



NEWSLETTER

New Ownership for KR Newsletter *Return to Monthly Publication First of Several Changes Ahead*

What the Heck Happened?

Last I remember, I had decided to build a KR-2. Subscribed to some newsletter in hopes of hooking up with other enthusiasts while keeping interest up and did, after a number of construction hours, succeed in flying a pretty fair rendition of Ken Rand's dream.

Now, I find myself as editor and chief bottle washer of the KR Newsletter. How I got from there to here should take some explaining. But, like my ol' granddaddy would say when he had trouble explaining something, "I've done slept since then". Suffice to say, I have added another hat to my collection.

The name is Monte Miller. I'm a native-born Texan, fifty years old, with thirty-plus years professional experience in the graphic arts industry. I graduated university about the same year that rope was invented. I am married to an educator, Dr. Lynn Singletary, and we have two grown sons. As that old cowboy song goes, "Thank god and Greyhound, they're gone".

Along with the assumption of the KR Newsletter, I'm also an active member of the EAA, having served in every officer capacity within EAA Chapter 661. I presently serve as Past President and Newsletter Editor, a position I have handled for the past eight years.

Longtime KR Newsletter subscribers will most probably recognize my name and style as I've been a frequent contributor to the rag over the years. The construction history and first flights of 684LM have been well documented.

It is a privilege to assume the publication responsibilities for the KR Newsletter. Every prior editor has done their best to provide a viable, useful and a fine quality product for the subscriber. I pledge to you, the reader, that the KR Newsletter will be developed into the

type publication that you deserve and can use. As such, several changes will be made immediately.

The KR Newsletter will return to a monthly publication. Articles, photographs, construction ideas, new items of use to builders, gossip...all these things are necessary, in frequent dosages, if a builder is to keep motivation and excitement at a high level.

You notice a change in format? The rebuilt KR Newsletter, besides providing readers with a healthy shot of the KR lifestyle, will also be buffed and beautiful. Just as Billy Crystal's Fernando character on the old Saturday Night Live would say, "You look Maaa-ve-lous!"

As reported elsewhere in this issue, the new KR Newsletter will begin accepting paid commercial advertising. What better place to look for suppliers than in your own newsletter? Ad revenues will help maintain the subscription rate at its present level. Much better to put your money into your project.

Along with a truckload of back issues, a big envelope arrived filled with what I hoped was reader contributions. Uh oh. If I'm gonna be your editor, I have gotta get something to edit! Here's the offer, folks...Ya'll send in your stuff. Don't worry about the spelling or grammar, just shove something in an envelope & I promise I'll do what you're expecting.

Oh, yeah. Expect to see the KR Newsletter on site at The Gathering in Perry, Oklahoma this year. My feeling is that your KR Newsletter should be an active participant in these events.

So far, this issue has been pretty much a one-sided dialog and I expected as much what with me being the new kid on the block and all. Give me some feedback, would ya? Together, we can have some fun with this deal!

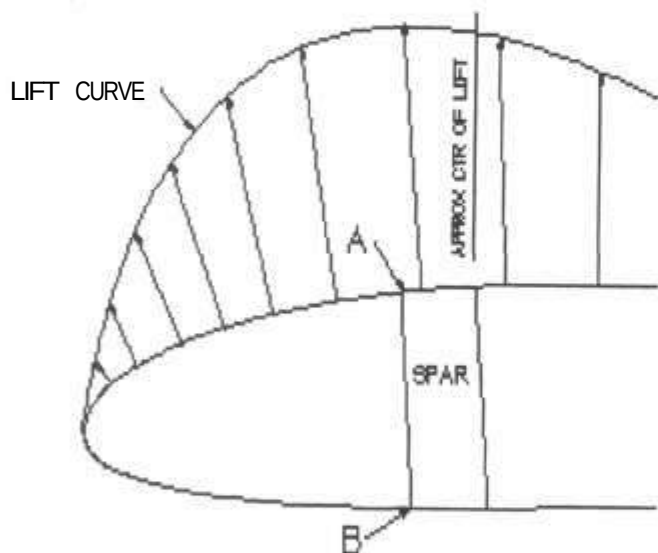
The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

Finishing Fiberglass Revisited

I would like to expand on comments made by Art Smart in the Jan-Feb issue of the Newsletter regarding finishing fiberglass. But first, let me say that if you ever do have the opportunity to meet Art, as he invites us all to do, act on it! He is a really fun guy but equally important, he is a serious student of the homebuilding art.

Art pointed out that sanding through the fiberglass skin fabric is generally a no-no. In some areas, this is simply bad taste. In others, it can lead to a fatal disease!

The drawing shows the leading edge of a wing. Note that approximately half the lift comes from the portion of the wing ahead of the spar. If you inadvertently sand through, or nearly through, the fiberglass at point B, paint it up nice to look good on the flight line and then subject it to a high flight load, there is the good possibility that the lift acting ahead of the spar will produce a moment about point A sufficient to overstress the weakened area at point B, causing the leading edge to fold up and over the wing while rotating about point A. For negative G loads, the reverse applies. At this point, your flying career is about to come to an end.



When sanding the foam near the spar, it is very easy to create a small depression. The foam sands easily and the spar does not. After glassing, this depression is apparent. Filler is added and the sanding problems Art described ensue.

Be extra careful to inspect the junction of foam, spar and fiberglass. If the glass has been sanded into, lay a fresh strip of fabric along the spar, allowing the fabric to extend an inch or more on each side of the spar, then refinish while exercising great care.

Forgive me, Art, for butting in on your story. I will make it up to you with a dozen raw oysters in Gulf Shores next winter.

CHARLES R. BRADLEE
215 Overland Drive Sidney OH 45365
KR-2 N649CB

One Thing Leads to Another

I discovered, before I secured the forward deck, that I need to complete the fuel tank. Before I install the tank, I must install the engine mount. But before I hang the mount, I must put on the firewall. But, before I install the firewall, I must finish the brakes. Etc. etc, etc...

Solution? Make the forward deck removable. My plan is to cut one-inch lengths of one-by aluminum angle. I'll have to bend the aluminum angle somewhat to accommodate the slope of the top longeron and the forward deck.

I filled the deck joggle with three layers of fiberglass to bring it up flush with the finished deck surface. Then, drill for the camloc fasteners, two on each side and five across the top of the firewall.

I'm going to fasten the aluminum angle to the longerons with flox. I'll drill and countersink the angle to allow the flox to come up through and lock into the angle.

With 18,000 KR plans sold and 1,500 flying, where are they? I'd love to be able to call or visit with those flying within two-hundred mile radius or so. When my 2S is completed, I hope to meet up with others for camaraderie, bragging, etc.

I was a member of the western KR group back in the late 80's, long before I began to build mine, but it soon folded due to lack of interest. It takes more than a few to hold anything together. Nuf said.

JEFFBRYSON
9017 Hemingway Place
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Editor's Note

Jeff's comments raise an interesting point in regards to holding an organization together for the long haul. "It takes more than a few..."

The KR Newsletter, if it is to be a success, will require the efforts of more than just a few. It's not all that difficult to put together a really dynamic newsletter if you have the support of, and contributions from, the subscriber base.

Success will breed success. All it will take is a little bit of effort from a whole bunch of you guys!

1997 MIDWEST KR GATHERING

6th Annual Midwest KR Gathering
May 24-25 Toledo Metcalf Airport

Information:

BUD SHANKS 419-693-1737
RONSMOLINSKI 419-882-8478

Builder Tips and A Thank You

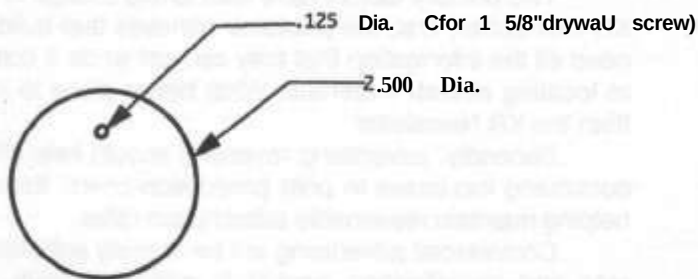
The following tip of the hat is directed to former editor of the KR Newsletter, Earl Teporten

I'm dropping you a short note, with my renewal, to let you know just how much the newsletter has helped me and to share with your readers a couple ideas I've tried so far.

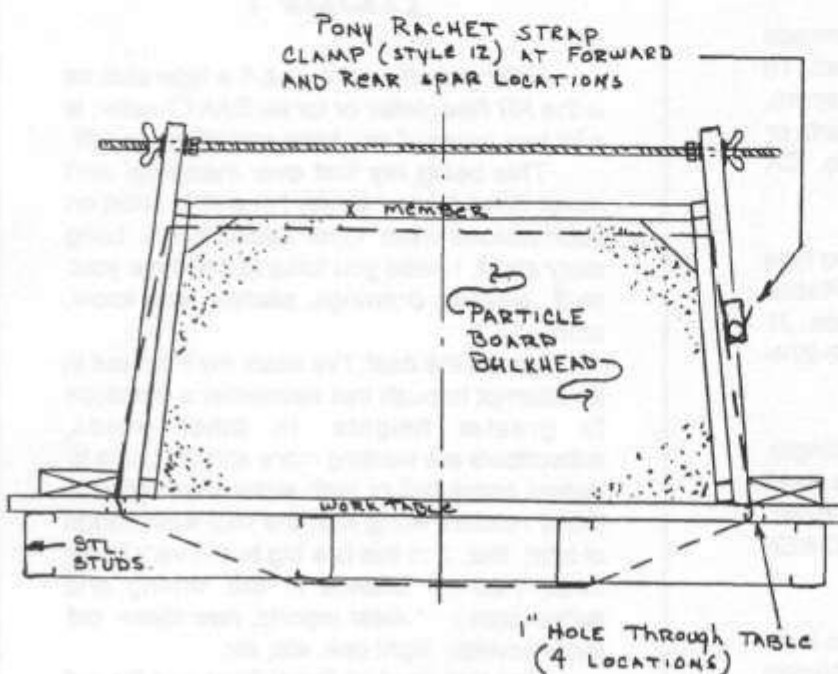
The first idea is that I used sixteen foot long 16 gauge steel studs from commercial building construction to build my work table. I had them laying around at our shop. They are straight as an arrow, strong and you don't have to worry about warping.

The 3/4 inch particle board top was biscuit jointed together and screwed down with self-drilling drywall screws. Good and strong.

The second idea was my method of clamping parts together on the table. See sketch.



cut out a bunch of 2.5 inch diameter circles of 3/4 plywood, then drilled a .125 inch hole off center for a screw. I then attached them to the table where and when needed. Simply turning them like a cam to tighten or loosen parts for dry fitting or gluing. I've been able to use them at almost every construction stage, so far.



Third idea is simply my elaboration of Dr. GambriU's excellent method for bowing the fuselage sides (issue 209, Oct 94). I set up the jigs pretty much as he shows it. Then, to limit the

bow up of the sides to a minimum, I drilled a one inch diameter hole near the bottom longeron where the front and rear spars will go through the fuselage sides (four locations).

I also put a hole through the table directly beneath the spar location on each side (four locations).

Using two Pony style #12 ratchet straps run through the holes, around the table and tightened down, I was able to keep the boat in position and clamped down through the entire upside down stage of building.

My bow up from the table was also limited to 1/2 in. I was extremely pleased with how true and symmetrical my boat turned out. I hope these ideas help someone out.

JOE HORTON
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Contacting KR Copy Cat

With the ownership change of the KR Newsletter, subscribers and contributors will need to make a note of the new postal and telephone changes.

The primary mailing address will be:

KR NEWSLETTER
624 West University Drive
Suite 199
Denton TX 76201

Telephone 817.566.5871

Sharp eyed readers and those folks up for renewal notices have probably got my home address, too. No problem, mon, it all gets to the same desk. Don't worry, be happy.

Ah yes, the telephone...danged if some of you guys ain't night owls! Usually it's one of you western Canadians that like to call when I'm busy stackin' some Z's. Don't you guys ever go to bed?

Anyway, I enjoy chatting it up on the phone with KR builders around the country. The world headquarters of the KR Newsletter is in the Central Time Zone so do the math. Best chance of reaching your editor is between 6-10 pm CST (or COST these days).

One last item; this has always been a shoe string operation so calls are on your nickel. I can't afford to return L/D calls.

KR CLASSIFIEDS

Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial style ads will be billed accordingly prior to publication.

The KR Newsletter reserves the right to edit free ads.

FOR SALE KR-2 boat. Wing spars, tail feathers complete. Spoilers, push-pull tubes installed. Gear legs, Type 4 block, misc parts optional. \$1000. Dean Smith, 17204 Ronald Rd, Prairieville, IA 70769. 504-673-6356.

WANTED KR-2 in good condition. Mathieu North, Seyon 2, 2001 Neuchatel, Switzerland. Fax: 011-41-32-724-10-47. Tel: 011-41-32-725-11-12.

WANTED One pair of unused gear castings for original KR retract system. Ken. 609-299-0498. Leave message.

FOR SALE KR-2 in boat stage. Complete running 1835 with Hapi electrical system, mag, prop and spinner on test stand. 2100cc heads and other parts. Diehl wing skins and tail feathers. Retract or Rand fixed gear with Rosenhan hydraulic brakes and tires. Aluminum kit, foam, Rand pedals, pulleys, bolts, newsletters and some instruments. Everything to build a KR less canopy and resin. Make offer. Might sell some parts individually. Todd Nugent. 2060 Greenwood, Olympia Fields, IL 60460. 708-503-0606 evenings, nugent@chapman.com

FOR SALE KR-2 project. Fuselage built, empennage installed and controls connected. Canopy installed. Tri gear retract and motor mount for VW. Outer spars, hardware, molded cowling. Sell or trade for RV parts or project. Reggie Smith. POB 2205, Mission Viejo, CA 92670. 714-855-6465.

NEED HELP Need source for Champion spark plug type C10S as used in Revmaster 2100, lower plugs. Please write or fax Henry Rudyanto. BePe - Natour Garuda, J1 Malioboro 60, Yogyakarta - Indonesia. Fax: +62-274-519774.

FOR SALE KR-2S kit No. 1 (wood, epoxy, wing fittings). Paid \$1500, will sacrifice for \$800 OBO. Includes 4x16 table, plans, all newsletters. You pick up. Dav>' Presley. 2355 Amberbrook Ln, Grayson, GA 30221. Ts ?0-822-4752. 73514, 1070@CompuServe.com

FOR SALE KR-2. 1846VW, tail dragger. Very pians built Zero time engine and airframe. Diehl wing skins. Always hangared. Airworthiness Certificate 7-26-94. Details, call John Feuerstein. Box 36, Rt 2. Lake Benton, MN 56149. 507-368-4593.

FOR SALE New Rand-Robinson 0-200 Continental engine mount for a KR-2 or KR-2S "50 or best offer. Peter ^attoni, 1102 West Long Lak Hd, Eveleth, MN 5573*. 218-744-5807 after 5pm Central time.

KR Newsletter Goes Commercial *Paid Advertising Now Accepted*

Effective immediately, The KR Newsletter will now begin accepting paid, commercial display ads for those suppliers serving the KR series designs, powerplants, services and accessories.

Two primary factors have lead to this change in the KR Newsletter; first, the publisher believes that builders need all the information that they can get when it comes to locating aircraft materials. What better place to look than the KR Newsletter.

Secondly, advertising revenues should help offset continuing increases in print production costs, thereby helping maintain reasonable subscription rates.

Commercial advertising will be actively solicited. A rate and specification packet is available from the publisher for those interested. Space will be limited.

A simple plea from your editor...

HELP!

Editing a newsletter, be it a type club as is the *KR Newsletter* or for an EAA Chapter, is a lot less hassle if you have something to edit.

This being my first ever inaugural ain't never done it befo' issue, I'm a little short on submissions from loyal subscribers. Long story short, I need you folks to send me your stuff...articles, drawings, photos...you know, stuff.

Here's the deal; I've stuck my neck out in an attempt to push this newsletter's envelope to greater heights. In other words, subscribers are wanting more and I'm going to deliver come hell or high water (Apologies to those readers living with the mid-west floods of late) But...:-, 1 this is a big but...I very badly need your assistance in the writing and submission of jilder reports, new ideas, old ideas revisec, flight ops, etc, etc...

One last word on the subject and I'm out of here...help!

*The following letter was received by the editor.
Rather than redirect it to the addressee, it seems
better to print it here, for obvious reasons.*

3-19-97

Dear Earl,

I am writing to say *thank you* for being a great newsletter editor over the past nine years! I can't believe it's been this long myself. I have followed all the editions since Rand-Robinson. My project is "of course" almost done.

I know the responsibility one assumes when they want to lead, communicate and coordinate to a group because you believe in the benefit to all. I myself have been an office holder, over the past nine years, in my local EAA Chapter and I know the dedication to responsibility you must take to do a good job and you, Earl, have done it.

Thanks so much for keeping the KR experience alive. I will surely miss your editorial regularity, your objectivity and a finely composed and organized newsletter.

Best wishes and please excuse the spelling of your name! It's only because I wanted to immediately fire off this note. I also think your wife Judy needs this thank you.

P.S. Earl, notice the nine years? I've been an EAA member the same length of time. Could it be you've kept my spark alive during this time? Your dedication has made an impression.

Yours truly,

John Duffy
237 Bridge Street
Bridgewater MA 02324

About Your Subscription

Ever wonder just when you wrote that last check to the KR Newsletter for a subscription? Is your last issue in your hands or is it months away? Will it be necessary to wait on that new widget so you can renew now?

Check your mailing label, top right corner. Those three digits will tell you the last issue of your current subscription. Each subscriber will continue to receive a renewal notice, but it might be helpful information for the reader to have some idea when the bill will arrive.

On Approach

Future issues of the KR Newsletter will include more than simply the nuts and bolts of constructing your KR series aircraft. Sure, builder reports will always take a priority, but each anxiously awaited issue will also include insight, wisdom and humor regarding our favorite plane. It will be your responsibility to decide which is which!

Many builders of experimental category aircraft are interested in the legal aspects of owning, flying and, yes, eventually selling their aircraft. The Newsletter has the good fortune to have within its ranks a KR-2 owner who happens to be a successful attorney. Readers will soon meet Mr. Bill Warren of Center, Texas. A long-time friend of the publisher and a self-proclaimed air pirate, Bill will provide insight into a realm many of us are unfamiliar with.

There's an aviation saying among homebuilders that when the weight of the paperwork equals the weight of the aircraft, you're ready to fly. The FAA, you know, those kinder and gentler folks from the gubment, really do want you to be successful in all aspects of your sport. They just have to have each little square filled in properly before you get that treasured airworthiness certificate.

The KR Newsletter will offer builders a bit of guidance and counsel along the paperwork pathway. If you're wondering just where to start in that quest for a special "N" number, what forms are needed for registration and what isn't, what it's like to go through a final inspection...stay tuned, we'll visit all these points.

A final thought. It is impossible to build an aircraft alone. A subscription and support of the KR Newsletter demonstrates this understanding. But please, if you are not already a member, consider joining the Experimental Aircraft Association and take advantage of all this great organization has to offer.

The KR NEWSLETTER

published monthly at
624 West University Drive, Suite 199
Denton, Texas 76201.

Editor and Publisher, Monte Miller
Evening and weekend tele: 817.566.5871

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Overseas
BACK ISSUES

Sets of existing back issues of the *KR Newsletter* are available, post paid, for 85.00 USD or 95.00 Foreign. Individual issues, when available, are 2.00 each.

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17th Annual **1997 KR GATHERING**

SEPT 19 thru 21,1997

Perry Municipal Airport

Perry, Oklahoma

Information contact:

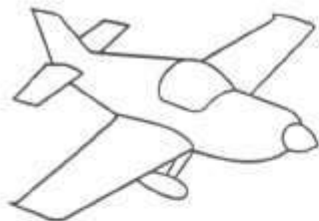
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KR NEWSLETTER

624 West University Drive

Suite 199

Denton, Texas 76201

Issue 238 - Apr 1997





Gypsy KR2S Builder

Just in case you don't remember, I'm the guy who called you about a year and a half ago from Trophy Club, Texas asking questions about building a KR. My modified KR2S is about halfway there.

Now, I find myself having to move to Kansas City, as we civil service folks do now and then. Please change my mailing address so I won't miss each anxiously awaited issue.

Fort Riley, where I now work, has an airfield that has apparently been closed and they would like to reopen it. The airfield manager is looking for clubs, Civil Air Patrol, EAA members, etc. to use the field. It's a really nice facility with big hangars and free utilities. (Editor's note: Free is my personal favorite four-letter "f" word!) The airfield is along side of I-70 at exit 301. Marshall Army Airfield is along the IFR and VFR approach path for Manhattan, Kansas.

Do you know any EAA members in the Manhattan and Junction area that might want to start a new EAA Chapter? I understand all it takes is ten people and we already have two - both KR builders. Might even consider having a fly-in there sometime.

I'm enclosing some correspondence I received from Gerry O'Hare of Sligo, Ireland concerning his method of constructing a curved instrument panel and center console. There are also some notes regarding his side-mounted control sticks. My thanks to Gerry for all the information and color photos. I really pays to write to builders and ask, "How did you do that?"

Richard sent along black & white xeroxs of Gerry's instrument panel color photographs. Unfortunately, they are beyond reproduction quality. His sketch and comments are included as they are clever ideas.

RICHARD A. McCALL
1518 Holly Lane
Junction City KS 66441

*The following is extracted from a letter
by Gerry O'Hara to Richard McCall*

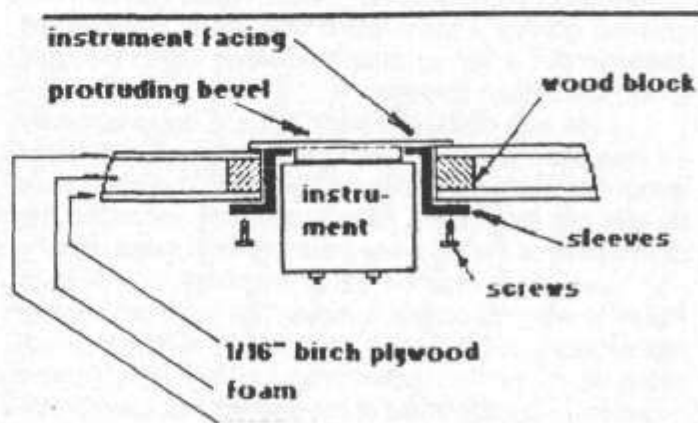
Dear Richard,

I hope what I sent will be of help. The panel I made is of one inch polyurethane foam covered on both sides with 1/16 birch plywood, bonded with epoxy resin while held in a curved position tailored to fit and later bonded to the fuselage frame.

The instruments were fitted by using specials sleeves so the screws would not appear on the outside of the panel.

The control mechanism I fabricated from aircraft grade tube and alloys. The system works very well, is very sensitive with original gearing to the elevator. When reduced to neutral position, it produces 25 degrees up and 15 degrees down elevator travel.

I am planning a trip to Oshkosh this year from 30 Jul to 5 Aug. The last time I went to Oshkosh was in 1988.



GERRY O'HARE
Culleenamore, Glen Road
Starnhill, Co. Sligo
Ireland

The "Art" of Glass Work

Greetings again from the crazy old glass plane builder from the North. I've made the acquaintance of several fellow builders either by phone or thru personal visits to my shop and have really enjoyed our conversations. However, I've noticed something about several of these fellows... they are either totally or almost totally in the dark about composites. They want to build but don't know how to begin. I know that describes me early on. Now, I don't pretend to be an expert..but I'd like to try to share as much as I can of what I've picked up about composites, in as simple a way as I can. Maybe this will give some of you fellows courage to begin.

First, a little terminology. A lot of guys get the words *resin* and *epoxy* confused. Resin is a term that originally referred to a gummy substance from a tree or plant. For our purposes, it will mean a man-made, adhesive like substance requiring the addition of a hardener to become useful. There are three common types of this resin: epoxy, polyester and vinyl ester. They each have different drying times and physical traits.

KRs have usually been epoxy birds. Lancairs and Glasairs use polyester and vinyl ester. I believe Dan Diel uses vinyl ester in his goods. Polyester is most commonly used in commercial operations for two reasons; It sets up fast and it's cheaper.

Cheaper sounds good but we each have to choose our resin based not only upon cost but physical strengths and working traits. As to the speed aspect, since most of us work alone, we can't handle a resin that sets too quickly. I have found that epoxy matches my ability to get a lay-up plastered down (before it gets gluey) better than polyester.

Let's also clarify the word *layup*. A layup is merely an area upon which we have glued, for want of a better term, fiberglass cloth, carbon fiber or ? This cloth must be wet out thoroughly. *Wet out* means saturating the cloth weave so that no white (resin starved) areas remain.

Our layup may be either moldless, like KRs or Rutan fuselages, or use a mold. The moldless system has us apply our cloth and resin to a form (foam for us) which becomes the finished product. Mold layups use a negative, or female, mold of the desired part coated with a waxy mold release to which our cloth and resin is applied. Obviously, a much more complex and time consuming process, although producing superior results.

A good way to save weight on our layup (if we are using more than one layer of cloth) is to apply the glass sequentially instead of on different days. I find that with epoxy, if I'm not doing too big an area, I can paint the foam with resin, wet out and flatten the first layer of cloth and, with very little extra resin, another layer of cloth may be applied. That's because the second layer, wicks any

excess resin from the first layer, thus requiring less goo to wet it out. I've never been able to do this with polyester resin because I'm not fast enough.

One other tip on wetting out the second layer of cloth on a layup; after all the wrinkles are out, you can apply a bit of heat from a hair dryer to "light" places and often get more resin to wick up from below. However, don't get too scotch with your resin and try to get dry places to wet out entirely with heat or you'll end up with a bad spot that's poorly adhered to the layer below or, worse, not at all.

The reason you don't use heat on the first layer is that it will accelerate the hardening of the resin in addition to briefly thinning it. On the first layer over raw foam, it's generally agreed that a thin mix of resin and micro balloons will minimize the absorption of excess resin by the foam, hence reducing weight. So, try to remember to do this but not too thick or it'll be tough to apply.

We now let the completed layup dry until we can sand without loading up our paper; usually at least 24 hours but often more in low temperatures or high humidity. Since we always make our cloth slightly larger than the end product, be sure to trim the excess the next day. If you do it then, it cuts nicely with a utility knife. If you wait a week, it's a hack saw blade job.

You'll likely notice a place or two in your cured layup (especially at first) where the cloth either rose or never properly adhered to the undersurface. They're easy to see. The correct parts of the layup are the same color as the underlying material whereas the bad places look kind of white. These must be fixed. If they're small, sand them out. If they're large, cut them out and patch. Feather the edges and apply a glass cloth patch of at least two layers. I prefer three layers. Overlap in all directions so you can taper it into the other glass. Shingling works well where the bottom patch is largest and they are progressively smaller. If your flaw is two layers deep..you have a bit of a hole. In this case, I build it up flush with filler..smooth that before doing my patch.

Returning for a moment to the layup process; for smoothing the cloth and getting it properly adhered to the undersurface, some builders use stainless steel rollers, some use small plastic "texture" rollers. The KR manual suggests pieces of plywood. I tried the ply and it got caught in the weave. My favorite, after trying all these, is a throw-away paint brush. It's a natural for coating the foam since that's like painting. For the application of the cloth over that, one uses a combination of pulling the edges of the cloth with your rubber-gloved hands, and stippling with the brush to work all air pockets toward the nearest edge.

Compound curves are a problem on old (and new) rag planes and they are a problem on glass ones. There's

continued on next page

always too much cloth on these curves. Gee, I hate to cut it and make a dart like in a ladies skirt. If you apply the cloth on the bias, it will help. Diagonally affixed material will adapt to some curvature. If it's too much, you'll still have to cut it and overlap the slices.

After your layup is cured, it's a matter of repetitive rounds of filling and sanding, ad nauseum. The better job of shaping the foam, the less filling you'll need. I attempted to take great care in shaping my foam and still had low spots. I have theorized that polyurethane foam planks have areas where the density of the foam varies. I believe this causes some places to remain flush, while softer places are removed by your shaping apparatus at a higher rate. That's my conclusion after building my plane. Therefore, if you have similar results, the closer you strive for perfection, the more filler you'll require.

About filler: i.e. micro balloons, talc, fumed silica, cotton flox, Bondo and other brands. Micro, talc and fumed silica are used to fill the cloth weave or for any nonstructural application. Cotton flox is used where strength is needed in the resin mix. Bondo may be used anywhere micro is used. By the way, if your Bondo gets too thick due to age, it can be thinned by adding polyester resin. That's what the factory made it from.

I think Bondo has received a lot of erroneous press, from somewhere, about its weight. If you'll take a shot glass of Bondo and a shot glass of your resin mixed with micro, etc. to the same consistency and weigh it on an electronic postal scale, you'll notice virtually no difference.

I've tried homemade micro, talc filler using both epoxy and polyester resins and have had poor luck. They don't sand well for me and they don't feather well. Bondo, dries quickly, sands and feathers well. I hear that Martin Holliman, the aero engineer and glass wizard from the west coast has reached the same conclusion.

However, for me the polyester fumes after a time make me nauseous. I've been that way since covering my Emeraude. Many cloth plane adhesives contain acetone and methyl ethyl ketones, just like polyester resin. If I wear my good paint respirator that filters organic solvents, I'm OK. I should use it every time I use Bondo or polyester resin, but sometimes I forget. I urge any of you to be forewarned and use a good respirator.

I don't think that I've suggested anything here that's unsafe and isn't generally agreed upon by composite guys. If anyone notices a point of disagreement, please speak up. As I always say, I'm no expert on anything... I'm just an old airplane nut trying to help my fellow builders.

Art Smart
HCO5 Box 14-A
Park Rapids MN 56470
Tel: 218-732-5295

The following letter was recently received by the editor. Although it is somewhat of a builder's report, the letter says more *between the lines*. See if you dont agree.

Hi, Monte

Ted McClurg here! I joined the KR-2 builders in March of 1992, obtaining a project in progress. I didn't know *diddley* about the bird but a smooth talking dude sold me the most screwed up job in existence. Needless to say, I removed the wing spars in less than ten minutes with a hammer. The glue he used turned black. A slight tap here and there and the spars were out with no damage to the wood.

The boat has a big "C" from firewall to rudder and just about everything had to be redone. I'm still fighting it. I'll probably put it on the burn pile one day but it has been interesting and educational.

In the course of all this, the most exacting information I ran across were your articles in the Newsletter. I cataloged the articles in sequence and by work title. When I need the data, I use them.

In an effort to build a flyable KR-2, I have since bought a couple more stalled projects. Work goes slow as I am a full-time care giver to my wife. We're into a 36 hour day stage right now. The KR project is essential to me to stay sane and busy.

I am 77 years young, a 27 year Naval Air retiree. I received my private license at what is now John Rodger Internatl in Hawaii. I was stationed on Ford Island, Pearl Harbor, T.H. and December 7th changed things. I was designated a Naval Air Pilot 3rd Class and trained on the job, Navy-wise.

I flew WW II, some in Korea and again in 1954-57 towing airborne radar targets for the Navy's Fleet Air Gunnery School at El Centra, California. I got my butt busted off Vietnam during my third tour aboard Ticonderoga CV-14 and had to retire medically in 1966. So, twenty-five years of wind wagons sets my aviation background.

I look forward to your tour and best of luck. I know that I probably won't ever pilot one of these birds but it will be good therapy along the way.

TED MCCLURG
PO Box 202
Branscomb CA 95417



KR CLASSIFIEDS

Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial style ads will be billed accordingly prior to publication. The KR Newsletter reserves the right to edit free ads.

FOR SALE KR-2 boat. Wing spars, tail feathers complete. Spoilers, push-pull tubes installed. Gear legs, Type 4 block, misc parts optional. \$1000. Dean Smith, 17204 Ronald Rd, Prairieville, IA 70769. 504-673-6356.

WANTED KR-2 in good condition. Mathieu North, Seyon 2, 2001 Neuchatel, Switzerland. Fax: 011-41-32-724-10-47. Tel: 011-41-32-725-11-12.

WANTED One pair of unused gear castings for original KR retract system. Ken. 609-299-0498. Leave message.

FOR SALE KR-2 in boat stage. Complete running 1835 with Hapi electrical system, mag, prop and spinner on test stand. 2100cc heads and other parts. Diehl wing skins and tail feathers. Retract or Rand fixed gear with Rosenhan hydraulic brakes and tires. Aluminum kit, foam, Rand pedals, pulleys, bolts, newsletters and some instruments. Everything to build a KR less canopy and resin. Make offer. Might sell some parts individually. Todd Nugent. 2060 Greenwood, Olympia Fields, IL 60460. 708-503-0606 evenings, nugent@chapman.com

FOR SALE KR-2 project. Fuselage built, empennage installed and controls connected. Canopy installed. Tri gear retract and motor mount for VW. Outer spars, hardware, molded cowlings. Sell or trade for RV parts or project. Reggie Smith. POB 2205, Mission Viejo, CA 72670. 714-855-6465.

NEED HELP Need source for Champion spark plug type C10S as used in Revmaster 2100, lower plugs. Please write or fax Henry Rudyanto. BePe - Natour Garuda, J1 Malioboro 60, Yogyakarta - Indonesia. Fax: +62-274-519774.

FOR SALE KR-2.1846VW, tail dragger. Very plans built. Zero time engine and airframe. Diehl wing skins. Always hangared. Airworthiness Certificate 7-26-94. Details, call John Feuerstein. Box 36, Rt 2. Lake Benton, MN 56149. 507-368-4593.

FOR SALE New Rand-Robinson 0-200 Continental engine mount for a KR-2 or KR-2S. \$350 or best offer. Peter Zattoni, 1102 West Long Lake Rd, Eveleth, MN 55734. 218-744-5807 after 5pm Central time.

FOR SALE Q-2 airframe kit and related parts, plans, jigs, more. Contact Patrick Myers, W17575 Irvine Ln, Galesburg WI 54630, 608-582-4541. \$3000 obo. Might trade. WANT KR-2S project/airframe.

FOR SALE New 3500 RPM recording tach (AC). Arc 328-T 720 Channel Nav-Com with glide scope amp, dual needle OBS and tray with all wires marked. Cost me \$800 give me an offer. New Bendix aircraft ignition, L-R mag, etc. What do you think? Art Smart, 218-732-5295.

FOR SALE Complete set of KR2S plans. \$175.00. Bob Sauer, 1103 Kevin St., Smithfield TX 778957. Tel. 512-237-5553.

The Quest for Pieces Parts

Who makes it? Where can I get it? How wHI I do it?

The preceding questions make up the majority of letters and phone calls directed to the KR Newsletter. If the editor doesn't have the exact answer available, another builder usually will, having been down that road earlier. The following from:

FRED LORENZ
227 Lincoln Avenue
Totowa NJ 07512

- 1) In the past, Rand has supplied an upholstery kit for the KR. However, these are no longer available. Where can upholstery be purchased?
- 2) Where might aluminum gas tanks for the KR be purchased? I'll bet they won't leak.

Several years ago, your editor was assisting a neighbor with the restoration of his Cessna 120. It all began with a leaky wing root fuel gauge. One thing lead to another...but that's another story.

When it was time to redo the interior, neighbor called his homebuilder buddy for help. Several original pieces were missing or damaged. The solution was for me to borrow the keys to another friend's 140 and, with his knowledge, simply strip out the upholstery panels, trace patterns, and build new ones. A local upholstery shop did the fabric honors and, viola, the bird won first in the Classic Division at the EAA S'west Regional Fly-In!

When 684 Lima Mike needed clothes, I made cardboard patterns and took them to an automotive upholstery shop for completion. Lightweight aluminum, cardboard, thin plywood...all these materials can be used as back up for the actual fabric. Installation can be with trim screws, glue, velcro; just explore what autos use. The beauty of making custom patterns for your

continued on next page

aircraft is obvious. They'll fit *your* aircraft! This is not always true with prefab interiors.

Aluminum fuel tanks can be custom built by any decent welding-machine shop. Don't overlook the offers in the larger aircraft supplier catalogs (if you have excess bucks to spend).

Most economical way would be to gather all your materials (filler neck, vent fittings, outlets, etc.) along with the sheet metal before you drop them and a good sketch off at the shop. It's really not that complex a project.

Is It Just Me? Or Did Somebody Miss Issue 238?

The first time is always the hardest, be it the initial flight in your new homebuilt or that first kiss...

In the rush to crank out my first issue as publisher of the KR Newsletter, I either slighted just a couple subscribers or wasted some postage. I don't know which.

After collating, after folding, after fighting those pesky little round sticky deals, after applying hundreds of address labels, it came time to lay on stamps. It was late. I was tired. I was almost finished.

So, a few days later I get back a couple Newsletters with no address label on 'em. Hum. A quick test reveals that, yes, the labels are extremely aggressive and any attempt to remove even a corner results in torn paper. All I can figure is I fell asleep while putting postage on a few extra Newsletters and then mailed those puppies!

It was tough not to send a Newsletter to those readers whose subs had expired. I checked that list. But if you're current on your subscription yet failed to receive issue #238, drop me a note and I'll send one out.

I really think I was just tired...

Registering Your Homebuilt Aircraft *N Numbers - Where & How to Get 'em*

So, you're well along in the construction phase of your KR and you've begun thinking about a unique or catchy identification number; something that will really personalize your creation. You probably have several ideas in mind but the steps to obtain that treasured "N" number are a little hazy.

Before a builder can register his aircraft for the first time, Federal Aviation Regulations (commonly known as FARs) say you must first obtain an identification number

to be affixed to the side of the aircraft and an Aircraft Registration Application, AC Form 8050-1. Both items are available from our buddies at the FAA.

Let's back up a step and mention that you can let the FAA assign you a random N number for free. All that's necessary is to write and request that it be done.

However, since you've worked your tail off for so many hundreds of hours and sacrificed minor things like food, clothing and social activities, it's not likely you would want something so simple as a random number! Ugh! Let's go through the drill and get you something special.

For a fee of ten dollars and a brief letter, the FAA will let you pick your own U.S. identification number. It must not exceed five (5) symbols in addition to the N prefix. All numbers (N12345), one to four numbers and a suffix letter (N1234H), or one to three numbers and two suffix letters (N123HS). It's your call but give the FAA five choices in order of preference in case your first choice is unavailable.

You may obtain your "N" number at any time, however, if you do not register your aircraft within one year, it will be necessary to send another ten bucks to Oklahoma City for a renewal of your number. If you spend five years building after you get your "N" number, it could cost you \$50.00.

Along with your letter of request, and the ten dollar check made out to the FAA, you must include an Affidavit of Ownership. The Affidavit must be notarized as it will establish your ownership of the aircraft even though you built it. These days, most banks offer a notary service free of charge, so check this out.

The Affidavit of Ownership must include the following information:

1. Model of aircraft: Rand-Robinson KR-(1,2,2S)
2. Serial number: Use your plans number
3. Class aircraft: Airplane
4. Type & no. engines: One (1) Reciprocating
5. Engine I.D.: Volkswagen 1835 (or whatever)
6. Built for land or water ops: Land
7. Number of seats. Count'em
8. State that the aircraft was built from parts and you are the owner. If built from a materials kit, a bill of sale from the manufacturer is required. (KR's are parts *built* aircraft even if you use the prefabs).

Shove the letter, affidavit and your check into an envelope and mail it to the FAA. In about three to four weeks, you'll receive your "N" number notification, form AC 8050-1 and any other applicable materials.

You may register your aircraft with the FAA even if it is not yet complete. Simply follow the directions for filling out AC 8050-1, write another check to the FAA for five

continued on next page

dollars and mail it off. It's a done deal.

There are many publications dealing with size and location of your aircraft's "N" numbers. You probably have this information in your personal library so we won't get into that topic. Suffice it to say, it better be right when the MIDO boys come for the airworthiness inspection!

By the way, our local DFW FSDO and MIDO offices have a complete package of forms applicable to experimental category aircraft free for the asking. A quick phone call to your District Office might turn up the same offer. Look up US Gub'mt offices in the phone book.

About Those Classifieds

Subscriber classified ads are entered in the order they are received...oldest are first and so on. Your item may not sell the first month, so we'll leave the ad to run until such time as new ads force it out.

If you do get lucky and sell that extra KR widget, let your editor know so that the ad can be pulled. Space in the Newsletter is limited so help other subscriber advertisers squeeze in. Gracias.

KR-1 & Sonerai Museum

Aviation enthusiast Tom Hall, of Springfield, Missouri, has plans to develop a local museum featuring both the KR and Sonerai designs.

Currently, Tom is searching for a complete KR-1 or parts. Any assistance or leads from KR Newsletter readers would be appreciated. Contact:

TOM HALL
3503 N. Marwin Avenue
Springfield MO 65803
Tel. 417-833-6513

Builder Questions

Looking for Info on Throttles & Engines

Bob Sauer (1103 Kevin St., Smithfield TX 78957. Tel. 512-237-5553) is asking for information regarding the use of a center stick with dual side throttles in his 2S. Also, if anyone has successfully used a Wankel rotary or Corvair engine conversion that would share details.

Bob also has a spare set of KR2S plans for sale (see classifieds) that came with a materials kit he recently purchased.

Boise Builder

The drawings show how I installed my stick and cables to the elevator. The installation will result in my elevator moving approximately half as much as I move the stick. The cables go straight back and do not cross each other since this change of direction is handled by the connection from control stick to control horn.

It may be about a year yet before the KR-2 is completed so I won't know just how well my idea works. It should result in a lot less pitch sensitivity.

The photograph is of my left wing tank. Made from a foam mold and wrapped with plastic tape (epoxy resist). I fiberglassed the bottom and sides with one layer then ran the plastic tape around just the top and finally glassed the top portion.

After curing, I removed the parts from the foam mold, floxed them together, drilled matching holes in both parts (slightly larger in top for screw clearance) and let the assembly cure.

Finally, I covered the whole tank with one more layer of fiberglass cloth using a resin /flox mixture.

I also floxed two 3/4" wood strips onto the top of the right side tank as a wing walk reinforcement.

The photograph is of my wife demonstrating the strength of the fuel tank. I weigh 185 and it would hold both of us but she's better looking. The tank weighs 2.5 lbs and holds six gallons.



JIM MARSHALL
10602 Winterhawk
Boise ID 83709
Tel. 208-362-9225

SAMPLE LETTERS

- 1) Request for U.S. Identification Number
- 2) Affidavit of Ownership

Date

Federal Aviation Administration
Mike Monroney Aeronautical Center
PO Box 25082
Oklahoma City OK 73125

RE: Request for Aircraft Registration Number
in accordance with FAR 47.15

Gentlemen:

This is a request for a United States Identification number assignment for my homebuilt aircraft.

Aircraft Description:

Make: Rand-Robinson
Type: Fixed Wing Airplane
Model: KR-2
Serial Number: (Use your plans number)

This aircraft has not been previously registered anywhere.

Special Registration Number Request. A check is attached which includes the Ten Dollar (\$10.00) fee requirement.

CHOICES for registration numbers:

1. N83LM
2. N84LM
3. N684LM
4. N92LM
5. N46LM

Name
Mailing Address
City State Zip

Affidavit Of Ownership For Amateur-Built Aircraft

U.S. Identification Number: Application attached

Builder's Name: *That's you!*

Model: Rand-Robinson KR-2 (or ?) Serial Number: (Plans #)

Class: Airplane

Type of Engine Installed: Reciprocating

Number of Engines Installed: One (1)

Mfg. Mod. and Serial No. of Each Engine: Volks 1835 (or ?)

Built for Operation: Land

Number of Seats: Two (2)

The above described aircraft was built from parts by the undersigned and I am the owner.

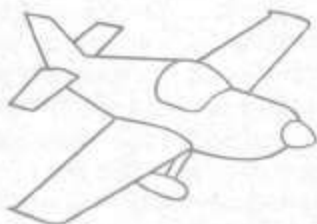
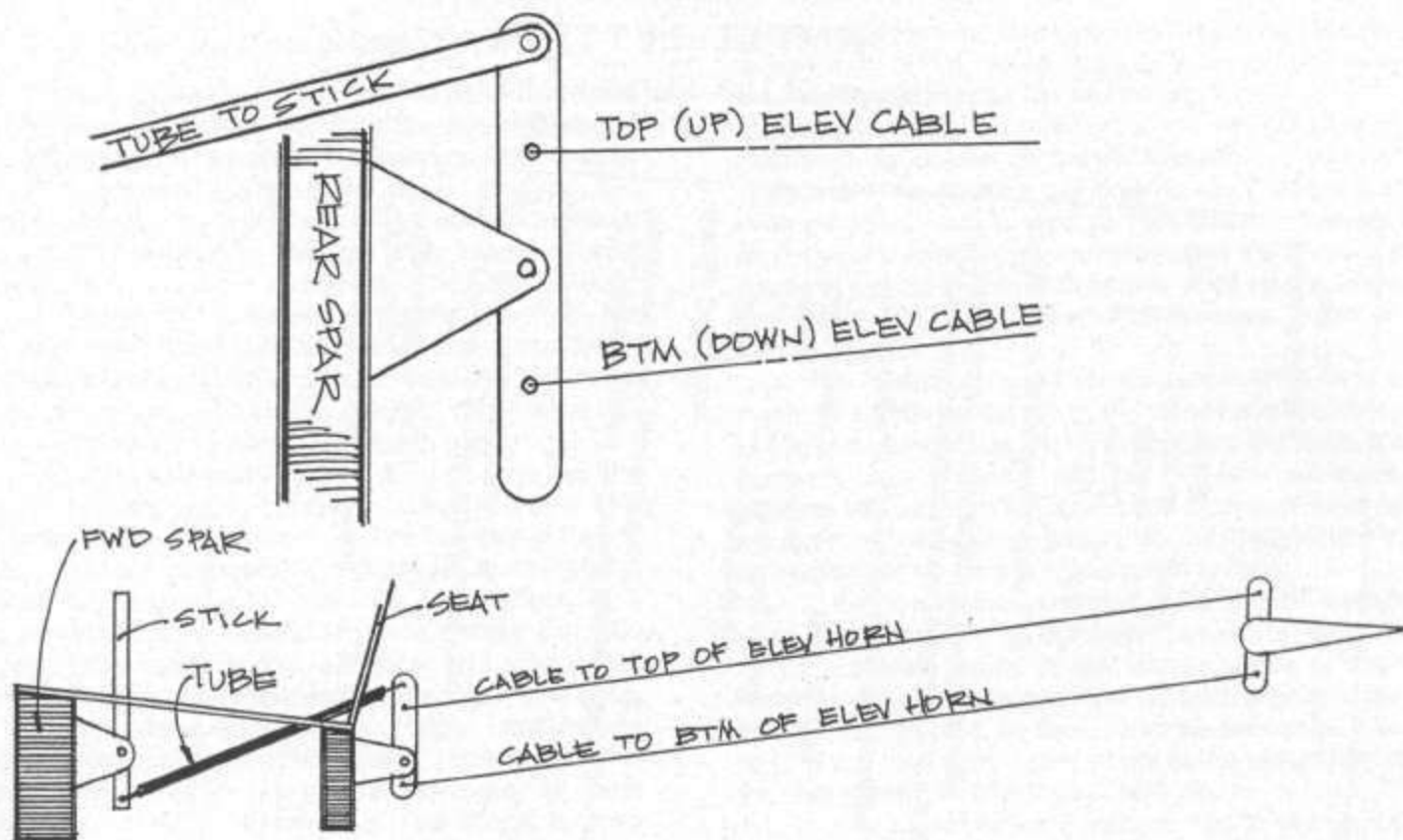
Signature of Owner / Builder:

State of: _____
County of: _____
Subscribed and sworn to before me this _____ day of _____, 19____.
My commission expires: _____

Signature of Notary Public: _____

Sketch of Jim Marshall's Modified Elevator Control

10602 Winterhawk, Boise ID 83709, Tel. 208-362-9225



KR NEWSLETTER

624 West University Drive
Suite 199
Denton, Texas 76201

Issue 239 May 1997





NEWSLETTER

SunNTun 1997, KR's and Weather

LATE NEWS LATE NEWS JOHN CULP and KR-2 MAKE FIRST FLIGHT

The KR Newsletter has just learned that JOHN Culp has flown his KR-2! The Greenwood, South Carolina resident launched from his local municipal airport and has accumulated nearly ten hours time at the date of this interview.

John's KR, N9079E, is a tail dragger utilizing the Diehl main gear legs and with a 52x50 Performance Prop attached to the 2180cc Volks conversion. 135-140kts top speed.

Airframe details include the use of standard, plans-design wet layup wings, a 16.5 gallon header tank and an elevator push-pull tube running under the main spar thereby eliminating the cockpit cable runs.

At 630 pounds empty, John is 150 pounds over the design weight but believes his slick finish and interior is worth it.

The most interesting aspect of the Gulp KR is the engine. Dual plug heads employ a custom built ignition utilizing some Nissan parts.

Electric fuel pumps feed a top mounted Tillotson carburetor with a unique carb heat idea.

Photos follow, sez John. Let's hope he hurries. *Congrats!*



Through the Weattier Fronts and On To Sun NTun 1997

Randy Smith pilots his KR-2 along the Beach at Destin, Fla.

Weather fronts all across the United States made it difficult, if not impossible, for many aircraft to reach Lakeland FL and the 1997 edition of the Sun N'Fun Fly-In...some did, some flew commercial and some stayed home.

Photographs in this issue give some idea as to sky conditions. Those KR fans that did make it were treated to the usual Florida hospitality and enjoyed their visit.

The seminar presentation on stability of the KR aircraft was SRO. A brief of that meeting will soon be published in your newsletter.

Thanks for the photos to Virgil Salisbury and Randy Smith.

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

So Far, So flood

Ya know what? There were so many subscriber submissions to the KR Newsletter last month that some had to be held over for the June issue! Ain't that just way cool, dudes?

Besides not having enough room to print everything, your "pleased as a new poppa" editor had to delete a really important item...my heartfelt thanks. You guys can and will respond for the good of our publication. I'm impressed.

So much for Mister Nice Guy. Here ya'll are reading a tasty June issue and I'm sweatin' bullets over a July deadline. Gimme some more help or I'll have to start using bigger type. Let's keep the information flowing both directions. Photos, tips, trips and first flights. We'll all benefit.

By the way...submissions or ideas for topics, either technical or specific, construction or concept are always accepted.

NONSENSE !

Man Will Never Fly

The Wright Brothers at Kitty Hawk helped land a man on the moon; Ken Rand built sport aircraft out of foam before VariEze became a household word; and a low-ball team of visionaries flew around the world, non-stop and unrefueled, in a homebuilt dream. All knew it couldn't be done. Shouldn't be done. Nonsense, it most surely was.

Got a note the other day from a subscriber with a suggestion that, as the new publisher of the KR Newsletter, I should, "...include a technical review board that will reduce the percentage of complete nonsense that has characterized the newsletter in the past".

Whoa! Get back, Loretta! I'm at a loss as to what would qualify as "complete nonsense". Could it be those among us that actually fly airplanes we've built in our garage? Maybe it's some small, techno concept that is so off-the-wall most folks write in off as unrealistic. Might even be an untried idea so stoneax simple that it is dismissed as, dare I say it, nonsense.

Nope, ain't gonna be no editorial review board with a big, red pencil deleting ideas not meeting some unknown standard of what's right and not so right. What will be done is to continue providing a forum for the presentation of ideas, concepts, discussion and reply. If you disagree with an article, your response is highly encouraged. Heck, somebody else may even respond to you!

My old granddaddy used to say, "If everybody liked what I like, they'd all wanta be married to your grandma."

— Monte Miller

Seeking Tri-Gear Info

Howard Welte writes that... Although I have had my plans for the 2S for several years now, I didn't have anywhere to build, until now. I'm hoping to start soon.

Other than the cut-away drawing of the plane on the Rand wall poster, I can't seem to find information regarding the exact placement of the nose and main gear for a tricycle gear set up.

To keep costs down (more time than money) I plan on building from scratch. I have KR Newsletters from 1973 to the present but must have missed the info on tri-gear mounting.

Besides the information I'm hoping to obtain relating to my project, I'm also working on an index for the KR Newsletter. More detailed than previously published, I'll send sections as they are completed. I hope it will be of benefit to other builders.

HOWARD WELTE
POB 1632
Tracy CA 95378
Tel. 209-832-0395

California Chit-Chat

After putting the May issue to bed at the printer's, I cashed in a few aluminum cans and put in a call to Rand-Robinson, Huntington Beach and the epicenter of our KR culture club.

Security was on the job, but I was finally able to reach Jeanette after being informed that she had just put away her short board after ripping up some smooth rollers during an afternoon surf fix. Gad, it must be tough at R-R!

Enjoyed a casual conversation that ran from the Newsletter's changed look and direction to new products from Rand-Robinson, to the fly-in at Lakeland and Oshkosh, to Texas and back.

Readers will be pleased to know that upcoming issues will feature input from Rand both technical and user friendly. After twenty-five years, the design is still one of the most popular ever produced.

continued on following page

In her comments, Jeanette does wish to remind readers that the KR Newsletter is, always has been, always should be and always will be an independent publication; a voice of the builder-pilot. It is in no way affiliated with Rand-Robinson Engineering, Inc. If it were, the opinions expressed might be influenced by the boss. A solid, un-biased, builder-supported publication is in everyone's best interests.

Stay tuned as there are some exciting things happening down by the sea shore.

Rudder Trim for the KR

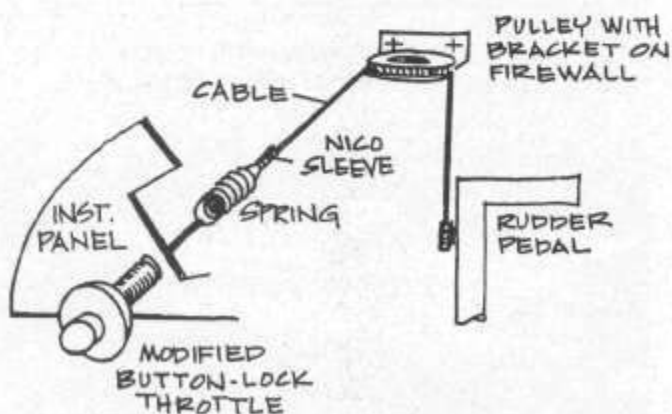
The best modification that I made on my KR was the rudder trim. I added the system after my first flights revealed that I needed left rudder input during cruise flight.

A hole was drilled in the left rudder pedal. A 1/16 inch control cable was passed through and secured with a nicopress sleeve. Two additional holes were drilled in the firewall to mount a pulley and bracket.

The instrument panel was reinforced where a button-lock throttle control was installed. The outer portion of the throttle cable was carefully cut off, leaving the single solid wire exposed. This wire was cut off, bent 180 degrees, and used as an anchor point for a spring.

The completed arrangement allows complete use of the rudders as desired. Once cruising flight is established, the trim can be applied to permit flight with feet off the rudders. This really increases pilot comfort on those three to four hour flights.

By the way, I did not get to Sun 'N Fun because I got a great job offer that I just couldn't turn down. One where every weekend is four days off. I spend my work day in a control tower on a gunnery range clearing A-10s, F-16s and F-15s to bomb and strafe. It's hard to consider that work!



JACK SCHNURR
1164VasiWay
North Pole AK 99705
Tel. 907-488-6659

More Glass Working Tips

I enjoyed reading Art Smart's glass working tips that appeared in issue 239. I would like to add a couple that have worked for me.

Lay a piece of vacuum bagging plastic (available from glass cloth suppliers) over the area you are glassing and mark the perimeter with a felt tipped marker. Next, place the bagging plastic on a workbench with the marked side down. Cut your glass cloth to cover the marked off area on the bagging plastic. You can do several layers of cloth at the same time as you will see later.

Now, with the bagging plastic and the cloth still on the workbench, apply the epoxy hardener mix to the cloth. Spread it with a Bondo spreader/squeegee. Work in the resin until the cloth is saturated and free of air bubbles. This works best if the glass cloth is completely dry before you start. Before I start, I put my cloth in the microwave for a couple of minutes to get rid of any moisture.

Work any excess epoxy off the edge of the cloth and onto the bagging plastic. The resulting layup will be clear and you can see the felt marker lines on the bottom of the plastic.

Use scissors to cut thru the whole layup, glass cloth and plastic, following your marks. You now have a layup precut to the correct size and stuck to a piece of plastic sheet. Apply the required epoxy resin and micro balloon mix to the foam component you are working on. Carefully lay the cloth layup onto the foam with the bagging plastic on the outside. Peel the plastic away from the glass cloth.

You should have very little cloth that needs to be trimmed since you cut the layup to the correct shape and size while the plastic held it in place during application to the foam.

To assure a smooth finished surface, apply a piece of peel-ply (also available from the glass cloth supplier) over the whole layup and use a squeegee to smooth it onto the glass layup. The more you work it, the more epoxy will come through. The more the better since this is excess epoxy and will add only weight if left to cure in place.

Allow the layup to completely set up with the peel-ply in place. After everything is set up and hard, pull the [peel-ply off and see your nice, smooth, clean glass surface. If you have edges that need to be trimmed, use a hair dryer to heat the part to be trimmed. The heat will cause the glass to soften so that a utility knife can be used to make a nice cut. Should you have an adjacent area to be glassed, that layup can be applied directly overlapping the edge of the layup just completed as the peel-ply leaves a prepared surface that needs no sanding or other prep.

continued on page 5

Plans Errors Rediscovered

Jim Hayward, 7860 Long View Road, Rapid City, SD 57701, is building a KR-2S and, like so many new builders, has tripped across errors in both the plans sheets and manual. Not surprisingly, he has lost a little time and has unanswered questions.

The questions are from Jim's letter and will be followed by comments and, perhaps, a few answers from the Newsletter Editor:

1. Station 1 brace on Drawing B doesn't show the top longeron doubler. It's OK on Drawing A. This caused me to have to cut out the horizontal cross member to allow the longeron doubler to be installed.

2. The firewall isn't shown correctly in the manual. In the drawing, the upper portion (above the longerons) for the forward deck is not shown. The firewall template is correct. I didn't use the template since I've widened the fuselage /firewall, so built it according to the manual and actual dimensions I was using. This caused me to have to add the top deck former and reinforce along the seam.

3. The horizontal stabilizer (between stations N and O) aft spar web on Drawing A shows the web as being a one-piece doubler / web. Is this correct or does the plywood doubler go between the web and spar?

4. Sheet W1 Main Spar Detail doesn't say anything about 2.5mm plywood being used for the center section forward spar, only for the outboard wing spars. The manual said 3/32 plywood on one side only and no update was given.

First, Ya Gotta Pay Your Dues

Jim, you're not the first and you probably won't be the last KR builder to discover an error in the plans or builder's manual, but I'd bet your questions will help other beginning builders!

Lucky you, building a 2S! I don't have the plans, so I'll be referring to my set of Dash Two drawings and manual for comments.

1) Yep, you're right about the confusion regarding the firewall cross member. In reference to the construction notes and Drawing No. 8 in the builders manual, you'll note that the builder is instructed to install these cross members while the airframe is still jugged and clamped to the work table. However, the upper cross member at the firewall extends 5/8 inch above the upper longeron. No can do! I got around this by installing the cross member flush with the longeron's upper surface and after removing the cured airframe, notching for the longeron doubler and adding a 5/8 square strip of spruce

to the upper edge of the cross member. Every builder must come to terms with this early aggravation.

2) The firewall / forward fuselage rendering in the manual has been incorrect for years. It needs to be redrawn but continues to mislead KR builders. Best advice: Read the plans and builder's manual several times before beginning to cut lumber. Even if a builder plans modifications to the basic structure, many potential hassles can be eliminated.

3) From the information given in your question #3, I'm a little unclear as to what you ask. Since you are building a stretched fuselage, you've got a couple more "stations" than the Dash 2. As I understand, you're inquiring about the web assembly that anchors the aft horizontal stabilizer spar.

The web assembly is composed of two pieces of 3/32 or 2.5mm plywood laminated to make a single, thick piece of lumber. This piece is shaped to fit inside the aft fuselage, mating with the forward face of the spar and the two vertical fitted pieces of .625 square spruce. Ultimately, the center elevator hinge half will be bolted through this assembly. Clear as mud, right? Me, too.

4) It's OK to mix and match metric and inch dimensioned plywood. Most birch kit materials are of imported plywood and are metric measurements. Both center section spars are covered with plywood, face and back. The outer wing spars are covered one side only, save for the areas noted on the plans. If using the R-R fixed gear springbar, there's another 6.0mm ply doubler bonded to the spar's forward face. Note the plywood's grain direction for installation on the spars. It must be oriented vertically in relation to the horizontal spar caps.

Hopefully, Jim, we've answered some of your questions and empathized with your problems. Don't feel like the Lone Ranger 'cause we've all been there or will soon be. Other builders may wish to drop a note to Jim and pass along other nuggets of truth.

The following may be helpful to builders as they construct their KR airframe

METRIC vs INCH

Mix 'n Match, Wash 'n Wear

1.50mm = 1/16 in.

2.00mm = 3/32 in.

2.50mm = 7/64 in.

3.00mm = 1/8 in.

4.00mm = 5/32 in.

5.00mm = 3/16 in.

6.00mm = 1/4 in.

Images of Sun N'Fun '97



Bob Muse, winner of the award for Most Representative of Original KR Concept



One of the oldest flying KR-2's, N4DD, built and formerly owned by Dan Diehl of Jenks, Oklahoma



A Subaru powered KR-2 on the line at Lakeland, Florida



Nice looking KR-2 with fully enclosed retractable gear



A "Sierra Hotel" KR-2, sans prop spinner, with a unique cowling and well-faired landing gear



An excellent example of the homebuilder's art the KR-2 of Marty Roberts

Selling Your Homebuilt Aircraft

Planning and Preparation Helps Avoid Common Pitfalls

For most aircraft owners, it's bound to happen sooner or later. For whatever reason, a decision is made to put your aircraft on the market. If it happens to be an experimental category, such as a KR, several factors enter into the picture and might determine just how you go about exchanging your plane for currency.

A couple of months ago, I was casually chatting with an old friend and pilot. The subject of conversation got around to KR's, as usual. Friend wanted to know if I'd ever sell my plane. Had my beer goggles on as I carelessly mentioned that, except for my wife, anything I owned could be bought for the right price.

Long story short, friend asks how much and after a brief pause to collect what few thoughts I can normally muster, I shot him a price that would make me a happy camper. Guy writes the check!

Yep, 684LM has a new home and I am filled with mixed emotions. Let me pass on how the transfer was accomplished. It may smooth the way for those of you that may follow.

In order to obtain the maximum liability protection provided by your state's laws, you should consider consulting an attorney when selling your aircraft. The attorney should be knowledgeable in aviation matters, specific to a hold-harmless agreement for the sale of your homebuilt aircraft. Although these types of hold-harmless agreements may or may not be favored by the courts of your state, both the seller and purchaser can benefit from a well written sale agreement.

In addition to the specifics of the agreement, the seller and the purchaser of the homebuilt aircraft may wish to consider, with legal counsel, the inclusion of the following items into the sale agreement. Of course, you may wish to use only a few of the suggestions based on your own situation. The following list is not a complete guide, only suggestions.

A warranty by the seller that the aircraft is free and clear of all liens or claims, including any federal or state taxes.

An agreement that the aircraft is sold "as is" with a disclaimer of any expressed or implied warranties specific to airworthiness or mechanical condition.

A warranty that the aircraft will be delivered with an appropriate FAA Bill of Sale, other required documents and clear title.

An acknowledgement by the purchaser that he is buying a homebuilt aircraft.

An offer by the seller to make the aircraft available to the purchaser for a pre-purchase inspection to be performed by the purchaser's agent.

An acknowledgement by the purchaser that he has had the aircraft and its records inspected by a rated mechanic.

An agreement by the seller to transfer to the purchaser at time of delivery all logbooks and records pertaining to the operation and maintenance of the aircraft.

An agreement by the purchaser that the seller disclaims the accuracy of any maintenance records other than those during the time of ownership by the seller. Appropriate witness signatures, signatures of the purchaser and seller, as well as notarization of the signatures.

An agreement by the purchaser to defend and indemnify the seller for losses occurring out of the subsequent operation of the aircraft.

An affirmation by purchaser and seller that they are of legal age, under no disability and have been advised by counsel specific to the aircraft sale document.

The seller and purchaser should make sure that the following documents are mailed to the FAA on the day of the sale:

1. The completed FAA Aircraft Registration Application (FAA Form 8050-1)
2. The completed Bill of Sale (FAA Form 8050-2)
3. The "signed over" current Aircraft Registration Form (FAA Form 8050-3)

Selling your homebuilt aircraft may, at first, appear to be a legal nightmare. It doesn't have to be and usually isn't. I'm pleased to say that my experience was a pleasant one for both buyer and builder.

I know, I know...many of you want to know who got my KR and where is it. For the record, 684LM now lives in a nice, private hangar on the Center, Texas Municipal Airport and is in the good hands of another KR Newsletter subscriber, Mr. Bill Warren.

The KR Newsletter wishes to acknowledge the assistance of the Experimental Aircraft Association of Oshkosh WI, its Member Services Department and legal staff in the sale of N684LM and in the preparation of this article.

KR CLASSIFIEDS

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WANTED KR-2 in good condition. Mathieu North, Seyon 2, 2001 Neuchatel, Switzerland. Fax: 011-41-32-724-10-47. Tel: 011-41-32-725-11-12.

WANTED One pair of unused gear castings for original KR retract system. Ken. 609-299-0498. Leave message.

FOR SALE KR-2 in boat stage. Complete running 1835 with Hapi electrical system, mag, prop and spinner on test stand. 2100cc heads and other parts. Diehl wing skins and tail feathers. Retract or Rand fixed gear with Rosenhan hydraulic brakes and tires. Aluminum kit, foam, Rand pedals, pulleys, bolts, newsletters and some instruments. Everything to build a KR less canopy and resin. Make offer. Might sell some parts individually. Todd Nugent. 2060 Greenwood, Olympia Fields, IL 60460. 708-503-0606 evenings, nugent@chapman.com

FOR SALE KR-2 project. Fuselage built, empennage installed and controls connected. Canopy installed. Tri gear retract and motor mount for VW. Outer spars, hardware, molded cowling. Sell or trade for RV parts or project. Reggie Smith. POB 2205, Mission Viejo, CA 72670. 714-855-6465.

NEED HELP Need source for Champion spark plug type C10S as used in Revmaster 2100, lower plugs. Please write or fax Henry Rudyanto. BePe - Natour Garuda, J1 Malioboro 60, Yogyakarta - Indonesia. Fax: +62-274-519774.

FOR SALE KR-2. 1846VW, tail dragger. Very plans built. Zero time engine and airframe. Diehl wing skins. Always hangared. Airworthiness Certificate 7-26-94. Details, call John Feuerstein. Box 36, Rt 2. Lake Benton, MN 56149. 507-368-4593.

FOR SALE New Rand-Robinson 0-200 Continental engine mount for a KR-2 or KR-2S. \$350 or best offer. Peter Zattoni, 1102 West Long Lake Rd, Eveleth, MN 55734. 218-744-5807 after 5pm Central time.

FOR SALE Q-2 airframe kit and related parts, plans, jigs, more. Contact Patrick Myers, W17575 Irvine Ln, Galesburg WI 54630, 608-582-4541. \$3000 obo Might trade. WANT KR-2S project / airframe.

FOR SALE New 3500 RPM recording tach (AC). Arc 328-T 720 Channel Nav-Com with glide scope amp, dual needle OBS and tray with all wires marked. Cost me \$800 give me an offer. New Bendix aircraft ignition, L-R mag, etc. What do you think? Art Smart, 218-732-5295.

FOR SALE Complete set of KR2S plans. \$175.00. Bob Sauer, 1103 Kevin St., Smithville TX 78957. Tel. 512-237-5553.

WANTED Back issues of the KR Newsletter, 1 thru 72. Contact with price and availability. Howard Welte, POB 1632, Tracy CA 95378. Tel. 209-832-0395.

FOR SALE KR-1 90% completed. Call for details. Chicago area. \$4600 OBO Layton Burnidge, 329 Riverview Drive, South Elgin IL 60177. 847-741-4346.

WANTED Flying, or nearly so, KR-2S. Please contact Jack Luiten with details and price. 428 Aladdin Road, Colville WA 99114. 509-684-3004.

The KR NEWSLETTER

published monthly at
624 West University Drive, Suite 199
Denton, Texas 76201.

Editor and Publisher, Monte Miller
Evening and weekend tel: 940.566.5871

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More Glass Working Tips, continued...

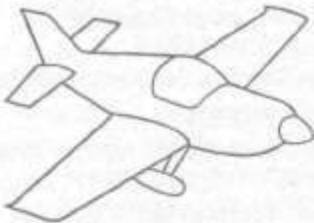
The final surface is easy to finish using a runny epoxy micro balloon mix and light sanding, as long as the foam surface you began with had no dips or dings.

Editor's Note: With a single key stroke caused by a synapse failure, the author's name of the proceeding article was lost. Help me give credit where it's due ..Drop a line to the editor so your efforts can be recognized.

The following is a public service message from the editor of the KR Newsletter

CRAYONS ON NEWSPRINT,
#2 PENCIL AND A BIG CHIEF TABLET,

It doesn't matter what you use,
just submit something!



KR NEWSLETTER
624 West University Drive
Suite 199
Denton, Texas 76201
Issue 240 June 1997





NEWSLETTER

Stretched Out In Florida *Latest KR-2S Launches in Orlando*



Dave Blucher's Orlando-based and Subaru-powered Rand-Robinson KR-2S, N197DB.
The journey begins inside this issue of the KR Newsletter

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

Stretched Out In Florida

Dave Blucher
616 Viscaya Avenue
Orlando, FL 32839
407-855-8071

As of June 3rd, one niner seven Delta Bravo has two hours of flight time and I just have to say to all the 2S builders out there...Keep *at it!* You've got a real nice surprise in store when you strap your butt into your sleek new machine. There I go, getting ahead of myself, so I'll go back and tell the whole story. Well, maybe just the highlights.

Somewhere, back in the 1970's, I decided to build my own airplane. Having always admired the famous Mustang, I sent to Canada for a set of plans for the SAL 2/3 P-51.1 had only a single carport to work in at that time, but I built the empennage and all of the wood work on the fuselage. There were long periods of time when nothing got done due to other commitments, distractions and flagging interest.

Finally, the project was stored until 1983 when my son, Bob, got into SCCA road racing. I didn't even see that coming because he started in go carts and I had little interest in that. It wasn't until he bought a small sedan and started autocrossing on parking lots that I started to pay attention. I soon had a similar car and we were competing against each other. Needless to say, youth will win out. Anyway, that led to his joining SCCA and upgrading his car to track readiness, then on to drivers school.

After crewing for him at several tracks, I could see that he was really enjoying himself and meeting some really swell people. Eventually, Bob decided to move to a faster class and, recognizing that I enjoyed the whole experience, suggested that I should buy his car and go to drivers school. Well, he didn't have to twist my arm. I made space for the car by selling the Mustang project to some jerk who never finished paying me for it and who will never complete it. Some people are real low-life #&@?'

From 1986 to 1991, I went racing. I even won the Central Florida Regional Championship in 1989 and 1991. But after five years of racing I got tired of overhauling engines, trailering a car and a mini-workshop all over Florida, wiping sweat from my brow and blood from my knuckles. In this short time, a lot of things changed; the club changed, the people changed, the camaraderie was gone along with the excitement. The car had to go.

Some time after that, I began reading airplane magazines again. Seem's like once a wing nut, always a wing nut. I have attended Lakeland's fly-in almost every year since moving to Florida from Maryland and, except for the Mustang, I've never considered building anything

else until I read some articles about the KR-2. Then, at Lakeland in 1993, I saw Wayne Heisler's 2S with a Subaru engine on it. I was hooked. (Where is Wayne?)

I went home and talked to my very understanding wife, Betty, about it and the next day, I purchased KR plans S/N 8688 and 2S plans S/N 277. I promised myself and Betty that this project will be finished.

The first wood was cut in June 1993. As was noted in issue 222 of this newsletter (Nov 1995), the airframe was completed in about 1100 hours. Total construction time was 1600 hours. Construction time estimated by Rand Robinson is 1000 hours. The extra 600 hours time was due to the incorporation of the NSI Subaru plus a lot of other things I chose to add. And speaking of adding things, this plane is not the rocket that Roy Marsh's is because it weighs in at an empty weight of 728 pounds.

Some of the extra weight came from the double bay wing tanks which required aluminum feed lines, fittings, sump drains, check valves, an extra fuel pump, a selector valve, wiring, an indicator light, a switch and a breaker. Remember, we're not talking ounces here, these are pounds.

There is an added dorsal fin on my aircraft. This is something I felt I had to add because it is removable and I can take it off at any time to inspect the upper end of the elevator horn. I've also cut an inspection port under the stabilizer to inspect the lower end of the horn. I've also added a couple of pounds because I static balanced the elevator and rudder. That weight was needed way back there because I didn't want to push the Subaru way back against the firewall and ruin the pleasant profile of the 2S. I was able to cram the Suber, oil tank (dry sump oil system), radiator and water header into the Volkswagen cowl and only shortened it by an inch.

Navigation lights, a taxi light and a landing light were also added and since the Subaru came with a 60 amp alternator, I figured I might as well add a radio and transponder with altitude reporting capability. All of these things require wiring, antennas, ground planes, switches, breakers and mounting structures. I really need these amenities anyway because of the high traffic density area in which I live.

Half of the instrument panel consists of engine gauges. A volt meter, water temperature, oil temperature, transmission temperature, a dual EGT, tachometer and an automotive-type fuel gauge. Other supporting items include the starter switch, dual ignition switches, dual tachometer switch and a primer switch. The flight instruments are minimal, just airspeed, altimeter, rate of climb and a turn and bank indicator.

So there you go. If you want a rocket, build to the plans. This is what Jeanette Rand preaches. But I defy anyone to build to the plans (wing tanks, flaps, full length

continued on page 4

25th Anniversary of the KR

Ken Rand Designs Still Attracting New Builder/Pilots

This year marks the twenty-fifth anniversary of Rand-Robinson and the fantastic KR series of aircraft. Designers Ken Rand and his partner, Stuart Robinson, pioneered the initial usage of composite materials in the construction of homebuilt aircraft. Their efforts began a new era in sport aviation; the capability for builders to produce economical, safe and high performance aircraft from modern, available and easily worked materials.

Today, countless designers and builders, of both experimental and commercial designs, understand and embrace composite construction of aircraft. All can trace their roots to Ken, Stuart and the original KR-1.



Ken Rand and N1436, the original open-cockpit KR-1.

(The following is an excerpt from the April 1972 issue of *Plane & Pilot*)

Into the air, Bargain Birdman!

Ken Rand is an electrical engineer with a wife, three children and a burning ambition to fly his own airplane. Until recently he had to satisfy that ambition by building and flying radio-controlled models, but a couple of years ago he decided to solve the problem of expensive airplanes by building one for himself that wouldn't be expensive.

The result is the KR-1, a sleek and sporty little speedster that already has logged 132 mph and is capable of more, with the right prop. Operating cost is hardly prohibitive: about 30 cents per hour, since it burns one gph of automotive regular. And the total investment should make you sit up and take notice: \$450 put this bird into the air.

Today, Ken Rand the former model builder is Ken Rand the owner/pilot, and nobody can guess the number of pilots in the country who wish they could say the same about themselves.

I Next time you're in the air with your KR, remember Ken

KR Newsletter Needs Your Help at Oshkosh

Are you a KR Newsletter reader and planning a trip to the EAA Fly-In Convention at Oshkosh this summer? If so, you could become famous with your own byline working as a *stringer* for the KR Newsletter.

Help is needed in acquiring photos of KR aircraft flown into Whitman Field. A sharp photo, a brief comment and the builder/pilot's name would be welcome. These photos will be included in the next issue along with the names of helpful contributors.

One day or the whole show, it doesn't matter. Just check that "double prints" box at the drug store and send them to your editor. We'll all be glad you did!

And Speaking of Submissions

Hope you're all enjoying the revised KR Newsletter. Some excellent articles and photos have been sent from subscribers to share with the readership. All are greatly appreciated and eagerly awaited. Thanks to each of you!

The mail bag is now getting a bit low so this is another plea for ya'll to find an hour or so in the day and scratch out something. Editors of these subscriber-supported type letters consume lots of Turns. Help us out.



***Stretched Out In Florida*, continued:**

wings, etc.) and still come up at 540 pounds empty weight and an honestly recorded 1000 hours construction time.

Well, enough about weight. It is what it is and I'm very pleased with what I've accomplished. To complete the picture, I've installed the Diehl main gear and the RR tail wheel fork assembly with a larger diameter wheel.

The Suber has a 1.85:1 reduction and is turning a Prince 52x59 P-tip prop. The gearing and the prop may have to be changed to get to max performance. That will be decided after I get further into flight testing.

I think I'll stop this for now and save space for someone else. Next month, I'll tell about some boring taxi tests, the experience of a first test flight and some problems with flight testing.

Thanks to the wealth of information gained through this great newsletter, a lot of would-be problem areas were averted. My thanks go out to you, Monte, for carrying on the great work of your predecessors.

Builder Tips

From reading past issues of the KR Newsletter, I got the idea of using small strips of flexible wood to put clamping pressure on the fuselage gusset blocks during construction. I used large binder clamps purchased at a local stationery store to hold the wood strips in place. At \$2.99 for a box of twelve, they are much cheaper than other clamps and are good for other clamping needs.

The hardware call out for the main spar wing attach bolts is AN6-6A. The grip length of an AN6-6A bolt is 3/16 inch, plus or minus 1/64 inch. The KR's metal wing attach fittings are each 1/8 inch thick. The bolt passes through two fittings for a total of 1/4 inch. The wing attach fittings bear in shear on these bolts.



Flexible wood strips, combined with metal spring clamps, secure fuselage gusset blocks during epoxy application.

Another observation; I used the mahogany plywood to construct the fuselage. Now that the sides have been curved into place and the fuselage has been completed for a few months, I notice the mahogany plywood "flattening" in the areas between the side frames at the most severe portion of the curved side. Perhaps the birch plywood with six plies might not do this.

I must put my project away until next winter when I can work on it again. I will keep up my enthusiasm by reading the KR Newsletter.

BILL MacMILLAN
1724 England Avenue
Everett WA 98203
Tel. 206-353-9589

Ken&I ***Memories from Stuart Robinson***

Allow me to tell you about the KR One and a Half, more commonly known as the KR Motor Glider. As it turned out, it wasn't, as I believe, a very popular design for the same reason that the BD-5 Long Wing was not a hit. Who wants to take a nice, slick and fast airplane, hang long wings on it, and go play in the thermals?

As I confessed in a previous article, I am really not all that crazy about going fast. I don't mind flying a fast airplane but you'd probably find me tooling along at 55% power while listening to a good classical CD. I never was in that much of a hurry. So, you can guess whose idea it was to build a motor glider.

The project got a real boost at the first Sun N'Fun Fly-In. Some guy whose name I have long forgotten turned up flying a Volkswagen-powered, single-place production motor glider crafted in Germany.

Along about the second day of the fly-in, he and I were talking about VW powered airplanes and he said, "Would you like to fly it?" There could not have been but a handful of these things flying in all the world and here he was, asking me to fly his only transportation back to Michigan! I agreed to fly it only if he would allow me to take him up in the KR-2 when I got back.

The airplane was a graceful lady in the air. Stable as a rock, slow and just a bit noisy, but a comfortable aerial platform from which to view the local cows and cornfields...actually, lakes. Hundreds of 'em. That's why they call it Lakeland, Florida.

The approach to land was stately, the flare so slight and the float, forever. I finally said enough and pushed it down onto its one main wheel. The owner was polite and did not comment on my landings. At that moment, I was hooked on motor gliders.

A few minutes later, we squeezed into the KR-2 and blasted off. I think he was amazed at the response to

control inputs, slamming through thermals at 160 mph, not to mention the dead prop landing because the darned Posa carb was still set too rich at idle. But, we did have enough momentum to roll back to the flight ramp just like Hoover does it.

He was kind enough not to kiss the ground after he got out.

The actual construction of the motor glider did not begin for another year or so. For the fuselage, we used my old original KR-1. Ken and I both had one under construction from the beginning but he finished way before me.

My bird was stored in the shop and was sort of finished except for the wings and engine. We made some ten foot outer wing panels, jiggled them in place and ended up with a total span of about 28 feet.

Ken was all excited about the GAW-1 airfoil so we made a long transition from the old Spitfire 'foil to the latest computer design. A goodly amount of washout was thrown in to keep the stall propagation about right.

The ailerons were standard KR-1 length which put them about mid span. The wing made the motor glider.

Along about that time, my wife asked me what I thought about moving to Sonora, California, about four hundred miles north of Los Angeles and not too far from Yosemite. I never did like the big city. We had lots of kids to raise so it was an easy decision to become a "mountain" family and start work on the KR-3. The motor glider was left for Ken and the shop to finish.

The strange part is that I lost track of the project. Some time later I heard that it had been flown and I believe it was a plans option to the KR-1. I have never seen the finished airplane or heard anything about its performance. I'm not even sure if anyone ever attempted to build one.

If any of you builders or enthusiasts out there have any information or pictures of the thing, it would make this man very happy to read about it. I'd probably hyperventilate if I saw a picture of one in flight! Please send any info to the Newsletter so it can be published.

One Homesick Angel

David Clinthome

3706 Wilburn Drive, Fredericksburg, VA 22407
540-786-9738

Hello, fellow KR builders. This is progress report #2 on N221HA, "One Homesick Angel".

I wanted my plane to look good and go fast so I've tried to incorporate small improvements. I think any single drag reduction may be minuscule but, cumulatively, they may mean a 5% change for the good.

From the early boat stage onward there are several opportunities for fairings which may reduce drag. I do not consider these to be design alterations but rather

personalized interpretations of the design. These changes may lead to purely aesthetic or true drag reductions.

The locations that fall into this category are; where the wing mates to the fuselage (on top and bottom) and vertical stabilizer to horizontal stabilizer (tail feathers mating region). *Editor's note* : Don't overlook the landing gear and cowl design as potential drag reduction areas.

I am fortunate in that I live about one hour away from the Smithsonian Air and Space Museum. I often have my lunch break there and have marveled for hours at some of the displays. There is a racer there built by Howard Hughes. In 1935, it went 535mph. I was shocked to discover this occurred in the pre-computer era. I photographed the wing root and tail feathers in order to copy them. I also looked at the great fighters from WWII: P-51, Spitfire, ME-109 and the F4U. The radiator locations on a few of these planes are of interest since N221 HA uses a water-cooler Subaru engine.

There are several classic aeronautical engineering texts written in the WWII era that experts with a whole lot more understanding than myself refer to today. In the May '97 *Sport Aviation*, there is a reference article by Mike Arnold (builder of the record-holding AR-5) describing, in plain language, how critical these fairings can be.

The key points of his article are: 1) Keep the fuselage sides flat and parallel from the leading edge to the trailing edge of the wing; 2) use a radius of about 6% of wing cord for the wing to fuselage fairing; 3) make the radius expand at the trailing edge; 4) put the canopy over the widest part of the wing. Sounds like the KR-2 already has these things going for it.

The expanding wing root fairing was copied from Howard Hughes' racer. I used a juice can to help carve out most of it. For my airplane, 6% equals 2.88 inches.



David "Darin" Clinthome tries to remember if he's sanding convex or concave!

continued on page 7

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WANTED Flying, or nearly so, KR-2S. Please contact Jack Luiten with details and price. 428 Aladdin Road, Colville WA 99114. 509-684-3004.

FOR SALE KR-2 approx 60% complete. Fuselage on retract gear. Controls, brakes, pedals, gas tank, instruments installed. Wings and ailerons need filling. Have cowling and lots of other parts. \$2000, negotiable. Nelson Heinrichs, 177 Mill St, West Creek, NJ 08092. 609-296-4349, no collect.

FOR SALE Parting out award winning KR-2. Removed from registration. Fuselage with Loran, xpndr, encoder, VAL 760 com, intercom. No damage. Unique canopy design, wells gear latch. \$5000. Set of plans built wings. 9 gal tanks & swept tips. \$1000 w/o fuselage or \$100 with. Complete, new 2180 engine kit, Slick mag, electronic ign, oil cooler, starter, etc. \$4500. Props- 52/50 fit Revmstr hub \$200. 52/52 fit Revmstr hub \$100. 52/54 fit Great Plains Force One hub \$200. Many Type 4 parts including machined case and cam, Force One hub & bearing. David Shirey, 8771 Springwood Way, Washington, MI 48094. 810-778-7440.

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UNDERDEVELOPMENT

VACUUM PUMP DRIVE SYSTEM FOR VOLKSWAGEN ENGINES

INFORMATION

\$20.00* & SASE

**MOORE PROFIT ADS COMPANY
POB 622KR**

TOCCOA, GA 30577-0622

This Drive System will fit the DIEHUIAPI accessory case
*Special to KB people - If you order the drive system,
20.00 will be deducted from the final purchase price

Homesick Angel, continued:

I was faced with a problem in filling the area around the base of the tail feathers. This problem was exaggerated because the turtle deck, which I had swapped another builder for, was short about ten inches on the aft end. On my aircraft, this fairing must be removable for inspection and access to the elevator cables and my internal counterweight. It would be really neat to make a two-piece aluminum fairing but that is way beyond my capabilities.

The tail fairing goes aft with a convex curve from the turtle deck and must end up with a concave and expanding radius curve.

Did I do it right? Without a wind tunnel, we will have to wait for late stage flight tests to be sure. Perhaps that will be my next report. Happy landings.

Economical Instruments

Sometimes, Less Is More

Many's the time that the matter of a few dollars or so has kept me from moving forward with an airplane project. I don't know if it's my Scotch heritage or that I have short arms and deeper pockets; whatever the case, at times this airplane building business seems too dang expensive for what you get.

I've got another project in shop with a Volkswagen engine. I need to purchase the instruments to monitor oil temps and pressure. Was I shocked at what a simple, mechanical, non-TSO gauge was going for these days! It was not *that* long ago that the KR's panel was being filled...or was it? All my favorite homebuilder sources apologized but said their costs were up. Initiate plan B.

Most everyone has a Pep Boys or similar store nearby. I originally went in looking for a special adapter to accept the oil temp probe from a salvaged Stinson instrument I hoped to use. Those things have gotten expensive, too. No joy. However, I did notice a set of SunPro-brand automotive gauges that included both oil temperature and oil pressure along with the sought after adapter fittings, plus some other hardware.

The manager frowned only slightly as I pried open the package, scattered the contents along a shelf and found that the gauges could indeed be removed from their plastic "aircraft styled" bracket. Hum...Two and one-sixteenth diameter sounded familiar. There were even *three* oil probe adapters to choose from, enough brass fittings to convert the oil pressure gauge from its plastic pressure tube to a much safer metal line and the whole rig was less than thirty dollars. So...

Refer to drawing on page 8
for instrument connection guide

How to Adapt an Auto-Style Oil Pressure Gauge to AN Hardware

Most mechanical oil pressure instruments sold in auto parts stores are adequate for use in many homebuilt aircraft. The major drawback in installation is that they all seem to utilize a nylon tube to conduct oil, under pressure, to the instrument. The nylon tube connects at the gauge to an undersized (for our purposes) male threaded port. As installed in our aircraft, this is less than desirable from a fire safety standpoint. A melted or split nylon line could dump your oil supply overboard or even worse, inside the cockpit.

There is an easy way to convert these gauges to use the preferred AN-style hardware along with seamless .125 OD metal tubing. Read on and check the sketch.

The supplied brass coupling normally used to connect the nylon tube to the rear of the instrument is modified by filing off the reduced opening tubing end to create a simple, threaded coupler. This is, in turn, threaded halfway onto the supplied male-male threaded adapter and the two pieces are sweat soldered together.

A drop of carefully applied Lok-Tite will secure the modified fitting to the rear of the instrument. From there, it's a simple process of using the required AN fittings from gauge to engine. The hook-up for a *real* aircraft oil pressure gauge is the same, just start with the AN-910 coupler and be prepared to spend mo' money.

KR Roots

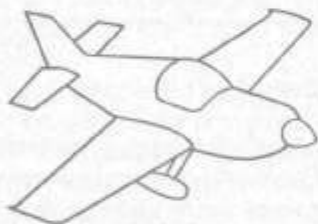
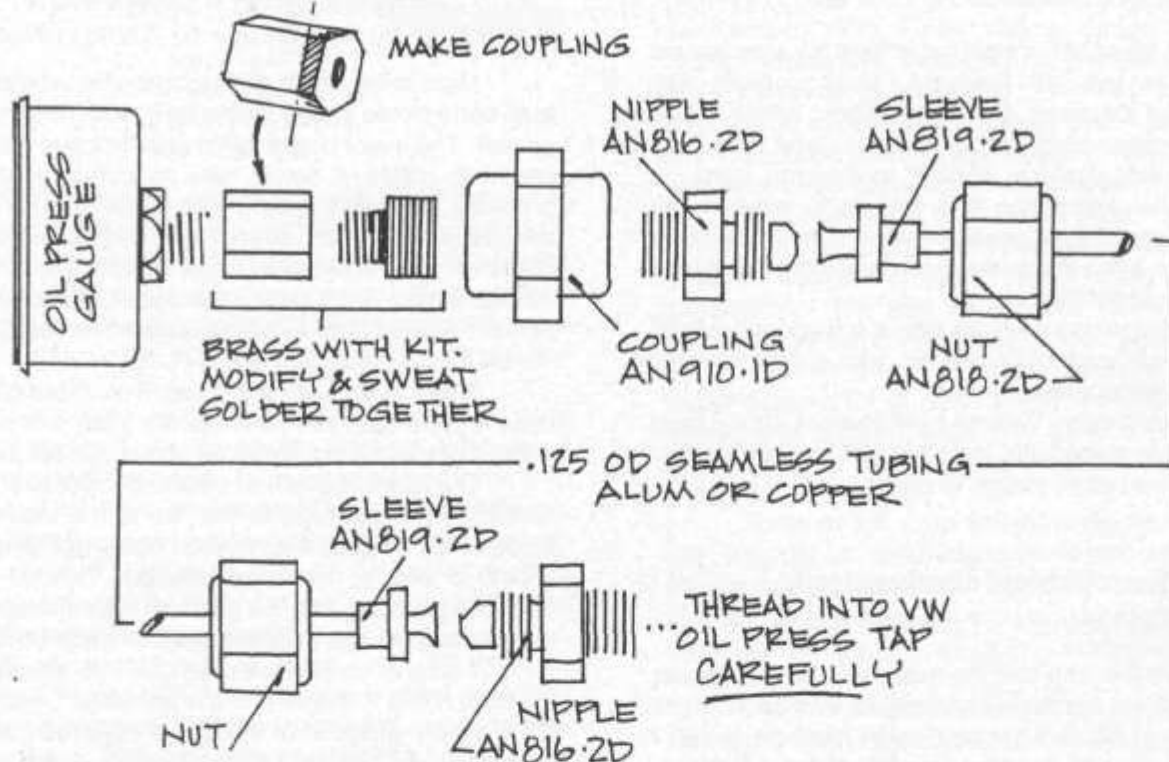
This year, 1997, the KR series of aircraft designs will celebrate its twenty-fifth anniversary. Rated historically as one of the ten most popular homebuilt aircraft ever, this enduring design continues to evolve and attract new enthusiasts as it marks its silver anniversary.

For the last twenty-two years, the KR Newsletter has documented builder ideas, construction, custom modifications, alternative engine choices, flight reports and more. Many subscribers report saving considerable time and money by learning how other builders overcome potential problems during the construction stages of both airframes and engines. You can, too.

Learn where it all started and, at the same time, enjoy some history and interesting reading about the KR aircraft. A set of all available back issues of the KR Newsletter, numbering over one hundred, is available from the publisher for \$85.00 (95.00 foreign), postpaid.

Convert an Automotive-style Oil Pressure Instrument to Aircraft Usage

See How-To-Do-It Article In This Issue of the KR Newsletter

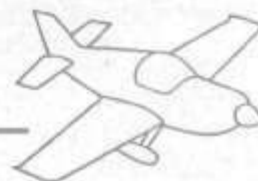


KR NEWSLETTER

624 West University Drive
Suite 199

Denton, Texas 76201

Issue 241 July 1997





NEWSLETTER

KR Gathering On Short Final *17th Annual Event Scheduled for Sept 19-21*

KR Fly-In

Sept 19 -21,1997

Perry Oklahoma Municipal Airport

This year's KR Gathering is shaping up to be one of, if not *the* best, ever produced.

KR driver Don Betchan (405-336-5954) is the point man on the ground at Perry, Oklahoma and has a full schedule of events already planned. Don's cohort, Mark Stein out of California, has a list of forum topics that will get ya drooltn' like a Okie hou'n dawg in a meat shop.

Friday. 19 Scot 97

Arrivals - All day, the field is open for you!

1:00-6:00pm - Forums

6:30 - FREE Barbecue and Beer
at the airport to all those flying in

Saturday. 20 Sept 97

8:00am-9:00am - Pilot Registration

9:00am - Pilots Meeting

10:00am 'til ? - Poker Run with \$150 cash prizes

Noon - Lunch on your own

10:00am-4:00pm - Randy Stein Presents
Forums, Forums, Forums

3:00pm - Spot Landing Contest

7:00pm - Awards Dinner

Aircraft Judging All Day

Sunday. 21 Sept 97

Pilots depart at their leisure

The Perry Airport has a new 75 x 100 hangar which will be available to secure your KR aircraft. There is ample ramp space but tie downs are limited. Bring your own lines and stakes. A fueling apron is available and avgas will be discounted by the local FBO to all KR aircraft flying in to this year's event.

