight time in several aircraft, varying from Cessna 150s to DC-8s. I belong to E.A.A. Chapter 43 in Denver, Colorado and have been a member of the International Aerobatic Club for several years. (No, I don't intend to fly aerobatics in my KR.)

I own F.A.S.T. (Forrester Aviation Supply and Technology, Inc.) which supplies parts and design work for general aviation and experimental aircraft. I have also purchased the "Sting" exhaust header system tooling from Ernest and it will be marketed by F.A.S.T.

I am presently building a slightly modified KR-2 that is rapidly approaching completion. It has longer wings, fixed windshield, gull wing door, better tips, full electric, full upolstery, and IFR panel. It is powered by a F.A.S.T. Model D engine and a Great American propellor.

The newsletter will still maintain the high standards that Ernest has always set and will continue to be the best source of information of the KR aircraft. In upcoming issues, you may look forward to expanded issues with more articles, photos, and how-to tips. Anyone who has any suggestions as to what they would like to see in the newsletter, please let me know. I want to keep it exciting and informative and I need your input.

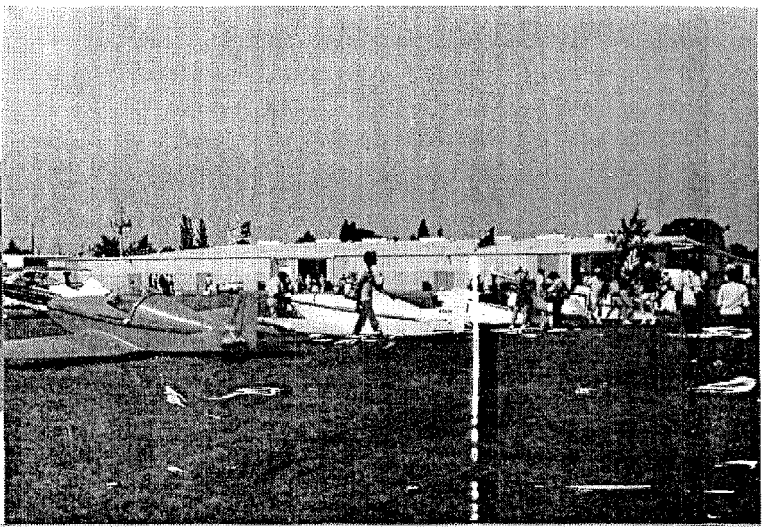
I have spoken to Jeannette Rand and she has promised her co-operation. Hopefully we will all be able to be kept well informed of what is happening at Rand/Robinson.

I plan to attend all of the major fly-ins and will be keeping the newsletter involved and accessable. You may also look for more KR Club activities, KR fly-ins and construction seminars.

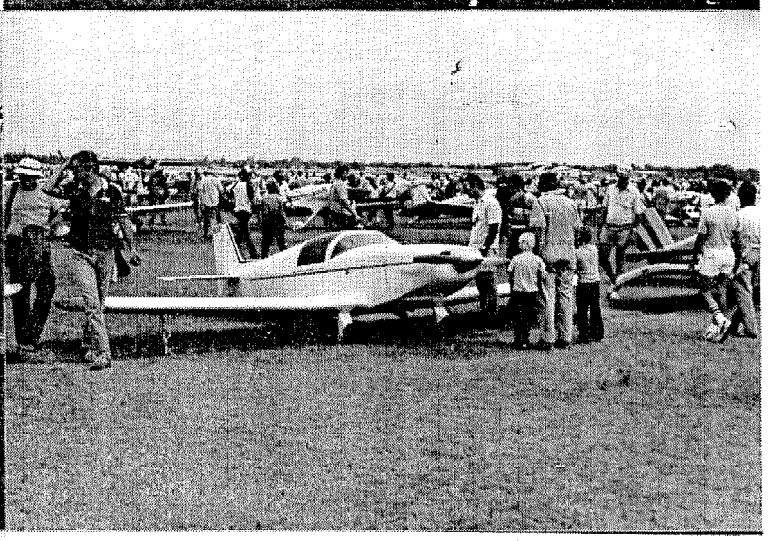
I look forward to meeting and working with other builders and hope to keep everyone well informed and excited.