Camping is permitted at the airport, however, there are no shower facilities. Prepared food will be available at the airport during the fly-in. Transportation to and from town is being arranged so pilots will not have to hitch hike.

Forums, you ask? Forums we got... lots. Topics? How about some of the following: Hand lofting the fuselage and airfoils; Glass and foam; Vacuum bagging; Composite antennas; Engines both V-Dub and Suber; Test flying; Flying and landings; Building the original and the new designs; Wood; Metal; Painting your KR; Test flying...to name a few.

Randy Stein is in charge of the forum sessions and is busy getting commitments from presenters. In an effort to pack as much information into the day yet still allow choices, Randy plans to limit each presentation to 40 minutes with a 10 minutes question period. Should you need more time for a personal explanation, plan on snagging your favorite presenter during the day or at the awards banquet. Bribe him with a cool one if you want the long version!

Bring your builder's photo log, either a finished aircraft or a work in progress. There will be a table set up for display and browsing.

A no cover charge Fly Market is scheduled. Bring along all your unwanted stuff and some extra cash. There will also be KR T-shirts and hats for the fashion conscious, plus who knows what else.

continued on page 2

KR Gathering., .continued from page 1

Don Betchan and Mark Stein have laid on a good event. Western history fans might enjoy the Cherokee Strip Museum or the Wal-Mart store (Don's words, I swear!). Comfy beds and fair prices at the Cherokee Strip Best Western, 405-336-2218, for reservations.

Boomer Sooner. See ya'll there!

PERRY MUNICIPAL
Elev1002' TPA1800'
N3623.1 -W09716.6
Unicom 122.8
Runway 17/35 5098x75 MIRL

Blucher's True Confessions

Or

DEMBUGS BE BUGGIN' ME, MON!

Dave Blucher

616 Viscaya Avenue
Orlando FL 32839

Last month, I left off by saying that this installment would be about flight tests. Before I get into that, I should say a few words about bugs. Not the creepy-crawly things but the ones we tend to build into our projects.

The worst one I tangled with was the radio. That's the VAL 750 that goes in the empty slot in the panel photo in this issue of the KR Newsletter. When I first installed the radio, I was able to receive clearly both the tower and ground control at a local airport about four miles from my shop. I was using an antenna built from the KR plans. I patted myself on the back and didn't think any more about it until I got the plane to the airport.



Dave Blucher's beautiful KR-2S instrument panel.

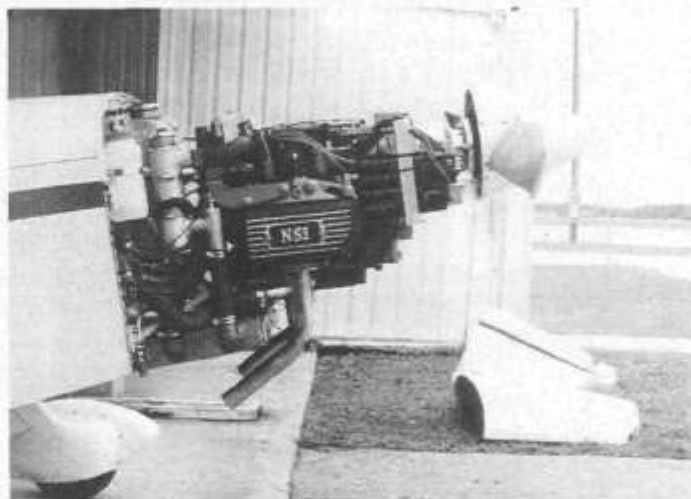
The first time I tried to transmit to the field Unicom, I got no answer. I then tried to transmit to a nearby C-152

whose pilot was listening for me. He could barely hear anything. Well, the first thing I blamed was the homemade antenna so I went and bought a used Cessna antenna. That didn't work either.

I got mad, took the radio out and sent it all the way across the country to VAL in Salem, Oregon. They said there was nothing wrong and returned it.

I rechecked everything and reinstalled the radio with a new Cessna antenna and a larger ground plane. It still didn't transmit more than a few hundred feet.

That night I was lying in bed, almost asleep (That's when I do most of my planning and design work) and it hit me...wood does not conduct electricity! I had installed my headset jacks on that wood panel and had not grounded them. The next day, I installed ground leads and the radio works like a champ. That bug set me back about three weeks.



*Dry-Sump Subaru engine installation in KR-2S
N197DB constructed by Dave Blucher.*

Between bouts with the radio, I worked on repairing oil leaks. Because of my desire to stay within the VW cowling profile, I selected NSI's dry sump oil system. As can be seen in the engine photo, there is no standard oil pan. Instead, there is a shallow pan about two inches deep. The oil is scavenged from this sump into a reservoir tank mounted on the firewall. I formed the tank from .080 inch thick aluminum and had the seams, thread bosses and the filler cap welded at a local welding shop.

I visually inspected the welds but did not pressure test the tank. I mounted the tank on the firewall, installed the oil lines and filled the tank with oil. Great, no leaks. I cranked the engine at the shop and saw no leaks after running a short time at idle speed. It wasn't until I got the bird to the airport and tied it to a post for a full power run up that I found oil dripping off the firewall. That's when I saw that the oil was leaking in one of the seams from a point above the static oil level.

continued on page 3

I have to say I didn't curse my stupidity. I just bit the bullet and spent another three days fixing the problem.

Minor bugs in the steering and braking systems came up during low speed taxi testing. I had to put a bar across the lower front of the brake pedals to keep from applying toe pressure on the brakes while steering. This is a no-no with a tail dragger, especially on landing. I also had to put larger springs on the tail steering yoke.

Editor's Note: I experienced the same rudder pedal problem with the plans designed system in 684LM...rudder inputs would also apply a proportional amount of brake. Unfortunately, my discovery was made during landing and around we went. Whoops...trees, sky, hangar... trees, sky, hangar. The fix was documented in a previous issue.

Taxi testing got downright boring. NSI recommended three to five hours of taxi tests before the first flight. After the second and third hours of tests, I couldn't find anything else to fix so I decided I might as well take it to the runway to see if I had a real airplane. The only thing I hadn't done was high speed tests.

The wind and local traffic were light so I taxied out to the assigned runway to get some tail-up time. I had five thousand feet of concrete ahead of me so there was plenty of time to lift off and land without going around.

I got cleared to the runway, pulled on ten degrees of flaps and lined up on the centerline. I pushed the power on too fast and before the tail came up the torque was overcoming full left rudder and I was heading off the runway. I came down to half throttle and at that time the rudder became effective. I got back to the centerline and at about fifty-five, it lifted off.

I chopped the throttle and it settled back on the mains and I got stopped with plenty of runway left. I did three more passes and went back to the hangar to check the landing gear and brakes. There was no excuse now. I had to go fly it.

During the entire three years of construction, very few people stopped in at the shop. I don't even have a photo of myself actually working on the project. I really felt quite lonely at times and even after I moved to the airport only one fellow I used to work with came by to take some photos and admire my work. And so it was on the day I took the first flight. The only witnesses who knew what I was doing were in the control tower.

That morning, I went to the airport about eight o'clock and fussed around, first with one thing and then another, until after about two hours of screwing up my courage I couldn't find anything else to fiddle with so I decided to go fly.

I remembered the torque surprise from the high speed taxi tests, so the takeoff was straight down the centerline. The plane didn't lift off until sixty mph because of a heavier fuel load and a significantly higher density altitude than when I did the first liftoff tests.

The speed came up quickly to eighty mph and I pulled the stick back and held that speed until I got to pattern altitude. I made two turns around the pattern, then climbed to 1400 feet and orbited the field for about twenty minutes.

All the engine instruments had stabilized and everything was in the green. That helped ease the tension I was feeling, but that more than doubled when I realized I had to get back on the ground before I could pat myself on the back for my engineering feats.

On down wind, I had to pull the throttle way back to get the speed down to eighty mph where I planned to pull on one notch of flaps. It's hard to plan every detail of a test flight and I found myself on the base leg wondering if I should three point it on the first landing. That would have been a snap in the old Champ I used to fly. Before I could think more about it I was across the threshold, still holding eighty. I wanted to lower my sink rate slightly so I tried to add a little throttle and nothing happened.

I glanced at the tachometer and the needle was on zero. I have no idea when the engine quit because the prop free wheels due to the gearing setup in the reduction unit. My headsets must be pretty effective because, even though there are no mufflers, I can just barely hear the engine at idle during a glide.

The engine out was just enough distraction that I totally blew any chance for a smooth landing. The mains touched down with the tail low and the stick wasn't all the way back. Any tail dragger jockey can tell you the rest of that story. Yes, one takeoff and five landings!

I called the tower to thank them for all the help. They were nice enough not to comment on the roller coaster act.

On the second flight, I still maintained an eighty mph approach speed but I used full flaps and flew it onto the ground on the mains just like the Mustangs do. I'll save the three pointers for the grass.

As of this writing, I've got five hours of flight time and I've only just begun to take real performance numbers.

'til next month...

EAA CHAPTER 526 FLY-IN TO FEATURE KR AIRCRAFT

Sept 7, 1997 8:00-10:00 AM
Auburn (Calif) Municipal Airport (AUN)

Each month, EAA Chapter 526 of Auburn, California holds a fly-in breakfast at which they feature a specific aircraft design. For September, the Rand KR series will be highlighted.

KR drivers flying into AUN will be treated to a FREE breakfast. Questions, contact KR Newsletter subscriber Todd Servaes at 916-652-6226.

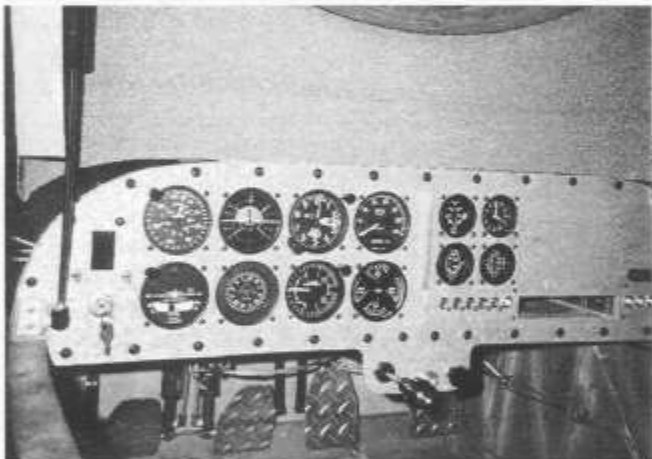
New Subscriber, Experienced Builder

Bill Gaudlip
POB 261
Hooverville PA 15936
814-798-9062

The envelope contained what makes every editor happy, a check from a new subscriber. Hey, Honey...we can eat tonight! However, this particular number ten included a bonus which is herein shared with all.

Bill Gaudlip had called a few days earlier inquiring as to how he could begin receiving the widely acclaimed, much sought after and world famous KR Newsletter. Hey, just show me the money. OK, really, really tired Jerry Maguire joke.

Anyway, his check arrived as fast as the USPS could flog their overweight dog sleds and included two excellent photographs of his KR-2 project. Just look at that fantastic panel!



*Main office in Bill Gaudlip's KR-2.
Impressive layout and workmanship evident*

Closer examination of the photos reveal a forward hinged canopy with gas struts, a center-mounted engine controls panel, snazzy aluminum diamondplate rudder pedals *hinged from the top*, plus a small fortune invested in a beautifully equipped and finished instrument panel.

The airframe features a low drag Rand fixed gear, fibreglassed fuselage sides, a custom aft turtledeck and canopy, and what appears to be a carb / air filter poking below the as yet completed cowling air scoop. There's bound to be more, such as how much expensive AN hardware has been lost down that floor drain next to the main gear! Let's hope Bill will soon provide us with an extended builder's report.

Support Your KR Newsletter
Submit Something!



A work of art in progress. Builders such as Bill Gaudlip provide motivation and encouragement for others.

KR WEIGHT CONTROL

Shannon Smith

9256 S. Valentine
Fresno CA 93706

e mail - s52525@juno.com

I have been reading the KR Newsletter off and on since the mid-seventies. At that time, I was teaching in a college A&P program and had started construction of a KR-2 as a class project.

My involvement in aviation began just before World War II when I started taking flying lessons. I was drafted about that time and upon my return from the service, I got my A&P and also picked up my pilot's license along the way. Currently, I own a very nice D model Bonanza with a 225 Continental.

At the present time, I occasionally substitute in an A&P program. Recently, most of my teaching has been in the field of composites. In view of my experience, I feel somewhat qualified to discuss KR construction.

In reading the KR Newsletters for all those years, several things stand out. There have been numerous very beautiful KR's built and reported upon. Most were very heavy and some were obscenely so. A few flights in one of those lead sleds would scare a good pilot into parking the airplane...or killing a new pilot.

How to keep the weight down? First and foremost, epoxy is heavy. Don't put any epoxy on foam until you prime the foam. Make a primer of powdered waterproof glue mixed with water, the type that can be purchased at the hardware store. Mix the glue according to instructions, then begin to thin with water while mixing in micro balloons.

Experiment with some scrap foam and adjust the mixture until the filler sands almost as easily as the foam.

continued on nextpage

This makes finish sanding a snap as well as making a smooth surface for the epoxy to bond to instead of a sponge-like surface that could absorb gobs of excess epoxy and weight. This technique will also save you some money spent on epoxy resin.

When applying the fiberglass cloth, spend some time with your squeegee, removing all the excess epoxy resin. The excess has no structural strength and will only add unnecessary weight and, perhaps, finishing problems.

For a paint primer, try to find one of the microballoon-based primers. If you can't do this, remember that all other primers are ground rock-based. Don't forget this because any airplane will not be at its best with a thin coating of rock-based primer along with a rock-based color coat. This statement isn't exactly true as there are a few colors that aren't mineral based.

One of the best ways I know to control the airplane's weight and to speed construction is to use all the premolded parts you can purchase. I have been to Dan Diehl's factory and have seen the wing skins that he makes. In my view, they are as good or better than some certified aircraft parts that are produced.

One last thing...about your own weight. If you are a two-hundred pounder and your wife or flying buddy is the same, pick another design as you are already over the KR design gross weight.

VISITORS

Your editor gets the occasional telephone call from KR enthusiasts around the country and enjoys hearing from each of you. Most often, there's a line similar to, "Well, if I ever get up your way, I'll stop by for a visit". So it went in a call from John Karner down Ocala, Florida way.

Imagine my surprise when, in mid-June, I got a second call from John asking for directions to my home. Turns out, he was less than a mile from the world headquarters of the KR Newsletter!

On his way to cool, colorful Colorado with a couple of charming young relatives, John, a professional foreign car wrench, got lucky and was able to inspect my newest GPACS/VW engine going together. Nothing like having a pro check your work. We talked of KR's, Volkswagens, those both flying and four-wheeled, Florida and what not. . Enjoyed your visit. Ya'll come back now, hear?

KR News Editor Honored at Oshkosh

For the last eight plus years, your KR Newsletter editor has been cranking out a monthly newsletter for EAA Chapter 661 in Denton, Texas. Years ago, when a good Chapter meeting turnout was four to five members eating a slice of pie at a local cafe while talking airplanes, it was pretty simple. A quick n' dirty single page off the xerox.

Fast forward and the 661 Talespinners newsletter has grown to a desktop production including color masthead, fancy paper (recycled, of course), photos and drawings, tech articles...hey, it's almost as if the KR Newsletter format was copied from good ol' EAA 661. Well, my feeling is if it ain't broke, don't fix it.

Anyway, the nice folks in the EAA Chapters Office at Oshkosh called to tell me that our efforts had been recognized and deemed good enough to be chosen as one of the top ten McKillop Award EAA Newsletters in, get this, the world!

I'm pretty pleased but, just like the KR Newsletters, nothing happens without your contributions. Thanks.

BILL WARREN

I lost a friend this week and I am disheartened by the helpless feeling of not being able to ever see or talk or fly with him again. Bill Warren, an East Texas attorney and the new owner of my KR-2, an air pirate if there ever was one, friend, husband, father and grandad, was involved in a pedestrian accident while visiting Galveston Island. He died over the July 4th holiday weekend.

I met Bill many years ago in Greenville, Texas. We were both shopping at a favorite aircraft supplier. We got to talking and he allowed as to how he'd been reading and enjoying my stuff in the KR Newsletter. I immediately pegged him as a very intelligent fellow and we'd been pals ever since.

Distance, time and careers allowed for infrequent visits, calls or letters but we remained kindred spirits and bigtime KR fans. Bill's purchase of my KR-2 moved his lifetime ownership tally to three. He also had a soft spot for the four-wheeled variety of V-dubs and other toys. Bill delighted in life.

We occasionally enjoyed sharing our favorite liquid refreshments while telling lies. Bill, being a lawyer, was well practiced but I could hold my own, too. This particular diversion lead to his purchase of my airplane, much to my chagrin.

I realize you didn't know him, but he was one of the good guys. I count myself fortunate as one who did.
s' long, Bill.

KR CLASSIFIEDS

Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial style ads will be billed accordingly prior to publication.

The KR Newsletter reserves the right to edit free ads.

FOR SALE Parting out award winning KR-2. Removed from registration. Fuselage with Loran, xpndr, encoder, VAL 760 com, intercom. No damage. Unique canopy design, wells gear latch. \$5000. Set of plans built wings. 9 gal tanks & swept tips. \$1000 w/o fuselage or \$100 with. Complete, new 2180 engine kit, Slick mag, electronic ign, oil cooler, starter, etc. \$4500. Props- 52/50 fit Revmstr hub \$200. 52/52 fit Revmstr hub \$100. 52/54 fit Great Plains Force One hub \$200. Many Type 4 parts including machined case and cam, Force One hub & bearing. David Shirey, 8771 Springwood Way, Washington, MI 48094. 810-778-7440.

FOR SALE KR-2, 70% complete. Fuselage, tail feathers, canopy and frame, forward deck, fuel tank and wings are complete. Diehl fiberglass tail-dragger landing gear installed along with Matco brakes, master cylinders and wheels, including tires. New instruments include ALT, compass, AS, tach and CHT. Includes engine mount, center mount control stick, rudder control assbly with pedals, 50x52 Sterba prop and zero time rebuilt Revmaster engine with Diehl backplate, starter, alternator and dual magnetos. Make an offer. I need room in shop. Also have one set of KR-2 plans, other misc items and a cradle to transport the KR-2 on a 16 ft. trailer. David Corpier, Rt. 1, Hillcrest Rd., Clifton, TX 76634. 254-675-8064 (Hm) 254-675-8064 (Fax) 254-582-6115 (Ans Svc)

FOR SALE KR-2, early version, plans built, not stretched. Boat stage on std retracts, empennage installed and controls connected. Have original canopy plus a Dragonfly canopy, neither installed. Wing spars ready to install. Add'l stuff goes with project. Have many new and used VW Type 4 parts however no complete engine. Also have new & test run only BIG BLOCK VW. 2600cc, 90 hp. Full electric with mech fuel pump, Force One hub, assembled from GPACS parts. Interested? Dan Freeman, 317-356-4152 or AOL at DanF1925 or 1925 S. Temperance, Indianapolis IN 46203.

FOR SALE KR-2 fiberglass cowl, \$400. Old retract gear setup-accepting offers. W. Janowski, 14123 E. 122nd St. N., Collinsville OK 74021. Tel. 918-371-5846.

FOR SALE KR-2 project at boat stage with fuselage and spars built. Horiz stab and elevators complete thru fglassing. Custom fixed or retract gear based on Newsitr

#131-134. All mat'l to complete from firewall aft. Includes set of KR Newsletters. \$1200. Don Q. Cryer, 165 South Rd, Kensington NH 03827. Tel. 603-772-3116. Fax 603-772-4156. E mail don.q.cryer@juno.com.

FOR SALE 1984 EA81 Subaru Engine. 0 SMOH. Std size components. New main and rod bearings, rings, gaskets & seals. Intake manifold modified, heads reworked with new guides and valve job. Orig carb, distributor & alternator included. Ready for installation in your homebuilt aircraft. \$650. (100. will be donated to EAA Ch 125) Don Clarke, 10013 Conover Ln, El Paso TX 79924. Tel. 915-755-0588.

FOR SALE Very special KR-2 featured in Rand-Robinson factory video. 280 TTAE, Hapi 1835 on Diehl fixed gear, tail dragger. Damaged wing tip, cowl, canopy and landing gear. \$4000, as is. Estimate \$1200. plus labor to be flying. Ken Shanon, 100 Lynch Rd, Petaluma CA 94954. Tel. 707-766-9842.

The KR NEWSLETTER

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Evening and weekend tel: 940.566.5871

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BACK ISSUES

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Individual issues, when available, are 2.00 each.

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UNDERDEVELOPMENT

VACUUM PUMP DRIVE SYSTEM FOR VOLKSWAGEN ENGINES

INFORMATION

\$20.00* & SASE

MOORE PROFIT ADS COMPANY
POB 622KR

TOCCOA, GA 30577-0622

This Drive System will fit the DIEHL/HAPI accessory case
"Special to KR people - If you order the drive system,
20.00 will be deducted from the final purchase price."

"WHY I WANT TO BE A PILOT"⁷

By Tommy Tyler, 5th Grade, Jefferson School, Beaufort, SC

Lifted from SLIPSTREAM, the Silver Wings newsletter, which credits the Ohio Flyer as a source.
Later reprinted in the Venice, Florida EAA Chapter newsletter and lifted, again, for inclusion here.
First seen on a brass plaque at the Crystal River Airport.

When I grow up I want to be a Pilot because it's a fun job and easy to do. That's why there are so many pilots flying around these days. Pilots don't need much school, they just have to learn to read numbers so they can read instruments. I guess they should be able to read road maps, too, so they can find their way if they get lost.

Pilots should be brave so they won't get scared if it's too foggy and they can't see, or if a wing or motor falls off they should stay calm so they'll know what to do. Pilots have to have good eyes to see through clouds, and they can't be afraid of thunder or lightning because they are so much closer to them than we are.

The salary pilots make is what I like. They make more money than they know what to do with. This is because most people think that plane flying is dangerous, except pilots don't because they know how easy it is.

I hope I don't get air sick because I get car sick and if I get air sick I couldn't be a pilot and then I would have to go to work.

Thanks to Gladys Muse of Marietta, Georgia for sharing this charming essay with her many KR friends

Oshkosh Input Needed

KR News Editor Seeks Contributors

By the time you read this issue of the KR Newsletter, another Oshkosh Fly-In will be history. Were you one of the fortunate who attended? If you did, you probably took some photographs of your favorite plane, the KR's from Rand-Robinson.

Many fans of the KR do not have an opportunity to be on site and take in the enormous variety of sport aviation that is Oshkosh. Searching through magazines, months after the fact, in hopes of a single photographic representative of the design just doesn't cut it!

The KR Newsletter needs your assistance in providing a glimpse of those KR's in attendance at this year's fly-in. We need your help in securing photos that will be used in an upcoming issue. Would you consider helping out? Send your stuff to the editor as soon as you can. If you can identify builder / pilots, all the better. You'll even be recognized for your efforts...unless your spouse thinks you were really on some business trip!

Those Racy KR's

The second annual Sun N' Fun Sprint Air Race was held April 4th, during the pre-opening days of the popular Florida fly-in. A quick run of 342 miles between Griffin, GA and Bartow, FL drew 33 race entries.

The race, sponsored by Aircraft Spruce & Specialty, classifies aircraft by their horsepower, grouping similarly powered planes in either the Sand Piper Experimental (to 75 hp), Pelican Certified (to 120 hp), Pelican Experimental (to 120 hp), Flamingo Experimental (to 160 hp) and Flamingo Certified (to 160 hp).

Taking first place in Sand Piper with a speed of 140.45 kts was the fixed gear tail dragger KR-2 flown by Troy Petteway. The next class finisher was Bob Muse and his KR-2 in at 118.17 kts. A Pulsar was hot on Bob's six at 117.85

KR's taking a one-two finish is outstanding and both Troy and Bob are to be congratulated. Even more so when the "big motor" class results are examined.

In Pelican Certified, the KR's speeds would have blown them all away. The winner, a Yankee AA-1TD, ran 102.66 kts while another Yankee tallied 98.05 for second place. Troy would have also won the Flamingo Certified, and Bob would have been third quick. Only in Flamingo Experimental would the KR's fall as the winning Lancair set the benchmark at 186.18 kts.

Obviously, the experimentals are the quickest in any category; that's only one of their many benefits. What is fun to study is how the KR design continues to lead all others in performance.

The KR Newsletter offers a big tip o' the windsock salute to our racy guys.

In This Issue of the KR Newsletter:



•17th Annual KR Gathering

Full details and a schedule of events begin on page one.

•Super Dave Blucher

Antenna antics, busy brakes, lubed Subaru and first flight fidgets.

•Classifieds

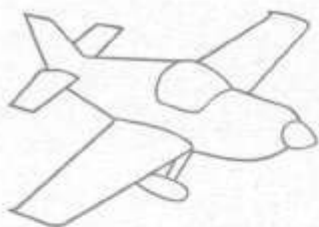
If we ain't got it, you don't need it!
Builders shop n' swap.

•Put Your KR On A Diet

Start early for a svelte final weight from primer to color. Good ideas.

•Builder Reports, Ramblings, etc

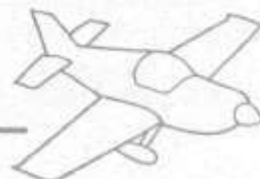
All this, and more, on short final inside this month's KR Newsletter.



KR NEWSLETTER

624 West University Drive
Suite 199
Denton, Texas 76201

issue 242 August 1997





NEWSLETTER

Our Boy Blucher KO'd By Suber *Betty, Rhoda and the Cat Still Smilin'*

As of 23 July, N197DB has eleven hours of flight time on it. I'm not accumulating data very fast but I'm getting very familiar and comfortable with the plane. As soon as I get a transmission gear change completed, I'll drag out the flight test scripts I got from my EAA designee and start taking some serious data.

Editor's Note. You can tell ol' Dave's been to more than a few rodeos. Only us old hands refer to EAA Tech Counselors as *designees*.



Prowling the sunny skies around Orlando, Florida, this beautiful Subaru powered KR-2S is piloted by owner/builder Dave Blucher. Readers will enjoy Dave's continuing escapades and experiences.

Speaking of my EAA designee, I need to stop right here and do something I should have done in the first article. I need to thank a bunch of folks who helped me through the whole building process. I'll begin with my very understanding wife, Betty, for her tireless support during times when I made mistakes and fretted over details. Mostly, I want to thank her for some outstanding voodoo economics. Betty's mother, Rhoda, (the shop is at her house) supplied lunches daily and never once complained about the airplane dust I drag in on my clothes and shoes. The first epoxy/fiberglass layup was directed by my EAA technical designee, Ed Rockwell. Thanks to him for getting me started in the right direction and for the technical checks along the way.

The gear change I mentioned should improve my cruise speed. The Prince 'P' tip prop just isn't cranking enough RPM at 75 percent Suber power (3800rpm). The original gear set was 1.85:1 and I'm changing to 1.622:1. I may even end up having the prop repitched from 59" to 60". I wish now that I had insisted that Prince make the prop at least four inches longer. As it is, with the 52 inch length and the Diehl

continued on page 2

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

gear legs, I have a good ten inches of ground clearance. A 56 or 58 inch prop would have been much more efficient. What is it they say? Keep it as long as possible for as long as possible.

I got a real demonstration of kinetic energy when I was removing the drive gear from the crankshaft. I had considerable tension on the gear and I reached down to pick up a hammer to give the gear puller a tap. At the instant I turned back, the gear released from the shaft with the sound of a shotgun. The gear and the puller slammed into my cheek and nose and just decked me. It was a couple of minutes before I could stand up and then I noticed blood dripping on my shoe. I was alone in the hangar so I thought I'd better look in the car mirror to see just how much damage was done. Well, it wasn't as bad as it felt and it certainly could have been worse. At least I didn't need stitches and my eyes weren't damaged. The plastic lenses in my glasses were scratched and the frames were slightly bent. I just asked myself why I always have to learn the hard way?

I have enclosed more photos with this installment. One picture is in response to David Clinthorne's article in the July issue. The photo has been doctored by using a pen to outline the tail fairing.

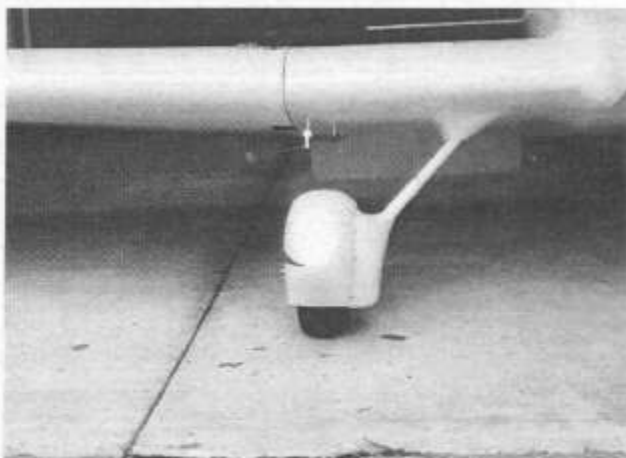


Location of removable fairing on Dave Blucher's KR-2S

The fairing shown is all one piece and was made by gluing foam around the intersections between the turtledeck, the vertical fin and the horizontal stabilizer. This foam is sanded to whatever shape is desired. Any kind of release agent can be applied to whatever area is to be glassed. In this case, I used teflon tape. I laid up two layers of the same type of glass used on the wings. The surface was finished through all the steps to the primer stage. The curved layup was removed and trimmed and the release tape and foam was removed. The final part is fastened in place using PK screws. If you look closely, you can see that there is an inspection plate below the stabilizer for access to the lower side of the elevator bellcrank.

The other photograph shows the brake assembly covers made by the same process described above. It cannot be seen in the photo, but the fairing is split

horizontally on the back side so that it can be slid off the front of the gear leg. The wheel pants are from Rand-Robinson. I have more detailed photos of these parts that will be included in the next installment.



Excellent workmanship evident on N197DB's landing gear fairings. Details in article.

Well, that's all for this month. While I'm waiting for my replacement gear set to come in, Betty and I are parking the cat at Rhoda's and heading up to New Orleans to jump on the Delta Queen for a short cruise up the ol' Mississippi. Wish you were coming.

Dave Blucher
616 Viscaya Avenue, Orlando FL 32839

Progress Report

Stan Mello
917 Sleppy Hollow Road
Paso Robles CA 93446
805-238-4841

After a few years of construction and reading the KR Newsletter for some time now, I thought it was time I submitted something. The KR Newsletter has been very helpful throughout my construction period.

My aircraft is a KR-2 minus 1. In other words, the fuselage is straight back from the firewall with flat sides. Width is thirty inches to the rear of the cockpit and it then tapers to the tail post. The canopy is from the KR-1.

The fuselage is stretched four inches ahead of the main spar and fourteen inches aft of the rear spar.

Diehl tri-gear is being used with Cleveland brakes and wheels mounting Lamb tires.

The assembly attached to the firewall is a rocker device constructed of 3/4 inch plywood and 2x6 lumber. It attaches to the firewall using the motor mount attach bolts. The unit makes it very easy for two people to turn the aircraft over by just lifting its tail and rocking it over onto its back whenever needed.



Unique turnover structure attached to the KR's firewall permits Stan Mello to turn his project as required.

At this point, I am stalled on construction. I am trying to utilize wing tanks only with the original intent to build them on a male mold and then fit them. I built the first one as you see in the photograph. Well, I built it a little too big and it would not fit right. So, I thought I would simply build them into the wing center section as per the plans. That did not go well and it was obvious that they were going to leak. So now it's back to building the tanks on a mold and another installation attempt.



Custom fiberglass wing tanks undergoing trial fitting in the Mello KR project. Stan relates his learning curve is near vertical at this point in the construction process.

After deciding that the molded tanks would make better gas strainers, I am convinced that aluminum tanks are the way to go. I have several questions that I hope some readers may be able to answer for me. Does anyone know of a supplier of aluminum wing tanks for the KR? Does anyone have plans, dimensions and a materials list for such tanks? Best method to construct them? Installation and attachment to the spars?

Any ideas would be greatly appreciated and would help me move forward with my project. Thanks.

About Those Classifieds

Hey, folks! Are ya'll reading the small print? You know, what's inside that little bitty box up there at the top of the classifieds page? Check it out after you've read through this issue.

As much as I'd like to take your offered money, the ads are FREE to subscribers as long as it's not a commercial-style business ad. Many thanks to you guys that offer to pay, 'predate it, but it's one of the benefits of your subscription. God love him, I had a man send me a signed, blank check for his ad! Turned out to be his lucky day. I returned it.

Send your ads; stuff wanted, stuff for sale or swap. Readers love the page. Just don't send me any more checks, carte blanc, as there's this Mooney for sale and...

The Never-Ending Dialogue

Art Smart
HCO5 Box 14-A
Park Rapids MN 56470
Telephone 218.732.5295

I suppose that the certified versus auto engine dispute will never end. Notwithstanding this, I was rereading my old KR Newsletters and came upon Don Reid's piece on the subject and decided to put my "oar in the water". Don described his purchase of a wrecked Varieze and all the stuff he got for 6500 bucks. A pretty fine deal for an O-200, VFR instruments and misc. hardware. But he then went on to compare 1976 prices for an O-200 from an old Rutan newsletter to a current price for a Subaru conversion. A classic oranges and apples comparison. Aside from the fact that O-200's are a lot higher now, they are almost impossible to find. Permit me to make a few points about both certified and auto engines. First, don't be misled by the weights published by Lycoming and Continental. Most people are amazed at the true weights of firewall forward certified engines. No, they are not as light as we've been told. My Emeraude, for example, was set up for an O-200. The O-200 was long gone when I got it but it still had a beautiful, gas welded mount. After I finished the airframe, I weighed it to see where I'd need to hang the Legacy to make the CG come out right. Big surprise ... my big old Legacy with radiator, coolant, oil, dual fuel pumps, wiring loom, coils, exhaust pipes, prop, motor mount extensions, engine cowling and prop, weighing about 375 pounds, had to be moved about 3 inches forward to balance the plane. Do you get the picture?

continued on next page

Never Ending, continued:

For this to be necessary, my total package firewall forward would have had to be lighter than the similarly configured O-200. My CG figures were checked and rechecked. They were correct. It is possible that the O-200 mount was incorrectly built. I had no way of checking this but I can tell you that certified engine weights are for a long block with no accessories and bear only a strained relationship with the total figure.

You may be surprised to hear that the claimed horsepower of certified engines is determined not on a dyno, but at the end of a pencil. A mathematical formula yields these numbers. Maybe they're right but then, maybe they're not. Could the "big three" get by with this? And then there's durability. Those Lycoming TBO numbers are impressive. Some go well beyond. But why don't we ever hear about the ones that become ill prematurely and require the E.R. of our A & P to keep them alive? In our little town of 3000 souls, I see a fairly steady stream of burnt valves, blown pistons, cracked cylinders, etc. in the noble certified engine. If it's happening here, it's happening everywhere. Couple this with the fact these engines are 20-30 years old (or more) with hundreds of thousands of power stroke concussions on their crank journals and heads and we have close to a guarantee of further deterioration in reliability.

There is no question that America's opposed aero engines are far superior to their predecessors and have increased safety as a result. However, because of the well intentioned safety mandates of our government, we have created a system that resists change, perpetuates stagnation and stifles innovation.

These same hurdles have built a closed cartel that supports the breathtaking prices we see. Conversely, the open market competition of the auto industry has produced efficiency and durability undreamed of in my youth. Before WW2, cars usually needed a valve job around 35,000 miles and valves, rings and bearings by 75 or 80 thousand. By the 1950's, 100,000 mile engines were becoming quite common. That "magical" 100 thou number impressed us. We thought we'd reached the ultimate. Well, it was definitely not that. With the introduction and refinement of detergent oils, better bearing materials and now, low tension piston rings, we see 200,000 mile engines not uncommonly and some beyond that. My former brother-in-law drove a Mazda pickup 245,000 miles in the early 80's. This was on an Idaho cattle ranch under miserable conditions (from the truck's viewpoint). He loaded that little truck until the axles were against the springs. He asked a lot of that little critter and it delivered. This is not exceptional. The worst car engine of today is a Goliath compared to the best of the 30's and 40's when our certified aero engines were designed. If we could pluck an engineer from space and have him compare an average auto engine with our typical certified engine, he would undoubtedly conclude

that the car engine was superior except in one way. More on that later.

Don and others have mentioned that car engines are designed to operate at 15-20% of rated power. I guess he never saw my kids driving my '71 Datsun wagon. It's true that at cruise, autos use only this much of their potential but they are designed with a huge margin of safety. Were this not so, they would not survive the unintended burdens placed upon them. They tolerate amazingly well the stop and go "killer" city traffic, drag racing by hormone-crazed teenaged boys trolling for girls, and cowboys blazing across Montana or the Nevada desert at 100 M.P.H.

I used to wonder why rigs driven like this seemed to last so long, actually better than "doggin" around town. Then I heard an engineering riddle. "What is hardest on an engine? Low RPMs and high load, or high RPMs and moderate loads?" Turns out that the engine spinning rapidly with moderate load is much happier. This is because the oil film pressures and piston-head pressures are lower. Now it makes sense. Assuming that the rest of these two engines are in good health, the cowboy smoking across the plains will have better luck with his engine than your spinster aunt idling her way to church and the market. We used to think that RPMs were the enemy of longevity and for those old, long stroke engines this was largely true. Today, with our super lubricants, balanced engines, improved metals and low tension rings, RPMs beyond our wildest hopes are routine and pose no challenge to the engine's well being. Other than in a trainer, the requirements of an aero engine are far kinder than in a car. Wide open takeoff followed by throttling back to that "steady state" load with nice, hot oil to distill out contaminants and the optimal bearing and head conditions mentioned above. This is as close to engine heaven as one could design.

Aero engines are required to perform almost identically to marine engines. Car engines have been converted for this use for years. I don't know about Chrysler, but Ford and GM engines have done very well in marine service and at a lot higher than 15-20% loading.

So why aren't more car engines seen in planes? There are lots of reasons. The first that comes to mind is fear. Building a plane is a big enough risky project so why compound it? Secondly, there are unique challenges inherent in each auto-aero conversion that must be met. It is not until the use of an engine becomes commonplace that these solutions become well known and the products required to answer some of these needs becomes available. The venerable VW was the first to achieve this. Through its aero usage, combined with the experience of Baja racers and dune buggy drivers, an engine has emerged that is serving many of our brethren well. Sure I've heard of the broken cranks, but I am told that the forged racing cranks have remedied this.

The Ford V-6 is second in useage thanks to Dave Blanton's work. Their head gasket, flywheel and coil

Never Ending, continued:

problems have been solved and many are flying well in heavier planes. Jerry Schweitzer, of Iowa, put 500 hours on his Ford in an older Piper with no loss of compression, increase in oil consumption or apparent loss of performance. He liked it so well, that he built up another and put it in his new RV-6.

Another older success story is the 60's Buick-Olds aluminum V-8. BAP of Nevada has been flying these for years with no problems. The catch is that very few remain since so few were built. As a result, they are now expanding into 350's and Chevy V-6's.

The Mazda rotary has created a lot of interest, but so far few are flying. There are a couple in RVs and Jim Mayfield, flying a gyro trainer in Arizona, put a thousand hours on one before returning it to Atkins Aviation in Washington state for apex seals.

The biggest recent success story is the Subaru. After building a stellar reputation on gyros serving Aussie sheep ranches, they finally caught on here. Not only are there lots of private experimenters, like me, using them but their virtues have led to the formation of several companies building complete engine packages for Kitfox, Avid and others. Among the early individual users are Justin Mace and Curtis Patten. Justin has around 500 hours on a wrecking-yard Legacy in his Dragonfly. Curtis is a gyro jockey who flies a lot with over a thousand hours on his Legacy. His inhales its lo-lead through a Holley 500 while Justin's holds forth with OEM. My Legacy, though, had just 43 hours on it when the alternator died leading to engine stoppage and my brush with "terra firma" (was it ever... firmathat is.). I believe that the lack of electrical redundancy is the "Achilles heel" in the aero use of today's auto engines. In certified and certain VW conversions, the independence of the ignition from the rest of the electrical system is valuable. Even though mags are less efficient, they are not beholden to an alternator. There are some dual aero solid state ignitions presently. If the system is NOT coupled with an EFI, this is a fairly safe system. On all modern auto engines electronic ignition system is coupled to the EFI fuel induction system. The EFI half of the equation, primarily due to the high pressure fuel pump, loves amperage...20-30 amps. This high demand system brought my Emeraude down in less than 2 minutes after the computer went into "limp home" mode due to low battery voltage from the failed alternator. For this reason, I believe that electric fuel injection, at least in auto configuration, is not suitable for an aero installation. I have, therefore, reverted to the old carburetor (admittedly less efficient) in order to give my alternator and ME a fighting chance. This was what I alluded to earlier in the theoretical comparison of the auto conversion and certified engine. Auto EFI-ignition systems work great, usually, on the ground. If something fails, that's fine in the Sears parking lot or even on the interstate. But over a forest, as I was, or the mountains of

Utah? In these not uncommon situations, a failed alternator can write the end of your story. If a man has a carb, a dual point or GDI ignition, with dual coils and even dual batteries, we can come close to the safety margin of a dual mag system. As a dividend, we get better timing control and a hotter spark. For you younger fellows, let me explain that a points-condensor system will run for hours on just the battery, providing one doesn't use the lights. We did this a lot when we were young and couldn't afford to fix our generators. I'm told that solid state systems draw even less than points. I can live (literally) with an aero engine that can function for hours with a dead alternator.

In summary, certified engines have given us journeyman service and their dual mags are a comfort. However, they're old and tired and their design was new when I was a kid. And the prices they command, for engines or their parts, rival medical equipment. Auto engines, on the other hand, offer better engineering and efficiency, excellent durability, ready availability and, by comparison, reasonable prices.

Sure, a certified engine is easier to work with. After all these years, not much remains to be solved. However, if you admire today's hi-tech efficient and tough engines, and perhaps resist supporting the (gasp) prices of the Continental & Lycoming cartel and have the heart of an experimenter, come on over to auto row where you'll find more of us each year.

There is a magazine that specializes in auto engine conversions, called CONTACT, published by Mick Myal. It's full of articles based not on someone's opinion, but upon actual experiences of guys who are flying auto engines and have been for years. These articles are great, covering everything, warts and all. A cornucopia of useful info. It'll never replace the KR newsletter, but it's great for engine pieces.

This has gone on far longer than intended and I hope it doesn't sound like I hate certified engines cause I don't. I do chaff a bit at the bureaucratic swamp and the enforced monopoly that "church approved" aircraft and their engines has become. Actually, I never met an engine I didn't like, from Briggs & Stratton to Pratt & Whitney. So I'll wish all my fellow airmen well, whether flying V "dubs" or Lye "ohms". And remember, whichever engine you like, if it dies, that altitude above you won't help.

Meet Your KR Newsletter Editor

I've got my reservation booked for the 17th Annual KR Gathering at Perry (OK) Municipal. How about you?

The entire staff of the KR News, both of us, will be on the field and we're looking forward to meeting many of our subscribers. That would make it a fine weekend but there's also a really neat fly-in scheduled!

The KR Newsletter will be sponsoring an award to a fly-in participant, holding a drawing, and conducting one of the many seminars. Hope to see you there!

Kit CLASSIFIEDS

Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial style ads will be billed accordingly prior to publication. The KR Newsletter reserves the right to edit free ads.

FOR SALE - Parting out award winning KR-2. Fuselage with Loran, xpnrd, encoder, VAL 760 com, intercom. No damage. Unique canopy design, wells gear latch \$5000. Set of plans-built wings, 9 gal tanks & swept tips \$1000 w/o fuselage or \$100 with. New 2180 eng kit, Slick mag, electronic ign, cooler, starter, etc. \$4500. Props- 52/50-Revmsr hub \$200. 52/52-Revmsr hub \$100. 52/54-Great Plains Force One hub \$200. Type 4 parts-machined case and cam, Force One hub & bearing. David Shirey, 8771 Springwood Way, Washington, MI 48094. 810-778-7440.

FOR SALE - KR-2, 70%. Fuselage, tail feathers, canopy and frame, forward deck, fuel tank and wings complete. Diehl tail-dragger gear installed with Matco brakes, master cyl, wheels, tires. New instruments: ALT, compass, AS, tach and CHT. Engine mount, center control stick, rudder assbly with pedals, 50x52 Sterba prop, zero time rebuilt Revmaster w / Diehl backplate, starter, alternator, dual magnetos. Make offer. Set of KR-2 plans, misc items and cradle to transport on 16 ft. trailer. David Corpier, Rt. 1, Hillcrest Rd., Clifton, TX 76634. 254-675-8064 (Hm) 254-675-8064 (Fax) 254-582-6115 (Ans Svc)

FOR SALE - Early KR-2. Plans built, not stretched. Boat on std retracts, empennage & controls installed. Original canopy plus Dragonfly, neither installed. Wing spars ready to install. Add'l stuff with project. Many new & used Type 4 parts but no complete engine. Have new test run only Big Block VW 2600cc, 90 hp. Full elec with mech fuel pump, Force One hub, from GPACS. Interested? Dan Freeman, 317-356-4152 or AOL at DanF1925 or 1925 S. Temperance, Indianapolis IN 46203.

FOR SALE - KR-2 fiberglass cowling, \$400. Old retract gear setup. Accepting offers. W. Janowski, 14123 E. 122nd St. N., Collinsville OK 74021. Tel. 918-371-5846.

FOR SALE - KR-2. Boat stage. Fuselage and spars built. Horiz stab and elev complete thru f'glassing. Custom fixed or retract gear based on Newsltr #131-134. All mat'l to complete, firewall aft. Includes set of KR Newsletters. \$1200. Don Q. Cryer, 165 South Rd, Kensington NH 03827. Tel. 603-772-3116. Fax 603-772-4156. E mail don.q.cryer@juno.com.

FOR SALE-1984 EA81 Subaru Engine. 0 SMOH Std

size components. New main and rod bearings, rings, gaskets & seals. Intake manifold modified, heads reworked with new guides and valve job. Orig carb, distributor & alternator included. Ready for installation in your homebuilt aircraft. \$650. (100. will be donated to EAA Ch 125) Don Clarke, 10013 Conover Ln, El Paso TX 79924. Tel. 915-755-0588.

FOR SALE - KR-2 featured in Rand factory video. 280 TTAE, Hapi 1835 on Diehl fixed gear, tail dragger. Damaged wing tip, cowling, canopy and landing gear. \$4000, as is. Estimate \$1200 to be flying. Ken Shanon, 100 Lynch Rd, Petaluma CA 94954. Tel. 707-766-9842.

FOR SALE-KR-2. Completed boat stage with fixed main, no nose gear. Brakes, wheels, tires, VW mount. Outer spars done. Rudder, horiz, elev. All controls in. \$500. Jerry Vanatta, 3730 Clarksville Pk, Nashville TN 37218. Tel: 615-248-2008. Fax: 615-242-7829.

WANTED - Gascolator & bracket. Contact KR Newsletter, 624 W. University Dr, Suite 199, Denton TX 76201. Tel: 940-566-5871.

FOR SALE - ARC 328-T, 720 Ch Nav-Com. Includes two needle GDI, glide slope amp & trays with labeled wires. Cost \$800, asking \$500 obo. New AC 3500 rpm recording tach. Cost \$150, I'll take \$75. New Bendix dual mag aero ignition switch. Cost \$75, I'd like \$35. Contact Art Smart, 218-732-5295.

WANTED - Posa Carb Needles I have the #5 and need the other four sizes. Also would like an instruction manual, if there is one, or words of encouragement. Will be used on Revmaster 2100-D. Jack Gress, 9305 Fairwood Dr., Kansas City MO 64138 Tel: 816-761-2693. E-mail lackg-kr2@msn.com.

WANTED-KR back issues #1-19, 21-96, 99-100, 105, 107-108, 110-115, 123-125, 130, 135, 137-148, 153, 157, 162, 176, 194, 225, 228-229. Bruce Toscano, 18916 68th Ave NE E205, Bothell WA 98011. Telephone 425-806-8072.

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INFORMATION

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Toscano KR-2S

Forget that TV, I'm Building!

Bruce Toscano
18916 68th Avenue Northeast E205
Bothell WA 98011
Tel: 425-806-8072

Your editor got a nice note and photograph the other day from a Washington state builder. Bruce said that he had nothing of substance to report, only that he had just begun construction of his KR-2S.

Check out the photo of the proud, new dad in the "delivery room". Folks, this is what it's all about! Try that *scratch n'sniff* on the photo. I'll bet you can almost smell that freshly cut spruce. Now, go out into your own shop and put an hour's worth of work into your project.



Bruce Toscano displays his KR-2S fuselage efforts.

The whole point of including Bruce's photo and article in this issue of the KR Newsletter is to encourage other builders, who may be in the early construction stages of their projects, to send a photograph and a note to your newsletter. Sure, we all enjoy reading about those completions and first flights but the majority of our readership are still laboring somewhere between Bruce and Suber Dave Blucher; early stages of the project and flying off that FAA mandated test period.

Send along a photo, preferably with you in it, and a note about your aircraft. I promise you'll make the News!

Be There!

Perry Oklahoma Municipal Airport
September 19-21, 1997

17th Annual KR GATHERING

For information, directions & gossip
DON BETCHAN 405-336-5954 COST

Blank Pages Ahead?

*Newsletter Editor Twiddlin' Thumbs
While Sittin' on the Ramp*

Well, fellas, the mail bag is empty...that's empty with a capital "E"...as in dried up. There are, literally, hundreds and hundreds of subscriber-builders out in KR Newsletter Land, yet lately the communication has been, save for a few loyal contributors, pretty much one-way.

If you'd like to see this rag continued in its present format, it's going to take some effort on your part to share a photograph, your progress report, a building tip, or some juicy gossip. It doesn't matter if you're in the early stages of building a box-stock KR and feel that you have nothing new to contribute; other builders will get a good shot of enthusiasm from your efforts.

So, what's it gonna be? Without the support of the readership, there can be no KR Newsletter. Your call.

The KR NEWSLETTER

published monthly at
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Editor and Publisher, Monte Miller
Evening and weekend tel: 940.566.5871

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BACK ISSUES

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Individual issues, when available, are 2.00 each.

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In This Issue of the KR Newsletter:

- **Blucher's Subaru Adventures**

Flying prop hubs, cats and cruises.
Never a dull moment with Suber Dave.

- **Stan Mello & A Rockin' KR**

Progress report from a West Coast
KR crafter.

- **Auto Conversion or Aero Engine**

Art Smart revisits this never ending
dialogue and adds his views.

- **KR Classifieds**

Shop this aviation garage sale without
leaving the house. Good deals abound.

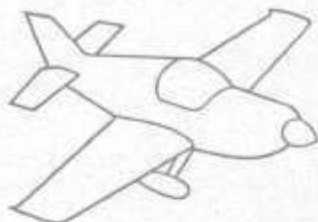
- **On the Ramp**

Your editor gets out his prayer rug again,
looking for contributors.

- **1997 KR Gathering**

Point man Don Betchan looking for you.
Information: 405-336-5954.

Time's a'Wastin! Make your plans to attend the 17th Annual
KR GATHERING
Perry, Oklahoma Municipal Airport September 19 thru 21, 1997



KR NEWSLETTER

624 West University Drive
Suite 199
Denton, Texas 76201

Issue 243 Sept 1997





NEWSLETTER

17th KR Gathering Done Right *Oklahoma Sooners Pitch a Good One*

Betchan / Stein Duo Dazzle All Comers with Event

First rattle outta the box, let's thank Don Betchan of Perry, Oklahoma and West Coast mover n' shaker Mark Stein for their fantastic dedication and service to the 17th Annual KR Gathering. Don was the "on site" point man in Oklahoma. Mark did a magnificent job of long-distance organization from California. Without these two hard working gentlemen, the event could not have been as successful as it was. Thanks, guys...ya'll done good!



*New Texan Bobby Muse of Wimbetly, Texas and his elegant KR-2.
Selected as the Champion KR-2, Bobby also won Publisher's Choice.*

Friday arrivals at Perry Municipal stayed far into the night bringing new meaning to the term "hangar flying". Food, flying machines and fellowship kept many people at the airport late into the evening. This nocturnal activity in no way slowed folks down come Saturday morning.

How do you describe the events and activities of Saturday, the 20th of September...my old granddaddy would describe the scene as akin to a blind dog in a meat shop. Good stuff everywhere.

If it wasn't Mike Ladigo cranking up his turbojet-powered KR 1 1/2 or Martin Roberts giving rides to all takers or the continuous seminars hosted by renowned experts in their fields, it had to be the fly bys or the nachos or the friendly sharing of information or the burgers or all the laughter. Take your pick, it was a day of dreams.

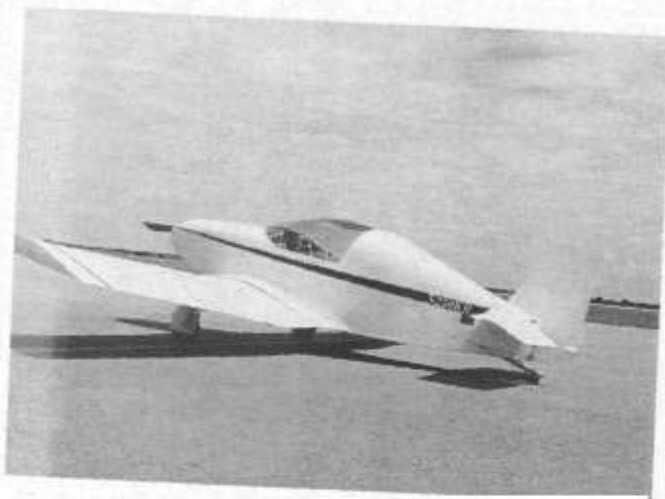
No doubt, after the Saturday evening banquet, the Cherokee Strip hotel has moved the KR crowd to the top of their rowdy list, but they say they want us to come back next year. Go figure. We'll show 'em, we'll be back!

Enjoy the photos with this issue. In future issues, the KR Newsletter will explore, in detail, selected aircraft from the 17th Annual KR Gathering.

*A complete listing of awards
and more photos from the
17th KR GATHERING
is included in this issue of the
KR Newsletter*

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Aircraft and Images from the 17th Annual KR Gathering Perry OK Municipal Airport 19-21 September 1997



Don Betchan's beautiful KR-2 with custom retractable gear.



*Photo of Martin Roberts & his KR-2 not actually flying.



*TMeyourhand...TomBagnetto with 911 Teddy Bear



Cal Campbell's N792BC was selected as People's Choice.



Awesome turbojet KR-1 1/2 blows away builder Mike



Stealthy-looking canopy on the Dennis Pointer tri-gear KR-2.

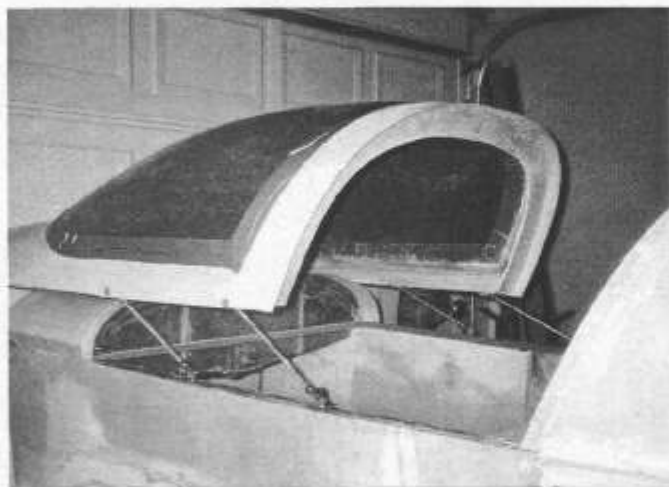
"I'll Take Care of That Later..!"

Jeff Bryson
9017 Hemingway Place
Bakersfield CA 93311
Tel: 805-665-9449

I've just finished the canopy on my 2S and was wondering why it turned out so badly. Structurally, it's like the rest of the plane, good. But cosmetically, it's crap.

Being a first-time builder, I'm impatient. A pilot for almost thirty years and wanting to get into the air again, I have attacked almost the complete project with the idea of putting off to the end of each section (wings, fuselage, etc.) the smoothing of the finish. The canopy was no exception.

The canopy's side rails were not perfectly aligned with the fuselage on the inside edge. No problem, I'll take care of that later. When glassing the rails, I said I wouldn't worry about the hard points for the latches, etc. I'll take care of that later.



*What'cha think? Is Jeff being too hard on himself?
Read his article about 2S canopy installation.*

When trimming the canopy frame, the angled front portion didn't line up with the canopy. No problem. I'll take care of that later. Well, I think you can get the drift of where I'm going.

I should be pretty much completed with my aircraft by the end of this winter. I have estimated that it will probably take through next summer to achieve the finished product ready for paint. Sure, I read all the articles telling us to take our time with the fiberglass work, trim out any bad spots and do our best before glassing. My impatience will cost me three or four months additional work.

My canopy opening mechanism is ate Roy Marsh and off the internet. Not sure if I like it yet because I can't hinge to the removable forward deck and fuel tank. Might not be strong enough.

AWARD WINNERS

from the 17th Annual

KR GATHERING

Best KR-1

Tom Bagnetto, Wichita Falls TX

Best KR-2

Bobby Muse, Wimberly TX

People's Choice

Calvin Campbell, KR-2, Broken Arrow OK

Publisher's Choice

Bobby Muse, KR-2

Best Engine Installation

Tom Bagnetto, KR-1 & his monster Type 4 VW

Best Interior

Jim Faughn, KR-2, Saint Louis MO

Oldest Pilot

Robert Muse

bom same year rope was invented

Longest Distance

Robert Muse & KR-2, Marietta GA

Spot Landing

Martin Roberts, KR-2, Broken Arrow OK

Repairing Wooden Props

Jack Schnurr
1164 Vasi Way
North Pole AK 99705

On a recent trip, I got stuck flying in a heavy, driving rain for about one and a half hours. A friend of mine asked, "What were you doing flying in rain that heavy?" My reply was, "I knew exactly what I was doing, I was praying." I was worried about the rain eroding away the leading edge of my propeller so I reduced power to 2,900 RPM's to lessen the impact forces.

After landing, post flight inspection revealed damage to the leading edge of the prop. Several areas about one-eighth of an inch deep and one-fourth of an inch wide had been eaten away by the rain. One of the tips also had the corner eaten away.

I was still several flying hours from home so I watched the damaged areas very closely on pre and post flight. It was obvious that the damaged areas were not getting worse and no cracks were developing.

I flew on to Fairbanks and when I got home, I got out my AC43-13-1A/2A, *Acceptable Methods*,

Techniques, and Practices, Aircraft Inspection Repair and Alterations. This is a publication that no homebuilder should be without. I referred to the section on wooden propeller repair and proceeded as follows.

I determined that my prop was made of maple so I got a piece of maple and made multiple cuts with a saw so I could collect the sawdust. The sawdust was mixed with Resorcinol glue to make a mixture the consistency of Elmers Glue. The prop was placed horizontally and a piece of masking tape was put on the front and back of the prop where the damaged area was. The top of the masking tape was left open so that the glue could be poured into the pocket formed by the tape and the leading edge of the prop. A 24 hour wait for the glue to dry, then rotate the prop 180 degrees and repeat the procedure on the other leading edge.

I waited two more days to make sure that the glue was dry and then, the tape was removed and the glue/sawdust mixture was filed down with a fine tooth file so that the original shape was obtained. The area was then sanded with 600 grit sandpaper and painted to match the rest of the prop. This looked good, but I had my doubts about the durability of this fix.

The next day, I fired up the 1835cc VW engine and took off on a one and a half hour flight to check out the new repair job. After landing, I was pleased to discover that all was well with the fix, no problems at all! My hat is off to the FAA people who wrote that publication, they did a wonderful job.

It would be an excellent idea to buy a prop that has leading edge protection on it. Stainless steel or a urethane insert for rain or sand erosion protection would eliminate this potential problem.

We Have A Winner!

Among all the other activities going on during the recent 17th Annual KR Gathering, the KR Newsletter held a drawing for a free, six-month trial subscription and/or an extension to an existing subscriber.

And the winner is... Mister George Brown, 104 Cross, Perkins OK 74059. Congratulations, George!

Now here's the really interesting part...George's neighbor, James Smith, also of Perkins OK, went ahead and paid for a sub when he stopped by to visit the KR Newsletter exhibit. But not or George...he just knew.

Boise Builder's Back

Enclosed are some notes and a few photographs showing how I constructed my wings.

After attaching the plywood ribs to the wing spars, I then glued two-inch polyurethane foam to the rib's vertical surfaces. This foam was then cut down approximately .75 inch below the rib's airfoil. To this, I

bonded the one-inch which was ultimately shaped to the correct plans airfoil.

All gaps and glue joints were then filled with a lightweight spackling and sanded smooth. The wings were then fiberglassed.



Traditionally constructed KR wing with shaped foam, filler and fiberglass demonstrates Jim's craftsmanship.

Wooden ribs were used to hold the wing in its proper position while the required washout was set.

The wing attach fitting in the photo? I messed up on some of the holes so made a correct fitting using some 4130 I had on hand.



Just wait until Jim's wife comes home!

Since we had no house guest at the time, I used our guest bedroom as a fiberglass curing room. Simply set the baseboard heating system to eighty degrees and poke me with a fork, I think I'm done! By the way, my **wife**, Donna, helps a lot with my project so I must thank her for all she does.

Jim Marshall

10602 Winterhawk, Boise ID 83709
Tel: 208-362-9225

Molded Plywood Seat For KR-2S

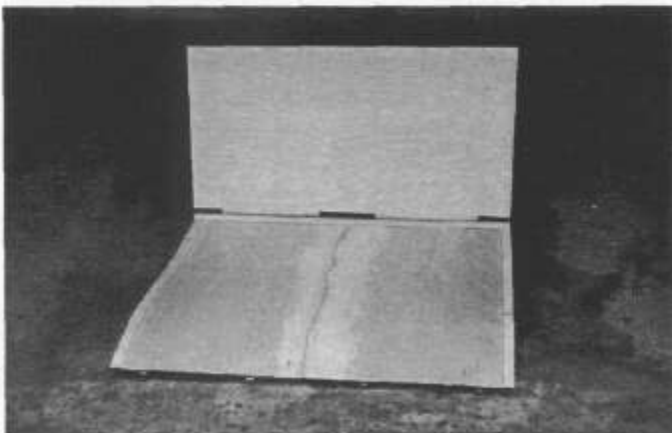
John Weikel
P.O. Box 2384
KerrvilleTX 78029
Tel: 830-895-1285

Even though my KR-2S project is on hold while I recover from a heart attack, I still give a good bit of thought to that dust-gathering pile of expensive material in the garage.



Texas Hill Country KR-2S from Kerrville's John Weikel.

The photos show a molded plywood seat that has a forward folding seatback that will accommodate dual control sticks. Of course, this little modification will require an alternate method for wing flap / belly board actuation. I am still working on that little detail while currently considering lightweight pneumatic cylinders and a hand-powered pump. I would appreciate hearing from anyone who has experience with pneumatic controls for this type application.



Well planned molded plywood seat bottom with folding back allows comfy seating as well as inspection access.

The last issue of the KR Newsletter containing the Stan Mello progress report really zeros in on an idea that I have also been working on. The idea of using aluminum wing tanks (and cowl tank for that matter) appeals to me. I have the name of a metal fabricator who has made KR

fuel tanks. He is Carl Eldredge of Wharton, Texas. Sorry that I don't have a phone number but I am sure that directory assistance would be happy to supply it for a modest fee. There can't be too many people with that name in a town the size of Wharton!

I can't wait until the next KR Newsletter arrives with Dave Blucher's performance report on his Subaru-powered KR-2S. Of particular interest is weight & balance and useful load information.

On Sale KR Newsletter Back Issues

To celebrate the 17th Annual KR Gathering, the KR Newsletter is offering a special sale price for a set of back issues. Totalling over one hundred issues and normally selling for \$85.00, the special price of \$50.00, postpaid, will honor the KR's twenty-fifth anniversary and the 17th Annual KR Gathering.

This offer is valid for purchases within the United States only and your order must be post marked no later than 30 October 97. Late orders will be returned.

KR Newsletter back issue sets are full of technical and systems information as well as providing an historical overview of the design. Should you be new to the KR experience or simply wish to explore your design's roots, a set of back issues is for you. Treat yourself.

Corvairs n' KR's

Subscriber DON BOLL, 8640 7th Avenue NW, Newburg ND 58762, is interested in knowing more about Corvair-powered KR aircraft. Your editor recalls one (or perhaps two) articles in the KR Newsletter regarding projects utilizing the Chevrolet air-cooled flat six.

The Corvair had a brief fling of popularity among the Pietenpol crowd, with several completed and flown. As a matter of fact, there's one at a private aviation community just south of DTO that's flown by a young lady

continued on next page

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Sets of existing back issues of the *KR Newsletter* are available, post paid, for 85.00 USD or 95.00 Foreign.

Individual issues, when available, are 2.00 each.

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not yet twenty years old! It may be possible to access some additional information from the Buckeye Pietenpol Association. EAA headquarters will most likely have their current address. It's somewhere in the Corn Belt.

Is anyone out there able to help Don? If so, drop him a note or call 701-272-6353.

More..bout dem Classifieds

Another little bit of explanation needed to clarify how this KR Newsletter feature must work.

Due to the economics of production, the free ads must be limited to a single page in the KR Newsletter. A new advertisement will be inserted at the bottom of the rotation. As additional ads are received, the oldest ads are deleted and the newer ones take their place at the bottom. If your item has not sold prior to its removal from the page, you must resubmit the ad and take your place in line.

A reader wanted to know why his ad was deleted and why I didn't just add more pages. The answer is in the first sentence of the second paragraph. By the way, your editor receives other builder newsletters and several of them charge their subscriber ads by the word, per month. What's that old saying about a *gift horse*?

JOHN GULP

Through Jerry Mahurin, of Columbia SC, the KR Newsletter has learned of the loss of John Gulp, Greenwood SC, and his KR-2. A first flight report from John had recently been published in the KR Newsletter.

John departed the Greenwood County Municipal Airport on Sunday, 21 September. The aircraft was not located until the next day.

The Atlanta office of the NTSB is conducting an investigation. No further details are available at this time.

The KR Newsletter and the KR fraternity extend condolences to John's family and friends.

A Big Thank You...

...to the KR Newsletter subscribers who have responded to the editor's request for articles and updates on projects. The response is encouraging as it does prove that *someone* is reading the Newsletter! Now I'm able to roll up the ol' prayer rug for a few days and get back to the business of producing this rag.

Keep 'em coming...and thanks, again.

Texas T-Tail KR-2

John Gregory
201 Plum Creek Lane
Dripping Springs TX 78620
Tel. 512-858-4419

Here are the shots I took of my project before the KR Gathering in Oklahoma...the same ones I left at home on the kitchen table!

My project is growing whiskers now, too. Started in 1979 but stopped due to other projects along with my late wife's illness. I'm hitting it hard now.

With the T-Tail and a fuselage extended by ten inches, I hope to beat the close-coupled pitch sensitivity characteristics of the standard design KR-2. We'll see what happens.



Whiskers John Gregory with his stretched T-Tailed KR-2. With fixed mains and a retractable tailwheel, the Revmaster 210DD should punch nice holes in the sky.

I had modified the original landing gear and even made the tailwheel retractable. Then I heard the stories of some collapsed main gear so I ripped it all out and now have Dan Diehl fixed landing gear. The retractable tailwheel remains!

With the longer and heavier tail, I'll space forward the Revmaster 2100D in order to keep the CG within limits.

We sure saw some beautiful handiwork at Perry. The FBO gentlemen were very accommodating; helping me with my Bonanza's battery and alternator. Just yesterday we found a bad crimp connection to the voltage regulator. Hoorah!

With all the extraneous stuff under and around the KR, you may not be able to use these shots. I'll send better ones later.

Please keep up the good work on the newsletter. It is so much clearer and readable now with well processed photographs. Thanks, too, for the great fly-in seminar and articles on painting the KR.

KR CLASSIFIEDS

Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial style ads will be billed accordingly prior to publication. The KR Newsletter reserves the right to edit free ads.

FOR SALE - Parting out award winning KR-2. Fuselage with Loran, xpndr, encoder, VAL 760 com, intercom. No damage. Unique canopy design, wells gear latch \$5000. Set of plans-built wings, 9 gal tanks & swept tips \$1000 w/o fuselage or \$100 with. New 2180 eng kit, Slick mag, electronic ign, cooler, starter, etc. \$4500. Props- 52/50-Revmsr hub \$200. 52/52-Revmsr hub \$100. 52/54-Great Plains Force One hub \$200. Type 4 parts-machined case and cam, Force One hub & bearing. David Shirey, 8771 Springwood Way, Washington, MI 48094. 810-778-7440.

FOR SALE - KR-2, 70%. Fuselage, tail feathers, canopy and frame, forward deck, fuel tank and wings complete. Diehl tail-dragger gear installed with Matco brakes, master cyl, wheels, tires. New instruments: ALT, compass, AS, tach and CHT. Engine mount, center control stick, rudder assbly with pedals, 50x52 Sterba prop, zero time rebuilt Revmaster w / Diehl backplate, starter, alternator, dual magnetos. Make offer. Set of KR-2 plans, misc items and cradle to transport on 16 ft. trailer. David Corpier, Rt. 1, Hillcrest Rd., Clifton, TX 76634. 254-675-8064 (Hm) 254-675-8064 (Fax) 254-582-6115 (Ans Svc)

FOR SALE - Early KR-2. Plans built, not stretched. Boat on std retracts, empennage & controls installed. Original canopy plus Dragonfly, neither installed. Wing spars ready to install. Add'l stuff with project. Many new & used Type 4 parts but no complete engine. Have new test run only Big Block VW 2600cc, 90 hp. Full elec with mech fuel pump, Force One hub, from GPACS. Interested? Dan Freeman, 317-356-4152 or AOL at DanF1925 or 1925 S. Temperance, Indianapolis IN 46203.

FOR SALE - KR-2 fiberglass cowling, \$400. Old retract gear setup. Accepting offers. W. Janowski, 14123 E. 122nd St. N., Collinsville OK 74021. Tel. 918-371-5846.

FOR SALE- KR-2. Boat stage. Fuselage and spars built. Horiz stab and elev complete thru f'glassing. Custom fixed or retract gear based on Newsltr #131-134. All mat'l to complete, firewall aft. Includes set of KR Newsletters. \$1200. Don Q. Cryer, 165 South Rd, Kensington NH 03827. Tel. 603-772-3116. Fax 603-772-4156. E mail don.q.cryer@juno.com.

FOR SALE-1984 EA81 Subaru Engine. 0 SMOH. Std

size components. New main and rod bearings, rings, gaskets & seals. Intake manifold modified, heads reworked with new guides and valve job. Orig carb, distributor & alternator included. Ready for installation in your homebuilt aircraft. \$650. (100. will be donated to EAA Ch 125) Don Clarke, 10013 Conover Ln, El Paso TX 79924. Tel. 915-755-0588.

FOR SALE - KR-2 featured in Rand factory video. 280 TTAE, Hapi 1835 on Diehl fixed gear, tail dragger. Damaged wing tip, cowling, canopy and landing gear. \$4000, as is. Estimate \$1200 to be flying. Ken Shanon, 100 Lynch Rd, Petaluma CA 94954. Tel. 707-766-9842.

FOR SALE-KR-2. Completed boat stage with fixed main, no nosegear. Brakes, wheels, tires, VW mount. Outer spars done. Rudder, horiz, elev. All controls in. \$500. Jerry Vanatta, 3730 Clarksville Pk, Nashville TN 37218. Tel: 615-248-2008. Fax: 615-242-7829.

WANTED- Gascolator & bracket. Contact KR Newsletter, 624 W. University Dr, Suite 199, Denton TX 76201. Tel: 940-566-5871.

FOR SALE - ARC 328-T, 720 Ch Nav-Com. Includes two needle GDI, glide slope amp & trays with labeled wires. Cost \$800, asking \$500 obo. New AC 3500 rpm recording tach. Cost \$150, I'll take \$75. New Bendix dual mag aero ignition switch. Cost \$75, I'd like \$35. Contact Art Smart, 218-732-5295.

WANTED - Posa Carb Needles. I have the #5 and need the other four sizes. Also would like an instruction manual, if there is one, or words of encouragement. Will be used on Revmaster 2100-D. Jack Gress, 9305 Fairwood Dr., Kansas City MO 64138. Tel: 816-761-2693. E-mail lackg-kr2@msn.com.

WANTED-KR back issues #1-19, 21-96, 99-100, 105, 107-108,110-115, 123-125, 130, 135, 137-148, 153, 157, 162, 176, 194, 225, 228-229. Bruce Toscano, 18916 68th Ave NE E205, Bothell WA 98011. Telephone 425-806-8072.

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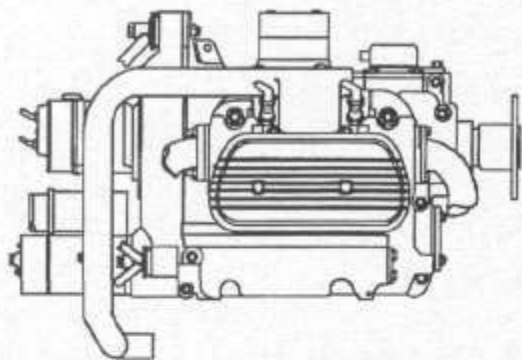
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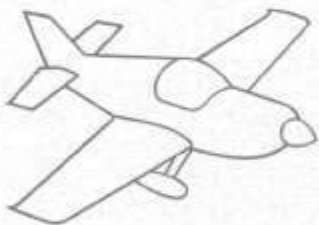
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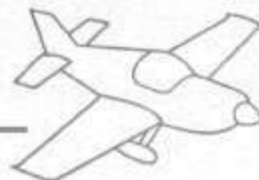


KR NEWSLETTER

624 West University Drive
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Denton, Texas 76201

Issue 244 Oct1997





NEWSLETTER

KR Lifestyle Wit, Wisdom and Humor *You've Gotta Figure Out Which Is Which*

Bagnetto Bags a Double at Perry

Ken and I

Stuart Robinson



Best Engine Installation and Best KR-1 at the 17th Annual KR Gathering, Tom & Dawn Bagnetto of Wichita Falls, Texas knocked 'em out.

Look up the word *perfection* in any dictionary and you'll see, right beside the definition, a picture of Tom Bagnetto's KR-1. Attendees at this year's Gathering took thousands of photographs of many outstanding KR series aircraft. The Bagnetto Type-4 Volks-powered gem accounted for a high percentage of that exposed film.

Outstanding detail touches abound on this multiple award winner and each viewing reveals something previously missed.

Never known as a shy individual, Tom has helped many builders with his patient and knowledgeable answers regarding the KR design.

Some years ago at the Watsonville Fly-In, when we had only the KR-1, I got up early on day two and wandered out to the flight ramp.

As I passed by the KR-1, a young man said he was building one and would like to see the KR fly. So, I fired it up, taxied to the active and took off.

The Pacific Ocean was not too far away and there was the normal cool, damp breeze as I climbed to 1000 feet and positioned myself on the upwind leg so as to demonstrate some slow flight. Holding Vs plus 2 (46 mph), I went droning along with a ground speed of about 25 mph, using very little throttle.

The Posa carb is not supposed to ice up as will a venturi-type carburetor, but they will form ice on the slide valve...under the right conditions. Even then, the slide valve can break free if the throttle "push-pull" rod has a hard case to work within. Unfortunately, we used a choke cable. *Pull* was fine but *push*, with a stuck slide valve, just stretched the cable casing.

With the slow flight demo over, I fed in power but nothing happened. If I had left things alone, I could have flown for the next twenty hours at that power

continued on page 8

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Kitplanes to Feature Blucher KR-2S

*Suber Dave Goes Hollywood
But You've Got the Scoop First*

Dave Blucher

616 Viscaya Avenue, Orlando FL 32839

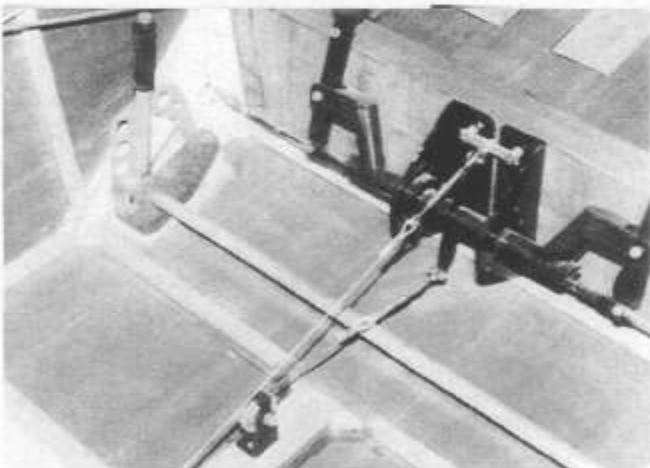
Back in the saddle again! We had a relaxing and educational trip up the Mississippi river. It was just four nights and three days, but there was lots of great food, music and historical sights to see. It was almost unbelievable to see one tug pushing forty-two barges upstream on that ol' muddy river. That's horse power! The Delta Queen was really impressive; steam power still lives. I hope it lives forever.

I'd like to start by correcting something I said in the last installment. I said that the Suber was turning 3800 rpm at 75 percent power. Make that 4200 rpm at 75 percent power. 3800 turns out to be my economy cruise.

Well, the KR Gathering at Perry is just around the corner and I've only got thirty of the 40 restricted hours flown off the plane and my transponder is in the mail to Terra's repair facility, so I guess I'm not going to make it out there. It really frosts me because I also just missed Lakeland this year by a couple of weeks. Lakeland is only 37 miles from Kissimmee and is well within my 50 mile restricted area, but I just wasn't ready.

I've fully recovered from the bashing I took from the flying drive gear and gear puller combination. The gear change was easier than I expected. NSI's instruction manual is complete and easy to understand.

The gear ratio change from 1.85:1 to 1.622:1 was quite an improvement. All it cost me was turn-around time and ten bucks for shipping costs. Maximum rpm on takeoff went from 5200 rpm down to 4900 rpm. That really didn't hurt the rate of climb: it's still 1000 fpm at 90 mph indicated airspeed.

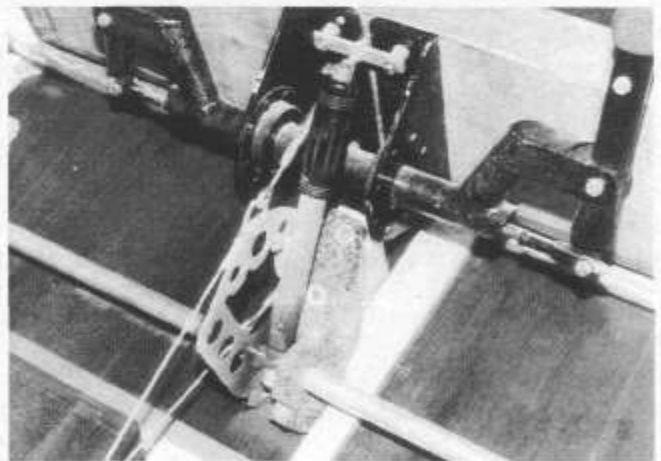


Plans-position flap handle in Blucher KR-2S

That brings up another thing that was bothering me. With the old gear ratio, the IAS was only about 110 mph at 75 percent power. With the new ratio, at 75 percent power, the IAS went to 125 mph indicated. I thought I really had a dog on my hands because of the 714 pound empty weight. It concerned me because it seemed that I was going a lot faster than that, especially since I was having to slow down for most of the other pattern traffic around the airport while low passes over the field drew a lot of comments about the apparent speed of the 2S.

I decided to check my ground speed by doing a triangular cross country trip while maintaining a constant 120 mph indicated and a steady altitude. The calculated ground speed was 164.3 statute mph. That made me feel a lot better. Now, what do I do about the air speed indicator? Maybe I'll try to change the location of my static port or the pilot tube. The present location of the static port is just above the top longeron and behind the baggage area. There is a "T" in the plastic tubing that runs to a port on each side. If anybody else has solved a problem like this it sure would make a good article for the newsletter.

I received a letter, questionnaire, and a request for photos of my plane from Don Downie, Senior Editor of Kitplanes magazine. They are doing an article on my KR. Don didn't say which month it would be in, but he seemed to be in a hurry, so look for it in the December or January issue. Someone recently called me and told me that my plane was noted in the *Completions* section of Kitplanes. I had sent a photo and a short blurb to Sport Aviation and Kitplanes about two months ago. So far, I haven't been able to find that Kitplanes issue but I've gotten calls and letters from folks who have.



Repositioned flap handle. Note dual control assembly and idler pulley for elevator cable.

I really don't have much performance data to talk about this month. The only other thing that comes to my

mind that may be of interest to 2S builders is the change I made to the RR flap installation.

The Rand design has the flap handle on the left side of the pilot. I built mine that way, and after I sat in the plane I noticed that the flap handle was really awkward to reach with my left hand and it interfered with my left leg when the flaps were down. In that position, the handle is straight up (Photo 1). My solution was to move the handle assembly to the center and just to the right of the elevator control cables (Photo 2). In that position, it is much easier to reach and I would rather have it interfere with the passenger than the pilot. Also note in the photo that the RR dual stick required me to use a pulley assembly to raise the elevator cable enough to clear the flap operating tube.

Well, while I'm at it, here's another significant change; I made my header fuel tank removable. There's no way at all to do maintenance on the brake pedal assemblies in my plane unless that tank is removed. Sure, I could probably do it if I tore out the instrument panel and the fuel management panel (center console) but that would take forever and half the equipment would never work again. So think about it. You'd have to be a contortionist to get to the brake pedals in some of the KR cockpits I've seen. I've often wondered, how do they fill and bleed those things while standing on their heads? Come to think of it, it seems I remember seeing feet sticking out of at least one KR at Lakeland. Wonder what that guy was up too?

That's it for now. Next month I'll talk about some engine cowlings changes made in the quest for speed.

Thanks for the Good Times

Gathering Attendee Pays His Respects

JimGrimm
Route 3 box 445
Stillwater OK 74075
Tel. 405-377-5582

I would like to thank all of you that attended, flew in, drove in and participated in the recent 17th Annual KR Gathering; particularly those that came from such great distances. Without all of you, and you know who you are, the KR family would lack something.

Special thanks to Don Betchan for hosting. I know how hard things like this are to put together plus the amount of time put into making the event so wonderful. Even with the Oklahoma winds, the Gathering was great what with lots of flying and high speed passes. What a relief it was to see how the KR's could handle the wind.

I got a lot out of the forums and from viewing all the planes with their new ideas incorporated into the original KR design. I brought home a lot of ideas to use in my KR.

I'm at the boat stage right now so the cowlings, canopies, turtledecks and panels were most beneficial to

see. I took many photographs of aircraft and ideas, except for one. This particular aircraft was not in any of my photos and now I remember why...it was Martin Robert's plane! The guy gave rides all day long.

The primary reason I wrote this note is to personally thank Martin for the ride he gave me. It was fantastic! What a plane and what a nice guy.

The speed was incredible and the G force sensations were marvelous. I had hoped to get a ride while I was at the Gathering. Well, I got one heck of a ride!

Thank you, Martin Roberts. You have inspired me to get on with my project and complete it by next year. When it comes time to learn how to handle a KR, I'll be calling you for help. I live in Stillwater, Oklahoma so I'm only one hour from you.

I'll be submitting another article on a good jig set-up for assembling the fuselage sides.

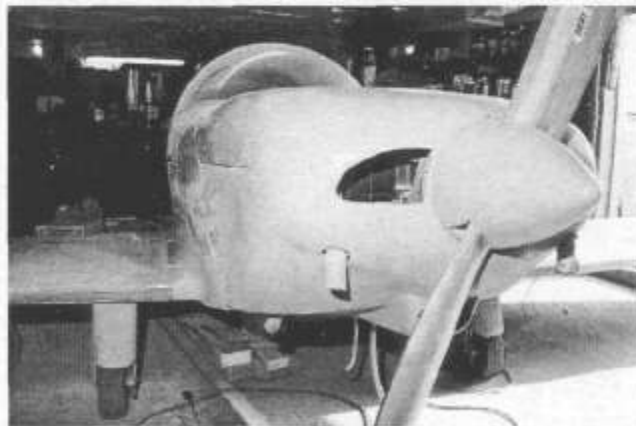
Again, thanks to all of you that participated in this year's KR Gathering.

Editor's Note: You bet, Don worked his tail off to insure a great fly-in event plus he can sing pretty fair, too. Let's also acknowledge the work of Randy Stein from Santa Monica, California. His diligence insured the success of the forums plus many unseen details.

Gee, It's Almost Done

John Duffy
237 Bridge Street
Bridgewater MA 02324
Tel. 508-378-3411

My KR-2 was started by an experienced builder, in Maine, in 1978, and completed through the boat stage, control system, Monnett 1834 conversion, plus tail and root with Dynel surfaces. After one year, it was sold to a Baptist minister in Maine.



Business end of the John Duffy KR-2. This long term and well-traveled project nears completion.

For the next ten years, the minister foamed and glassed up everything else. When the minister retired from his congregation, he sold the KR to me.

I saw the excellent workmanship in the first stage, but I knew I'd have to tear down and throw away everything the minister had done. He must have been counting on having God as his copilot.

One unique dimension of this KR-2 is the fuselage length. The original builder was addressing the reported pitch sensitivity and incorporated, aft of the rear spar, an additional 27 inches. Yes, I said 27 inches. It remains to be seen if this original stretch version will overcome pitch sensitivity or ground looping. I know I have my weight and balance cut out for me!

I've also had to change the root section airfoil to meet Dan Diehl's RAF-48 airfoil wing skins. You see, back in 1978, the rage sensation for experimenters was the GAW-1 high lift, high drag airfoil. For me to make this change, the overall wing incidence had to be reduced to 1.5 degrees, I hope. This was in order to save the alignment of the root spars in relation to the new wing chord.

I had the cockpit upholstered two years ago in a nice dark, sky blue velvet simply to give me a mental lift. You know, that "Gee, it's almost done" feeling.



The results of real committment.. John Duffy's "real" airplane will soon take flight.

I'd been putting off and putting off the realization that ten years of flying my CGS Hawk ultralight to just about anywhere is not going to help me with the KR. It's time to dig deeper into my pockets than I thought I'd ever have to dig to get a "real" pilot's license. As if falling out of the sky hurts less and really doesn't count because you're not a "real" pilot or piloting a "real" airplane while knowing nothing about FAR's. Or, sell the KR and lose all those past eight years of research, build time, head scratching, KR Newsletter correspondence and all those precious moments dreaming about flying and navigating

to distant places in an airplane you've built. That airplane being one which I can inexpensively maintain and still call the most bang for your buck.

Well, the license is finally in hand and it's getting close now. Yeah, I know the last ten percent takes ninety percent of the time. By hook or crook, it's going out on my tiedown early next spring. I feel if I tell everyone this then it must be true. I would have hell to pay and it would be so much trouble to explain to my EAA chapter friends if it didn't happen.

The engine has run but needs its baffling and carb heat boxes. I haven't tuned up the Posa carb with all the needles available to me. If I'm not satisfied, then I have a new Zenith from Steve Bennett of Great Plains to play with. The engine may not be completely operational until mid-summer.

The paint job won't be so great because I may have to do it myself. At least it will be on the field.

Service Hydraulic Brakes *Without Breaking Your Back*

Many homebuilt aircraft, in particular those fitted with hydraulic brakes, utilize the Rosenhan or Matco-style individual brake cylinders. The vast majority are of the design that provides a fluid reservoir as an integral part of the component. All nice and tidy. Simple to install plus they eliminate the need to plumb in a common fluid reservoir and its associated potential leaks.

It's not until the brake pedal area is all enclosed by the mandatory cockpit that the now obvious question appears; how are you going to fill the fluid reservoirs and bleed the system of unwanted air? There is precious little working space beneath the instrument panel and fuel tank in a KR.

Before installing the brake system and closing up the forward deck area, lift up the neat, little rubber dust boot that encloses the upper part of the brake cylinder. The brake cylinder actuating rod pokes out the top. You can't miss it.

See that little ol' screw on the top of the cylinder body? That's where you add that slimy, red aviation hydraulic fluid that seems to run just about everywhere at the most inopportune times. By now, you're probably remembering how you and your buddy would bleed the brakes in your old pickup truck; you under the truck and him pumping the pedal. That's not going to work here.

The simplest and cleanest way to fill and maintain the brake system on your KR aircraft is to work from outside the aircraft and from the bottom up. By pumping brake fluid from the caliper, through the lines, and into the reservoir, all the air will be purged from the system as the fluid displaces the air up and out through the reservoir vent screw opening.

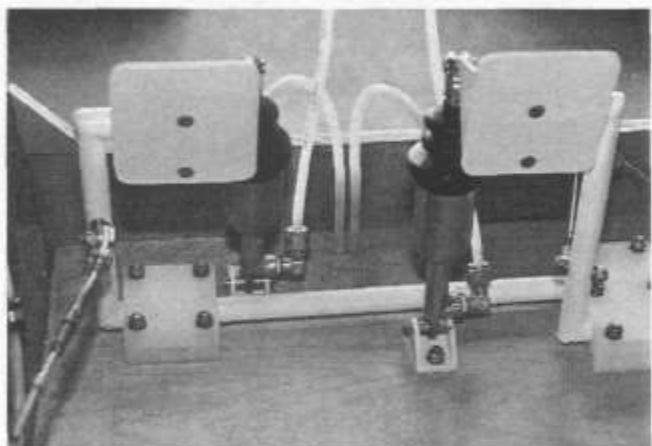
You could have someone hold a shop towel around the brake reservoir and ask them to give a shout when the fluid starts puking onto their glasses...or you could modify the vent screw hole to accept a length of neoprene model airplane fuel line and simply route the line overboard. The second idea is far tidier.



Hydraulic brake cylinder modified with brass fitting for simple and clean servicing of brakes.

The local hobby shop can supply the required Du-Bro #192 Fuel Can Fitting. Buy two. Modify the brass hobby shop parts, tap the brake reservoir top to accept a 1/4-28 thread, and fit the required pieces. A drop of LocTite will secure the small brass fittings.

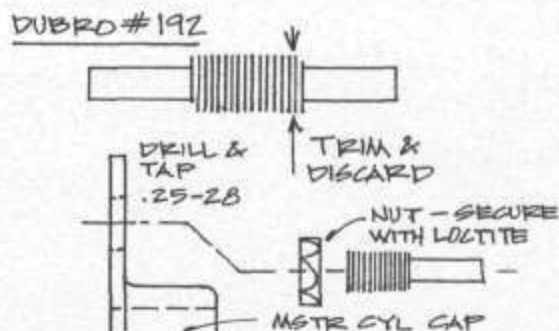
For my particular aircraft, the neoprene lines attach to a pair of short aluminum tubes that are epoxied into holes drilled through the cockpit floor just aft of the firewall. These tubes extend past the exterior skin of the fuselage bottom by about 3/8 inch.



Complete rudder bar, pedals and brake cylinders as installed on 684LM. Note hydraulic fluid overflow tube vented overboard through cockpit floor

To fill or top up each brake, another model aircraft product is used. A hand-cranked fuel pump mounts to the gallon can of hydraulic fluid. Another length of tubing attaches to the brake caliper bleed screw. Then, simply open the bleeder screw a turn and crank the pump handle. When the system is full, fluid will squirt from the aluminum overboard vent lines. Close the bleeder valve. No air in the system, no mess in the cockpit and no broken back.

For best performance and longevity of the complete brake system, nothing but fresh hydraulic fluid should find its way into the lines. On most KR's with the five-inch Cleveland wheels and the mounting location of the brake calipers, the brake bleeder screws are positioned pretty close to the ground. For me, it didn't take but one trip through the grass to a fly-in parking spot and the rubber bleeder screw covers were gone. Later, a few unplanned excursions during high speed taxi tests left dirt packed into the hollow shaft of each bleeder screw. If you suspect any bit of contamination, remove the screws and clean them before adding fluid. The idea is to not inject any grit into your brake system.



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Bayou Cajun KR Gathering Provides Big Mo'

Dean Smith
17204 Ronald Rd., Prairieville LA 70769
Tel: 504-673-6356

As I had promised at the KR Gathering, here is a little something for the KR Newsletter, but first things first...congratulations on the seventh place McKillop Award at Oshkosh for EAA Chapter 661's newsletter.

Wow! What a KR show this was. Way beyond my expectations and imagination. I never expected to gain so much beneficial knowledge from a fly-in as I did at this one. This year's Gathering was only my second but both have been very educational.

Congratulations to all the KR award winners even though, in my book, everybody won. Many, many thanks to all the KR drivers who showed up to help ignite some needed enthusiasm in us builders who are way behind you. It worked.

The construction progress rate in my shop is going to increase steadily in the very near future. As can be seen in the photograph, my 2S is still in the bare boat stage and awaiting installation of those spars hanging on the wall.



Louisiana-based Dean Smith tells his neighbors he's building a "boat"...and so he is.

Thanks to some of the KR owners and builders at the show, I was able to target a Type 4 VW engine installation with the option of later adding a turbocharger.

I am also pleased with everyone's vote to return to Perry for next year's Gathering. We can't go wrong after seeing what Don Betchan and company did for us. I'll take my turn down here in south Louisiana in a few years, Don, but you leave a tough act to follow.

Enough for now. I'll leave room for others to express their gratitude. Besides, it's time to turn in my vacation request for next year. See you there.

The following is a remembrance written by Tommy Waymack shortly after attending the 1990 KR Gathering, his first.

Steve, an Aeronca owner, had sold his Chief to a gentleman named Estell. I learn, by way of Mr. Estell, of an earlier fly-in held near Covington, Tennessee where Volkswagen powered aircraft meet. He had attended an earlier event due to his interest in VW's. I may do the same.

My first encounter came about the time I acquired my KR. A pile of parts at the time, but after ten months of work and though not totally completed, it flew. N995BG would fly to the 1990 Gathering.

It's mid-September when I fly into Rough River, Kentucky. I had borrowed a hand-held radio and made the three hour trip from Pine Bluff. I can not remember how I knew the Gathering was that particular weekend. I had no idea. Perhaps it was simply instinctive.

The first aircraft I encounter after landing on the 2500 foot strip is one of the best looking KR's I had ever seen. I didn't really know this at the time since it was also one of the first KR's I'd ever seen, besides mine.

Flown by Martin Roberts, he was busy giving rides in his race winning KR-2. Who else would do that in a race plane? I really think he just likes to fly and share that experience with others.

I taxi in, shut down and crawl out of my KR. I see strangers. They will be the last strangers I will encounter for the next seven years.

As the three days slip by, I understand why I'm here. I make friends that I will see only once a year but we will never be strangers again.

My plans are the same; make another year and keep the KR flying if for no other reason than to attend the next Gathering. There was the time when I couldn't fly in, once... maybe again, but no matter as I've enjoyed much more than I deserve. I just haven't given up wanting more.

Keep 'em flying.

How is Dud Tape like (he Jecfi Force ?

**They both have a light side,
a dark side
and
each holds the universe together.**

KR CLASSIFIEDS

Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial style ads will be billed accordingly prior to publication. The KR Newsletter reserves the right to edit free ads.

FOR SALE - Early KR-2. Plans built, not stretched. Boat on std retracts, empennage & controls installed. Original canopy plus Dragonfly, neither installed. Wing spars ready to install. Add'l stuff with project. Many new & used Type 4 parts but no complete engine. Have new test run only Big Block VW 2600cc, 90 hp. Full elec with mech fuel pump, Force One hub, from GPACS. Interested? Dan Freeman, 317-356-4152 or AOL at DanF1925 or 1925 S. Temperance, Indianapolis IN 46203.

FOR SALE - KR-2 fiberglass cowling, \$400. Old retract gear setup. Accepting offers. W. Janowski, 14123 E. 122nd St. N., Collinsville OK 74021. Tel. 918-371-5846.

FOR SALE - KR-2. Boat stage. Fuselage and spars built. Horiz stab and elev complete thru f'glassing. Custom fixed or retract gear based on Newsletr#131-134. All mat'l to complete, firewall aft. Includes set of KR Newsletters. \$1200. Don Q. Cryer, 165 South Rd, Kensington NH 03827. Tel. 603-772-3116. Fax 603-772-4156. E mail don.q.cryer@juno.com.

FOR SALE-1984 EA81 Subaru Engine. 0 SMOH. Std size components. New main and rod bearings, rings, gaskets & seals. Intake manifold modified, heads reworked with new guides and valve job. Orig carb, distributor & alternator included. Ready for installation in your homebuilt aircraft. \$650. (100. will be donated to EAA Ch 125) Don Clarke, 10013 Conover Ln, El Paso TX 79924. Tel 915-755-0588

FOR SALE- KR-2 completed boat stage with fixed main, no nosegear. Brakes, wheels, tires. VW mount. Outer spars done. Rudder, horiz, elev. All controls in. \$500. Jerry Vanatta, 3730 Clarksville Pike, Nashville TN 37218. Tel: 615-242-7716.

WANTED - Posa Carb Needles. I have the #5 and need the other four sizes. Also would like an instruction manual, if there is one, or words of encouragement. Will be used on Revmaster 2100-D. Jack Gress, 9305 Fairwood Dr., Kansas City MO 64138. Tel: 816-761-2693. E-mail lackg-kr2@msn.com.

WANTED - Carb heat box and exhaust muff to fit 1834 VW Monnett conversion with Posa carb. New or used. Write or call John Duffy, 237 Bridge St, Bridgewater MA 02324. Tel 508-378-3411.

FOR SALE - To settle estate. KR-2 684LM. 1835 VW, non-electric, Rand fixed gear taildragger with Cleveland's, Diehl wings. Lightweight and beautiful plans-built plane. Asking \$1 1,000, includes parts to add electric start. Diehl tri-gear components available for additional cost. Technical questions to KR Newsletter, evenings, 940-566-5871. Inspection & purchase offers to Ms. Page Warren Osbourne, Esq., at 409-598-2818. Aircraft located Center (TX) Municipal Airport.

WANTED - Builder's Manual and plans for KR-2. Originals lost. Contact D.K. Boettcher, 105 West Circle Dr., Blue Earth MN 56013. Telephone evenings 507-526-2586.

FOR SALE - Modified KR-2S. Electronic ignition Subaru 1800cc with belted redrive and Weber carburetor. Fixed gear taildragger with wing and header tanks, Dragonfly canopy, flaps, Cleveland's, taxi, nav and strobes. Inst panel loaded. Has airworthiness cert and many features. \$25,000. Details contact Geo. Huber at 817-261-3572.

FOR SALE - KR-2 Fiberglass cowling. \$350. Write to 14123 East 122nd St North, Collinsville OK 74021.

FOR SALE - MAPI engine, Magnum 75. Purchased new in 1984, never installed. 1835cc with 75hp, sodium filled valves, hyd lifters, dual electronic ignition, Posa carb, tuned exh, engine mount, all engine instruments in quad & dual configurations. \$5000 plus shipping. Original KR2 retract gear also avail. Call Rick, 51 0-426-9525.

WANTED - KR-2S cowling to fit Continental 0-200 on a Rand factory mount. Contact with price to W B MacMillan, 1724 England Ave, Everett WA 98203. 425-353-9589.

WANTED - Gascolator and bracket. Please contact editor of KR Newsletter, evenings at 940-566-5871 or write to 624 West University Dr., Suite 199, Denton TX 76201.

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This Drive System will fit the DIEHUIHAPI accessory case
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...Ken and I by Stuart Robinson
continued from page one:

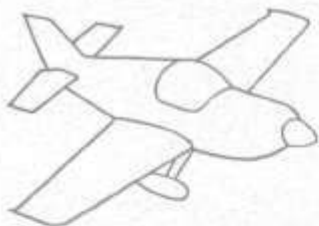
setting. However, I had pulled back the throttle and had lost what little I had.

My next mistake was to try to enter the normal left-hand pattern instead of making a quick 180 and entering downwind with a right-hand pattern. As it was, the best I could do was to slowly increase speed to 65 mph and stretch it for the center of the field.

The tower was at midfield with the display area next to the tower. The FAA was just setting up shop in the tower as I came whizzing by at eyebrow level and gear up. I thought about using the taxi strip but figured I was in enough trouble already.

With a quick, steep, ninety degree turn and gear down, I made the runway and plopped down just as the wings rolled level.

As I rolled off the active onto the grass, a pickup with four guys hanging on the back came roaring down the taxiway and I figured it was time to turn in my license. They were nice and even helped me push the KR-1 back to the ramp. Even the FAA seemed to understand.



KR NEWSLETTER
624 West University Drive
Suite 199
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Issue 245 Nov1997

In This Issue of the KR Newsletter

More from Dave Blucher

Florida KR-2S driver continues quest for aviation Nirvana.

Ken and I

*Stu Robinson and the early years.
Good reading.*

Builder Reports

Just startin' to just about done, from across the country.

More Gathering Tidbits

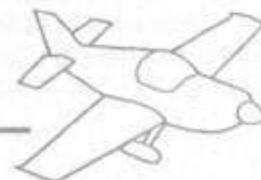
Reader Ramblings.

Service Hydraulic Brakes

*...and give your back a break, too.
Timely tech stuff for builders.*

KR Classifieds

*Buy, sell, swap, give or take boot.
Popular page please.*





NEWSLETTER

Happy Holidays & Season's Greetings
Resolve to Complete Your KR This Year!

Images of the Gathering



As the fall turns to winter, the opportunities for flying are often as rare as a clear, calm day. It's when we are grounded that our thoughts turn to that perfect day in the future when we will, most assuredly, put some air between the earth and the wings of our dreams. It's thoughts such as this that reinforce our resolve to fly.

To each of you and your house, may the coming new year bring with it the happiness, health and blessings that we all seek.

This first year of producing the KR Newsletter has been a wonderful and challenging experience. Thanks to many subscriber contributions, the job has been fairly painless; looking good is pretty easy with such outstanding support.

Ya'll keep them cards n' letters comin', hear?

Turbo KR

Would you be willing to trade your finished and flying KR for a jet engine? If your dreams are big enough, then that's what you'd do if you are Mike Ladigo of Tulsa, Oklahoma.

A future issue will detail this unique interpretation of the KR design. For now, all you get is a taste!



Mike Ladigo shows off the muscle that will propel his nearly completed, unique KR design.

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

WHAT EAA'er WANTS

To attend air show
Attend weekend airshow
Attend Oshkosh
Buy plans set
Buy kit materials
Buy quick-build kit
Build hangar / shop
Buy Lycoming IO-540
Take flying lessons
Fly ten hours a year
Fly ten hours a month
Fly ten hours a week
Fly ten hours a day
Aviation art for living room

EAA'er SHOULD EXPECT

Send wife to day spa
Send wife to out-of-town spa
Buy spa
Buy wife elegant dinner
Buy wife new outfit
Buy new furniture
Buy wife new car
Buy wife's boyfriend new car
Buy new carpet for house
Take wife to jeweler's
Take wife on cruise
Wife takes you to court
Buy wife a house...your's
For hell to freeze over

Tips from a Texas Builder

Bob Sauer

1103 Kevin Street, Smithville TX 78957

Tel: 512-237-5553

I began work on my KR-2S in May of '97 and have now completed the woodworking portion of the boat and wing spars. I have just begun fabrication and installation of all the metal control components.

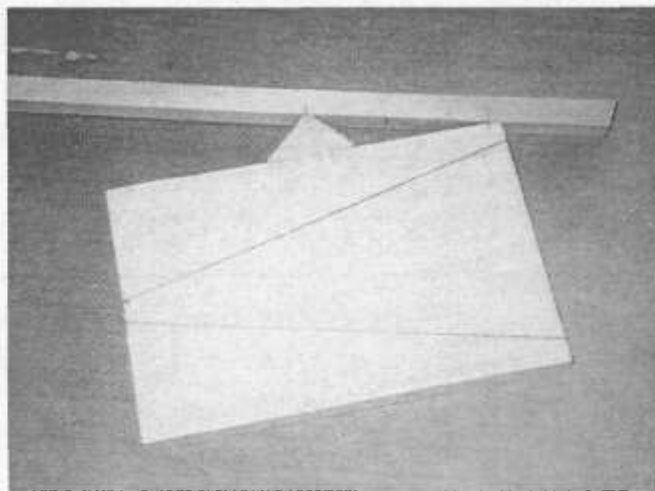
I'd like to pass on a couple of helpful ideas that may be useful to other builders.



With fuselage solidly held in place by formers, cross member installation is done at a more relaxed pace.

A Sears staple gun #68428 (\$9.99) along with their 5/16 staples, # 74416, can be used to hold nearly everything together while epoxy sets.

Three-quarter inch particle board formers make fuselage assembly easy and accurate. Just maintain plumb, square and level positioning. My *boat* longerons came up off the table less than 1/2 inch.



Bob's shop jig can also be used for repetitive cuts. A similar setup can aid in the req'd spar cap taper cuts.

Use a simple jig for accurate angle cuts on the table saw. The key is to maintain a parallel position between the guide stick and your intended cut line.

I am seriously considering Corvair power and would like to hear from others with similar interests.

Prior to fiberglassing, I'll send another project photo update.

Hey, GuysJWeed your Builder Reports !

Two Projects Under Construction

Sam Roberts

Nicabox 390, FOB 025640, Miami FL 33102

e-mail enelgos@tmx.com.ni

Inspired by the photo in issue #243, I've enclosed a similar photo of my own project. I appear with my two year old son and my as-yet-born son. The two year old says he can't wait to fly. I hope he might solo the KR some day.

The aircraft is an original retract version KR-2.1 plan on using wing tanks for longer range. As you can see, I don't expect weight problems! I'm 130 pounds, my wife is 125 and my son currently reads 33 on the weight and balance sheet.

Haven't yet decided on a powerplant but am considering the Great Plains WV, Subaru, Rotax, even Zoche. I'll decide when the time comes.

The "delivery room" is an enclosed patio next to the living room. This arrangement gives me the pleasure

continued on page 5

How Strong Is Your Stabilizer?

Throughout the course of my building project, my father has expressed a concern that the elevator spars just "don't look strong enough". He is very experienced in aviation, starting as a P47 pilot, professional engineer, long time member of EAA, as well as designing and building several airplanes. I trust his judgment so I did some checking to find out just how strong the elevator really is.

Some of the dimensions that I used in this calculation are different than the standard KR-2, since mine is larger and heavier than most. I will identify those few areas that are different. As other people are fond of saying, your mileage may vary.

My as-built elevator specs are as follows:

Span: 6'-5" (77")

Root chord: 28" Tip chord: 20.5"

Spar dimensions: 5/8" wide X 2" high (maximum)

Total area of the stabilizer/elevator combination (including the area inside the fuselage) 1867.25 sq. in. = 12.97 sq. ft.

Including the area inside the fuselage and using the entire length, as opposed to just the length that extends from the fuselage, is slightly conservative. Any time engineering calculations are performed, it is a good idea to use the conservative approach, at least in any plane that I fly in. You can be less conservative on your airplane if you want.

There is an engineering term called the *Moment Of Inertia*, that represents the cross sectional area of the body in question and is used to calculate the load carrying capability of the body. All standard types of shapes have been calculated and tabulated in any good reference handbook. In the case of a rectangular beam like the elevator spars, the moment of inertia is:

$$I = \frac{\text{width} \times \text{height}}{12} = \frac{0.625 \times 2}{12} = 0.41667 \text{ in.}$$

The maximum moment that the beam can carry is then given by the equation below. The moment is the load that the beam is carrying, multiplied by the moment arm of the load on the beam.

$$M = \frac{I \times F}{V}$$

In this case, y is one half of the height of the spar (approximately). It represents the distance from something called the neutral axis to the outermost part of the beam. The neutral axis is that part of the beam in which the fibers are neither stretched nor squeezed when the beam is loaded, and it is very close to the center of the beam. That is why a beam like those of the elevator can have holes in the center without affecting the strength of the beam significantly. The material that is in the center of the beam does not contribute to the strength of the beam since it is neither under tension (stretching), nor under compression (pushing). As a beam is loaded, it will bend as a result of the load. The part of the beam that is on the outside of the curve is stretched and is under tension. The part of the beam that is on the inside of the curve is being squeezed and is under compression.

Represents the allowable stress that the beam is designed to. Since this discussion is an example of what is called reverse engineering, I will use the largest allowable stress levels, and then find out the maximum load that the beam can carry. For spruce, the fiber stress at the proportional limit is 5,300 lb/sq. in., and the fiber stress at rupture is 9,400 lb/sq. in. The proportional limit is the highest stress level that the material can reach without undergoing any type of permanent damage; it is often referred to as the yield point. The rupture limit is the absolute maximum that the material can reach before total failure. The values for wood are not as easily determined as for other engineering materials since the wood is a natural product with its own internal flaws, grain orientation, and fibrous arrangement. These values are taken from a reference manual called ANC-18, *Design of Wooden Aircraft Structures*, one of the bibles for wooden aircraft design. Other references give slightly different (and higher) values. I choose to use the best I can find.

With all that aside, the maximum moment the one elevator spar can carry is:

$$\text{Moment at yield } M = 5.300 \text{ lbs/sq. in.} \times 0.41667 \text{ in} = 2,208 \text{ in. lbs.}$$

$$\text{Moment at rupture } M = 9.400 \text{ lbs/sq. in.} \times 0.41667 \text{ in} = 3,917 \text{ in. lbs.}$$

Anyone who has determined an aircraft CG already knows how to use a moment in a calculation, but this one is a little different than normal. In this case, it represents a distributed load that is spread over the entire length of the moment arm. In a CG calculation, you use point loads that are at specific locations. This needs to be converted to something that is easier to use in the rest of this evaluation.

The air loads on a wing or tail surface have a shape that is similar to one half of an ellipse, a semi-ellipse. The load is zero at the tips, and increases to a maximum at the root. To help visualize this, think about the wing shape of the Spitfire, a famous WWII fighter. The wing and tail are elliptical in plan form, resulting in an area loading of the wing that is approximately constant with span. Tapered wings approximate this constant area loading along the span in a manner that is much easier to build.

With a semi-elliptical span load, the centroid of the load on each side of the fuselage is given by the equation:

$$C = \frac{\text{length} \times 4}{2 \times 3 \times \pi} = \frac{77\text{in} \times 4}{2 \times 3 \times \pi} = 16.34 \text{ in}$$

The centroid is a fancy way of describing the center of the area of the distributed load. This means that the distributed load along the span of the stabilizer can be replaced by a single point load that is located at the centroid and it will define the moment at the root of the spar. The stresses in the stabilizer root do not care if the load is distributed along the span or replaced with a point load at the centroid. The stresses along the length of the spar will be different for the two cases, but this evaluation is just for the highest stressed location at the fuselage attachment point.

In the equation given above, I used the half span of the stabilizer (length 12). This works, since the spar and its loading are symmetrical. With this in mind, the final calculated load will represent one half of the total load that the spar could carry.

With a moment and a moment arm already calculated, the next step is to determine the yield and rupture loads for one half of each spar.

$$\begin{aligned} \text{Yield Load} &= \frac{2.208 \text{ in-lbs}}{16.34 \text{ in}} = 135.12 \\ \text{Rupture load} &= \frac{3.917 \text{ in-lbs}}{16.34 \text{ in}} = 239.72 \end{aligned}$$

Assuming the four spar halves load equally, the total yield load is 540.5 pounds and the total rupture load is 958.9 pounds. Four spar halves are used, since there are two spars, each loaded on both sides of the fuselage. This is the only point in this analysis that is possibly suspect, since the chordwise load on the stabilizer is not uniform. In a rigid airfoil, the air loads are concentrated towards the front edge. This is why the main spar in a wing is located near the 25% chord location.

In a stabilizer, the loading on the rear spar is heavier because the air loads from the elevator are carried on the rear spar. In the case of a KR, the two spars are relatively close together and they are rigidly connected by the foam and fiberglass. They should load in an approximately uniform manner, with each spar sharing the load. Gust loading is a different set of assumptions since one side of the stabilizer will load more than the other. This is one reason why maneuvering speeds are lower than cruise speeds.

Remembering that the yield load represents the normal upper limit that cannot be exceeded, and dividing the yield load by the surface area of the stabilizer/elevator combination, you get:

$$\text{Average loading at the yield point} = \frac{540.5 \text{ lbs}}{12.97 \text{ sqft}} = 41.67 \text{ lbs/sq ft}$$

If the KR were designed to meet FAR23 standards, it would be required to carry a stabilizer load given by the equation:

$$W = 4.8 + 0.534 \times (n \times GW / S) \text{ pounds/sq ft}$$

where:

- GW = gross weight
- S = wing area (sq ft)
- n = limit load
 - = 3.8 normal category
 - = 4.4 utility category
 - = 6.0 acrobatic category

Rearranging the equation given above to solve for the limit load:

$$n = \frac{(W - 4.81 \times 5)}{0.534 \times GW}$$

Assuming a wing area of 80 sq ft and a gross weight of 1000 pounds, the yield load comes out to 5.52, which is greater than the FAR23 limit load for the utility category. At 900 pounds, the stabilizer limit load increases to 6.14, which is slightly greater than the acrobatic category. I should mention here that I do not endorse or recommend any acrobatics in a KR (at least with me on board). This statement is my concession to the possibility of legal liability. I am as much a coward as the next guy.

Up to now, this evaluation does not include any reference to the actual conditions that the stabilizer will encounter. It also does not include any margin of safety that would normally be applied to this type of design. I believe that there is a significant margin built into the FAR23 limit load equation. I say this because I calculated my best guess of the actual loading that my stabilizer will see in flight. In my case, I would expect to have a downward air load of approximately 76 pounds at gross weight, normal cruise conditions, and full forward CG. This would increase to 197 pounds at the utility category limit of 4.4 G's for the same conditions. This represents a safety margin of greater than 200 percent over the calculated yield point of the stabilizer. All of these numbers are based on a different airfoil, larger wing area, higher gross weight, and my own design cruise conditions. Your mileage may vary.

Donald L. Reid
donreid@erols.com
15256 Hopeful Church Road Bumpass VA 23024

Two Projects... continued



of building while in close proximity to my family. The only complaints are due to the noisy belt sander. Note the bowed longeron as mentioned in Sam Sayer's article in issue 226-227.

That's all for now. Keep up those good KR articles.

Welcome Great Plains Supply

The KR Newsletter is pleased to welcome aboard a new major advertiser. Steve Bennett and Great Plains Aircraft Supply Company have long supported the Volks-powered aircraft builder with quality engine components. Your editor has built two GPASC powered aircraft and has never been disappointed with the choice.

If you do not have the current GPASC catalog, send for one immediately. Besides some great pieces parts, the catalog has a wealth of technical information that every bug motor builder needs to know. Make Steve happy... tell him you saw his ad in the KR Newsletter.

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Denton, Texas 76201

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Evening and weekend tel: 940.566.5871

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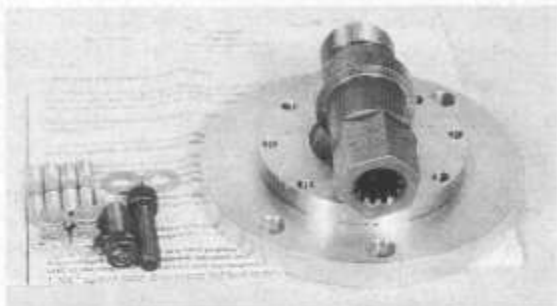
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I Stretched Before It Was Stylish

John Shatter

501 1/2 Wilbur Street, Genoa OH 43430

Telephone 419-855-7114

I've been working 35-45 hours of overtime per pay period (two weeks) so am quite busy. Also, I've moved four times in the last four years and as of last May, I don't have a desk so I'm writing this on a magazine on top of my knees!

The photograph was taken after my last interstate move. The wings had already been off loaded from the trailer.



How many Volks powered vehicles can you count in this photo from the John Shaffer Gypsy Van Lines?

My aircraft is a twenty-four inch stretched KR-2 begun prior to the Rand-Robinson offered KR-2S. It's a tri-gear retract with a steerable nosewheel. The fuselage utilizes a one-piece plywood wrap that extends from the bottom longeron all the way to the top of the turtledeck. A small plywood triangle mates with the fuselage skins at the top canopy junction.

The engine utilizes a Diehl accessory case and 44-inch exhaust headers connecting to a four-into-one collector which then exits at the bottom of the cowl.

Twin Chevy Vega fuel pumps with check valves and separate switches feed an Ellison throttle body mounted on top of the engine. A modified Type 3 VW fuel injection manifold gives 100rpm more static power revs than the five other manifolds I have tried.

I have some good construction shots that, since the last move, I'll really have to dig for. Interested?

New Subscriber & New Builder

Cleo Greenhaw

1201 Princeton, Ponca City OK 74601

I became a subscriber to the KR Newsletter during the recent Gathering at Perry, Oklahoma. What a great thing for KR folks in Oklahoma and everywhere else from which the KR Bunch came from.

I'm a recent owner of a KR-2 kit, still in the box and by way of two previous owners who never got around to beginning construction. Such is not the case with me; I am currently completing a Loehle P-51 and can hardly wait to begin work on my *traveling* airplane. I also own a Cherokee 140 which I'll sell when the KR-2 is finished.

A suggestion for those who have "been there, done that" with their KR construction...there are some of us who would truly like to have some *do's and don'ts* for the boat stage as well as a few hints about the spars. I'm sure there is much information that others, like myself, would gain while saving time in constructing this bird. How about some of you veteran builders sharing an article or two with us new guys?

I know there are many old KR Newsletters out there with valuable information, but us new builders do not know what to ask for. Any help would be appreciated. Heck, I'd even go for a quality-built *boat* just to get a jump on building this thing!

seen on a hangar wall...

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KR CLASSIFIEDS

Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial style ads will be billed accordingly prior to publication. The KR Newsletter reserves the right to edit free ads.

FOR SALE - Early KR-2. Plans built, not stretched. Boat on std retracts, empennage & controls installed. Original canopy plus Dragonfly, neither installed. Wing spars ready to install. Add'l stuff with project. Many new & used Type 4 parts but no complete engine. Have new test run only Big Block VW 2600cc, 90 hp. Full elec with mech fuel pump, Force One hub, from GPACS. Interested? Dan Freeman, 317-356-4152 or AOL at DanF1925 or 1925 S. Temperance, Indianapolis IN 46203.

FOR SALE - KR-2. Boat stage. Fuselage and spars built. Horiz stab and elev complete thru f'glassing. Custom fixed or retract gear based on Newslettr#131-134. All mat'l to complete, firewall aft. Includes set of KR Newsletters. \$1200. Don Q. Cryer, 165 South Rd, Kensington NH 03827. Tel. 603-772-3116. Fax 603-772-4156. E mail don.q.cryer@juno.com.

FOR SALE-1984 EA81 Subaru Engine. 0 SMOH. Std size components. New main and rod bearings, rings, gaskets & seals. Intake manifold modified, heads reworked with new guides and valve job. Orig carb, distributor & alternator included. Ready for installation in your homebuilt aircraft. \$650. (100. will be donated to EAA Ch 125) Don Clarke, 10013 Conover Ln, El Paso TX 79924. Tel. 915-755-0588.

FOR SALE - KR-2 completed boat stage with fixed main, no nose gear. Brakes, wheels, tires. VW mount. Outer spars done. Rudder, horiz, elev. All controls in. \$500. Jerry Vanatta, 3730 Clarksville Pike, Nashville TN 37218. Tel: 615-242-7716.

WANTED - Posa Carb Needles. I have the #5 and need the other four sizes. Also would like an instruction manual, if there is one, or words of encouragement. Will be used on Revmaster 2100-D. Jack Gress, 9305 Fairwood Dr., Kansas City MO 64138. Tel: 816-761-2693. E-mail lackg-kr2@msn.com.

WANTED - Carb heat box and exhaust muff to fit 1834 VW Monnett conversion with Posa carb. New or used. Write or call John Duffy, 237 Bridge St, Bridgewater MA 02324. Tel 508-378-3411.

FOR SALE - To settle estate. KR-2 684LM 1835 VW, non-electric, Rand fixed gear taildragger with Clevelands,

Diehl wings. Lightweight and beautiful plans-built plane. Asking \$11,000, includes parts to add electric start. Diehl tri-gear components available for additional cost. Technical questions to KR Newsletter, evenings, 940-566-5871. Inspection & purchase offers to Ms. Page Warren Osbourne, Esq., at 409-598-2818. Aircraft located Center (TX) Municipal Airport.

WANTED- Builder's Manual and plans for KR-2. Originals lost. Contact D.K. Boettcher, 105 West Circle Dr., Blue Earth MN 56013. Telephone evenings 507-526-2586.

FOR SALE - Modified KR-2S. Electronic ignition Subaru 1800cc with belted redrive and Weber carburetor. Fixed gear taildragger with wing and header tanks, Dragonfly canopy, flaps, Clevelands, taxi, nav and strobes. Inst panel loaded. Has airworthiness cert and many features. \$25,000 Details contact Geo. Huber at 817-261-3572.

FOR SALE - HAPI engine, Magnum 75. Purchased new in 1984, never installed. 1835cc with 75hp, sodium filled valves, hyd lifters, dual electronic ignition, Posa carb, tuned exh, engine mount, all engine instruments in quad & dual configurations. \$5000 plus shipping. Original KR2 retract gear also avail. Call Rick, 510-426-9525.

WANTED - KR-2S cowling to fit Continental O-200 on a Rand factory mount. Contact with price to W B MacMillan, 1724 England Ave, Everett WA 98203. 425-353-9589.

WANTED - Gascolator and bracket. Please contact editor of KR Newsletter, evenings at 940-566-5871 or write to 624 West University Dr., Suite 199, Denton TX 76201.

FOR SALE - KR-2S Project. Mahogany ply boat stage on conventional gear with spars completed. Must move and can't take it with me. I'll throw in lots of parts, hardware & tools for the first \$3000. Lloyd Stearns at 512-244-7537, 512-838-0761, or stearns@ix.netcom.com.

FOR SALE - KR-2 fiberglass cowling \$400. Make offer on KR standard retract gear set. W. Janowski, 14123 East 122nd St., Collinsville OK 74021. Tel: 918-371-5846.

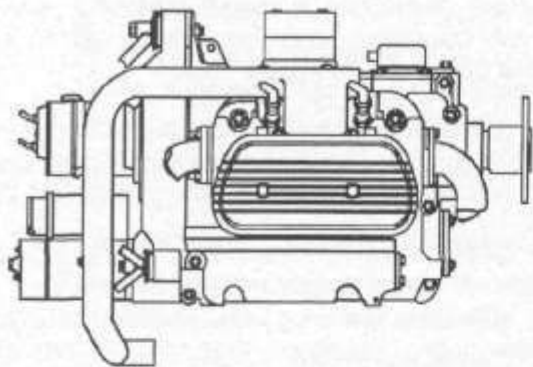
FOR SALE - Brand new & never used KR-2 retract gear complete with tires, spring pin locks and brake pedals. \$350 or trade for instruments and/or avionics. Contact Jack Cheney, POB 1640, Acme, Michigan 49610. Telephone: 616-938-2886.

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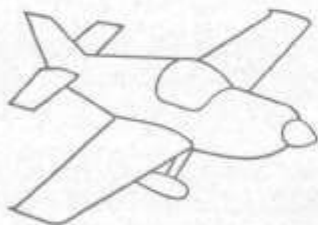
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KR NEWSLETTER

624 West University Drive
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Denton, Texas 76201

Issue 246 Dec 1997





NEWSLETTER

Supplement to KR Plans Sets Seat Belt & Shoulder Harness Attachments

MarcyAnalyticsCorporation
G068 South Lakeview Street Littleton CO 80120
Telephone 303-798-6086

The purpose of this 2 Apr 97 memorandum is to document computations and data presented at the KR-2 forum during the 1996 Sun n' Fun Fly In.

1. Assume pilot and passenger each weigh 200 lbs with a 20g impact force applied. For each person, applied force is 4000lbs, taken as a load limit, and 6000lbs as the ultimate load. Assume there are two attachments for each seat belt (one at each side) and two for each shoulder harness. This makes the ultimate load for each attachment 1500lbs. This is a conservative assumption for shoulder harnesses, as the seat belt is likely to take more load than the shoulder harness since it is located closer to the eg of the occupant. Now add 500 lbs to each attachment to account for eccentric and off-axis loading to make the ultimate load 2000lbs. *RefFig 1. (See page 8)*

2. Assume the shoulder harness is bolted to a plywood web and assume the bolts apply their loads to the wood by compression of the circular hole sides.

For birch plywood, the compression strength is 7300psi. The required total hole depth times diameter is $2000/7300=0.274$ square inches. Five .250 diameter holes in quarter-inch plywood is .312 square inches; the same for four (4) 5/16 holes in 1/4 thickness. *RefFig 2*

3. The bolt loads apply shear along forward acting planes in the plywood, which has a shear strength of 1500psi. We therefore need at least 1.50 square inches of cross section in front of the attach bolts. Each bolt has two shear planes, so a four bolt attachment has eight planes, each carrying 188lbs of shear, requiring .125 in. of cross section. This is 1/2 inch edge distance in quarter-inch plywood, measured forward from the edge of the hole to the edge of the piece.

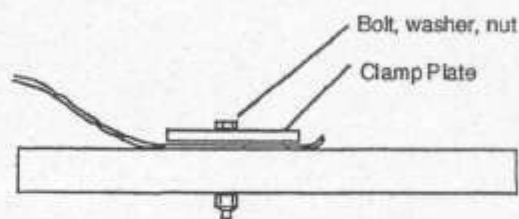


Figure 2: Shoulder Harness Attachment

4. The KR-2 plans call for a 3/32x4 inch shear panel glued across the longerons behind the seat back, with 5/8 square spruce cross members at each edge. This is not enough cross section for the bolt holes. For new construction, use a 1/4 ply sheet instead of the 3/32. For existing construction, a 1/8 or 1/4 panel should be glued over the shear panel, with the bolts going through both sheets.



Figure 3: Shear Panel Reinforcement

5. The total shear area attached to each longeron is $4 \times 5/8 = 2.5$ square inches. The strength of aircraft spruce in shear is 750psi, so the ultimate allowable shear in the spruce is 1875lbs. Assuming that both shoulder harnesses are attached to this web, the total load applied to each longeron is 2000lbs, requiring 2.67 square inches of glue area between the web and the spruce. Accomplish this by gluing an additional 5/8 square strip along each longeron between the cross members. *Fig 3*

2S Takes Shape in Minnesota

Pete Zattoni

1102 West Long Lake Road Eveleth MN 55734

Telephone 218-744-5807

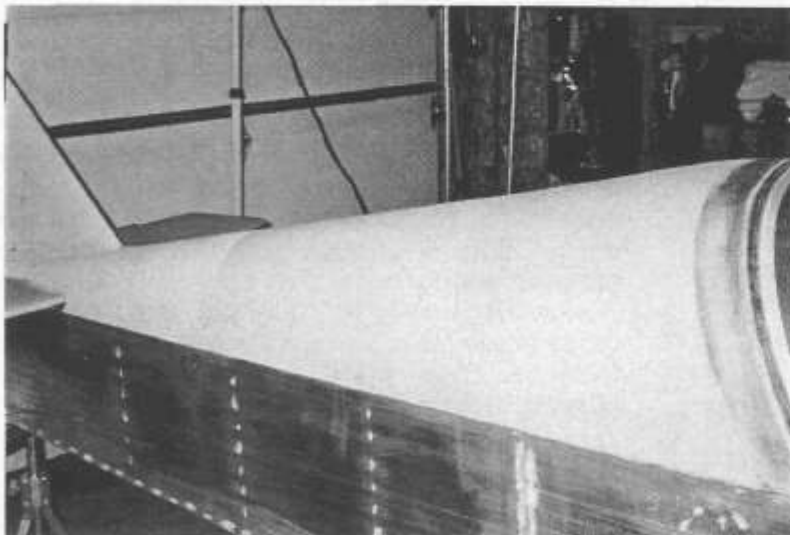
I've been in the process of building a KR-2S for about three years now. It's pretty much to plans except for widening the cockpit area by 2.5 inches. After talking with other KR owners, the extra room seemed quite desirable.

Due to the modified fuselage width, the Rand-Robinson premolded components were not used. I fabricated a removable, composite forward deck and fuel tank and am utilizing a Dragonfly canopy and canopy frame as they retain the sleek KR look.



One-inch thick foam formers support aft turtledeck structure.

Presently, I'm working on the aft turtledeck which is scratch-built to assure a perfect fit. I researched several ideas regarding this task (thanks to ideas and input obtained via this great newsletter) and decided to go with the method shown in the photos. Basically, you'll need to install



Zattoni KH-2S shaped foam aft deck is ready for two layers of fiberglass.

several one-inch thick foam formers beginning with the one that will eventually become the aft cockpit bulkhead (I slanted mine for cosmetic reasons) and continue to place a former directly over the 5/8" spruce horizontal members, all the way back to the vertical stab. I didn't put my formers directly over the crossmembers so had to add a foam support under them as seen in the photographs.

Once the formers are installed, you can carefully sand to contour using a long sanding board. The aft former has a 1/4" rib behind it that was clamped to the fuselage and assisted in supporting the sanding board. Once the formers were sanded to shape, the rib was removed. Next, I removed an additional 3/8" from each former. Then, I was able to cover the formers with 1/2" foam, using duct tape to hold the foam in place as the glue set.

My entire turtledeck is constructed with four pieces of 1/2" foam. Take your time, be careful and you'll end up with a turtledeck that requires very little final sanding and will fit perfectly.

After a final sanding, I laid up two layers of fiberglass cloth using conventional methods. Once cured, the result is a strong, lightweight, inexpensive component. An additional layer of fiberglass was laid up inside where the baggage area is located.

Note that the foam covering, as you work toward the tail, must bend in an ever tightening radius. A few passes with the heat gun will encourage the foam to accept its new shape. Do this prior to any gluing. Thanks, Art.

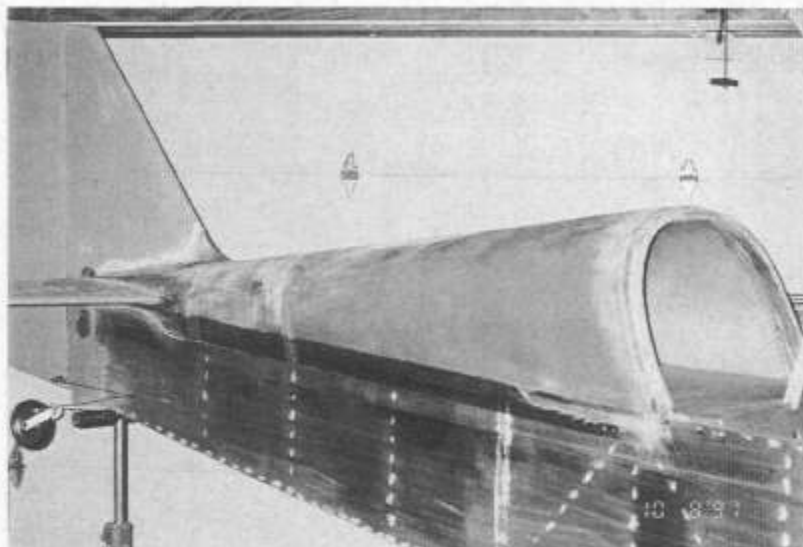
That's it for now, I look forward to next constructing the wings. The spars are done and ready for the Diehl wing skins to benefit!

Additional photo on page 3

Happy New Year
to the subscribers of the
KR NEWSLETTER

Resolve to submit a
Builder's Report
first thing this year!

Zattoni KR-2S, continued



Careful attention to detail results in a beautifully constructed aft deck structure on the Pete Zattoni KR-2S.

Ohio KR Tips

Bob Hawk

821 Jamestown Ave Elyria OH 44035
Tel. 440-365-6867 e-mail rahawk@hotmail.com

I now have over 150 flying hours on my KR-2 using an 1835 Volkswagen coupled with a Warp Drive propeller. To date, I haven't broken a crank because of this engine and propeller combination. I would be very interested in seeing some statistics on the known failures for this set up. Both Warp Drive and Great Plains Aircraft have advised against this usage but what I'd like to know, before I chuck my five-hundred dollar prop, is 1) what was the compression ratio on the failed engines; 2) How many hours were on the cranks before they failed; 3) Were the failed crankshafts stock or reground; 4) were the engines turbocharged or stressed in other ways.

I find my Warp Drive propeller is much quieter than a wooden prop. The adjustability allows me to fine tune my engine system for my leisurely style of flying.

My engine utilizes a remote oil filter attachment that I've modified to accept an oil pressure fitting. I drilled and tapped the filter bracket to supply a pressure source to the oil pressure gauge. The location helps prevent the flexing and vibration that can occur with oil lines attached to the engine block.

I believe that oil pressure is a measurement of the resistance to the flow of oil through the engine's system. An oil pressure fitting attached to the stock location on the engine will not indicate the total pressure required to force oil through the filter.

At SOOOrpm and 160 degrees oil temp, my indicator reads 70psi. It's about 15psi higher with a cold engine.

Following a suggestion from Steve Bennett at GPASC, I filled the end of the copper oil pressure line with solder and then used a small dental drill to open a tiny passage for the oil. This technique will prevent a

continued on page 4

Short Final

Random Thoughts from the Editor

A little housekeeping item about subscriptions; a few subscribers may notice an altered renewal issue number on their mailing label. No cause for alarm, you'll still be receiving twelve monthly issues of the fabulous KR Newsletter. It's just that your editor sometimes gets in a rush, doesn't remove his shoe and it's difficult counting past ten, hence a couple errors in calculating renewals.

Builder reports, photos, construction tips and your ideas are always needed. Santa's bag didn't have enough room to fill my big wish so I've got to get out the ol' prayer rug again and ask ya'll to send in some chicken scratching. There is a real need for articles on systems installations. Any Santa helpers out there?

One of the neat things about publishing this rag, besides getting money in the mail, is discovering some of you guys *real* names! Sure, your subscription form might say Bill or Joe, but your checks reveal the truth...Your secrets are safe with me 'cause my middle digit ain't gonna win no prizes either. G'night, Roscoe.

A frequent question from builders is *what's the best route to go; the retract gear or the fixed?* I think the answer might be in the classifieds. Four retract sets on sale this month alone. Just an observation.

Soon as I Get a Round Toit

Tim Eisinger

18155 Burke Drive Plymouth CA
95669

Just a note to thank you for your work on the KR Newsletter. You're doing a great job. I enjoy your humorous contributions to the Newsletter.

I've had my KR-2S plans for two, maybe three years, but with building a home, raising a family and work, so far I've just built a 4x16 workbench.

My profession keeps me away from

continued on page 4

Round Toil, continued:

home and the commuting costs take away from my hobby. Of course, being an electrician in the construction trades, it's always a feast or phantom position.

I hope for *this* year. Although I'm not much of a writer, I promise to send something to the Newsletter.

Ohio KR, continued:

rapid loss of oil should the instrument or pressure line fail somewhere along its length.



With over 150 flight hours on his KR-2, Bob Hawk has a couple of ideas to share with the readership.

Budget Gascolator Option

Monte Miller, Editor, KR Newsletter

At times, my Scotch ancestry comes out and I'll get kinda bent out of shape if I feel like I'm paying more for something than I think it's really worth. Such has been the case with my need for a gascolator fuel filter and bracket for my Pieterpol. Sixty-plus bucks just doesn't fit into the Piet scheme of things! Ran my own little *wanted* ad in the KR Classifieds, but no joy.

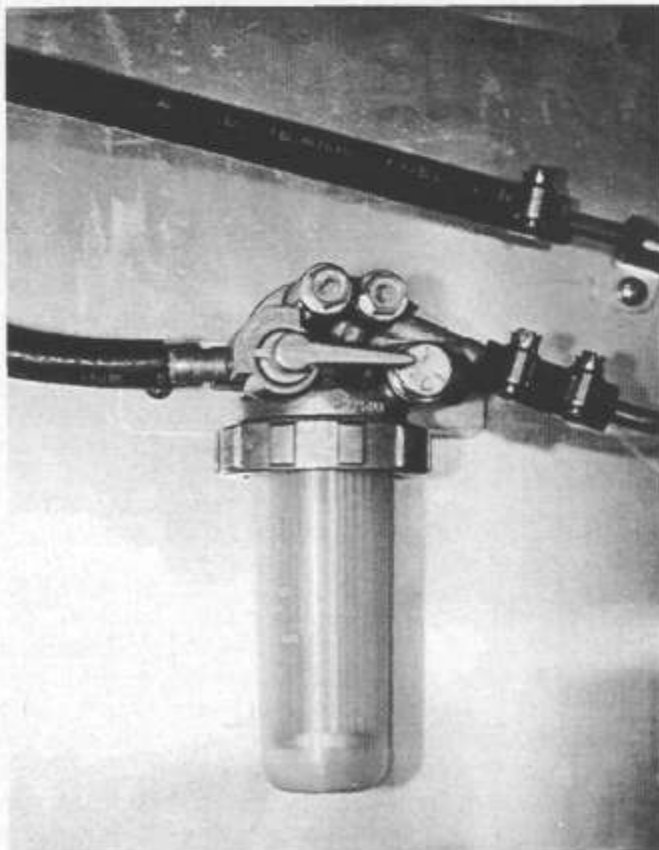
Sometimes, I'll hang out in my workshop, not actually doing anything, just enjoying a cool one and staying mentally busy developing ways of accomplishing tasks required on the airplane. Anybody else do this? I thought so.

Anyway, while pursuing this worthwhile endeavor, I recalled reading that several homebuilt aircraft are successfully utilizing an alternator sold by the local Kubota tractor dealer. Huuum...

Next morning, I zipped into our local Kubota dealer and mentioned that I have a Volks-powered, off-road vehicle that would benefit from a fuel filter. A nice gentleman escorts me to a shiny tractor sitting in the showroom, points out what looks just like a gascolator

and tells me I can have one just like it for twenty-eight bucks which includes an integral mounting system! This is bunches better than the sixty-plus dollars I was looking at. Times like this is where I usually do my happy dance.

The Kubota filter does everything I want it to do. It filters aviation gas through a replaceable element, has a translucent bowl for visual checks, has a shut-off valve to permit removal of the sediment bowl and does not need a separate mounting bracket for installation. It meets my needs and might do the same for other builders.



Boys, you might be a rednek pilot... if ya fly one 'a these.

The Kubota number for the Fuel Filter Assembly is #15393-43017. For a reduction in the hassle factor, I'd suggest, if asked as to your proposed usage, you try the *off-road vehicle* explanation. It's the truth.

Park Rapids Air Pirate

Art Smart
HCO5, Box14-A Park Rapids MN 56470



Great White North woodsman shows off rack from three point KR bagged on recent building expedition.

After painting, a series of ignition problems became evident in the plane. In retrospect, they were, first, a faulty plug-in on the distributor and then a high resistance oxidized connection on the coil. Before I figured that all out, I had screwed up the timing which ultimately resulted in a carburetor fire! Visions of my dream craft reduced to a pile of ashes ensued. However, the FBO was standing by the avgas pump and responded to my frantic yelling. A fire extinguisher handled the hungry flames.

I have since repaired almost all the fire damage and it's now running better than I had hoped. With two more degrees of bite dialed into the Warp Drive prop, the engine turns about 500rpm more than it did on my Emeraude. That's static with brakes locked and with all the push on the Clevelands I could muster.

The engine runs cool, at least on the ground. Running for 15-20 minutes, often at high revs, the temperature never got above 180 degrees. That's another unknown that appears settled.

During the ground run tests, it became obvious that my Wittman-style RV gear legs had lost their temper where I had attempted to adjust the camber and toe in. Concurrent with all this entertainment, I noticed that my

distance vision was worsening. I'd had trouble getting my biannual and now it was bad enough to get my attention. My vision A&P diagnosed a cataract, so outpatient surgery was conducted.



Work continues on the instrument panel and interior of Art's Minnesota-based KR-2, N424A.

N424A is at home now getting a set of fiberglass main gear legs. Minnesota, however, didn't have enough good weather left to completely fix the gear legs so we will shoot for next summer.

My friend, Pete Zattoni, inspired me to build the gear legs. He came up with the general concept after staring at a couple of KR's and I rendered my version; slightly wider and longer due to my plane's size.

After Thanksgiving, we head south to escape the Minnesota miseries and take up lodging in Gulf Shores, Alabama. Since my friend, Charlie Bradlee, got called home by the big ATC, I will have a shortage of friends to talk airplanes with. Anyone in our area will always find an open door and plenty of airplane chat. Through March, call me at 334-948-7405.

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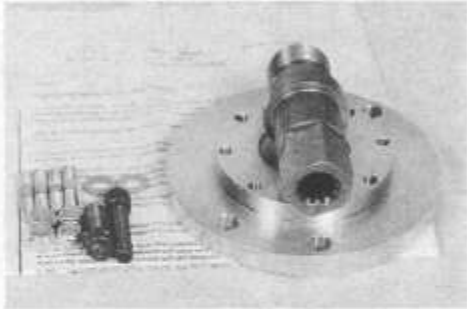
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In Search of Snake Navel Little Known Burg Not On Maps

Dennis Steed

POB 9013, Salt Lake City UT 84109

Tel/Fax: 801-487-3730 e-mail: kenikas@aol.com

It was great to finally meet you at the KR Gathering in Perry. My wife and I had a great time and although it was our first Gathering, it's definitely not the last. I attend quite a few fly-ins each year and am always disappointed when looking for KR's. Perry made me feel like a kid in a candy store; everywhere I turned was another gorgeous example. I got so many ideas that I might have to build a couple more KR's.

As I mentioned in my last letter, a lot of the workmanship in my acquired project left a lot to be desired. When I bought it, it was on the gear with the tail feathers framed up but not yet glassed. The wing spars were also finished.

I had to disassemble the airplane *before* it could make its first flight! I flew it home from Lewiston, Idaho...in the back of a Cessna 401.

On getting it home and upon closer inspection, I realized it was going to need some TLC in order to get up to where I would feel comfortable with it. Many of the glue joints weren't good and the tail area was kind of scary. The cuts on some of the pieces were so bad that you could see daylight through the joints. One of the previous builders had worked on it in a basement and found that it wouldn't go up the stairs so he cut the

vertical stab and later spliced it with plywood and bolts!

I've taken care of most of the spooky bits and am going back together with new spruce components and T-88.1 feel like I'm almost ready for foam and glass and am hoping I've been good enough so that Santa will bring me some.



Eddie shows off his master, Dennis Steed, and their KR-2 project. Utah builder explains risk in buying partially completed project.

I've been going 'round and 'round about whether to go with the retract set-up (which I've already got) or go fixed. Pretty much settled on breaking down and buying the fixed gear but don't know whether to go Rand-Robinson or Diehl. I'd sure appreciate some contact from builders that might be willing to offer some pros and cons on both types.

Sorry for the delay in getting this material to you but we recently lost my little co-pilot, shop helper and best friend, Eddie, to cancer. He's in the picture with me. It's going to be difficult to work on the KR without him underfoot, trying to get into the middle of everything.

By the way, at the Gathering you said that you and your wife were from Snake Navel, Arkansas. I can't find it on any of my maps. Just where the heck is it?

submitted by
Maude Huber, Arlington TX, and
Maury Hunter, Des Moines IA

You may notice, from time to time, some typographical errors in the KR Newsletter. Readers call them to our attention. We have discovered that some folks actually enjoy finding these errors so they are there on purpose as we wish to please all of our subscribers.

KR CLASSIFIEDS

Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial style ads will be billed accordingly prior to publication. The KR Newsletter reserves the right to edit free ads.

FOR SALE - KR-2. Boat stage. Fuselage and spars built. Horiz stab and elev complete thru f'glassing. Custom fixed or retract gear based on Newsltr #131-134. All mat'l to complete, firewall aft. Includes set of KR Newsletters. \$1200. Don Q. Cryer, 165 South Rd, Kensington NH 03827. Tel. 603-772-3116. Fax 603-772-4156. E mail don.q.cryer@juno.com.

FOR SALE-1984 EA81 Subaru Engine. 0 SMOH. Std size components. New main and rod bearings, rings, gaskets & seals. Intake manifold modified, heads reworked with new guides and valve job. Orig carb, distributor & alternator included. Ready for installation in your homebuilt aircraft. \$650. (100. will be donated to EAA Ch 125) Don Clarke, 10013 Conover Ln, El Paso TX 79924. Tel. 915-755-0588.

FOR SALE - KR-2 completed boat stage with fixed main, no nosegear. Brakes, wheels, tires. VW mount. Outer spars done. Rudder, horiz, elev. All controls in. \$500. Jerry Vanatta, 3730 Clarksville Pike, Nashville TN 37218. Tel. 615-242-7716.

WANTED - Posa Carb Needles. I have the #5 and need the other four sizes. Also would like an instruction manual, if there is one, or words of encouragement. Will be used on Revmaster 2100-D. Jack Gress, 9305 Fairwood Dr., Kansas City MO 64138. Tel. 816-761-2693. E-mail lackg-kr2@msn.com.

WANTED - Carb heat box and exhaust muff to fit 1834 VW Monnett conversion with Posa carb. New or used. Write or call John Duffy, 237 Bridge St, Bridgewater MA 02324. Tel. 508-378-3411.

FOR SALE - To settle estate. KR-2 684LM. 1835 VW, non-electric, Rand fixed gear taildragger with Clevelands, Diehl wings. Lightweight and beautiful plans-built plane. Asking \$11,000, includes parts to add electric start. Diehl tri-gear components available for additional cost. Technical questions to KR Newsletter, evenings, 940-566-5871. Inspection & purchase offers to Ms. Paige Warren Osburn, Esq., at 409-598-2818. Aircraft located Center (TX) Municipal Airport.

WANTED- Builder's Manual and plans for KR-2. Originals lost. Contact O.K. Boettcher, 105 West Circle Dr., Blue Earth MN 56013. Telephone evenings 507-526-2586.

FOR SALE - 24" stretched KR-2. Subaru 100 h.p. with 1.69:1 redrive. Sterba 60x66 race prop. Electronic ignition, fixed-gear taildragger with 32 gallon fuel tanks. Dragonfly canopy, flaps, 500x5, Clevelands, taxi, landing, nav and strobes. Inst panel loaded. \$23,000. Details, contact Geo. Huber at 817-261-3572.

FOR SALE - MAPI engine, Magnum 75. Purchased new in 1984, never installed. 1835cc with 75hp, sodium filled valves, hyd lifters, dual electronic ignition, Posa carb, tuned exh, engine mount, all engine instruments in quad & dual configurations. \$4000 plus shipping. Original KR2 retract gear also avail. Call Rick at 510-426-9525.

WANTED - KR-2S cowling to fit Continental 0-200 on a Rand factory mount. Contact with price to W B MacMillan, 1724 England Ave, Everett WA 98203. 425-353-9589.

FOR SALE - KR-2S Project. Mahogany ply boat stage on conventional gear with spars completed. Must move and can't take it with me. I'll throw in lots of parts, hardware & tools for the first \$3000. Lloyd Stearns at 512-244-7537, 512-838-0761, or stearns@ix.netcom.com.

FOR SALE - KR-2 fiberglass cowling \$400. Make offer on KR standard retract gear set. W. Janowski, 14123 East 122nd St., Collinsville OK 74021. Tel. 918-371-5846.

FOR SALE - Brand new & never used KR-2 retract gear complete with tires, spring pin locks and brake pedals. \$350 or trade for instruments and/or avionics. Contact Jack Cheney, POB 1640, Acme, Michigan 49610. Telephone: 616-938-2886.

FOR SALE - Set of unused KR-2S plans. \$200, includes shipping. Mark Joiner, 817 Alma Lane, Kingston TN 37763. Tel. 423-376-3628.

FOR SALE - Retract gear for KR-2. New, never used. Make offer. WANT new or gently used KR-2 canopy and frame. Dennis Steed, POB 9013, Salt Lake City, Utah, 84109. Tel/Fax:801-487-3730. e-mail:kenikas@aol.com

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Attachments for Seat Belt and Shoulder Harness

*The following technical article was provided to the KR Newsletter by Jeanette Rand.
The information included has become a part of the KR Builder's Manual supplied with each plans set.*

Why Shoulder Harness?

excerpt from Accident Prevention Program,
Pamphlet
FAA-P-8740-45, AFO-800-1084

Wearing of shoulder harnesses can substantially reduce injury in case of an accident. Experts estimate that serious injuries and fatalities would be reduced 35 percent if everyone wore shoulder harnesses in aircraft.

Ironically, only 23 percent of those involved in fatal and/or serious injury accidents, in a recent year, had their shoulder harness secured, according to the NTSB.

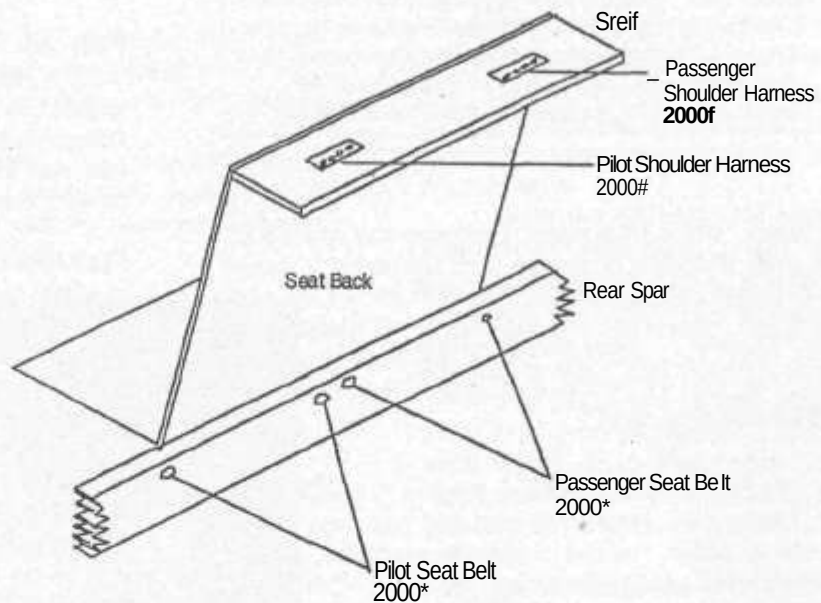
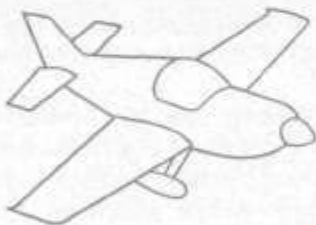


Figure 1: KR-2S Seat Belts & Shoulder Harness Installation



KR NEWSLETTER

624 West University Drive
Suite 199
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Issue 247 Jan 1998





NEWSLETTER

Ladigo Turboprop KR Project *Tulsa Builder Previews '98 fly By*

One weekend, several years ago, my wife and I piled into the pickup and struck off for Oklahoma. The plan was to make a first stop at OKC's Remington Park where we'd win enough money from betting on ponies to then cruise over to Jenks, Oklahoma (home of Diehl AeroNautical) and pay for my previously ordered wing skins. Definitely a plan we could live with.

Later, while enjoying the nickel tour of the Diehl facility and hangar, we see several KR's including Calvin Campbell's work in progress tri-gear, the famous Ol' Blue of Diehl and company, and a really sharp Dash Two belonging to one Mike Ladigo. These guys and their aircraft were a great encouragement that helped me complete my own KR.

Fast forward to the '97 KR Gathering and FlyIn at the Perry OK Municipal Airport. Mike Ladigo is still putting together KR's in his own unique way. This time, it's his fantastic, turboprop-powered rendition of a *sorta* KR-2S.

Although not ready for its first flight, the Ladigo Turbo was trailered to the event and, in an amazingly short time, assembled and prepped for an engine start.

Sounding for all the world like a corporate jet about to launch, the KR's jet engine lights off with a healthy puff of smoky kerosene, the three-bladed prop begins its initial characteristically slow rotation and all other activity at Perry Municipal immediately ceases. Loud fails to adequately describe this aircraft!

The KR Newsletter had an opportunity to talk with Mike about his unique project along with doing a bit of eavesdropping as Mike detailed his aircraft to other interested fly-in attendees. As the turbojet engine is the real *grabber*, let's begin with it.

The engine is a geared Air Research JFS100-13A. Weighing in at a svelte 81 pounds, the kerosene burner began its life as a starter engine inside the Vought A-7. While putting out around 90-95 shaft horsepower, the engine develops approximately 330 foot-pounds of torque.

According to Mike, his powerplant weighs 50 lbs less than a Volkswagen installation, cranks out 25-30 more horses and around 60 additional foot-pounds of torque than its Teutonic

continued on page 2



The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

counterpart. To the basic engine, add 25-30 pounds for the prop drive and another 25 pounds for the three-bladed prop and hub assembly. Do the math and you come up with about 130 pounds of prop and powerplant installation.

Mike's prop drive assembly is a clever work of art designed and produced by two of his buddies (one of which now owns Mike's former KR-2). Besides the prop shaft itself, there are cross drives which utilize Volks distributor drive shafts to operate a vacuum pump, an external oil pump for the gearbox and the tach drive. The assembly also includes mounts for an alternator.



Definitely a star of the 1997 KR Fly In. Anytime Mike Ladigo was around his turboprop KR, people would bombard him with questions about the craft.

The engine is a gas guzzler, consuming a maximum of 16 gallons per hour at full power and a relatively modest 12gph at 80% power. A Volks it ain't.

The propeller is a three-bladed affair utilizing an NSI hub and Warp Drive blades. As a final touch, Mike has a beta prop position which will allow him to dazzle folks by *backing* into his ramp spot at next year's KR Gathering. All this marvelous engineering hangs on an engine mount ten inches longer than plans so as to keep the CG within limits.

The Ladigo Turbo KR-1.5 began its construction stage as a KR-2 that was stretched and narrowed while incorporating all the Rand 2S plans mods. Initial concept

was to install a Mazda single-rotor rotary but the lure of the jet changed all that.

Mike has utilized several Diehl vacuum bagged parts to keep the empty weight to, "somewhere between a KR-1 and a KR-2." Every horizontal flying surface is a premolded part: outer wings, center section, stabilizer and elevators all came out of molds. The elevators and ailerons are internally balanced to one-hundred percent. No rudder balance is utilized.

Wing span is a little bit over 18 feet and the wing area is, "...between the KR-1 and 2. With less empty weight combined with less wing area, I should have a wing loading similar to a standard KR-2S," states Mike.

The aircraft's narrowed fuselage incorporates a Sonerai II canopy over a roomy, armrest-equipped cockpit. Diehl landing gear components round out the package as it now sits.

Some people may have thought Mike Ladigo crazy for trading his beautiful KR-2 for nothing more than a surplus starter engine and a dream. Others now believe that he'd have been crazy not to do so.

By the way, the great plan to *win my wings*, as mentioned earlier, didn't quite work out. Oh, I picked a great horse...it took nine other nags to beat him!

Monte Miller, Editor

Ain't You Through WHh That Yet?

How many times have you heard that question, or one much like it, while you patiently build your KR? If asked when my own KR-2 would fly, I always told the inquiring party, "Two o'clock, Tuesday". Didn't say *which* Tuesday, though.

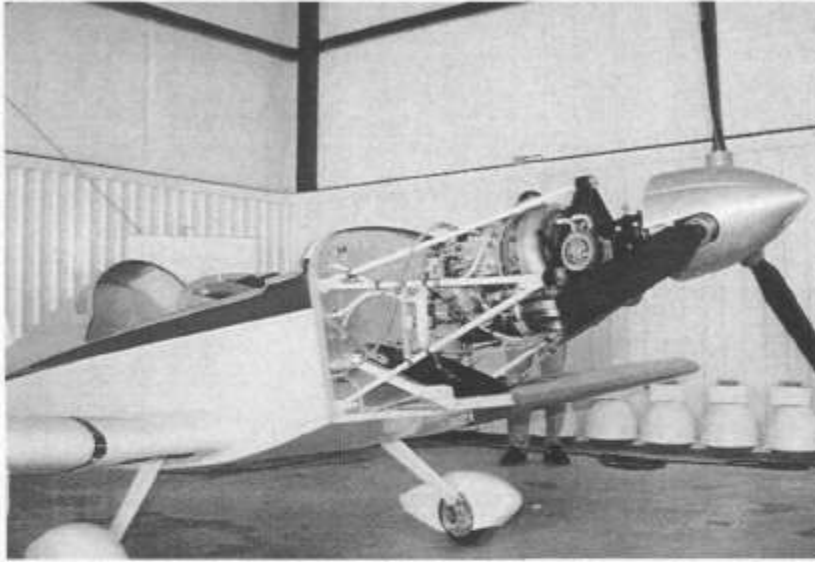
Dave Clinthorne (3706 Wilburn Dr., Fredericksburg VA 22407) included a quick note with his renewal check; "...the Newsletter has kept me going. My progress has slowed because I'm working 78 hours a week. I'm following the article you wrote (Jan 90) on putting the canopy on. My hinge is as Jeff Bryson's (Oct 97). I was hoping for a summer first flight."

Should you, as "DaddyMan" is, be feeling a bit behind the power curve of KR construction, don't despair. Remember, it's supposed to be an enjoyable, leisure time activity. Besides, all you lack is finishing!

*It Only Takes Two Things For a
KR toGoF/y...
Airspeed and Money*

TLnough o/Bof/7 and You're Up

Business End of the Ladigo / Turboprop KR...



A New Year's Resolution

Lloyd Buckner

7396 Circle Drive Rohnert CA 94928
Tel: 707-794-8976 Fax: 707-795-0420

I had put a note in with my subscription renewal saying that I would contribute a write-up on my project. Now, as the year nears it's end, I am committed to do this before 1998 begins. Enclosed is an article on my new project along with some recent photographs.

The reason I called it my new project is because it is my second KR. The first one was completed after three years of labor in 1992. This one is about 80% done after four years. The first one took less time because I was suffering through an addiction to it. This results in a faster completion but can also cause maxed out credit cards, fed up wife and occasional lacking job performance for the nice man that provides you with that paycheck! Can anyone relate to this?

Anyway, I sold number one after enjoying it for about eighteen months, then took a six month break before jumping into number two. This one will be a more quality result, at least as the outward appearance goes. The first KR performed great but wasn't the prettiest lady on the ramp.

The primary difference between the two projects is that this one is the *streeeech* version and that I put the center wheel up front instead of the back. My wife likes this idea because those blind three-point landings and taxis had her pulling her hair out. I will still be running a 2180 Volks conversion with a Posa Supercarb and a dual mag. The prop is a Sterba once again. The major jobs yet to be completed are to build the instrument panel (This one of aluminum, the last one was composite); build the outboard wing panels (spars are ready); purchase and ready the engine cowl; and lastly, complete all that lovely filling and sanding (bottom is done and painted). As all airplane builders are aware however, all of these major jobs filter down into many smaller ones.

continued on oaae 4

ON THE RAMP

Rumblings from the Editor

I don't know what it might actually imply, but there sure are a lot of telephone area codes being added these days. How I often dislike that intrusive phone... perhaps born to late, I refuse to carry a cellular. At any rate, that damnable invention intrudes at the most inopportune times. Anyone else feel the same?

While I'm griping about Alex Bell's toy, ya'll remember that the KR Newsletter is a true-to-life shoestring operation. If you'd like to chat it up with the editor, it's gotta be on your nickle. The poor, ol' Newsletter just can not afford to return your long distance calls.

Spent a week over the Christmas holidays down on South Padre Island, Texas. The air is warm, the drinks are cold and Mexico is minutes away. What made it really nice was two aviation museums in the neighborhood. The Brownsville, Texas, Wing of the Confederate Air Force and the nearby Texas Air Museum at Rio Hondo both received our attention. Be advised that the Texas Air Museum has hard tooling and jigs and is well into the process of building two *brand new* Focke Wulf 190's to go with their pair of original Butcher Birds! Worth the trip.

I'm still waiting for the flood of builder progress reports. I'm truly indebted to those subscribers who have shared their experiences with the readership. It matters not at what stage of the building or flying process you are currently enjoying; there are others behind you hungry for motivation, inspiration and encouragement.

By now, most everyone has heard the story about the aborted 'round-the-world ballon flight by Dick Rutan and Dave Melton. The abandoned, unmanned craft finally crashed and burned just a few miles northwest of the world headquarters of the KR Newsletter, barely missing my all-time favorite beer n' barbeque joint. Whew...that could have been a *real* aviation disaster!

A New Year's Resolution, continued...

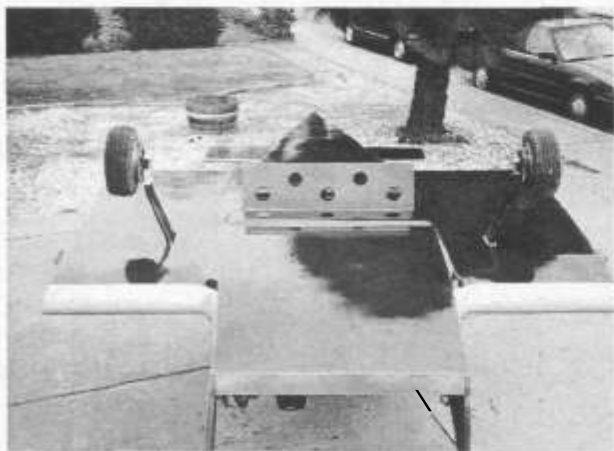
There are a few items I'd like to discuss that may be of benefit to other builders or prospective builders. First is the paint. I have painted this project a dark color on the bottom and will paint the sides and top a lighter color. The sun doesn't shine on the bottom and the darker color doesn't show exhaust smoke trails as badly. Also, as you can see in the photo, I am again using the belly brake versus flaps or nothing. It has the desired effect and is easy to build, install and operate.

Again, I have built my own header tank versus prebuilt glass or aluminum. It's the volume I need (21 gal) to avoid wing tanks and the top of the tank is my forward deck. I formed the deck to conform to the firewall and the front of the canopy. It was not very difficult to build and plumb.



Buckner's bladder-buster 21 gallon header tank No mention in his builder's report of a relief tube!

I have not been able to find sheets of urethane foam locally so, to supplement my needs, I have used sheets of home insulating foam that can be purchased at your local home improvement store. It is a more dense



An unspoken tip here is, like Lloyd, do all you can do while the airframe is on it's back. Much less hassle.

foam and therefore heavier but it sands and forms Just as well. Also, it is fibrous and does not break as easily as the stuff you get from Rand or Aircraft Spruce.



Ever closer to completion, Lloyd Buckner's KR-2S offers some unique design concepts.

I've discovered a fabulous product to fill small low spots in the foam and is especially good to fill in and smooth out areas in the foam next to spars, ribs and areas where two pieces of foam come together. It is called *Patch n' Paint*. It's a very lightweight spackling compound that goes on with a putty knife and sands great after drying. I've tested this product and it adheres well to the foam and fiberglass adheres well to the filler. Don't know how I completed my first project without it.

Anyway, that's it for now. I'll report again after completion or if I come across some important information before then. If I might provide any help to anyone, please feel free to call.

Regarding Firewalls & Wives

Jeff Bryson

9017 Hemingway Place, Bakersfield CA 93311

Tel: 805-665-9449 (res) 805-326-3736 (bus)

Just a note on the progress of my KR-2S, the future N949JB. My wife has already reserved our "N" number. She also ordered the same number for my truck's license plate! We builders that have the backing and support of our spouse are truly blessed.

Well, it's time to install my firewall. I need to finish the brakes but the fittings are back-ordered. Why can't I do the job on the bench?

After floxing the fuel tank to the forward deck, both removable, I took the .125 inch birch plywood and, after making a template, cut out the firewall. I had previously drilled the fuselage cross members for the mount so I temporarily installed the firewall using small wood screws. After sanding the forward deck flush with the face of the firewall, I removed the firewall and placed it on my work bench

continued on page 5

Firewalls & Wives, continued:

Next, I marked and cut the fiberfrax material, leaving it about three-quarters of an inch shy of the edge all around except at the bottom. Now to epoxy, but how to apply even overall pressure?

I'm the one who puts off tasks for later or ignorantly jumps ahead. Back when I was doing the KR woodwork, some two years ago, I had epoxied about all I could stand but had some daylight left. What can I do? Hey, I'll cut out the firewall. After all, I have the pattern in the plans set. Cool. Hal What a mistake. But now it makes a perfect pressure object for epoxying the fiberfrax to the firewall. Actually, I later used the miscut plywood for the seat back.

After curing, I reinstalled the firewall so I could drill the birch and fiberfrax plus trim the fiber where the mount will go. Back to the bench and attach the stainless with epoxy along the edge with spots of adhesive dispersed over the rest of it. I used three-quarter lumber clamped around the perimeter and carpet protected weights elsewhere.

When the brake fittings get here, I'll be able to access the forward fuselage area then attach the firewall using the engine mount to apply pressure during cure. It worksforme.

Having just ordered the engine components from GPASC, I'm really jazzed about possibly flying in '98. By the way, the last time I had 949JB on it's face, I painted the bottom using a water-based urethane. I'm pleased with it and now won't need that creeper for bottom painting. Call or write anytime.

FLASH FLASH FLASH FLASH!

**1997 KR Gathering & FlyIn
Plus KRBUILDERSURVEY**

Featured in

March '98 KITPLANES Magazine

Thread Lube, Bondo & Grease

Tips for Your Shop and Ship

Monte Miller, Editor, KR Newsletter

Most everyone agrees that it's a pretty good idea to use a bit of lubricant on spark plug threads prior to installing them in any engine. With the Volks, the steel sparkplug inserts installed in the cylinder heads can be easily stripped and pulled out by ham-fisted folks trying to remove a stubborn sparkler. A tube of the copper-based lubricant can be purchased at any auto parts house. Be sure to follow the instructions for application.

Here's another use for the lube that I'd bet a few of us wish we'd known about earlier; exhaust manifold nuts.

Who among us, in an effort to remove the VW exhaust system, have ended up twisting out the entire stud along with a rusted-tight nut? I thought so.

It's always best to use brass or bronze nuts to secure the exhaust to the head studs. Steel nuts will rust while you stand there and watch...something to do with all that heat, I'm sure. Anyway, a small dab of the thread lubricant will help even those non-ferrous nuts come off easier when the need arises.

Right, Bondo. Initial entry fee for the KR adventure requires that everyone build a BIG workbench. Problem is that we'd all rather invest money in aircraft grade spruce rather than 2x4's and particle board.

You can save a few early bucks by: 1) Securing the long side of the workbench to a wall, thereby eliminating several legs and; 2) Not buying lumber you'd normally use as diagonal braces for the legs. Instead, after you've leveled that fourteen-footer, put a healthy sized glob of Bondo beneath each bench leg. Let the stuff ooze out and it'll lock the leg to the floor. Years later, the plastic goo can be chipped off the cement fairly easily. For those builders well into their projects but still living with legs that scoot out of alignment, use that leftover epoxy and some cotton flox. My experience is that the legs stay in place but, upon removal, a small portion of the cement floor chips off with the epoxy. Strong stuff!

Last item for today...I've been buying those 500W halogen bulbs for my shop lights at an amazing pace. At anywhere from \$3.50 to \$5.00 each, the 25-50 hours of service that I received made the units a bit pricey!

The terminals on the bulbs and the holders always looked crusty upon inspection and I would attempt to burnish the lampholder tips before installing a new bulb. I wasn't always satisfied until a wizard friend told me about *dielectric grease*. Another auto parts item, this stuff can be lightly smeared on electrical terminals and will prevent the corrosion that was causing premature bulb failure.

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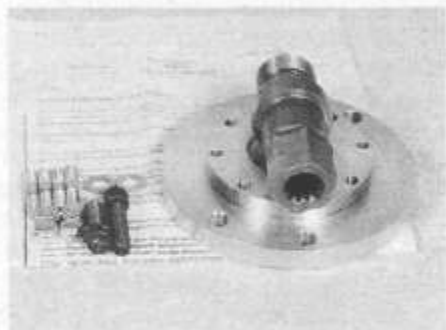
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M P A COMPANY

POB 622KR

TOCCOA, GA 30577-0622

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*Special to KR people - If you order the drive system,
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253

Flush Fuel Caps

Jim Marshall

10602 Winterhawk Boise ID 83709

Telephone 208-362-9225

After three tries from the plans design fuel caps, I said that there had to be a better way.

I purchased two threaded PVC plastic fittings for each tank; one male and one female. The modified female component becomes the tank filler opening and the male part is adapted to become a flush-fitting cap.

Before beginning the installation, let me remind the builder to use sandpaper and roughen up the PVC plastic so that the epoxy and epoxy/flox mixtures will bond well.



It's really easy to put the female part into the tank. Mark the chosen installation spot and then use a Dremel tool to cut the opening. It should be a pretty tight fit. The plastic part is put in place and then an epoxy/flox mixture is used to permanently secure it. You'll have to reach into the tank filler opening with a finger to build a smooth fillet of adhesive so use proper safety precautions.

My aircraft uses 1.5 inch fittings as it makes it easier to get the flox inside. Use your own discretion as to how much of the fitting to trim off prior to installation. Mine are about 3/4" with a small amount left protruding above the wing skin. This is later sanded flush.

The male portion of the PVC pipe becomes the fuel cap. Roughen up the inside of the pipe before sealing the end with tape and pouring in an epoxy/flox mixture. I found it necessary to put a bit of metal in the area of the screwdriver slot as the flox can become dented from continuous use.

As with the filler neck, leave the caps a little tall, install them in the neck and sand them flush for a very neat appearance. A vent tube is also floxed into my header tank cap.

My opinion is that the caps look good and are far more economical than the store bought variety. A last note regarding the fuel caps; the plugs go in easier than they come out. Don't know why but it's the reason for the metal reinforcement.



The other photograph shows the bottom side of a wing tank. I have installed tubes so that I might easily run the aileron cables through anytime I desire. I have also provided inspection ports for the pulley, flap and fuel connections. My aileron pulley bracket has been extended aft since I went with the Diehl tri-gear system.

**It doesn't matter what you do,
just submit something!**

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FOR SALE - KR-2 Boat stage. Fuselage and spars built. Horiz stab and elev complete thru f'glassing. Custom fixed or retract gear based on Newsltr #131-134. All mat'l to complete, firewall aft. Includes set of KR Newsletters. \$1200. Don Q> Cryer, 165 South Rd, Kensington NH 03827. Tel. 603-772-3116. Fax 603-772-4156. E-mail don.q.cryer@juno.com.

FOR SALE- 1984 EA81 Subaru engine. 0 SMOH. Std size components. New main and rod bearings, rings, gaskets & seals. Intake manifold modified, heads reworked with new guides and valve job. Orig carb, distributor & alternator included. Ready for installation in your aircraft. \$650. (\$100 will be donated to EAA Ch 125) Don Clarke, 10013 Conover Ln, El Paso TX 79924. Tel. 915-755-0588.

WANTED - Posa Carb Needles. I have the #5 and need the other four sizes. Also would like an instruction manual, if there is one, or words of encouragement. Will be used on Revmaster 2100-D. Jack Gress, 9305 Fairwood Dr., Kansas City MO 64138. Tel. 816-761-2693. E-mail lackg-kr2@msn.com.

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FOR SALE - Brand new & never used KR-2 retract gear complete with tires, spring pin locks and brake pedals. \$350 or trade for instruments and/or avionics. Contact Jack Cheney, POB 1640, Acme MI 49610. Telephone 616-938-2886.

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WANTED - 54/56x28 or 54/56x30 wood propeller to fit GPASC-style Volkswagen prop hub. Call, write or smoke signals to Editor, KR Newsletter, at 940-566-5871, evenings GST.

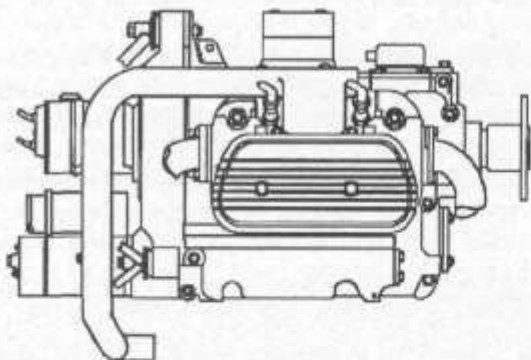
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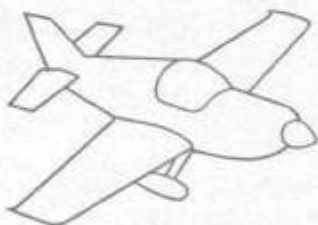
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KR NEWSLETTER

624 West University Drive
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Issue 248 Feb1998





NEWSLETTER

After the Honeymoon's Over *Life With a KR-2 Ten Years Later*

Living With the KR-2

Gary Sack

FOB 6082 Eureka CA 95502

Telephone: 707-444-9493

I live in Eureka, California but I purchased N81JM in Fort Meyers, Florida in April of 1987. The builder was a Navy pilot who agreed to give me a check-out prior to my return flight home.

Although I had previously owned a Stinson 108-1, I was unprepared for the lightness of the KR's pitch control. We spent close to a week's worth of evenings preparing me for the flight home. As departure time approached, I flight planned for long hops and hoped I wouldn't have to land too often.



It's 1987 in Eastland. Texas. Gary Sack and his new KR-2 are almost halfway home.

The first leg home was planned direct to New Orleans from Fort Meyers. I made it almost 150 miles before the spinner flew off, damaging the prop and forcing me down on a little strip just north of Tampa. I thought I had hit a bird. As I travel pretty high, I had little trouble with a partial power glide to Pilot Country Airport where the KR and I made a remarkably good landing.

While I was on the phone trying to hunt up a new prop, a gentleman by the name of Bud came by and offered to help me fix my damaged one. I was unconvinced as the prop had an eight by one inch chunk bitten out of the leading edge. Bud proceeded to use a hand plane to remove all the damaged wood and then used super glue to attach a matching piece of new mahogany.

After curing, Bud used his trusty hand plane to reshape my prop. By the next day, we had the prop balanced with a coat of primer and back on the plane...which flew just fine, thank you very much!

continued on page 2

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

Living With the KR-2, continued. .

The remainder of the trip to New Orleans Lake Front Airport went pretty well except for my worrying about the prop and my next landing in a plane that I really hadn't yet mastered.

After getting on the ground at New Orleans, I had a new problem to deal with. Ground control asked, "Where do you wish to go?" I had no idea and said as much. Ground repeated, "Where do you wish to go?" Seems they can't or won't send a fellow to any FBO for fear of showing some sort of favoritism. All I wanted to do was get off the runway. I should have carried a flight guide, but didn't.

This standoff continued for a remarkably long time before I saw a Chevron sign in the distance and radioed GC. This worked fairly well except the Chevron folks sold only jet fuel to Learns.

After a three day layover visiting relatives my next leg was 4.3 hours to Eastland, Texas where the photograph was taken by a local airport bum fascinated by the KR-2.

The only significant issue during this portion of the flight revolved around a 2 quart bottle of Sunny Delight. I had purchased the beverage earlier in the morning as an aid in preventing dehydration. The bottle might come in handy later as a relief system. In hindsight, I should have poured out half the juice before departing but couldn't stand wasting it. I took off and flew along while attempting to drink a half gallon of liquid. I barely made it to my next stop without an accident and now do not recommend the technique unless you wear Depends.

The afternoon flight was 5.2 hours into Winslow, Arizona. Total flight time for the day was 9.5 hours in the air. That evening, I slept sorta under the KR's wing (it is low) halfway between the tarmac and tumbleweeds.

At dawn, I arose and walked the KR down to the FBO and after they opened, pumped 19 gallons of fuel into my 23 gallon tank.

Next stop was San Carlos, California and my log entry says 750 miles at 138mph and 35mpg. I don't recall any tail wind, but those figures are about as good as she'll do. I later read about a fellow in a Dragonfly who had set a new world record for distance that pretty much matched my performance. I just shrugged my shoulders. Certainly no FIA observers on either end of my trip.

My landing at San Carlos was awful. I bounced on all three wheels but not at the same time. Radioing the tower I said, "Gawd, I hate landing this thing". They replied that they were relieved to see me roll off onto the taxiway on my own power.

The last leg, San Carlos to Eureka, was short and uneventful...eleven years ago.

*[The KR Neivsletter needs more articles like Gary's!
Share your flight experiences with others through the pages
of the KR Nnvsletter.*

It Never Rains In California...

EL Nino Benefits KR Neivsletter

Stan Melio

917 Sleepy Hollow Road Paso Robles CA 93446

It's still raining like hell here in California which gives me plenty of time on my hands and no excuse not to give a little progress report.

I just ordered some wing tips today from Rand-Robinson. I had made several tries at my own and was not satisfied with them. Besides, I'd like to finish this thing some day.

Finally completed the wing tanks that I was having so much trouble with the last time I wrote. The way I ultimately made them was to lay up two layers of fiberglass, let them cure and then laid up two more layers over that. I checked them with 3 psi of air pressure for 24 hours without any loss. I hope that when fuel is added they will still hold. If not, aluminum tanks they will be.



Fuel tank nested in wing and secured in wooden cradle epoxied to spars. Also note the wheeled work cart and Stan's obscenely clean shop.

Right now, I am waiting for some warm, dry weather to finish up the outer wing panels. Yet to do is closing the ends, fuel caps, cutting the ailerons and filling the weave with micro slurry. Then, everything gets a good priming and sanding. If all goes well, I'll start on the engine this fall and work the winter on it.

Ordered the axle for the transporting trailer last week. Will build the trailer as low as possible so that the vertical tail will clear the garage door when the plane is on the trailer. Ground clearance may be a problem when traversing driveway approaches, etc.

Editor's Note: Stan need not be overly concerned about future leaks in his fiberglass fuel tanks. Properly fabricated and tested, as did Stan, if they don't leak now, odds are extremely good that they never will.

Additional photos of the Stan Mello KR in this issue

AND YOU THOUGHT YOUR ASP WAS **BAD...**

HERE ARE SOME ACTUAL SQUAWKS SUBMITTED BY U.S. AIR FORCE PILOTS AND THE ACTUAL REPORTS THE MAINTENANCE CREWS MADE IN RESPONSE:

Squawk: Dead bugs on windshield. Report: Live bugs on order.	Squawk: DME volume unbelievably loud. Report: Volume set to more believable volume.	Squawk: Test flight OK except auto-land very rough. Report: This aircraft not equipped with auto-land.
Squawk: No. 3 engine missing. Report: No. 3 engine found on right wing after brief search.	Squawk: Friction locks cause throttle to stick. Report: That's what they're there for.	Squawk: Left inside main tire almost needs replacement. Report: Almost replaced left inside main tire.
Squawk: The autopilot doesn't. Report: It does now.	Squawk: Evidence of hydraulic leak on right main landing gear. Report: Evidence removed.	Squawk: No. 1 propeller seeping fluid. Report: No. 1 propeller seepage normal.
Squawk: Autopilot in altitude hold mode produces 200 fpm descent. Report: Cannot reproduce problem on ground.	Squawk: Something loose in cockpit. Report: Something tightened in cockpit.	Squawk: Nos. 2, 3 & 4 propellers lack normal seepage.

TTic TViiv>5s We Sec

' High above in airborne sea,
my craft and I...the things we see.
I have built her straight and true
to travel in the sky so blue.
High above the world we fly,
my tiny little craft and I.
At times I'm afraid to see
what passes far beneath me.
The little engine sings its song, "You've
nothing to fear, I'm light and strong."
What dream has brought me here you ask,
the dream of a child long since past.
A dream of looking to the clouds,
transcending the earthbound shrouds.
I have labored with my tools,
the lines upon paper drawn,
I have toiled through the months
to build a dream I have spawn.
I've had my doubts at times you see,
what this pile of sticks would be.
A man departed some time ago
left this gift to us below.
And now I fly in airborne sea,
my craft and I...the things we see.

-Duane Miles

The preceding literary favor was contributed by
Duane Miles, 2136109th Ave NW, Coon Rapids MN 55433

ON THE RAMP

Rumblings from the Editor

Hope all of you guys remembered your significant other this recent Valentine's Day. You may be the only one providing the sweat equity in that aerial hotrod, but without the support of your spouse, you'd still be dreaming. A big tip of the KR Newsletter's wind sock to the ladies who provide so much support to our sport.

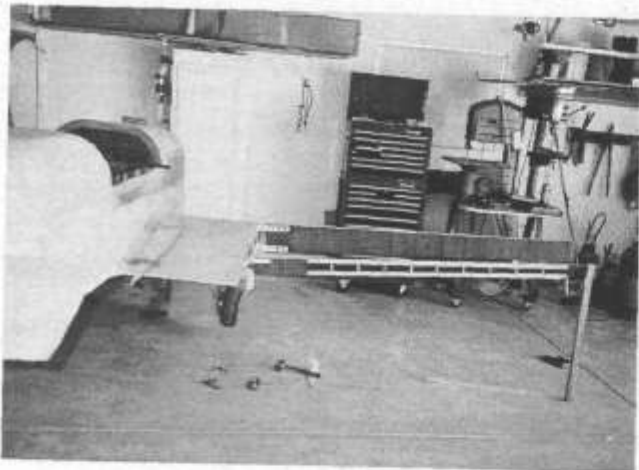
George Huber (KR-2S), of Arlington, Texas, called the other evening. "What's a date for the KR Gathering in '98?", sez George, "I'm putting in my vacation request at work right now." Now *that's* planning! September and Perry (OK) Municipal is for sure but I don't want to stir up Don Betchan just yet he's probably not yet fully recovered from his superb efforts last year. Stay tuned.

Has everyone seen the *Kitplanes* March '98 issue? KR's figured prominently in the magazine with features on the 1997 KR Gathering & FlyIn plus a builders survey penned by Don Downie. Lots of nice ink for our side.

Steve Bennett, proprietor of Great Plains Aircraft Supply Co., is a leader in the development, support and design of Volks aero-conversion parts and engines. His Nebraska-based company has helped power many a KR builder's project with hardware and friendly technical assistance.

Builders can greatly help themselves by sending four dollars for the GPASC catalog. Mention that you're a *KR Newsletter* subscriber and Steve will also provide you with a free subscription to his quarterly publication, the *Beetle Flyer*. It's user friendly tech stuff on VW engines beneficial to your project. See Steve's update in this issue of the KR Newsletter.

More KR Melloness..



Critical to performance, the Mello KR is leveled on sawhorses while wing dihedral and washout are set.



Accidents will happen. Damaged during storage, the canopy is repaired with fiberglass both inside and outside the frame. Common drywall patch fills void.



A cardboard cowling profile is utilized to check outline from spinner to firewall thereby saving later surprises.

GPS Mount for the KR *Northern Exposure for the Dash Two*

Jack Schnurr

1164 Vasi Way North Pole AK 99705

Telephone 907-488-6659

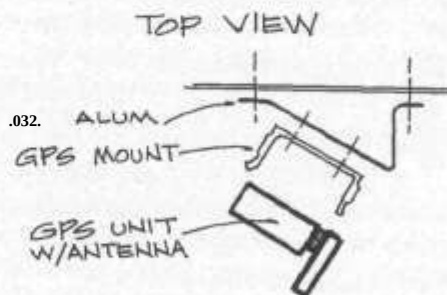
I use my KR-2 for lots of cross country flying. The Global Positioning System that I use is invaluable. "

My handheld GPS unit is attached to the KR's instrument panel. A mounting bracket was made from .032 aluminum and shaped so that the GPS is easy to read when installed. The aluminum mount is attached with sheet metal screws as is the plastic GPS holder. The nav unit itself snaps easily into its holder.

I did not want an external antenna so the one that attaches to the GPS itself is used. I'm pleased to report that the system works quite well even with the canopy covering it.

The quick release on the Garmin 55 or 95 allows removal of the GPS unit in only seconds so that it may be taken with you when you park your aircraft. The GPS can be wired into the aircraft's electrical system or the same mount can be used with the AA battery pack that comes with the product.

On a 9000 mile trip out of Fairbanks, the GPS failed only once for about ten minutes due to one satellite getting too on the horizon before the next one got high enough to be picked up.



Jack Schnurr's panel-mounted GPS bracket is a simple solution to a sometimes unwieldy device.

Are You an EAA Member?

The simple act of *assuming* something can often get us in trouble. It's the old, "I thought everybody knew" mind set that can lead us off course.

Your editor has been an EAA'er for many years and assumed that everyone else is, too. Oops.

If you're not presently involved, then consider this excellent organization as a resource for your KR building experience. Call the Experimental Aircraft Association at 1-800-564-6322 for membership benefits.

Great Plains Aircraft Supply Co.

Updates from the Leader in Volkswagen Aero Conversions

Rear Drive System for the VW

The drive system is made up of five major components: the bell housing, drive shaft, flywheel, dampener and a taper lock bushing. The rear drive system is designed so that there is no preload on the engine and propeller thrust and radial loads are taken up by the unit's bearing and dampener with minimal transmission back to the engine.

Clearly the largest single advantage of the rear drive system is in not transmitting torsional vibration to the engine. The added benefit, however, is the potential for a great increase in horsepower via larger displacement engines.

Right now, we are limited, in our opinion, to 76 horsepower in the dependable 2180cc Type 1 engine. With the rear drive system, we can easily go up to almost 2600cc on the Type 1 using aftermarket engine cases and up to 3200cc using Type 4 components. By having the carb mounted on top of the engine, we gain yet additional horsepower.

The other major advantage, regardless of engine displacement or type, is that we hope you will be able to use any of the new propellers now available in the marketplace that are "other than wood", ie: Warp Drive, etc.

KR-2S Package

We are also working on a new KR-2S firewall package. This new package will feature a five-point, wide engine mount, a top mount starter accessory case that will fit the Diehl tri-gear, tuned exhaust, and Rev-flow, Ellison or Zenith type carbs. Look for a new display in our booth at Sun n'Fun this Spring.

New Products

We are also working on a new StaDri Breather Vent for the VW. This unit will bolt to the breather pad on top of the engine. Much like a firewall mounted oil separator, it should keep all the oil in the engine and vent only air and a little moisture.

Our other new product under development is a full swivel tailwheel that will adapt to most small aircraft under 1200 pounds gross. The unit will feature our "roll silent" tailwheel and an aluminum casting combined with a locking mechanism. We project a Spring release date.

Great Plains Aircraft Supply Co.

P.O. Box 545 Boys Town NE 68010
Info 402-493-6507 Orders 800-922-6507
Complete Catalog \$4.00

Adventures with Art, continued from page 6...

punishment. I wouldn't wish it upon anyone. This stuff is so hard it eats sandpaper like peanuts. My hands were almost bleeding when I got to the point that I couldn't continue. To make a long story short, I sanded out all I could, we resprayed and it now looks much better than it did, although not nearly as well as it might have.

Next week, I'm having some decals made of my "N" numbers and "no step" for the flaps. I'll also install the prop, engine cowlings, check out the ground cooling and get the prop pitch adjusted for proper RPMs.