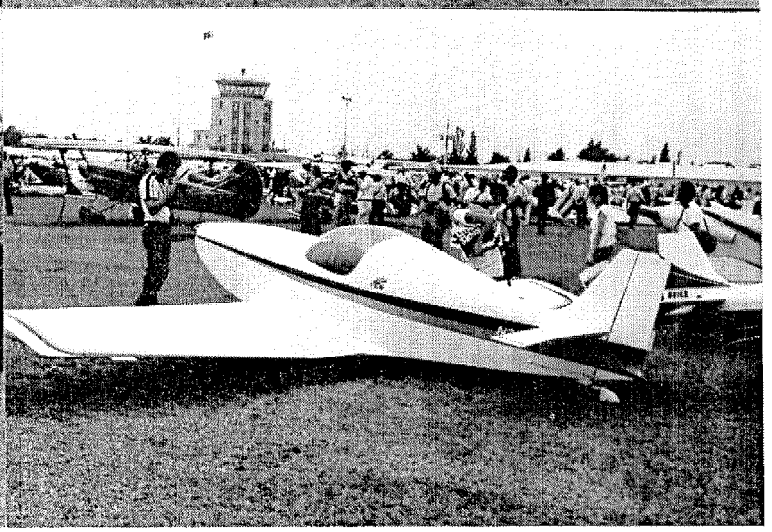
KR FEVER! IT'S FUN! CATCH IT!

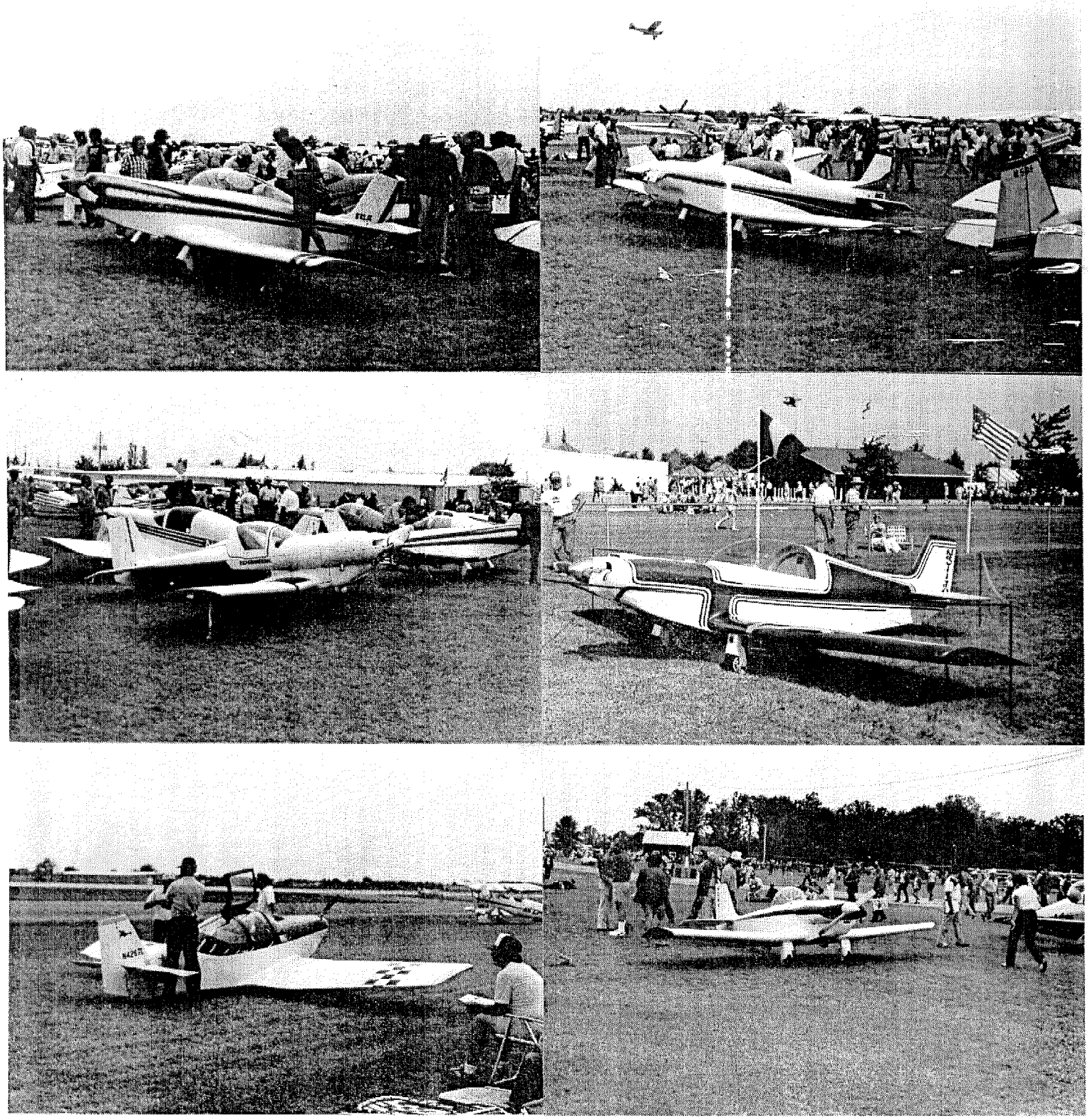
The following photos are of various KRs at Oshkosh "82". They were taken by John while he was there. I hope you will continue to support the KR Newsletter with photos of your KR projects, building tips, etc. as you did for me. John will be able to help you with your questions and says your calls are welcome. Phone (303)693-8239 after 6 pm and week-ends.