By the way, for those of you who have never gone through this dance before, experimental aircraft may wear anywhere from 3 inch high letters up to 12 inches. Pick whatever looks good to you. One caveat though, the space between characters must equal the width of the previous character.

I should begin taxiing next week and send my plane's paperwork package to AVEMCO. Being a one of a kind, they want a picture and specs before they'll issue my liability insurance. During the same period I'll reweigh it to determine if my projections for balance were accurate. I won't make it to Oshkosh, at least not in the plane, but you guys will be the first to know when my wheels clear Mother Earth.

Broken Record Same Song, Second Verse

Stan Mello got it right. El Nino has put the brakes on lots of building plans so there's really no excuse not to send your anxious and overworked editor a builder's report plus a photograph, or two.

It's really quite painless and you'll feel good about sharing your knowledge and experiences with others. As always, a big *Thank You* to all our contributors.

The KR NEWSLETTER

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Editor and Publisher, Monte Miller
Evening and weekend tel: 940.566.5871

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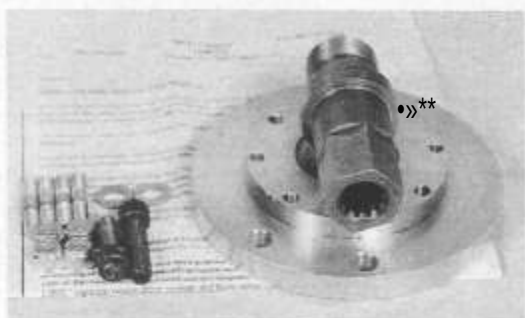
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253

Problems Pandered in Power and Paint

Lessons Learned the Hard Way

Art Smart

Greetings again from that crazy old glass man from the North. Been awhile since I caught you lads up on my progress so I thought I'd drop a line (nor as in fishing).

As of about three weeks ago, my plane is living at the airport. Prior to that, I did a couple of things that may interest some of you. My mechanic son was concerned with potential contact failure of the switching terminals inside the ignition switch in my plane, as all the load for the engine electrics went through there. I suggested a relay like in our cars. He said use two for redundancy, so we did.

I now have two Bosch 20 amp relays, in parallel, handling the GDI ignition, coil and fuel pumps. Now, only the tiny activating current that kicks in the relay goes thru the ignition switch. I've had only one ignition switch fail (actually two in one car) in 45 years of driving, so I think the likelihood of such an event is minimal. However, now my son feels more confident and so do I.

The other change is also electrical. In this plane, you may recall I'm using two small batteries. Initially, I was using two main breakers and a series of switches to select between the two batteries and to direct the current to the appropriate circuitry. After the alternator failure in my Emeraude, I opted to chuck the amperage-glutton EFI and add the extra battery. After I had all this wired in, naturally, it came to my attention that the marine industry had a heavy duty switch for just such a situation. It will handle two batteries and allows use of either one or

both plus it has a key lock for security. Perfect! So I yanked my dual breakers, a couple of switches and plugged it all in and it works just as advertised. Probably saved a few ounces also.

Now... about my paint job. When I got my toy to the "flying place" and some natural light, it became oh so apparent that I had a lot of work to do to ascend to the level of mediocrity. Old fella eyes, especially after impacting a plane's instrument panel, are unable to perform as those belonging to you 2 or 3 point bucks (and a few other things as well, but you don't want my tear stains on here, do you?).

Being in a hanger with no access to my compressor, I was unable to use any of the sprayable pinhole-weave fillers, so I used red spot putty. After a bit, the lacquer fumes from the putty started to make me sick. Luckily, I was able to find a young body man who was willing to work for me a couple of days. Putty fumes didn't bother him. In fact, he seemed to be somewhat more jovial after a few hours.

Between him and another friend, we finally got the weave and pinholes mostly filled. I worked on the bottom of the wings and stab until my neck said, "Are you stupid?" To which I replied, "Depends on who's asking." So please promise me if you ever see me at a flyin, don't look under my wings!! Why does this sound like a deodorant commercial?

Believe it or not, this was the good part of this event. I purchased some marine fiber glass paint by an outfit called Pettit. The catalog said it covered well and even when applied with a brush rivaled a spray job in gloss and finish. This was for me.

Unfortunately, the guy who said he'd spray for me was unfamiliar with polyurethane paints and therein lies the problem. The application instructions on the paint can were quite vague so my sprayer decided it should be applied like old-style auto enamel; that is, an initial light coat, allowed to dry until tacky, then followed by the final coat. Wrong, wrong, a thousand times wrong!

The initial undercoat looked beautiful. It had a high gloss and, aside from being able to faintly see the primer here and there, it was perfect. My painter friend waited perhaps an hour before recoating. Almost immediately, it became apparent we were in trouble, at least to me. Orange peel erupted on the entire plane. What once had been glossy and bright became mottled and bumpy. My painter assured me it would "flow out" with time. It didn't. I almost forgot to bring out my tail fairings, so they got two light coats in quick succession. They turned out beautifully, like white, glossy eggshell. These events told me that we had applied the paint incorrectly to the plane and, inadvertently, correctly to the fairings.

My painter didn't see it that way. He blamed my paint gun, a Wagner copy of the high volume, low pressure Croix. Sanding orange peel out of polyurethane is nothing short of cruel and inhumane

continued onpgS

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WANTED - 54/56x28 or 54/56x30 wood propeller to fit GPASC-style Volkswagen prop hub. Call, write or smoke signals to Editor, KR Newsletter, at 940-566-5871, evenings CST.

FOR SALE - Rand KR-2S fuel tank. New and has been trimmed to Rand specs. Decided to make custom tank. Sell for half of new price. \$142., plus shipping. Contact Bill MacMillan, 1724 England Ave, Everett WA 98203. Phone 425-353-9589.

FOR SALE - KR-2, N85ES. Signed off but never flown. Revmaster 2100-D with Almost Constant Speed prop. Full instrumentation. Polyurethane paint (white with red and black trim), Terra TXN-960 plus PTT, retracts and Lamb tires, Posa carb. Trailer included. Too many interests at present. \$7500 firm. Eddie Smith, 1762 Moore Rd, York SC 29745. Tel & Fax: 803-684-3425.

FOR SALE - Revmaster 2100D. New, factory built with forged crank and Revmaster carb. All accessories including exhaust system; with or without Great American 52x48 prop. Might deliver depending on time and location. Contact Jack Cheney, POB 1640, Acme MI 49610. Telephone 616-938-2886.

FOR SALE - KR-2 60% complete on retractable gear. All RR premolded parts used. Never installed Revmaster 2100-D engine has starter, alternator, oil cooler, engine mount, Posa carb. \$3200. Darryl Krogman, 1406 Kent Way, Friendswood TX 77546. Tel: 800-856-9009, days or 281-332-2718, evenings or email: ghia@flash.net.

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In This Issue of the KR Newsletter:

After the Honeymoon's Over

Ride along with Gary Sack as he flies his new KR home...acrossthe U.S.... ten years ago.

More KR Melloness

Four months later, see what Californian Stan Mello has accomplished.

Product Updates

What's new for your Volks conversion from the folks at Great Plains Aircraft.

Lessons in Paint & Patience

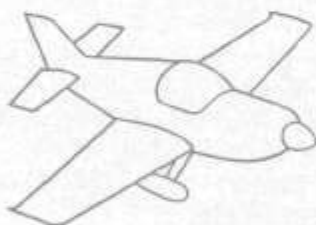
Another adventure with Art Smart. No fires but a little frustration.

KR Classifieds

A veritable plethora of property priced to please.

Funnies, Poetry & Editorials

All the stuff you've come to expect each month awaits in this issue of the KR Newsletter...Enjoy!



KR NEWSLETTER

624 West University Drive
Suite 199

Denton, Texas 76201

Issue 249 Mar 1998





NEWSLETTER

A Tri-Gear Retractable KR-2 *Kansas City Builder's Project Feature Loaded*

Hangin' In with Long-Term Dedication

Ron Eason

7333 North Brooklyn Ave Kansas City MO 64118

Tel: 816-468-4091 or 4425

E-Mail: jrlkc@mindspring.com

I started planning this project in 1964 and it began as a VariEze but living, eating and family were higher priorities. One wife later, nine kids raised and a few years and here I am building a KR-2.

One thing about KR building: it's always patiently waiting for you, it's not going anywhere until you finish it.

I bought the materials and some boat stage from Mr. Al Brown of Los Alamos, New Mexico. The VariEze plans were lost during a move into our present home...sixteen years ago.

I've been fabricating a standard KR-2 for about eight years now. Most of the last four years have not been productive due to my position as president of J.R.L. Engineering Consortium Ltd, a contract and consulting engineering services firm with two offices and ten employees. My passion is aircraft design, a field in which I have a B.S. in Aeronautical Engineering. Unfortunately, I do not practice in my passion but for industries like GM, John Deere, Boeing, McDonnell Douglas, Bayer Chemicals, etc.

My KR-2 is basically plans built with some prefab parts I have, however, incorporated some personal modifications.

In an effort to improve interior living space, the aircraft uses a staggered seating arrangement. A basic sling-type seat (hammock-style) is modified with an adjustable length sling. The sling is removable and has removable aluminum tube anchors which attach to the

main spar and the brace-reinforced back shelf. The length of the sling is adjustable by placing the tube anchors into multiple stitched sleeves in the end of the sling fabric. The result is a height adjustable seat.

The occupant is held in the seat by a seat belt and shoulder harness. The stagger is accomplished by different back padding. One side uses little or no back padding. The two occupants do not sit shoulder to shoulder but are staggered by four to six inches. Much like having two reclining chairs side by side but at two different reclined angles.

A rarity among KR's, this one is equipped with a retractable, tricycle landing gear. Retraction is handled by a 12 volt compressor powering air cylinders. Extension is by gravity with the gear using over-center lock struts. This simple system provides a fail safe in the down position. Limit switches will be used to confirm gear down and locked. My estimate is that the system is just five pounds heavier than the stock system as the air cylinders are aluminum and weigh ounces, rather than pounds, when compared to hydraulic cylinders. Compressed air will also be used with inflatable seals on the canopy.

Photo coverage of the Eason KR-2 begins on page 2

A Hapi manufactured 1835 VW with turbocharger will be installed with an exhaust waste gate and exhaust pipe ceramic internal coating plus infrared shielding.

These items are all off the shelf from auto performance suppliers. The infrared shielding is aluminum gage foil now being used on GM exhaust pipes and manifolds to prevent heat radiation in the engine compartments. I believe this will solve the heat problems that have plagued many turbo installations.

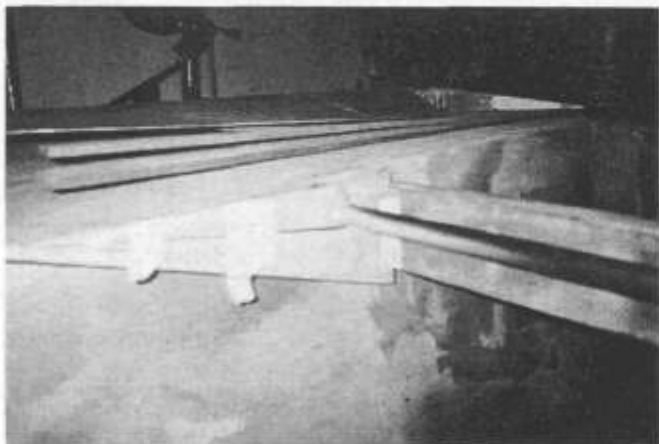
The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

Also under the cowling is a special composite high temperature fire wall employing stainless steel, 1/16 inch mica, 1/16 inch rigid ceramic insulation and 1/8 inch plywood. During testing, the structure endured the flame from an acetylene torch for five minutes before the plywood began taking any heat. Mica is the same stuff used to hold the red hot heating elements in electric toasters and heaters. No toxic fumes are given off when heated.



A Hapi 1835cc Volks with an exhaust-driven turbo will power the completed Eason KR-2.

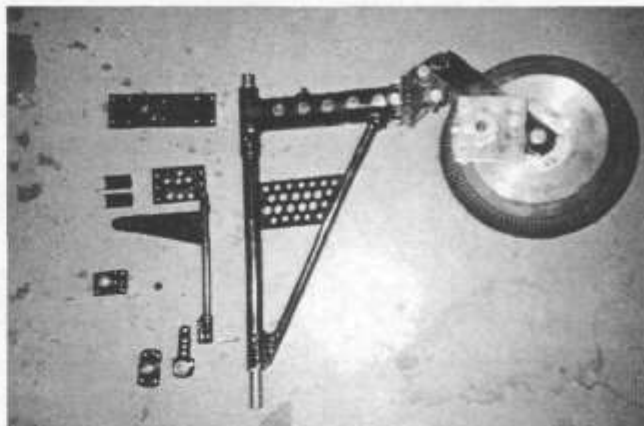
Wing tanks are used along with two electric, solid state fuel pumps. The alternating controlled pumps will deliver fuel to a five gallon polypropylene, level controlled fuel tank that is managed by microprocessor. Data will be displayed on my heads-up display (HUD). I've eliminated the stock header tank to allow space for instruments and electronics.



Close examination reveals the split flap location and its aluminum tube "hinge". Aircraft is inverted in photo.

The fuel cell weight is four pounds with the level control. My fuel cell cost \$86.00 plus \$49.00 for the level control. Many different types of fuel cells may be purchased from Jeggs, an automotive performance supplier. I also bought my seat belts, panel switch clusters (designed for dragsters) and plan other

purchases from them. The prices are reasonable, equal or less than aircraft suppliers. A free Jeggs catalog is available by calling 1-800-CALL-JEG. *Editor's note:* I've got one of their neat catalogs, too.



Excellent view of main landing gear components prior to installation. Lightening holes reduce weight.

The KR has *split flaps*. 3/4 inch diameter aluminum tubing extends through the fuselage and stops about six inches short of the end of the aft spar on each side to allow space for the aileron linkage. The inner and outer rib of the flap is attached to a 7/8 inch diameter tube which fits over the smaller tube as a hinge element. The smaller of the two aluminum tubes rides in bronze bushings that are floxed into the fuselage and into an extra aft wing rib attached to the rear spar.



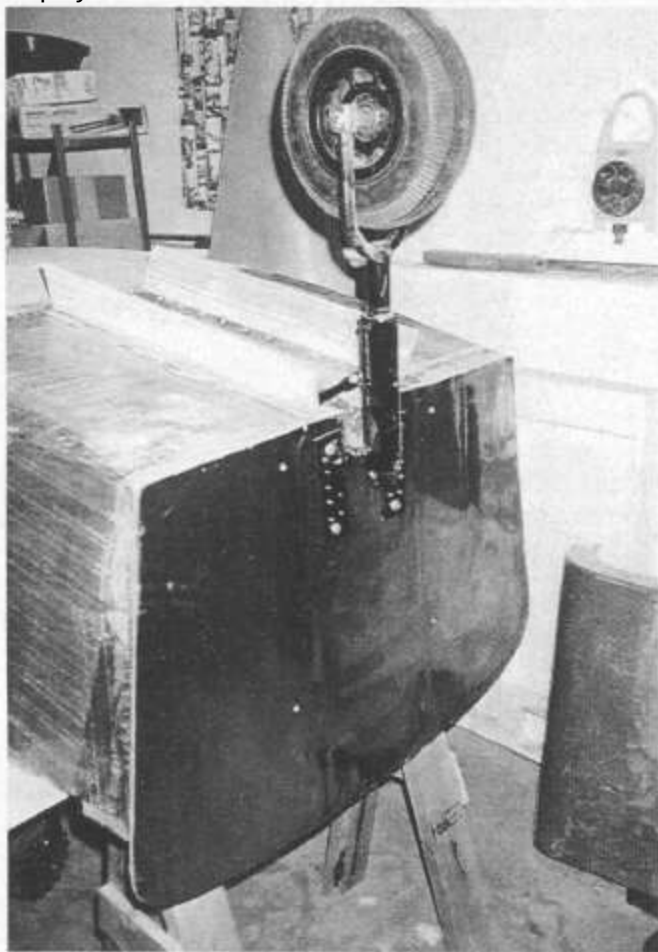
Main gear as is attached to wing's center section spars. Note the pneumatic operating cylinder position.

A stock KR canopy and frame has been modified by adding a 10 inch extension to the rear portion of the canopy frame. This move will place the occupants out of direct sunlight. Landau windows will provide side visibility.

I plan to hinge the canopy from the rear canopy frame. Turtle deck width and canopy extension will both have a wider contour to provide more head room.

The KR's instrument panel will utilize integrated microelectronics including an Audio Avionics engine

monitor with fuel flow measurement, a kit-built Rocky Mountain Encoder, an IBM P.C. with sunlight readable LCD display kit from Earth Computers along with moving map GPS and a customized automotive-based heads up display.



Retractable nose gear installed to KR-2 firewall. Strut and wheel will be enclosed by double doors.

Future plans will include demonstrations and marketing of the HUD unit. It can display air speed, fuel tank, oil temperature, oil pressure, battery and high coolant alarms. The turn signal system is rewired to show course deviation outputs while the former bright lights will now serve the landing light circuit.

This system may be seen on some Pontiac Gran Prix and Bonneville automobiles. We're targeting a cost of less than \$1000.00 with air speed sensor, microprocessor and economical automotive sensors.

My KR-2 utilizes S2 glass in an effort to decrease composite weight. E glass is used on the tail surfaces.

Many of my ideas come from seeing other KR's and previous KR Newsletters. My aircraft, from the first glance, will look much like others. However, I will call it a KR-2X. Thanks for the great coverage of KR's and events through the KR Newsletter. I continue to be inspired by reading and seeing fellow builder's efforts.



Rudder for the Eason KR-2 with electric servo trim.

Thanks, Ron!

Sometimes, you just plain ol' get lucky. Such was the case with the timely arrival of Ron's fine report on his custom KR-2.

Recently, the editor has received several calls from readers interested in tri-gear retractables. It may be that Ron's telephone will get busy.

Necessity is a Mother...

Scrounging Works for This Texas Builder

Charles Robison

Route 4, Box 617 Atlanta TX 75551

On visiting my local scrap iron yard, looking for hidden treasures such as antique bed frames and plow tools, lo and behold...there were some KR-2 parts! Of course, they were very well disguised but not hidden to us scroungers that have been bitten by the infectious KR bug.

Hidden among piles of discarded junk was my prize, a military electrical generator assembly. Powered by a 180hp Continental industrial engine, I ruled out the possibility of hanging the engine on a KR-2. The cowling would be much too wide plus I calculated the need to lash a V-8 engine block on the tail just to keep the CG within range...

I did manage to salvage a combination oil and cylinder temperature gauge, a tachometer with meter and cable plus an oil pressure gauge - all aircraft grade. Also liberated was several pounds of aircraft wire, many junction blocks, two fuel shut off valves complete with mounting hardware along with several switches and reset breakers.

I grunted while exchanging a hard earned twenty-dollar bill for my treasure, as if to say that was too much money, all the while hoping the guy wouldn't see the delighted look in my eyes and charge me more.

After seeing a lot of innovations at the Perry Fly-In, I thought this was right up to par with KR fans.

1998 KR Gathering & Hy-In

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Best Western Cherokee Strip Motel

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Ohio Builder Checks In

Robert Berger

15235 Stocker Ridge Rd Newcomerstown OH 43832

Telephone 614-498-6074

My KR-2, plans book number 57, I bought from my cousin, Bud Frenton, in 1989.

My plane is a scratch-built tail dragger on fixed gear. The construction has been modified with plywood ribs covered with plywood and then fiberglass. Each weighs approximately 55 pounds. Except for the wing

attach fittings and the tailwheel spring, the balance of the fittings are crafted of titanium, *editor's note: about 75% complete.* TITANIUM!

My good friend John Grega has inspected my plane three times. John

sells the AirCamperGN-1 plans, *editor's note #2:1* have a set of the GN-1 plans...long live the Pieterpol AirCamper!

John says that I have done good work and the KR looks to be about 75% complete. I probably have 50% more to do.

"... the KR looks to be about 75% complete. I probably have 50% more to do."

ON THE RAMP

Ramblings from the Editor

The Check Is In The Mail

All things considered, the US Postal Service does a pretty fair job. Occasionally, though, something will slip through the cracks. In this case, the crack showed up with Ken Wright's latest issue of the KR Newsletter.

Ken is having to endure life in the Grand Cayman Islands, the poor guy. He recently returned to the KR Newsletter an envelope that had become interleaved within his issue. The misdirected and stamped item was a payment to a dentist out in Midland, Texas. Sure hope someone's dentures weren't repossessed...

- - -

Gotta note from Don Betchan. Ya'll know Don as the hard workin' man responsible for the successful KR

Gathering up Oklahoma way. Anyway, Don read last month's On *The Ramp* and immediately called George Huber in Arlington, Texas just so eager George could go ahead and schedule his vacation time around this year's even more spectacular KR Fly-In. Don is truly dedicated.

- - -

The quick builder report in this issue, from Ohio's Bob Berger, brings up a subject that all builders should be encouraged to follow. Regular progress inspections conducted by an EAA Technical Counselor or someone familiar with your design are invaluable. A second pair of knowledgeable eyes is an important safety consideration and should be incorporated throughout the construction process.

An EAA Technical Counselor can also save you some money. With only a minimum of three visits and the proper EAA supplied documentation, the Avemco folks will offer you a ten percent discount on your aircraft's insurance policy. They'll even knock another ten off if you're a member of your local EAA Chapter!

With the coming of springtime and improved flying weather, we all must keep flight safety in our minds. Stay current in whatever you're punching holes in the sky with and should you be near to making that first flight in a new KR, consider getting a few hours training in an aircraft with similar performance. Let's be careful out there.

Homebuilt aircraft just seem to draw attention. It matters not if your project is still in the early stages and residing in your garage or drawing a crowd on the ramp...people are attracted to them.

Conversations with seriously interested folks usually get around to the subject of desire, cost, time and resources. The following article is pretty much my standard sermon. Some have actually begun projects after becoming true believers.

The Economical KR Aircraft

Construct Yours and Still Eat

Homebuilders are attracted to the KR design for many different reasons; it's a relatively simple design to construct, the Volkswagen engine is a proven power plant, wood is user friendly, the airplane can carry two people at a pretty fair speed, and, probably the main reason, it came be built without the need to sell off any family members. Economy blended with performance.

The KR series of aircraft are not really *kitplanes* as the word has come to mean. Many of today's kitplanes are primarily assembly projects whereby the major components are prefabricated and the builder does just enough to remain within the FAA's 51% rule. Kitplanes can be constructed in relatively brief periods of time when compared to *plans-built* aircraft. The short route to flying an aircraft that you have constructed comes with a price tag that reflects the profit and labor investment of someone else. You pay your money and you take your choice.

Economical Build, continued:

Plans-built aircraft, and now we're talking about the KR, usually arrive at your home in the form of a set of plans and a builder's manual and not much more. Where you go from there, how fast and how much money changes hands is entirely up to you. This freedom of choice and direction allows the builder to decide when and how much money will be spent on the aircraft. A pay as you go project in the truest sense of the word.

After the decision has been made to build your KR and all significant others are in agreement, more or less, and a building location has been selected, it is time to give some thought as to how you're going to pay for this hobby. Believe it or not, the money part is not all that difficult. N684LM had her keel laid down and made its first flight during the same time period that two sons were working on college degrees, a new home was built, and the lady of the house earned a doctorate degree. Sure, it took some time, but the aircraft did get built without borrowing a single nickel. The builder is not wealthy, just patient and a world-class scrounger!

There is an amazing quantity of hardware that goes into an aircraft, even one as simple as the KR. You may as well commit at the start of the project, to the use of only aircraft quality hardware. It's the safest way to go. Remember, it'll be your pink fanny up there.

Look over the plans and manual. The time spent in compiling a list of hardware requirements will be of benefit. One school of thought says to order only the AN hardware needed. If your hardware call out lists only five AN960-916 washers for the entire aircraft, then order only the five. Buying more than necessary may not demonstrate fiscal responsibility. The other school of thought is to consider bulk purchases. You'll need a large number of 3/16 washers, AN 960-10, for the KR. If you'll notice the catalog prices, 100 washers will cost less than 75 individual items. The leftovers will help fill your hardware drawers and still save money.

Prices vary from vendor to vendor. The small investment for a few aircraft supply catalogs will be quickly repaid by the savings garnered. Last time I checked, I found a thirty-four dollar price difference for identical gascolators. Research prices before mailing that check.

A number of suppliers to homebuilders will, on occasion, have close out sales on a variety of goods. Get on their mailing lists. How? Just ask.

Freight costs are also going to be part of the economic picture. Should a local supplier offer the identical item at only a slightly higher price, it may be worth your time to compute the total price after factoring in both freight and local sales tax. Consider time, too.

Being a member of a local EAA chapter can be a financial benefit if you'll team up with another member and place your materials orders together. This idea ties into the possibility of bulk purchases of AN hardware,

lumber, and sheet goods. Sharing the shipping costs is another way to save money on your homebuilt. Don't forget to ask around the Chapter if you need something. Members frequently will sell off their overstock at great bargain prices.

Take advantage of another builder's decision to quit a project. It's a sad fact of life, but it can benefit you. It's estimated that only ten percent of the homebuilt aircraft are completed by their original purchasers. There have been many articles written about the pros and cons of buying a partial project so let's skip rehashing this topic. What can be beneficial is the knowledge of what might be included in the sale. If you can buy instruments, hardware, an engine, new or unused lumber and metals, even those nice premolded and labor saving wing skins and cowlings, then do so.

Places to watch are the magazine want ads, publications like Trade-A-Plane, local want ads in major metropolitan newspapers, the builder newsletters such as the KR Newsletter, fly markets, and area EAA chapter newsletters. Don't overlook placing an ad for what you're looking for. This technique can work well. By the way, KR builders have been having tremendous good fortune by shopping the fly market at the annual KR Gathering.

Exercise caution when considering buying used major components. Unless you are positive about the condition of the item, repair or overhaul costs can offset any price difference between used and new.

Here's another money saver to consider...Unless you're going after the Grand Champ award, consider skipping expensive finishes on just about everything. Powder coating, wet-look paints, and pricey metal finishes are economically replaced by epoxy based primers and paints, alodine treating of metals, and easily repaired acrylic finishes. May as well skip any chrome. The plating process, unless handled by a certified aircraft station (read *expensive*) can introduce metal embrittlement which must be avoided at all cost.

The KR NEWSLETTER

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Economical Build, continued:

Another benefit of being an active member of the local EAA group is the possibility of using or borrowing a special (read *expensive*) tool needed for that one-time operation. From the simpler items such as a swager, nico press or tube flaring tools, to bending brakes and shears or spray rigs, fellow builders are most often ready to assist. The key element involved in using other builder's tools is to care for them greater than you would your own, return them as soon as possible with your thanks, and be prepared to return the favor when a builder asks you for a favor.

Aircraft suppliers can be supplemented by shopping alternate sources. Sailboat shops often have the tools to swage those AN cable fittings you've just bought onto aircraft cable. Auto refinish stores carry many of the work supplies you'll be using such as sandpapers, blades, tapes, fillers, and, of course, primers and paint. Volkswagen fans have known about 92mm jugs and 1835cc motors long before the bug engines flew on planes. Scout out the imported car parts dealers in your neighborhood so you'll have a source for some firewall forward stuff. Auto parts houses can be a treasure trove waiting to be mined. Check out every potential source.

A word of caution when dealing with just about every vendor outside the homebuilt aircraft catalogs. I have found it to be in the builder's best interest to say, if asked by the parts counter guy as to what you're putting the "widget" on or into, that it's a "homemade, off-road, recreational vehicle". Mention the word *airplane* and some folks just don't want to help you. Ya know whadda mean, Vern?

- Monte Miller

The Newsletter recently received a letter from KR builder Charles Robison of Texarkana, Texas. Charles sent along a sample of some material he is considering using on his KR-2. The letter and editor's comments follow:

Firewall Safety for the KR

Charles Robison

Route 4, Box 617 • Texarkana TX 75551

Here's a small swatch sample of a foil-faced carbon Kevlar® material I'm considering using. It is supposed to withstand 1700°F and, as was explained to me, will char but not burn at the higher temperature. Of course, as fire wall protection on a KR, anything seems to be better than nothing.

I plan on using the material behind a thin sheet of stainless steel for additional protection and appearance. I am also considering a homebuilt engine compartment halon fire suppression system that is cockpit activated.

Do you think the carbon Kevlar® could be justified at a cost of \$50.00 for a piece that is 40"x36"? It's the smallest amount I can purchase.

KR Newsletter Editorial Response

The Newsletter has always responded to individual requests for help by written note or telephone. However, this particular letter should be of interest to all builders so it has been included in this issue.

The sample material submitted by Charles appears to be perfect for his intended usage. It is very light weight and no more than .0312" thick. For ease of handling and installation, it's probably superior to the oft used fiberfrax.

An inflight fire is, arguably, the worst fear of pilots. To prevent such an occurrence, we can and must do a professional job of installing the fuel system...from tank to filter, to carb, valves and all lines. The KR's VW fuel system can be a model of simplicity and safety when proper aircraft materials and techniques are employed. This is certainly no place to cut corners.

A quick look at the Volkswagen engine will reveal another reason for a secure firewall protecting that slab of quarter-inch plywood. Notice the location of the exhaust pipes as they exit the aft cylinder heads. An improper fuel mixture, combined with the thin exhaust tubing employed, could, over an extended period of time, burn and or fail the tubing thereby permitting the superheated gases to be directed straight onto your firewall.

Is fifty bucks too much for protection? I hope Charles will share with the readers just where he finds his peace of mind. Good call, Charles.

Your Submissions Are Solicited

Share Your Knowledge, Experience and Fun
by Dropping a Note to Your KR Newsletter

Let Others Know What You're Up To!

KR CLASSIFIEDS

Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial style ads will be billed accordingly prior to publication. The KR Newsletter reserves the right to edit free ads.

WANTED - Posa Carb Needles. I have the #5 and need the other four sizes. Also would like an instruction manual, if there is one, or words of encouragement. Will be used on Revmaster 2100-D. Jack Gress, 9305 Fairwood Dr., Kansas City MO 64138. Tel. 816-761-2693. E-mail lackg-kr2@msn.com.

WANTED - Carb heat box and exhaust muff to fit 1834 VW Monett conversion with Posa carb. New or used. Write or call John Duffy, 237 Bridge St, Bridgewater MA 02324. Tel. 508-378-3411.

FOR SALE - To settle estate. KR-2 684LM. 1835 VW, non-electric, Rand fixed gear taildragger with Clevelands, Diehl wings. Lightweight and beautiful plans-built plane. Asking \$11,000, includes parts to add electric start. Diehl tri-gear components available for additional cost. Technical questions to KR Newsletter, evenings, 940-566-5871. Inspection & purchase offers to Ms Paige Warren Osburn, Esq., at 409-598-2818. Aircraft located Center (TX) Municipal Airport.

WANTED- Builder's Manual and plans for KR-2. Originals lost. Contact O.K. Boettcher, 105 West Circle Dr, Blue Earth MN 56013. Tel evenings 507-526-2586.

FOR SALE - 24" stretched KR-2. Subaru 100hp with 1.69:1 redrive. Sterba 60x66 race prop. Electronic ignition, fixed-gear taildragger with 32 gallon fuel tanks. Dragonfly canopy, flaps, 500x5, Clevelands, taxi, landing, nav and strobes. Inst panel loaded. \$23,000. Details, contact George Huber at 817-261-3572.

FOR SALE - MAPI Engine, Magnum 75. Purchased new in 1984, never installed. 1835cc with 75hp, sodium filled valves, hyd lifters, dual electronic ignition, Posa carb, tuned exh, engine mount, all engine instruments in quad & dual configurations. \$4000 plus shipping. Original KR-2 retract gear also available. Call Rick at 510-426-9525.

WANTED - KR-2S cowling to fit Continental O-200 on a Rand factory mount. Contact with price to W B MacMillan, 1724 England Ave, Everett WA 98203. 425-353-9589.

FOR SALE - KR-2S Project. Mahogany ply boat stage on conventional gear with spars completed. Must move and can't take it with me. I'll throw in lots of parts, hardware & tools for the first \$3000. Lloyd Stearns at 512-244-7537, 512-838-0761 or stearn@ix.netcom.com.

FOR SALE - KR-2 fiberglass cowling \$400. Make offer on KR standard retract gear set. W. Janoski, 14123 East 122nd St, Collinsville OK 74021. Tel. 918-371-5846.

FOR SALE- Set of unused KR-2S plans. \$200, includes shipping. Mark Joiner, 817 Alma Lane, Kingston TN 37763. Tel. 423-376-3628.

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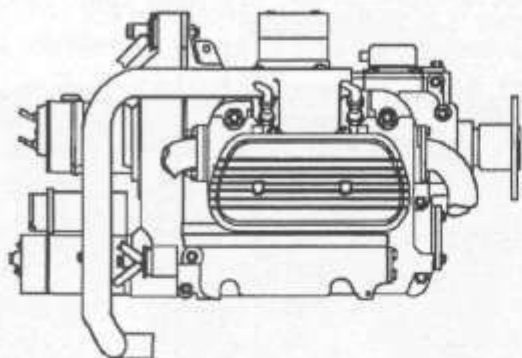
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FOR SALE - KR-2, N250KB. Flying since 1988 with approx 780 hrs. 1835 VW with custom prop. True 150 mph cruise. Aircraft features an inboard folding, totally enclosed retractable gear, forward hinged Dragonfly canopy, nice instrument panel with moving map GPS. \$14,000 firm. Don Betchan, Route 1, Box 21A, Perry OK 73077. Tel: 580-336-5954 after 6pm CST.

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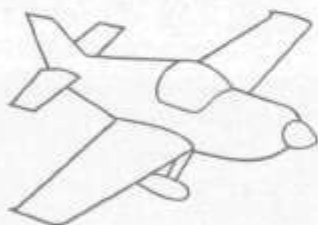
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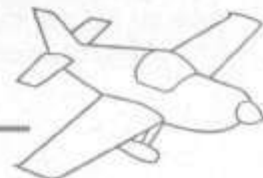
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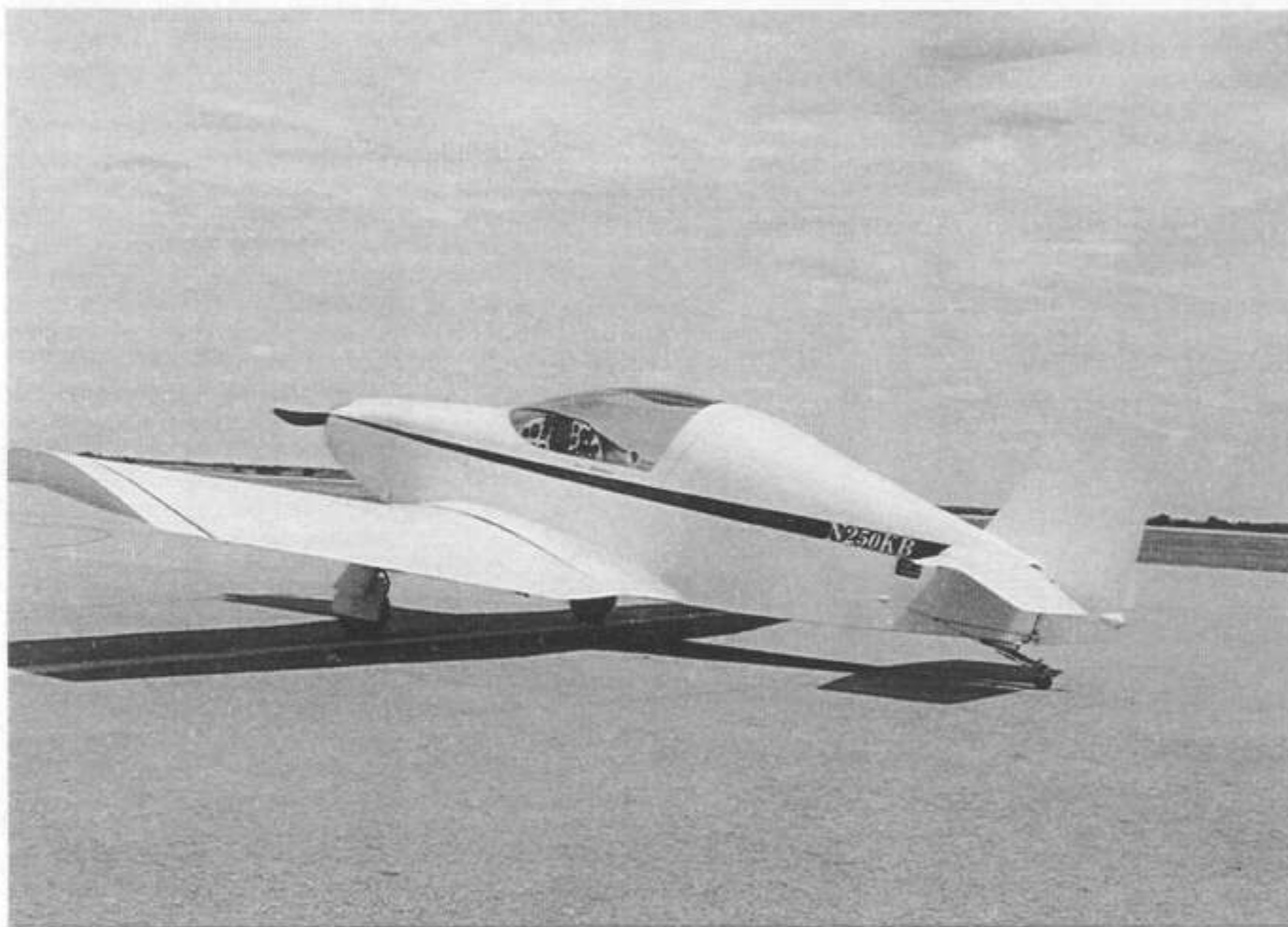
Issue 250 Apr 1998





NEWSLETTER

Don Betchan Builds a Beauty



Many people at the 1997 KR Gathering at Perry, Oklahoma were quite literally blown away by the outstanding ideas, design, fabrication and features displayed with the Don Betchan KR-2. However, few people knew that this aircraft is actually Don's second KR-2. Why would a builder do it all over again? The Okie kareoke king reveals all inside this issue.

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

Second Time is Sweeter for This Oklahoma KR Builder

Don Betchan

Rt. 1, Box 21A • Perry OK 73077

Tel: 405-336-5954

Last year's KR Gathering still generates pleasant memories, yet it's only four short months until we get to do it all again. The prime organizer of a most successful 1997 event is again handling the chores for the 1998 Fly-In, Don Betchan of Perry, Oklahoma.

Don is the builder/pilot of the much photographed and drooled over KR-2, N250KB.

This aircraft is unique in that it is Don's *second* KR! When asked as to why he selected the same design to repeat, Don responded that, "I knew the faults in my first one and really wanted to include my own ideas in the second on." Initial construction began on 26 January 86 with completion and airworthiness certificate awarded in October of 1988. Don states that he really doesn't know how many actual construction hours were spent. After having built his first KR-2, Don's skill level and construction knowledge was already well developed.



Beautiful hand-crafted cowling blends the lines of the KR-2 from its polished spinner to the forward hinged Dragonfly canopy.

Several features make the Betchan KR-2 a very striking looking aircraft. The unique cowling, the forward hinged Dragonfly canopy or the fully enclosed, inward retracting landing gear would make this project worth a second look anytime. Together, they make this distinctive KR stand out on any ramp.

Before digging into the details of Don's aircraft, the reader should know that every piece and every part were hand crafted by this talented Oklahoma builder. Except for the plexiglas Dragonfly canopy, Don fabricated his aircraft without the use of premolded components.

The flawless cowling was laid up directly on the aircraft after engine installation. Numerous chunks of foam were blocked around the Volkswagen powerplant and then meticulously sanded to the desired final shape prior to the application of glass fabric and Dow laminating

Beneath the cowling resides an 1835CC Volks engine that, naturally, Don built up himself. Not content with following the crowd, N250KB has a 28 amp alternator system that is driven off the Hapi prop hub on the front of his engine. Naturally, Don designed and fabricated the entire alternator system. The design generates all the power he needs plus, as an added benefit, he believes the unit also absorbs some of the potentially nasty torsional crankshaft vibrations occasionally present in the VW aero conversion.

Other engine elements include Don's own design electronic ignition with centrifical advance and a Zenith carburetor lifted from a 65hp Wisconsin industrial engine. The carb was originally designed to work in conjunction with a pressure fuel pump but had its valving and jetting altered to match the gravity flow fuel system in the KR.

All this clever engine work is hung on a tubular engine mount designed and crafted by the builder while being pulled through the air by a propeller whittled by, who else, Don hisownself.

The hard rock maple propeller is slightly over 52 inches in diameter and measures 54 inches in pitch. Don states that there's no 1835 Volks alive that can run that much pitch and achieve his performance figures but, as Ray Hegy once told him, "That's whatcha got. Go figure!" The prop was built up to the required hub thickness by using 44 laminations of 1/16" lumber.

Fuel is carried in an eleven gallon header tank. Each wing carries an additional 3.5 gallons for a total fuel load of eighteen gallons. A Facet fuel pump handles the fuel transfer requirements. Don mentioned that the little pump does a good job *pushing* fuel but doesn't like to *lift* it very far. A four gallon per hour fuel burn at cruise makes the little KR a true bladder buster.

The Dragonfly canopy was, according to Don, mated to the KR without need for any modification. Just as shown in the Rand-Robinson KR Builders Manual, Don crafted the framework, canopy and canopy skirt directly on the fuselage. This technique insures a perfect fit but does require the builder to later cut the completed

Don Betchan KR-2, continued:

canopy away from the fuselage prior to hinge installation and final fit up. You get only one chance to make the correct cut.

Inside the cockpit, the Betchan KR-2 is fitted with a side stick and a center mounted throttle quadrant. Don flies with his left hand and makes noise with his right.

The instrumentation is designed for Day VFR and includes a GPS map system originally sold for the boat bunch and a thirteen year old 720 channel Nav-Com that Don built from an RST kit. Don says that his radio has operated perfectly from day one and has never required service. Guess ol' Don can solder, too.



A deluxe Day-VFR panel includes a kit built RST 720 NavCom. GPS on top.

Several years ago, Don had inherited a motorcycle, a 100cc Honda Combat Wombat to be exact. Every time he walked past the little Japanese crotch rocket, he says those front forks kept calling out to him. They just begged to be incorporated into the KR's retractable gear. After considering both electric and hydraulic systems for gear actuation, Don settled on a manually operated screwjack system that requires 24 hand turns. Retraction requires about eleven seconds and is assisted by some very stout lift struts liberated from the hood of an old Buick. Don sez they were a real

challenge to install due to their strength in compression and extension. As mentioned earlier, the gear folds inward and is totally enclosed by drag reducing gear doors.

The KR was built using T-88 structural epoxy. Dow laminating resins handled the fiberglassing chores while DuPont Centari is the color system of choice.



The only premade component on the Betchan KR-2 is the Dragonfly plexiglas canopy. Additional framework and skirting, plus forward hinge mechanisms, were crafted by the builder. KR's small size shown evident.

Ailerons are statically balanced to 100%. The elevators have a 60% static balance with small tabs near the outer ends of the elevators providing the remaining aerodynamic balance requirements. These balance tabs extend approximately two inches beyond the hinge line and into the horizontal stab.

continued on page 4

Zenith Carb on a KR-2 *Fitting Up to the 1835 Volks*

The original concept for the KR series of aircraft was, among other things, to produce an aircraft that was economical to build, operate, and maintain. Time has proven this concept to have remained valid.

It's hard to find a better match for the KR than the Volkswagen engine. Like the KR, it is a simple and economical design. After some minor alterations, the "bug" motor makes a pretty fine aero powerplant.

Following the KISS principal, (That's Keep It Simple, Stupid) the 1835 WV in N684LM was fitted with a basic Posa carburetor. With only two moving parts, the little device fit nicely into the overall design concept and at a bargain price to boot. What a deal!

Before this discourse goes any further, let me say that I've heard all the bad stuff about the Posa. It's gotten a bad rap, primarily because many people do not understand the tuning techniques required and the limitations of the slide body fuel metering device. In spite of all the

continued on page 5

Don Betchan KR-2, continued:

To date, the airspeed has been pushed to 220mph with no flutter problems. The high speed was a one-time accidental test that occurred while performing a split-S with his daughter as a passenger. The younger Betchan wanted a second helping but Daddy Don elected to land and thoroughly check over the airframe for possible damage. None detected.



Japanese Hodaka motorcycle front forks are recycled into landing gear struts on the Betchan KR-2. An old Buick also provided some retraction components.

Rolls require a simple sideways shove of the side mounted stick with no rudder input. A loop utilizes 600 feet and no throttle changes. As noted, the split-S will build speed quickly.

Performance numbers are better than what you might expect from this 576 pound empty weight KR Dash 2, enhanced as they are by the low drag generated by careful attention to detail. Don climbs solo at 1000fpm and 90mph. True cruise speed is an honest 150mph at 3100 to 3200rpm. Maximum speed, straight and level, is 165mph. Stall is at 52-58mph.

Don, like most V-dub flyers, has not a clue as to the TBO on his 770+ flight hours behind the 1835. Winds and winters in Oklahoma lead stir-crazy pilots into their

hangers where they, including Don, do regular ring and valve jobs, so...

Don advises other Bug motor pilots to take care of the engine's valves and watch out for heat related problems. N250KB's oil temperature always runs at 100 degrees plus the outside ambient air temperature. The cylinder head temperature, at cruise, is 340 degrees.

"Three things will destroy a Volks engine", states Don. "Heat, heat and more heat. In that order".

Betchan has, for the last eight years, managed the Perry Municipal Airport along with operating an oil field service business. As of late, the airport gig had to be shelved due to a hefty upswing in Don's day job. Work is requiring most of of Don's time, having allowed him to fly his KR only once since last year's Gathering. His family is not happy about it, but Don really wants to have his KR flown more frequently and has decided to list it in the KR Newsletter as *for sale*. A third, someday, Don?



Two-piece, articulated main gear door covers, when combined with inner doors, create a major component of the drag reduction features on N250KB.

The KR Newsletter extends thanks and acknowledges the contribution of photographs by Sid Knox of Wellington, Oklahoma for this article. *Thanks, Sid!*

1998 KR Gathering 8c Fly-In
September 18-20
Perry, Oklahoma Municipal (F22)

Zenith Carb, continued:

negative press, many aircraft fly just fine with the Posa carburetor. Lima Mike was one of them.

I have since exchanged the Posa for a Zenith float bowl-equipped carburetor. I did not turn the Posa into a trot line anchor as some of my buds suggested. I simply went from a fuel system that was about 9/10ths perfect to one that is 10/10ths.

The only complaint about the basic Posa was its lack of a consistent mixture throughout the rpm range of the Volks. Sure, the more elaborate Posa carbs offered both mixture controls and even a float bowl. Problem is, at this time, no one is manufacturing or supporting with parts and service any of the Posa designs.

Several factors contributed to the decision to change carbs. The primary reason was an overly rich mixture and the lack of top end revs. Several metering needle changes and positions were tried. Just when every thing seemed perfect, I would fly over some cow that was discharging methane gas and the mixture would change again.

Reequipping with the Zenith was not a case of swapping one carb for another. Whereas the Posa did not really require a carb heat system, the Zenith does. You must fabricate a heat muff for the exhaust pipe, a heat box for the carb, related ducting, and a cockpit control for both carb heat and the manual choke control.

An air filter and its associated material led to a modification of the lower cowl and some paint work. Since the Zenith is a semi-updraft and the Posa was side draft, a new carb mounting flange had to be machined and welded to the intake manifold.

All the required parts and work consumed a pretty good chunk of time and money but now the engine runs well in all areas. These days, I feel a lot more confident while flying the speedy KR.

The Zenith carburetor is installed on a wide variety of industrial equipment: generators, fork lifts and other gasoline powered engines. There are a variety of sources for purchasing the Zenith, but for service and tuning support, I recommend Great Plains Aircraft Supply. As one of the largest providers of Volkswagen aero conversions, Steve Bennett supports the Zenith with parts and tech information.

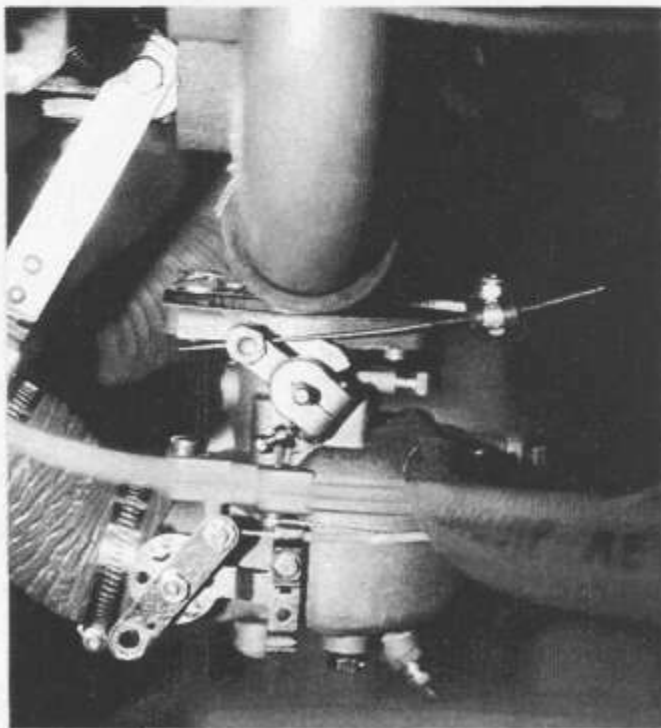
A T-shaped heat muff was fabricated from aluminum tubing, slipped over the starboard rear exhaust pipe, and clamped in place.

The carburetor heat box does not need to be some massive, heavy conglomeration. A 3 1/2" square box, constructed of .032 aluminum, will meet all the breathing requirements of an 1835 VW engine. Two inch diameter SCAT tubing ties everything together.

The choke and carb heat controls are easily handled by Bowden cables with solid wire cores. I have found different O.D. sizes available, complete with control knobs, in local auto parts stores. The smaller

diameter sizes can make gentle turns without binding and perform best when secured to the aircraft's structure along their entire length.

After fitting the Zenith carb and its related support equipment, it's going to be necessary to go through the tuning of the carburetor to the engine's requirements. The additional throttle, fuel and air control points on the Zenith will be appreciated.



Zenith carb from Great Plains Aircraft Supply on tubular intake manifold mounted below 1835 Volks. If you think this photo is a little confusing, imagine retrofitting from a simple Posa. Heat box and heat muff fabrication, new throttle, choke and carb heat controls, air filter, SCAT tubing, brackets and a modified cowling all took time.

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Oklahoma Garage Sale

Mike Ladigo Cleans Out the Hanger

The following note and listing really belongs within the KR Classifieds section but Mike's list is sooooo...long

Spring cleaning is upon us and, like everyone else, I have come up with a plethora of goodies that are no longer needed. I hope there are builders out there that can use some of it. *Editor's Note:* Plethora? Mike's done gone and gotten pretty classy now that he has his own jet turbine KR!

- (1) United Instruments, Inc. 0-200mph ASI, Good Condition \$90
- (1) United Instruments, Inc. 1000-20,000 sensitive Altimeter, Excellent Cond \$210
- (1) Cessna 5A circuit breaker. New \$4
- (1) remote oil filter housing, GC make offer
- (1) each J-33 & J-34 headset and mic jacks, New \$2 each
- (2) Timken tapered roller bearings, GC, for Cleveland with 1.25" axles. Make offer
- (1) Start/Master solenoid, New \$15
- (3) each Hi-Flow cleanable/reuseable fuel filters, AN-6 (3/8") fittings, EC \$15 each
- ELT's, 2 transmitters (both work), 3 batteries (good but out of date) \$15 plus shipping
- (1) gascolator, New \$35
- (1) mechanical dual tach drive from O-200, GC, make offer
- (1) Kollsman pitot/static tube, 24V heated, GC make offer

- (2) wheel covers, with screws, for Matco/Rosenhan wheels, New \$5/both
- (1) flexible CAT duct, 7/8"Dx24"L, finished ends New \$4
- (1) push-pull control, 3/8"x24 Thd, .050 wire, 4 ft long, GC \$18
- (1) "Autometer" fuel pressure gauge with isolator to keep fuel out of the cockpit. 2 1/4" automotive gauge, New \$40
- Coaxial cable, RG-58A/U, 14 ft with UG-88/U on one end. UG-89/U coax end connector separate, New \$6 for all

I hope some of this will come in handy for somebody. Anyone interested, call 918-495-3662. That's Tulsa, Oklahoma for those of you that don't know me. If I'm not at home (working on my KR), please leave a message and I'll get back to you.

Everybody take care and fly safe. Mike Ladigo.

Lost Friend Found Via KR Newsletter 55 Years Later, KR Fans Reunited

Dallas Shepherd

983 Sheid Road • Norfork AR 72658

This issue (#250) had a letter from Robert Berger of Newcomerstown OH. He was my neighbor when we were both about ten years old.

Bob used to bring a model airplane engine over to the house. He had it fastened to a board and we would take turns whacking our fingers with the prop.

I'm glad to hear he finally got the funds for the rest of the plane...55 years later! I intend to write him and share experiences.

By thw way, after my education at Perry, I gave up on the KR-2. My Arkansas grass strip is just too short. I like the information in the KR Newsletter, so renew me.

Anyone have a Zodiak?

ON THE RAMP

Rumblings from the Editor

Hey, hope all you guys remembered Mother's Day. If your mom is anything like mine, she put up with a kid whose jeans and finger tips were crusted with Ambroid glue, my room powdered with balsa dust plus a house that occasionally smelled of butyrate dope.

These days, the lady of the house sees my epoxy spotted t-shirts, wood dust tracked into the house and the occasional whiff of fiberglass resin. And the beat goes on...

I'm sure everyone will enjoy reading about the Don Betchan KR-2 in this issue. I'm sorry to see Don offer his

continued on page 8

KR CLASSIFIEDS

Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial style ads will be billed accordingly prior to publication. The KR Newsletter reserves the right to edit free ads.

WANTED - Posa Carb Needles. I have the #5 and need the other four sizes. Also would like an instruction manual, if there is one, or words of encouragement. Will be used on Revmaster 2100-D. Jack Gress, 9305 Fairwood Dr., Kansas City MO 64138. Tel. 816-761-2693. E-mail lackg-kr2@msn.com.

WANTED - Carb heat box and exhaust muff to fit 1834 VW Monett conversion with Posa carb. New or used. Write or call John Duffy, 237 Bridge St, Bridgewater MA 02324. Tel. 508-378-3411.

FOR SALE - To settle estate. KR-2 684LM. 1835 VW, non-electric, Rand fixed gear taildragger with Cleavelands, Diehl wings. Lightweight and beautiful plans-built plane. Asking \$11,000, includes parts to add electric start. Diehl tri-gear components available for additional cost. Technical questions to KR Newsletter, evenings, 940-566-5871. Inspection & purchase offers to Ms Paige Warren Osburn, Esq., at 409-598-2818. Aircraft located Center (TX) Municipal Airport.

WANTED - Builder's Manual and plans for KR-2. Originals lost. Contact O.K. Boettcher, 105 West Circle Dr, Blue Earth MN 56013. Tel evenings 507-526-2586.

FOR SALE - 24" stretched KR-2. Subaru 100hp with 1.69:1 redrive. Sterba 60x66 race prop. Electronic ignition, fixed-gear taildragger with 32 gallon fuel tanks. Dragonfly canopy, flaps, 500x5, Cleavelands, taxi, landing, nav and strobes. Inst panel loaded. \$23,000. Details, contact George Huber at 817-261-3572.

FOR SALE - MAPI Engine, Magnum 75. Purchased new in 1984, never installed. 1835cc with 75hp, sodium filled valves, hyd lifters, dual electronic ignition, Posa carb, tuned exh, engine mount, all engine instruments in quad & dual configurations. \$4000 plus shipping. Original KR-2 retract gear also available. Call Rick at 510-426-9525.

WANTED - KR-2S cowling to fit Continental O-200 on a Rand factory mount. Contact with price to W B MacMillan, 1724 England Ave, Everett WA 98203. 425-353-9589.

FOR SALE - KR-2S Project. Mahogany ply boat stage on conventional gear with spars completed. Must move and can't take it with me. I'll throw in lots of parts, hardware & tools for the first \$3000. Lloyd Stearns at 512-244-7537, 512-838-0761 or stearn@ix.netcom.com.

FOR SALE - KR-2 fiberglass cowling \$400. Make offer on KR standard retract gear set. W. Janoski, 14123 East 122nd St, Collinsville OK 74021. Tel. 918-371-5846.

FOR SALE - Set of unused KR-2S plans. \$200, includes shipping. Mark Joiner, 817 Alma Lane, Kingston TN 37763. Tel. 423-376-3628.

FOR SALE - Retract gear for KR-2. New, never used. Make offer. **WANT** new or gently used KR-2 canopy and frame. Dennis Steed, POB 9013, Salt Lake City, Utah, 84109. Tel/Fax 801-487-3730. E-mail kenikas@aol.com.

WANTED - 54/56x28 or 54/56x30 wood propeller to fit GPASC-style Volkswagen prop hub. Call, write or smoke signals to Editor, KR Newsletter, at 940-566-5871, evenings CST.

FOR SALE - KR-2, N85ES. Signed off but never flown. Revmaster 2100-D with Almost Constant Speed prop. Full instrumentation. Polyurethane paint (white with red and black trim), Terra TXN-960 plus PTT, retracts and Lamb tires, Posa carb. Trailer included. Too many interests at present. \$7500 firm. Eddie Smith, 1762 Moore Rd, York SC 29745. Tel & Fax. 803-684-3425.

FOR SALE - Revmaster 2100D. New, factory built with forged crank and Revmaster carb. All accessories including exhaust system; with or without Great American 52x48 prop. Might deliver depending on time and location. Contact Jack Cheney, POB 1640, Acme MI 49610. Telephone 616-938-2886.

FOR SALE - KR-2 60% complete on retractable gear. All RR premolded parts used. Never installed Revmaster 2100-D engine has starter, alternator, oil cooler, engine mount, Posa carb. \$3200. Darryl Krogman, 1406 Kent Way, Friendswood TX 77546. Tel: 800-856-9009, days or 281-332-2718, evenings or email: ghia@flash.net.

FOR SALE - KR-2, N250KB. Flying since 1988 with approx 780 hrs. 1835 VW with custom prop. True 150 mph cruise. Aircraft features an inboard folding, totally enclosed retractable gear, forward hinged Dragonfly canopy, nice instrument panel with moving map GPS. \$14,000 firm. Don Betchan, Route 1, Box 21 A, Perry OK 73077. Tel: 580-336-5954 after 6pm CST.

FOR SALE - Parting out KR-2. 1835 Turbo Volks with approx 40 hrs and 52" wood prop. Panel with thirteen instruments plus other misc parts. Asking 1500.00 OBO. Contact Harvey Salevski, 11856 West Waterford Ave, Greenfield WI 53228. Tel 414-543-4132, Fax 543-1289.

On The Ramp, continued:

beautiful aircraft for sale, but I also understand, having been through a similar situation.

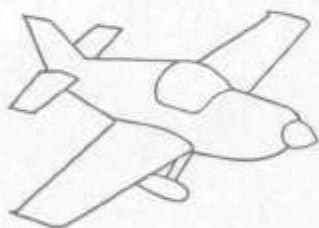
Along similar lines, Don's business now occupies so much of his time that I can't help but wonder if '98 could be the Perry swan song. Just thinking out loud and certainly not intending to start a rumor, but if you have any interest in attending one outstanding KR Gathering then I sure wouldn't miss this year's event. Let's all thank Don for his efforts on our behalf.

Most issues of the KR Newsletter contain a small blurb asking for builder submissions. Each item sent in by generous readers is truly appreciated. With a few articles and photos, the Newsletter pretty well pulls itself together each month.

Right now, folks, the mailbag is truly empty, bare, vacant, clear and void of so much as a postcard. This issue is slightly late; held up in hopes of...something.

Hope to hear from ya'll.

A note to our numerous Canadian and overseas subscribers. Please remember that your subscription payments must be paid in US funds. For example, checks drawn on Canadian banks cost the KR Newsletter over \$14.00US in fees and handling. Add to this the continuing increase in print production plus postage and things end up resembling deficit financing. Thanks.



KR NEWSLETTER

624 West University Drive

Suite 199

Denton, Texas 76201

Issue 251 May 1998

In This Issue of the KR Newsletter:

• **Back to Perry**

Don Betchan's outstanding KR-2 is featured.
Checkout this hand-crafted beauty.

• **Zenith Carb Retrofit**

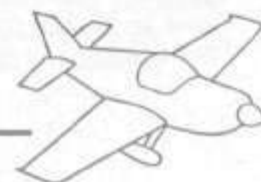
Pulled the Posa. Carburetor Zen with Zenith.

• **Oklahoma Garage Sale**

• **Lost Friends Found**

• **Want Ad Treasures**

• **On The Ramp**





NEWSLETTER

KR-2S Takes Shape in Washington State

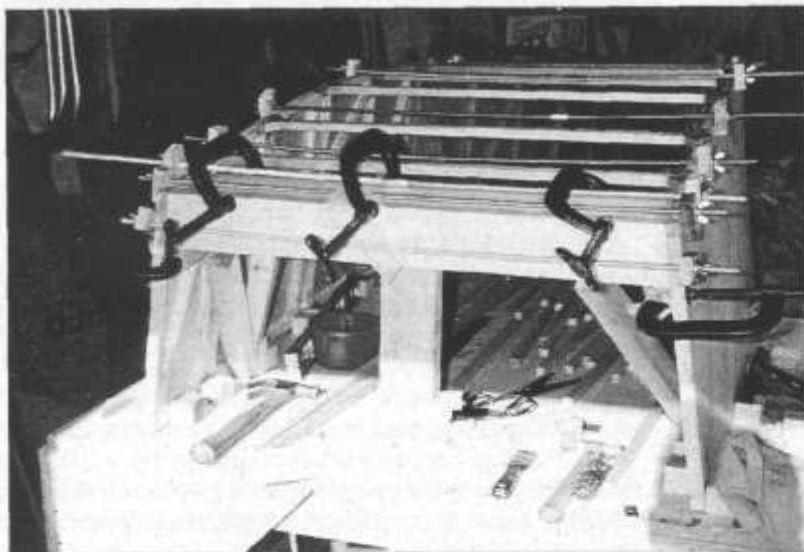
Scratchin' Out a Scratch Built 2S

Bruce Toscano
18916 68th Avenue Northeast E205
Bothell WA 98011
Telephone 425-806-8072

I look forward to receiving each months KR Newsletter and the interesting ideas, suggestions, and those great pictures of planes that look so new, glossy, and obviously bringing great joy to their builders.

This article is for the people who aren't there yet! I'm not even close, and the first year went by so fast I can't believe it.

I am building a KR2S (I might even throw the word "modified" in there...but I haven't decided yet) from scratch. In fact, one of my goals is to purchase absolutely no pre-made parts from Rand Robinson, although I may break down and get a set of Wing Attach Fittings.



Clamps, clamps and mo'clamps! Homemade, borrowed or store bought, you can never have enough when it's boat buildin' time.

I'm milling all of my spruce. Here I recommend a good jointer (6" is best but an old 4" or so works great) and table saw. I should mention that

I'm using a combo unit that is older than I am...but it works and it didn't cost anything.

All of the aircraft grade spruce was purchased from Fred Tebb and Sons 1906 Marc Street, Tacoma WA 98421, tel: 253-2724107. They receive cans from Alaska, then grade and cut the material down to S2S form. I had to wait about a month and a half, but since I live just north of Seattle, it wasn't a problem to drive down and pick it up.

Milling all of your own spruce is not for everybody! I cut the S2S material down to oversize pieces, then joint it down to actual size for a perfect, smooth finish. I highly recommend milling down all of your 5/8" square stock in one session. I did mine in three sessions and they are not all the same. This will introduce slight variances in actual thickness of the stock...it can drive you crazy!

My work table was constructed by using throwaway 2x4 and 2x6 material that I had around the house, the top being 3/4" particle board (not high density). The top is going to be destroyed through use anyway so don't throw your money away. This table was leveled in all directions. It's amazing to find out how many hills and valleys are in that "flat" garage floor!

All structural components are being glued with T88 epoxy. I wouldn't use anything else. I did a series of destruction tests before gluing anything. I am also of the firm belief that it

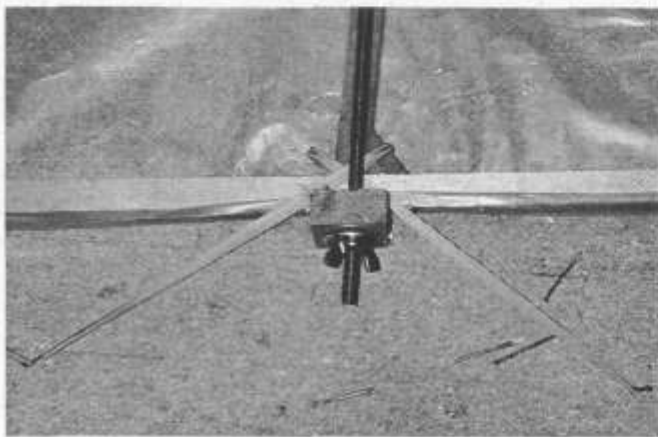
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is impossible for every joint to be cut 100% perfect. T88 will fill minor variances and will not become brittle.

Clamps for the fuselage sides were constructed of all thread, blocks, washers, and wing nuts. They work very well. Later, when you need longer clamps, these can be joined together using coupler nuts.

Gussets were held in place using finish nails and large rubber bands. The key word is "firm" pressure. Don't hold these so tightly that you push all of the epoxy out of the joint.

All surfaces were pre-coated with T88 and allowed to soak into the grain (very important tip). Since T88 is the consistency of dried honey, simply brush on and let the epoxy "flatten smooth" (you're not going to be able to brush it on that way) and you're ready to go.



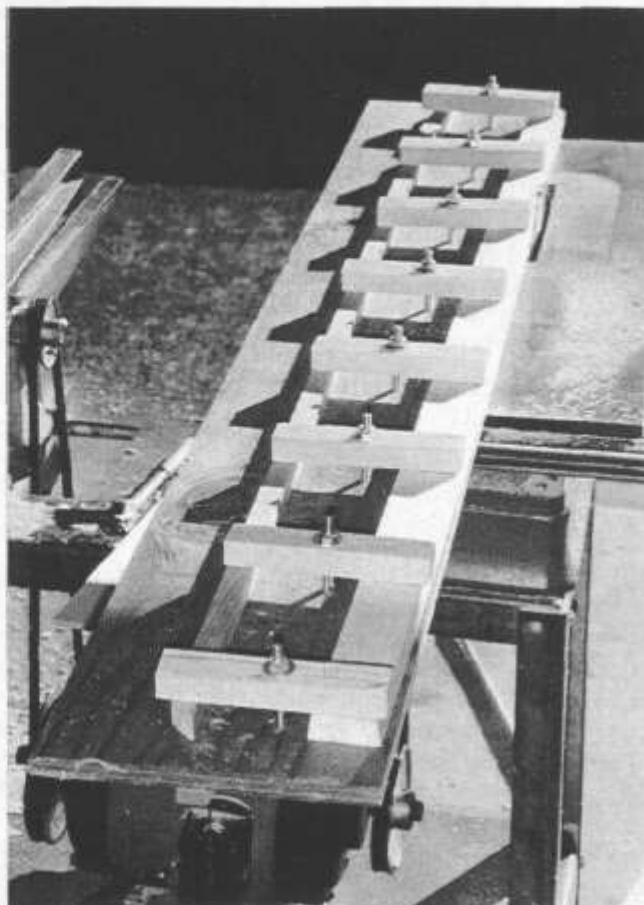
Simple solution to an often perplexing problem. Finish nails secure gusset blocks while rubber bands apply an adjustable amount of pressure.

Have you ever seen so many staples? I learned one of my most important lessons at the skin stage. Buy Arrow staples! I thought I could save a buck a box by buying the "house brand" at the hardware store. I think they were manufactured in Taiwan. After the epoxy had set and I was removing them with a paint bucket opener, every house brand staple broke at the leg. Have you every imagined how tun it is to try and pull out twice as many broken staple legs as there are staples? Not one Arrow brand staple broke. I saved three bucks and lost eight hours. (Hint: America makes great staples)

Once the fuselage sides were assembled and cross members were being epoxied, those gussets were held in place with tacks. This puts plenty of pressure on the gussets. These multi-angle gussets are easy to make by getting an old table saw blade and putting a self-stick sanding disc on it. Use your table saw to sand the angles. This way those really tough gussets can be finessed to fit perfectly.

I used an idea that was in an early newsletter to cut tapers. Build a jig that slides in the table top groove of the table saw. The bolts in mine are flat headed and I use a socket wrench to tighten down the clamps on the stock. I

cut just slightly oversize and one simple pass over the jointer gives me the perfect finish.



Tosceno Taper Jig in action. Unseen wood strip is attached to jig base, mates to and slides in tabletop channel. Tapered cuts are accurate and repeatable.

When the garage was too cold and I wanted to install the belly skin and stern post, I simply created my own "oven" with three 100-watt light bulbs. I did use a paper bag to hold the heat for the stern post. I "cooked" them for 24 hours.

After cutting the lower engine mount rail and its compression brace and being thrilled that it fit together like a Japanese wood puzzle (one perfect tight fit), it's amazing what happens when you apply the world's best lubricant...epoxy! Those pieces want to slip and move in directions you never thought possible! Clamps, clamps, and more clamps.

I milled the top engine mount rail as one solid piece of lumber. I feel this is the strongest method. I used a band saw and much forethought and patience. The piece took about two or so hours to complete. I think, for me, it was easier than trying two pieces as shown in the plans.

I could hardly wait to attach the firewall. It is now temporarily attached in its rough cut form. I did decide to use birch ply which gives me 5ply 2.5mm and 12ply 6mm.

Toscano KR-2S, continued:

This is strong stuff, although it is a bit heavier. The plywood was purchased from B&D International, 1711 South Center Street, Tacoma WA 98409, tel: 253-627-4788. Here again I'm at an advantage since I can drive down and just pick it up.



The unknown stern post? Actually, paper bags and a 100 watt bulb create a temporary curing oven. Later, a string of three bulbs provided necessary warmth during belly plywood attachment. Clever minds keep building.

Soon though, it will grow wings and prove everyone wrong! Here's to everyone who's not flying yet and I hope a couple ideas have helped. More later!

I guess so far I have this neat fuselage in the garage which the neighbors and even my two year old son, Keaton, says is a "boat".

East Coast KR Gathering

Saturday, July 25, 1998

Friday arrivals encouraged!

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Tri-Gear 2S Engine Install Info *Builder Shares His Experiences*

Jeff Bryson

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Tel: 805-665-9449 • e-mail:jbryson@lightspeed.net

Just a note to update my progress. I've put the engine together, a Great Plains 2180, and mounted it onto my KR-2S tri-gear. When I then attempted to install the 4-1 exhaust, it wouldn't fit!

I called Steve Bennett at GPASC and told him of my plight. He said the exhaust was designed to fit with the engine moved forward on two inch aluminum bar stock. Sure. I'll call Jeanette and we'll both have a good laugh.

Well, the laugh was on me. Mrs. Robinson told me that, for the tri-gear, it was necessary to move the weight forward for weight & balance plus to facilitate fitting the collector exhaust system. Maybe that's the reason the tail went down when I got in! This may negate the need for a prop extension since the 2S cowling is 3" longer than the Dash 2's.

I could not find this information in the KR plans, the engine instructions or any publications. Communicate!

Speaking of communicating, I would like some serious, straight forward, honest info on what prop pitch to use on a 520 pound KR-2S, or KR-2, with a 54" prop. I would like to run a 54" pitch if I can get by with it. I live in a valley where obstacles are at a minimum. My previous store-bought aircraft climbed at about 500FPM with little or no puckering. The engine is a GPASC 2180 with tuned exhaust and a RevFlo carb, single distributor ignition and wheel pants.

In reading all the back issues, I've found anywhere between 124 to 212mph. I'd appreciate an article, a note, a call or an e-mail. Thanks, folks.

The KR NEWSLETTER

published monthly at

624 West University Drive, Suite 199
Denton, Texas 76201

Editor and Publisher, Monte Miller
Evening and weekend tel: 940.566.5871

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ON THE RAMP

Ramblings from the Editor

Did you know that EAA publishes another great magazine that can benefit your endeavor? EAA's *Experimenter*, the former ultralight division magazine, has altered its compass heading, picked up on the growing lightplane attraction and has become an outstanding "how to" resource for homebuilders.

The May 1998 issue of the *Experimenter* carries a reprint of the Nov '97 KR Newsletter article on servicing hydraulic brakes. This is not the first time that EAA has recognized the value of the KR Newsletter by sharing good ideas with its world-wide membership.

» . . .

There's an agricultural and mechanical school here in Texas that turns out some pretty sharp grads. These folks have also been, since the beginning of time or maybe longer, the butt of countless Aggie jokes.

Recently, a small aircraft departed the runway at College Station, lost power and augured into a cemetery near the Aggie campus.

The Texas A&M student fire and rescue unit was first on the scene. So far, the Aggies have recovered 314 bodies and expect to unearth more.

. . .

OK, you're reading the June issue of the KR News so that means I got it out pretty much on schedule.

Late June thru mid July, your editor's gonna be off on a semi-spontaneous road trip so the July issue is going to be a little tardy. I may sneak up on some of you southeastern builders and write a progress report for you! You've been warned.

Start Your Day With Special K

BuHder Fits His Project Into Busy Lifestyle

Kerwyn Stoll

1261 Collins Rd - New Market TN 37820

Ph: 423-475-1568

email: tridouble@aol.com

Does this sound familiar to anyone else? I have such enthusiasm to work on my KR-2...but there is just simply no hour of the week available that I can honestly justify using for building an airplane.

That scenerio has kept me from laying a finger on my KR project for a solid 5 years. I have moved to another state, purchased a home that is always in need of maintenance, fathered two little boys (ages 11/2 & 3) and

taken on a job that is very time consuming and stressful. In my role as husband, father, homeowner, and engineer, I have been patiently waiting for that moment of time where I honestly felt that my KR project is my (and my wife's!) top priority. I realize that that time will NEVER come!

I recently ran into a fellow EAA'er at a food establishment and briefly expressed my frustration with my situation. He told me that he and his wife have Thursday night set aside for their project (they both work on it... that lucky guy!), regardless of what ever else needs to be done. Something seemed very intelligent about that idea, so I decided to pick a weekly time for myself, too! At that time, I was leaving for work at 5:50 AM on M,T,W,F due to early morning commitments...but on Thursday mornings, I was sleeping in until 7:30 AM.

On Thursday, January 15, 1998, my KR2 and I woke up at 5:30 AM. I had so much fun that, over the next couple of weeks, this one morning a week ritual was quickly transformed into a 7 day a week pattern of living! My alarm now goes off at 4:45 AM every day of the week, including Saturdays and Sundays. I work on my project for anywhere from 30 minutes to 3 hours each morning again, 7 days a week. I am averaging about 10 hours per week. The KR2 is as important to me as a hot cup of coffee is to others. And the good thing is (especially for my marriage!), by the time my wife and kids are awake, I am usually available to do the daily tasks that are always more important than building an airplane.

I don't know if there is anyone else out there that is struggling with the priorities of life the way that I do...but I thought that if there is, just maybe someone else could benefit as I have from reserving a special time for the KR...no matter what other fires are burn-ing at the time. Try it, you WILL like it!

Happy Independence Pay!

Be Careful with those Sparklers

New Builder & Subscriber

On the Right Track with a KR-2S

Tom Kadyszewski

217 Church Street • Malvern PA 19355

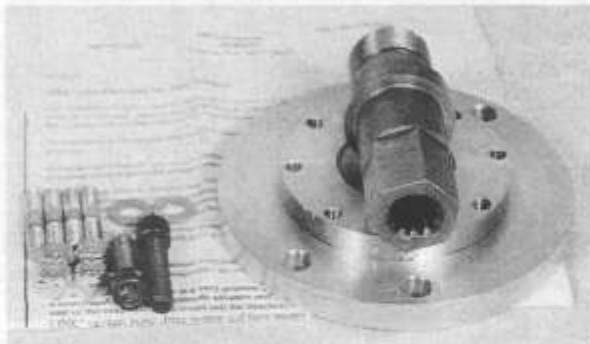
Telephone 610-644-3475

I'm building a conventional tailwheel geared KR-2S serial #765. It's currently at the boat stage.

I will be using the complete turtle deck, canopy and wing skins from Rand-Robinson. I have already decided on a few of the plane's features that will be included, but there are a lot of questions still left. I do not want to unnecessarily reinvent any new wheels!

Please publish my name as a new builder. I would like to hear from other builders willing to share ideas and building experiences.

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253

WANTED - Builder's Manual and plans for KR-2. Originals lost. Contact D.K. Boettcher, 105 West Circle Dr, Blue Earth MN 56013. Tel evenings 507-526-2586.

FOR SALE - 24" stretched KR-2. Subaru 100hp with 1.69:1 redrive. Sterba 60x66 race prop. Electronic ignition, fixed-gear taildragger with 32 gallon fuel tanks. Dragonfly canopy, flaps, 500x5, Cleavelands, taxi, landing, nav and strobes. Inst panel loaded. \$23,000. Details, contact George Huber at 817-261-3572.

FOR SALE - HAPI Engine, Magnum 75. Purchased new in 1984, never installed. 1835cc with 75hp, sodium filled valves, hyd lifters, dual electronic ignition, Posa carb, tuned exh, engine mount, all engine instruments in quad & dual configurations. \$4000 plus shipping. Original KR-2 retract gear also available. Call Rick at 510-426-9525.

WANTED - KR-2S cowl to fit Continental O-200 on a Rand factory mount. Contact with price to W B MacMillan, 1724 England Ave, Everett WA 98203. 425-353-9589.

FOR SALE - KR-2S Project. Mahogany ply boat stage on conventional gear with spars completed. Must move and can't take it with me. I'll throw in lots of parts, hardware & tools for the first \$3000. Lloyd Stearns at 512-244-7537, 512-838-0761 or stearn@ix.netcom.com.

FOR SALE - KR-2 fiberglass cowl \$400. Make offer on KR standard retract gear set. W. Janoski, 14123 East 122nd St, Collinsville OK 74021. Tel. 918-371-5846.

FOR SALE - Set of unused KR-2S plans. \$200, includes shipping. Contact Mark Joiner, 817 Alma Lane, Kingston TN 37763. Tel. 423-376-3628.

KR CLASSIFIEDS

FOR SALE - Retract gear for KR-2. New, never used. Make offer. **WANT** new or gently used KR-2 canopy and frame. Dennis Steed, POB 9013, Salt Lake City, Utah, 84109. Tel/Fax 801-487-3730. E-mail kenikas@aol.com.

WANTED - 54/56x28 or 54/56x30 wood propeller to fit GPASC-style Volkswagen prop hub. Call, write or smoke signals to Editor, KR Newsletter, at 940-566-5871, evenings CST.

FOR SALE - KR-2, N85ES. Signed off but never flown. Revmaster 2100-D with Almost Constant Speed prop. Full instrumentation. Polyurethane paint (white with red and black trim), Terra TXN-960 plus PTT, retracts and Lamb tires, Posa carb. Trailer included. Too many interests at present. \$7500 firm. Eddie Smith, 1762 Moore Rd, York SC 29745. Tel & Fax: 803-684-3425.

FOR SALE - KR-2 60% complete on retractable gear. All RR premolded parts used. Never installed Revmaster 2100-D engine has starter, alternator, oil cooler, engine mount, Posa carb. \$3200. Darryl Krogman, 1406 Kent Way, Friendswood TX 77546. Tel: 800-856-9009, days or 281-332-2718, evenings or email: ghia@flash.net.

FOR SALE - KR-2, N250KB. Flying since 1988 with approx 780 hrs. 1835 VW with custom prop. True 150 mph cruise. Aircraft features an inboard folding, totally enclosed retractable gear, forward hinged Dragonfly canopy, nice instrument panel with moving map GPS. \$14,000 firm. Don Betchan, Route 1, Box 21A, Perry OK 73077. Tel: 580-336-5954 after 6pm CST.

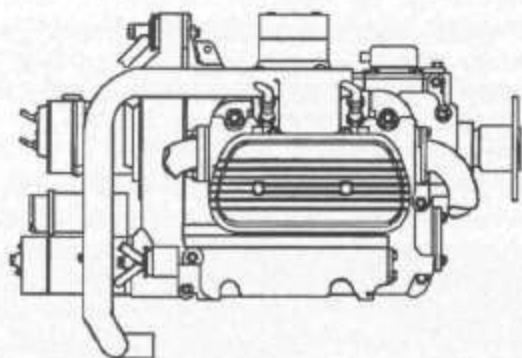
FOR SALE - Parting out KR-2. 1835 Turbo Volks with approx 40 hrs and 52" wood prop. Panel with thirteen instruments plus other misc parts. Asking 1500.00 OBO. Contact Harvey Salevski, 11856 West Waterford Ave, Greenfield WI 53228. Tel 414-543-4132, Fax 543-1289.

FOR SALE - KR-2 approx 60% complete. Fuselage on retractable gear. Controls, brakes, pedals, fuel tank & instruments installed. Wings and ailerons need filling. Have cowl and other parts. \$2000, negotiable. Call: Nelson Heinrichs, 177 Mill St., West Creek NJ 08092. Telephone 609-296-4349, no collect calls, please.

FOR SALE - KR-2 project, complete thru boat stage. Spars ready for included Diehl skins. Forward deck, cowl for Revmaster, turtle deck (still in included mold), horiz stab and elevator with electrim motor. Includes foam, ply, firewall steel, aluminum hardware and remaining kit wood. See aircraft via e-mail at robert@castlegate.net. Bob Lord, tel 407-636-4893, evenings 5:00-9:00, eastern time (Cocoa FL). Machine will answer, calls will be returned if no answer. \$2500 OBO.

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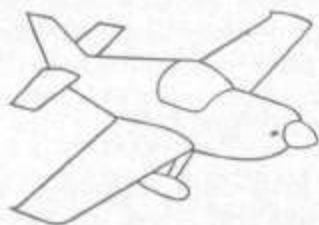
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KR NEWSLETTER

624 West University Drive
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Issue 252 June 1998





NEWSLETTER

I Like My KR Withalittle Southern Style *KR Newsletter Drops in on Bob Muse*

Georgia's Home to this Traveling Man

Monte Miller • Editor

Driving north out of Marietta, the sky looks friendly; lots of Georgia blue with a few non-threatening cumulus and a mild breeze. It's a little after the lunch hour and I'm on my way in search of KR driver Bob Muse. His lovely wife Gladys had previously and graciously provided me with a heading.

If ol' Bob had gone flying, I'm betting it was during the cooler morning hours. This particular day, any pilot worth his salt would probably still be around the airport, but in a shady spot. It's getting warm.

Approaching Kennesaw, I adjust my heading and rate of turn and before I can wonder if I missed it, I'm pulling into McCollum Field. A quick stop at the FBO and I've got another heading to Bob's hanger. "Drives an old, green Plymouth," says the ramp guy, "you can't miss him".

Sure enough, I find Bob Muse sitting in the shade and, true to his piloting heritage, this gentleman is casually reading a sectional and sipping cool water. Ah, youth...ramp guy can't tell an old Plymouth from an old Mercury Comet. He was right about the color, though.

KR drivers and enthusiasts that have been around the block once or twice recognize Bob Muse when they hear the name or see him at a fly-in. He's probably the patriarch of long time KR fliers, having carried home more "oldest pilot" awards than the next five guys put together. At any rate, a quiet Southern gentleman who believes his, "aircraft is fun and good therapy".

Having driven nearly 900 miles to visit Bob, I was ready to listen. I wasn't disappointed.

Big airplanes. That's what Bob was involved with during a long career in procurement for Lockheed at its Marietta facility. His work involved the development of the C-130, C-141 and C-5. Like I said, *big* airplanes.



Always happy to discuss KR's, Bob Muse begins pulling the cowl of his KR without any prompting.

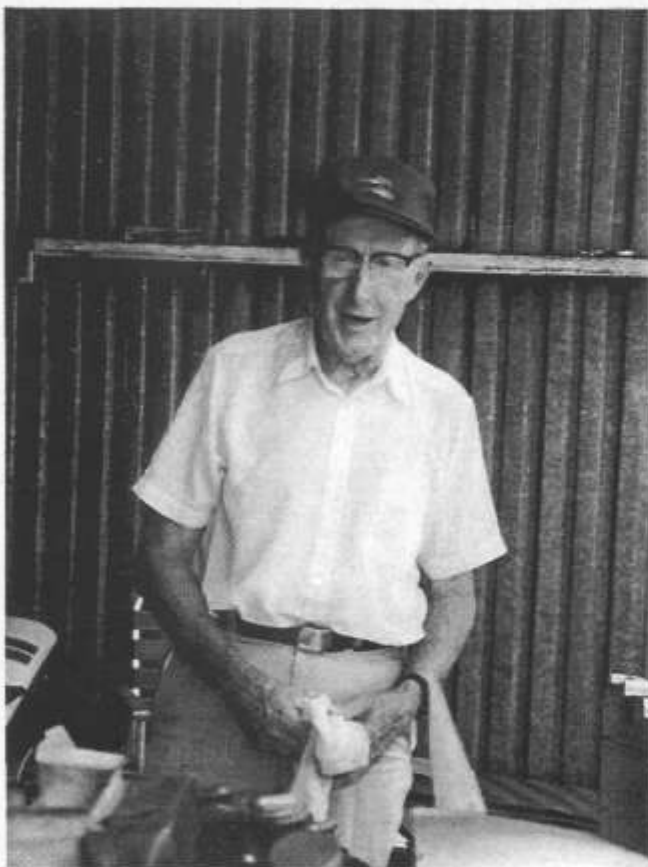
Bob's KR-2, N28RM, is a totally scratch built plane. "I couldn't see paying somebody else to make something that I could do.", is how Bob justifies his labor. The construction period encompassed the years 1979 to 1984. Robert mentions that during the same time period, he rebuilt his Mercury Comet and drove it up the Alcan highway and back. His way of explaining what he considered a longer than average construction time.

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

Bob Muse Visit, continued:

In 1981, during the time when Bob was actively building his KR, Bob had a by-pass surgery and as a result, lost his medical ticket. Undaunted, he proceeded to recover his ticket in 1983 after, as he says, "jumping through multiple FAA and medical flaming hoops". He received help from his Congressman and kept detailed records of all tests, medicals and letters. His health log book is a two-inch thick 3-ring binder. "I worked for the government. I know how they work and the importance of record keeping." These days, Bob has an AME exam every year, down from every six months, which allows him to keep his ticket punched.

The annual checks are, to Bob, a "blessing in disguise", as they help him maintain a balanced diet, get plenty of exercise and sustain good physical condition. Bob Muse was 76 years old this past Father's Day.



Coin's off and Bob provides full details of his reliable Volks conversion. Engine exterior is so dry, Bob complains his push rod tubes get rusty.

As mentioned earlier, 28RM is a totally scratch built KR-2 that sits on plans-designed retracts. Tires are an industrial-treaded style and get their stopping power from hand operated, cable activated mechanical brakes. Bob mentioned that he was considering hydraulics. Just considering.

The canopy, like many other KR's, is a one-off style fabricated from a chopped up KR bubble. The stock canopy yielded the material needed for a pair of gull wing doors with a sun screening solid area down the middle of the unit. The windscreen was developed from a flat wrapped piece of plexiglas. Bob commented that if he were to do the windshield again, he would opt for molding the plexi as he pointed out some very minute stress checks caused by the sever bend required. He pointed 'em out but I never saw them, just nodded, yeah.

Several years ago, Bob sent an article to the newsletter detailing his custom seats in his KR. Well, those seats are only the tip of the iceberg. Fabricated as form-fitting composites of wood and fiberglass construction, each individual seat is removable for access to the control runs. Between the seats is a removable arm rest. Aft of the seating area is a baggage compartment constructed of PVC tubes and a canvas sling. All these items are removable without the use of tools.



True to form, Bob made his own intake and exhaust systems, carb heat box, baffles and modified the Posa to provide inflight mixture control.

The instrument panel is covered with a thin, wooden veneer. Removal of six screws allows Bob full access to the instruments and radio stack. The radio, by the way, is a 720 channel Nav/Comm unit that Bob built from an RST#572 kit. No sense paying someone else to do what you can do yourself, right? Bob says the radio is older than dirt and has been trouble free since the day he built it, originally as a 360 channel kit that he upgraded to the current capacity.

Fresh air enters the cockpit through a pair of NACA ducts that Mr. Muse created using balsa wood and thin plywood. I mentioned the plastic pre-mades that I installed on my personal KR... Bob just rolled his eyes.

The Muse KR flies with an 8.5:1 compression ratio 2100cc (actual 2074) Type 1 VW conversion. A Posa slide-body carburetor has been Muse-modified to provide inflight mixture control. This fuel metering device has been on the aircraft for all of its 800+ flight hours.

Bob Muse Visit, continued:

Equipped with carb heat, the system was never used until Bob's first experience with icing occurred in early June of this year! Amoco 93 octane auto fuel cured an earlier vapor lock problem and has been used ever since.

The crankshaft on Bob's engine originally had the prop hub taper ground just a bit off center. As such, the prop did not track properly until Bob hand-filed a shim, installed it and flew on for a couple more years.

After a small crack developed in the crankcase near the oil pressure take off point, Bob elected to replace the case and at the same time, purchase one of the earliest GPASC Force One hubs. After sending the crank to Steve Bennett for machining, the taper error was corrected. While the engine was apart, Bob also had Bennett modify the cylinder heads to accept dual plugs. Bob has never liked the dual plug modification whereby the second set of plugs is under the valve covers so the GPASC mod fit his needs.

A Hapi electronic secondary ignition is driven off the V-dub-U's original distributor location while a conventional magneto provides the primary sparks.

A Diehl-supplied geared starter gets its power from a firewall mounted Sears DieHard motorcycle battery. Everything comes together at 25° BTDC. Engine start requires that the electronic secondary ignition be turned off as it does not have a retarded start position. This is a common requirement on many Volkswagen dual ignition modifications.



The instrument panel in N28RM may look simple yet it's equipped well enough to permit Bob access to Bravo airspace.

At birth, the Muse KR weighed 517 pounds. Today, with the addition of upholstery, transponder, radio, ignition and carburetor mods, 28RM, like many of us, has picked up a few pounds and now tips in at 600.

A 52x52 Sterba prop lets Bob cruise at 130kts and 3500rpm. On what Bob refers to as "nice days", climb is between 700-800fpm.

Bob flies a standard pattern at 80-70-60kts. With calm winds (What's that?), 55kts is just about down with tire chirps at SOKts. It's a tailwheel aircraft and Bob simply smiles when asked about pedal dancin' during roll out. He says the aircraft, "provides a learning process every time you turn around."

The day was getting a little long in the tooth when I asked Bob if he had to be home at any certain time.

"Just as long as it's before dinner".

And now...

A Little Trick with Wicks *The Folks That Helped Start This Deal*

A note from Don Deiters, Warehouse Supervisor for Wicks Aircraft Supply and newsletter subscriber, says that they have a few pre-fab parts for the KR-2 remaining in their inventory. These items will be available until their stock is depleted. The items are:

KR2 VW Engine Mount	1 remaining @ \$160.00
KR2 Tail Spring	1 remaining @ \$ 18.00
KR2 Dual Rudder Pedal	1 remaining @ \$ 89.00
KR2 Control Stick	4 remaining @ \$136.00
KR2 7075-T6 1"x2.5"x60"	1 remaining @ \$ 93.00
KR2 Trim Tab Rod	4 remaining @ \$ 13.50

The ink was barely dry on the first set of Ken Rand KR-2 plans when the folks at Wicks Organ (as in *music*) decided that they could build an aircraft with the same lumber that they had been using in building musical instruments. The rest is history and good luck for us all.

WICKS AIRCRAFT SUPPLY
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Jack Schnurr

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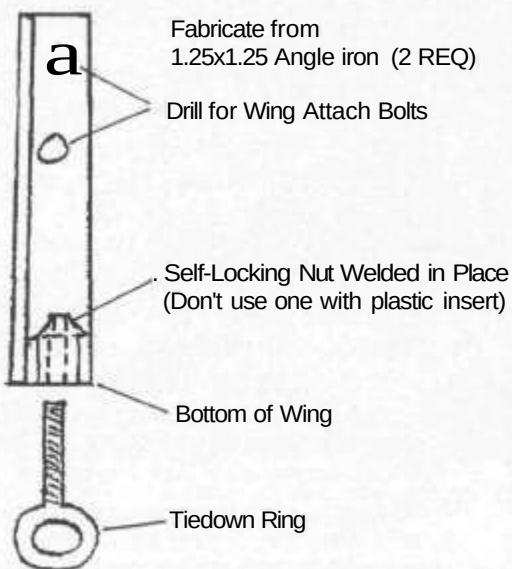
The KR-2 that I bought had no provisions for securing the aircraft by tying down. The KR-2 is usually kept in a hangar, but on cross country trips I needed to have a way to secure it for the night.

Some builders put a hard point in the wing construction to provide for a tie-down but mine had nothing. The thought of cutting into a perfectly good wing just to install a tie-down ring was enough to make me have nightmares. I needed a quick and easy fix. The following is my solution and it has worked very well.

A length of 1.25x.25 inch angle iron, long enough to cover both bolts in the wing attach fittings, was used to fabricate an attach point. A self locking nut was then welded into one end of the angle iron. The end of the angle iron with the nut welded onto it was positioned even with the bottom of the wing and bolted into place using the wing attach bolts.

The cover that fills the gap between the wing stub and the outer wing panel rests on the welded nut. A hole was drilled through that cover to allow the tie-down ring to be screwed into the self-locking nut. The tie down ring will not vibrate loose while flying and my plane has withstood winds to 40 knots while tied down. A third tie down was placed into the hole where I had removed the tailwheel assembly.

I hope this solution will help those of you who are in the same situation that I was in.



Big Bore Illinois KR

A Little Heavy But She Can Cook!

Ralph VanScoyk

8603 South Under Ave • Burbank IL 60459

Telephone: 708-423-0141

Well, it's been raining for the past few days so it's time for me to tell you a story about my KR-1 1/2.

I bought my KR in the boat stage of construction from a fellow down in Spartanburg, South Carolina. My son, Roger, and I drove down to Spartanburg and hauled it home, in the rain.

The fuselage is about 16.5 inches longer than the original KR-2.

I bought a stationary gear from a fellow up in Wisconsin. Put the gear on, put the spars on and started to foam the wings. That's a lot of sanding! Dan Diehl has a better idea. The wings that he sells go together easier!



Ralph takes a work break to share the fun of homebuilding with a couple of cute grandchildren. It's never too early to introduce young people to the joys of aviation.

Bought a turtledeck from Wicks and made it fit. That, too, was a lot of sanding. Went to Oshkosh during the air show and found me a windshield to fit my KR.

When I got the KR together, the next step was the paint. I called a few places. They wanted \$4000. Well, here I go again...sand, sand and sand some more. You get a lot of paint on the floor.

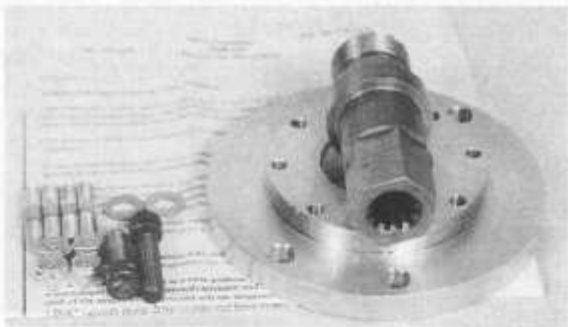
When I was a young man, I used to work in a body shop so I called a few KR gentlemen. They said to go for it, so I painted the KR.

The first attempt on the wings I had too much orange peel. A biplane builder I know came over and looked at 'em. We sanded them down and I painted them again. This time, they came out nice.

So, I painted the whole plane white. I think I'll put some red trim on it...too much white. Have to wear sunglasses when you work on it outside.

Well, it's time to weigh the KR. I have it in my back-

THE MISSING LINK



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POB 622KR

TOCCOA, GA 30577-0622

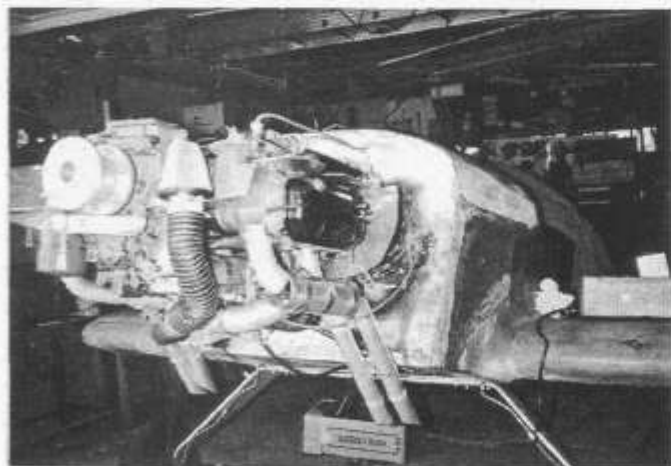
This Drive System will fit the DIEHL/HAPI accessory case.
*Special to KR people - If you order the drive system,
5.00 will be deducted from the final purchase price.

263

Illinois Big Bore, continued:

backyard and it weighs heavy. 671 pounds empty and 937 pounds loaded. I do have a Type-4 Volkswagen in the engine compartment and it is about sixty pounds heavier than its lighter brethren.

I'll check the weight again on the 411 1911cc engine. Might change the engine. I know where I can get a VW1600 plus I like playing with engines. Hope my wife doesn't read the KR Newsletter.



There's no shortage of power with the Volks Type 4 engine but Ralph finds the weight penalty a bit tough to swallow.

The 411 has 6 hours running time on it. I put it on an engine stand in my backyard. The neighbors complained a little bit about the noise.

The engine runs up to 2950 RPM static. Have a 52x46 prop on it and the carb is a Super Posa. Runs good and has plenty of power.

When I figure out my weight & balance problem, I'll send another report. I also have some photos of the plane with the wings on which I'll send as soon as I get them out of the camera.

I'd really like to thank all the KR folks and the homebuilders who have helped me. Now to find those KR pictures...



KR builders will always find a way to get the job done and Ralph is no exception. Be sure to shim opposite wheel to same level as scale for accuracy. Van Scoyk is right on.

OK, I found 'em! How do you like my way of getting the KR on the scale all by myself? *Editor's Note:* Check out what appears to be a boat trailer winch with cables running to each gear leg. Homebuilders can improvise!

I've got four different ways of weighing my KR. Is it 15% in from the leading edge of the wing or eight inches? 15% is 7.2 inches on my aircraft. In order to reach the 8 inch distance, I'll have to lose forty pounds off the front of my Type 4 powered KR.

Last month's article (issue 252) regarding Jeff Bryson and his attempts to fit a Great Plains 4-into-1 exhaust system onto his KR-2S elicited a response from Steve Bennett of GPASC. His comments will be of great interest to all builders.

Exhausting Updates from Great Plains

Monte, a few points of interest for the newsletter:

When our original Great Plains Aircraft 4-into-1 exhaust system was designed, it was to fit Calvin Campbell's personal KR-2. Cal's aircraft did have a 2" spacer between the STOCK (emphasis on stock) KR engine mount and the accessory case. The original 4-into-1 exhaust will still work with either the Revflow or Ellison carburetors but not the Zenith unit.

We now have a *new* tri-gear KR2S engine mount that is a 5 point mount with three mounting points at the

continued on page 6

Exhausting Updates, continued:

top of the firewall and two on the bottom. This mount can be used with or without a tri-gear installation on either the KR2 or the 2S. It is designed to be used with the accessory case starter positioned on the top. This installation provides the builder with tons of room below to mount nose gear, carb and exhaust. We have modified our new 4-1 exhaust slightly to provide even more room and clearance for the builder's accessory choices. The new mount is about 8" wider at the top than a standard KR mount.

Also, we now have available our new cast breather assembly that keeps all the oil in the engine. Cost is \$29.95. We will soon have available our new top-mounted intake system (for Ellison carb) as well as a few other goodies coming down the pike.

Shared Tips and Ideas

Simple Mods Make for Unique Aircraft

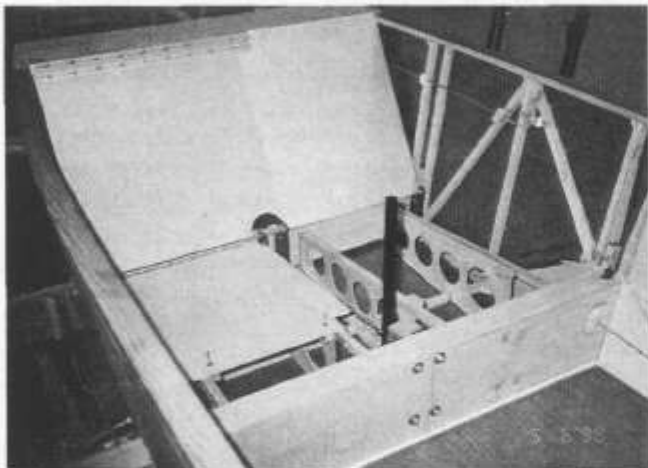
Philip A. Spade

PO Box 327 • Gwinn MI 49841

Tel: 906-346-3237

The sling seat in the KR-2S plans is simple and adequate, but I wanted something that was quickly removable to get at all the hardware and plumbing that goes under it. I also wanted access to the fuselage aft of the seat. I looked through back issues of the KR newsletter and found little information on seat building other than using the plans depicted sling seat. Here is a design that I came up with. I hope it helps some of you builders out there.

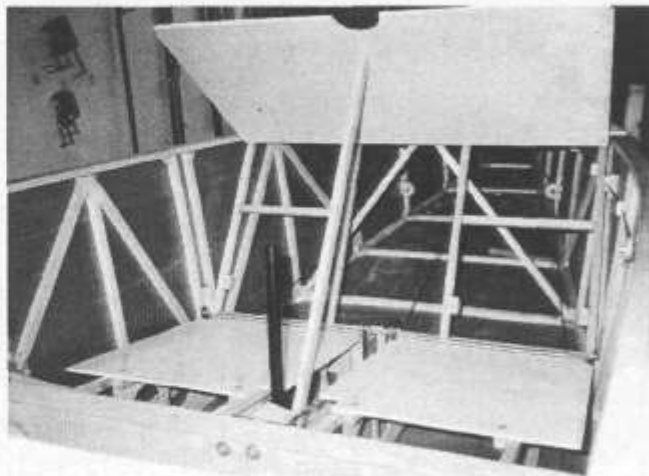
The seat bottom and back are of 1/4 inch birch plywood. Seat ribs are 2.5mm (3/32") birch.



One bottom panel in up position showing construction of the seat ribs and location of the nutserts.

Piano hinges are aluminum, 1.5 inches wide and everything is aircraft quality. Panels are held in place by machine screws and nutserts. More weight than the sling

seat, to be sure, but probably worth it. One could cut out some lightening holes in the back panel. They would be covered by cushions anyway.



Back panel in up position giving access to rear fuselage.

Both photos show seat belt anchor hardware made of 1 x 3/32 inch 4130 steel strap welded into angle.

Another slight deviation from plans is the routing of the rudder cables. Look closely to the right in photo #1 and you can see the cable going through the main spar. If you do this just make sure that you don't go through any vertical members. Epoxy a wood reinforcement washer around the holes on both sides of the spar. If you're installing flaps, leave room for its hardware and the flap handle.

I also have added a cable pulley for the aileron cable just inside the fuselage. This idea works fine for the tri-gear version. I'll send a photo of this soon.

News Outta New Mexico

Progress Report from New Subscriber

Dale Hudson

PO Box 2753 • Las Cruces NM 88004

Telephone: 505-526-5589

I am presently building a KR-2 which I bought about four years ago. I would estimate that it was about forty percent completed at that time.

I now have it about ready to put the wings on and hours more of sanding and painting.

I have a 2100D Revmaster VW with dual mags and a turbo charger. I'm doing away with the metal prop and going with a wooden one. The engine is mounted to the airframe and I have started it a few times. A Posacarb is currently installed, however, I am changing to a Zenith before any more work on it.

I have not done too much to the aircraft in the past year and I don't have a photograph at this time. Hope to get started again on it soon.

KR CLASSIFIEDS

Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial style ads will be billed accordingly prior to publication.

The KR Newsletter reserves the right to edit free ads.

WANTED - Builder's Manual and plans for KR-2. Originals lost. Contact O.K. Boettcher, 105 West Circle Dr, Blue Earth MN 56013. Tel evenings 507-526-2586.

FOR SALE - 24" stretched KR-2. Subaru 100hp with 1.69:1 redrive. Sterba 60x66 race prop. Electronic ignition, fixed-gear taildragger with 32 gallon fuel tanks. Dragonfly canopy, flaps, 500x5, Clevelands, taxi, landing, nav and strobes. Inst panel loaded. \$23,000. Details, contact George Huber at 817-261-3572.

FOR SALE - MAPI Engine, Magnum 75. Purchased new in 1984, never installed. 1835cc with 75hp, sodium filled valves, hyd lifters, dual electronic ignition, Posa carb, tuned exh, engine mount, all engine instruments in quad & dual configurations. \$4000 plus shipping. Original KR-2 retract gear also available. Call Rick at 510-426-9525.

WANTED - KR-2S cowl to fit Continental 0-200 on a Rand factory mount. Contact with price to W B MacMillan, 1724 England Ave, Everett WA 98203. 425-353-9589.

FOR SALE - KR-2S Project. Mahogany ply boat stage on conventional gear with spars completed. Must move and can't take it with me. I'll throw in lots of parts, hardware & tools for the first \$3000. Lloyd Stearns at 512-244-7537, 512-838-0761 or stearn@ix.netcom.com.

FOR SALE - KR-2 fiberglass cowl \$400. Make offer on KR standard retract gear set. W. Janoski, 14123 East 122nd St, Collinsville OK 74021. Tel. 918-371-5846.

FOR SALE - Set of unused KR-2S plans. \$200, includes shipping. Mark Joiner, 817 Alma Lane, Kingston TN 37763. Tel. 423-376-3628.

FOR SALE - Retract gear for KR-2. New, never used. Make offer. WANT new or gently used KR-2 canopy and frame. Dennis Steed, POB 9013, Salt Lake City, Utah, 84109. Tel/Fax 801-487-3730. E-mail kenikas@aol.com.

WANTED - 54/56x28 or 54/56x30 wood prop for GPASC style VW prop hub. KR Editor at 940-566-5871, evenings CST.

FOR SALE - KR-2, N85ES. Signed off but never flown. Revmaster 2100-D with Almost Constant Speed prop. Full instrumentation. Polyurethane paint (white with red and black trim), Terra TXN-960 plus PTT, retracts and

Lamb tires, Posa carb. Trailer included. Too many interests at present. \$7500 firm. Eddie Smith, 1762 Moore Rd, York SC 29745. Tel & Fax: 803-684-3425.

FOR SALE - KR-2 60% complete on retractable gear. All RR premolded parts used. Never installed Revmaster 2100-D engine has starter, alternator, oil cooler, engine mount, Posa carb. \$3200. Darryl Krogman, 1406 Kent Way, Friendswood TX 77546. Tel: 800-856-9009, days or 281-332-2718, evenings or email: ghia@flash.net.

FOR SALE - KR-2, N250KB. Flying since 1988 with approx 780 hrs. 1835 VW with custom prop. True 150 mph cruise. Aircraft features an inboard folding, totally enclosed retractable gear, forward hinged Dragonfly canopy, nice instrument panel with moving map GPS. \$14,000 firm. Don Betchan, Route 1, Box 21A, Perry OK 73077. Tel: 580-336-5954 after 6pm CST.

FOR SALE - Parting out KR-2. 1835 Turbo Volks with approx 40 hrs and 52" wood prop. Panel with thirteen instruments plus other misc parts. Asking 1500.00 OBO. Contact Harvey Salevski, 11856 West Waterford Ave, Greenfield WI 53228. Tel 414-543-4132, Fax 543-1289.

FOR SALE - KR-2 approx 60% complete. Fuselage on retractable gear. Controls, brakes, pedals, fuel tank & instruments installed. Wings and ailerons need filling. Have cowl and other parts. \$2000, negotiable. Call: Nelson Heinrichs, 177 Mill St., West Creek NJ 08092. Telephone 609-296-4349, no collect calls, please.

FOR SALE - KR-2 project, complete thru boat stage. Spars ready for included Diehl skins. Forward deck, cowl for Revmaster, turtle deck (still in included mold), horiz stab and elevator with electrim motor. Includes foam, ply, firewall steel, aluminum hardware and remaining kit wood. See aircraft via e-mail at robert@castlegate.net. Bob Lord, tel 407-636-4893, evenings 5:00-9:00, eastern time (Cocoa FL). Machine will answer, calls will be returned if no answer. \$2500 OBO.

FOR SALE - KR-2S plans and manual including full scale layout for the KR-2S fuselage. \$150 plus postage. Call Jack Cheney, 616-938-2886.

FOR SALE - KR-2, boat stage, \$400. New set of KR-2 plans \$100. Bobby Whisenant, Rt 1 Box 637, Chireno TX 75937. Tel: 409-854-2644 or e-mail to bpc@lcc.net.

KR CLASSIFIEDS WORK!

List your unwanted items and turn them into money

The KR Newsletter always needs your articles, tips and builder photos. Help your KR Newsletter be the best.

ANNUAL KR GATHERING

September 18 -20, 1998

Perry (OK) Municipal Airport

The city of Perry and surrounding areas were opened for settlement by a land run on September 16, 1893. The Great Oklahoma Land Run. Many people were able to begin a new life for themselves and future generations.

The City of Perry, Oklahoma has celebrated this event for over 100 years. Each year, a full day of downtown festivities is held on the Saturday that falls closest to September 16th. This year, the event falls on Sept. 19th...ring a bell? Parades, car shows, carnival and old west gunfights will fill the day.

In conjunction with the city's activities, I am hoping to have a city fly-over by a multitude of KRs.

The Best Western Cherokee Strip Motel will again be our event headquarters for the awards banquet. I strongly suggest you make your room reservations ASAP as our big little city will fill up fast.

Best Western Cherokee Strip
580-336-2218

SCHEDULE OF EVENTS

Annual KR Gathering

FRIDAY 18 Sep 98

0900 to ? Early Arrivals
1700 BBQ&Beer

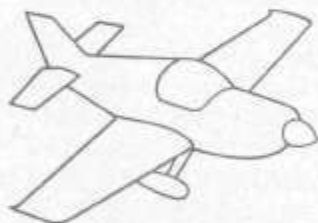
SATURDAY 19 Sep 98

0800 Registration table opens
0900 Pilots Briefing. Flying begins & continues all day
0915 Aircraft judging begins
0930-1030 Seminar: Composite wet layups
1030-1100 Prep for & launch fly-over AC
1115-1200 Fly-over City of Perry
1200-1300 Lunch on your own
1300-1400 Seminar: VW Engines with GPASC
1400-1500 Seminar: Flight Testing by Rick Junkin
1500 Pilots Brief for short take-off and spot landing competition
1530 Spot Landing Contest
1615 Real flying & Hanger Flying
1930 Banquet & Awards at Cherokee Strip

SUNDAY 20 Sep 98

Farewells and Departures

Canadian Fly-In Attendee Needs Help - Gene MacDonald of Saskatchewan, has his plane ticket into Will Rodgers (OKC) arriving Thurs 17 Sept and departing Mon 21 Sept. Needing transport OKC/Perry/OKC, and a bunk or room share. If you can assist, contact: 360-225-2770. Box 60, Hague SK, Canada SDK 1X0. Editor promises he's house broke!



KR NEWSLETTER

624 West University Drive
Suite 199

Denton, Texas 76201

Issue 253 July 1998





NEWSLETTER

KR Gathering on Short Final *KR Faithful to Descend on Perry Municipal*

The Wing is the Thing *Issue Features Several Helpful Articles*

Tri-Gear Aileron Cable Modification

Philip A. Spade
PO Box 327 • Gwinn MI 49841
Telephone: 906-346-3237

This is a clarification and continuation article regarding the aileron cable routing and pulley brackets for the very fine tri-gear supplied by the manufacturer. The first installment was published in last month's issue.

Instructions call for mounting the gear castings as close to the fuselage as possible. In my situation, this amounted to one (1) 5/8ths square for the main spar fuselage side brace plus two (2) 5/8ths square wing rib braces plus the width of the wing rib. That's two inches from the fuselage as measured at the top of the main spar.



Aileron cable bracket modified to clear gear.

Annual Fly-In Set for 18-20 Sept

This is gonna be a good one, folks! Some of you have procrastinated and now find yourself without a room but there's nothing wrong with joining others and camping at the airport. It's worth it just to have the chance to meet, mix, mingle and laugh with the KR enthusiasts.

Remember the barbecue and brew on Friday evening at the airport and Saturday evening's dinner at the Cherokee Strip...both are not to be missed activities.

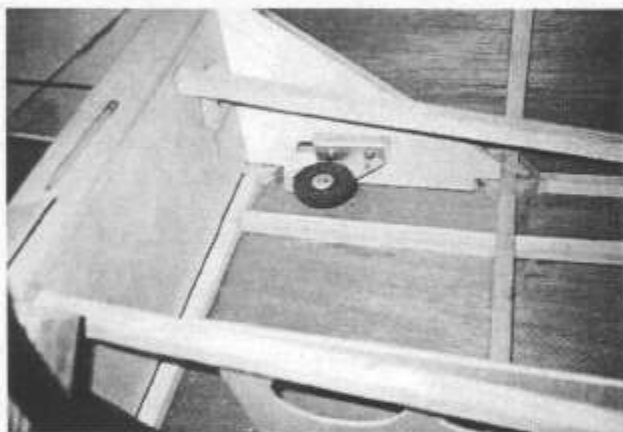
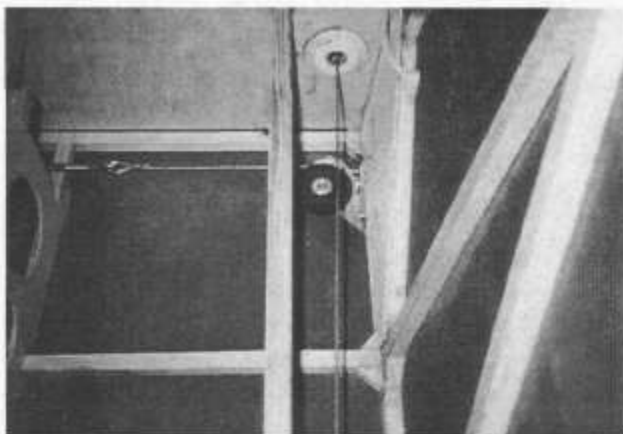
Stop by the KR Newsletter booth and say hello while you register for some freebies.

As per instructions, an extension of the aileron pulley bracket is required. I extended the bracket with a 1/8 inch thick by 1 inch aluminum angle. However, the bottom angle portion should be trimmed to about 1/2 inch to stay inside the wing skin. From the face of the main spar to the center diameter of the pulley measures 9 1/4 inches. This extension length gives me a cable clearance of about 1 inch behind the main gear leg (see photo #1). Note additional mounting bracket on rib.

With this configuration, it is necessary to mount an additional pulley and bracket just inside the fuselage (see photo #2 & 3). The bracket is very similar to the one just in front of the top elevator horn. I used the same one and trimmed it down to fit. A wooden shim is necessary to maintain the same horizontal plane of the cable and pulley. Make sure everything is on the same plane to prevent pulley wear. Bolt through the pulley bracket and the inside and outside skins. Epoxy wood filler blocks between both skins, you can do this by slipping epoxy wetted square short blocks between the skins. Use enough blocks to provide drilled hole backing.

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

Tri-Gear Mods, continued:



Two views of aileron cable pulley and bracket inside fuselage. Beveled wood shims used for alignment

• • * * •
Bill Ridley

9544 Hart Rd SE • Olympia WA 98501

A really short note accompanied the photograph of Bill Ridley's KR-2. Looks as if it was just rolled out of the paint booth as some masking material still covers the side plexiglas.

The excitement of completing your aircraft is a powerful emotion so we'll overlook the missing details and hope Bill will send a fully detailed flight report in the near future.

Bill's letter said that he had bought the partially completed kit from John Hutcheson in Las Vegas. The prior owner had started building it in the early 70's. There are some modifications. The KR has a 21 ODD Revmaster turbo. Bill notes that, "I'm waiting for a prop now, then will have it inspected and signed off."

The airplane is 200 pounds overweight. That is the penalty for having all the goodies. I hope to have it in the air by the end of July."



One journey ends and another is about to begin for Bill Ridley, of Olympia, Washington, as he rolls out his freshly painted and near complete KR2.

• • • • •

2S Mods at High Speed L.Sorta

Bill Gaudlip

Route 403, Box 261 • Hooversville PA 15936

Telephone: 814-798-2040

First off, let me say that I have enjoyed the newsletter thoroughly. I love seeing what all the other builders are up to. I have not submitted any information since June of last year, which I apologize for, but I did have a good reason. In the July '97 issue you published some photos of my project and wrote a very nice article about it due to my lack of supplying any written information about the plane.

Shortly after that publication I flipped the plane on a high speed taxi that was not supposed to be high speed. I had a throttle cable hang up and before I could do much about it I found myself flipping over the nose of the plane and landing upside down.



Comin 'atya! The Gaudlip KR-2S features a landing light molded into the engine cowling.

Gaudlip KR-2S, continued:

All considered, I was extremely lucky. I took out the prop, smashed the cowl, canopy, canopy frame and a small portion of the turtle deck. I had a few small cuts and a bruise on my side. I'd say that I was lucky.

So, since the last photo I submitted, my KR has undergone some changes. I changed the landing gear to a Diehl tri-gear, rebuilt the canopy frame, repaired the turtle deck, and redid the cowl modifications using a premolded Rand-Robinson cowl. It has been about a year to the day (July 4) that it happened.

I am pleased to say that I think the incident actually happened for the better. I made improvements to my canopy that made it much better looking and it also functions better. I love looking out at a level attitude at all times due to the tri-gear and I just feel better about the whole project. I have spent the last six months doing nothing but body work. I recently had the plane on static display at a local fly-in and it got rave reviews, even from other builders who had flown in.



Bill's 2S features a beautifully applied "splash" of gray, mauve and maroon below a sparkling white fuselage. Black n' white photo doesn't do it justice so catch him soon at a KR Gathering. Wish we could see it all, Bill.

I am now in a hanger and in the final process of finishing up all the little details so the FAA inspector can come in and check me out. I am enclosing some more photos and will do my best to follow up later with my progress and more details about the plane.

If you could help me out, I am looking for another owner to get some dual time with. If anyone out there does this, I would love to know. Again, sorry I took so long submitting additional information but I had a sanding block glued to my hands...you know how that goes.

See You in Perry, Oklahoma at the
1992: KR Gathering
18-20 September 1992

ON THE RAMP

I was reminded of an old friend the other day when I received a call inquiring about 684LM. For those newer subscribers, Lima Mike was my pride before I went crazy and sold it to my friend, Bill Warren.

Tragically, Bill would lose his life as a victim in a pedestrian-DUI accident and the KR2 was offered for sale through his estate.

684 Lima Mike has a new owner. It will be nice to again see the aircraft gracing the Texas sky.

Hot dawg! The annual KR Gathering is closing in. Get your housing squared away soon as the town will also be hosting its annual Oklahoma Land Run celebration while we're busy invading Perry International Airport. The last call I made to the Cherokee Strip was in July. They had no rooms left for Friday the 19th but a few remained for Saturday night. *Update on rooms...* per Bob Muse, the Cherokee is now booked solid!

Your editor appreciates those subscribers who have taken the time to support the newsletter by sending in an update on a project, some photos, a tip or an idea.

I'd like you guys to know that ya'll are among the five to seven percent of the readership that is sharing your knowledge with the readership. Thanks for your efforts.

Be sure to stop by the KR Newsletter booth while you're enjoying this year's KR Gathering. Say *heyto* your editor and register for some neat door prizes.

We will again sponsor a "Publisher's Choice" trophy for an attending aircraft. Rules? Hey, we don't need no stinking rules! Just ask last year's winner, Bobby Muse...

You guys will probably have to put up with the editor pestering you for info about your aircraft, too. Gotta get some fodder for these pages.

The KR NEWSLETTER

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Editor and Publisher, Monte Miller
Evening and weekend tel: 940.566.5871

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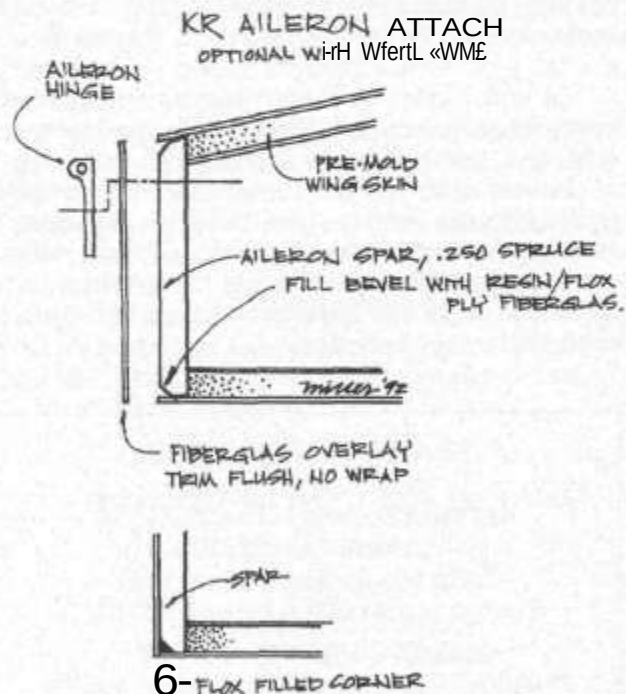
Installing the KR Aileron Spars Diehl Wing Skins Simplify Chore

Editor, KR Newsletter

Just can't stand to sand those fiberglass layups, especially with that vinylester resin...it clogs sandpaper and is really slow going. I had held off completing the aileron spar installation for the premolded Diehl wing skins simply because of my intense dislike of sanding. I finally came up with an alternative technique that is easier, stronger and requires far less arm effort.

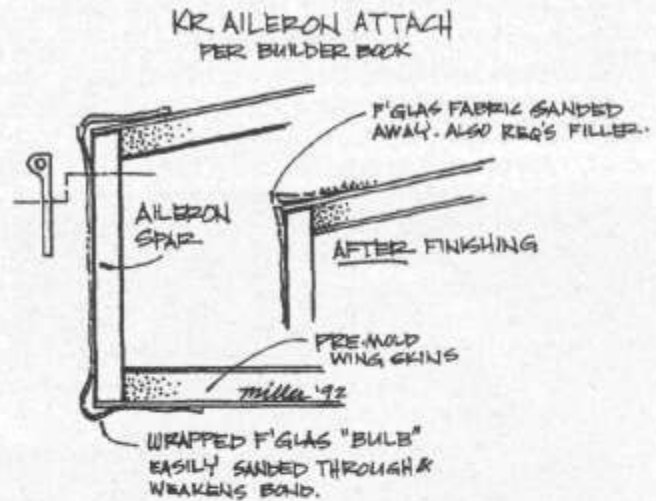
During the aileron spar fabrication, the Builder's Manual directs you to wrap the previously fitted aileron sub spars with fiberglass, then feather sand and blend the layup into the existing wing skin. This instruction relates to the stock urethane foam wing. The manual seems a bit vague through this section so it's necessary to read between a few lines.

The sketches should explain how to eliminate the wrapping technique altogether. I even used a mill file to dress the trimmed out fiberglass edges and eliminated sanding entirely. This short cut still won't save you from having to shape the wing leading edge tapes over the joggle joint. Sanding can't be escaped entirely.



As a reference, the following sketch describes the aileron spar attachment method as called out in the Rand Builder's Manual. In reality, it is all but impossible to get the fiberglass cloth to make a tight wrap around a nearly square corner. The fabric wants to pull away from the very spot that its bond strength is needed most.

Remember, this spar attach technique works only in conjunction with the Diehl premolded wing skins; these wing skins have a fiberglass layer on both the outside and the inside of the molded surfaces. These glass surfaces are critical to achieving a safe and secure bond of the aileron spar to the wing structure.



Adventures North of the Border *Desire to Fly is Never Extinguished*

Gene MacDonald

Box 60, Hague, SK, Canada S0K1X0

Phone: 306-225-5770 Fax: 306-225-5771

Thank you for taking the time to chat on the phone with me last week. I am excited about going to Oklahoma for the KR Gathering next month!

I just spent an hour on the phone, checking details of my flight. (It only took 2 minutes to check, 58 minutes waiting for "an available agent". I'm glad it was an "800" number.) I have been intending to write this letter for over a year now, but Mr. Procrastination always had another task for me.

I cannot remember when flying was not high on my list of "want to's". My first remembered "flying" thoughts were wishing I could be a Spitfire pilot and doing what needed to be done over the skies of Europe! Much later, when joining the RCAF in 1960, the windshields over my eyes kept me out of those fighters. I finally had my first flight in a small airplane in 1968 and guess what - it was a Miranda!

I have had plans for several planes, including the Cavalier, BD-4 and the Nesmith-Cougar. I still have plans for the Zenith Zodiac and the Jeanie's Teenie-II, as well as two sets of KR-2 plans. In the 1970's, I owned a Cougar and a Taylor Monoplane, both purchased as basket cases. The Cougar never flew again. After I had rebuilt the Taylor and its engine, and without flying it, I sold it to return to college.

Northern Adventures, continued:

In November 1996, after "hibernating" many years, I convinced my good wife that I needed a hobby, and that likely should take the form of a KR-2. I ordered plans from RR, but before they came, I saw an ad for a KR-2 "boat" for sale. Jeannette kindly canceled my order for the plans, and I paid for the 1996 video of the KR Gathering. Wow! I was and am impressed!

During the winter of '96-'97, I corresponded several times with the builder who advertised the KR. He lives on Vancouver Island, on the coast of BC. In April of 1997, my wife Helen and I drove our Dodge Caravan about 1,000 miles across the mountains from Saskatchewan and took a Ferry ride to Vancouver Island. To stow the wings, I had removed the rear seats and eventually had to remove the arm-rests from the front seats as well.

I liked what I saw, and paid the man. The next day, he and I loaded the wings (ailerons removed), Revmaster 2100D, 3-blade Warnke prop, preformed gas tank, engine cowlings, seats, instruments, bolts & nuts, a looseleaf binder with KR Newsletters from 1989 to 1994, and myriads of other bits and pieces into my standard size van. We wrapped the fuselage in heavy vinyl, sealed it with several rolls of good or Duct Tape, turned the "boat" upside down, and strapped it to the top carrier, which I had reinforced just for this trip. Helen and I then brought it back to Saskatchewan with the vertical tail hanging down behind the rear lift hatch, and the end of one wing poking into the place between the front seats. Every once in a while one of us would bend forward and say "Hi!" to the other, as this airplane had now literally come between this happily married couple.

The workmanship is superb, and I complemented Dave Hutchinson, who felt obliged to part with his treasure, for his obvious attention to detail and good workmanship.

Of course, I took my camera on the trip, with plenty of film. Taking pictures of the loading process, and various shots along the way, especially in the mountains, we were happily looking forward to reliving the trip through pictures. Alas, it was not to be, as the film somehow never caught in the take-up spool, yet the counter kept recording. I discovered the problem after arriving in our driveway, and noticing the counter going past 40 with a 36 shot film installed.

I did not get much done during this past year on account of job changes, but I am changing the retracts for fixed tri-gear, and have several parts made. I made the attach plates from 1/2 and 3/8 inch 6061-T6, mig-welded together, and plan to cut an unused 3/4x2.5 RR spring gear, reinforced with fiberglass for the main gear legs. I recently bought another partial kit which included a complete retract set, bolt kit, metal kit, canopy, and KR Newsletters 1977 to 1979.

During this past year, I have studied the project for many hours and have added a few ideas of my own. I installed a vertical member between the rear baggage

crossmember and the floor, and attached a slim nylon "slider" between the elevator cables where they cross. I used the tip of a nylon hockey stick replacement blade.

The casings of the Ny-rod cables to the elevator and rudder trim tabs were both broken between the hinge areas. In removing one during the winter, it shattered in my hand, likely indicating the cause of the other broken areas. I replaced the cable on the elevator trim with two small steel cables lifted from an old Pontiac right mirror control and added another small aluminum horn on the top of the trim tab. The tab now has a pull-pull action. I had noticed that the ny-rods were allowing too much slop; likely because of the breakage due to the cold weather here in Canada. I plan to remove the rudder tab and fiberglass the area over.

I had followed the builder's practice and inserted the two cables through holes in the horizontal spars. I wondered about the effect on such small spars. The other day, I was reading an old Newsletter that advised NOT to route trim cables through those tiny spars. The article advised that if you did, remove them, epoxy plywood over the holes and reroute the cable(s) through the rear empennage into or onto the elevator. I will certainly carry out that mod in the near future! I will mix epoxy with sawdust from my band-saw, and first fill the holes in the spars. Since the fiberglass work is complete, I will now be cutting into both the horizontal tail and the wings to do these mods.

I am also looking into the feasibility of using stub axles on the RR wheels. 5/8 inch axles look awful small to me. There is room to put 3/4 inch bearings in there with some machine work. I am trying to find out what the minimum diameter should be for proper load carrying capacity for stub axles.

Again, thanks for the great Newsletter, and with the enclosed money order, I look forward to enjoying many more issues. I am looking forward at this point to meeting many fellow KR enthusiasts at the great KR Gathering in September!!

Note to everyone - Please call me or fax me to chat, exchange info, or whatever. No other KR in my area.

EDITOR'S NOTES

To address Gene's comments regarding routing of the elevator trim cable through the horizontal tail spars, permit me to mention that the method shown in the KR Builder's Manual has been engineered to be safe and proper. A small hole positioned at the exact center of the spar's vertical dimension will *not* weaken the spar as it is subjected to flight loads nor will it effect the trim tab position as the elevator is moved during flight operations. A hole located off-center *will* impact the spar's overall strength when subjected to compression and/or tensile loading. The same thing goes for those tail surface hinge installations.

It Could Never Happen to Me

From EAA Technical Counselor News, April 12, 1997

I hesitate to tell you about a stupid yet classic accident with my nearly completed VariEze. I had just installed an overhauled carburetor and was attempting to start the engine the old fashioned way, by propping it, to evaluate the engine. After a few failed starts, a Bonanza returned from a flight and taxied to his hangar just across from mine. I had to remove the chocks and fire-bottles and push the VariEze back out of the way to let the Bonanza get into his T-Hangar. After the Bonanza was hangared, I decided to leave the VariEze where it was and to attempt another start; this time, after my unsuccessful starts, with an increased throttle setting as suggested by a mechanic. You guessed it. It started on the first pull. However, in the recent move, I had forgotten to replace the chocks and the airplane began taxiing down the tarmac with the nose bumper leaving a black streak behind it! I was, of course, behind the pusher prop and tried to grab the Eze's wing to stop it. When I grabbed the left wing, it turned the airplane toward a parked Suburban so I had to let it go.

I could not get ahead of the airplane to reach the cockpit and shut down the engine. It tracked straight ahead. The nose went directly between a telephone pole and guy wire, severed both wings outboard of the wing strakes before stopping due to the nose digging into some soft dirt.

The classic part of the accident was the fact that something not planned happened (the arrival of the Bonanza) which interrupted the routine, resulting in the sequence of events (forgetting to replace the chocks) with disastrous consequences. I still do not believe it happened and I haven't yet decided what to do. Of course, I mainly wanted to cry. The secondary lesson: do not try to start a pusher aircraft without someone at the cockpit to operate the controls, as needed... especially with an unproven engine.

* * * * *

Stickin' with a KR in Iowa *Life's Speedbumps Overcome*

PatMcFall
2212 68th Street
Windsor Heights IA 50322

You're doing a great job with the Newsletter. I'll have pictures and an article shortly.

I started my "three year" project in October of 1981. Two houses, one wife, three garages (excuse me...hangars) later, I'm back at it with a vengeance. By profession, I'm a general contractor since 1970. I'm finally getting to the point where I can shine on the interior and finish...hopefully.

N88KR (In 1987, I thought I would be done in '88!) will be powered by an 1834cc that's been balanced and

blueprinted. The engine is equipped with a Diehl accessory case, Bendix mag, Zenith carb, stinger tuned exhaust, and a Hegy 52x46 prop.

Unpainted, the aircraft weighs 510 pounds. I'm trying for 550 empty.

I look forward to the KR Newsletter as much as my Kitplanes, Sport Aviation and AOPA magazines. Frankly, our members write just as well. I will submit an article describing a few neat goodies I've incorporated in the airplane.

Remind all the readers, "Don't give up on your dream", despite any delays.



Business end of the McFall KR-2. Note cooling shroud around gasolator and blast tube for fresh air.



Custom turtledeck and canopy frame. As do most builders, Pat finds the stub wing a handy work bench. Is that a Christen Eagle in the hangar, too?

MISSING IN ACTION

Recently, a generous reader submitted an article to the Newsletter detailing his custom aileron pushrod brackets for the KR aircraft. Photos, too.

If you're the builder, I apologize but I've misplaced the material. Would you consider resubmitting?

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FOR SALE - Retract gear for KR-2. New, never used. Make offer. **WANT** new or gently used KR-2 canopy and frame. Dennis Steed, POB 9013, Salt Lake City, Utah, 84109. Tel/Fax 801-487-3730. E-mail kenikas@aol.com.

WANTED - 54/56x28 or 54/56x30 wood prop for GPASC style VW prop hub. **FOR SALE** - Hegy 52x49 (reworked to match 52x48 performance). \$95.00 includes freight. Call KR Editor at 940-566-5871, evenings COST.

FOR SALE - KR-2, N85ES. Signed off but never flown. Revmaster 2100-D with Almost Constant Speed prop.

Full instrumentation. Polyurethane paint (white with red and black trim), Terra TXN-960 plus PTT, retracts and Lamb tires, Posa carb. Trailer included. Too many interests at present. \$7500 firm. Eddie Smith, 1762 Moore Rd, York SC 29745. Tel & Fax: 803-684-3425.

FOR SALE - KR-2 60% complete on retractable gear. All RR premolded parts used. Never installed Revmaster 2100-D engine has starter, alternator, oil cooler, engine mount, Posa carb. \$3200. Darryl Krogman, 1406 Kent Way, Friendswood TX 77546. Tel: 800-856-9009, days or 281-332-2718, evenings or email: ghia@flash.net.

FOR SALE - KR-2, N250KB. Flying since 1988 with approx 780 hrs. 1835 VW with custom prop. True 150 mph cruise. Aircraft features an inboard folding, totally enclosed retractable gear, forward hinged Dragonfly canopy, nice instrument panel with moving map GPS. \$14,000 firm. Don Betchan, Route 1, Box 21 A, Perry OK 73077. Tel: 580-336-5954 after 6pm CST."

FOR SALE - KR-2 project, complete thru boat stage. Spars ready for included Diehl skins. Forward deck, cowl for Revmaster, turtle deck (still in included mold), horiz stab and elevator with elec trim motor. Includes foam, ply, firewall steel, aluminum hardware and remaining kit wood. See aircraft via e-mail at robert@castlegate.net. Bob Lord, Telephone 407-636-4893, evenings, 5:00-9:00 eastern time (Cocoa FL). Machine will answer, calls will be returned if no answer. \$2500 OBO.

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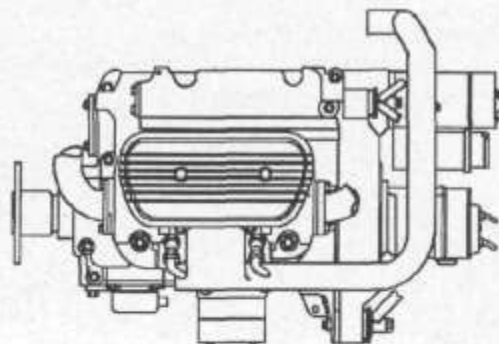
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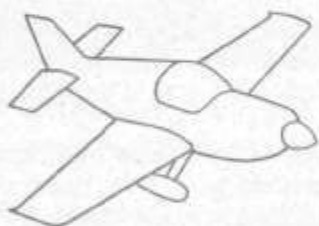
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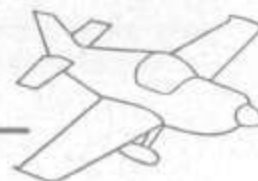
GREAT PLAINS AIRCRAFT



ICFI NEWSLETTER

624 West University Drive
Suite 199
Denton, Texas 76201

Issue 254 August 1998





NEWSLETTER

Perfection Rides 18th KR Gathering *For Three Days, KR World Epicenter in Perry OK*

Snapshot Peek at PenyKosh Hy-In

Full Photo Coverage in Next KR News

From twenty-two states and Canada, the faithful converged on Perry Municipal Airport for this year's eighteenth KR Gathering. Popular Perry was also hosting its annual Oklahoma Land Run celebration along with a multi-year high school class reunion. To say that hotel accommodations were extremely tight would be an understatement. Several KR enthusiasts had to book rooms in Oklahoma City, a one hour drive south.

Outstanding weather graced the entire three-day event. The air was almost too calm on Friday as pilots were frequently able to land in the direction of their choice. Thankfully, a gentle breeze on Saturday kept visitors cool and pilots headed pretty much in the same direction...generally speaking.

As always, the Friday evening hangar party and barbecue attracted a large crowd. The Don Betchan gig is so popular that the majority of the event's attendance is on hand for the free feed! Can't imagine why.

Activities included the usual fly-in short field and spot landing contests, judging aircraft for awards, folks getting a ride in their dream machine, seminars, question and photo opportunities and, for this year's Okie Land Run parade, a fly-over of downtown Perry by a squadron of KR's! It also appeared that there were more local citizens paying a visit to their hometown airport. The locals sure knew we were there.

Check next month's Newsletter for extensive photo coverage of the 18th KR Gathering along with details on who did what. This year's event was the swan song for Don Betchan and Perry OK. Next year, we'll all gather in southwestern Kentucky for the 19th incarnation of our very own KR nirvana.



A portion of the ramp during the 18th KR Gathering.



Are VW engines popular with the KR crowd? That's Great Plains' own Steve Bennett surrounded by an SRO crowd during his engine building seminar.

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

Custom KR Aileron Bellcranks

Design Eliminates Common Complaint

Sam Sayer

6621 Foxmoor Drive • Zephyrhills FL 33541
Telephone: 813-782-3302

The drawings and photographs are of the KR Aileron Bellcranks that will be used on my next KR-2S.

On my original KR-2, the nut from the bottom of the bellcrank protruded through the bottom wing skin, the same as was shown on the KR plans, Book 64 (1984).

For the new KR, I made changes to eliminate this condition.

I purposely used 5052-H32 aluminum for the upper and lower brackets as it can be bent with a sharp radius. 6061-T6 aluminum was used for the remaining components.

Thanks, Monte, for the excellent job you are doing on the KR Newsletter. Hope to see you at Perry.

Sam's KR Fly-In Connection

The line boy for the KR Newsletter was quite thrilled to receive Sam's note, technical drawings and photos of his jewel-like hardware. Only one small problem prevented this article from moving to the head of the class. The instant-camera shots looked like the proverbial "black bear in a cave at midnight"...just would not work out for publication.

A note to Sam requesting some better photos was initially met with no response, that is until Sam came by the KR Newsletter booth at Perry. As he held out a small bag, he said, "If ya want better photos, let's take some now".

From Florida to Oklahoma and return... thanks.Sam, for getting the job done right!

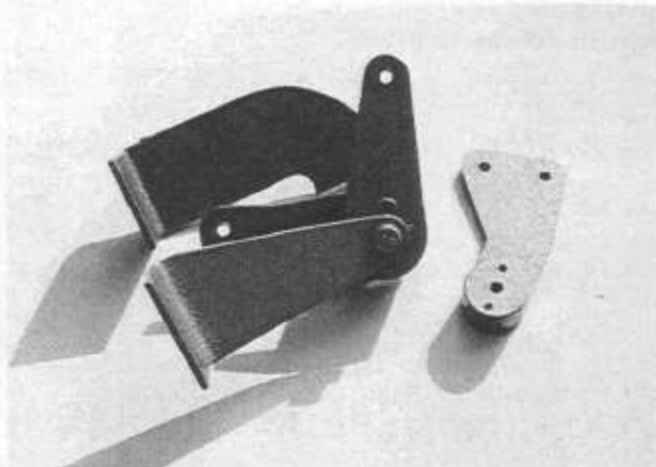
ON THE RAMP

*rumblings, thoughts & observations
from the editor*

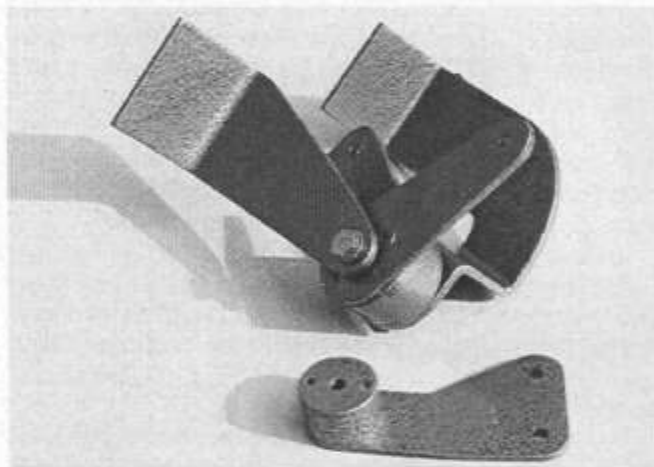
This year's Gathering is over. Air Boss Don Betchan and company have done a marvelous job these past two years. We owe them our lasting gratitude. By the way, in less than a year, we'll all gather in Kentucky for number nineteen. Hey, Dana Overall, are you busy yet?

By now, you've probably read through this issue's article by Floridian Sam Sayer. His technical drawings of a customized KR aileron bellcrank assembly are typical of many KR builders and their efforts to improve the breed.

continued on page 8



Aileron Bellcrank design by Floridian Sam Sayer is an improvement over plans design unit. Although a bit more difficult to fabricate, the component helps clean up the underside of the KR's wing.



Individual part shown is bellcrank arm designed for full pushrod actuation rather than cable - aileron pushrod.

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LOWER SUPPORT BRACKET (AILERON BELL CRANK)

1 MAKE BLANKS.

2 MAKE 1ST BEND, LAYOUT
NEW DIMS. & TRIM.

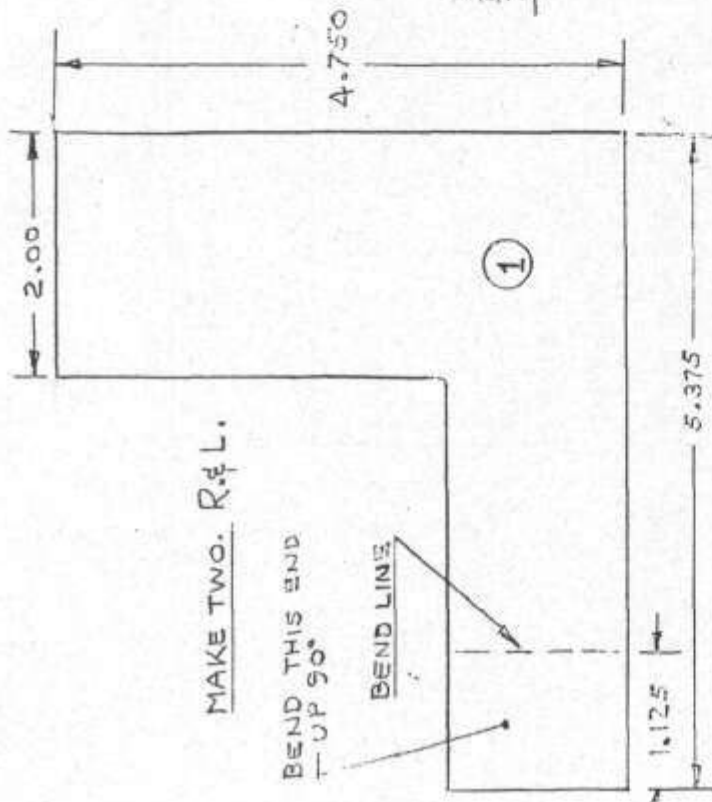
3 MAKE 2ND & 3RD BENDS.

4 LAYOUT NEW DIMS.
& TRIM

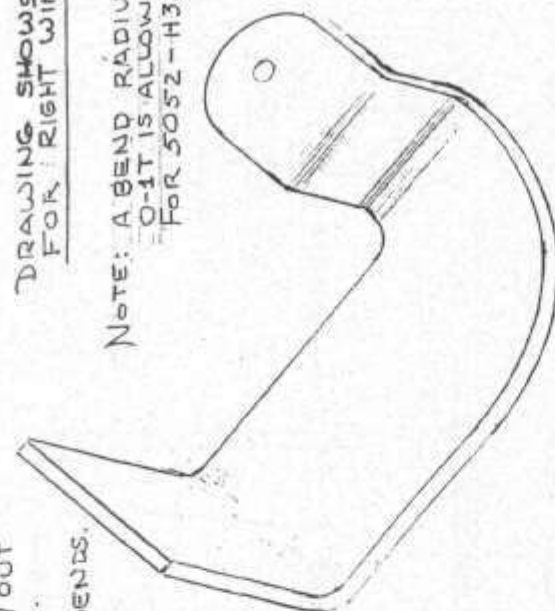
MAKE TWO. R & L.

BEND THIS END
UP 90°

BEND LINE



FLIP VIEWS 1 & 2
OVER TO MAKE LEFT
BRACKET.

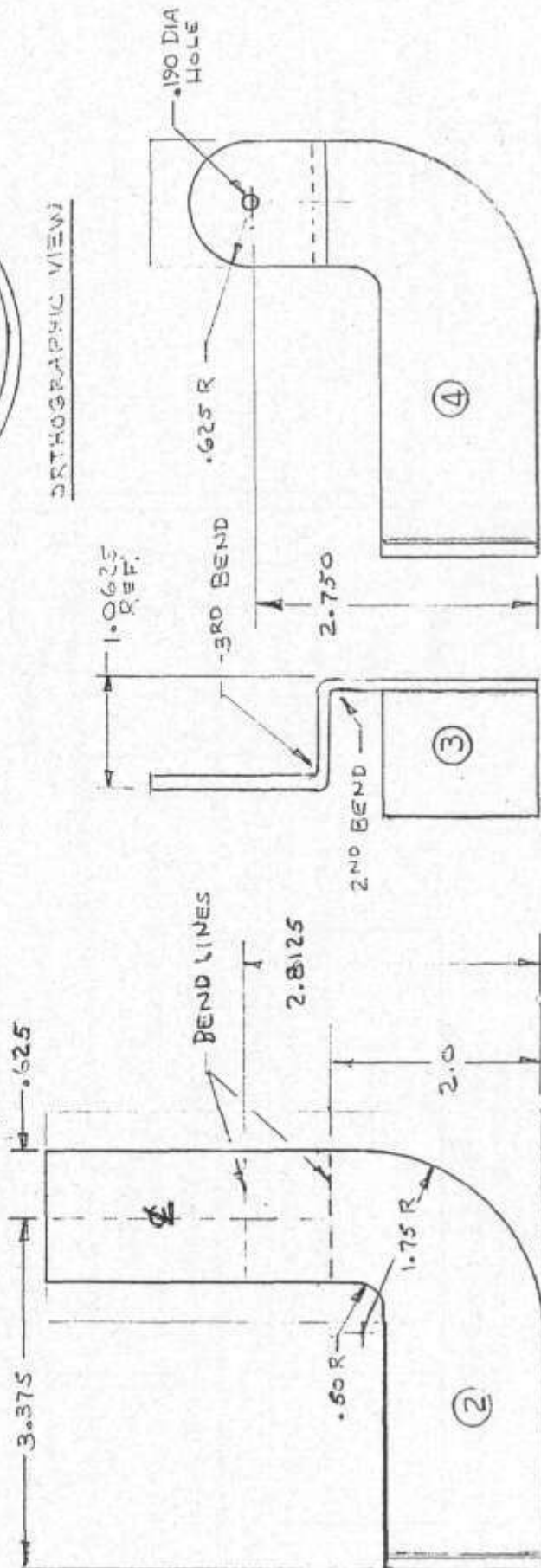


MATL. USED:
ALUM. 125 5052-H32

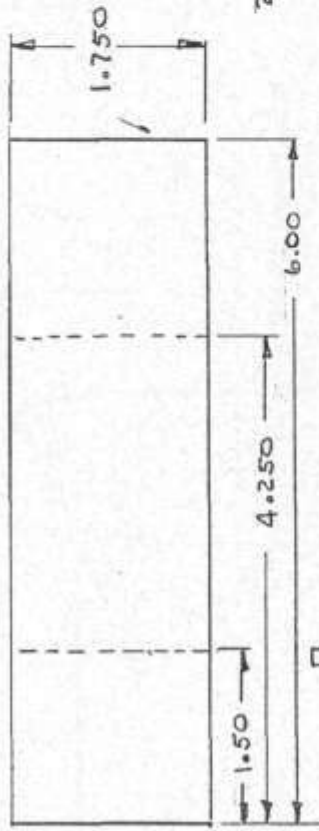
DRAWING SHOWS BRACKET
FOR RIGHT WING.

NOTE: A BEND RADIUS OF
0-1T IS ALLOWABLE
FOR 5052-H32 ALUM.

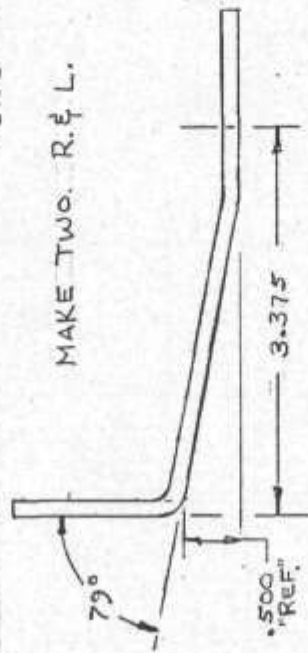
ORTHOGRAPHIC VIEW



UPPER SUPPORT BRACKET
AILERON BELL CRANK

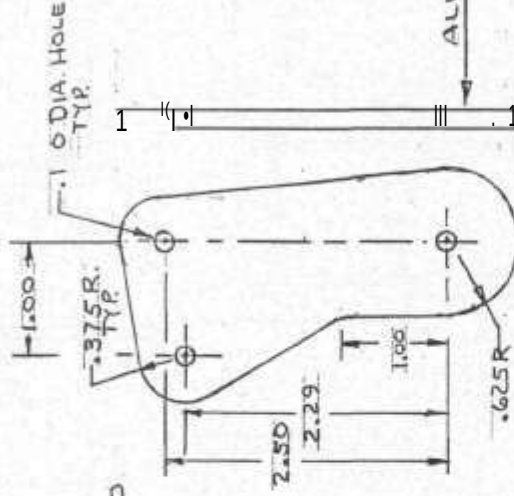


MAKE TWO, R. & L.



MATL. USED
.125 ALUM 5052-H32
UNLESS OTHERWISE
SPECIFIED.

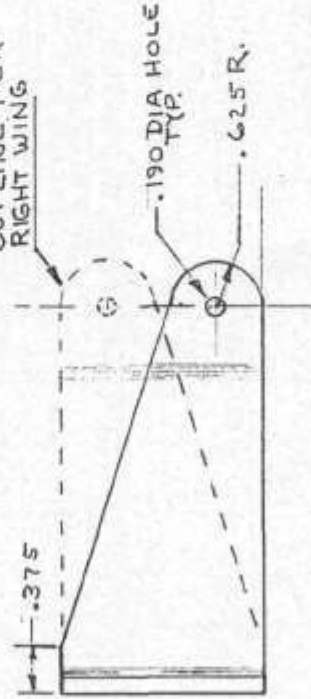
NOTE: TWO OF EACH.



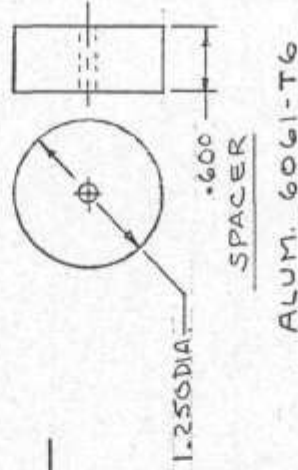
ALUM. 6061-T6

BELL CRANK

OUTLINE FOR
RIGHT WING



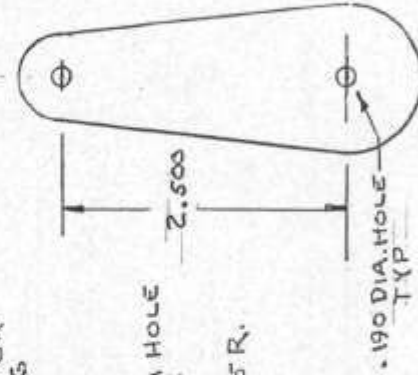
BRACKET FOR
LEFT WING.



1.250 DIA.

SPACER

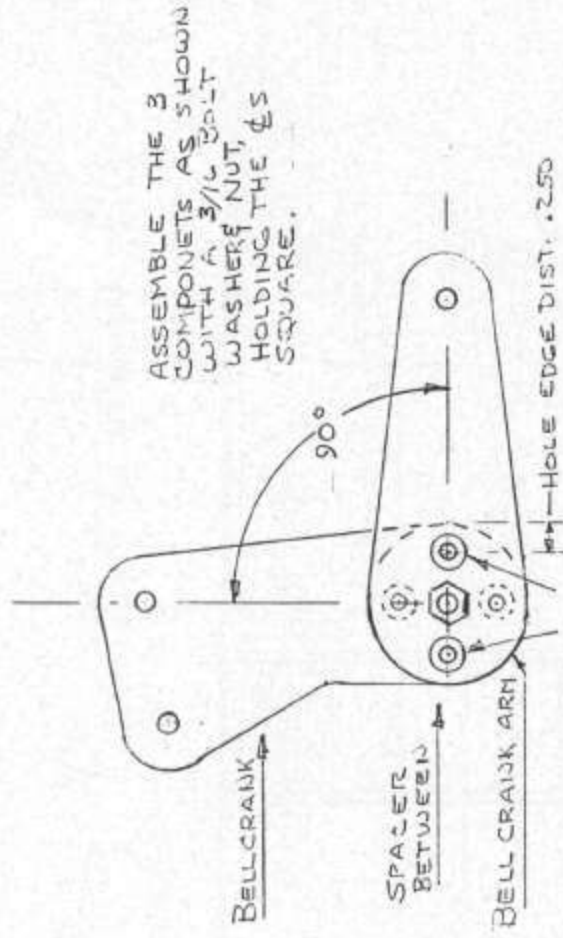
ALUM. 6061-T6



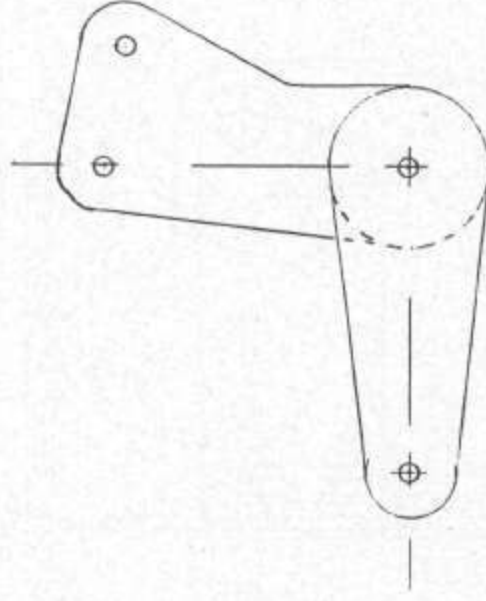
ALUM. 6061-T6

ELL CRANK ARM

ASSEMBLY FOR LEFT BELL CRANK

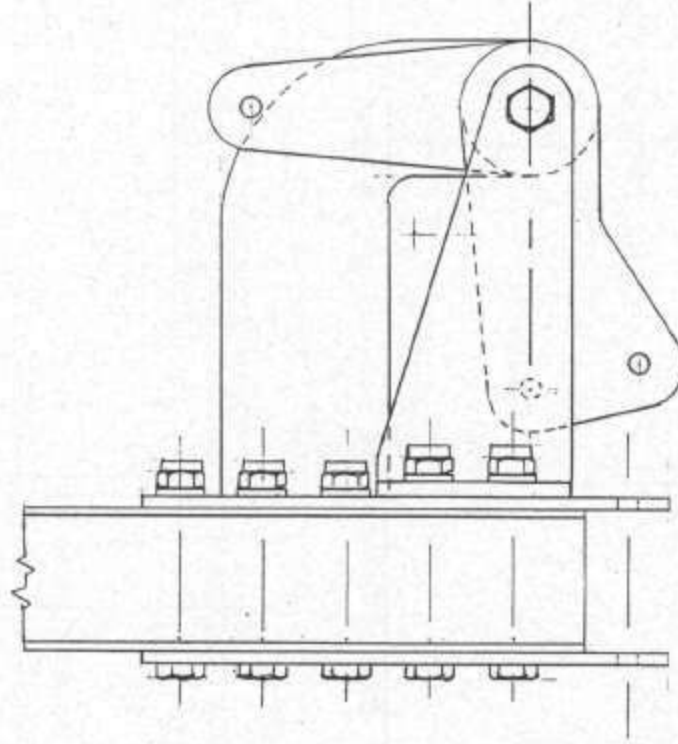


1. (#29 DRILL BIT) DRILL, & SINK & TAP FOR 10-32 FLATHEAD SCREWS $\frac{7}{8}$ LONG, TWO HOLES.
2. SECURE WITH TWO SCREWS.
3. FLIP THE ASSY. OVER & REPEAT FOR TWO ADDITIONAL HOLES.
4. DISASSEMBLE & THOROUGHLY CLEAN ALL PARTS.
5. APPLY A THIN LAYER OF EPOXY BETWEEN PARTS, IN THREADED HOLES & SCREWS.
6. REASSEMBLE USING BOLT & NUT IN CENTER HOLE WHILE ALIGNING HOLES - TIGHTEN.
7. ASSEMBLE THE FOUR SCREWS & SECURE, REMOVE BOLT & NUT, WIPE OFF EXCESS EPOXY.
8. AFTER EPOXY HAS CURED, REAM THE CENTER HOLE (.189 DIA.).

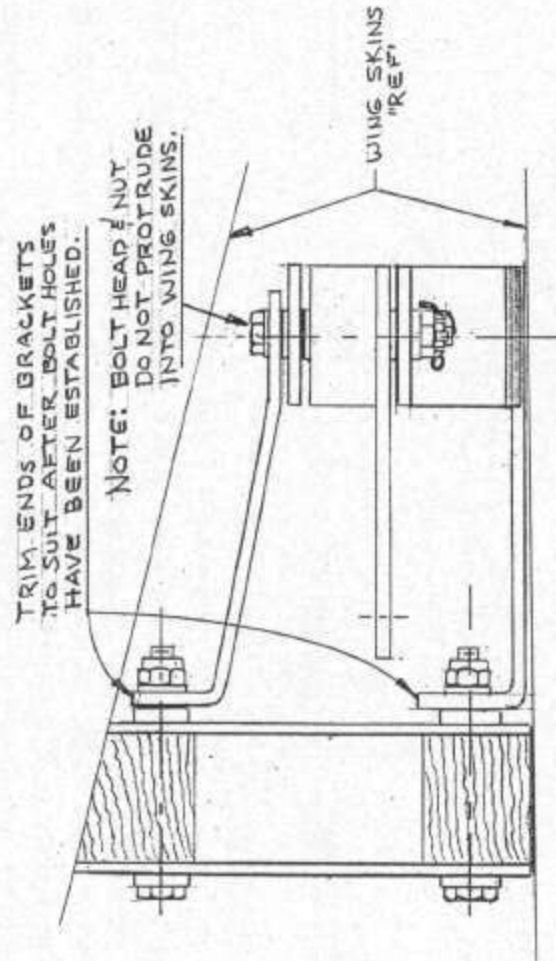


REPEAT SAME AS
LEFT SIDE

A SEMBLY FOR RIGHT BELL CRANK



TOP VIEW OF ASSEMBLY



END VIEW OF ASSEMBLY

LEFT END

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FOR SALE - KR-2S. Diehl tri-gear with instructions, new in box, \$700 OBO. R-R Group 1 pkg: Spruce, ply (80%), wing attach fittings, \$700 OBO. Dave Root, Box 1978, Edgartown MA 02539. Tel/Fax: 508-627-7480.

FOR SALE - KR-2 with 14" stretch. Boat stage on retracts. Dragonfly canopy, dual controls, turtledeck mold. Spars complete. Diehl wing skins. Foam, cowlings, etc. GPASC 0-time 2180, 5-point mount, prop and spinner. Ellison throttle body, Diehl case and alternator and 4-into-1 exhaust. Usual excuses. \$7500 OBO. John Mander, POB 122, Sprague River OR 97639. Telephone 541-533-2388 or aridell@aol.com.

FOR SALE- KR-2S, Boat stage. Birch ply, spars started. All spruce to finish, full set plans, newsletters, internet downloads, pictures, KR Gathering tapes. \$950. Project located north of Seattle WA. I have no time to build. Bruce Toscano 425-806-8072.

KR Classifieds Work
Place *your* ad in the "MegaMart" for
KR goodies. The ad's free.

OX THE RAMP *cont:*

Recently got a call from a reader inquiring about his subscription expiration date. He didn't want to miss an issue. I try not to be overly repetitious but I'll again toss out the format used to track your renewal.

The three-digit number in the top-right corner of your mailing label is the last issue of your current subscription. Check the cover page to confirm the latest issue number. Subtract little number from the big one, carry the nine, multiply by the month and...well, you get it.

Also, each subscriber will receive two month's worth of renewal notices tucked inside the KR Newsletter as your sub winds down. I know how busy you folks are.

Speaking of busy (neat segue, huh?) ...The last two issues have been a bit late due to, can you guess?, a lack of contributions. Much like the renewal codes, I hate to be a nag but this is a reader-driven publication and without the support of our helpful builder/enthusiasts there can be no KR Newsletter.

The common response, when I ask for an article, is that, "No one would be interested in what I'm doing. It's been done before." Really? There's always people interested in how you may have accomplished a task that

they are about to undertake. Reassurance and the act of simple encouragement can often make the difference in a project's continuation or cancellation. Same thing goes for this newsletter. How about it, readers?

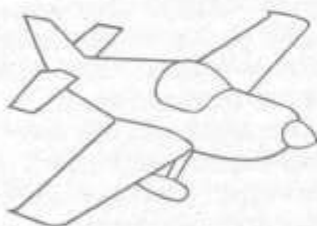
By the way, Steve Bennett, of Great Plains fame, strongly encourages using only wooden props on VW conversions. Historically, other materials can lead to the failure of the prop, prop hub or the crankshaft due to reasons far too complicated for my feeble mind.

A recent EAA gathering turned up a pilot who had just flown in with his 1835 turning composite blades held in an aluminum hub. A friend noticed a cracked hub after the prop wound down. The lucky pilot drove home.

According to Steve, it's not *if* you'll have a failure, it's more a matter of *when*. Definitely something to consider.

KR NEWSLETTER

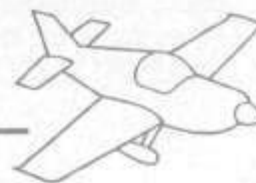
Serving the Builder Pilot & Enthusiasts



KR NEWSLETTER

624 West University Drive
Suite 199
Denton, Texas 76201

Issue 255 September 1998





NEWSLETTER

Remembering the 18th KR Gathering

Faithful Join for Flying, Food, Fun n' fellowship



1998 KR Gathering • Grand Champion KR2 • Bobby Muse, Wimberly, Texas

In attempting to find just the right adjective to describe the Bobby Muse tri-gear KR2, the word *elegant* continues to emerge. Muse, the younger, has been a strong supporter of the design having been schooled at his father's knee. A solid aircraft, executed to near perfection, 122 Bravo is a fine example of the classic KR design. Bobby has won many fly-in awards for his craftsmanship but as he stated during the awards dinner, "This is the one I've always wanted". A popular win.

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

Images and Memories of PerryKosh '98



Les Palmer and his Subaru-powered, single-seat, stretched KR won the *KR News Publisher's Choice*.



On the back side of forty, Scott Jeffrey (in hat) won for being the *Youngest KR Pilot* at this year's event.



Cal Campbell won the *People's Choice Award* in spite of Steve Bennett's advice about a mysterious "oil leak".



Martin Roberts did yeoman duty by providing rides for all comers. Receives unofficial *KR Iron Man Award*.



Bob Muse, perennial winner of the *Oldest Pilot Award*, did it again this year at the 18th KR Gathering.



Don Betchan chats with KR builder John Gregory and his charming wife Carolyn from Dripping Spgs, Texas.

PerryKosh Post Script

Perhaps the planets were properly aligned or all 'em biorhythms were in sync or per chance it was simply the fine people and great weather... At any rate, this year's 18th KR Gathering & FlyIn was a rejuvenating, relaxing, motivating and exciting event.



John Gregory photo

Morning calm on the Perry Muni ramp. Early arrivals and hangar setup begins an exciting KR Gathering.

Friday arrivals spent the day renewing friendships and checking out each other's aircraft. With the excellent WX, there were frequent fly bys which drew spectators out of the hangar. An outstanding photo op day. Truth be known, most everyone got to Perry Municipal early so they could reserve a front row starting spot for the run on the evening's huge barbecue dinner! For the second year running, Texan Randy Smith, pilot of the yellow Tweety Bird 197RS, showed all that he is still pretty fleet of foot. Randy se2 he was simply volunteering as the quality control engineer.



Jim Faughn, 891JF, provided the evening's hangar entertainment with his original song, "We Are Flyers". The consensus, even by those wearing their Beer Goggles, was that Jim Faughn is one fine troubadour.

All weekend, Cal Campbell was busy telling anyone who'll listen to him about how clean his KR's engine and under cowl area is. "Not a drop of oil, no misty blow by, clean enough to eat off of...blah, blah, blah." By Saturday pm, some of Cal's buddies are getting just a wee bit tired of old Mister Clean, so a plan is hatched.

WingSkinner Dan Diehl locates some used and truly nasty motor oil. A small amount of this gunky mess is dripped off Cal's lower cowl and onto his pristine nose wheelpant with just a little bit to puddle on the hangar floor. We all sit back and wait.

The Perry crowd is much like that at Oshkosh. Folks pick up trash even if it's not their own. A tidy bunch that keeps the grounds looking good. Hey, we had a good sam at Perry who located a rag and mopped up Cal's oil! Plan B requires that Cal be distracted long enough for Dan to replace the "oil leak".

By this time, everyone is in on the gag...except Cal. By the time he sees his "problem", our VW guru Steve Bennett goes to work on him. "Might be a rear seal. You need to pull the cowl and check it", sez Steve.

Ultimately, the cowl does come off but Clean Cal is about wise to the gag. Guess it was all the chuckling people, cameras and video surrounding him.



Steve Bennett (left) and Cal "Mister Clean" Campbell. "I dunno, man. It looks like it could be pretty serious."

Kansan Randy Clark, 151RC, flew from Salinas sans a place to lay his head and planning to sleep...? The KR News editor felt sorry for the railroad engineer and offered his extra bed at the Cherokee. First thing Randy does when we get there is use his eel phone to call his wife, telling her, "Hey, I met this guy and he takes me to a motel." Long explanation follows. Thanks a lot, Randy.

When an event of this nature goes off smoothly and everyone enjoys themselves, it's most often because someone did a job on the advance planning. Again, Air Boss Don Betchan, his family and a score of volunteers gave of themselves so that we could all enjoy PerryKosh. Thanks, Don. You the man!

Next year, it's on to Kentucky. Stay tuned for details.

More KR Gathering Memories...



The Iron Man himself, Martin Roberts graciously spent most of his weekend single-handedly satisfying people's need for speed. This guy is amazing!



Ya gotta be present to win... The Unofficial Youngest KR Pilot Award goes to early departure Dan Denig of Mineola, Texas. The aircraft looks familiar because it's the former mount of KR driver Max Calkin.

* * * * *

"Twin Prop" KR2

The editor's weekend "roomie", Randy Clark, flew in with an interesting KR2. First flown in 1986, the aircraft is powered by a GPASC 1835cc Volks. Sparks come from a magneto and distributor dual ignition system. A 52x44 prop, Diehl gear legs, cable actuated mechanical brakes,

a detachable forward deck and a wind-driven alternator round out Randy's "Armstrong starter" aircraft. You say what?...a wind-driven alternator?

Buried in the left wing root is an 8 amp alternator driven by a four-blade, laminated propeller. Randy reports that the system powers all his aircraft system with no noticeable degradation in flight performance. Prop wash and slipstream keeps the little prop turning.

The KR News promises to pester Randy for further information on his "twin prop" KR.

•HF

* y/i



Access to the 8 amp, wind-driven alternator in Randy Clark's KR2 is through an aluminum access plate on top of the wing's center section.

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KR Checkbook Confessions

Guys, Don't Show This to Your Wife!

Jeff Bryson
9017 Hemingway Place
Bakersfield CA 93311

I just finished KR Newsletter #254. Another job well done...thanks. Each time you talk about needing articles, I get that guilty feeling.

I have no new photos but I have been making a lot of progress this summer on 949JB. I sanded and filled most of the last three months. I purchased the new KR-2S streamlined cowling from R-R. Boy, what a beautiful addition to an already sleek looking design. I said sleek, not slick. I am tired of sandpaper and all that goes with it.

Back to the cowling. Due to my *assuming* ways, things are getting in the way of reality. I was looking forward to finally being able to buy a pre-made part and installing it unmodified. *Hahahahahaha....*

First, the 4-1 exhaust was in the way. No problem, just trim a little here and there. After all, I have to have a way for the cooling air to get out. Oops, the Rev-Flow injector hangs down too far. Again, no problem. I'll just cut here and there. Uh oh, now the Rev-Flow carb heat won't fit.

Finally, I've hacked most of the bottom away but the lower cowl fits. Hey, wait a minute. Why is my prop hub 1.75" back inside the cowl? No problem, I'll just buy a prop extension. Besides, what could a simple 2.75" extension cost?

Well, first off, I couldn't find anyone that could or would build one for me. I tried GPASC, Revmaster, Aircraft Spruce, Rand-Robinson, Dan Diehl, Ron somebody and Don so n' so. Remembering my high school mechanical drawing classes back in the fifties, I drew up some plans, located some 2024 round stock and found a machine shop in Bakersfield that would turn it for a total of two-hundred and ninety-five big ones. The cowling looks so good, I'm sure it'll be worth it.

Now for the top half of the cowling. Remember, I'm the smart guy that didn't want magnetos. Just an old-fashioned Bosch system for me, right? Now, that gorgeous top cowl has a bump on it to cover a distributor that *appears to be* four feet high! Boy, do I learn by trial and error. I knew the ignition stuck up above the engine, but four feet?

I told my wife that we are going to The Gathering but as you can see, the price for the trip just about equals my checks to the machinist and Ed Sterba. Maybe next year we can fly our own to the event. Sure would be nice to see some KR's up close and personal. Perhaps I could have avoided the mistakes I've made...

Time, Time, No Time

Think You're Busy? Read This

Ed McGowan
2306 West Frank • Lufkin TX 75904

Greetings from the Deep East...Texas. Saw a couple of finished KR's listed in the newsletter. Thought I was going to have some time, but am seeing 50+ patients a day, then spending 'til 10:00 o'clock each night and weekends in this residency. That equals "0" time for fun things.

What about buying a pre-made KR? How does one go about checking on the quality of construction (having it done)? Since I just can't pull off the flight way and park on a cloud, get out and check something if there is a failure - I need to really be sure the ship's well constructed.

Assuming I buy a prefab, who can check me out in the aircraft? I understand these ships are quick on the controls. Any thoughts will be much appreciated.

Enjoy your newsletter. I ran a crop dusting firm in my youth; medicine is an afternoon of my life adventure. So far, I love it next to: 1) flying, 2)geology and, 3)good coffee.

Build... or Buy Your KR?

Ed McGowan's letter brings up some interesting questions regarding the purchase of an existing or partial project aircraft. Just how do you keep from buying the proverbial pig-in-a-poke?

In my opinion, the way to protect your interests would be to find someone who knows a lot more about the aircraft than you do. The initial pre-buy inspection should be done with your agent.

Locating a knowledgeable individual is not that difficult. Your local EAA Chapter is the first place to look. For the KR designs, expanding your search is as simple as contacting a builder or pilot near your potential purchase. The KR News editor can assist.

EAA National's Member Services can also help locate nearby EAA members who might assist you with an initial inspection of a distant aircraft. This technique worked for a former KR pilot who found an A&P EAA'er who inspected a Taylorcraft, gratis.

As to a flight check, the editor has his own ideas but how about some of you readers sharing your thoughts? Let's get a dialog going on this topic as it's something that would be quite helpful for many builders approaching their first flight.

This Reader Has a *Couple* of *Homebuilt* Projects

Mark S. Jones

2710MeadowbrookRd. • WaukeshaWI 53188

Telephone 414-542-9561

I purchased my plans for the KR-2S last March (serial number 886) and received my box of spruce and plywood from Wick's on March 23rd. To date I have completed all the major woodwork and have installed most of the control system hardware. The building process has gone amazingly smooth. I credit this to my building countless control-line and remote control aircraft from the young age of twelve.

The only problem I encountered was in trying to taper-cut the outboard wing spars on a table saw without using a jig. My advice on this is to do not even attempt it. Cost me an extra two hundred in new spar stock from Wick's. The jig cost me about ten bucks to make.

I was very fortunate in locating a gentleman who was parting out a KR and acquired many needed parts along with almost a complete set of KR Newsletters. After reading through all of the letters, I have acquired many useful tips and ideas. I must credit the newsletter for the information it provides us.

For us builders with a wife and family, I feel we need to extend a special thank you for their patience and tolerance. For those of us who have a baby (another is on the way), have you ever heard your wife say, "Honey, could you please come in from the garage and rock the baby?" Well, I have and for the rest of you that have and

are obsessed with the KR as I am, here is my version of a song that will put your baby to sleep. By the way, this is the only one that works with my one-year old son. I wonder if that's because he is destined to be a KR pilot.

Of course, you can see a lot of time and effort went into writing this and believe me, my wife wishes I knew at least just one other lullaby to sing. I just can't seem to bring myself to sing anything else to my son. Why would I want to deprive him of this wonderful KR world? By the way, he spends a considerable amount of time with me in the workshop now that he is walking. I could not ask for a better helper.

The KR Lullaby

Hush little baby don't you cry
Daddy's building you an airplane.

*Hush little baby don't you cry
Daddy's building you a KR-2.*

Hush little baby don't you cry
Daddy's gonna teach you how to fly.

*Hush little baby don't you cry
Daddy's gonna show you around the sky.*

Hush little baby don't you cry
Daddy's gonna make you a pilot some day.

*Hush little baby don't you cry
Daddy's gonna show you how to play.*

- Mark Jones

ON THE RAMP

I really enjoyed putting together this issue of the KR Newsletter. Reviewing the year's Gathering photos and notes brought back quite a few smiles. Hope that everyone enjoyed the event as much as I did. Thanks to builder/pilots Sam Sayer (FL) and John Gregory (TX) for their help and to all the friendly folks who stopped by the KR News display booth.

The UPS guy rolled by last week and dropped off a new propeller for the Pietenpol that is taking up most of the space in the KR News World Headquarters hangar. When the prop is snugged down and tracked, we'll move to the FAA sign off and go flying...maybe in November. Anyway, I'd like to give a plug for the prop carver who completed my stick in just over two weeks time.

Most homebuilders are aware of the many designs from Leon Davis. Think V-tail. Most all have been featured in various aviation mags and his current little record-setter was featured on the Discovery Channel's program Extreme Machines. Leon's son, Harold, is a talented A&P actively involved in warbird and classic rebuilding plus he is the owner of Aerotec Propellers.

My search for a prop netted several unreturned calls left on answering machines, long delivery estimates and a few horror stories from local EAA buddies. The first call to Aerotec resulted in an offer to glue up the prop blank the next day and deliver in two weeks. After discussing weights, speeds, engine and the projected performance envelope, I mailed Harold a check. Good to his word, a beautiful laminated-maple airscrew landed on my workbench as promised.

Aerotec builds props for many high performance aircraft, like KR's, so builders might want to get Harold's input on their needs. I can sure vouch for his workmanship and business integrity. I believe you will also be well treated.

Contact Harpold Davis & Aerotec Propellers at 915.685.0867, 1002 Chukar Ln, Midland TX 79706.

As the holiday season approaches, permit me to wish each reader and their families a safe and Happy Thanksgiving.

KR CLASSIFIEDS

Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial style ads will be billed accordingly prior to publication.

The KR Newsletter reserves the right to edit free ads.

WANTED- Builder's Manual and plans for KR-2. Originals lost. Contact O.K. Boettcher, 105 West Circle Dr, Blue Earth MN 56013. Tel evenings 507-526-2586.

FOR SALE - 24" stretched KR-2. Subaru 100hp with 1.69:1 redrive. Sterba 60x66 race prop. Electronic ignition, fixed-gear tail dragger with 32 gallon fuel tanks. Dragonfly canopy, flaps, 500x5, Cleavelands, taxi, landing, nav and strobes. Inst panel loaded. Price reduced to \$21,000. Details, contact George Huber at 817-261-3572.

FOR SALE - MAPI Engine, Magnum 75. Purchased new in 1984, never installed. 1835cc with 75hp, sodium filled valves, hyd lifters, dual electronic ignition, Posa carb, tuned exh, engine mount, all engine instruments in quad & dual configurations. \$4000 plus shipping. Original KR-2 retract gear also available. Call Rick at 510-426-9525.

WANTED - KR-2S cowling to fit Continental O-200 on a Rand factory mount. Contact with price to W B MacMillan, 1724 England Ave, Everett WA 98203. 425-353-9589.

FOR SALE - KR-2S Project. Mahogany ply boat stage on conventional gear with spars completed. Must move and can't take it with me. I'll throw in lots of parts, hardware & tools for the first \$3000. Lloyd Stearns at 512-244-7537, 512-838-0761 or stearn@ix.netcom.com.

FOR SALE - KR-2 fiberglass cowling \$400. Make offer on KR standard retract gear set. W. Janoski, 14123 East 122nd St, Collinsville OK 74021. Tel. 918-371-5846.

FOR SALE - Set of unused KR-2S plans. \$200, includes shipping. Mark Joiner, 817 Alma Lane, Kingston TN 37763. Tel. 423-376-3628.

FOR SALE - Retract gear for KR-2. New, never used. Make offer. **WANT** new or gently used KR-2 canopy and frame. Dennis Steed, POB 9013, Salt Lake City, Utah, 84109. Tel/Fax 801-487-3730. E-mail kenikas@aol.com.

FOR SALE - KR-2, N85ES. Signed off but never flown. Revmaster 2100-D with Almost Constant Speed prop. Full instrumentation. Polyurethane paint (white with red and black trim), Terra TXN-960 plus PTT, retracts and Lamb tires, Posa carb. Trailer included. Too many interests at present. \$7500 firm. Eddie Smith, 1762 Moore Rd, York SC 29745. Tel & Fax: 803-684-3425.

FOR SALE - KR-2 project, complete thru boat stage. Spars ready for included Diehl skins. Forward deck, cowl for Revmaster, turtle deck (still in included mold), horiz stab and elevator with electrim motor. Includes foam, ply, firewall steel, aluminum hardware and remaining kit wood. See aircraft via e-mail at robert@castlegate.net. Bob Lord, Telephone 407-636-4893, evenings, 5:00-9:00 eastern time (Cocoa FL). Machine will answer, calls will be returned if no answer. \$2500 OBO.

FOR SALE - KR-2, boat stage, \$400. New set of KR-2 plans \$100. Bobby Whisenant, Rt 1 Box 637, Chireno TX 75937. Tel: 409-854-2644 or e-mail to bpc@lcc.net.

FOR SALE - 1835cc Volkswagen engine with prop and spinner. Contact Harvey Salevski, 11856 West Waterford Ave, Greenfield WI 53228. Tel: 414-543-4132, Fax: 414-543-1289.

FOR SALE - KR-2S. Diehl tri-gear with instructions, new in box, \$700 OBO. R-R Group 1 pkg: Spruce, ply (80%), wing attach fittings, \$700 OBO. Dave Root, Box 1978, Edgartown MA 02539. Tel/Fax: 508-627-7480.

FOR SALE - KR-2 with 14" stretch. Boat stage on retracts. Dragonfly canopy, dual controls, turtledeck mold. Spars complete. Diehl wing skins. Foam, cowling, etc. GPASC O-time 2180, 5-point mount, prop and spinner. Ellison throttle body, Diehl case and alternator and 4-into-1 exhaust. Usual excuses. \$7500 OBO. John Mander, POB 122, Sprague River OR 97639. Telephone 541-533-2388 or aridell@aol.com.

FOR SALE - KR-2S, Boat stage. Birch ply, spars started. All spruce to finish, full set plans, newsletters, internet downloads, pictures, KR Gathering tapes. \$950. Project located north of Seattle WA. I have no time to build. Bruce Toscano 425-806-8072.

FOR SALE - KR2S spruce kit, \$500. Also a 2.2L Subaru Legacy engine for \$1500. Contact Wesley Tomikoshi, 2449 Park Rose Ave, Irwindale CA 91010. Telephone 626-303-3477.

RAGWING NEWSLETTER

Enthusiasts of the many replica lightplane Exp's and ultralights from RagWing Aero now have available a newsletter published by the editor of the KR News. Flight reports, tips, ideas & photos with each issue.

\$15.00/yr

RagWing Newsletter

624 West University Dr Ste 199, Denton TX 76201.

It's not too early to begin planning for your visit to the
19th Annual KR Gathering and Fly-In

tentative date is

September 24-26, 1999

Lake Barkley (KY) State Park

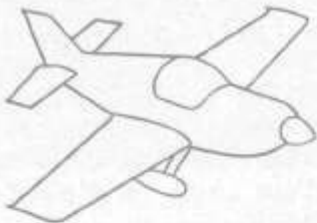
(located Southwest corner of state across lake from Kent Darn State Park)

Airport identifier 1M9 • 4000x100 asphalt • 570 MSL

Facility offers a modern lodge with 88 rooms plus 8 2-bdrm cabins. Air Boss Dana Overall reports that the facility *will not* accept reservations more than 60 days prior to event. Room blocks for the event are being arranged by the organizer and he requests that attendees not contact the lodge management prior to this time.

for further information

Dana Overall . 606-369-3156



KR NEWSLETTER

624 West University Drive

Suite 199

Denton, Texas 76201

Issue 256 October 1998





NEWSLETTER

KR's Launching Coast to Coast *First Flight Reports from New York & California*

Jeff Bryson & N949JB Take Off in California

Lightweight KR2S shows its performance during initial flight hours. Share in Jeff's excitement, with the typical Bryson humor, beginning on page two of the KR News.

Howard Trampenau & N23HT Buzz New York

Stretched KR2 single-seater takes off into aviation's rich in history Elmira sky. Fly along with Howard as he nails his first ever KR landing. Photo and story all on page three.



The Jeff Bryson KR2S, N949JB, Bakersfield, California

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Jeff Bryson Launches His KR2S *Lightweight Aircraft Dazzles*

Jeff Bryson

9017 Hemingway Place • Bakersfield CA 93311
Tel: 805-665-9449 email: jbryson@lightspeed.net

The FAA signed off N949JB on the 24th of October. You all are correct when you say it is a big day. I couldn't have been happier. When the inspector got done and the paperwork was complete, I came down off Cloud 9.

The FAA inspector spent three hours and used up two flashlights. The only gig was a request to re-safety the prop hub.

I had an oil leak at the back of my self-built Great Plains 2180. I pulled the engine, installed a new seal, reinstalled the engine, started it and observed the same oil leak. Well, you guys remember me...I'm the one who puts off most things until later. Maybe now I should call Steve at GPASC.

Steve suggested that I check the dowel pins at the rear crankshaft to flywheel junction. If they are too long, says Steve, by even a single thousandth of an inch, they can cause a problem.

I pulled the engine, again, and removed the gland nut, slipped off the large washer, turned it around and, presto!...the washer showed four very tiny indentions where the pins were hitting and not allowing the gland nut to fully secure the flywheel to the crank. Filed off a very small amount from each pin, re-secured everything, reinstalled the engine, started it and Whoopee!, no leak.

I then began my ground work. I ran up the engine and taxied the airplane. I leaned the RevFlow by 1.5 turns and checked everything at high RPM. With the wheels chocked, I did everything but get it off the ground.

I contemplated a high speed pass down the runway with a brief lift-off and an immediate landing. I then decided that all the runway behind me wouldn't do me any good so I went for it.

WOW! What a plane. That 2180 and an empty weight of just over 520 pounds made this rocket jump off the ground. Now then, I know that the first liar doesn't have a chance, but MY plane indicated 1200fpm rate of climb at 100mph and SOOOrpm. I leveled off at 3000 feet and pulled the throttle back to 2900rpm. She showed 165mph. I twisted it back up to 3000 revs and got close to 180. I have not, to date, gone past SOOOrpm for these first four hours. My new calibrated instruments have not been checked against a GPS and I don't think they ever will be... Chuckle.

Ed Sterba built me a 54x50 race profile prop and I am very, very pleased with it. I'm getting ready to send pictures of my KR to the magazines.

To all of you that are building, don't give up. The end result justifies all the hours involved. Hope to see some of you in the near future.

Editor's note: It will be near springtime before the magazine lead times allow for Jeff's hero shot. Ya'll saw it way early in the KR News!

Readers of the KR Newsletter will recognize Jeff Bryson from his previous contributions. Always written with a lively sense of humor, Jeff's articles speak to each of us as we build, then rebuild, make a few false starts and generally try to reinvent the wheel during the course of constructing an aircraft.

Thanks, Jeff, for reminding us that our sport is supposed to be fun. Now go out and fly that bird, then send us a note when your knees quit rattling!

KR FlyIn Awards Correction

It's hell getting old! Granddaddy used to say that he had outlived certain parts of his anatomy. I'm not quite there yet, but sometimes I forget stuff. Must be that new mental health problem that's been in the news...CRS. It's supposed to stand for Can't Remember S_____.