PHILLIPS 66







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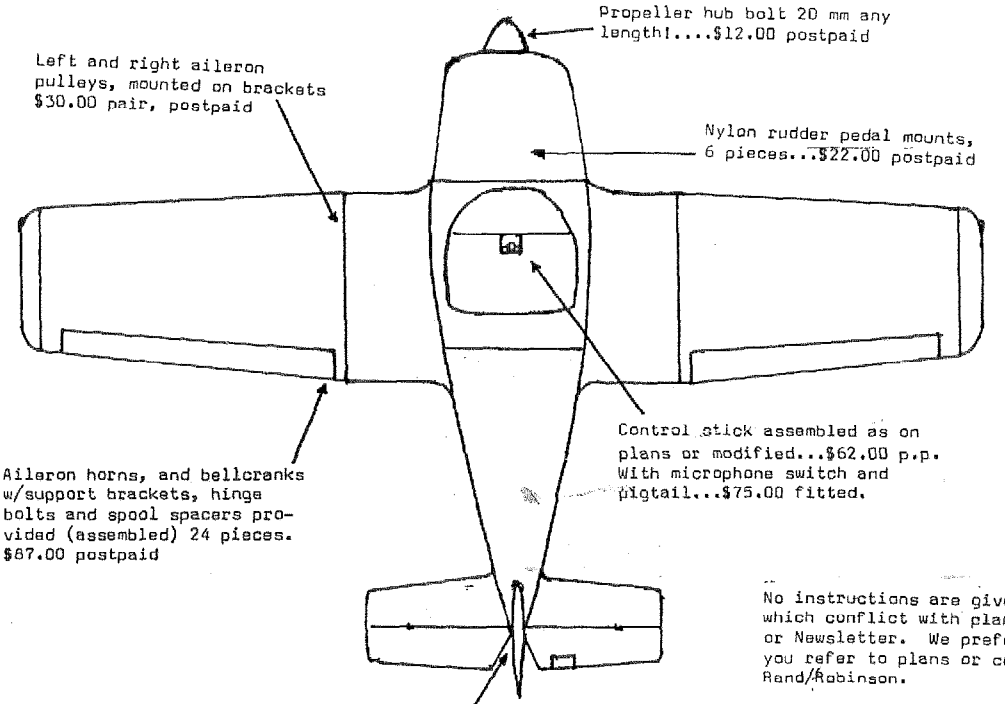

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