Anyway, at least *one* reader remembered the rowdy awards banquet at the KR Gathering and called to correct me on the awards listing. Cal Campbell, from Broken Arrow OK, received the award for Grand Champion with his beautiful KR2. He also scored the Craftsmanship Award which is a combined Best Engine and Best Interior judging. The award for People's Choice went to Bobby Muse, Jr., Wimberly TX, and histri-gear KR2.

These two gentlemen have enjoyed a neck n' neck competition for these awards at several flyins. This was the first time that Bobby picked up the People's plaque.

Apologies to these two fine builder pilots. Their aircraft are both outstanding examples of the design and, rightfully, deserve all the attention they receive.

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The Howard Trampenau KR2, N23HT, Elmira, New York

FirstFlight *Around the Patch and a Greaser*

Howard Trampenau

924 Scio St • Elmira NY 14901

My KR2, a stretched single place, has made its first flight and it was very successful.

The initial test flight was shortened to a trip around the pattern due to a suspected oil pressure problem. Later, Steve Bennett, of Great Plains Aircraft Supply, was very gracious with his help in correcting the problem with my 1835 VW.

Take off was at 60 mph with climb out at 80. An altitude of 1200 feet was achieved quickly and the speed increased to 120 mph as I turned downwind. It was then time to throttle back and set up the landing.

A set of Chocks for "Tee Wee"

Skip Garden

POB 15388 • Durham NC 27704

I recently purchased Don Betchan's KR-2 and soon realized that with such a small airplane, I would need to re-think many old habits. In fact, the folks at my airport have named my KR. It is now affectionately known

Across the fence at 70 and N23HT greased on a three-point landing. I'm looking forward to next summer's flying.

The control system in the aircraft utilizes a push rod method for the elevator and ailerons. Ball bearing connections are used throughout. It is simple and very easy to construct. I plan to submit my ideas for the newsletter and would like to know if you prefer black and white or color prints.

Thanks for a great KR Newsletter.

Editor's Response: Congratulations, Howard, on the launch of your beautiful KR2! Your flight report will do wonders toward encouraging other builders.

Advances in modern print production have pretty well ruled out the old-fashioned need for black and white photography. Color prints are fine and dandy so send along that control system article and we'll feature it in an upcoming issue of the KR Newsletter. *Thanks.*

as "Pee Wee". The first thing that I became aware of was that the small wheels just do not lend themselves to standard, run of the mill chocks which are almost as large as my wheels.

Another consideration is weight. We all know that weight is the one thing we want to keep at a minimum in a KR. I use my KR for a lot of cross country flights so I want

continued on page 4

A reader contacted the newsletter inquiring about a schematic for an electrical trim system adaptable to the KR. Research of back issues turned up a few ideas. All are worthy of a second exposure.

From KR Newsletter No. 18, December 1976

Electric Trim for Your KR? Why Not?

Some Notes To Get You Started

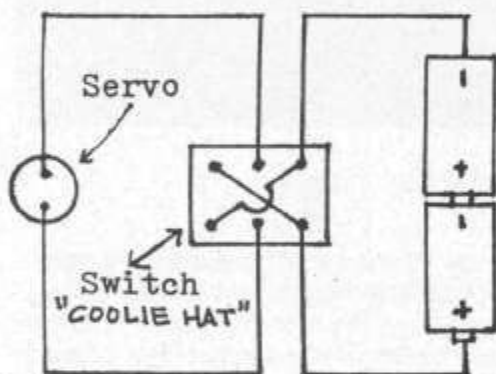
Bror Faber

Use the landing gear retract servo manufactured by Carl Goldberg, Inc. This servo has heavy duty gears and is self-limiting to 155 degrees of travel. It has built-in limit switches.

Mount servo with aluminum angle, attach to 3"x3" piece of 3/32 plywood. Epoxy entire unit to inside skin of control surface.

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

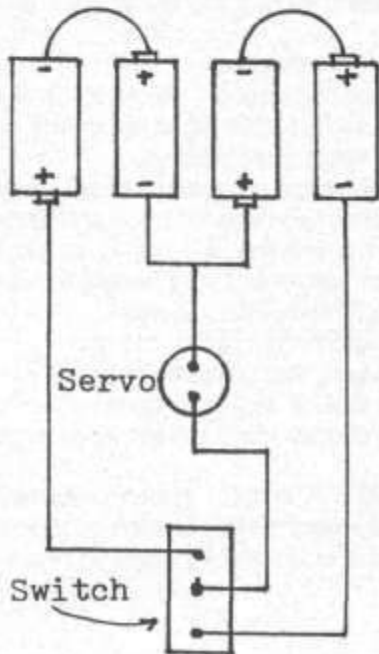
Trim tab control horn should be mounted to 3/32 ply. Use 2-56 screws and epoxy into the trim tab. Hinges, control horn and pushrod are standard RC model hardware.



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

Batteries are C or D alkaline cells giving many hours of flying service

before replacement. Wiring is 18 ga. double insulated.



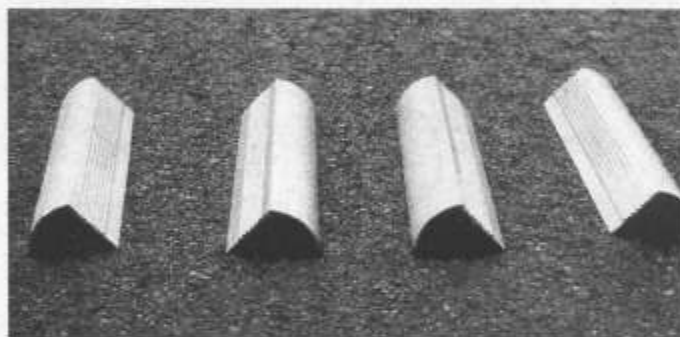
This diagram uses the more common single-pole, spring-loaded, center off toggle switch found on many control sticks.

Pee Wee's Chocks, cont. from pg. 3:

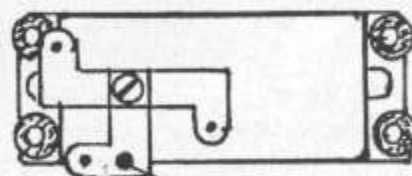
to be able to carry a set of chocks with me that were light, small and effective.

After a lot of searching, I found the perfect set of chocks for "Pee Wee". They are light, small and very effective. What I found was an aluminum extrusion that is used to cover step risers. The material is sold in almost any hardware or building supply store. It is light and very sturdy. The unique shape actually digs in if any pressure is exerted on the flat portion of the material. They can be nested together and secured with a large rubber band (available at the Post Office for free!) and you have a set of chocks that require a minimum of space, are lightweight and very effective. Best of all is the price! A three foot length sells for less than \$10.00 and is enough for six, six-inch long chocks and it is available in natural or gold color.

Of course, you could drill holes and hook them together in sets with a length of heavy fishing line. Or you could even use a magic marker to put your "N" number on them, but I like things simple so I just cut mine and use them as is!

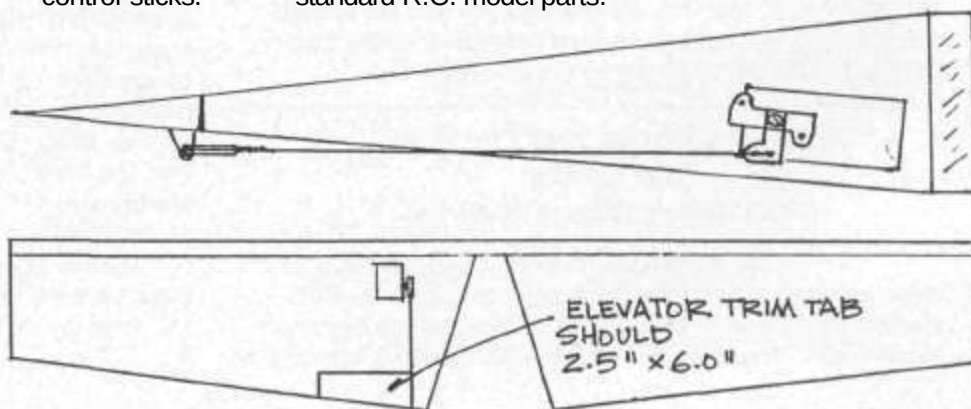


Landing gear retract servo from Carl Goldberg, Inc. Mount to aluminum angle and 3/32 ply. Unit is secured inside selected control surface.



^Drill new hole

These drawings represent the elevator, rudder and/or aileron. Hinges, control horn and pushrod are standard R.C. model parts.



Digital-Proportional Electric Servo Device to Operate Trim Tabs

David L. Feiger

Tested and proven in my KR2, N39426, with over 60 trouble-free hours to date.

An R/C "servo tester" electronics provides digital-proportional control of an R/C servo which provides the muscle to move the trim tab. Control is provided by a 5K ohm R/C "trim control" pot (thumb wheel) buried in the top of the control stick handle. Electrical power, 5 volts DC, is provided by a Radio Shack 5 volt regulator which drops the aircraft's 12 volts.

• PARTS LIST •

1. Two (2) dual one-shot integrated circuit, Radio Shack #74LS123; One (1) resistor 1/4 watt 4.7K ohms; One (1) resistor 1/4 watt 4.4Kohms; One (1) resistor 1/4 watt 33K ohms; One (1) capacitor 1 uf at least 6 v.; One (1) capacitor 10 uf at least 6 v.; One (1) capacitor 250 uf or larger, at least 6 v.; One (1) perf board 1 "xr to assemble parts on.
2. One (1) heavy-duty R/C servo, 39 in/oz torque or stronger. Be sure it has a HD gear train.
3. One (1) 5K ohm R/C trim control pot. Suggest the R/C unit due to its high quality and small size. Any 5K pot will work.
4. One (1) 5 v. 1 amp voltage regulator 1C, Radio Shack #7805.
5. Also, an on-off switch on the panel installed between the 12 v. buss and 5 v. regulator and a 1/4 amp fuse between the 5 v. regulator and the electronics as a safety in case the voltage regulator should go bananas.

• HOWTO BUILD IT •

Study the schematic and note that there will be two leads "in" and two "out". 22ga wire is heavy enough for all the wiring.

Wire up the parts on the perf board. Build the electronics (#1) and the servo (#2) into the elevator so that only a little bit of the servo shaft sticks out of the bottom of the elevator. Connections between 1 and 2 can be soldered. Make sure the correct three wires exit out of the elevator.

Pack parts firmly in foam rubber and glass over everything but the servo shaft.

To make the control stick grip, I clamped two pieces of 3/4" walnut together and centered bored to desired depth and control stick diameter. Shape outside of grip then relieve inside at top to hold the pot and thumb wheel assembly plus wire pathway.

For the thumb wheel, solder AN washer to an AN-4 bolt then center bore bolt to provide a slight interference fit onto pot shaft, finger tight fit. I counter bored into bolt head so it fit over threaded portion of pot shaft, providing a more compact assembly.

Editor's Comments

This issue's three "control surface" articles represent quite different approaches to adding an electrical trim system to the KR. After researching the material and studying the varied ideas, it would appear that it might be possible to combine some features from these concepts and develop an entirely new and lightweight approach to the subject. If anyone has another view or experience on the subject of electrical trim systems, please consider sharing it.

The last electric trim system idea, from Ralph Sawyer, was found in the June, 1991 issue. There was no commentary, materials list or explanation accompanying the drawing. There's bound to be a wizard among us that understands the sketch. Schematic is on page eight.

* * * * *

Grand Champion 1998 KR Gathering Cat Campbell, Broken Arrow OK



Winner of both the Grand Champion Award and the Craftsmanship Award at this year's KR Gathering

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BACK ISSUES

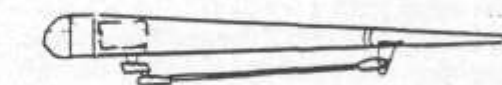
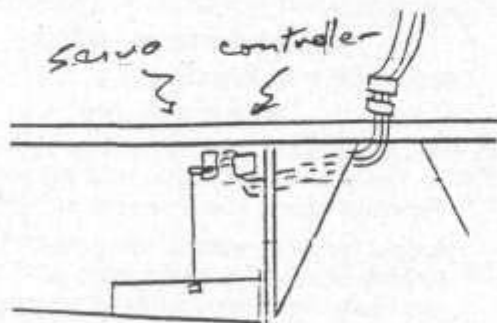
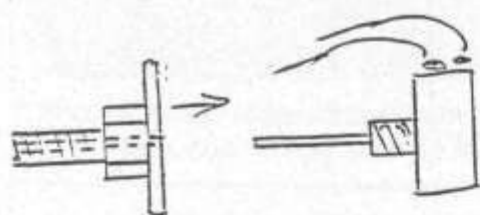
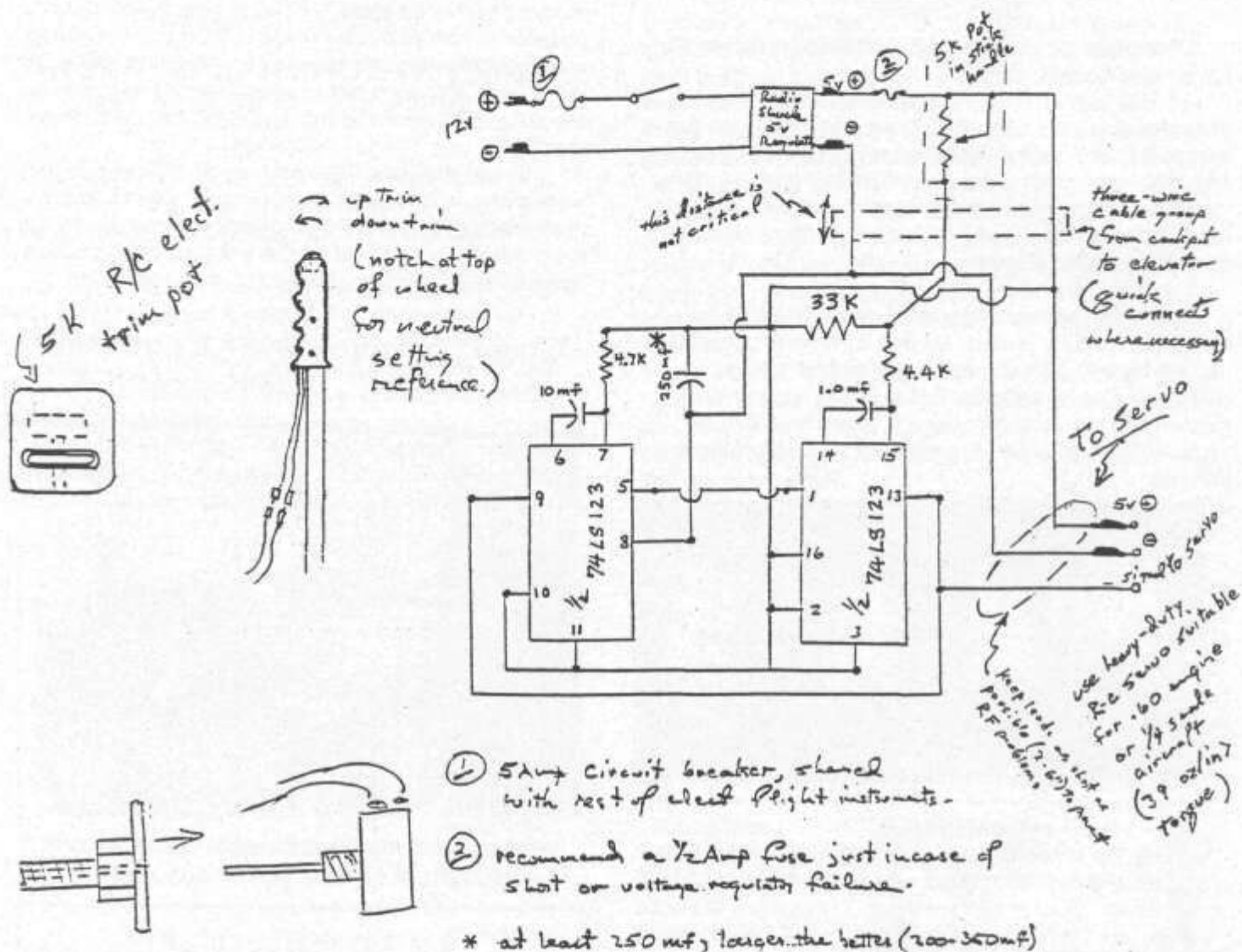
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Digital-Proportional Electric Servo Device to Operate Trim Tabs

Reprinted from KR Newsletters No. 116 & 124



use R/C control horn

suitable for .60 engine
power airplanes

KR CLASSIFIEDS

Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial style ads will be billed accordingly prior to publication.

The KR Newsletter reserves the right to edit free ads.

WANTED- Builder's Manual and plans for KR-2. Originals lost. Contact O.K. Boettcher, 105 West Circle Dr, Blue Earth MN 56013. Tel evenings 507-526-2586.

FOR SALE - 24" stretched KR-2. Subaru 100hp with 1.69:1 redrive. Sterba 60x66 race prop. Electronic ignition, fixed-gear tail dragger with 32 gallon fuel tanks. Dragonfly canopy, flaps, 500x5, Clevelands, taxi, landing, nav and strobes. Inst panel loaded. Price reduced to \$21,000. Details, contact George Huber at 817-261-3572.

FOR SALE - HAPI Engine, Magnum 75. Purchased new in 1984, never installed. 1835cc with 75hp, sodium filled valves, hyd lifters, dual electronic ignition, Posa carb, tuned exh, engine mount, all engine instruments in quad & dual configurations. \$4000 plus shipping. Original KR-2 retract gear also available. Call Rick at 510-426-9525.

WANTED - KR-2S cowling to fit Continental O-200 on a Rand factory mount. Contact with price to W B MacMillan, 1724 England Ave, Everett WA 98203. 425-353-9589.

FOR SALE - KR-2S Project. Mahogany ply boat stage on conventional gear with spars completed. Must move and can't take it with me. I'll throw in lots of parts, hardware & tools for the first \$3000. Lloyd Stearns at 512-244-7537, 512-838-0761 or stearn@ix.netcom.com.

FOR SALE - KR-2 fiberglass cowling \$400. Make offer on KR standard retract gear set. W. Janoski, 14123 East 122nd St, Collinsville OK 74021. Tel. 918-371-5846.

FOR SALE - Set of unused KR-2S plans. \$200, includes shipping. Mark Joiner, 817 Alma Lane, Kingston TN 37763. Tel. 423-376-3628.

FOR SALE - Retract gear for KR-2. New, never used. Make offer. WANT new or gently used KR-2 canopy and frame. Dennis Steed, POB 9013, Salt Lake City, Utah, 84109. Tel/Fax 801-487-3730. E-mail kenikas@aol.com.

FOR SALE - KR-2, N85ES. Signed off but never flown. Revmaster 2100-D with Almost Constant Speed prop. Full instrumentation. Polyurethane paint (white with red and black trim), Terra TXN-960 plus PTT, retracts and Lamb tires, Posa carb. Trailer included. Too many interests at present. \$7500 firm. Eddie Smith, 1762 Moore Rd, York SC 29745. Tel & Fax: 803-684-3425.

FOR SALE - KR-2 project, complete thru boat stage. Spars ready for included Diehl skins. Forward deck, cowl for Revmaster, turtle deck (still in included mold), horiz stab and elevator with etectrim motor. Includes foam, ply, firewall steel, aluminum hardware and remaining kit wood. See aircraft via e-mail at robert@castlegate.net. Bob Lord, Telephone 407-636-4893, evenings, 5:00-9:00 eastern time (Cocoa FL). Machine will answer, calls will be returned if no answer. \$2500 OBO.

FOR SALE - KR-2, boat stage, \$400. New set of KR-2 plans \$100. Bobby Whisenant, Rt 1 Box 637, Chireno TX 75937. Tel: 409-854-2644 or e-mail to bpc@lcc.net.

FOR SALE - 1835cc Volkswagen engine with prop and spinner. Contact Harvey Salevski, 11856 West Waterford Ave, Greenfield WI 53228. Tel: 414-543-4132, Fax: 414-543-1289.

FOR SALE - KR-2S. R-R Group 1 pkg: Spruce and ply (80%), side panels for boat, plans, newsletters. \$200 OBO plus shipping. Dave Root, Box 1978, Edgartown MA 02539. Tel/Fax: 508-627-7480 or email jizo@webtv.

FOR SALE - KR-2 with 14" stretch. Boat stage on retracts. Dragonfly canopy, dual controls, turtleneck mold. Spars complete. Diehl wing skins. Foam, cowling, etc. GPASC 0-time 2180, 5-point mount, prop and spinner. Ellison throttle body, Diehl case and alternator and 4-into-1 exhaust. Usual excuses. \$7500 OBO. John Mander, POB 122, Sprague River OR 97639. Telephone 541-533-2388 or aridell@aol.com.

FOR SALE - KR-2S, Boat stage. Birch ply, spars started. All spruce to finish, full set plans, newsletters, internet downloads, pictures, KR Gathering tapes. \$950. Project located north of Seattle WA. I have no time to build. Bruce Toscano 425-806-8072.

FOR SALE - KR2S spruce kit, \$500. Also a 2.2L Subaru Legacy engine for \$1500. Contact Wesley Tomikoshi, 2449 Park Rose Ave, Irwindale CA 91010. Telephone 626-303-3477.

WANTED - Interested in purchasing KR1 or KR2. Contact Edward Menges, 6223 Southwood Apt 1S, St Louis MO 63105. Tel: 314-726-3085.

RAGWING NEWSLETTER

Enthusiasts of the many replica lightplane Exp's and ultralights from RagWing Aero now have available a newsletter published by the editor of the KR News. Flight reports, tips, ideas & photos with each issue.

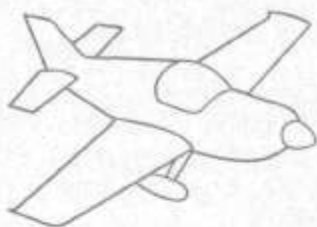
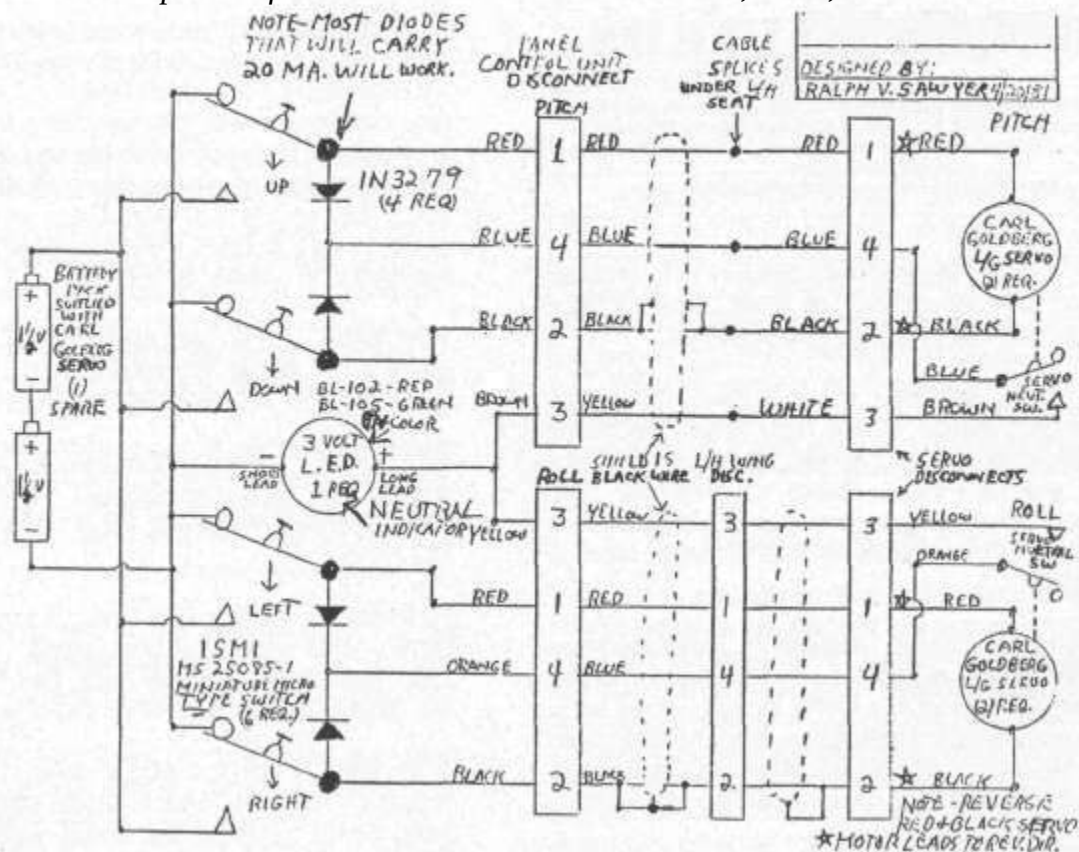
\$15.00/yr

RagWing Newsletter

624 West University Dr Suite 199, Denton TX 76201.

Electric Roll and Pitch Trim for the KR

Reprinted from the KR Newsletter No. 169, June, 1991



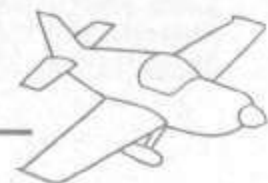
KR NEWSLETTER

624 West University Drive

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Issue 257 November 1998



SPECIAL DOUBLE ISSUE
KR NEWSLETTER
Issue 258 JANUARY 1999
Issue 259 FEBRUARY 1999



NEWSLETTER

Hangar Tales from Gary Sack

More KR Adventures from Out West



Gary Sack • Box 6082 • Eureka CA 95502

Gary's previous article, *After the Honeymoon's Over*, was published in an earlier issue of the KR Newsletter. His experiences, besides providing interesting reading, offer insight into living with and learning about your completed KR.

Other KR drivers are encouraged to share their own *Hangar Tales*.

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

OUR COVER STORY

Parts Is Where You Find 'Em Gary Sack • Eureka, California

Shortly after our arrival in Eureka, I pulled the rocker arm covers to check the valve clearances and found that one of the aftermarket ball rockers had slipped off the valve stem. The rocker was still actuating the valve even though its tip was now contacting the valve spring cup. Still, the engine ran just fine.

Not liking this situation, I went back to stock VW rockers on that, the right, side. To do so, I had to loosen the rocker studs and use a big, long 1/2" drive torque wrench during reassembly. Though I still don't know why, I over-torqued until something yielded. I could feel the rear nut turn slightly easier rather than harder. I stopped torquing right there but I didn't replace the head or stud. After a careful run up and a few cautious test flights, I decided it was OK and soon forgot about it.

Years later, I became suspicious of the clips which hold the valve covers onto the heads. I replaced them with the fancy cast aluminum ones which bolt on via a pair of extension nuts attached to the rocker studs.

Sometime later, I flew 440 miles from Eureka to Elko, Nevada. Returning home, all went well until we (the KR and I) were over the inhospitable terrain of the Black Rock Desert. Yup, black rocks and lots of desert. Then, the VW engine began running rough. Pretty soon, the KR wouldn't hold altitude and we were still one hundred miles from civilization.

My outdated chart showed the nearest runway to be a short dirt strip in Gerlach. That became our destination. As the engine began to run even rougher, the oil pressure dropped. We weren't going to make Gerlach but opening out beneath us was an alkali flat. Initially, it showed color patterns that looked like streams and hills but soon it was as smooth and flat as a concrete slab - 50 by 150 miles. To make it even more promising, there was a camp below of land sailors living in Winnemagogos.

As the oil pressure dropped through 3 lbs., I shut the engine down and set about making my first off-field and dead-stick landing.

Without any visual references, it was very hard to tell just where the ground was. I understand seaplane pilots can experience the same problem. We landed half a mile from the camp. I climbed out and proceeded to push the airplane back to the land sailors who thought the whole show was pretty neat.

Disassembly revealed that the long forgotten and over-torqued stud had failed. Not only had I lost valves on that side of the engine but the aluminum valve cover had all but come off, being held on by only the extension nut on the failed stud. All my oil had drained away.

One of the sailors lent me his pickup truck and I drove

20 miles into Gerlach. The gas station was open and happy to fill up the truck with gas and sell me four quarts of oil. Unfortunately, he didn't have any VW parts. "Well, isn't there some hillbilly in this town that fools with dune buggies?"

"Sure. Go find Willie."

Driving down several blocks and around a corner, I find Willie living quite close to where the airport should have been. He was friendly as could be and gave me a stud out of a head sitting on his garage shelf.

"What do I owe you?"

"Nothing, but please send me a new stud when you get home. These things are kinda hard to come by way out here."

"Say, Where's the airport?"

"Oh, they turned it into a trailer park. Everyone landed out on the alkali flat anyway."

Returning, I had little trouble, with borrowed tools, replacing the stud and putting the engine back together. I also had the luxury of a 150 mile long runway for my test flight.

All went well so we climbed high for the remaining 200 miles of the trip. Approaching the last set of coastal range mountains, the engine again began running rough. Unwilling to chance an engine failure at dusk in the mountains, I made a precautionary landing at the non-town of Hyampom and slept under the wing.

Next morning, I opened up the right valve cover and found everything healthy. Opening the left side, I found that another of those damned little ball rockers had slipped off the valve stem and had broken the rocker shaft retaining clip.

Asking around, I learned that the local fire chief was a bug freak. Hunting him up, he offered me a ride back to the airport and helped me put the engine back together. No charge, of course.

Although I only had 2400 feet of runway for this test flight, it was enough and we climbed in circles over the airport until we had 10,000 feet which was almost enough to glide home on.

All told, it was an adventure where I met some very nice people. It may seem as if I had a lot of bad luck, but actually, I had a lot of bad judgment followed by moments of extremely good luck every time I needed it.

I've since replaced the heads with a pair of dual-pluggers from Great Plains, standard Volks rockers and those stamped tin valve covers. They're ugly, but they do work well. I also replaced the torque wrench.

Hey, folks, if you get a big grin reading stories like Gary's and would enjoy seeing more of them in your newsletter, then drop a note to your editor and let him know about it.

If you, as Gary, can spin a yarn regarding your flying adventures, you are encouraged to share it with the rest of us. Building an airplane is fun but so's hearing about what the future may hold for you.

Italian KR-2S Builder Report

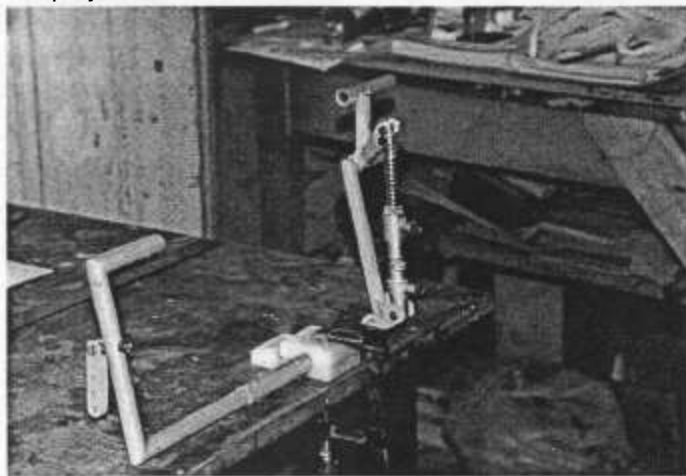
Outstanding First Ever Project

Alessandro Pecorara

Via Cavallermaggiore, 22 • 10139 Torino Italy

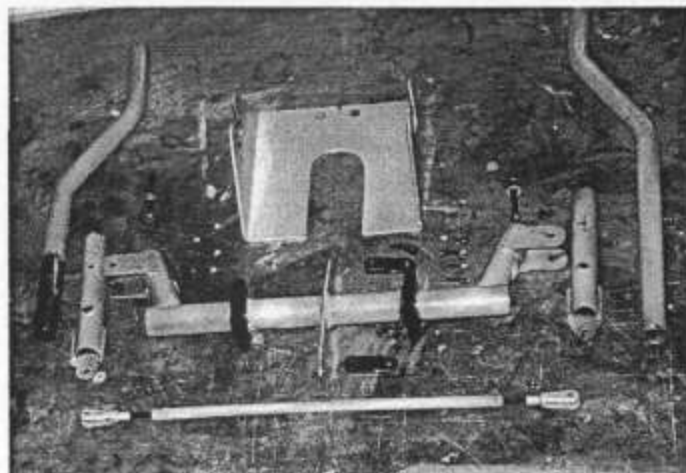
I'm aware of your needs for contributions for the KR Newsletter but my KR-2S is very straightforward. I'm a first time builder and, by now, I have just learned many ways to make mistakes and it would be unfair to share them with other people. However, I have collected some stuff that, although already found in back issues of KR News, could help you in filling some blank pages, and maybe also interest a few newcomers, so I am submitting it to you.

Some photographs of details (rudder/brake pedals, instrument panel, stick) and other things. Of course, none has been tested and many of these could change before the project ends!



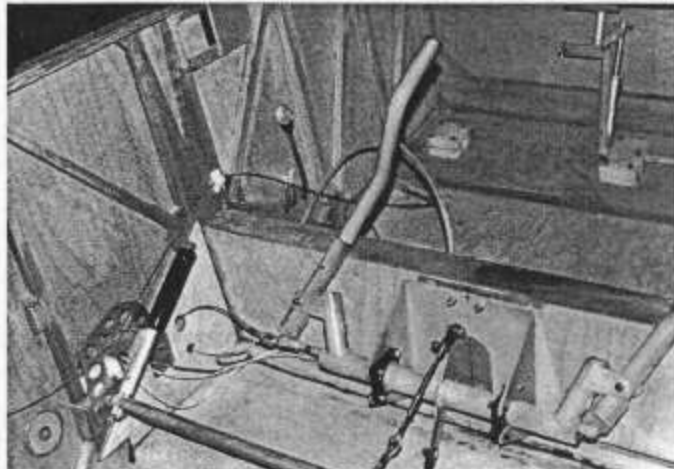
Bench-mounted rudder bar with brake cylinder and toe-operated pedal assembly. Also note the simple, yet effective, adjustable rudder cable attach bracket.

Drawing (following article) and photos of my dual stick assembly. My sketch is taken from an original RR unit which, in turn, looks like the one published in the November 1992 KR News issue that is very well detailed.

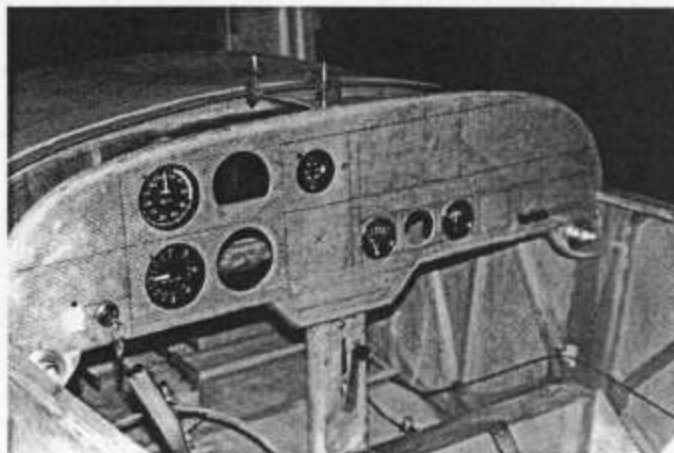


Stick components are primed and ready for cockpit installation test fit in the Pecorara KR-2S.

Photographs show some small variations that were proposed by the fellow who welded the "thing". Ultimately, I will be able to remove the torque tube without unbolting the brackets.



Planning pays off with a professional installation of the control stick assembly. Note flap handle and torque arm plus obvious excellent craftsmanship.



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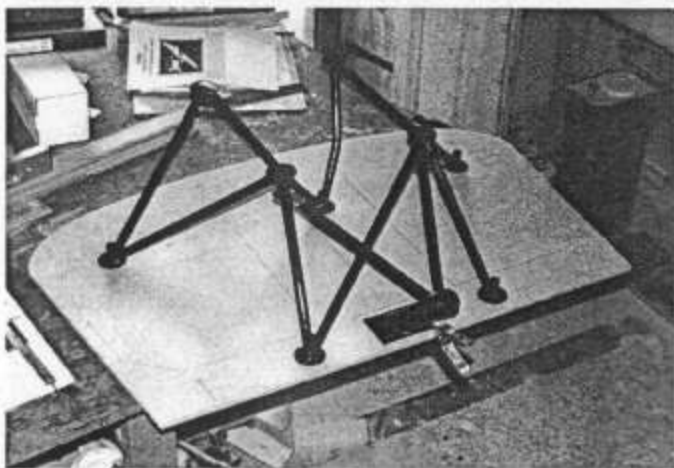
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The preceding photo of the temporarily installed fiberglass instrument panel reveals a center console with what would appear to be a trim crank handle, custom air vents at each corner plus initial test fitting of gauges.



Good photo of the five-point KR tri-gear motor mount being aligned to the as yet installed plywood firewall.

KR-2 Wing Tip

1. Glue foam blocks to wing tip ribs. The wing must be leveled. See the "O" degree reference in the wing ribs drawing. The upper line of the tip must also be level.
2. Length "L" may be up to 18" according to the article in KR Newsletter No. 82, without adding any stub spar to the tip.
3. By using a long sanding block, shape the bottom, leading edge and upper surface forward of spar. Tip and wing surface should blend.
4. Remove the shaded area of foam from the top to the bottom at the outer most corner. See drawing "A". Round slightly the bottom front of the tip.
5. Before removing the foam from the top of forward spar to the back, you should fiberglass the bottom. Check carefully for level lines and smooth curves. If "L" is less than 12", use one layer of cloth. If "L" is over 12", use two layers. The layer/s should overlap wing and leading edge approx 2 inches. As the aft tip is not very strong, add two additional triangles of fiberglass cloth, 3" and 1 1/2" long. See drawing "B".
6. After the bottom has cured, trim the edges of the tip. Sand the foam on top to blend into the wing and to a sharp trailing edge. Round the top inside curve.
7. Last step is fiberglassing the top, just as in Step #5. Don't forget to excavate a 1/4" groove along the trailing edge and the sharp edges of the fin (see drawing "C") to be filled with flox just before covering with glass. Then, finish the surfaces.

Technical drawings for the Pecorara KR-2S
Dual Control Stick and Wing Tip Design
will be found on pages 5 & 6 of the KR Newsletter.

Laser Alignment Tool

From Workbench to Weight & Balance

These economical, low power (3mW) laser pointers currently available might be helpful for homebuilders. Most of them will easily project a beam of light the length of a fuselage or wing. Why not use one for your alignment needs?

The beam itself is visible if smoke, dust or even a poof of baby powder is put in its path. This will permit taking measurements, from the light beam, at any point along its path or where the beam strikes a rib, bulkhead or a pre-positioned reference point.

The laser can also be combined with a level to project a reference line or to measure the incidence angle of a wing or tail component.

The laser beam is not affected by temperature, humidity or any other factor. Although they are low power devices, they are not toys. Proper and safe usage should go without saying.

Closeout on Back Issue Sets

Special Pricing Available

These things remind me of the hamsters I used to have way back in preflight... ah, make that preschool. It seemed that every time I checked on 'em, there were a whole bunch more! Ultimately, the little guys had to go.

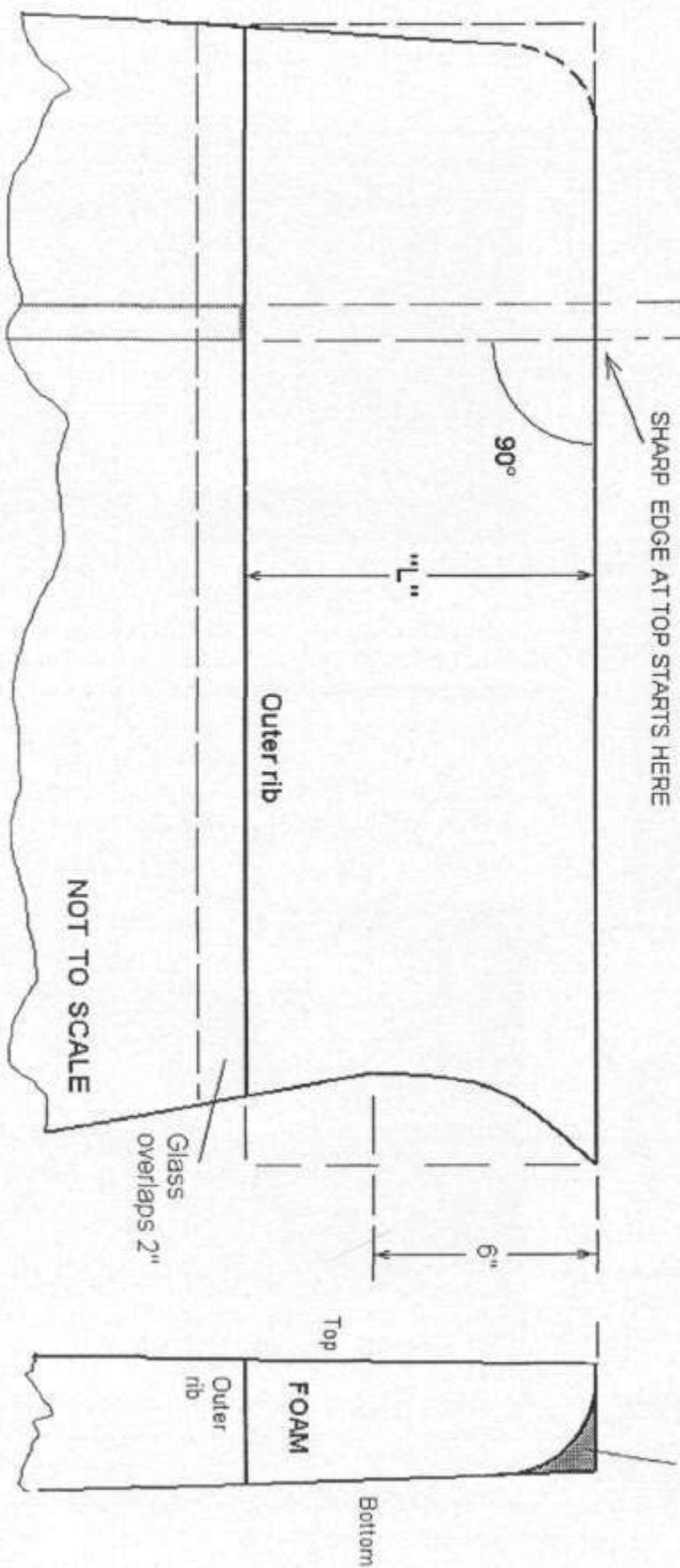
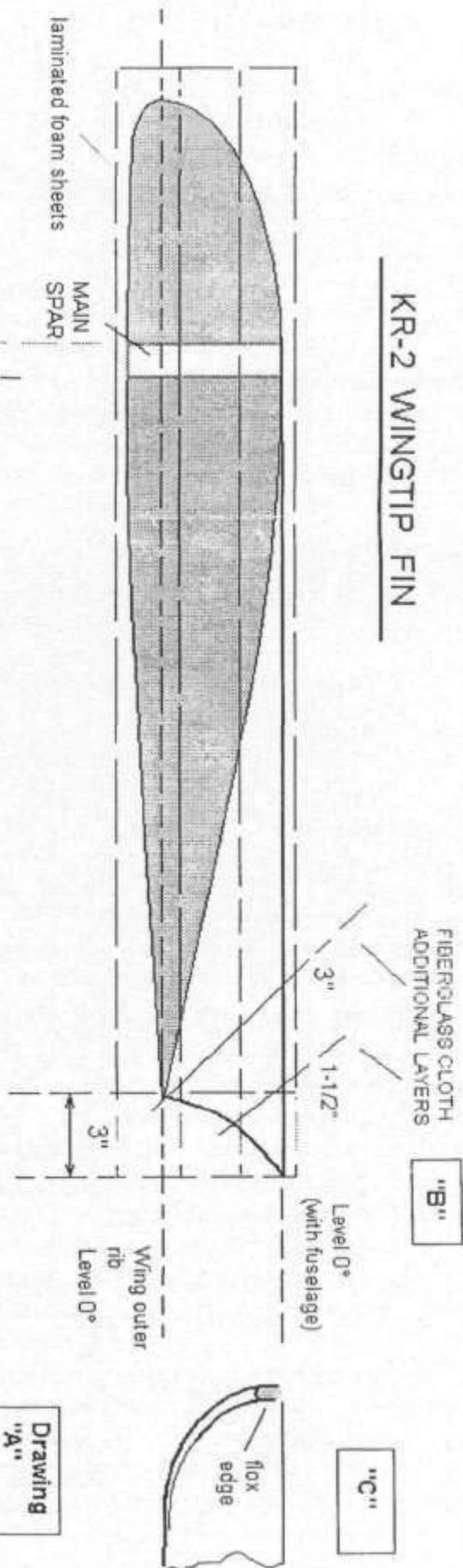
It's the same thing with the KR Newsletters. Storing over twenty-plus years of back issues has become a battle of space and cost factors. So... they, too, like the hamsters, must go.

Here's the deal regarding back issues; if you've ever considered purchasing a set, you have through the first quarter of 1999 to do so. At the end of March, they will be disposed of. Special post paid price is \$50.00 in the US & \$65.00 US foreign.

During this time, a computer database is being developed that will permit accessing articles from past newsletters. In the future, readers will be able to request specific resource information and, for a small charge, receive photocopies of the appropriate articles from a master set of KR Newsletters. Still working on the pricing schedule.

Get 'em while they last!!

KR-2 WINGTIP FIN



REVIEWS 73

A Georgian Up North

Baby, It's Cold Outside

Mark S. Jones

2710 Meadowbrook Rd • Waukesha WI 53188

414-542-9561

Winter finally came to Wisconsin and with vengeance I might add. This is my second year here. As I am truly a Georgia boy, I have seen more snow this last couple of weeks than I have seen in my entire life. We have 18 to 20 inches on the ground right now and it is snowing like crazy today with an expected 5 inches more by nightfall. Temperature, well lets see, the lowest so far was 14 below with wind chills of 40 below. Today, it's a warm 1 degree above zero. So why am I boring you with the weather? Because I envy all of you who live in warmer climates and are progressing on your projects.

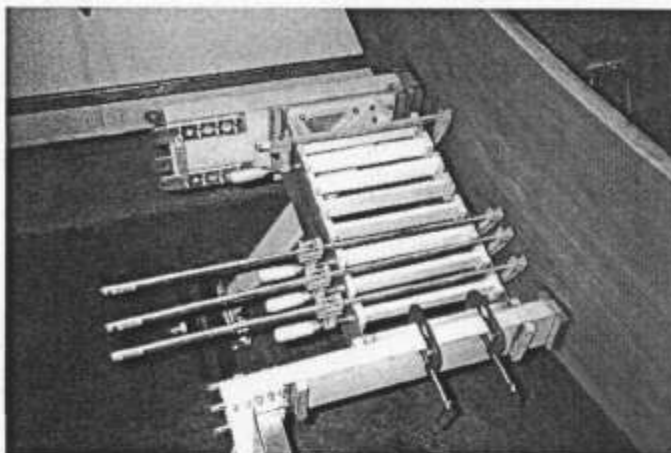


Prior to the Ice Age, Mark Jone's KR2S is wheeled out on the ramp for a photo op. Pringles munching FAA inspector remains unidentified.

Last week my burning desire to work on my 2S sent me into the garage to brave a bone chilling 10 degree or so workshop. The moisture in my nostrils instantly froze. I picked up a wrench and my fingertips started to go numb. I'm lucky it didn't freeze to my hand. Well, I fired up my 30,000 btu heater and managed to get the garage up to a warm 25 degrees. I did manage to stay out there long enough to route the rudder cables through the fuselage sides and connect them to the control horn.

Since my last letter, and prior to the cold, I have made significant progress on N886MJ. Fortunately, I acquired the Diehl tri-gear from a gentleman who had an ad in the KR Newsletter classifieds. The main gear is now mounted along with lamb tires and hydraulic brakes. The nose gear will be installed after the heat shield and engine mount are installed on the firewall. I have fabricated a wingwalk area (photo enclosed) built up from 1/4 x 2 birch covered with birch ply. All aileron cable brackets are complete and ready for pulleys to be installed. I have carpeted the cockpit floor, installed

rudder pedals and have made the seats which are hinged for rear fuselage access and inspection. I have also enclosed a photo of N886MJ taken the day after Thanksgiving.



You can never have enough clamps! The Jones KR2S wingwalk substructure being installed prior to ply skin.

As I mentioned in my previous letter, I have a very understanding wife when it comes to this project but she drew the line when I asked her, since it was so cold, could I please move the project into the living room? She did not even have to answer; her eyes said it all. Guess I'll have to brave the cold and pray for warmer weather.

* * * * *

Mailbox Surprises

Photos Delight and Tease

You just never know what the postman will leave in that box! That's one of the reasons I enjoy this KR gig.

When it's renewal time, I dutifully include reminders so you guys won't miss an issue. Most often, the form returns along with a check and the occasional note.

Recently though, two builder-subscribers surprised the editor with photos of their projects. Not a single word of explanation...just the tantalizing pics.



The Tom Allison KR2 looks ready for paint and flight.

Mailbox Surprises, continued:

Tom Allison, of Council Hill, Oklahoma, included a photo of his KR2. Close examination reveals a Diehl-style gear, fixed windscreen with a throw-over canopy, what appears to be a rounded vertical stab and rudder plus obvious hours of sanding the primer coats.



No, it's not Air Force One, but it is our John Shaffer and he's saddled up his Super Stretch KR2.

Last time I saw a photo of the John Shaffer project, it was secured on the top of a truck that was towing trailer-mounted wings! The picture was run in a previous News and subtitled Gypsy Aircraft Movers.

Up until now, John has been pretty quiet about how much work he has completed on his Super Stretch KR2. The lad's been busy!



Nice, three-quarters view of the Shaffer KR2. Sure would be nice to read a flight report on this project!

No written report, but it's easy to see that John is at the airport. The tri-gear shows off trailing link suspension and, knowing of John, possible retracts (?).

A snazzy blue and white paint design with a fixed windscreen are the visual highlights. A tail view photo showed the KR with engine running and taxiing... maybe out to the active runway? OK, guys, talk to me!

Type 4 KR

Florida Project is Feature Loaded

John Karner

8047 N Fairwind Loop • Hernando FL 34442

Telephone 352-726-2071

This will be my first excursion on this electronic monster. No matter what, I hate to write. But this thing will make it a little easier. I will not date this because there is 'no telling how long I will be compiling this mess. Along with as much information as I can think of to include here, I want to send a set of photos that will show the project in its current state.

I started the construction in 1987 to try and keep busy all by myself here at Twelve Oaks. But, since I have not yet been able to find the right partner in my life, I just can not stick with it. So, as much as I love the project and the design, I must start making new memories.

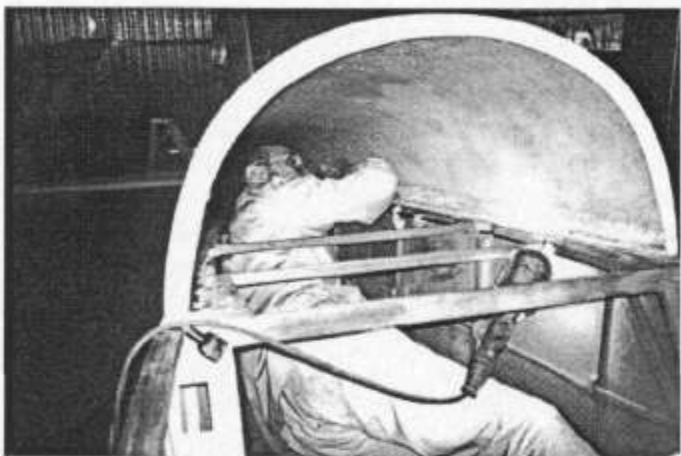


Photographic proof that John Karner is on the level! Early stages of construction with KR on the gear.

I have many years with VW work so it seemed like the ideal way to go. I was one of the first to use the type IV engine. This unit is just about the ultimate in the family. The bugs that showed up in the later type 1 were pretty much worked out in this engine. Mine is set up with 96mm bore and 71 mm stroke, giving a little more than 2000cc. The nose of the standard s-haft is too small to support a prop drive so I spent a pile on a Scat forged unit. Then, Steve at Great Plains cut it to fit one of his prop drives. I have a Crane cam ground to supply the best power at around 3000 to 3200 rpm.

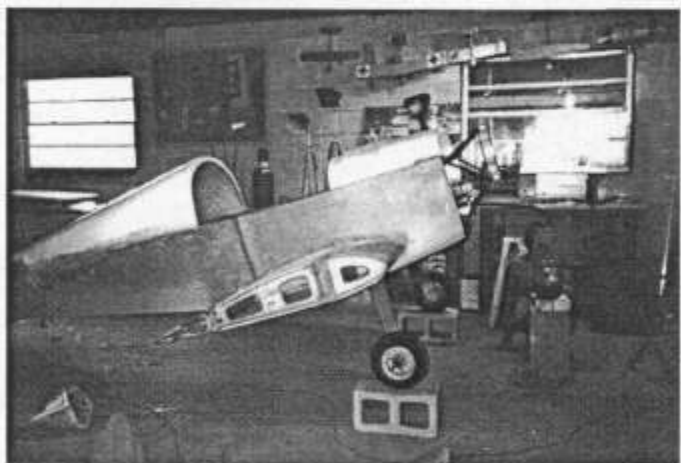
When I bought the shaft, Scat told me everything would clear inside. Ha! The case, shaft, rods, cam and crank end play were all set and then I decided to rotate things. Ripped it apart and spent much time grinding, checking, polishing etc. to the point that everything clears with 1 mm +. Nothing has been cut too much. I have had some high performance racer friends look it over and they agree that at our max rpm nothing is going to stretch

enough to create a concern. All the pressed in oil gallery plugs have been replaced with threaded plugs. It has a Dan Diehl lightened flywheel and starter ring gear along with a Super Case. This is set up to work with a small Hitachi geared starter, which I have.



KR builders have all been in this position. If not yet, then soon enough. John, it's easier to install the trim tab before the aft deck goes on!

I had planned on single plug good old Kettering ignition (points, that is) system. With a small amount of regular maintenance, I have never been let down. I cannot say as much for electronic ignitions. I cannot count the number of times vehicles have been towed into my shop after having stopped on the road, only to start right up and run to perfection... until the next time. I have several very short Bosch distributors which can be made even shorter. This will allow a nice shaped cowl.



Fuel flow check is critical with a gravity feed system. It's a good idea even if you plan to utilize a fuel pump.

The engine is, at present, disassembled. I figured any one interested in the project would really want to build it up himself. I would! There are plenty of spare parts, extra heads, etc. All in top condition. The planned carb is an SU from an MG-B. This is a variable choke unit and, being

vacuum controlled, will compensate up to about 6000 feet. It is a simple carb but you have to understand how it works. I can supply books. It is Fully adjustable. With the engine there is a regular KR mount. There is also a brand new, uncut spinner. Included is a lightweight Mitsubishi 35 amp. alternator.

Living on a grass strip, I decided against the retracts and purchased the first (I think) fixed spring bar gear that they brewed up when Kevin Kelly was building the KR-100. We are all equipped with Clevelands, etc. Actually, about the only things missing at this time are a prop and canopy. I have the canopy frame but had not yet decided just what design I liked. There is plenty of the poly foam and other material to form the cowl, etc. Both wing spars are ready to go and I have the Diehl wing skins. The tail feathers are, of course, all finished.



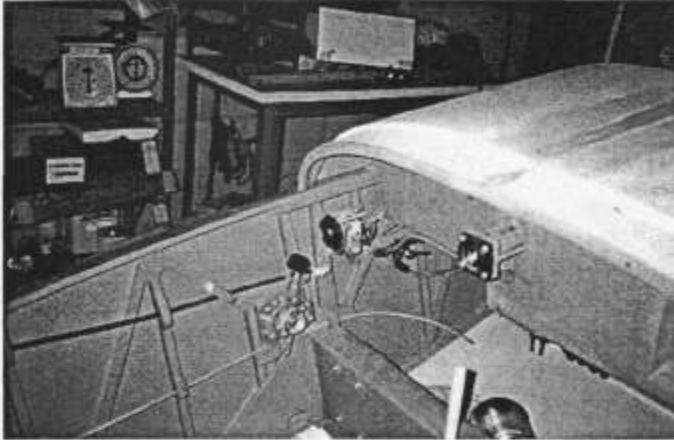
Initial fit up of instruments was done with panel attached to ceiling-suspended jig. Good idea is easy on the back.

I built a different forward deck. It is removable, but could be glued down if someone so desired. It is held on with five studs that enter fixtures in the frame. I used Clark foam and the proper eyster and built a fuel tank that held 19.5 gallons. Then, after working on the instrument panel, I figured that later on a radio system might be added. I cut into the tank and installed a box that lowered the capacity to a lowly 18 gal. Shucks! The instrument panel is rather full. A Cessna-type gauge is built into the tank and protrudes through the panel. The gauge was calibrated with 9 gals in the tank (half fuel) at the same time we raised the craft up to way beyond normal nose high attitudes and did gravity fuel flow tests. There is also an electric boost pump as a just in case thing or for take off and landing. The tank feeds on regular position from a stand pipe which gives us a reserve of about 5 gals, similar to good ol' VW practice. I had fuel standing in the tank for several months, with a 10% methanol mix, just to check the tank integrity.

Also, because of the grass strip, I modified the mount to accept a larger tail wheel. On the left wing stub, I added some internal beefing-up for a wing walk. Instead

of going for flaps, I brewed up a belly brake which, I figured, would be much simpler and should do the job. When retracted, it fairs in nice and smooth.

The flight deck is quite normal. I kept the single center stick. On the left wall is a throttle quadrant and within finger reach distance is a nice knob for the trim control. The fuel selector is just forward of these controls. Because of all the talk of pitch sensitivity, I built an armrest and used it to house the lever for the belly brake. The brake fairs in to the belly quite nicely, turbulence holes, and all.



Magnificent machine work created throttle quadrant and trim control. Works of art. Note the fuel control valve, the fuel gauge and the removable top deck and tank. Wow!

I think I will send this off soon just to see if you may be able to do anything for me in selling the project. I still hate to, but I must. There will be a few photos with this and I will run off a new batch, more descriptive, soon. Right now my hanger is a mess. My PA-28 is apart for annual, etc. I am doing tank work, new lines, etc. Also, as you may see from this typing, I am still trying to beat this machine into submission. So far, it is winning.

This will go out via US mail with a few old pictures. Later on, when I get it together, I will try to contact you via e-mail. WOW!

I can't get the curser to the right, so... I will now try the printer. Heh! heh! heh! The damn fool thing worked! Now, among other things, I have added a scanner. More to figure out.

As you have gathered by John's excellent report, he has his project for sale (see KR Classifieds). John and the editor have visited both face-to-face and via telephone for a few years and your KR scribe can verify that he's not a happy camper about the decision to part with a big portion of his life. However, as my friend would say, "It's time to make new memories".

Should you be in the market for a close to complete KR with outstanding workmanship, this aircraft will pass your most thorough inspection.

ON THE RAMP

Hey, how about this meaty edition of the KR News? I believe you'll enjoy the variety of articles and reports from around the world.

I was really impressed with the quality of work shown by Italian builder Alessandro Pecorara. For a first time KR builder, this gentleman demonstrates quality skills and knowledge. His letterhead even showed a lot of style with a cartoon plane and pilot from his local Italian EAA Chapter 459.

I must again thank those builders who take the time to share their experiences, ideas, thoughts and photos with the KR Newsletter's readership. No one more than I is aware of the time and effort required to write up a report and shoot it off to the newsletter. Your efforts are much appreciated. The nice thank yous which I often receive in the renewal returns tells me that your work is enjoyed by many. You guys efforts continue to help make the KR Newsletter one of the best special interest publications available today.

One of my New Year's resolutions, and one that I haven't yet busted, is to get on-line so that there can be a more rapid response to the subscribers needs. Like of John Karner sez, "When I get it all together". At any rate, I'll post an e-mail address for you folks soon enough.

I had though about including a funny off the net in this issue, especially after reading Mark Jones winter building blues story this month. Ran out of space so will simply remind you of the hilarious diary of the Texan (or native of your choice) who moved north and just could not wait for the first snow...until Snow Plow Charlie, road salt, stray deer and cabin fever drove him homicidal!

The main reason that this issue of the News is larger than normal is an effort on my part to catch up and get back on a more normal publishing schedule. The usual reasons none of which include the USPS rate increase. Does anyone else besides me wonder why, with a year's notice of an increase, the Post Office still couldn't produce a new one cent stamp instead of the generic H stamp? What are these guys doing? I'd ask my letter carrier but he keeps his Prozac capsules in the same box with his ammunition!

Our aviation community has suffered some recent tragic losses. Many of you have heard of the loss of a Van's RV-8 demonstrator with two aboard. The factory prototype Thunder Mustang, which drew me to Dallas for its demonstration, was lost with two more casualties. The president of Rotary Air Force and two others were killed when their rotorcraft collided in mid air during a photo mission. Just before Oshkosh, an ultralight pioneer and the founder of LEAF died along with a photographer in the crash of a GT-500. Nine people. Five aircraft.

I greatly enjoy homebuilt flying. By their very nature, our aircraft make us experimental test pilots each time we launch. We must conduct ourselves, always, as such. Be careful up there!

Mil CLASSIFIEDS

Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial style ads will be billed accordingly prior to publication. The KR Newsletter reserves the right to edit free ads.

FOR SALE - KR-2 fiberglass cowling \$400. Make offer on KR standard retract gear set. W. Janoski, 14123 East 122nd St, Collinsville OK 74021. Tel. 918-371-5846.

FOR SALE - Set of unused KR-2S plans. \$200, includes shipping. Mark Joiner, 817 Alma Lane, Kingston TN 37763. Tel. 423-376-3628.

FOR SALE - Retract gear for KR-2. New, never used. Make offer. WANT new or gently used KR-2 canopy and frame. Dennis Steed, FOB 9013, Salt Lake City, Utah, 84109. Tel/ Fax 801-487-3730. E-mail kenikas@aol.com.

FOR SALE - KR-2, N85ES. Signed off but never flown. Revmaster 2100-D with Almost Constant Speed prop. Full instrumentation. Polyurethane paint (white with red and black trim), Terra TXN-960 plus PTT, retracts and Lamb tires, Posa carb. Trailer included. Too many interests at present. \$7500 firm. Eddie Smith, 1762 Moore Rd, York SC 29745. Tel & Fax: 803-684-3425.

FOR SALE - KR-2 project, complete thru boat stage. Spars ready for included Diehl skins. Forward deck, cowl for Revmaster, turtle deck (still in included mold), horiz stab and elevator with elec trim motor. Includes foam, ply, firewall steel, aluminum hardware and remaining kit wood. See aircraft via e-mail at robert@castlegate.net. Bob Lord, Telephone 407-636-4893, evenings, 5:00-9:00 eastern time (Cocoa FL). Machine will answer, calls will be returned if no answer. \$2500 OBO.

FOR SALE - KR-2, boat stage, \$400. New set of KR-2 plans \$100. Bobby Whisenant, Rt 1 Box 637, Chireno TX 75937. Tel: 409-854-2644 or e-mail to bpc@lcc.net.

FOR SALE - 1835cc Volkswagen engine with prop and spinner. Contact Harvey Salevski, 11856 West Waterford Ave, Greenfield WI 53228. Tel: 414-543-4132, Fax: 414-543-1289.

FOR SALE - KR-2S. R-R Group 1 pkg: Spruce and ply (80%), side panels for boat, plans, newsletters. \$200 OBO plus shipping. Dave Root, Box 1978, Edgartown MA 02539. Tel/Fax: 508-627-7480 or email jizo@webtv.

FOR SALE - KR-2 with 14" stretch. Boat stage on retracts. Dragonfly canopy, dual controls, turtledeck mold. Spars complete. Diehl wing skins. Foam, cowling, etc. GPASC 0-time 2180, 5-point mount, prop and spinner. Ellison throttle

body, Diehl case and alternator and 4-into-1 exhaust. Usual excuses. \$7500 OBO. John Mander, POB 122, Sprague River OR 97639. Telephone 541-533-2388 or aridell@aol.com.

FOR SALE - KR-2S, Boat stage. Birch ply, spars started. All spruce to finish, full set plans, newsletters, internet downloads, pictures, KR Gathering tapes. \$950. Project located north of Seattle WA. I have no time to build. Bruce Toscano 425-806-8072.

FOR SALE - KR2S spruce kit, \$500. Also a 2.2L Subaru Legacy engine for \$1500. Contact Wesley Tomikoshi, 2449 Park Rose Ave, Irwindale CA 91010. Telephone 626-303-3477.

WANTED - Interested in purchasing KR1 or KR2. Contact Edward Menges, 6223 Southwood Apt 1S, St Louis MO 63105. Tel: 314-726-3085.

FOR SALE - Owner deceased, must settle estate. KR2 project. Boat stage with spars and some f'glas work started, retracts, 1800cc, magneto, instruments, many materials. Need to sell to best offer. Betty Harrington. Tel: 718-816-4934. Staten Island NY area.

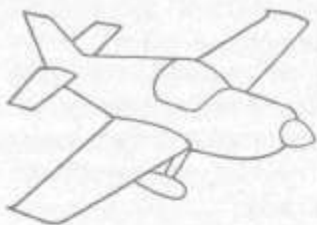
FOR SALE - Cleaned out the garage and found a set of KR-2 pre-molded center section skins. I'm gonna let them go for a super price but you've gotta call me for the price. Les Palmer, 214-241-4387.

FOR SALE - Two (2) KR2 projects. Both thru boat stage and on retracts. Most controls mounted. Have two (2) cowls, molded header tank, canopy, Diehl gear in box, plans and ten years of KR Newsletters. Have 0-time HAP11835, prop, mount, exhaust. \$5000.00 OBO. Consider trade for metal project. Ron DeWees at 404-876-3481 or rdewees@avana.net.

FOR SALE - KR2 project complete thru boat stage on Diehl tri-gear. Wing and center section skins, aft & fwd decks, Revmaster cowl, Dragonfly canopy. New 2180 GP on firewall with dual ign, alternator, starter, carb, exhaust, prop and polished spinner. Carl Evers, 904-724-2324, between 6-9pm EST. Leave name and number.

WANTED - New or gently used Dragonfly canopy, KR2S fuel tank, wheel pants for tri-gear. Contact Mark Jones, 2710 Meadowbrook Rd, Waukesha WI 53188. Tel 414-542-9561.

FOR SALE - KR2 project, near complete, lacks only the canopy and cowl. Rand conventional fixed gear. Type 4 2000cc VW. Full panel. Many custom features. Asking \$6000. Contact John Karner, 8047 North Fairwind Loop, Hernando FL 34442. Telephone 352-726-2071.



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624 West University Drive
Suite 199
Denton, Texas 76201

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Issue 259 FEBRUARY 1999

SPECIAL DOUBLE ISSUE





NEWSLETTER

Garbez KR Rolls Out *Ink Still Wet on Airworthiness Certificate*



Mike Garbez's Dream *N998MG Awaits FAA SignOff*

MIKE GARBEZ
48483 Chestnut Road • Griswold IA 51535
msgtlg@msn.com

It all started in 1992, with R/C model planes. I was flying them every chance I got. First, it was small trainers, then to acrobatic planes, next came quarter scales. Build, build, build, fly, fly. Faster, bigger, BIGGER. Wish I could get in and fly! Yeah, that's it get in and fly!

Pilot training. Oh, man this is great! Rent a plane, fly. Hey this is expensive. I can't fly enough. What to do? Buy a Plane. WOW, they're proud of those. Now what? Build a plane? Why not, I build everything else.

OK, build a Plane. What plane? Ultimate? The Lancair. Too pricey, time to get real. Check out kits; two place a must, good cruise speed, good looking, and economical.

While I was researching the market, our local paper advertised a KR-2 for sale. Well, that's a great little plane that had it all, including the price. It was in the "boat" stage. Now the adventure begins in 1994.

I had a two car garage, soon to be a one plane garage. Construction was now under way. Every spare moment and my dreams are filled with plans. How to do this, what to do about that. Build, build, build, it seemed like forever. Finally, it is starting to look like a plane, not a boat. Things are going together pretty good, progress is great. Then, some personal tragedy enters. Progress is halted for a little more than a year. Then back at it.

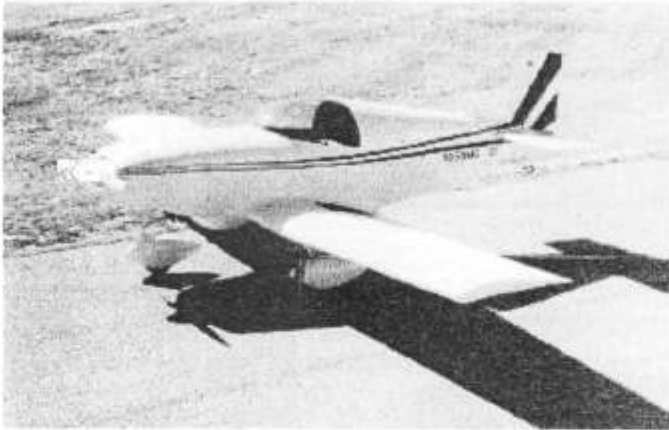
Time to do the layup of the wings and tail feathers. This went pretty well, had the wife

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

Garbez KR, continued.

help. Now, it really looks like a plane. OK, get it ready to paint. Fill and sand, and sand, and sand, and sand some more, almost a YEAR. Will it ever be straight? Sand, sand, sand. OK, it looks pretty good. Now put some primer on and sand some more, looks pretty good now.

Time to paint. It is white with teal stripes. After looking at it for a while, it's not perfect but she's close! I have always hated body work.



Great view of the Mike Garbez KR2. You Ve gotta wonder what ol' Mike climbed up on to get the shot.

It is time now to put the engine, instruments, and interior together. We ARE getting close. The KR has an 1835 VW engine with a 52x46 prop and a Revflow carb. I am now waiting for the inspection from FAA. They said about 30 days and they can come out to do the inspection.

I have taken her to her new home at the airport. I am doing the taxi testing and fine tuning. The urge to fly it is almost unbearable. It's GREAT! What a feeling!! And it is MINE! I'll send flight reports soon and hope to fly to the Kentucky Gathering.

* * * * *

KR on a Diet

Type 4 Replaced to Trim Excess

Ralph Van Scoyk

8603 South Under Avenue • Burbank IL 60459

You may recall a previous report from Ralph regarding his overweight Type 4 powered KR. At that time, he was considering replacing the IV with a lighter, 1600-based Volks. Says Ralph, "I like working with engines". Read on...

Well, I found a 1600-style Volkswagen engine. It's a Revmaster 2100D. I ran the engine when I first got it. Beautiful. Then, Revmaster wrote me a letter and told me to check the crankshaft as it might be a cast iron unit.

I took the engine apart and discovered it did have a cast iron crankshaft installed. I wasn't too happy about it.

A new forged crankshaft, bearings and other parts came to about \$1000.00.

My motor mount was 1/2" from the firewall so I called Dan Diehl and he made four two-inch extensions for me. Then I needed longer, as in 6 inch AN7 bolts. Wicks had five inch bolts but the longer ones had to be special ordered at \$15.00 apiece! All you need is money.

We have had bad, rainy weather in the Chicago area so the KR1 1/2 is still in the trailer. I have been able to install the engine.

This engine is a hand prop job. Not bad at all. Turn on the fuel and the mag, count to four or five, and it starts on the sixth blade.

I'll write again when I get a new weight. Hope to get down to a more normal reading.

ON THE RAMP

Ramblings from the Editor

The newsletter's supply of articles from our readers, pilots and builders is at an all time low. And just how low is that? Can you spell N-O-N-E?

Charles Warren, of Ringgold, Virginia, enclosed a note with his renewal commenting on an article in the latest KR News. He says he's, "still laughing with Gary Sack and his search for parts. He must be flying a KR tool box!" Yep, stories like Gary's are a real treat. They help get us out of the workshop for a little while and remind us of the big adventure waiting after that first flight.

Just had to chuckle after getting a call from Floridian John Karner. You'll recall his nice article in the last issue and his confession of wanting to sell his remarkable KR... well he's sold himself on finishing the aircraft so it's now off the market. Way to go, John! Finish and fly that pup.

Last Call on Back Issue Sets *Special Pricing Available*

Storing over twenty-plus years of back issues has become a battle of space and cost factors. So... they are going away at the end of March.

Here's the deal regarding back issues; if you've ever considered purchasing a set, you have through the first quarter of 1999 to do so. Special post paid price is \$50.00 in the US & \$65.00 US foreign.

A computer database has been developed that will permit accessing specific articles from past newsletters. In the future, readers will be able to request resource assistance and, for a small charge, receive photocopies of the appropriate articles from a master set of KR Newsletters. Still working on the pricing schedule.

Several readers have already taken advantage of this opportunity. Orders will ship soon. Last call...

Diehl A/D on Nose Gear

Dan's Comments on F'glas Nose Strut

Dan Diehl • Diehl AeroNautical
1855 North Elm • Jenks OK 74037

I haven't sent in anything to the newsletter for a while, but I think you're doing a great job! I have some information readers may need.

Please make a notice to all that we still have two styles of landing gear available, the tail dragger and the tri-gear. Everyone knows this, but some don't know that these main gear are different, ie: a tail dragger gear won't work well if turned around and used as a main gear for a tri-gear. We trade out gear legs with those wanting to change their style of gear.

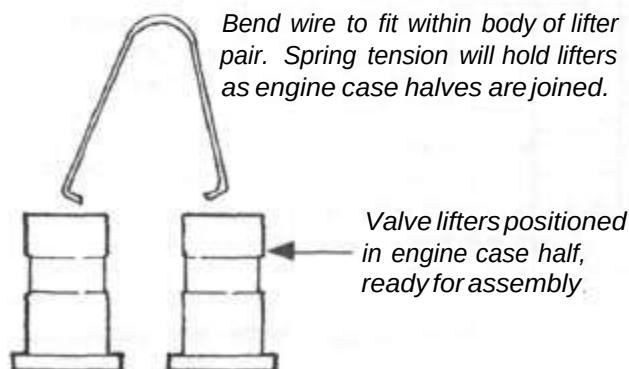
The really important notice is that we no longer offer the fiberglass nose gear and haven't for several years. We continue to find builders trying to use this old style gear. If you have a fiberglass nose gear strut, please send it to us and we'll trade out with you at no charge. We now consider the fiberglass nose gear as "an accident waiting to happen". Some builders have purchased kits from someone else and we cannot find these new owner/builders. Please, builders, if you know of someone with a "glass" nose strut, tell them not to use it but instead send it to us for a free trade.

Lifter Gripper

Check Your Closet for VW Engine Tool

Those Volkswagen engine assembly manuals talk about using them, but there's never a photo of one. Just what are the experts talking about when they tell you to use a lifter tool to hold the four valve lifters in their bores as you close the engine case? And where do you get one when it's two a.m. and you're determined to finish before hitting the sack?

Salvation, my friends, is hanging in your closet. The aforementioned lifter gripper can be quickly made from a lowly coat hanger. Check the sketch, then go to bed.



"Half-Finished" KR2

The Old 90% Done, 90% To Go

CLEOGREENHAW
1201 Princeton Ave
Ponca City OK 74601

At this time, I wish to renew my subscription to the KR Newsletter. Time just got away from me. Been busy building airplanes.

KR 8128 is built and only needs assembly and painting. This means it is about half done. I bought it from Mike Garbez in Iowa. His KR is beautiful, a good job.

I am about to finish up my Loehle P-51. It is powered by a four-cylinder Geo Metro engine that is fuel injected and computer controlled. This engine can be adapted to many airplanes. Dave Johnson, of Reductions, Inc., out of Canada, sent me a film that showed a Geo engine fitted to a KR-2. Very impressive, I already have a Revmaster for my KR-2 and that's what I'm sticking with.

Should anyone want to contact me, my phone is 580-762-2531. Thanks, again...

VW Prop Extension

Help Fit KR2S Cowl to Your Volks

Several builders have been attempting to fit the new super streamlined KR-2S cowl to their VW engine and find that they need a prop extension. These are available for \$300 plus \$10 shipping and handling from Wizard Industries, 10150 East 47th Place, Tulsa OK 74146.

Study the drawing and then, to avoid some liability stress, send your check and a copy of the drawing for a "Utility Trailer Spare Tire Mount". You'll be pleased with the component's quality.

continued on next page

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Individual issues, when available, are 2.00 each.

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A similar prop extension is pictured on Ralph Van Scoyk's KR on page 6, Issue 253, of the KR News. Be advised that Steve Bennett, of Great Plains A/C Supply, does not sell prop extensions as he is concerned about crankshaft breakage.

Editor's Thoughts: Prop Extensions on VWEngines

I've been enjoying reading the latest catalog from GPASC and, as always, it's loaded with information vital to Volks flyers. Such as..."Wood props only on VW's." The additional weight of an aluminum hub and composite blades can lead to failure of the crankshaft.

With the foregoing thought in mind, I'd strongly encourage the machining of your Volks case for the use of the GPASC Force One prop hub bearing. Although a prop hub extension will not generate the same gyroscopic forces as does the actual propeller, it will still add a significant amount of weight to the crank while placing the prop further away from the actual crankshaft bearing, thereby increasing the forces generated by the longer moment arm.

Colorado to Alaska in a KR-2

Jack Schnurr

1164 Vasi Way • North Pole AK 99705

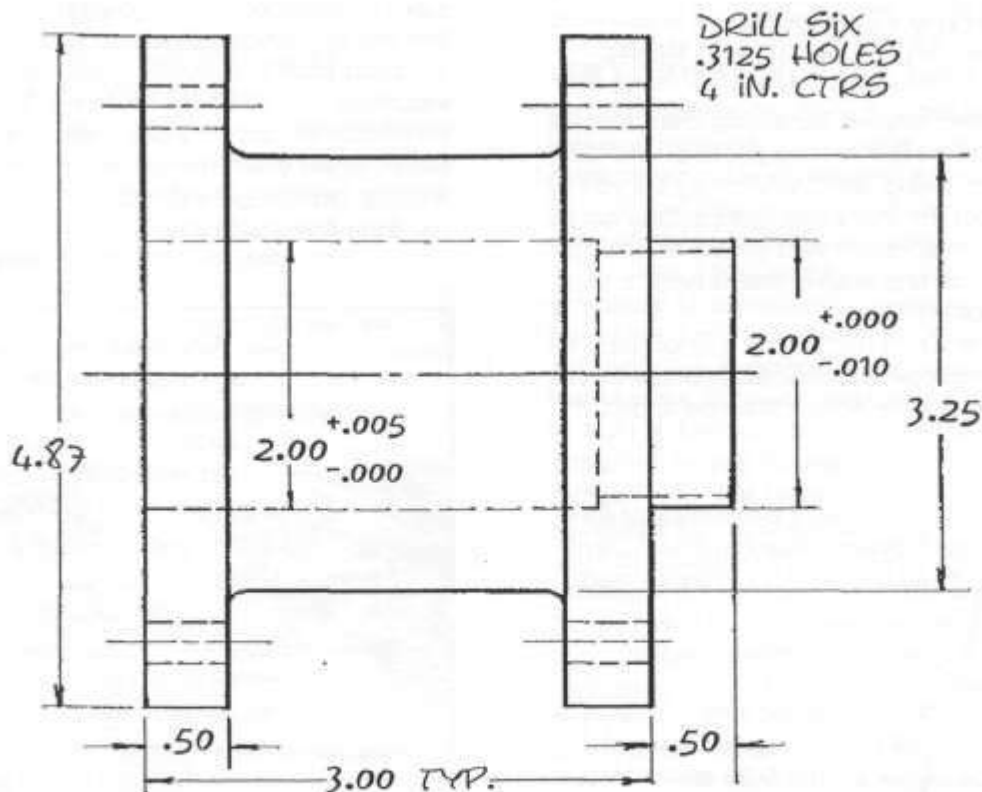
My KR-2 spent the winter in Loveland, Colorado and it was time to fly it back to Fairbanks. It took one day to get it ready for the trip, wash the winter dust off of it, change the oil and charge the battery. These items accomplished and I was ready for an early flight the next morning.

The weather in the morning was below VFR so the wait was on. I would get used to this in the days to come. It was 2:00 pm before the weather at Cheyenne WY would allow me to get on my way. The first leg to Billings MT was below 1000 feet AGL all the way in rain. By the time I got there, I was ready to stop for the night. The flight time was 3 hours. The solid line of low clouds all the way to the ground made continued flight impossible. I did not work on my landings before leaving so the first KR-2 landing in nine months proved to be very interesting.

With such a long runway, I was not worried about the

continued on next page

UTILITY TRAILER SPARE TIRE MOUNT



DWG NOT SCALE

Colorado to Alaska, continued:

landing at all. The runway was very wide, which should have been a consideration also. Let's see, how does it go? Wide runway and you have a tendency to flair high. My flair was perfect, if I had been in a 747. Thank heavens for the great tricycle landing gear. I really did not want to park the airplane out all night in the rain and the line boy solved that problem for me as he refused to let me park outside. He claimed that the plane was too beautiful to park in the rain. It didn't take up too much space so he put it in a hanger free of charge for the night.

I found downtown Billings a great place to spend the night; excellent hotels and places to eat at a very reasonable price.

Early the next morning I was at the airport ready to go only to wait two hours for the weather to get up to 1000 ft AGL. The flight to Havere was only an hour long but once there it was wait all day for the weather at Leathbridge to go VFR. The flight to Canada was again at low altitude in rain. The GPS was a great aid to navigation during this part of the trip. The wait at Leathbridge for a 1000 ft ceiling ate up two more hours on the ground. Customs had been so efficient that I was ready to take off only one hour after I landed. My hat is off to the polite, efficient Canadian Customs officials.

The next part of the trip proved to be very interesting. The weather forecast was for VFR all the way to Rocky Mountain House. A strong tailwind gave me a ground speed of 210 mph for the first hour out of Leathbridge. It just doesn't get any better than that. The ceiling was starting to drop so I planned a divert to another airport, just in case things got worse. The ceiling was dropping very rapidly now. I was becoming very uneasy. The decision was made to divert to the alternate airport. Four minutes to go to my alternate and the darn weather dropped from VFR to IFR (300 feet and 1 mile vis). I was in very heavy rain now at about 500 feet AGL and the tailwind went to zero. Rocky Mountain House was 80 miles ahead. If I kept on going, I would be there at official sunset. If I turned back to Leathbridge, it would mean low ceilings and rain in the dark. The choice was obvious. GPS low level to Rocky Mountain House and hope that the weather there stayed good. 50 more miles of flying and the ceiling rapidly lifted, the rain stopped and the visibility increased to 5 miles. The rest of the flight into Rocky Mountain House was no problem. The weather forecast in my pocket for VFR all the way was a grim reminder; the weather forecasters do their best, but there are no guarantees. It was great to be on the ground safe and sound. The weather kept me on the ground for the next two days with the nicest people that you have ever met. My nights were spent at a local flying clubs meeting place and the KR-2 spent its nights in a hanger owned by a club member.

The weather got a little better so I made a short hop to Fort St. John that was pleasant until five miles out on

final and the rain started again. The cost to hangar the KR-2 was \$75 a night so my faithful little buddy sat out all night in a driving rain. The next morning I was reluctant to open the canopy as I was sure that the cockpit would be soaking wet. I was pleased to find it dry as a bone with no water leaks at all.

The flight from Fort St. John to Fort Nelson was a beautiful one with clear skies and unlimited visibility, a welcome change from the previous four days. My little airplane ran like a dream, handled so very lightly on the controls and offered such an awesome view of the breath taking scenery that I was in absolute ecstasy for the whole flight. Before I knew it, Fort Nelson was off the nose and it was just a few minutes 'til the quiet "squeak of the tires touching down on the tarmac announced our arrival. There is a great new place to eat at the airport on the other side of the fence behind the fuel pumps. Homemade food and a friendly atmosphere was a perfect way to get ready for the flight to Watson Lake.

The weather was perfect for the next leg of the trip. The flight was one that memories are made of with the steady hum of the engine and fantastic views, of mountains and lakes until I was on a 5 mile straight in for Watson Lake. A nice landing followed by taxi to the fuel pumps to gas up for the flight to Whitehorse was a perfect ending of the flight. The fuel bill was \$24 U.S. What a treat as several years ago the same leg in a 150 hp Champ required a hundred dollar bill to pay for the fuel. There is a great place to camp on the west end of the runway next to the lake but the day was still not over so it was off to Whitehorse, Yukon Territory, where I would spend the night.

The hotel on the airfield was a perfect place to spend the night. There is something about being able to look out of your second story window and watch your trusty little steed, tied down, and just waiting to take you back into the blue skies for another adventure. There are two restaurants within easy walking distance and a nice pilots lounge where you can watch all of the different types of aircraft as they come and go.

The next morning the weather between Whitehorse and Fairbanks was "severe clear" but now instead of just wanting to get home, I found that I was reluctant to end my adventure so soon. A stop in Northway to clear customs and get a piece of homemade pie would delay the end of the trip by a couple of hours. The flight to Northway was another beautiful one except for strong gusty crosswinds for the landing. The great tri-gear would again prove itself to be the gear to be below you when the winds are nasty while landing.

The customs agent was waiting for me when I landed and the paperwork was completed very quickly. We spent 30 minutes discussing homebuilts. He was such a nice person that I actually let him sit in the cockpit while I took his picture. One piece of blueberry pie later and it was off to Fairbanks on the final leg of the trip.

continued on next page

Colorado to Alaska, continued:

Smooth air and a blue sky awaited me for the last flight on my journey. The landing at Fairbanks was in smooth air and no wind. This was a perfect ending to a 25 flight hour trip from Loveland CO to Fairbanks, Alaska.

Some observations on the trip: Keep a close eye on the weather, it may change quickly and you must have a back-up plan. The flight characteristics of the KR-2 are not changed at all when flying in heavy rain (not that I could tell) and the aircraft will not let any water in when built as designed. The KR-2 is a great cross-country airplane with no bad handling characteristics that I have seen in 110 hours of operation. When operating in heavy rain, I reduced rpms to 2900 and still got several holes eaten away in the leading edge of the prop. The prop was repairable but the next one will have either a stainless steel or other type of material on the leading edge to prevent a reoccurrence.

I still love the spirited little aircraft and plan to increase the engine size to a Great Plains 2180cc (up from 1835cc) this winter. The addition of wheel pants will also occur this winter to up the cruise speed some.

Carolina Dreamin' *Photo Accompanies Renewal*

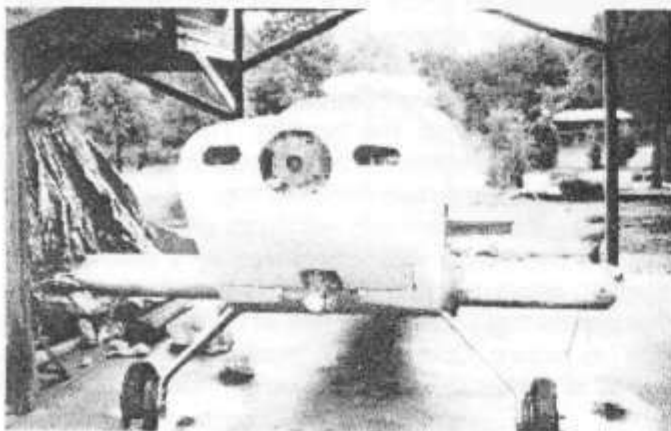
David Jones

6615 Sadie Drive • Wendell NC 27591
Telephone 919-365-5165

A nice photograph came along with KR builder David Jones's newsletter renewal. What the photo reproduction does not show well is that David is crafting his airplane much as the early builders did...that's a laid up foam cowl being shaped prior to the fiberglass work.

If there's a point to this, it's simply a reinforcement of the idea that the Rand-Robinson designs can be built quite economically if you're willing to trade some sweat equity for the premolded components.

Thanks, David, for the reminder of how this started!



Wing Center Section Fillets **fil'let/ // 1: a concave junction where two surfaces meet**

The KR builders manual shows a wing center section with a partially completed wing fillet. The instructions mention only that the fiberglass should lap onto the fuselage and that the contours are left to builder preference. There's also a couple of sentences about wing fillets back in the wing center section notes. Lots of gray area to get lost in.

During the wing center section lay-up, plan to also lay-up a strip of the peel-ply fabric that will cover an area the length of the wing/fuselage juncture and about six inches out from the fuselage. After cure, remove the peel-ply and you will have a surface ready to accept the construction of the wing fillets.

A successful wing fillet can be built by first doing all of the necessary foam and fiberglass work on the center section. With a solid surface to bond the foam onto (the fuselage and the cured fiberglass), the small, fragile foam blocks will be less likely to break.

The shape of the wing fillet is left to the discretion of the builder. A large fillet is not necessary and could become more prone to damage than a smaller, neatly shaped one. On my KR2, the major radius was formed by using some 100 grit paper wrapped around a coffee can and finished up at the leading and trailing edges by some artful use of an aluminum can. Very high tech!

Begin constructing the fillet by attaching one-inch thick foam "bricks" along the wing to fuselage joint. By lightly scrubbing the blocks on the cured f'glass and the fuselage plywood, it's possible to eliminate quite a bit of extra sanding. Do not attempt to shape the final exterior form at this time. You'll need all the foam strength you can get while bonding the blocks.

Sand a few blocks, then glue them into place using a mixture of construction epoxy and micro balloons. I found the 5-minute variety of epoxy cured too fast and did not allow enough time to reposition any wayward foam blocks. However, the fast set variety can be helpful to hold a few strategic "keystone" blocks. Apply the adhesive to the fuselage skin and the wing contact surface only, not block to block. Any epoxy that gets squeezed out between the foam blocks will cure rock hard and become impossible to sand without tearing out chunks of the delicate foam. Go slow, use caution with the glue, and you'll be rewarded with a very nice job.

Before applying the fiberglass and resin on the completely shaped foam, mix up some dry micro and fill any voids. Use care while working with the shaped fillet as it will be extremely fragile near the tissue thin edges. Prep the raw foam with a micro slurry and lay up the fiberglass fabric, lapping onto both the fuselage skin and the peel-ply area of the center section by at least two inches. Foam prep is the major component of a nice job.

Kit CLASSIFIEDS

Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial style ads will be billed accordingly prior to publication.

The KR Newsletter reserves the right to edit free ads.

FOR SALE - Set of unused KR-2S plans. \$200, includes shipping. Mark Joiner, 817 Alma Lane, Kingston TN 37763. Tel. 423-376-3628.

FOR SALE - Retract gear for KR-2. New, never used. Make offer. WANT new or gently used KR-2 canopy and frame. Dennis Steed, POB 9013, Salt Lake City, Utah, 84109. Tel/Fax 801-487-3730. E-mail kenikas@aol.com.

FOR SALE - KR-2, N85ES. Signed off but never flown. Revmaster 2100-D with Almost Constant Speed prop. Full instrumentation. Polyurethane paint (white with red and black trim), Terra TXN-960 plus PTT, retracts and Lamb tires, Posa carb. Trailer included. Too many interests at present. \$7500 firm. Eddie Smith, 1762 Moore Rd, York SC 29745. Tel & Fax: 803-684-3425.

FOR SALE - KR-2 project, complete thru boat stage. Spars ready for included Diehl skins. Forward deck, cowl for Revmaster, turtle deck (still in included mold), horiz stab and elevator with elec trim motor. Includes foam, ply, firewall steel, aluminum hardware and remaining kit wood. See aircraft via e-mail at robert@castlegate.net. Bob Lord, Telephone 407-636-4893, evenings, 5:00-9:00 eastern time (Cocoa FL). Machine will answer, calls will be returned if no answer. \$2500 OBO.

FOR SALE - KR-2, boat stage, \$400. New set of KR-2 plans \$100. Bobby Whisenant, Rt 1 Box 637, Chireno TX 75937. Tel: 409-854-2644 or e-mail to bpc@lcc.net.

FOR SALE - KR-2S. R-R Group 1 pkg: Spruce and ply (80%), side panels for boat, plans, newsletters. \$200 OBO plus shipping. Dave Root, Box 1978, Edgartown MA 02539. Tel/Fax: 508-627-7480 or email jizo@webtv.

FOR SALE - KR-2 with 14" stretch. Boat stage on retracts. Dragonfly canopy, dual controls, turtledeck mold. Spars complete. Diehl wing skins. Foam, cowling, etc. GPASC 0-time 2180, 5-point mount, prop and spinner. Ellison throttle body, Diehl case and alternator and 4-into-1 exhaust. Usual excuses. \$7500 OBO. John Mander, POB 122, Sprague River OR 97639. Telephone 541-533-2388 or aridell@aol.com.

FOR SALE - KR-2S, Boat stage. Birch ply, spars started. All spruce to finish, full set plans, newsletters, internet downloads, pictures, KR Gathering tapes. \$950. Project located north of Seattle WA. I have no time to build. Bruce Toscano 425-806-8072.

FOR SALE - KR2S spruce kit, \$500. Also a 2.2L Subaru Legacy engine for \$1500. Contact Wesley Tomikoshi, 2449 Park Rose Ave, Irwindale CA 91010. Telephone 626-303-3477.

WANTED - Interested in purchasing KR1 or KR2. Contact Edward Menges, 6223 Southwood Apt 1S, St Louis MO 63105. Tel: 314-726-3085.

FOR SALE - Owner deceased, must settle estate. KR2 project. Boat stage with spars and some f'glas work started, retracts, 1800cc, magneto, instruments, many materials. Need to sell to best offer. Betty Harrington. Tel: 718-816-4934. Staten Island NY area.

FOR SALE - Cleaned out the garage and found a set of KR-2 pre-molded center section skins. I'm gonna let them go for a super price but you've gotta call me for the deal. Les Palmer, 972-241-4387.

FOR SALE - Two (2) KR2 projects. Both thru boat stage and on retracts. Most controls mounted. Have two (2) cowls, molded header tank, canopy, Diehl gear in box, plans and ten years of KR Newsletters. Have 0-time HAPI 1835, prop, mount, exhaust. \$5000.00 OBO. Consider trade for metal project. Ron DeWees at 404-876-3481 or rdewees@avana.net.

FOR SALE - KR2 project complete thru boat stage on Diehl tri-gear. Wing and center section skins, aft & fwd decks, Revmaster cowl, Dragonfly canopy. New 2180 GP on firewall with dual ign, alternator, starter, carb, exhaust, prop and polished spinner. Carl Evers, 904-724-2324, between 6-9pm EST. Leave name and number.

WANTED - New or gently used Dragonfly canopy, KR2S fuel tank, wheel pants for tri-gear. Contact Mark Jones, 2710 Meadowbrook Rd, Waukesha WI 53188. Tel 414-542-9561.

WANTED - Looking for nice KR2S that will fit a 6'3" pilot. Contact Leigh Kolka, 2840 South Church St D-404, Murfreesboro TN 37128. Telephone 615-867-1211.

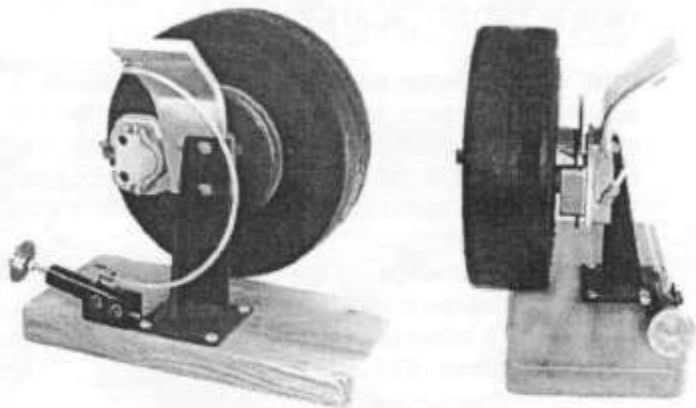
FOR SALE - Lost my medical so I am now offering my near-complete KR-1 for sale. Just about ready to fly with 1835 engine, instruments, plus second engine available. Call Carle Curtis at 703-339-8346 or fax at 703-339-8345. No collect calls, please.

WANTED - Any ol' KR builders out there have any Dynel? I'd like to buy some if you don't want it. Contact Dan Diehl at 1855 N Elm, Jenks OK 74037. Tel:

GREAT PLAINS AIRCRAFT

World's Leading Supplier of VW-based Engine Kits and Components

NEW! Hydraulic Brakes! Weighs only 5.75 pounds, less the wheels]



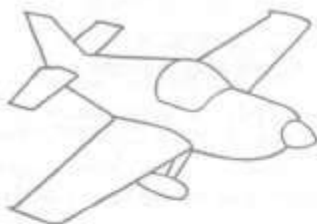
Our Hydraulic Brake Retrofit Kit can be used on your KR! The calipers are a dual sided brake that press against both sides of the disk. Used with Azusa 5" or 6" wheels or can be adapted to other bolt patterns. It will fit either 3/4" or 5/8" standard axles. The kit consists of 2 discs, 2 calipers, 2 disc spacers and 2 caliper holders. Price ... \$259.95. Master Cylinders ... \$45.95 each (heel or toe). Tube & Hardware Kit... \$19.95 each.

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KR NEWSLETTER

624 West University Drive

Suite 199

Denton, Texas 76201

Issue 260 March 1999





NEWSLETTER

1999 KR Gathering & FlyIn Set *Lake Barkley Regional Airport in Kentucky*

A Wee Anecdote from the North *Flying CG-SJS for Fifteen Years*



Don Leitch

1695 Ridgewood Dr • Castlegar BC Canada
Telephone 250-365-8326

After cruising over high mountains at 10,000 feet, I dropped down to a warmer 4000 feet to cruise home over Lower Arrow Lake. About fifteen miles ahead, a point of land jutted into the lake. I thought to myself, "Why not simulate a landing there?" So, reduce power to idle, pick a spot, wheels and speed brake down and about 500 feet over the lake when...SCHREECHL. a dead engine and all extremely quiet!

With no way to use my Armstrong starter, I upper wheels and speed brake, increased the throttle position and dove to within twenty feet of the lake surface.

continued on page 2

Begin Your Plans for 1999 Gathering

Plans for the annual KR Gathering & FlyIn are being finalized, according to event organizer Dana Overall.

Scheduled for Sept 24-25, 1999 at Lake Barkley Regional Airport, Kentucky, this year's KR fly-in will be a vacation opportunity for both KR enthusiasts and their families.

The Lake Barkley State Resort Lodge, located 2.5 miles from the airport, has blocked 70 rooms and 4 cottages for attendees. Room rates are 52.90 sgl / 62.18 dbl. Cottages are two-bedroom and sleep up to six. Located in a wooded area, the cabins are 139.20. Rates are per night. FlyIn attendees must make their reservations prior to July 25th and must mention the KR Gathering. On July 26th, all unreserved room blocks will be released to the general public. Lodge managers say that the rooms will be gone "in a couple of hours". Contact the lodge at 800-325-1708.

continued on page 2

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

1999 KR Gathering, continued:

Lake Barkley Lodge will operate a free shuttle from their site to the airport. The lodge offers breakfast, lunch and dinner each day. Guests can enjoy golf, tennis, boat rentals, miniature golf and a swimming pool. Dana says the management is family-oriented.

Lake Barkley Regional (1M9) has a 4800' lighted runway. 100LL fuel is available. The airport manager will permit tent camping on site. There is a toilet facility, but no shower or RV hookup. The nearest jet service airport is Nashville TN, an hour's drive from Barkley Regional.

A Saturday night dinner is planned for the KR folks. Details of this activity are still being developed. Dana Overall can be reached at 606-369-3156. Watch the Newsletter for further updates on the KR Gathering.

* * * * *

A Wee Anecdote, continued:

At an indicated 150 mph, the fan screeched a bit then turned and fired the VW thus saving my clean shorts and much embarrassment. As you may surmise, the airport landing was a bit shaky.

Upon pulling the engine, I found that the alternator's magnetic ring had backed out from its interference fit within the cage and had seized onto the stator, thus providing much quietness. Needless to say, I securely reattached said ring using three loctited machine screws so as to never repeat that act.

In any case, because of money and family problems, KR2 CG-SJS is for sale. I'm asking \$3000.00 US. Readers with a set of back issues may reference the December 1988 issue which details the aircraft and its flight characteristics. Lacking that, give me a call.

Ed's Note: Don's KR2 first flew in 1984, was featured in the Dec '88 issue and is an excellent performing example of the design. Check out the classifieds for additional details on what could be a great bargain.

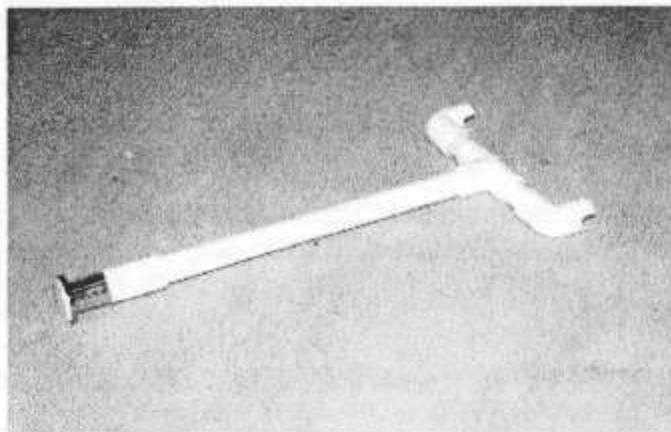
Homemade Gust Lock Simple, Quick & Lightweight

DanVoda KR2 N89DV
POB 96651 • Las Vegas NV 89193

The article in the November KR Newsletter, Pee Wee's Chocks, reminded me of something I've been meaning to share...it's the rudder lock I made for my KR2. This is actually a refinement of my original which worked fine but didn't look as neat.

I made the new gust lock using thin-wall PVC water pipe and elbows. One small bolt holds the shower rod end on the PVC tubing. The forks on the other end are spaced to fit on the opposing, original KR-style tubing rudder pedals. The shower rod adjuster, with its rubber

pad on the end, allows me to snug the lock up against the main spar. It's never come loose, even in very strong winds.



Wonder if Don Voda's wife has ever discovered where her shower curtain rod got off too? Clever idea!

The new PVC rudder lock looks a lot slicker than the old wood and metal clunker and it suits a white plastic airplane. Now, if someone will come up with an aileron lock that's classier than a bungee cord wrapped around the stick...

* * * * *

The following is a reprinted article from the August 1995 KR Newsletter and is in response to several subscriber requests

CONTROL CABLE TENSION *What It Is and How To Get It*

John Sickafoose
Post Office Box 253 • Dover OH 44622
Telephone 216-827-3964

While helping Jeanette Rand man her outside display tent at Oshkosh '95 along with Shane King (who had his Subaru powered KR-2S project on display there) and Mike Stearns (who along with Jason Parker had their KR2S project at Oshkosh last year) there were many questions asked about construction, different engines, rigging, etc.

Most of these could be answered by one or more of us, but one question that was asked quite frequently and couldn't be answered satisfactorily was the one concerning the correct tension on the control cables and how to measure it without a tremendous outlay of cash for one of the available cable tensiometers that us A&P mechanic-types use.

I'm pleased to announce that I stumbled across a neat little cable tensiometer that is very compact, lightweight and quite affordable. This unit is the CT-1 Economy Cable Tensiometer and is available from Aircraft Spruce (P/N 05-05800) for only \$31.15.

(Editor's Note: Remember, this was written in 1995!) It is straight forward in both design and useage and should present no problems in determining the tension of your cables. It reads the tension of both 3/32" and 1/8" cables.

That solves half of the problem. The other part (the suggested tension of the cables) has not been so simple to come up with. Neither the KR plans nor the FAA's handbook, *Acceptable Methods, Techniques, and Practices - AC 43.13-1A*, chapter 4, have any explicit instructions for adjusting tensions, except to do it in accordance with the airframe manufactures recommendations.

In the absence of published instructions, I will offer the following guidelines which are based on a good cross section of certificated airplanes control system tensions.

Cable size	3/32"	1/8"
Ailerons	25+5-5 lbs	30+10-10 lbs
Elevators	15+7-3 lbs	20+10-5 lbs
Rudder (if closed loop)	15+7-3 lbs	20+10-5 lbs
Flaps (if closed loop)	15+7-3 lbs	20+10-5 lbs

If anyone should be using any 1/16" cable for anything (different type trim system etc.) the normal tension for this size would be 10+5-2 lbs.

One possible reason the ailerons on most aircraft are adjusted to a higher value is that the cables, bellcranks and opposite aileron all contribute to the counterbalancing effect and therefore may help to prevent flutter.

Even though you use a tensiometer to adjust your cables, check for how the system feels. Check for looseness or tightness of cables at both extremes of travel and check for drooping of cables or for interference between cables and any structure, etc. Be sure to adjust your cables with the surfaces neutral and check both cables and average your readings. Most manufactures specify checking the ailerons on the tie together or balance cable.

Also, temperature and humidity affect cable tension some, so you may want to check the system over several days or weeks after initial adjusting. Also, recheck your systems after the first 40-50 hours of use as the cables and pulleys tend to stretch slightly and "seat in". After that, a periodic check should be all that is needed.

I hope this helps you by sharing what I've learned over the years of working on "spam cans". The price of the above described tensiometer is well within the reach of most of us. The current price of the one I own is over \$465 and you can bet I'm not loaning it out to anyone!

Dreamin' and Makin' Motor Noise Arkansas Builder Keeping At It

Leonard Pittman

10934 Pinner Rd • Bentonville AR 72712

Thought you might be interested to know that one more subscriber actually has a bird in the works.

Progress seems extremely slow; maybe a couple more years. It's a standard KR2 with Dan Diehl gear. I also have a set of the Diehl wing skins. Plan to use a GPASC 2180. Don't expect to do any major modifications.

Thanks for doing a great job with the newsletter.



On the gear and makin' noise! The Leonard Pittman KR shows off its builder, Diehl landing gear and top mounted rudder pedals. Ah, big boys and their toys. Nice work.

KR NEWSLETTER

Serving the Builder Pilot & Enthusiast

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The DelCom 960

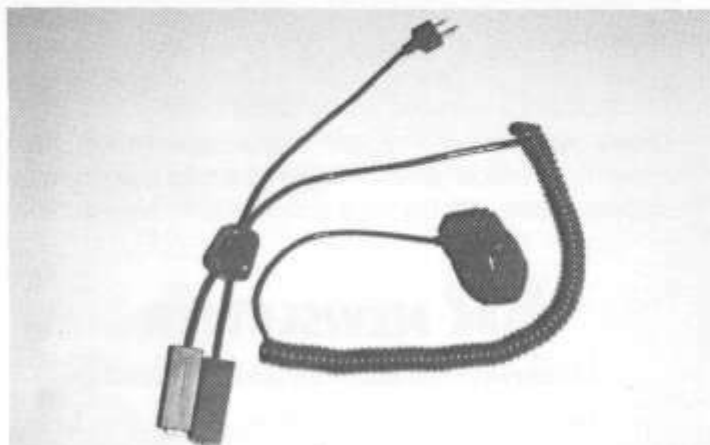
Lightweight Radio Does the Job

Skip Garden
(919) 471-9492.

When my radio decided to act up, and since it was kit built, I decided that I needed another radio. Have you priced radios lately? I told them that it was for my Experimental KR2, not a Lear jet, but the price was the same. The cheapest thing that I could find was over \$600.00!

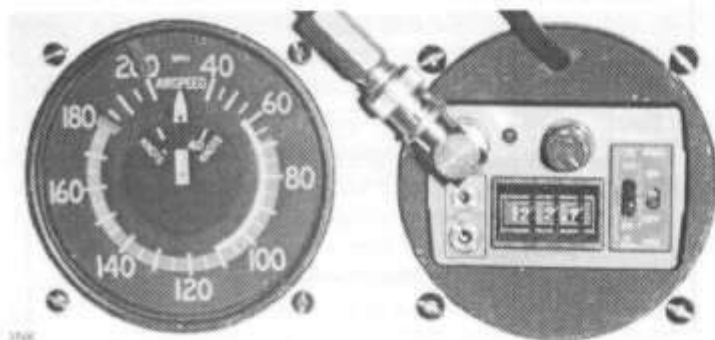
I then remembered seeing an ad for a new handheld that not only had a 5 watt output, but could be mounted in the panel. I dug up some old magazines and found the address of DELCOM. I called them and talked to Dave Frank, who I found to be most helpful and understanding. Although they don't recommend it as the primary radio, I decided to try it anyway, especially since my RST radio was not working.

For my installation, I would require a 3.125 inch panel mounting hole, a battery eliminator and the headset, mike and push to talk switch cord. This item is made into one convenient package with mike, headset and PTT switch all ready to plug in.



Headset adapter cord with integral push-to-talk (PTT) switch.

Installation is easy. Just slip the Delcom into the mounting plate, secure two screws to attach the battery eliminator, hook up the hot and ground wire mount in the panel with the supplied screws and it was in. I hooked mine into my fixed antenna, which I would recommend, so I had to thread a short



The DelCom transceiver in the panel and ready to go.

length of coax through the hole in the mounting plate. I used a Radio Shack screw-on BNC connector and a 90 degree elbow to keep things close to the panel.

All of the controls on the Delcom are mounted on the front, as can be seen in the photo. The frequency wheels are small but easy to flip. A possible drawback is the slide switch controlling the decimal frequency. In rough or turbulent air, you must be careful to be sure that you are on the correct setting.

There are a few comments I want to make. First of all, I am very pleased with the Delcom. It has a dual crystal filter and a ceramic filter that filters out all the trash and gives you sharp, clear sound. The receiver is also almost immune to outside interference. In my KR2, I don't even have a shielded ignition or plugs. Guess what... no ignition noise. Even at full squelch, it doesn't compromise receiver sensitivity.

The transmitter, although only 4.8 watts, really does the job. I use mine to work ATC and have worked them from as far as 70 miles out. The receiver will also pull in other planes from 100+miles, loud and clear. I have been using my Delcom for almost two months and love it!



The mounting plate and battery eliminator.

For those who are weight conscious, the Delcom really fits the bill. The radio weighs only 17 ounces with the battery eliminator in place or a bit over 20 ounces with the NiCad battery in place. It is only 8 inches long and, as you can see, fits nicely into a 3 1/8" instrument hole. If you don't have an electrical system, this is the one to use because the battery slides off of the bottom of the radio and can be recharged on or off of the radio. It is fully guaranteed for one year, parts and labor. With your DelCom, you'll receive a wall charger, NiCad battery, belt clip, vinyl case and a wrist strap. The other items are optional accessories.

If you want more Delcom information, they are on the web at DEL.C.COM. or you can call me at (919) 471-9492.

On THE RAMP

Ramblings from the Editor

Thanks to all those who took advantage of the closeout sale of KR Newsletter back issue sets. All have been shipped and should be delivered. As of March 30, 1999, *back issues are no longer available.*

The database index to KR Newsletter articles, from Issue Number 1 to current, is available to subscribers. The index is over forty pages in length, broken into topic subjects and provides a brief note of content for each item. Due to its size, the index will be mailed flat in a 9x12 envelope. The KR Newsletter Index is available for \$7.50, post paid.

Subscribers will be able to request photocopies of specific articles of interest. A fee, based on research and number of pages, will be charged for the service. Workin' on that part... but right now it looks like a buck a page.

I was recently contacted by the FAA FSDO office in Miami, Florida. Seems a local gentleman had purchased a completed KR2 and wished to secure an Airworthiness Certificate for the aircraft. The "speed bump" occurred when the FAA inspector noted that the original weight & balance paperwork had been altered with correction fluid and some dissimilar information added in its place. According to the document, the aircraft's CG was now dangerously aft of limits. It is unknown if this CG dilemma is due to the owner's miscalculations or a W/B problem.

Information was shared with the Miami FSDO and the aircraft's owner as to the KR's specified CG range. Those of you who are experienced, particularly in the KR, well understand the dangers inherent with an aft CG.

My contact with the owner included a sample KR weight & balance form plus instructions, encouragement to take advantage of both the KR Newsletter and to find a local EAA Chapter. Excellent resources add to flight safety. To date, there's been no further response.

My thanks to those who have most generously contributed their time and effort in support of the news. It can get kinda scary when the deadline starts creeping up on you and there's not much in the ol' mail bag. Keep 'em cards and letters coming.

OK, boys and girls, I've got to fuss at a couple of you. Don't want to be an old grouch, but when you so graciously send in a photograph of your bird PLEASE do not write on the pretty picture!

The postman recently brought a renewal check from Roy Linn of Corsicana, Texas. Inside the envelope was a photo of a very interesting tri-gear KR2 peeking out of Roy's hangar. I hope that we might convince Roy to share with us, in the near future, a detailed report on his aircraft.

In the meantime, here's the photo...complete with ol' Roy's chicken scratchings ON THE SHINY SIDE!



Roy Linn KR2 tri-gear
3380 SW 1160 • Corsicana TX 75110

AVIATION... As Explained by Kids

Borrowed from
The San Diego Antiquer Newsletter



"The first female aviator was Kitty Hawk."

"Roger Wilco invented the language of communications."

"The history of aviation is getting longer and harder all the time."

"Orville Wright was born in 1871, supposedly on his birthday."

"Charles Lindbergh was the first to fly to Paris. He did it by the airplane method."

"Lift in an airplane is the same as thrust, only just the opposite."

"I know what a sextant is, but I would rather not say."

"A rocket has no moving parts, except itself. Straight up."

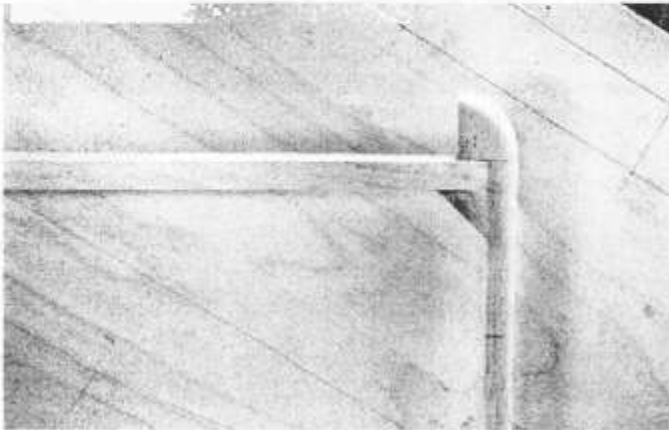
Stab Tip "Tip" *Easy Foam Shaping*

Wes Hennis

6687-3 Cape Hatteras Way NE • St Petersburg FL 33702

Here is a tip that might help builders during the foam shaping for the horizontal stab. It's not in the plans.

Make a wooden block for the forward corner of the stab. Round and shape it to your final preference. When you sand the polyurethane foam to its leading edge shape, the block will serve as a sanding guide.



This simple construction tip will save much frustration and, when used in conjunction with the plywood stab rib, help produce a well-shaped foam component.

Fiberglas Gap Seals for Tail *Technique Sounds Simple, Neat*

Jim Marshall

10602 Winterhawk • Boise ID 83709

When making the trailing edge gap seal for my KR's vertical and horizontal stabilizers, I didn't make them the way shown in the builder's manual.

First, I completed the elevator and rudder up through the fiberglas layups. Then, I attached waxed paper (as a resist) over the leading edges of the parts. A couple of layers of fiberglas are then laid up over the paper, extending back approximately an inch or two. After cure, the parts are popped off, trimmed as required and bonded to the fixed stabilizers. Some minor fill and another layer of fiberglas fairs the seals into the stabs. The idea worked well for me.

I read in a newsletter some time ago about saving unused resin in your freezer. Defrost it in the microwave for reuse. This, too, worked well but don't use more than 10-12 seconds for thawing! The correct time will depend on how big a resin popsicle you have.

Inquired about the Zoche diesel engine. I'll send some info. There's a lot more on the internet. After driving diesel trucks for thirty years and gas for ten, there is no comparison. Diesel wins hands down.

Keep up the good work.

The editor thinks Jim is his kinda guy. Fellas, this is the man that, while his wife was away, stored his KR's wings on the bed in their guest room while they final cured! Had that nice fiberglas potporri ladies like so much.

Hydraulic Line Installation Tips

Many of the hydraulic hose fittings used on our aircraft at the calipers and brake cylinders are pipe threaded and, as such, will usually require some time of sealer to prevent unwanted leakage. That slick, red fluid will find any little chink in your installation and will leave its calling card in the form of drips and runs.

The entire process can get pretty frustrating, particularly if the leak does not show up until some hours have been put on the pressurized system.

My KR developed a slight fluid weep on the left brake cylinder reservoir. The first indication was a slippery cockpit floor. The initial fix was to mop up and then wrap a shop towel around the lower portion of the brake cylinder. Not too safe or very professional.

Later, while the aircraft was down for maintenance, the hydraulic system was drained and an attempt was made to properly reseal the threaded joints.

Most everyone is aware that the KR is a small aircraft. Working underneath the panel and fuel tank is a job for a skinny contortionist. Removing the brake pedals and plumbing required hanging upside down with legs outside the cockpit while the main spar was causing pressure bruises on my ribs. The necessity of testing the threaded couplings before reinstallation was an idea that didn't take long to materialize.

After setting up a bench mounted rig that would maintain constant pressure on the system, each of the next three mornings found a small drip of fluid formed under one or the other reservoirs. Teflon tape was initially used to help seal the threads, however I'm never too sure how much torque I can put on those pipe fittings before something strips and I have to buy a new brake cylinder. After three days, the system held up to a 24 hour pressure check and was reinstalled in the aircraft.

After all the hassle, *now* I find a product that does eliminate all the weepy hassle. Permatex No. 14 Thread Sealer with Teflon is a semi-solid paste that is applied into the male threads and provides approximately 24 hours of adjustment time before the material firms up and seals the coupling. I've used it. It works.

As with any type of sealer, use caution so that none of the material will be introduced into whatever system you are fabricating.

KR CLASSIFIEDS

Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial style ads will be billed accordingly prior to publication.

The KR Newsletter reserves the right to edit free ads.

FOR SALE - KR-2 project, complete thru boat stage. Spars ready for included Diehl skins. Forward deck, cowl for Revmaster, turtle deck (still in included mold), horiz stab and elevator with electromotor. Includes foam, ply, firewall steel, aluminum hardware and remaining kit wood. See aircraft via e-mail at robert@castlegate.net. Bob Lord, Telephone 407-636-4893, evenings, 5:00-9:00 eastern time (Cocoa FL). Machine will answer, calls will be returned if no answer. \$2500 OBO.

FOR SALE - KR-2, boat stage, \$400. New set of KR-2 plans \$100. Bobby Whisenant, Rt 1 Box 637, Chireno TX 75937. Tel: 409-854-2644 or e-mail to bpc@lcc.net.

FOR SALE - KR-2 with 14" stretch. Boat stage on retracts. Dragonfly canopy, dual controls, turtledeck mold. Spars complete. Diehl wing skins. Foam, cowling, etc. GPASC 0-time 2180, 5-point mount, prop and spinner. Ellison throttle body, Diehl case and alternator and 4-into-1 exhaust. Usual excuses. \$7500 OBO. John Mander, POB 122, Sprague River OR 97639. Telephone 541-533-2388 or aridell@aol.com.

FOR SALE - KR-2S, Boat stage. Birch ply, spars started. All spruce to finish, full set plans, newsletters, internet downloads, pictures, KR Gathering tapes. \$950. Project located north of Seattle WA. I have no time to build. Bruce Toscano 425-806-8072.

FOR SALE - KR2S spruce kit, \$500. Also a 2.2L Subaru Legacy engine for \$1500. Contact Wesley Tomikoshi, 2449 Park Rose Ave, Irwindale CA 91010. Telephone 626-303-3477.

WANTED - Interested in purchasing KR1 or KR2. Contact Edward Menges, 6223 Southwood Apt 1S, St Louis MO 63105. Tel: 314-726-3085.

FOR SALE - Owner deceased, must settle estate. KR2 project. Boat stage with spars and some fiberglass work started, retracts, 1800cc, magneto, instruments, many materials. Need to sell to best offer. Betty Harrington, Tel: 718-816-4934. Staten Island NY area.

FOR SALE - Two (2) KR2 projects. Both thru boat stage and on retracts. Most controls mounted. Have two (2) cowls, molded header tank, canopy, Diehl gear in box, plans and ten years of KR Newsletters. Have 0-time HAPI 1835, prop, mount, exhaust. \$5000.00 OBO. Consider

trade for metal project. Ron DeWees at 404-876-3481 or rdewees@avana.net.

FOR SALE - KR2 project complete thru boat stage on Diehl tri-gear. Wing and center section skins, aft & fwd decks, Revmaster cowl, Dragonfly canopy. New 2180 GP on firewall with dual ign, alternator, starter, carb, exhaust, prop and polished spinner. Carl Evers, 904-724-2324, between 6-9pm EST. Leave name and number.

WANTED - New or gently used Dragonfly canopy, KR2S fuel tank, wheel pants for tri-gear. Contact Mark Jones, 2710 Meadowbrook Rd, Waukesha WI 53188. Tel 414-542-9561.

WANTED - Looking for nice KR2S that will fit a 6'3" pilot. Contact Leigh Kolka, 2840 South Church St D-404, Murfreesboro TN 37128. Telephone 615-867-1211.

FOR SALE - Lost my medical so I am now offering my near-complete KR-1 for sale. Just about ready to fly with 1835 engine, instruments, plus second engine available. Call Carle Curtis at 703-339-8346 or fax at 703-339-8345. No collect calls, please.

WANTED - Any of KR builders out there have any Dynel? I'd like to buy some if you don't want it. Contact Dan Diehl at 1855 N Elm, Jenks OK 74037.

FOR SALE - Fixed gear taildragger KR2. 1835 VW with Diehl starter/electrics and IVO inflight adj prop. Has wing tanks, mech brakes, swing-over canopy & dual side-by-side control sticks. Extras with sale. Trade for 0-360 Lye or will sell as de-registered aircraft for \$5000. Full details, contact Bob Easland, 203 Vista Rd, Gatesville TX 76528. Tel: 254-628-8448, days only. Fax: 254-628-7744.

FOR SALE - Volks engine goodies. 1835 and 2180 parts: cams, cranks, heads (both single and dual port), intakes, motor mount, zenith carb plus other small parts. Contact Randy Smith, 940-483-9939 after 8pm CST.

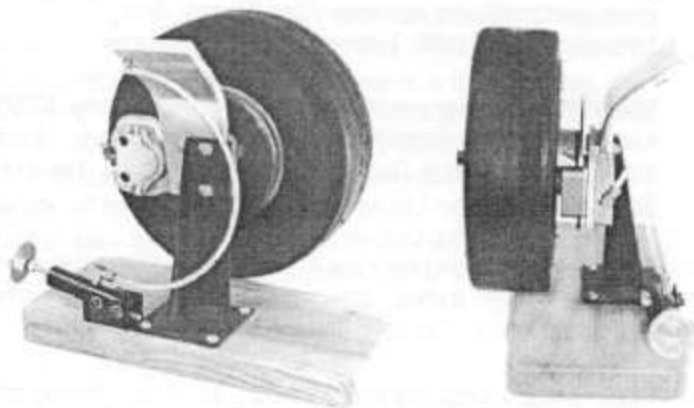
FOR SALE - I built CG-SJS and have been flying it for over 15 years. This KR2 is still going great with 2180 VW, retracts, speed brake, other goodies. Cruises at 155mph and 2500 easy rpms. Won't last long at \$3000.00 US so contact Don Leitch at 1695 Ridgewood Dr, Castlegar BC V1N 2L5 Canada. Tel: 250-365-8326.

FOR SALE - Builder deceased. KR2 project. DeFrese tri-gear and canopy, throw-over yoke, push rods, rod end bearings, etc. Fuselage and center section completed. Outer spars completed and ready for foam or skins. Much materials, foam, fiberglass, KR Newsletters, etc. Excellent workmanship, asking \$4500. View at 8607 E Thornwood Dr, Scottsdale AZ 85251. For add'l info, call Gladys Cheney at 602-949-1613.

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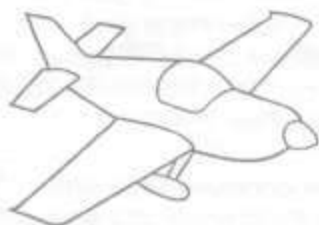
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KR NEWSLETTER

624 West University Drive

Suite 199

Denton, Texas 76201

Issue 261

April 1999





NEWSLETTER

Gettin' It Done In A KR-1 *Helpful Flying and Landing Techniques*



KR-1 N94G

Thurman Longcrier • 726 East Limestone Street • Florence, Alabama 35630
Tel: 256-764-8913 • email: tlongcrier@aol.com

Strap in with Thurman Longcrier as this experienced taildragger driver takes us along on the initial flights of his KR-1. His efforts in conquering the quick and responsive KR are well communicated and extremely helpful for those who may be approaching that first flight...and landing. Veteran pilots as well will enjoy comparing techniques as Thurman rolls onto final for his first ever landing attempt. Recounted with humor as well as common sense, the story begins on page two...

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

First Flight Always Includes a Landing

Knowledge Helps Assure Success

Thurman Loncrier

726 East Limestone Street • Florence AL 35630

About a year ago, I bought my KR1 from a guy as a project. Got her flying and put about four hours and four or five flights on her to get the feel of it. Had some alternator problems so the engine is out. One of the segments of the magnet ring, mounted on the rear of the crankshaft inside a Diehl accessory case, came off and deposited (stuck) itself to the segment next to it. At the time, it was on the ground during a run up to check out a tach from Great Plains.

With the little time I've had in the KR1, I think it is probably the most fun to fly. You'll notice the wide, spring gear. It has Bennett's hydraulic brakes and a heel set-up, which I like, and an 1835cc VW.

Got my tailwheel set the way I wanted it and with toes on the pedals, heels on the brakes, it's very comfortable.

Taxi tests were a piece of cake. Good, solid feel and prompt response. I didn't do any fast taxi. Eased the power in, kept the tailwheel planted on the hard surface runway and it tracked straight forward with what seemed like no input on my part. The aircraft flew itself right off the runway although it did not seem that I had gotten up enough speed to call it a fast taxi. *Editor's Note:* Sounds like the typical KR ground effect phenomenon.

Later, during stall tests, I guess it stalled around 50 mph. The aircraft wanted to mush down. The last time I looked at the ASI, the needle was below the numbers.

Handling in flight was crisp and responsive. In straight and level flight, the nose seemed further below the horizon than I was accustomed to. You could gain a thousand feet real quick if you didn't pay attention. I've never really checked for a cruise speed or maximum, but I do remember seeing 175 mph a time or two while cruising above the airport!

Landing...well, you know the drill. I was pretty successful in slowing it down on downwind, say 100 mph. Base was about 70-80 and final, figuring it would stall around 50 or so I tried to set up an approach at 65 mph (1.3 times 50 mph). I like to fly by that number.

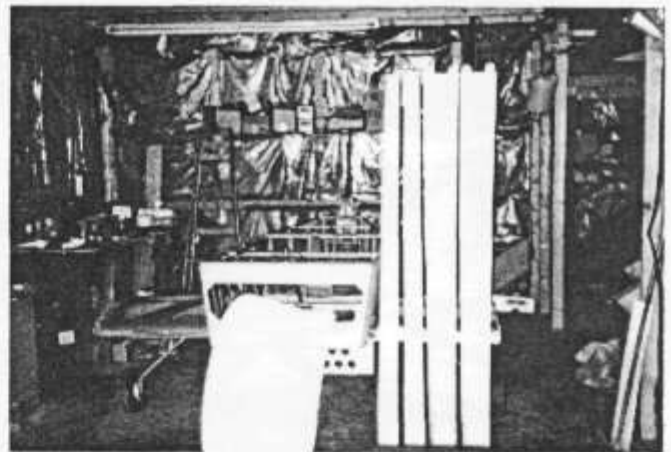
First time, didn't get that slow, flared out, floated down the 6750' runway and set up for a 3-point full stall. That won't get the job done. The tail was low, touched down the mains near stall speed and - you guessed it - bounced. Not bad, but bounced three times. The porpoise felt uncomfortable so went around. Next time, bounced again but in control. Made three landing, as they say, in one approach.

Next flight, I decided to make a power landing. Would have the first time but I had forgotten how I used to do them. Full stall, 3-point worked OK in my Midget Mustang. My Turner T-40 and my Grumman AA1A, which I had just prior to getting the KR1, were tri-gear. So, for

anybody just getting used to the KR, here's the way I did it. I understand KR's don't like full stall, 3-point landings because they are configured to stall with the nose way high in the landing configuration. Am I correct? Approach speed 1.3 times the stall speed is plenty fast. This should be around 65 mph. 70 mph is fast, but OK. Aim at the end of the runway then at about twenty feet of altitude, raise the nose about 15 degrees. You'll think you are still tail high but you aren't. This is your flair. I keep my nose my nose trimmed a little nose heavy here. Still keep a little power in and just let the speed bleed off. Not much back pressure here. Old taildragger pilots want to put the stick all the way back in their gut on a three-point landing. Resist this urge. Real light touch and it will practically land itself if you'll just leave it alone; read don't over control.

Feel for the runway with your mains. When they touch, relax the back pressure a little...remember the nose heavy trim? It will just stick. No bounce, no wobble and should track straight down the runway. Your tail is still up so keep the stick about neutral or wherever it needs to be. As speed bleeds off, allow the tail to come down of its own accord (or sooner, of course, if you want to).

I made several landings this way and each one felt very comfortable.



Besides flying and tweaking his KR1, Thurman is also building a tri-gear version of the KR2. He shares some thoughts in his KR flight report.

As to the engine, I have bought a Type 1 converted to 1904cc by way of 90.5mm cylinders and a 74mm stroker crankshaft. The engine is used but with low time. It was in a Sonera that was damaged during high speed taxiing. When the time comes, I will continue tearing it down and will rebuild it. It had a prop strike, albeit a light one, but I will check the crank and prop hub.

Oh yeah, the KR2 project is about 20% done with only 90% left to go. I do not have a nose wheel assembly and have not decided how I want to go about this. I would like to see some input from some of the readers. I know about Dan Diehl and Les Palmer's stuff but still would like

First Flight...Landing, continued:

your thoughts on these. Also, they seem a little pricey. Has anyone come up with a simple, lightweight design that is practical to build in the shop? Come on, guys, Monte needs that kinda stuff and I do, too!

Just read the March KR Newsletter...ain't that KR2 of Mike Garbez a thing of beauty? Very interesting article by Jack Schnurr, too. I like that kinda stuff.

When I get my engine back together and some more flight time, I'll send in another flight report if there's any interest in this sort of thing.

* * * * *

"Any interest in this sort of thing?"

Holy smoke, Thurman, this is what *everyone* is interested in! Thanks for taking the time to share your experiences and ideas with us. Without valuable contributions such as yours, we would all be busily reinventing the wheel. Keep it up, pal.

— Monte

Air-Driven Alternator *KR2 Simplicity*

Randy Clark

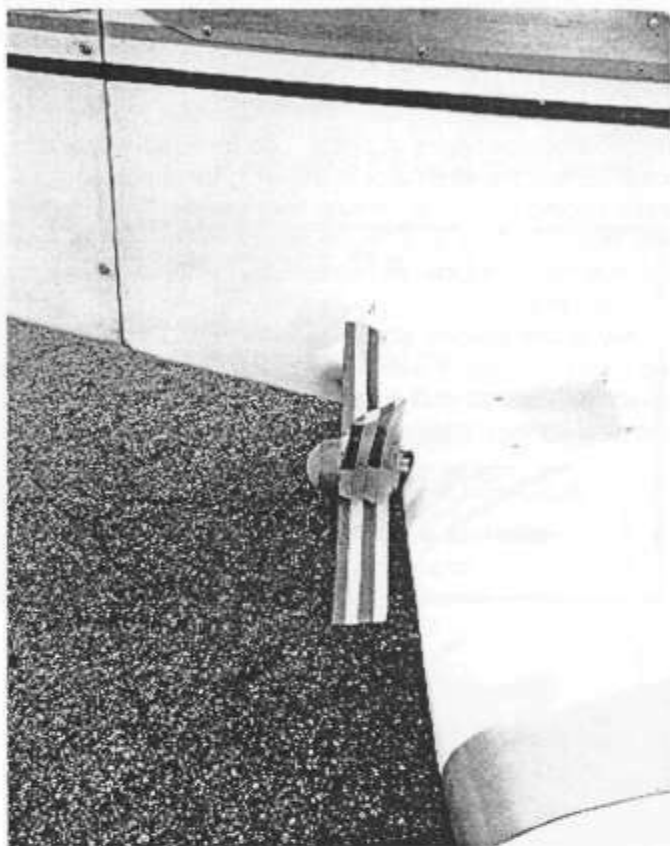
2262 Falconview • Salina KS 67401

First off, just a note to say hello. I am still flying plus enjoying my move to Salina, Kansas. I recently flew from Amarillo to Salina in 2.5 hrs and 9 gallons of fuel. I appreciated the previous little story about you and I sharing a room in Perry during last year's Gathering and the story about my alternator in the wing. Enclosed are two photos depicting my installation.

I had no room under the hood for an alternator. I bought my 1835 VW engine in 1983 from HAPI. I have about 300 hours and the engine is doing well. I have the mag in back, hooked to the crank that supplies juice to top plugs. I had Steve Bennett drill 10 mm holes for sparkplugs under the heads. A distributor supplies juice to lower plugs. Now, to provide for the electricity that was missing.

I purchased an eight amp alternator from B&C Specialties of Newton KS. They pulled the pulley shaft and replaced it with a small prop shaft. A friend of mine, Glen Pfortmiller, made the unique prop shown in the pictures. The prop is about 12 plus inches in diameter with a heavily twisted blade so that a 150 mph airplane does not overspin the prop. I do not notice any significant difference in the way the airplane flew before or after the installation. I have a 5 1/2amp motorcycle battery that supplies the juice until I firewall the throttle. I did not weigh the components but I figure the battery, alternator and prop weigh about 12-13 pounds. A

voltmeter was installed and as soon as the aircraft begins moving under full power, I can watch the meter go from 12 to 14 volts.



/Access port for wind-driven alternator installation visible on upper leading edge of the Clark KR2.

-Additional photo and article continued on page four

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Evening and weekend tel: 940.566.5871

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BACK ISSUES

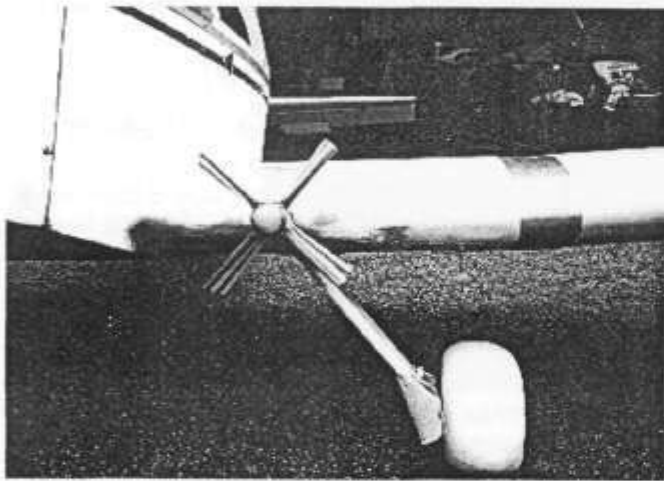
The KR Newsletter maintains a database of selected articles from past issues. Printout available at \$7.50 US, \$10.00US Canada & \$15.00US Foreign. Copies of material available at \$1.00 per page, please include estimated postage. Articles over one page in length will be billed for amount due.

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Air-Driven Alternator, continued:

The installation was simple. A top section of the left front wing was cut open about 9 inches across. A quarter-inch plywood plate, fiberglassed on both sides, was positioned in the wing with alternator attached. It was fiberglassed in place and the little regulator was attached on the backside of the plate. The top portion of wing was then fiberglassed back in place. I do have an inspection cover behind the alternator in the wing for checking nuts, brake rigging, etc. The hookup was simple. The positive lead was attached to a toggle switch on the panel and then run from there to the battery. Instructions came with the alternator.

My plane weighs about 535 pounds. I kept it light and I am not missing much except a starter. My radio is a navcom handheld that is hooked into my a/c battery. It flies nice on the 1835 engine.



Nope, not the light twin offering from Rand-Robinson but Randy Clark's air-driven alternator installation.

ON THE RAMP

Ramblings from the Editor

An Important Notice

Besides the most recent postage increase, those pesky folks at the USPS have made a change in how mail will be delivered to private mail box customers...of which the KR Newsletter is one.

Effective immediately, a minor change in our address must be made. Rather than *Suite 199*, the use of *PMB*, or Private Mail Box, must be used.

Please note this change when you submit your pics, articles, love letters, checks, etc. Gracias.

And while we're talking about the mail... A few of our readers maintain two residences, both a summer and a winter domicile. It's no problem to switch your mailing address as you move, however, the KR News database

is not able to *automatically* make that change. It will be necessary for you to drop a note to the editor with your current dig's address each time you move. That way, you'll get your KR Newsletter in a timely fashion.

Lately, the KR News has been receiving quite a few renewals from KR pilots...yes, pilots, as in *flying* pilots. The renewal form says "100%" on the percentage completed line. That's a great accomplishment from these individuals!

What the KR Newsletter and all our readers would enjoy is a photograph of you and your aircraft along with a note on your personal experiences with the KR. Please consider dropping some info in the mail. The photos will be published and your thoughts will be appreciated.

Update on a Tri-gear KR2S ***"Other Projects" Keeping Builder Busy***

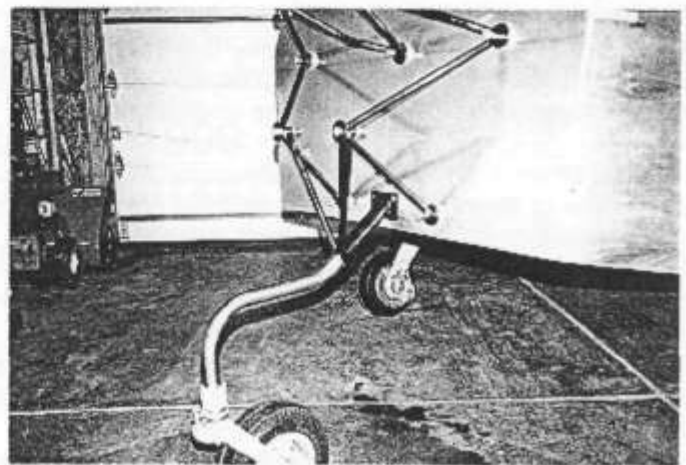
Mark S. Jones

271 O Meadowbrook Rd • Waukesha WI 53188

Tel: 414-542-9561 • email: flykr2s@aol.com

The deep freeze is over and I am making progress on N886MJ again. I now have two future KR pilots, one 18 months old and the other one week old (both boys). The older one gives me the motivation needed to get out in the garage and work on the 2S. You see, as soon as I get home from work he heads to the garage where he can play with Daddy's toys.

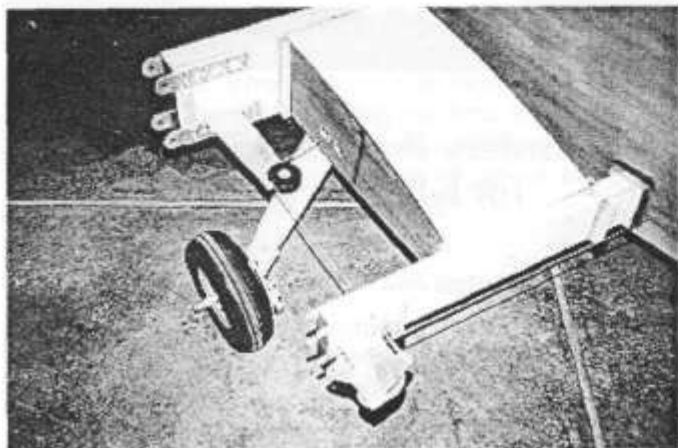
I have now completed the firewall, which is stainless steel, fiberfrax and plywood. A Great Plains five-point engine mount is installed as well as the Diehl nose gear. If you are considering using fiberfrax, I would suggest not to buy the expensive glue they offer for it. I found a high temperature clear silicone used to seal fireplaces works great. Spread a thin layer over the plywood, press on the fiberfrax, let cure overnight, spread another thin layer on



*Excellent view of 2S motor mount and nose gear fit.
Can engine installation be far behind?*

the fiberfrax, press on the stainless steel, let cure overnight. You can find the silicone at any home builder supply store for about five bucks a tube and it only took one tube to do the job.

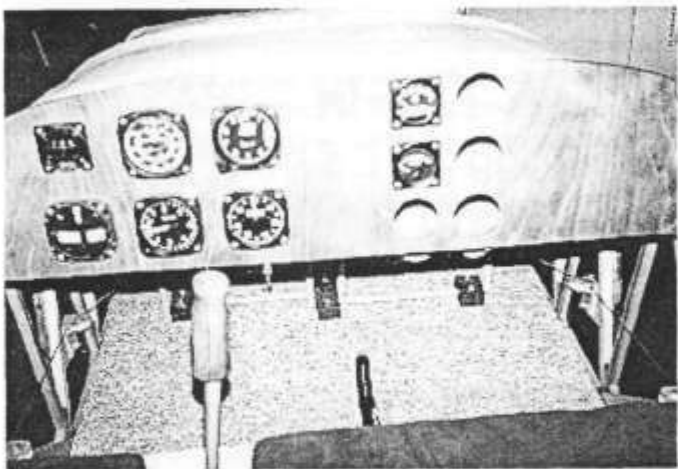
All of my control cable brackets are completed and all cables are installed. I have enclosed a photo of my stub wing showing how I routed my aileron cables around the Diehl main gear leg brackets. On the aileron cross cable, some builders are having problems clearing the bottom of the dual rudder cable pulley brackets mounted on the rear of the aft center wing spar. I had to modify the bottom of the bracket slightly and now have a straight cable between the bellcranks.



Center section with wing walk structure and modified aileron pulley bracket necessary to clear Diehl gear.

I have finished the construction of my header tank mold. Expecting it to hold around 17 gallons. I am just waiting on a little warmer weather so I can do the glassing.

I have completed the instrument panel, which I made from birch plywood, stained and coated with polyurethane. Turned out beautifully. Most of the instruments (6 flight and 6 engine so far) are also installed. This will be a removable panel for ease of wiring and working on.



The Jones KR2S features instruments installed with mounting flanges on outside of birch plywood panel. Makes for less critical dimensions of cutouts

Thanks to the classifieds in the newsletter, I have once again managed to find a good price on a Dragonfly canopy. I am waiting on the delivery, after which, I will install the turtle decks. I had started to form the rear turtle deck, but with well taken advice from a fellow builder who suggested I get the canopy first in order to make all the lines match up perfectly, I placed that project aside and moved on to the tail feathers. I am in the process of inserting the foam and shaping the surfaces for glassing.

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AND

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Prices so LOW that I can't Advertise Them
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Contact: Cessna 150-152 Club

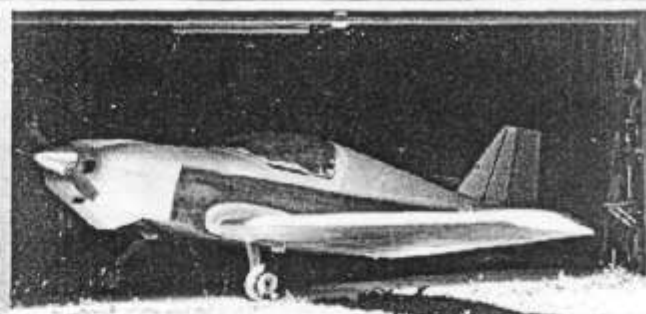
919-471-9492 for a Quote
C150club@aol.com

Michigan KR2

Photo Accompanies Renewal

Les Neuman

10634 Eastern Avenue • Wayland MI 49348



Peeking from the shadows of the workshop, the Neuman KR2 is about 85% complete...85% to go.

Questions from a Plansholder

Michael Beck

5960 State Route 9 • Sedro Wooley WA 98284

I very much enjoy the KR Newsletter, but as I have worked toward the day when I could start construction, everything had to come together. First, build an addition to the house with a basement workshop underneath then a few other things.

- continued on page

Questions, continued:

I've had KR2 plans for 10+ years and now, since '94, the prints for the KR2S. There are a few things I've wanted to know but don't believe I've seen anything in the newsletters. Regarding landing gear; 1) A design for a swiveling nose wheel, 2) Homebuilt composite gear legs with mounting points in the wings.

Secondly, I'd enjoy a survey of builders with flying KR2's and their choices of engine and prop vs speed. Under engine specs, I would like to see: Engine displacement, cam, compression ratio, fuel choice, carburetion and the diameter, pitch and rpms of the prop. With this would be the aircraft's weight and landing gear configuration. Then, what is each plane's cruising speed and what is their rate of climb?

Another thought is if the builder used the Spitfire RAF 48 airfoil or did they use something newer as did Roy Marsh with his modified 23012.

It's My Dream, Too !

Thanks, Mike, for the nice note and your comments. I, too, would enjoy comparing all the data on KR's you mentioned in your note. Basically, you're asking for what myself and every other editor of the KR Newsletter has been doing for over the last twenty-five years! It would be a terrific piece of reference material.

Reality is quite a bit different. KR builders, pilots and enthusiasts, like most everyone else, are busy people. A fellow who sits down long enough to write *anything* to share with the newsletter is a treasured contributor. There are no set specific requirements or form as to what you submit so I am extremely grateful to receive just about anything from jumbo pencil scratchin' on a Big Chief tablet to very technically sophisticated reports and everything in between. In other words, us editor beggars can't be choosers.

Thanks again for writing. I hear you.



Bindery Process Available for KR Newsletters

Rick Armstrong

4522 Whetsel Ave • Cincinnati OH 45227

A quick note to inform the group of a binding process available at your local Kinko's print shop. They charged me less than five dollars to provide a very professional product.

I've been having this binding done for many years and have yet to have one fail.

KR NEWSLETTER

Serving the Builder Pilot & Enthusiast

ANNUAL KR GATHERING & FLY-?N

• September 24-25, 1999 -

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and the

Lake Barkley Resort Lodge, Kentucky

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for additional information, stay tuned to the KR Newsletter or contact
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Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial style ads will be billed accordingly prior to publication.

The KR Newsletter reserves the right to edit free ads.

FOR SALE - KR-2 project, complete thru boat stage. Spars ready for included Diehl skins. Forward deck, cowl for Revmaster, turtle deck (still in included mold), horiz stab and elevator with elec trim motor. Includes foam, ply, firewall steel, aluminum hardware and remaining kit wood. See aircraft via e-mail at robert@castlegate.net. Bob Lord, Telephone 407-636-4893, evenings, 5:00-9:00 eastern time (Cocoa FL). Machine will answer, calls will be returned if no answer. \$2500 OBO.

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FOR SALE - KR-2S, Boat stage. Birch ply, spars started. All spruce to finish, full set plans, newsletters, internet downloads, pictures, KR Gathering tapes. \$950. Project located north of Seattle WA. I have no time to build. Bruce Toscano 425-806-8072.

FOR SALE - KR2S spruce kit, \$500. Also a 2.2L Subaru Legacy engine for \$1500. Contact Wesley Tomikoshi, 2449 Park Rose Ave, Irwindale CA 91010. Telephone 626-303-3477.

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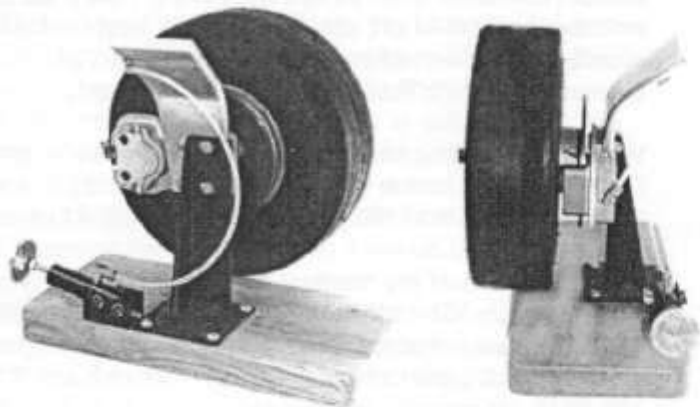
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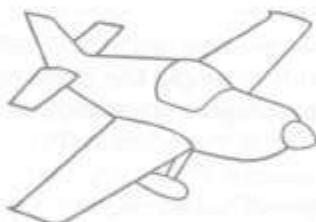
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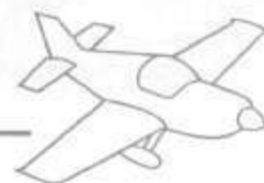
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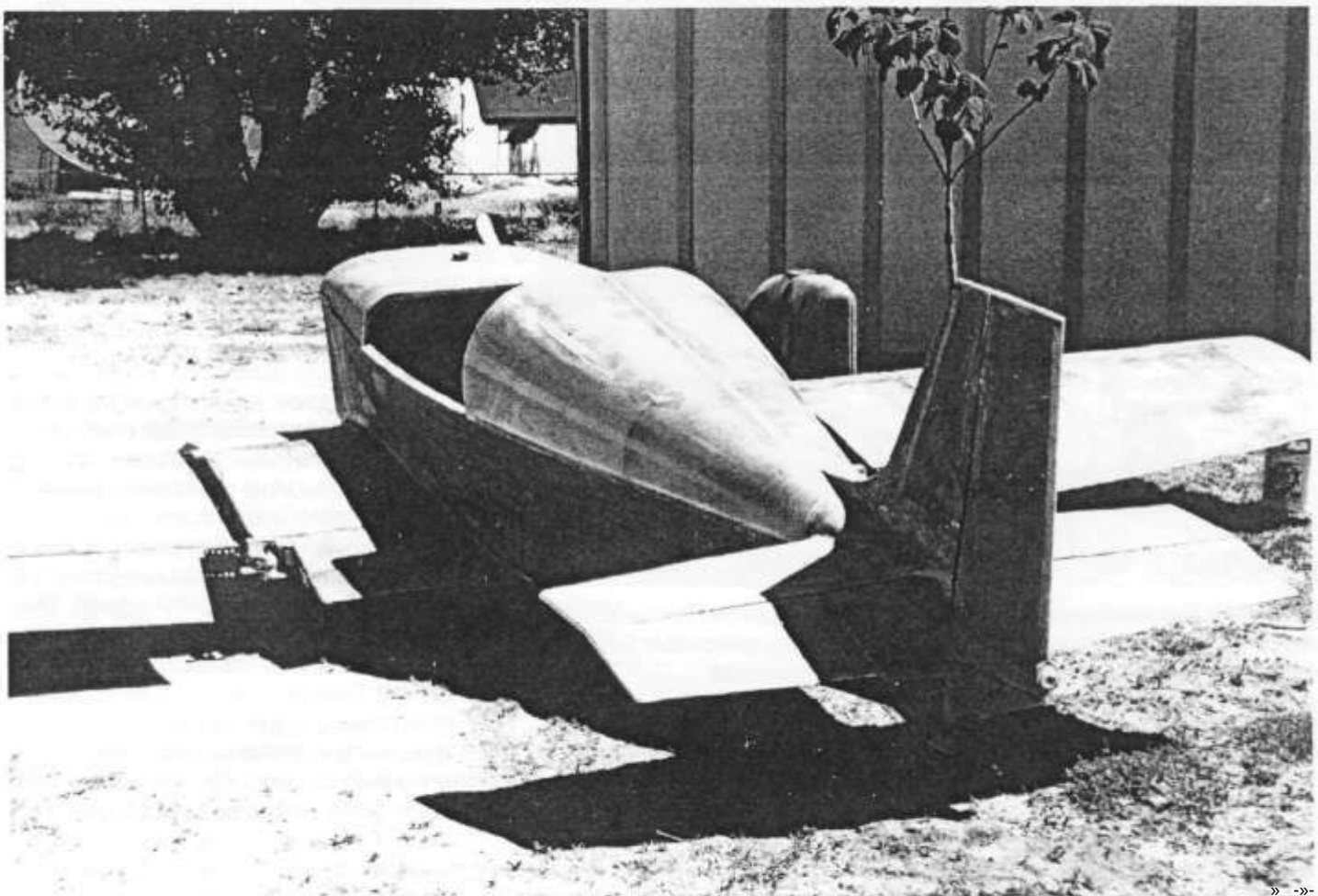
Issue 262 May 1999





NEWSLETTER

Arizona Builder Dedicated to His KR2 *Long Term Project Is Moving Forward*



John Cromwell

7685 North Star Grass Drive • Tucson AZ 85741
Tel: 520-744-3303 • email: jdcromwell@juno.com

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

Arizona KR2

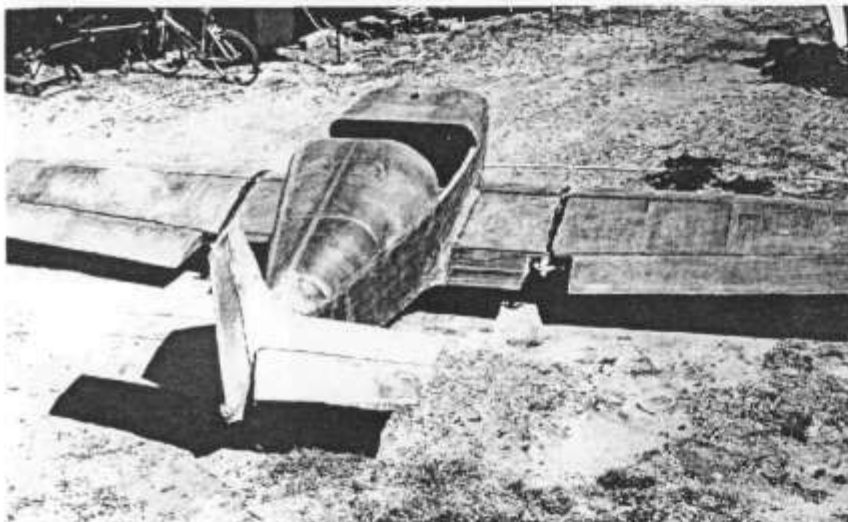
Knockin' It Out in Tucson

John Cromwell

7685 North Star Grass Drive • Tucson AZ 85741
Tel: 520-744-3303 • email: jdcromwell@juno.com

I know you have been wanting KR project photos and articles for the newsletter. I have been meaning to do this for some time now so one day this month I pulled my KR-2 project out of my 12'x20' Tuff shed and took pictures of it.

Enclosed are some of the photos I took. I have been building on this KR-2 for some time now. Seems I have little time to work on it, working out of town as I do, so the progress is going very slowly. I do enjoy working on it when I can. I have been trying to stay with the KR plans as much as possible but have made a few changes. I have used a few things found in the KR Newsletter that I felt were just better ideas. I widened the cockpit seat area to 39" because 38" was just not enough room for me. I wish I had widened it 2" but I am too far along now and can't go back. The extra room is very nice for two people. Glad I did it.



Except for the cowling, all fiberglass components for the Cromwell KR2 were crafted by the builder including the aft deck, a removable forward deck and fuel tank, wing skins... the works.

Using premolded seats that I cut down to fit the 39 inch cockpit width. They seem to work out great for my KR. I am using metal brackets to bolt them to the spars. I can pull them out anytime by removing four bolts. The seats are lightweight, yet strong. My good next door neighbor gave them to me for my plane. Plan to cover or paint them.

I'm still working out a few bugs, but my flaps can be removed with a few bolts should I ever need to work on them. My own design, they seem to be working well to date.

One item that I did not make is the premolded cowl. It was fabricated by Keith James of Tulsa, Oklahoma, and shipped to me.

The tail section I have tried to make look nice and streamlined so as to make my KR-2 fly faster. I have a white aircraft tail light with red and green position lights are on the wing tips. For now, my KR will be VFR only. Have collected a few gauges so far.

The retractable landing gear is to plans. I have one landing light that I can get to by removing the wing.

I have a premolded turtledeck that Gary Conrad, of Oklahoma City, and I made at his home. He was also building a T-Tail KR-2 at the time. I'm not sure if he has his plane completed yet.



Careful attention to tail surfaces juncture will aid performance. Note nav light.

I have used Aerolite glue for all the spruce wood and vinylester resin for all the fiberglass. I like both the Aerolite and the vinylester. Most of the metal parts for cables, etc. were made by Carey Anderson of Liteflite Hardware. (*Editor's Note:* Many readers may remember the late Carey Anderson. He was an avid supporter of the KR designs and also provided some of the metal components on my 684LM.) My wing spar attach fittings were made by a friend while we were living in Edmond, Oklahoma.

I plan to build my own engine and have some of the parts but I have not started on that. Volks 1750 or 1834, undecided just yet. The fuel tank I have made is almost 15 gallon capacity. It is just sitting on the plane for the photos. I have a lot more to do to get this bird flying bit I wanted to send these photos in to you for the KR Newsletter. I really enjoy the newsletter and it's a real help in keeping me working on this project. Hope to be flying soon. Keep the KR Newsletter going. You're doing a great job with it.

How Windy Is It?

Meteorologists use the Beaufort Scale of Wind Force to describe wind conditions

<u>Category</u>	<u>MPH</u>	<u>Result</u>
Calm	under 1	Smoke rises vertically
Light Breeze	4 to 7	Wind is felt on face; leaves rustle, vanes move
Gentle Breeze	8 to 12	A light flag extended
Moderate breeze	13 to 18	A small branch moves
Fresh breeze	19 to 24	A small tree sways
Strong breeze	25 to 31	Large branches move; umbrellas out of control
Near gale	32 to 38	Whole trees move
Gale	39 to 46	Twigs break off trees
Strong gale	47 to 54	Slight structural damage occurs
Whole gale	55 to 63	Considerable structural damage occurs

ON THE RAMP

Editor Rambles On

As I sit here at the 'puter and knock out this column, I'm grouching about the 20 to 25+ mph southerly breeze blowing, just as it has been for the last several days. I have a brand new Pietyol in the hangar with a brand new Airworthiness Certificate nailed to it and I can't launch that first flight until the weather calms down. Poor, poor pitiful me. Guess it could be worse...

Yesterday, the postman left me my latest newsletter from the Texas Chapter of the Antique Airplane Association. Since the wind had grounded me and my "new" antique, I sat down to do some light reading.

Yikes! The recent tornadoes in nearby Oklahoma did a number on several airports and Chapter members aircraft. Photos of the old Chickasha Municipal Airport, southwest of Oklahoma City, showed total devastation. Pieces of airplanes, hangars and other debris were found as far as Moore, Oklahoma...over thirty miles away!

At nearby Newcastle Airport, a member's C-172 had a broken windshield; minor in comparison to the total loss of his recently restored J-3 Cub. At the same field, another member lost his E-2 Cub and a Standard J-1.

Both are irreplaceable historical aircraft. They did receive something in trade from the tornado. The storm dropped a car carrier trailer on the field along with a dead cow.

I've decided to quit complaining about the wind and just be patient. I sincerely hope none of our KR family have suffered such losses.

And as always, the newsletter needs your help with contributions. Last issue was a bit tardy due to my hopeful waiting for a few more submissions. This current issue is short for similar reasons.

Think I'll go out to the field and check the windsock... It could be worse.

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AND

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Prices so LOW that I can't Advertise Them

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BACK ISSUES

The KR Newsletter maintains a database of selected articles from past issues. Printout available at \$7.50 US, \$10.00US Canada & \$15.00US Foreign. Copies of material available at \$1.00 per page, please include estimated postage. Articles over one page in length will be billed for amount due.

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Oil Cooler Control *System Offers Ease of Installation & Operation*

Skip Garden

POB 15388 • Durham NC 27704

Since it gets cold here in North Carolina and as I like to fly all year, I have found it necessary to make some changes to the oil cooler system on my KR2. 25OKB uses a top mounted oil cooler that opened directly through the rear engine baffle. This is fine for temperatures above 70 degrees but doesn't work well in the cooler winter months. Also sometimes the temperature here can make drastic changes in a short time.

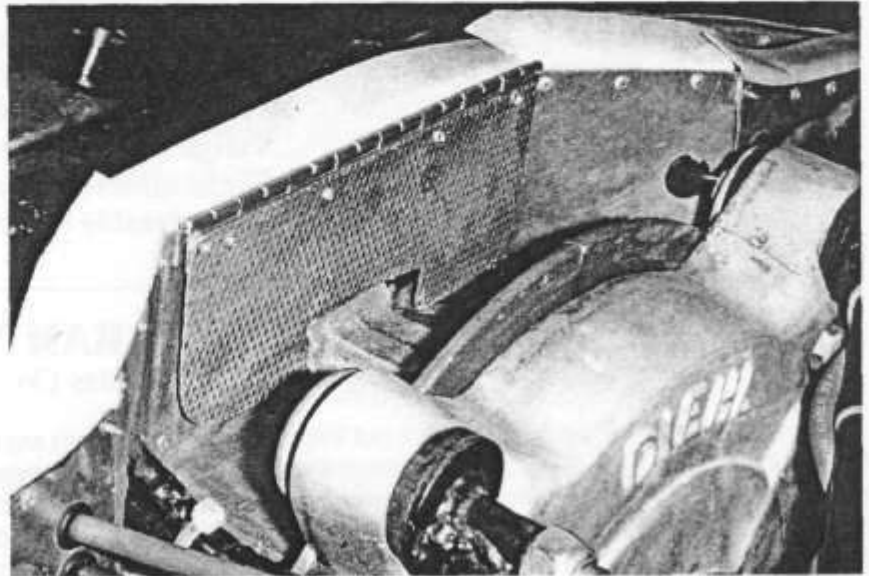
Don Betchan, builder of 25OKB, had told me to put duct tape on the front of the oil cooler thus blocking it off. I tried this and it worked well. I then became concerned that I might be flying some day and experience a temperature change that would need for the oil cooler to be working again. I decided that the best solution would be an oil cooler block off flap that could be controlled from inside the plane. With this in mind I began to cut templates from cardboard for a flap that would be able to block/restrict the airflow through the cooler.

Once I had a shape that would clear everything, I cut a piece of standard hinge material and pop riveted it to the flap and then to the rear engine baffle. Next, I went to Auto Zone and purchased a 6 foot choke cable, fabricated an "L" bracket to mount below the panel and then routed the cable through the firewall, the engine baffles and through the space at the end of the cooler. I pushed thin wall rubber tubing over the cable housing at any place that I thought it might rub or wear. This is especially needed where you thread the cable through the oil cooler housing.

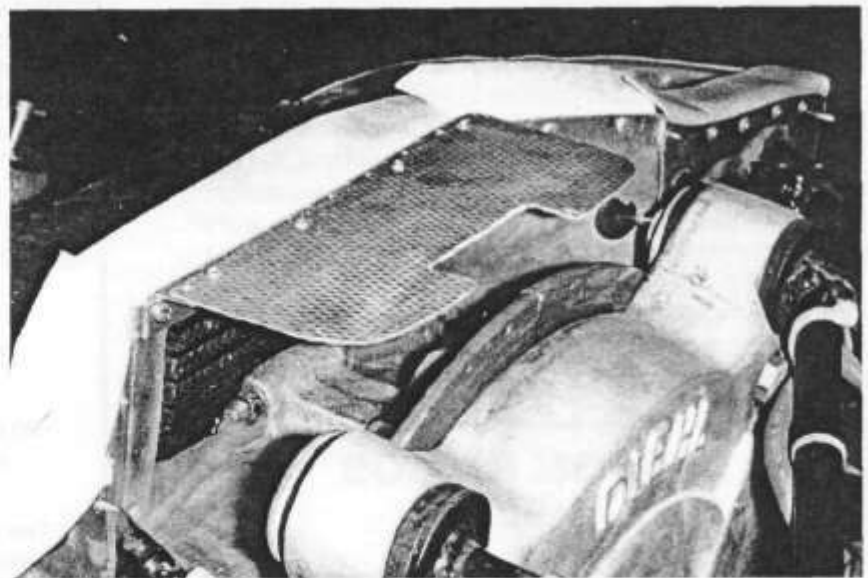
After 20 hours, I have checked this area and can detect no wear or chaffing. DO NOT use any nylon wire ties in this area as they are so hard that they will wear through any soft metal, as in copper cooler tubes! This done, I drilled a hole in the cooler flap and bent the cable to operate it. I set mine up so that

with the cable pushed in the flap is open, with the cable pulled out it is closed. I have flown this setup for about 20 hours and it works great. If the oil temperature starts to climb, I simply push the control cable in opening the flap, allowing the air to pass through the cooler and lowering the oil temp.

This set up allows you to keep the oil temperature up to a good operating range. Also remember that ALL small aircraft engines will run 100 to 110 degrees above outside temperature so an oil temperature of 170° to 190° is not unusual.



Oil cooler flap on the Skip Carden KR2, in the closed position, aids in maintaining engine oil temperature at optimum during cold weather ops.



Panel-mounted Bowden cable offers infinitely variable positioning of the oil cooler control flap, shown here in the fully open position. Simple design and execution has proven bulletproof after twenty flight hours.

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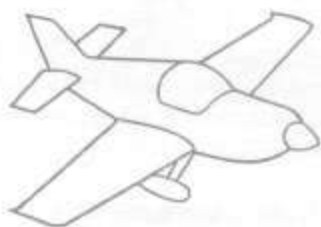
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KR NEWSLETTER

624 West University Drive

Suite 199

Denton, Texas 76201

Issue 263 June 1999





NEWSLETTER

Adaptability is Key to Success *Limited Shop Space Not A Deterrent to Builder*



KerwynStoll • Fixed Gear KR2 • 1261 Collins Road • New Market, TN 37820

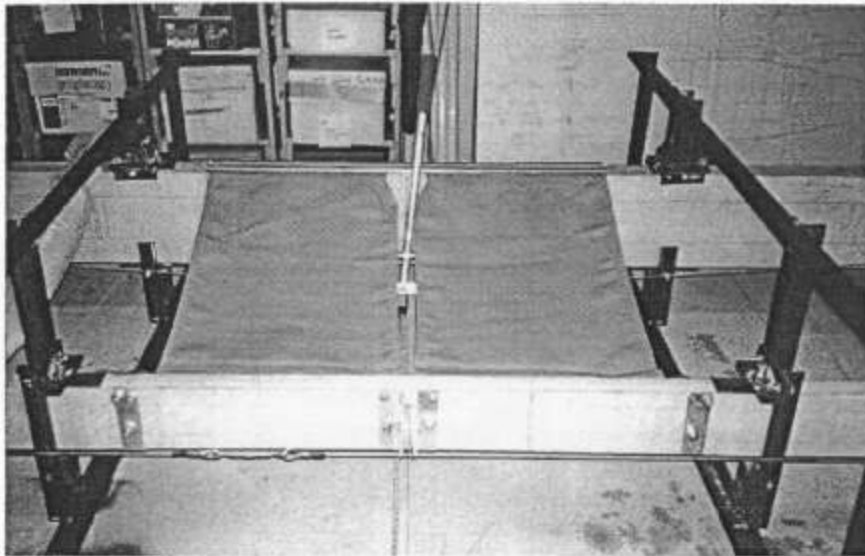
Although limited to a small basement workshop with a low ceiling, Kerwyn Stoll has not been deterred in his efforts to construct his version of the fixed gear Rand KR2. By designing and fabricating steel construction jigs, Stoll has been able to build his wings prior to constructing the shop space consuming fuselage. How's he ever going to get it out of there?

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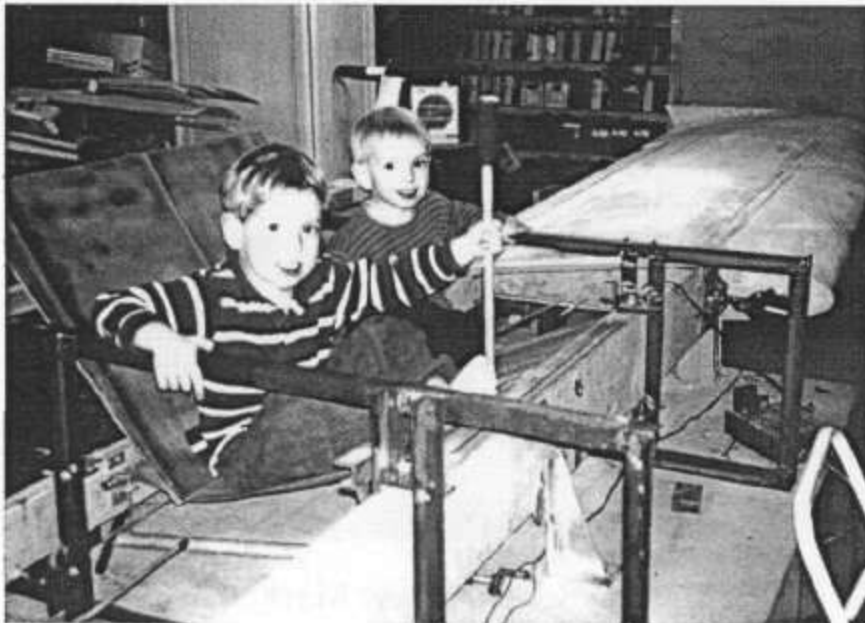
Kerwyn Stoll
1261 Collins Rd • New Market TN 37820
Telephone

Just wanted to express my appreciation for your continuing efforts on the KR Newsletter. I've been subscribing to it since '82 and still feel the excitement of a little kid every time my wife tells me that the Newsletter has arrived! You are sure doing a nice job with it.

Due to limited space in my basement, I've been building my KR a little bit differently. Thought I'd share about what I've been doing.



Steeljig holds center section spars in critical alignment for construction of outer wing panels. Same jig positions fuselage for spar installations.



Shop helpers have to be paid! Here, Gabriel and Nathaniel Stoll collect.

I am building my KR in a workshop in which you enter and exit through a 36" door. It has been fun trying to see how much I can do without violating the wide load limit!

Flipping the fuselage and wings over along any of the axis in a basement with eight foot ceilings seemed to be too much of a challenge,

so I elected to build the outer wings without the fuselage.

To hold the spars correctly, I welded up a steel frame with 1.25 inch angle iron. This frame sits on a 4 x 8 table at a height of 28 inches. It took quite a bit of time to get everything square and keep it that way, but I was fairly successful in doing so. With the spars mounted in the frame, the top "longerons" of the jig are level in all directions and the vertical members of the steel jig are perpendicular to the top and bottom longerons.

Everything that I have done to the wings has been per plans except for the fact that I had to glue a set of inboard ribs to the inboard edge of the outer spars. They usually go onto the center section spars.

With the spars clamped into the frame, I went ahead and installed the aileron controls, rudder pulleys, landing gear brackets and sling seat onto the main spars. The installation of these was probably easier than they would have been had I already installed the spars into the fuselage. Of course, they will all have to come off again when the fuselage is installed onto the spars.

In addition to saving work space, I've found that other advantages to using the jig include: a) easier to access cockpit area of spars for drilling holes; b) easy to keep the "fuselage" level; c) easy to check dihedral with a string that goes through the cockpit area wingtip to wingtip; d) possible to work on wing in four different orientations - vertical climb, vertical dive, inverted, level ('vertical climb' made glassing the leading edge a a real joy!); e) no space needed for fuselage until outer wings are finished.

Now that my outer wings are basically done, I am using the same jig to work on my fuselage. The fuselage is just hanging on the spars right now, but I can sit in the cockpit and try out each component as I build it - elevator & rudder with controls, seat back/baggage compartment, instrument panel, landing gear/brakes, etc. I even sat in the cockpit briefly in the three point attitude (on gear) just to see how it feels. All of this without gluing the spars in. And yes, it all

continued on page 3

Adaptability... continued:

will all still go through the 36 inch width door, even with the vertical & horizontal stabilizer and elevator installed. The rudder will have to exit separately, though!

Although the challenge to keep it narrow has been fun, I only dream of the day that I have to glue something on that will exceed the door limit. Then, I'll know I'll be getting close.

* * * * *

Update on CG-SJS *15 Years Old, 69 Hours Young*

A recent letter from Canadian KR guy Don Leitch clarifies an item mentioned in the April 1999 issue of the KR News. The cover article noted that Don's KR2 had been flying for fifteen years. In actuality, the aircraft is 15 years old but has been in storage since 1987.

Don can explain this much better, so the following is his letter to prospective purchasers of his KR2. The KR News apologizes for the misinterpretation of Don's prior notes and any inconvenience caused.

See Don's ad in the KR Classifieds.

Please be advised that the KR News, issue #261, April 1999, made an error stating that CG-SJS has been flown these last fifteen years. It has, however, been in covered storage since November 12, 1987, as upon taxiing through mud on Nov 11th, the prop got nicked and lost 1/4" off one blade. During the subsequent flight, only 100 mph could be attained without vibration so I returned and landed.

Next day, the damage was evident so I removed the wings and towed it home for the winter and there it has resided ever since with wings and engine in the basement.

During the winter, I repaired, reconfigured and rebalanced the prop to a 51x47 modified Great American plus I ordered another prop from Props, Inc.

The engine was then torn down and the crank checked OK. However, after talking to Steve Bennett at Great Plains Aircraft, I purchased a new 69mm crankshaft and a new piston-cylinder set with which to rebuild the engine into an 1835cc unit. I also purchased a set of heads drilled for an extra plug but was unhappy when I could not totally stop the oil leaks. So there sits the engine with three-quarters of an hour ground running time on it. It should have the overhauled, original dual-port heads reinstalled.

SJS was built from plans of spruce covered with birch plywood, then skinned with Dynel. It has no starter but has a tie-down release at the tailwheel. It's cabin has heat, cool air, dual sticks, Wells gear retract system and a built-up seat which houses 61/2 pounds of survival gear. The radio is a 360 channel navcom. The aircraft is fitted

with a whiskey compass and only the necessary flight and engine instruments.

As Ken Rand's original gross weight was supposed to be 850 pounds, SJS is still under Experimental Permit for that amount as it has logged only 69 hours. It has a very strong 15US gallon tank. Its outboard wing panels are totally glassed internally between the spars. The aileron sub spars are bonded to the rear spars with short, stub ribs so as to soak up the torque loads, thus taking the strain off the wing skins.

The rudder has three hinges instead of two and is equipped with a bird strike spar, as is the fin and stabilizers, just in case.

The all up empty weight is 400 pounds so with no battery, engine or outboard wings attached, its airframe weight is less than 140 pounds. Hope this helps.

- Don Leitch



September 10-12, 1999

Golden West Aviation Association, Inc. has announced the dates and location of the newest EAA regional fly-in. Celebrating its second year, the Golden West EAA Regional Fly-In will be held September 10-12, 1999 at Castle Airport (formerly Castle AFB) near the cities of Atwater and Merced in Central California.

Event highlights include aircraft judging and awards, forums and aircraft construction workshops, daily airshows, kit manufacturer and vendor exhibits. Other features will include static displays, fly-by demonstrations, special evening activities and youth programs.

KR Newsletter subscriber and builder Todd Servaes is serving as the event's Exhibitor Coordinator and informs the Newsletter that Rand-Robinson will be exhibiting at the event along with a strong KR presence.

For further information on this event, readers are encouraged to contact Todd either by mail at 1999 Golden West Regional Fly-In, P.O. Box 685, Loomis CA 95650 or via telephone at 916-652-6226.

O-200 Powered KR2

Project Features Unique Ideas

W. B. MacMillan

P.O. Box 834 • Ojai, CA 93024

Phone: 805-640-7646 • email: wmacmi3807@aol.com

Enclosed are some photos of my under construction KR-2S. I haven't been able to work on it for the last few months as I moved from the Northwest to Ojai, California and I'm in the process of remodeling the house that I purchased. It will be a few months more before I can get back to airplane work.

The KR Newsletter is a valuable tool to keep one's interest and it has been very valuable to me as a source of technical information. While I have spent a life time building all sorts of things, I have never built an airplane so I'm sort of "grouping in the dark" for knowledge. The newsletter is often a source of "light". I'm sending you this information as I feel guilty that I haven't contributed to the newsletter; however, no one should assume that anything seen here represents something of knowledge because it doesn't!

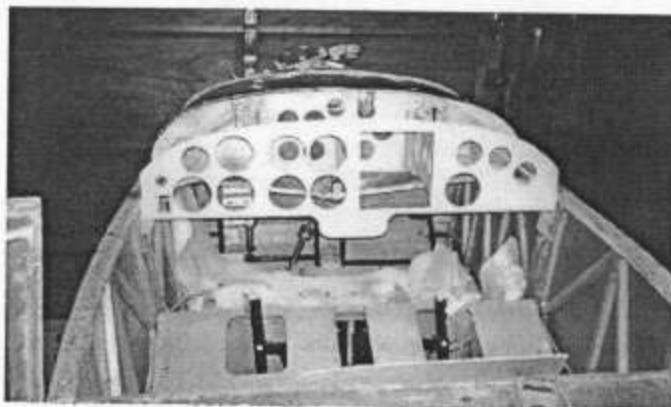
Photos number 1 & 2 show my efforts on the construction of an aluminum fuel tank and plywood instrument panel. I decided to not use a fiberglass tank simply because I've heard of many problems with them. As with all things, they are probably fine if you know what you are doing when you make them. Since I didn't, I chose aluminum. Confidence in the fuel system is so important. The change in the fuel tank lead to changes in the panel and canopy mount as shown in photo number two. The panel is made of plywood. You will also note the toe brakes under construction. Those that have not investigated the geometry of toe brakes should do so before they make any assumptions. After hours of "investigation" I've decided to forget about toe brakes.



KR2 fuel tank is fabricated of .040 5052 aluminum.

I'm 6' tall and, with the rudder bars aft enough to accommodate room for the toe brakes, found that I can not get enough leg room. I plan to start "investigating"

heel brakes. Also, the plywood seats shown do not allow enough head room when the canopy is closed. I sat in Roy Marsh's KR-2S at Chino and became convinced I should build one but I never closed the canopy. If I had, I would have probably raised the canopy location a few inches on mine. Instead, I will now lower the seats.



Little lumber remains of the MacMillan KR instrument panel. Radio stack cutout may equal engine cost!

Photos 3 & 4 show the construction of my horizontal stabilizer. It is not made of foam and fiberglass but wood and plywood skins. I'm a good wood worker and a welder by trade. However, I'm just plain lousy with fiberglass and foam. I plan to use all the prefabricated parts I can. It would seem that the tail would be considerably heavier than the foam and fiberglass. It is heavier but not a great amount. Glass and resin is heavy. The plywood tail is glued with T-88 as is the rest of the structure of the airplane. It was the recommended glue when I started. Now I hear rumors of loss of strength when it gets hot. I hope not. These are the kind of rumors that discourage builders of limited knowledge, like me.

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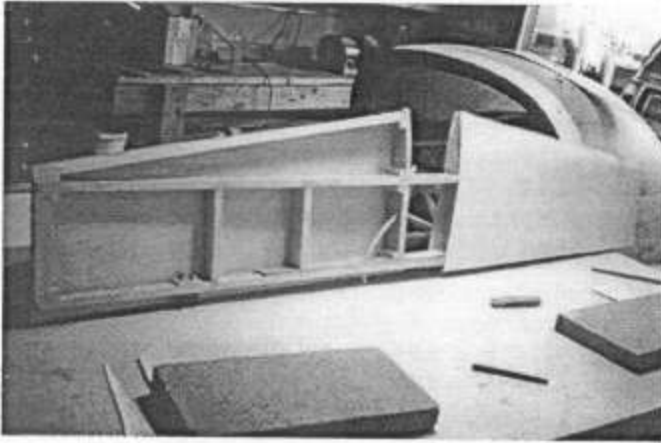
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BACK ISSUES

The KR Newsletter maintains a database of selected articles from past issues. Printout available at \$7.50 US, \$10.00US Canada & \$15.00US Foreign. Copies of material available at \$1.00 per page, please include estimated postage. Articles over one page in length will be billed for amount due.

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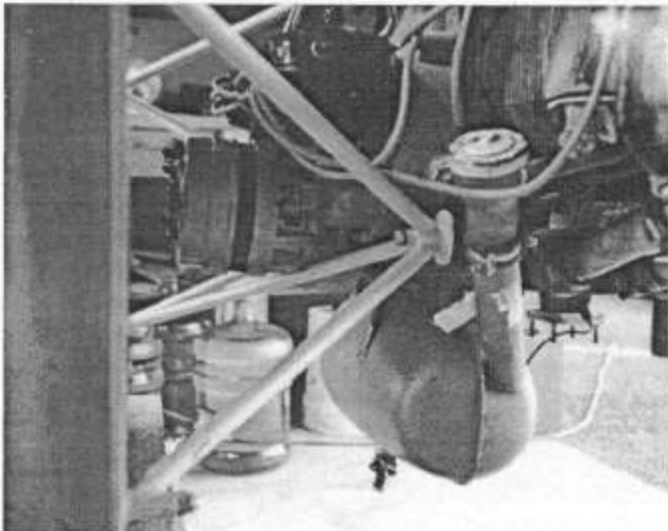


No foam and fiberglass here. Horizontal stab has birch plywood skins and additional interior structure.



Plywood-skinned horizontal stab in position.

Photo 5 shows my Continental O-200 bolted to the Rand mount. One problem; the alternator won't fasten to the engine as it hits the mount's crossmember. After thinking about various solutions, which included other sources of electrical generation, I decided to modify the mount. These sort of things are also discouraging as it makes one wonder what else within the project may not be well thought out.



In closing, let me ask that if any readers see anything here that they feel might be a problem, their counsel would be appreciated. If there are any builders in my area who would like to share thoughts and ideas, I would like to hear from them. Finally, a question: I understand that a number of builders have balanced their elevators with a "bob weight" of lead inside the tail cone. Does any one have a proven design they would share with me?

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ON THE RAMP

Ramblings from the Editor

OK, now that you've enjoyed your first reading of the July issue of the KR Newsletter, scanned the classifieds and are now reduced to reading this column...go back and reread the names of this month's contributors. This *juicy-newsy* issue is their doing and we are all impressed! There are some additional submissions from builders that will help build up the next issue, so the editor is feeling a little less stressed. Thanks, folks.

West coast area KR enthusiasts will want to block some time to enjoy the Golden West Fly-In coming up in September. Although in only its second year, this EAA regional fly-in recorded some impressive numbers for its first rattle out of the box in 1998. How about 85 vendors and 727 registered aircraft? The fifteen thousand plus attendees also enjoyed a daily airshow featuring ten different performers. Sounds like a goodie.

Jeannette and company will be on site exhibiting the Rand wares and our own Todd Servaes is serving as Exhibitor Coordinator. Be there if you possibly can.

OK, the "ten year old GPASC catalog" article is a plug sorta for Steve and his business. I truly was amazed at the relatively small price increase over the time period. Wish my grocery bill would grow as slowly!

KR NEWSLETTER

Serving the Builder, Pilot & Enthusiast

An Expensive Hamburger Story *One Thing Leads to Another*

Joseph Schiavoni

832 Central Ave • Southampton PA 18966

Home: 215-682-7177 • Work: 800-491-2200

Shortly after earning my private ticket, I left the Tomahawk trainers behind and made a transition to Archers. One beautiful afternoon, as I was enjoying my proverbial \$100.00 hamburger and admiring my rented bird, suddenly into the pattern came the coolest little hot rod I ever saw. What the @&*!?! is that? I stared in awe as it landed and taxied up to the ramp at the airport eatery. As the canopy opened and the driver stepped out I asked him, "What is it?"

His reply, "A KR-2."

KR-2 ? Never heard of it. Who builds it?

He proudly proclaimed that he had and that was my introduction to home building and the EAA.

If that pilot is reading this, I apologize because I don't remember your name, but I will never forget your KR2. It was the most inspiring thing I ever saw.



The Schiavoni KR-2 features dual control sticks, flaps and retracts with hand-operated mechanical brakes. Credit all this to that infamous hundred dollar 'burger.

Fourteen years later, with the help of the KR newsletter, I found just the right project, parts and technical assistance. Now, I am on the way to putting myself in the drivers seat of a KR-2. Over the years, I have built time in Turbo Arrows, Turbo Lance, Togas and other high performance singles, but I have "O" taildragger time and even less KR-2 time... unless you count the chance 14 years ago when that guy let me sit in his.

So, if any KR-2 drivers are looking for a excuse to visit (PNE) North East Philadelphia airport, call me I will gladly trade them a lunch or dinner for a ride.

FLY KR

On This Day In History -1989

Boxes full of old magazines, books and catalogs stored in the attic can do several things for you. Overlooking the potential for a sagging ceiling and cracked drywall, these little printed time capsules can offer thought provoking insight into the old "Should have, Could have and Did".

A recent attempt at eliminating a few years worth of my aviation flotsam and jetsam revealed a ten year old copy of the *latest* catalog from Great Plains Aircraft Supply Co. Rather than wasting my time and actually completing my job, I spent an hour comparing prices "then... and now".

I began building my KR-2 in July of 1986 fully intending to use a VW engine built up from Great Plains pieces. The completed aircraft flew with the 1835 version built up following Steve Bennett's simple how-to manual. It is still hauling 684LM through the Texas skies. My current bird also flies with another GPASC Volks aero conversion.

For homebuilt aircraft, the simple Volks is still the most popular choice among automotive conversions. The real kicker is the cost. Compare the following prices and see if you don't agree that the little bug motor is a real value.

GPASC-DOIN' IT IT RIGHT ...still



2180cc Long Block Engine Kit - All the necessary engineered components so you can build a complete long block aero engine. 1989 Catalog.....\$2515.50
1999 Catalog.....\$2895.95

Standard Taper Prop Hub - Inc drilled bolt, washer, faceplate and cotter pin. 1989 Catalog.....\$139.95
1999 Catalog.....\$144.95

Force One Prop Hub - Inc drilled bolt, washer, faceplate and cotter pin. 1989 Catalog.....\$220.00
1999 Catalog.....\$229.95

KR2/S Engine Mount - Bolts right up to the Diehl Accessory Case. 1989 Catalog.....\$190.00
1999 Catalog.....\$194.95

Kit CLASSIFIEDS

Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial style ads will be billed accordingly prior to publication.

The KR Newsletter reserves the right to edit free ads.

FOR SALE - KR-2, boat stage, \$400. New set of KR-2 plans \$100. Bobby Whisenant, Rt 1 Box 637, Chireno TX 75937. Tel: 409-854-2644 or e-mail to bpc@lcc.net.

FOR SALE - KR-2 with 14" stretch. Boat stage on retracts. Dragonfly canopy, dual controls, turtledeck mold. Spars complete. Diehl wing skins. Foam, cowling, etc. GPASC 0-time 2180, 5-point mount, prop and spinner. Ellison throttle body, Diehl case and alternator and 4-into-1 exhaust. Usual excuses. \$7500 OBO. John Mander, POB 122, Sprague River OR 97639. Telephone 541-533-2388 or aridell@aol.com.

FOR SALE - KR-2S, Boat stage. Birch ply, spars started. All spruce to finish, full set plans, newsletters, internet downloads, pictures, KR Gathering tapes. \$950. Project located north of Seattle WA. I have no time to build. Bruce Toscano 425-806-8072.

WANTED - Interested in purchasing KR1 or KR2. Contact Edward Menges, 6223 Southwood Apt 1S, St Louis MO 63105. Tel: 314-726-3085.

FOR SALE - Owner deceased, must settle estate. KR2 project. Boat stage with spars and some f'glas work started, retracts, 1800cc, magneto, instruments, many materials. Need to sell to best offer. Betty Harrington. Tel: 718-816-4934. Staten Island NY area.

FOR SALE - Two (2) KR2 projects. Both thru boat stage and on retracts. Most controls mounted. Have two (2) cowls, molded header tank, canopy, Diehl gear in box, plans and ten years of KR Newsletters. Have 0-time HAPI 1835, prop, mount, exhaust. \$5000.00 OBO. Consider trade for metal project. Ron DeWees at 404-876-3481 or rdeweess@avana.net.

FOR SALE - KR2 project complete thru boat stage on Diehl tri-gear. Wing and center section skins, aft & fwd decks, Revmaster cowl, Dragonfly canopy. New 2180 GP on firewall with dual ign, alternator, starter, carb, exhaust, prop and polished spinner. Carl Evers, 904-724-2324, between 6-9pm EST. Leave name and number.

WANTED - Looking for nice KR2S that will fit a 6'3" pilot. Contact Leigh Kolka, 2840 South Church St D-404, Murfreesboro TN 37128. Telephone 615-867-1211.

FOR SALE - Lost my medical so I am now offering my near-complete KR-1 for sale. Just about ready to fly with 1835 engine, instruments, plus second engine available. Call Carle Curtis at 703-339-8346 or fax at 703-339-8345. No collect calls, please.

WANTED - Any ol' KR builders out there have any Dynel? I'd like to buy some if you don't want it. Contact Dan Diehl at 1855 N Elm, Jenks OK 74037.

FOR SALE - Fixed gear taildragger KR2. 1835 VW with Diehl starter/electrics and IVO inflight adj prop. Has wing tanks, mech brakes, swing-over canopy & dual side-by-side control sticks. Extras with sale. Trade for 0-360 Lye or will sell as de-registered aircraft for \$5000. Full details, contact Bob Easland, 203 Vista Rd, Gatesville TX 76528. Tel: 254-628-8448, days only. Fax: 254-628-7744.

FOR SALE - Volks engine goodies. 1835 and 2180 parts: cams, cranks, heads (both single and dual port), intakes, motor mount, zenith carb plus other small parts. Contact Randy Smith, 940-483-9939 after 8pm CST.

FOR SALE - 1 built CG-SJS and have owned it for over 15 years. This KR2 won't last long at \$3000.00 US, so contact Don Leitch, for complete details, at 1695 Ridgewood Dr, Castlegar BC V1N 2L5 Canada. Tel: 250-365-8326.

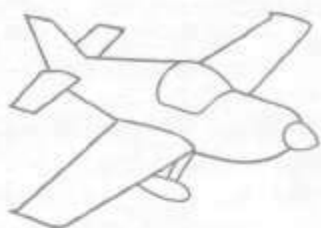
FOR SALE - KR2 wood kit, foam kit and landing gear. Other accessories also available, all at 1980 prices. Kits are complete. Some extras tossed in, too. Contact Cleo Greenhaw, 1201 Princeton, Ponca City OK 74601. Tel: 580-762-2531.

WANTED - I purchased the remaining available back issues during the closeout sale but I'd like to acquire a full set. Anyone wishing to sell, please contact Michael Simpson, POB 1297, Boone NC 28607. 828-898-4644.

FOR SALE - Canopy and windshield, originally designed for Polywagon. Adaptable to and has been used on the plans built KR2 but unsuitable for KR2S. New condition. \$150 plus packing & freight. Ron Dillard, 407-834-3528.

FOR SALE - KR2. 11" longer & 2" wider. Boat with stubs, wings and tail feathers. Converting to fixed gear. Dual controls and reinforced for more HP. 0-time 2180 VW with KR motor mount. Canopy, hardware, lights and most engine/flight instruments. \$3400 OBO. No time. Richard Rymer at 562-435-7937 or rlymer@worldnet.att.net.

Happy Birthday, Jeannette
God Bless and Thanks



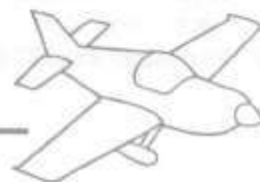
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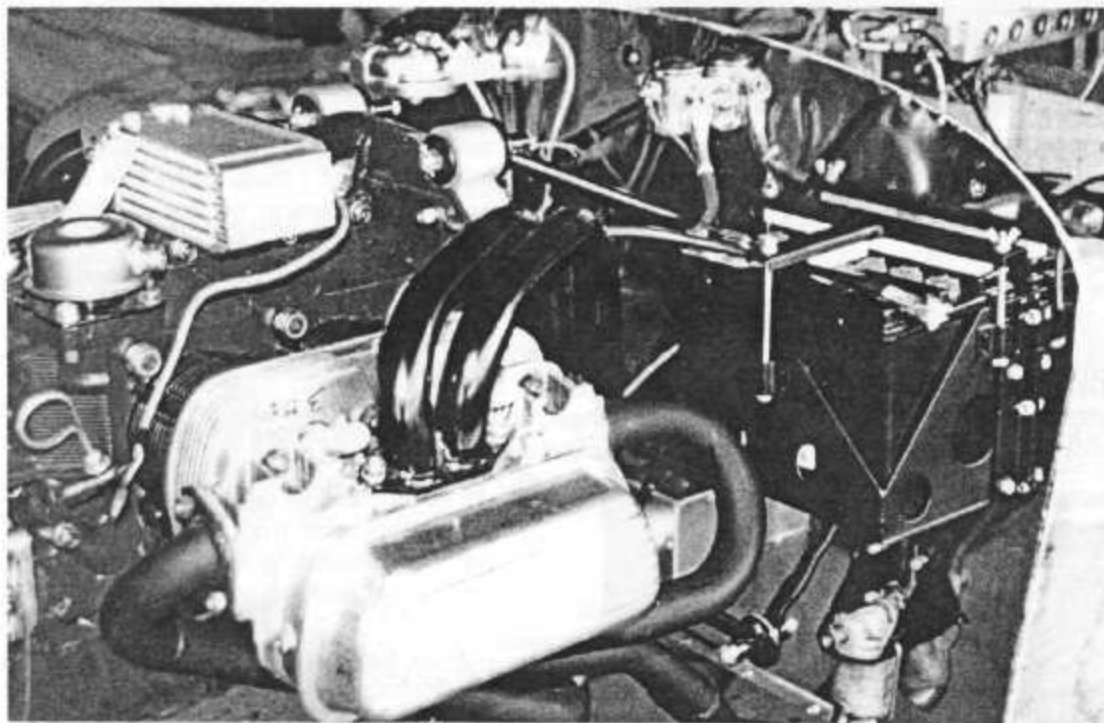




NEWSLETTER

A Lesson in Patience

KR2 Retirement Project in Full Swing



David R. Rial

504 Highview Road • Telephone 309-699-0423 • East Peoria, Illinois 61611

David Rial is a retired teacher. As do most professional educators, David would attempt to impress upon his students the importance of both short and long term planning; to complete the day's homework assignments, their leisure time activities and, most importantly, for their faraway future. He evidently took his own advice to heart. The planning and preparation for the construction of his fixed-gear KR2 actually began almost eighteen years ago! To quote the builder from a recent interview, "Teachers don't have a lot of free time". Good ones don't, that's for sure.

The initial assembly work on the 2180cc Volks aero conversion was accomplished at the beginning of the project. Utilizing a Hapi accessory case and the Hapi float bowl carburetor, the powerplant sat idle for many years. As David reached his retirement and began working on

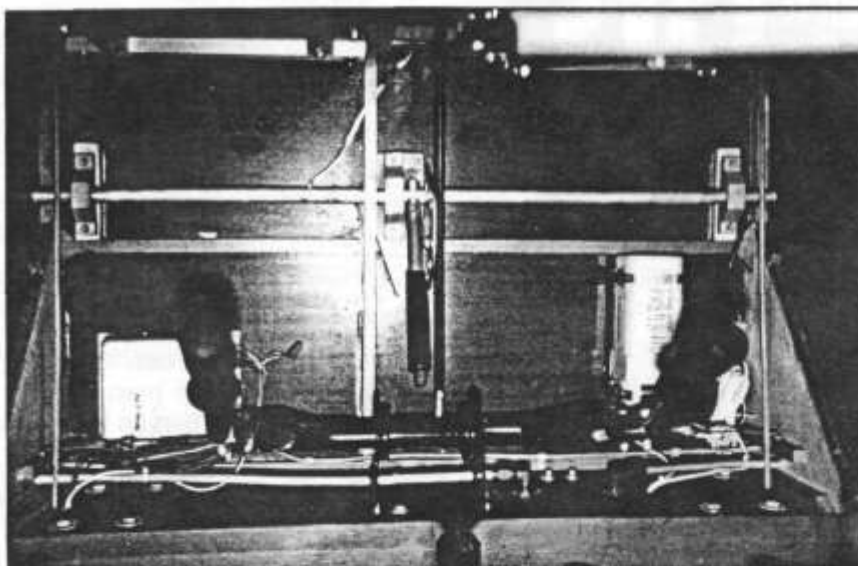
the project in earnest, the thought of that small crankshaft bearing supporting the prop began to worry him so he had Steve Bennett of Great Plains Aircraft retrofit his heavy duty Force One hub and bearing into the engine case. Bennett also machined the heads for dual ignition and supplied his dual sparkler system. The GPASC four-into-two header system takes care of exhaust gases.

The Rial KR project really got cranked up in 1993 when the airframe began to take shape. Diehl wing skins are fitted with flaps, controlled by the Rand-design handle mounted between the seats. Dual sticks link up a pushrod controlled elevator system. Underneath the removable seat bases are an ELT and the power pack for Whelen strobes. A custom designed gull wing canopy with fixed windscreen offers additional shoulder and head space than does the snug yet sleeker Rand unit.

continued next page

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LeSSOn... continued:



Access to area beneath seat bases is necessary with this much equipment underneath. Note fuel lines, ELT and strobe package.

Fuel is carried in a fiberglass header tank along with additional motion lotion in the wings. Next time you talk to Dave, ask him about pressure testing his wing tanks. He now knows that 3 psi is plenty! Even teachers learn new lessons now and again.

The KR will roll out on the Rand one piece aluminum fixed gear legs. These replace the unused original retract hardware that David would like to dispose of along with an extra fiberglass header tank. He said that he would let 'em go for the first ridiculously low offer he gets.



It won't be a lightweight, but the Rial KR2 will have the goodies. Gyro panels sure are nice along with the GPS system.

A tailwheel transition check-out prior to the KR's first flight is something that Dave will probably forego. This teacher didn't spend all his time in the classroom as his 3000+ hours of tailwheel time have been logged in a Taylorcraft that has been in the Rial family stable for over thirty years.

New Builder Note

The Fun Begins

Tom and Ben Raby

13784 Riverview Dr • Elk River MN 55330

Telephone 612-441-0948

I enjoyed speaking with you on the phone tonight. Thanks for taking the time to answer my questions. I realize you must have answered the same questions dozens of times but people new to the process appreciate hearing answers from someone who has already "been there".

My son, Ben, actually ordered the plans from Rand-Robinson in December of 1997, KR-2S serial number 864. We studied the plans for awhile, then ordered the spruce kit from Aircraft Spruce about a year ago. Delivery took several months, which was a little frustrating, but I must admit that I have never seen clearer or straighter wood (nor a smaller pile for the money).

We just recently purchased the plywood and foam kits from Wicks Aircraft Supply and took delivery just days after the order. I'm having trouble getting used to writing big checks for small material orders but have no trouble appreciating the quality of materials we've received so far. We ordered some 4130 steel, also from Wicks, to try our hand at fabricating wing attach fittings and rudder pedals.

Ben built a nice bench just like the manual suggested and this weekend we will probably glue plywood onto the right fuselage side. Thanks to your input we'll start looking into the Great Plains 2180 conversion and focus our work on light layouts and sticking to the plans.

Editor's Note

For builders new to the homebuilt persuasion, aircraft quality Sitka spruce is getting harder and harder to acquire. Much of the lumber is being sold overseas, to the highest bidder, for the production of musical instruments! Would you believe that a spruce replacement wing spar for a certificated aircraft might take 12 to 18 months for delivery?

continued on next page

Builders, please do not blame Aircraft Spruce or other suppliers for the delay in your shipment. They, just like Wicks (formerly know as Wicks Organ Company) and others, are caught in the same free enterprise, supply and demand situation. Orders for polyurethane foam, 4130 steel, plywood and hardware are easier to fill quickly due to a greater supply network.

Hum... Let's see, would buying a few KR spruce kits qualify you as a futures investor?

Note from Steve Bennett

The July 1999 issue of the KR Newsletter contained an extensive progress report and great photos from W.B. MacMillan of Ojai CA. In his report, MacMillan noted that his Rand-supplied O-200 motor mount did not fit his Continental O-200 engine and required him to modify the unit.

A note followed shortly after from Steve Bennett, owner of Great Plains Aircraft Supply, who produced the engine mount for Rand-Robinson. Steve notes that, "The O-200 mount is actually made, or was made, for the Hapi (editor: Volkswagen conversion) accessory case. I don't know if I ever actually made one for an O-200. Hapi utilized Continental mounting points."

To clarify, the Rand offered O-200 motor mount is designed to be used in conjunction with a Volks conversion fitted with the Hapi accessory case. The mount was never intended to directly fit the Continental O-200. This point is probably where the confusion begins.

Also, Rand-Robinson Engineering has always discouraged the use of the heavier aircraft engines due to their concerns regarding weight, design and safety. However, many KR's have flown successfully and safely with the heavier engines. We are, after all, building experimental aircraft!

KR Classifieds Work
Place your ad in the "Mega Mart" for KR goodies.
The ad's free!

An Islander Visits Florida *Sun ri Fun Ramblings*

Ken Wright

PO Box 1528 GT • Grand Cayman Island

This is the first time I've been to Sun n' Fun and I was amazed at the emphasis on technology... \$30,000.00 navigation systems in a Zenair!

The Rand booth was one of the friendliest. Some booths are too slick with untouchable airplanes. Some had little to show except hype! The result was either "don't touch" or nothing to touch.

I'd really enjoy seeing a KR "boat" showing construction techniques yet finished enough for customers to sit in and make airplane noises

I enjoyed seeing a well built KR2 on the Sun n' Fun flightline. It was a speed merchant worth examining but the owner was leaving. The photo shows what a pretty thing it is. A most impressive example of a KR2.

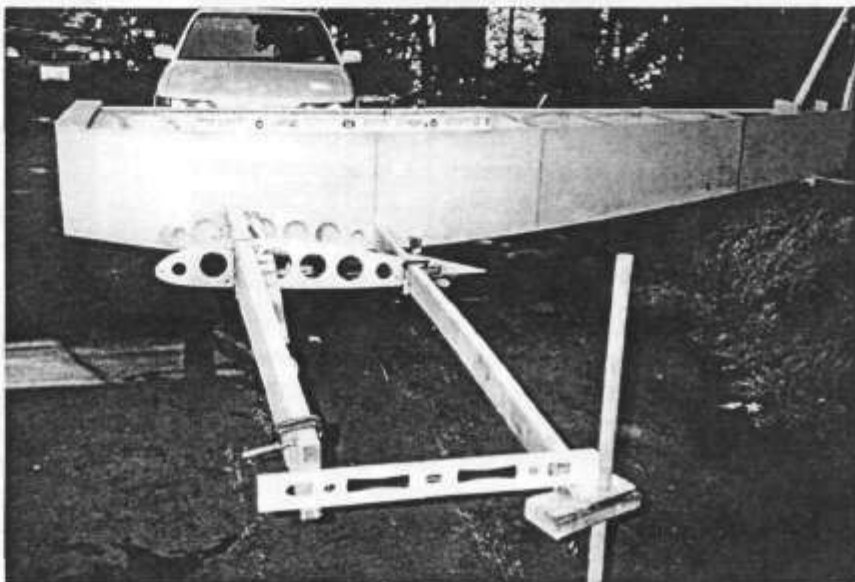


Seeing the object of your fascinations is always good as a booster shot of builder enthusiasm. Ken Wright caught this sharp looking KR.

Trigonometry Tips Set Wing Incidence

Bill Kirkland

RR2 • Parry Sound Ontario P2A 2W8 • Canada



Trig Tips Set Wing Incidence

See photograph on page three

Here is a tip for builders. If you need nylon bearings or bushings, simply go to the hardware store and buy the nylon fittings for plastic pipe or nylon tubing. They are available in increments of 1/4" and the Tee, properly sawn, yields three. You can even cut them so you end up with one or two shoulders.

Check the photo or an easy way to set the wing incidence angle. Level the fuselage using the firewall as a vertical. Then locate the spot on the fuselage longeron that gives a level reading. It is just easier to lay the level on the longeron. Also, level the fuselage crossways.

Using the plans, mark the chord line on the end of the forward and aft spars and note the distance between the centers of the spars. At the chord line and the center of the forward spar, drill a small hole and insert a piece of dowel about two inches long so as to be able to set the level on it.

Using tables or a computer (in my case, a slide rule) find the tan of the angle or incidence you wish to set and multiply this times the distance between the spar centers. For the center spars and 3.5 degrees, this works out to $\tan 3.5^\circ = .0367$ times 21.63 = .860 in.

At the aft spar, measure this distance above the chord line (below, if the incidence is negative) and, just as was done for the forward spar, drill another small hole for a dowel pin. Lay the level across the dowels. Adjust the aft spar until the level is zeroed and the incidence angle will be correct.

Canadian KR Spruce Source and You Think U.S. Builders Get Hit

Rick Hubka

65 Butler Cres NW • Calgary Alberta T2L 1K4
rick@hubka.com

I have started building my fuselage sides and really enjoy the whole experience. I am attempting to build a list of Canadian homebuilt suppliers. You see, for us Canadians, we really get hit hard. I found that out real quick! For example, a KR spruce kit is approximately \$830 US dollars. That equates to \$1215 Canadian dollars. Then, add duty, border processing fees, shipping and tax. The total can easily be double the original price...like \$1600 Canadian dollars. Ouch!!!

I found a Canadian supplier for the KR spruce kit right here in Calgary. Western Aircraft Spruce can be reached at 403-250-1955. The owner, Jean Peters, sold me my spruce kit for less than \$1000 CDA. Jean has been in business many years and has also designed and built his own aircraft from Sitka spruce. He is extremely knowledgeable.

Today, I found a source for aviation plywood in Canada. Leavens Aircraft, at 403-735-4996.

I am just beginning my internet homepage, www.hubka.com (under construction), which will become my KR2S building page as well as a place where KR and other builders may find Canadian homebuilt aircraft suppliers. In some cases, US KR builders might actually purchase from Canadian suppliers because the US dollar is worth more up here.

I'll keep you posted... and thanks.

Obviously, Rick has not let the frozen North get to his brain! His research will save himself and other builders mucho dinero. Part of the fun of the homebuilt aircraft experience can be the ferreting out of sources. Sharing your discoveries is another.

Along These Same Lines

Theodor Einarsson

Savidarsund 27 • 104 Reykjavik Iceland
email: teddi@centrum.is

"It would be nice to see in the Newsletter a source of KR parts. It would make things a little bit easier far and away."

OK, all you internet aficionados, how's about dropping a few lines to Teddi over the North Sea. He's building a KR2S and is about 30% complete. I just cannot imagine the wait for ordered supplies that this gentleman must have to endure. I'm getting antsy when the UPS truck hasn't arrived after two days!

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Editor and Publisher, Monte Miller
Evening and weekend tel: 940.566.5871

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All payments must be submitted in US Dollars

BACK ISSUES

The KR Newsletter maintains a database of selected articles from past issues. Printout available at \$7.50 US, \$10.00US Canada & \$15.00US Foreign. Copies of material available at \$1.00 per page, please include estimated postage. Articles over one page in length will be billed for amount due.

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On THE RAMP

This year's KR Gathering is just around the corner! The dates are September 24&25 at the Lake Barkley (Kentucky) Regional Airport (1M9) and the Lake Barkley Resort Lodge. Event coordinator is Dana Overall. He may be reached at 606-369-3156. Contact Barkley Resort Lodge at 800-325-1708 for room availability.

This year, business commitments will prevent me from attending the event so I'll wish all attendees a safe flight and clear skies.

I'm hoping that with the end of summer upon us, you guys will get back to building and sharing your thoughts with the readership. This is a tired, old verse but the KR Newsletter would be nothing without reader input. How about it? Can I count on you to help keep up the quality and quantity of this rag? Lemme hear from you. Thanks.

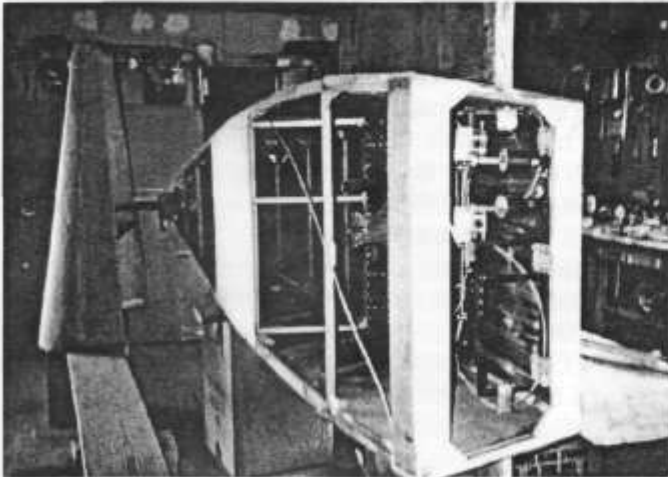
Tips for Turtledecks and Other Neat Ideas

Jim Marshall

10602 Winterhawk • Boise ID 83709
Telephone 208-362-9225

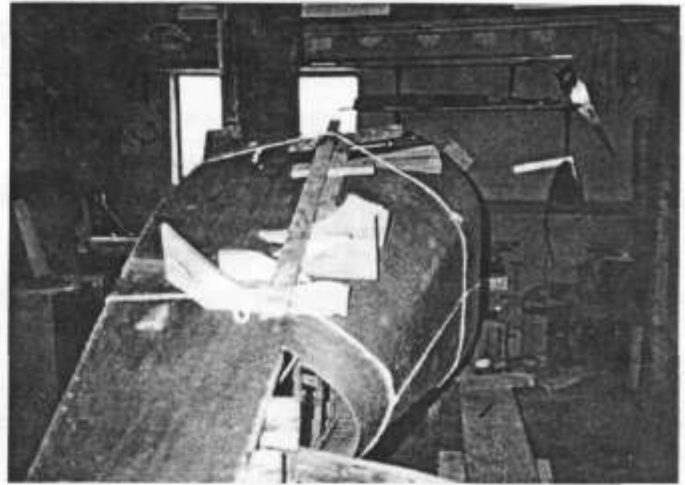
Enclosed are some photos showing how I installed my custom turtledeck, after deciding that the Rand premolded deck wasn't going to be high enough for me.

I glassed my KR's fuselage. I don't know how many other builders do this or if they just paint, but I did. While the fuselage was on its side, I secured 1x4 stock along the longeron creating a step on which the turtledeck rested. Additional 1x4 stock, heavy cord and shims held the turtledeck in position while the epoxy-flox cured.



No, the photo's not printed sideways. Fuselage is on its side for ease of turtledeck installation.

Using the Rand turtledeck, you probably wouldn't need to shim the alignment quite as much because they have a much straighter edge than what I had. Anyhow, it worked out really well for me.



Turtledeck epoxied in place and secured with 1 x4's and a variety of other mat'ls. Required pressure is not heavy.

The other photo is of my inexpensive resin measuring scale. While trucking in the late 70's, I visited the Rutan works in Mojave, California and picked up a book on working with composites. I've enclosed a copy of the diagram. The design results in a 22:100 mix ratio. Should you be using a 44:100 blend, simply shorten the long arm by one-half its specified length.



See next page for details on an early Rutan-style epoxy scale. Simple yet accurate. Cheap to fabricate.

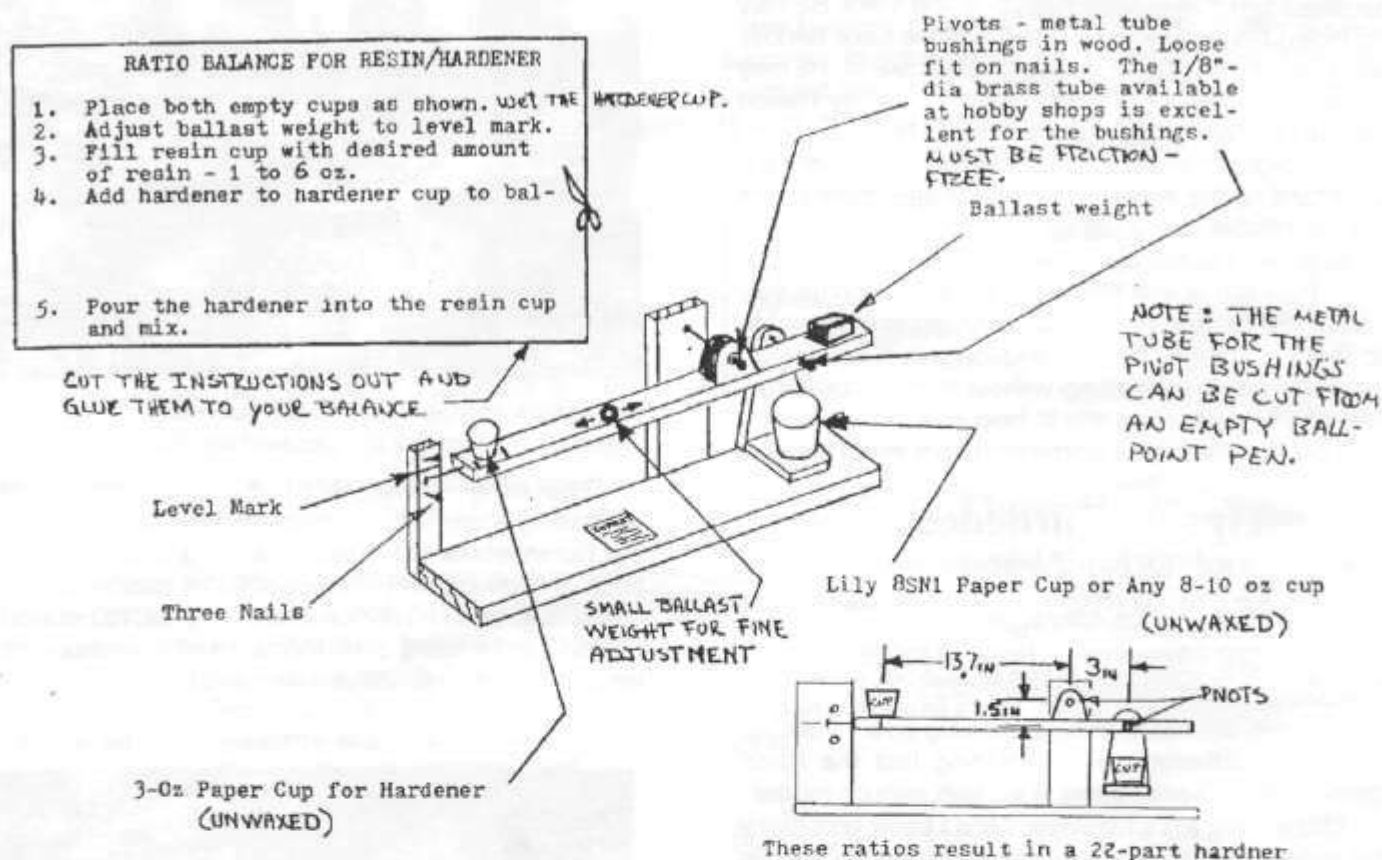
I have also altered my elevator control system to use a tube rather than the cable system as previously reported. I'll be glad when I get this bird done so I can see how it works. Still undecided about an engine. I want the Zoche diesel but don't know how long I'll have to wait.

KR NEWSLETTER

Serving the Builder, Pilot & Enthusiast

Simple to Construct *Balance Beam* Sticky Stuff Ratio Mixer Thingy

- straight from the Mojave Rutan Skunkworks... some years back.



You've Gotta Kiss a Few Frogs Before You Find the Right One

Ray Goree

1713 Park Ridge Terrace • Arlington TX 76012
Telephone 817-795-4779

My private ticket came in 1962 in a Luscombe 8E. After graduating to tri-gears about ten years later, I flew mostly Cessnas, 152 and 172.

Somewhere around 1985, I bought a magazine called *Kitplanes* and then began a new adventure. By this time, renting Skyhawks was becoming too expensive for simply flying around the pattern and the occasional cross country. Building my own airplane seemed to be an answer I could live with and I liked the challenge. But which plane was right for me? By this time, I was just a few years from retirement so money was a definite consideration.

My first exposure to the homebuilt world was a Falcon XP; a two-place tandem and mostly composite plane. I got to fly in one and it was fun but too cramped for my 6'3" frame.

My next encounter was in a Laron Streak Shadow at the factory in New Mexico. They took me for a ride but it was the same song, second verse.

After reading an article in *Kitplanes* sometime during the late eighties, I learned about the Pulsar. The article covered the first Pulsar completed and it was done by a woman in Oklahoma. I liked the looks, the lines and the type of construction; fiberglass, foam and plywood. I got in touch with Mark Brown, the designer, and arranged a look-see and flight. I liked the plane but this was the third verse...a bit cramped.

In 1991, I moved to Wichita to work for Boeing. It was there that I became acquainted with EAA Chapters and the KR design. Jeanette Rand gave me the names of a couple of KR builders in the Wichita area. One was Richard Ring, about 70 miles west, in Pratt KS. I was in awe as I looked at his stretched KR2. It was a pretty one.

The other name supplied was Ed Carr in Wichita. He was building a KR2S. Ed was a big help to me with his willingness to answer my many questions. He told me about Dan Diehl over near Tulsa. He, too, has been a big help.

I could mention several others who have helped me and I probably will as I continue my story of building a KR2S in a later issue of the KR Newsletter. Photos, too.

Kit CLASSIFIEDS

Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial style ads will be billed accordingly prior to publication.

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FOR SALE - KR-2 with 14" stretch. Boat stage on retracts. Dragonfly canopy, dual controls, turtledeck mold. Spars complete. Diehl wing skins. Foam, cowling, etc. GPASC 0-time 2180, 5-point mount, prop and spinner. Ellison throttle body, Diehl case and alternator and 4-into-1 exhaust. Usual excuses. \$7500 OBO. John Mander, POB 122, Sprague River OR 97639. Telephone 541-533-2388 or aridell@aol.com.

FOR SALE- KR-2S, Boat stage. Birch ply, spars started. All spruce to finish, full set plans, newsletters, internet downloads, pictures, KR Gathering tapes. \$950. Project located north of Seattle WA. I have no time to build. Bruce Toscano 425-806-8072.

WANTED - Interested in purchasing KR1 or KR2. Contact Edward Menges, 6223 Southwood Apt 1S, St Louis MO 63105. Tel: 314-726-3085.

FOR SALE - Two (2) KR2 projects. Both thru boat stage and on retracts. Most controls mounted. Have two (2) cowls, molded header tank, canopy, Diehl gear in box, plans and ten years of KR Newsletters. Have 0-time HAPI 1835, prop, mount, exhaust. \$5000.00 OBO. Consider trade for metal project. Ron DeWees at 404-876-3481 or rdewees@avana.net.

FOR SALE - KR2 project complete thru boat stage on Diehl tri-gear. Wing and center section skins, aft & fwd decks, Revmastercowl, Dragonfly canopy. New 2180 GP on firewall with dual ign, alternator, starter, carb, exhaust, prop and polished spinner. Carl Evers, 904-724-2324, between 6-9pm EST. Leave name and number.

WANTED - Looking for nice KR2S that will fit a 6'3" pilot. Contact Leigh Kolka, 2840 South Church St D-404, Murfreesboro TN 37128. Telephone 615-867-1211.

FOR SALE - Lost my medical so I am now offering my near-complete KR-1 for sale. Just about ready to fly with 1835 engine, instruments, plus second engine available. Call Carle Curtis at 703-339-8346 or fax at 703-339-8345. No collect calls, please.

WANTED- Any ol' KR builders out there have any Dynel? I'd like to buy some if you don't want it. Contact Dan Diehl at 1855 N Elm, Jenks OK 74037.

FOR SALE - Fixed gear taildragger KR2. 1835 VW with

Diehl starter/electrics and IVO inflight adj prop. Has wing tanks, mech brakes, swing-over canopy & dual side-by-side control sticks. Extras with sale. Trade for 0-360 Lye or will sell as de-registered aircraft for \$5000. Full details, contact Bob Easland, 203 Vista Rd, Gatesville TX 76528. Tel: 254-628-8448, days only. Fax: 254-628-7744.

FOR SALE - Volks engine goodies. 1835 and 2180 parts: cams, cranks, heads (both single and dual port), intakes, motor mount, zenith carb plus other small parts. Contact Randy Smith, 940-483-9939 after 8pm CST.

FOR SALE -1 built CG-SJS and we owned it for over 15 years. This KR2 won't fail! I'll give it \$3000.00 US, so contact Don Leitoli, fojYjw^Tete details, at 1695 Ridgewood Dr, Ca%J>M5C V1N 2L5 Canada. Tel: 250-365-8326. **A

FOR SALE - KR2 wood kit, foam kit and landing gear. Other accessories also available, all at 1980 prices. Kits are complete. Some extras tossed in, too. Contact Cleo Greenhaw, 1201 Princeton, Ponca City OK 74601. Tel: 580-762-2531.

WANTED - I purchased the remaining available back issues during the closeout sale but I'd like to acquire a full set. Anyone wishing to sell, please contact Michael Simpson, POB 1297, Boone NC28607. 828-898-4644.

FOR SALE - Canopy and windshield, originally designed for Polywagon. Adaptable to and has been used on the plans built KR2 but unsuitable for KR2S. New condition. \$150 plus packing & freight. Ron Dillard, 407-834-3528.

REDUCED PRICE - KR2. 11" longer & 2" wider. Boat with stubs, wings and tail feathers. Converting to fixed gear. Dual controls and reinforced for more HP. 0-time 2180 VW with KR motor mount. Canopy, hardware, lights and most engine/flight instruments. \$2400. Richard Rymer at 562-435-7937 or rlymer@worldnet.att.net.

WANTED - Your unwanted Diehl wing skins for my KR2. Contact Brad Pearson at 909-599-2786 or e-mail me the details at pear91773@aol.

FOR SALE - KR2, N3780B. Near complete conversion to tri-gear, lacks aileron cables, wing walk and wing close. 26 TT Hapi single-plug 1835 plus 200TT Hapi dual-plug 1835 available. \$10,000 OBO or will split up for \$3K each. Call Steve Buckley 6-9pm PDT at 510-656-3329 or email buckOO@earthlink.net.

WANTED - Help in locating and purchasing a fuel tank or fuel bladder that will fit inside my weepy fiberglass unit. Any ideas? Also wanting a good updraft carb for my 1600 VW engine. Contact Fred Sledge, 108 South Lelia, Guymon OK 73942. Phone or fax 580-468-3387.

Never Buy Over Priced Shielded Aircraft Spark Plugs Again!

AIRCRAFT

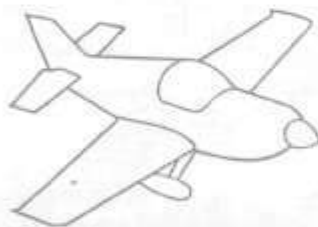
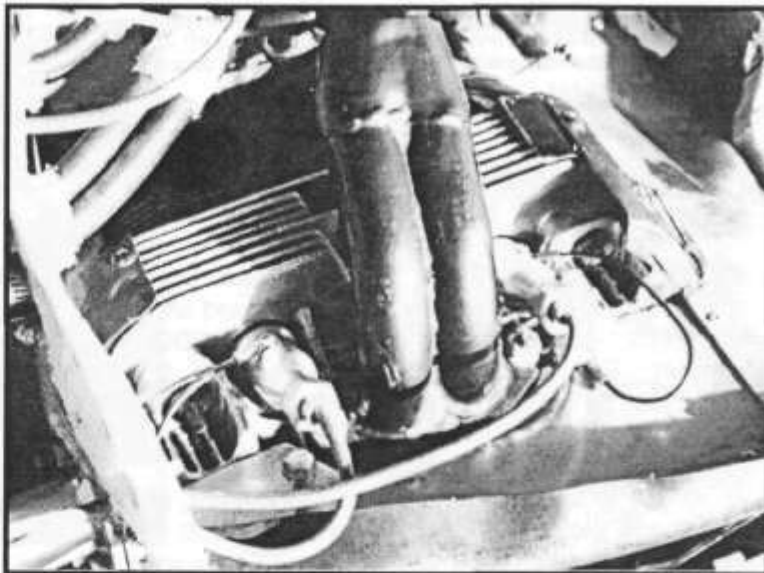
SHIELDED SPARK PLUG ADAPTERS For Type 1 & Type 4 VW's

These innovative Spark Plug Adapters connect the standard Slick M2266 Shielded Spark Plug Harness to a standard VW automotive spark plug. They feature full noise suppression and are easy to install. No special tools are required. Simply reduce the automotive spark plug gap to .017" and install the spark plug as you normally would. Push the spark suppressor over the plug, install the housing and set screw - then hook up the harness! That's all there is to it!

The spark plug adapters are precision machined from 6061T6 aluminum and will last the life of your aircraft. The spark plug suppressor is replaceable if you accidentally break or lose one.

Introductory price is \$79.95.

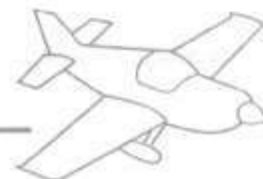
The price for the four Spark Plug Adapters with automotive plugs will be \$89.95 after the Introductory Sale. When you need to replace your plugs, the spark plugs are only \$1.99 each, instead of \$20.00 each!



KR NEWSLETTER

624 West University Drive
PMB199

Denton, Texas 76201
Issue 265 August 1999





NEWSLETTER

KRackerjack 1999 KR Gathering

Flyln Report from Attendee and KR Builder Ken Jordan

The 1999 KR Gathering was held September 24 and 25 at the Barkley State Park airport near Cadiz, KY. Host Dana Overall and his volunteers plus the staff of the airport made all the KRers feel welcome while making the difficult task of Fly-In organization look easy. Every flavor of KR2 was present including original retract versions, tri-gears, KR2S stretch along with VW, Subaru, and Continental O-200 powerplants. The lone KR1 was Ken Cottle's baby, now owned and flown by Steve Bennett.

In total, nearly twenty examples of KR craftsmanship were on display by their proud owners. As usual, all the pilots answered a multitude of questions and provided encouragement to builders and prospective builders. One gentleman came from Scotland to participate in the 1999 Gathering. Now that's inspired!

Friday evening a barbecue supper was held and KR was definitely the topic at the tables. There were several new KRers attending and everyone wondered what Saturday would bring. There were even a few rumors floating around including something about a KR2000 and Martin Roberts selling his KR2. What does Jeannette have up her sleeve for next year? What will Marty do for thrills now? Hey, pass me more bergoo!

On Saturday, seminars were held under the big top, a shady respite from the sun and mid-80 degree weather. The seminar schedule ranged from a new airfoil design for the KR series, composite construction and first flight planning, to Corvair engine conversions plus others. There was something for everyone! Jim Faughn noted that he had about 150 rides lined up and wished Martin Roberts and Calvin Campbell would get through some weather to help with the demonstration rides.

Several familiar faces were in the crowd. Bob Muse, Sr. managed to get his KR2 repaired and flown in from Georgia, arriving on Saturday. Arkansasan Max Caulkin

was spotted. Steve Bennett and Jim Faughn, as well as Bobby Muse, Martin Roberts and Calvin Campbell were all in attendance. These guys know KRers!

Some new faces in the crowd included Tom Crawford, of Gainesville, FL, in a beautiful KR2 and Troy Pettaway in his very nice KR2. Sorry I didn't catch everyone's name. Everyone who flew in truly deserves recognition.

This year, the banquet was held buffet style at the KenLake Lodge, just on the other side of the lakes from Barkley State Park. The buzz at the tables was all KR, from building tips, to Martin Roberts' new paint job, to photos of projects, to guesses about the award winners. At 8 pm. we all adjourned to a meeting room for the awards ceremony. Dana Overall did a swell job hosting.

The KR Net sponsors also gave awards for the best contributions to the KR web ring. If I could handle 25 more emails each day I would subscribe. Surely the quality and timely info available through the KR Net is invaluable.

There is no doubt that next year you should be at the KR Gathering. It's again going to be held in the Barkley State Park area since we drafted Dana Overall for a second time. Be sure to check your KR Newsletter next spring/summer when the details should be announced. Regardless, there is plenty to do for spouses and children that want to join in some fun. There is golf, swimming, riding, fishing, boating and nature trails right at the park. There is also a Boy Scout Museum in nearby Murray, KY. Next year, bring the whole family but sneak away to see the KRers!

Photo coverage and award winners from the 1999 KR Gathering begin on page two. Thanks, Ken, for the fine report. You're hereby promoted to Chief Stringer for the KR Newsletter with all rights and privileges!

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

1999 KR Gathering & Flyin Award Winners

Longest Distance Flown
Bobby Muse, Wimberly, Texas

Spot Landing Contest
Jim Faughn, St. Louis, MO

Best Engine Installation
Calvin Campbell, Broken Arrow, Oklahoma

Best Interior
Bobby Muse, Wimberly, Texas

Oldest Pilot
Bob Muse, Sr., Marietta, Georgia

Innovator Award
Troy Petteway, Columbia Tennessee

Best KR2 and People's Choice
Tom Crawford, Gainesville, Florida



Lots of seminars! Here, Mark Langford holds court and elaborates on composite construction.



Perpetual KR Gathering attendee Bob Muse prepares a space to haul off his annual "Oldest Pilot" Award. He may have the years, but Bob logs more time than most!



Martin Roberts had a swoopy, new paintjob on his KR. Marty is the traditional Iron Man of the Gatherings, giving rides almost continually to KR enthusiasts.



Mike Garbez and Bob Wetzel talk engine installation. Typical line begins, "Whatcha think about using a...?"

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Memories of the 1999 KR Gathering and FlyIn



Mike Garbez trailed his tri-gear KR2 from Griswold IA. Very nice custom canopy installation typical of how builders may add custom touches to their aircraft.



This belt redrive, Subaru powered KR2 also featured a very cleanly executed fixed windscreen canopy. Much interest in this aircraft. Troy Pettaway's KR in backgrnd.



Guest of Honor Jeannette Rand was presented with a lovely framed reproduction of a mid-70's Sport Aviation cover featuring husband Ken Rand's original N4KR.



KR Gathering host Dana Overall presents the 1999 Spot Landing Contest award to Jim Faughn. Appears ol' Jim can land as well as he can sing!



Jim Faughn. St. Louis MO. and Steve Bennett, Boy's Town NE, discuss Great Plains Volks conversions



Weight & Balance looks good for Tom Crawford of Gainesville FL. winner of Best KR2 plus People's Choice

Memories of the 1999 KR Gathering and FlyIn



Calvin Campbell was finally able to locate his mysterious '98 Gathering oil leak and claim the Best Engine Installation Award. Dan Diehl nowhere in sight...



Professionalism pays off for Troy Pettaway as he is awarded the 1999 KR Gathering Innovator Award.



This guy looks familiar. Would a KR Gathering be complete without Bob Muse, Senior, and his Georgia-Based KR2? Let's award him Senior Pilot Wings.



Feed them and they will come. The Friday evening barbecue buffet left many pilots over gross. Table topics were, what else, KR's. KR's and more KR's.



Bob Muse's younger brother...OK, his son Bobby, took home Best Interior honors at this year's event.



The rumored KR2000 may well be true. Ace reporter Ken Jordan risked all to snag photo of the prototype.

Update on the Bryson KR

Jeff Bryson

9017 Hemingway Place • Bakersfield CA 93311
Tel 661-665-9449 or jrbryson@lightspeed.net

Here's an update on 949JB. She is flying great and I'm enjoying her tremendously. I have over 60 hours TT and have made a couple of trips. My wife Lynda was the first to go up after the 40 hour test period. She complained that it was too fast. That's probably because I told her that the indicated 140 kts was actually 250 mph... ha ha.

Through the help of the Lord, I was able to find and correct the oil heating problem. That fix also helped the oil pressure situation. The cylinder head temperature also decreased.

Every time I go to the airport planning to install the wheel pants I end up flying and don't get anything else done. It is hot here in the San Joaquin valley so we need to get where we're going before 9:00am or you will fry. I am happy to hear about the Atwater Fly-In. I hope everyone on our left coast will make it. I will certainly try. The people at Merced are real nice and it's a good place to top off your tanks. I'm not sure if there's fuel at the old Air Force base.

To all those still building, keep going. It is worth it to see your dream come true. And Monte, keep up the good work with the newsletter, keep the faith and take no prisoners.

Editor's Note: Jeff's Dash Two was a KR Newsletter cover feature just a few months ago. Prior to that, his progress reports were quite frequent. His aircraft has also been seen in both *Kitplanes* and the EAA's *Sport Aviation*.

Golden West Fly-In

New KR Builder Gets Juiced Up

Tim Eisinger

18155 Burke Dr • Plymouth CA 95669

I just got home from the Golden West Fly-In. It was great! This was my first EAA fly-in and I never dreamed that I would see this many homebuilts until I would be fortunate enough to make the trek to Oshkosh. The weather, too, was just awesome.

Rand-Robinson has a booth at the fly-in with three KR2s parked in front. I really began to get excited since I had recently purchased the KR2S plans and had only seen one KR in my life. Yeah, I live in the hills. I also got to meet Jeannette Rand, a nice lady.

The informal KR forum was totally cool. Everyone there was very pleasant. You can really pick up a lot of ideas from these jabber sessions. Among others, Richard Hanson, of Livermore CA, discussed O-200 modifications. There was not a big attendance at this

forum but one guy came over from the Glstar forum next door because he was the only person to show up. He said, "I should sell my kit and buy a KR."

Hey, Monte..This is my first taste of the KR family and I will be back next year for more. Talking to other KR builders, especially those who have finished their planes, really gives you that extra push on a project.

By the way, Jeannette showed the videotape of last year's KR Gathering. Those high speed flybys were awesome. There was also a clip with your mug in it but I would still recommend getting it!

I also got to meet three B-29 crew members from the Enola Gay. Unbelievable! Sorry I didn't bring a camera.

A Quick Video Plug

This'll Get You Into the Shop!

In the previous article, Tim Eisinger mentioned the KR video being played at the Rand-Robinson display during the Atwater, California Golden West EAA Fly-In. Your editor can confirm that he is not exaggerating about this film. It is professionally crafted and highly motivating. The producers have several KR videos available.

Unfortunately, I do not know the cost of the tapes nor the telephone number of the producers. However, a little detective effort will turn up this info. Contact:

Omega Productions

304 Cedar NE

Grand Rapids MI 49503

ON THE RAMP

Issue 265 of the KR Newsletter had been distributed only a few days when the editor received a call from Jerome Hediger of Wicks Aircraft Supply regarding the delay in spruce delivery, from a totally different supplier, encountered by Tom and Ben Raby (see *The Fun Begins*, pg 2, issue 265).

Jerome notes that Wicks Aircraft Supply is currently able to fill spruce orders within two weeks. This time frame includes most custom spars, too.

The editor has built and flown two different aircraft that carry Wicks lumber, metals and hardware and will personally vouch for their service. If you don't have one of their giant catalogs, call 'em at 800-221-9425.

Coming Next Month

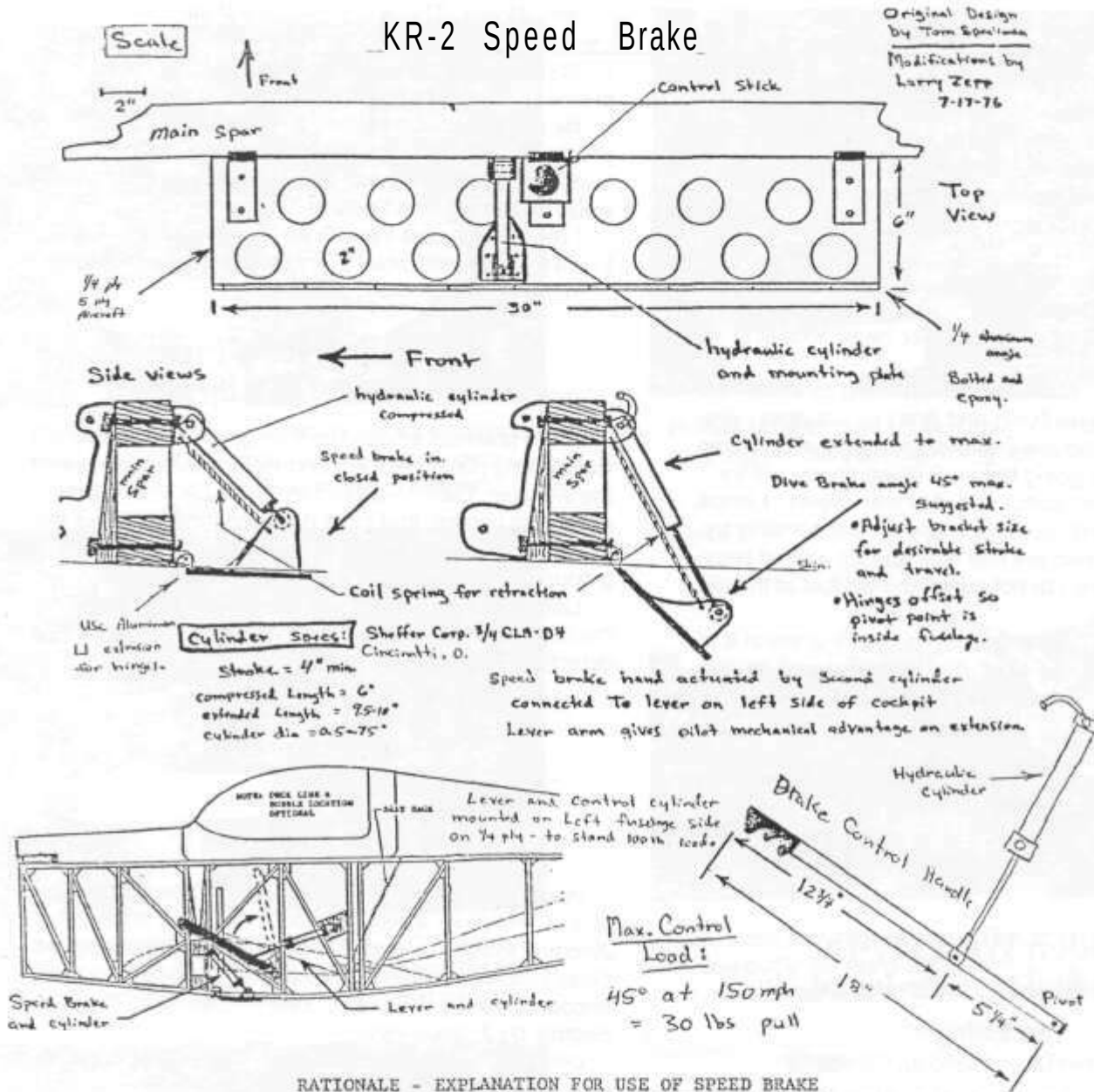
• More on Aileron Bellcranks

- *Another* plan for a KR2/S Speed Brake

- Plus the Usual Stuff

KR-2 Speed Brake

Original Design
by Tom Spaulding
Modifications by
Larry Zapp
7-17-76



- (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

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FOR SALE- KR-2S, Boat stage. Birch ply, spars started. All spruce to finish, full set plans, newsletters, internet downloads, pictures, KR Gathering tapes. \$950. Project located north of Seattle WA. I have no time to build. Bruce Toscano 425-806-8072.

WANTED - Interested in purchasing KR1 or KR2. Contact Edward Menges, 6223 Southwood Apt 1S, St Louis MO 63105. Tel: 314-726-3085.

FOR SALE - Two (2) KR2 projects. Both thru boat stage and on retracts. Most controls mounted. Have two (2) cowls, molded header tank, canopy, Diehl gear in box, plans and ten years of KR Newsletters. Have 0-time HAPI 1835, prop, mount, exhaust. \$5000.00 OBO. Consider trade for metal project. Ron DeWees at 404-876-3481 or rdewees@avana.net.

FOR SALE - KR2 project complete thru boat stage on Diehl tri-gear. Wing and center section skins, aft & fwd decks, Revmastercowl, Dragonfly canopy. New 2180 GP on firewall with dual ign, alternator, starter, carb, exhaust, prop and polished spinner. Carl Evers, 904-724-2324, between 6-9pm EST. Leave name and number.

WANTED - Looking for nice KR2S that will fit a 6'3" pilot. Contact Leigh Kolka, 2840 South Church St D-404, Murfreesboro TN 37128. Telephone 615-867-1211.

FOR SALE - Lost my medical so I am now offering my near-complete KR-1 for sale. Just about ready to fly with 1835 engine, instruments, plus second engine available. Call Carle Curtis at 703-339-8346 or fax at 703-339-8345. No collect calls, please.

WANTED- Any ol' KR builders out there have any Dynel? I'd like to buy some if you don't want it. Contact Dan Diehl at 1855 N Elm, Jenks OK 74037.

FOR SALE - Fixed gear taildragger KR2. 1835 VW with Diehl starter/electrics and IVO inflight adj prop. Has wing tanks, mech brakes, swing-over canopy & dual side-by-side control sticks. Extras with sale. Trade for 0-360 Lye or will sell as de-registered aircraft for \$5000. Full details, contact Bob Easland, 203 Vista Rd, Gatesville TX 76528. Tel: 254-628-8448, days only. Fax: 254-628-7744.

FOR SALE - Volks engine goodies. 1835 and 2180 parts: cams, cranks, heads (both single and dual port),

intakes, motor mount, zenith carb plus other small parts. Contact Randy Smith, 940-483-9939 after 8pm CST.

FOR SALE - KR2 wood kit, foam kit and landing gear. Other accessories also available, all at 1980 prices. Kits are complete. Some extras tossed in, too. Contact Cleo Greenhaw, 1201 Princeton, Ponca City OK 74601. Tel: 580-762-2531.

WANTED - I purchased the remaining available back issues during the closeout sale but I'd like to acquire a full set. Anyone wishing to sell, please contact Michael Simpson, POB 1297, Boone NC 28607. 828-898-4644

FOR SALE- Canopy and windshield, originally designed for Polywagon. Adaptable to and has been used on the plans built KR2 but unsuitable for KR2S. New condition. \$150 plus packing & freight. Ron Dillard, 407-834-3528.

REDUCED PRICE - KR2. 11" longer & 2" wider. Boat with stubs, wings and tail feathers. Converting to fixed gear. Dual controls and reinforced for more HP. 0-time 2180 VW with KR motor mount. Canopy, hardware, lights and most engine/flight instruments. \$2400. Richard Rymer at 562-435-7937 or rlymer@worldnet.att.net.

WANTED - Your unwanted Diehl wing skins for my KR2. Contact Brad Pearson at 909-599-2786 or e-mail me the details at pear91773@aol.

FOR SALE - KR2, N3780B. Near complete conversion to tri-gear, lacks aileron cables, wing walk and wing close. 26 TT Hapi single-plug 1835 plus 200TT Hapi dual-plug 1835 available. \$10,000 OBO or will split up for \$3K each. Call Steve Buckley 6-9pm PDT at 510-656-3329 or email buckOO@earthlink.net.

WANTED - Help in locating and purchasing a fuel tank or fuel bladder that will fit inside my weepy fiberglass unit. Any ideas? Also wanting a good updraft carb for my 1600 VW engine. Contact Fred Sledge, 108 South Lelia, Guyton OK 73942. Phone or fax 580-468-3387.

FOR SALE - Stretched KR2. Primed and ready for color. 1834 VW, Hegy prop, Diehl wings, retracts, professional upholstery. Good to excellent workmanship. \$4500 firm. See KR News #245 for details. John Duffy, 237 Bridge St, Bridgewater MA 02324. Tel 508-378-3411.

FOR SALE - Unregistered 85% KR2 project with fixed fiberglass gear, new Hapi 1834, dual ign and new 52x46 prop. Most major glass work done. Mech brakes, spinner, wing tanks, hidden VOR antenna, all instruments except compass. Wired for position lights. Photos & equipment list avail plus most all KR Newsletters. Located Cleburne TX (F18). \$6000 OBO. Contact Geo Henderson, 6301 Wrigley Way, Ft Worth TX 76133. Tel 817-292-1614.

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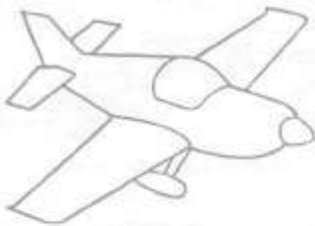
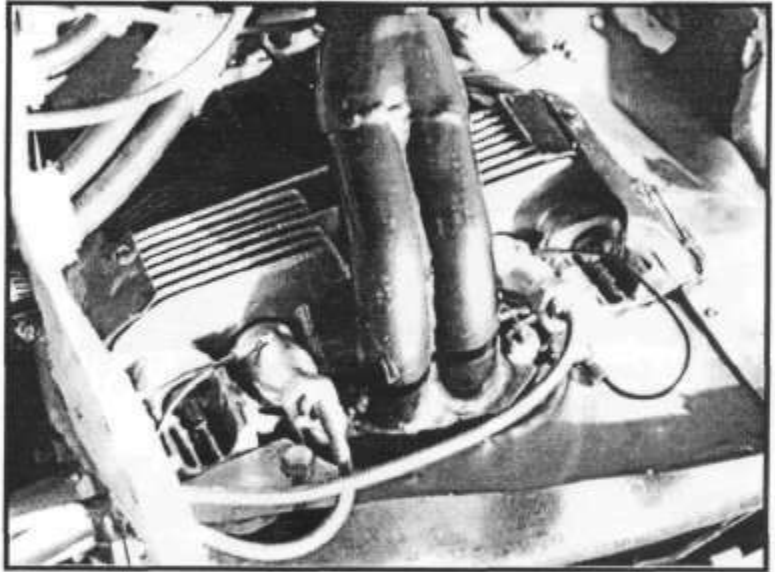
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KR NEWSLETTER

624 West University Drive
PMB199

Denton, Texas 76201
Issue 266 Sept-Oct1999





NEWSLETTER

Development of a "New" KR2S Airfoil *Groups Efforts Offer Handsome Performance Dividends*

Design Suggests Handling Improvements

Mark Langford

296 Taylor Denton Lane • Harvest, Alabama 35749

I was asked at the Gathering to provide a little history for the "new airfoil" for publication in the KR Newsletter. We've been accused of keeping a great secret to ourselves, the Internet crowd of 460 KR builders and flyers named "KRNet".

I originally became interested in a better airfoil in 1994 while still in the boat stage on my KR2S. I was also helping design the Lionheart prototype (see <http://www.griffonaerospace.com>), a composite, modern day Staggerwing. I created the solid model of the aircraft and its mechanical systems, from which I drew up plug and end-user construction templates and CAD drawings for most of the hardware as well. While working with designer Larry French, I got a good feel for the aircraft design process, and started thinking about doing a stability analysis on the KR2S, a plane famous for its pitch sensitivity.

I started looking for design data for the RAF48 airfoil, and found precious little. There appears to be only one scant page of info, which I've put on the web at <http://home.hiwaay.net/~langford/kraf48.html>. I called Stu Robinson to see if he could steer me to some source of RAF48 info. He said they didn't have any design info on it when they built the KR1, borrowing heavily from the Taylor Monoplane (including its RAF48 airfoil), and that the data I had was all he knew of.

At about the same time, I struck up an email conversation with an aerodynamicist who frequented the internet news group rec.aviation.homebuilt. He volunteered to take the RAF48 and feed it into the "Eppler code", a computer program designed to extract

Cl/Cd info from a set of airfoil coordinates. His report was that "the experimental data differs greatly from the theoretical results". It seems the Eppler code didn't match the Cl/Cd data in the chart, and he didn't quite know what to make of it. His comment was that the wind tunnels of the era (1920's) were pretty bad, and that he trusted the Eppler code more. He recommended that I should find an airfoil for which more accurate numbers existed, and pointed me to a new airfoil named the NLF(1)0115.

Although the NLF(1)0115 was designed for aircraft flying at higher Reynolds numbers than the KR, at least I had data for it, and I was planning on going pretty fast myself. I talked Larry into feeding the data into his extensive stability analysis program, and out popped a wing incidence and tail incidence, along with expected cruise and stall speeds, among other things. Armed with these, I set about building my wing spars.

During this same time, several of us KR builders had been corresponding by email via AOL's KR forum, which is pretty much defunct now that there's KRNet <http://www.krnet.org>. I had finished my wing tanks and was singing the praises of my new lower drag wing, when Steve Eberhart decided to do a little design work of his own. He asked why I was using an airfoil that wasn't a perfect fit for the plane, and why didn't I get the guys who designed the NLF to do one specifically for the KR2S. I told him "knock yourself out", and although I wasn't exactly holding my breath, I DID hold off on anymore wing construction for a while, just in case.

Since he lives near the University of Illinois at Urbana (UIUC) Steve set up an appointment with Dr. Michael Selig, designer of the NLF, and many more laminar flow airfoils. Dr. Selig advised that while the NLF(1)0115 would work just fine on the KR2S, he really would like to

continued on page two

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR serieb aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

"New" KR2S Airfoil ..continued:

test a model of it in the wind tunnel to make sure that the calculated data matched reality. He was particularly concerned about the effects of bug guts and rain on lift at stall speed. While the University of Illinois has its own wind tunnel, it stays booked to the tune of several thousand dollars a day for months in advance, for such customers as Ford Motor Company. KRNetters had cooperatively financed a few other minor projects, and Steve thought maybe there were enough of us that would chip in to finance the wind tunnel project.

That night, the call went out to KRNet for contributions for the wind tunnel fees, and in 24 hours we had \$1100 pledged! Selig said that would do just fine, and Steve set about making an NLF(1)0115 wind tunnel model. KRNet's John Roffey machined the special 4130 spars required for the test specimen, and other contributions paid for the carbon fiber, epoxy, and other materials for the test specimen construction. Sweat and hard labor was provided by Steve Eberhart. Just about the time the tunnel specimen was finished, Steve dropped back in for a visit. It seems Dr. Selig had a doctoral candidate specializing in airfoil design who needed a project, and designing an airfoil especially for the KR2S would be just perfect! The graduate student was Ashok Gopalathnam, whose summer job at Scaled Composites included designing the airfoils for Burt Rutan's new Boomerang 11. He knew things were going well when Ashok appeared wearing an EAA T-shirt. Ashok first designed a 15% "AS5045" airfoil for the KR2S, using a typical cruise speed of 180 MPH and weight of 850 pounds. The preliminary iterations for this airfoil (the GA19980222A) were displayed on the web, along with comparisons of efficiency and speed improvements over the RAF48 and NLF(1)0115 used in the same KR2S application. They are not trivial, and the proof is displayed in excruciating detail at <http://Hamber.aae.uiuc.edu/~ashok/kr2/airfoils/> Make sure you visit the sites listed at the bottom.

Dr. Richard Mole, (Britain's version of Tony Bingelis) also participating in the KRNet dialog, asked, "why not design an 18% foil, so that wing tanks can be larger, and spars made lighter and stronger?" Presto, an 18% AS5048 appeared! As an avid CAD fan, I promptly superimposed the 15% onto the stock spars, and determined that we needed a 16% for a perfect fit. A few days later we had the 16% AS5046!

Mark Loughheed of Seattle, a boat designer & mathematician, fed the new airfoil coordinates and characteristics into a highly massaged CFD (computational fluid dynamics) program, attached to a 3D CAD model of a KR2S. The results of his analysis, in conjunction with his stability analysis, pegged the wing and horizontal stabilizer incidences required for maximum efficiency and stability, and resulted in some truly spectacular images like the one at the top of this

page (the AS5046 approaching stall at a 16 degree angle of attack).

Of course, we would really need a wind tunnel test to verify the Profoil data, so maybe we shouldn't waste our precious tunnel time on the NLF, but should test the AS5045 and AS5048. Since our tunnel slot was quickly approaching, Steve quickly ordered up another set of spars from John Roffey, and cannibalized the NLF specimen for its specially machined 4130 spars. After a lot of long days and midnight oil the AS5045 specimen was complete. This thing would bring a concours body man to tears. It was absolutely perfect, and in beautiful carbon fiber black. The pictures at <http://www.newtech.com/nif/nlf.html> can't do them justice. You've gotta see them to believe them.

Off to the tunnel with the two specimens, where results were as predicted by the analysis. A new airfoil was born! All we needed was a test pilot...

Tennessee's Troy Petteway had recently damaged his wings (among other things) during a forced highway (well, farm road) landing, and was building new wings anyway. "Higher speed" was all this Sun Race winner needed to hear, and he was installing the AS5046 on his stock sparred KR2. Troy is not only a daily corporate King Air pilot, but A&P and CFI, owning and flying just about every "fun" classic plane you can think of. First flight with the new wing was in July of '99. He reported that even without wheel pants installed, his plane climbed out at a much higher speed, and cruise speed was definitely improved. His plane was also "10 times more stable" than it had been with the stock wing with exactly the same CG, although some of the improvement no doubt came from increasing the horizontal stabilizer length 4" per side. But much of the stability improvement is due to the higher pitching moment of the new wing being counteracted by

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the horizontal stabilizer, which creates a more stick free stable plane. These improvements came with no penalty as stall speed remained the same as before, with power off stall coming at 40 knots. The stall was gentle with no tendency to drop a wing. The increased climb out speed (120 mph rather than the previous 80 mph) not only means getting to a safe altitude quicker, but increased engine cooling at the time it needs it most, full power.

One other benefit to the new wing that no one had really noticed on paper is that the airfoil actually has a slightly higher drag than the RAF48 at high wing incidences, such as landing and takeoff. This may not sound like an advantage, but when the KR is a few feet off the runway in ground effect, this increased drag is a welcome brake to shorten the floating process. During takeoff, it increases the run slightly, but takeoff run for a KR is always 2 or 3 times shorter than landing distance anyway, so it helps to equalize the takeoff and landing distances.

Although Troy's plane is both more stable and faster than before, it's still not optimal. The tail incidence should be reduced slightly, and he has yet to get his wheel pants back on, so it can only get better!

As of the September '99 KR Gathering (at Lake Barkley, KY), Troy had his 40 test hours in and was still quite happy with the new airfoil. He had unintentionally flown it in a moderate rain shower, and noticed no difference in flying qualities. Ashok, the airfoil's designer was keynote speaker at the "new airfoil" forum at the Gathering, and explained how the laminar airfoil had been tested with "trip strips" in the wind tunnel to simulate the effect of rain and bug guts on the leading edge. Test results matched the theoretical calculations, and there was very little effect.

If your plane is already built, it doesn't make sense to tear the wings off and replace them with the new airfoil, unless of course, your wings need to be torn off anyway! But if you're still in the boat stage or haven't started actual wing construction, now would be the time to consider the new airfoil. The planform and construction methods for the new wing are exactly the same as the plans call for, only the airfoil templates are different. You don't even need any new plans, just the templates for the new airfoil.

See <http://home.hiwaav.net/-langford/as504x.html> for airfoil coordinates and template source.

The biggest construction difference is that the aft spar needs to be raised with respect to the fuselage to lower the wing incidence. This is partly due to a different airfoil shape, as well as getting the fuselage to fly level at cruise speed, rather than nose down like the stock KRs fly.

There are three different ways to use the new airfoil. For new construction, the best is using the 18% AS5048 at the root, tapering to the 16% AS5046 at the tip. This uses a main spar that is 8.19" tail at the root, making it 17% stronger than the stock spar. It also adds almost

20% to the capacity of the wing tanks. The materials required are exactly the same as the plans call for, except the vertical spacers between the caps are slightly longer. If your spars are already built, the 16% AS5046 is almost a perfect match, requiring only a lamination of 1/8" of spruce to the upper main spar cap to bring it up to proper dimension.

One other change that should be made is the horizontal stabilizer incidence should be reduced to about -.75 degrees. I'll tell you for sure after my plane flies, since it has an adjustable horizontal stabilizer so I can "nail" that number. It will obviously work at zero, since that's what Troy's is still set to, but that's probably not optimal.

At present, I know of at least 20 builders who are using the new airfoil. Dean Selby of Tennessee will probably enjoy first flights before years end. There are no wing skins available for the new airfoiled wing, so you'll have to build your wings the old fashioned way. Personally, I've built my own wing skins for the AS5046 airfoil. You can see them on my "Outboard Wings" construction page at <http://home.hiwaay.net/-langford/kmarkl.html>. They are slightly lighter than plans built wings, but the skins are several times stronger, even though I'm using very large flap.

This airfoil owes its origins to KRNet, and several folks working for a common goal. Were it not for the Internet, it would have never happened. And they say there's nothing on the web but smut!

Our thanks to Mark Langford for sharing this truly exciting research on KR airfoil design. The classic RAF48 section used on many KRs is still a viable choice for builders. However, with the advent of computer modeling and greater technological resources, newer and more efficient airfoils are within the reach of most every builder.

Troy Petteway's modified KR was on the ramp at this year's KR Gathering. Congratulations, again, to Troy for his 1999 KR Gathering Innovator's Award.

Those builders choosing to incorporate this new airfoil design into their aircraft are encouraged to share their results with the KR Newsletter. Visit the online sites for some visuals of the airfoil tests.

Happy Holidays

From the Wright Brothers to Neil Armstrong on the moon to the almost commonplace flights of the space shuttle, it's all happened within the last one hundred years.

To our KR family of builders, pilots and enthusiasts

Peace, Prosperity and Health

KR-2 Takes Shape in Florida

Photos Reveal Builder Tips

Robert McDonough

17295 121 st Terrace • Jupiter Farms FL 33478

Telephone 561-744-5066

After talking to a few builders at Sun n' Fun, I have decided to install a speed brake, rather than flaps, on my KR-2. *Editor's Note:* See the speedbrake ideas in both this and last month's KR News.

I do not plan on any major changes on my aircraft. What I will have is dual sticks, an angle of attack indicator, a sound-proof cockpit, Diehl tri-gear and wing skins, a GPASC Volkswagen engine from Steve Bennett... and the speed brake.

I really enjoy the KR Newsletter and your articles. Keep up the good work.



Setting dihedral in the KR's main spars. Positioning the Spar Attach Brackets is a critical construction step. Bob's sturdy work table insures accuracy.



The editor knows some builders who would love to be able to have a three-piece main spar! Bob and helper display the component in front of his "dog house".



Wish more reports included photographs of the builder, such as this one of Bob McDonough and his KR-2.

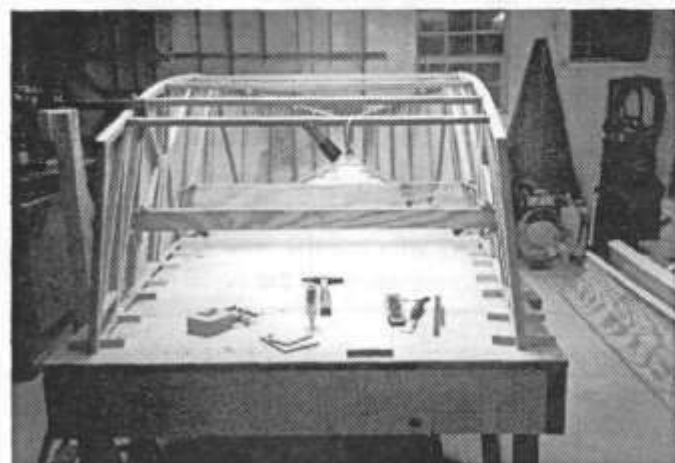


Photo speaks volumes. Tricks spotted: 1) Vertical upright and bar clamp, visible at left, securing the "boat" in position: 2) Temp internal jigs C-clamped to uprights, holding fuselage dimensions: 3) Series of locating blocks secured to the table and: 4) Plumb bob registering on the benchtop's previously marked centerline. This is how you build a "square" fuselage.

The Airplane Ride

Granddaddy told me a story, from back in the Thirties, about some old neighbors of his. I was never sure when Grandad was telling the truth and when he was stretching it a bit. I like the tale, anyway.

Story goes that Joe and Betty, a notorious pair of tightwads, had been married for years. Joe had always wanted to go flying and the desire grew stronger each time a barnstormer flew into town. Joe would ask, but Betty would say, "No way. Ten dollars is ten dollars".

Years went by. Joe figured he didn't have many left so he talked Betty into going out to see the next gypsy pilot. "It's free to watch", Joe said. "Let's just go out to see. It won't cost nothing".

So, Joe got Betty out to the field and his desire for a flight grew even stronger. They got into a loud argument, which the pilot overheard. Between flights, to quiet them down, the pilot offered the couple a deal.

"Tell you folks what", said the pilot. "I'll take both of you up flying and if neither of you says a word, the ride is on me. However, if just one of you makes a sound, you owe me ten bucks." For the famous penny pinchers, the offer was too good to pass up.

Off they flew with the pilot doing every stunt he could think of. Loops, rolls and terrifying dives with the pullout bare feet above the cotton fields. Not a word from the back, nary a peep. Admitting defeat, the pilot returned to the field and landed.

"I thought for sure I could get one of you to scream", lamented the barnstormer. "How come you didn't say anything?"

"Well, young fella", says Joe, "I almost said somethin' when Betty fell out, but ten dollars is ten dollars."

* * * * *

More Ideas on Bellcranks

Ball Bearings and Less Pieces

Sid Wood

31010 Point Lookout Rd • Mechanicsville MD 20659

email: swood@mail.tqci.net

Tel: 301-475-5389

I read with much interest about Sam Sayer's custom KR aileron bellcranks in Issue 255, September 1998. If you are using a cable control loop system per the KR plans, I believe the precision that Sam advocates is not that critical. With a standard 40-pound cable tension, all the play is taken out of the plain hole bolt bearings. At every yearly condition inspection you can readjust the cable tension to compensate for the aluminum bracket and steel bolt wear. Unfortunately, I don't have any neat drawings or photos as in Sam's article, but this is what I did for my KR2 aileron bellcranks:

Build the bottom left and right bracket from 6061-T6 angle stock per the KR plans. (Follow Sam's advice and don't drill the spar mounting holes until you have everything assembled and lined up.) Mark the aileron bellcrank bolt holes but don't drill them yet. Make the top left and right bracket from 6061-T6 per Sam's drawings except use a generous bend radius at the spar and make the angle about 65 degrees versus Sam's 79 degrees. I used my bench vise with aluminum padded jaws to hold the bracket. I grabbed the end tab with a large C-clamp, padded with two pieces of flat steel to spread the load. You will have to bend the trailing end to about 25 degrees. These angles are not critical as long as they add up to 90 degrees. Save yourself a little aggravation and check the bend totals with a carpenter or machinist square. Leave extra length on the tails so that you can locate the spar and bell crank bolt holes later on. Make the aileron bellcranks per the dimensions in the KR plans. Forget the Ochannel spacer bracket.

Now for the change. Use a 3/4 inch hole saw to cut out the 3/16 inch bellcrank pivot bolt hole in both the left and right bell cranks. No, we won't use a 3/4 inch aileron bolt. Instead, rivet each aileron bellcrank to an aileron bearing (AC Spruce BC4WIO or equivalent). Alodine the bellcrank before you rivet it as the ball bearings will be damaged by the alodine solutions. You can get 3/16" bore bearings if you shop around the fly markets. 1/4" bores are more readily available and will work fine. The point is you really should put a real factory-made bearing in this application. More on that later.

Line up your brackets. Set the left and right lower brackets back to back on a smooth flat surface. These brackets should be mirror images of each other. The flat surface will serve as a reference for the plane of your aft spar. Will the aileron bolt holes line up? If not, make it so now even if you have to make another bracket. Clamp the left and right lower brackets together and match drill them for the aileron bolt holes. Drill the aileron bolt holes with a 1/16" pilot drill.

Set the left lower and upper brackets together and the right lower and upper brackets together on your flat reference surface approximately as they would be bolted to the rear of the aft spar. There is nothing between the pair of brackets, yet. You will have to clamp the lower bracket to the flat surface to get it to stay in position. Place the upper bracket against the lower bracket in about the proper position. Clamp the upper and lower brackets together with two small C-clamps at what will be the trailing edge. The upper bracket should still be sitting flat on the flat reference surface. If the upper bracket wants to kick out or tuck in, your bends are probably not exactly 90 degrees total. Gently adjust the bend angles to get it square. All brackets still sitting flat and lined up? Don't disturb the C-clamps holding the upper and lower brackets together.

Take the clamped pair to the drill press and match drill the upper aileron bearing bolt hole using the already drilled pilot hole as a drill guide. Use a 3/16 or 1/4 inch bit, depending on which bearing bore diameter you are using. No need to ream as these are bolt clearance holes. Do the same for the other set of brackets.

Deburr the bolt holes. Set the bracket back on the flat surface as before. Put an aileron bolt through the pair. They should line up smooth and easy. Now, put a bellcrank and bearing assembly between the bracket pairs and fasten the bellcrank bolt with a plain nut. Put the bolt through from the bottom bracket. Tighten the nut and all should sit square and flat on the reference surface. If not, loosen and re-tighten the aileron bolt nut to make it so. Note that the aileron bell crank spins freely while the mounting brackets are held tightly by the bellcrank bolt.

Now you are ready to fit to the aft spar. Clamp the bellcrank and bracket assembly to the rear of the aft spar with the aft spar, rear inner wing attach brackets against the spar. Position so that the bellcrank bolt head will not

protrude below the bottom wing skin. Mark the bracket with a 3/16 inch transfer punch through the wing mount brackets and drill the bell crank brackets on the drill press. Deburr and fit check. You may find that a hole or two may be just a little off and these bolts will not go through. Not to worry. Take the brackets back to the drill press and drill the holes a 64th or 32nd inch larger. Don't be tempted to drill the bracket through the spar as this will elongate the spar holes and weaken a primary structure. You will need some clearance on the bellcrank brackets to allow for alodine and paint thickness. Now, you can cut off the extra material you left on the bracket tails. With the drill holes deburred and edges filed smooth, you are ready to alodine and paint before final assembly. Better yet, take the brackets to a plating shop and get them to anodize the brackets.

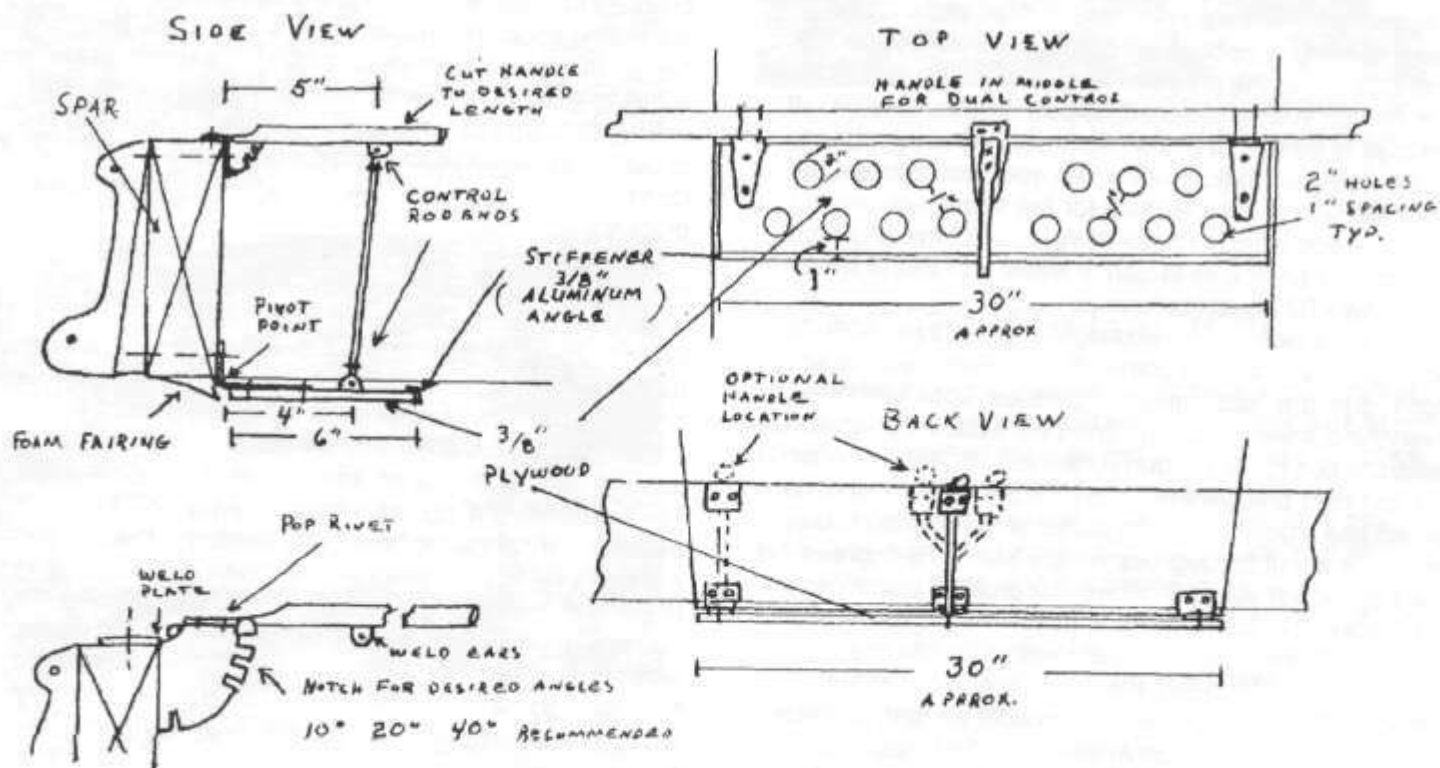
With the brackets and bellcrank bolted tight, notice how this triangle assembly is quite rigid. A cable control system will not require that amount of rigidity since the cable tension will take up the slack. (But it is desirable to have rigid structures any way). With real roller bearings at

your bellcranks, you won't have to wonder why you have to tighten the aileron cable loop at each yearly condition inspection. A push rod control system will need the structural rigidity of the triangular brackets firmly bolted together. Even if the ailerons are perfectly balanced, they will flutter with a push rod system if there is play in the aileron bellcrank bearing. Load reversal on the push rod, and on the aileron itself during roll-in/roll-out maneuvers during fast rolls in conjunction with slack in the aileron bellcrank bearing, will cause aileron flutter. Most likely the flutter will only last a few milliseconds as you move the aileron through the critical angle. It will be the aileron on the downward moving wing that will flutter.

All the precision required for this aileron bellcrank assembly has already been done for you at the bearing factory. You need only to make a few very simple brackets and then get on with the rest of the wing construction. Make note to replace the plain nuts with stop nuts on the aileron bellcranks. And yes, I had an aileron control cable in my KR-2 but I replaced it with a push rod system. But that's another story.

MECHANICALLY ACTUATED SPEEDBRAKE

The speedbrake drawing was submitted several years ago by Tom Speakman, of Portland, Oregon. Any other builders, besides the editor, that are reminded of the WWII-era Douglas SBD "Dauntless" dive bomber and its perforated dive brakes?



The center lock and handle is a lockable folding table leg hinge called "EZ Hinge" and is offered by Ardor Mfg. Co. Available in most hardware stores as are the three (3) required 5-inch hinges. *Editor's Note:* A properly dimensioned, full length AN extruded hinge strip might be a replacement choice.

KR CLASSIFIEDS

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The KR Newsletter reserves the right to edit free ads.

WANTED - Interested in purchasing KR1 or KR2. Contact Edward Menges, 6223 Southwood Apt 1S, St Louis MO 63105. Tel: 314-726-3085.

FOR SALE - Two (2) KR2 projects. Both thru boat stage and on retracts. Most controls mounted. Have two (2) cowl, molded header tank, canopy, Diehl gear in box, plans and ten years of KR Newsletters. Have 0-time HAPI 1835, prop, mount, exhaust. \$5000.00 OBO. Consider trade for metal project. Ron DeWees at 404-876-3481 or rdewees@avana.net.

FOR SALE - KR2 project complete thru boat stage on Diehl tri-gear. Wing and center section skins, aft & fwd decks, Revmaster cowl, Dragonfly canopy. New 2180 GP on firewall with dual ign, alternator, starter, carb, exhaust, prop and polished spinner. Carl Evers, 904-724-2324, between 6-9pm EST. Leave name and number.

FOR SALE - Lost my medical so I am now offering my near-complete KR-1 for sale. Just about ready to fly with 1835 engine, instruments, plus second engine available. Call Carle Curtis at 703-339-8346 or fax at 703-339-8345. No collect calls, please.

FOR SALE - Fixed gear taildragger KR2. 1835 VW with Diehl starter/electrics and IVO inflight adj prop. Has wing tanks, mech brakes, swing-over canopy & dual side-by-side control sticks. Extras with sale. Trade for 0-360 Lye or will sell as de-registered aircraft for \$5000. Full details, contact Bob Easland, 203 Vista Rd, Gatesville TX 76528. Tel: 254-628-8448, days only. Fax: 254-628-7744.

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FOR SALE - KR2 wood kit, foam kit and landing gear. Other accessories also available, all at 1980 prices. Kits are complete. Some extras tossed in, too. Contact Cleo Greenhaw, 1201 Princeton, Ponca City OK 74601. Tel: 580-762-2531.

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REDUCED PRICE - KR2. 11" longer & 2" wider. Boat with stubs, wings and tail feathers. Converting to fixed gear. Dual controls and reinforced for more HP. 0-time 2180 VW with KR motor mount. Canopy, hardware, lights and most engine/flight instruments. \$2400. Richard Rymer at 562-435-7937 or rlymer@worldnet.att.net.

WANTED - Your unwanted Diehl wing skins for my KR2. Contact Brad Pearson at 909-599-2786 or e-mail me the details at pear91773@aol.

FOR SALE - KR2, N3780B. Near complete conversion to tri-gear, lacks aileron cables, wing walk and wing close. 26 TT Hapi single-plug 1835 plus 200TT Hapi dual-plug 1835 available. \$10,000 OBO or will split up for \$3K each. Call Steve Buckley 6-9pm PDT at 510-656-3329 or email buckOO@earthlink.net.

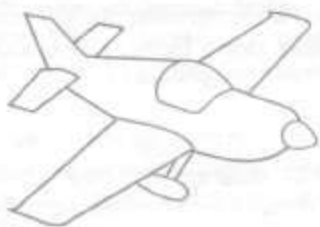
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FOR SALE - Stretched KR2. Primed and ready for color. 1834 VW, Hegy prop, Diehl wings, retracts, professional upholstery. Good to excellent workmanship. \$4500 firm. See KR News #245 for details. John Duffy, 237 Bridge St, Bridgewater MA 02324. Tel 508-378-3411.

FOR SALE - Unregistered 85% KR2 project with fixed fiberglass gear, new Hapi 1834, dual ign and new 52x46 prop. Most major glass work done. Mech brakes, spinner, wing tanks, hidden VOR antenna, all instruments except compass. Wired for position lights. Photos & equipment list avail plus most all KR Newsletters. Located Cleburne TX (F18). \$6000 OBO. Contact Geo Henderson, 6301 Wrigley Way, Ft Worth TX 76133. Tel 817-292-1614.

FOR SALE - Diehl wing skins, Rand center section skins, turtledeck, canopy frame, canopy, forward deck, wheel pants, Cleveland wheels and brakes with Cheng Shen tires & tubes, Matco tailwheel plus misc spruce, foam and fiberglass mat'l. AH or Part. Call for prices. Bruce McPherson, 817-277-5399 or email karen22@flash.net.

FOR SALE - KR2S project. Taildragger is 80% complete and on wheels. No wings or engine. \$1000. Contact Fred Lorenz, 227 Lincoln Ave, Totowa NJ 07512. Telephone 973-956-0974.



KR NEWSLETTER
624 West University Drive
PMB199
Denton, Texas 76201
Issue 267 Nov1999





NEWSLETTER

Seventeen Year Relationship with a KR2 *Type-4 Powered Ship Converted to Rand Fixed Gear*



Reliable KR flew first thirteen years without need to open Type-4 VW engine.

Veteran KR2 Design Soldiers On Into the New Millennium

Orma L Robbins

24836 Gleneyrie • Southfield, MI 48034

Telephone 248-356-0137 • aviationmech@aol.com

N110LR started life in Wyoming, I believe, before being passed along in boat stage all the way to Michigan. I picked it up after learning to fly in 1983. Made my first flight in Aug 84 and my first trip to Oshkosh in 1985.

We have had lots of memorable trips together. Somehow I have missed all the Gatherings. My excuse for both this year and last was working too hard and an engine change. My trusty 2.0 litre Type-4 Volkswagen had been on the mount for over thirteen years without the case being opened. I also fell prey to the opportunity to install a built-up 2.3 litre Type-4 built by a close friend, but never flown. I'm still trying to sort out the differences caused by a different mount, accessory case, and lastly, the desire to improve things.

Over the years, I have had several props, including the original Rand three-blade ground-adjustable. My favorites have come from Ed Sterba. I had one of his almost-constant-speed props and gained 10 kts and 200 rpm over the prop that was replaced.

My boat came complete with retractable gear and has since been converted to the long fixed gear supplied by Jeannette Rand. It opened a whole world of grass and semi-rough surfaces without fear of gear collapse. The next best change that occurred was the addition of flaps. These add drag and best of all, roll the nose over so you can see to land.

With all the mods, the little ship is over the 450 pound mark by a few. Last time on the scales at 615 lbs. I can carry header fuel (12 gal) and 200 lbs for a total of 1050 lbs gross.

The KR has enough equipment to go anywhere, though not IFR. It has lights, a strobe, portable GPS, hand held and panel mount nav-com, Loran, transponder and encoder, among other items to fill the panel. The aircraft is manageable in flight but is not docile. You can pitch yourself out of the seat if you shake the stick. The KR handles like a fighter.

continued on page 4

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

Oil Pressure Cures

VW Knowledge from GPASC

This last year has produced a rash of oil pressure problems in the field. The majority of the problems began when pilots replaced the oil pumps in their engines. With a new oil pump, always check to make sure the pump body is the correct one for your engine case. The inlet and outlet openings of the oil pump body need to line up with the inlet and outlet openings on the engine case.

The length of the drive shaft that goes through the oil pump drive gear is critical. The drive shaft needs to seat in the slot that is in the center of the camshaft. Use a caliper to measure from the oil pump body to the back of the slot in the camshaft. Then, measure your new oil pump's shaft length. The shaft may be pressed out to make it longer. Some builders have also been using gasket sealer on the gasket between the oil pump cover plate and the oil pump body. The gasket installs with only a light coat of oil. There should only be about .002" running oil clearance between the gears and the oil pump cover plate. Any additional clearance will result in low or no oil pressure. On a new oil pump, pack the teeth of the oil pump with bearing grease to get oil pressure up ASAP.

There are two other problems we have seen. In some instances, the oil filter screen occasionally has to be tapped onto the six oil sump studs. Some builders have tapped the filter screen in the center of it rather than the flange. What happened in one case was the screen was tapped so hard in the center that it collapsed around the oil pickup tube and did not allow any oil to be picked up by the pump. In another example, we saw a used engine case where the builder had replaced the oil pickup tube with an incorrect one (No, they are not all the same.). The oil pick up tube fits very loosely into the female end of the case and, in the 3-point position, oil was actually below the pick up tube where it attaches to the case. The engine was sucking air and oil mist.

Half-VW users have the opposite problem. When the case is cut in half, about half of the oil volume is reduced. A stock oil pump will pick up oil faster than it can accumulate in the oil sump. The cure is to cut about 1/4" of an inch off the gears and replace the distance with a steel washer of similar thickness. This will reduce the volume of oil pumped and allow the oil to accumulate in the sump at a greater rate than it is being picked up by the pump.

The last oil problem that seems to reveal itself frequently is located at the flywheel. When assembling an engine, you must make sure that the dowel pins on the end of the crankshaft do not protrude beyond the face of the flywheel. When using a stock 69mm crankshaft with four dowels, this is not usually a problem. It is more frequent with the 8 dowel crankshaft. What happens is that the flywheel may not seat against the end of the crankshaft. This allows oil to seep around the gland nut and dowel pins and ultimately show up as a small oil leak at the bottom of the Diehl Accessory Case.

EAA Chapter Offers KR Goodies

Tom Swearingen • EAA Chapter 129

Our EAA Chapter 129 has acquired some valuable KR parts and materials. We would very much enjoy having a prospective KR builder take advantage of an offer while helping out Chapter 129.

We obtained a gentleman's abandoned KR2 project with the hopes of developing the aircraft as a Chapter project. Unfortunately, all interested members were currently involved with their own individual projects.

Gosh, how I would have enjoyed finding something like this back when I was building our KR2. Earlier, I couldn't have even considered the Cleavelands and composite tri-gear as they were too rich for our blood!

- See the EAA 129 ad in this issue's KR Classifieds •

Robbins KR2 Before Metamorphosis



Orma Bobbins' Type-4 powered KR2, N110LR, prior to being converted to fixed gear. See article in this issue.

The KR NEWSLETTER

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Editor and Publisher, Monte Miller
Evening and weekend tel: 940.566.5871

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BACK ISSUES

The KR Newsletter maintains a database of selected articles from past issues. Printout available at \$7.50 US, \$10.00US Canada & \$15.00US Foreign. Copies of material available at \$1.00 per page, please include estimated postage. Articles over one page in length will be billed for amount due.

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How-To's For When Plans Don't Resin Mixin' Spar Leveling n' Grinding

Phil Spade

FOB 327 • Gwinn MI 49841

Cold Weather Builder

I used the West System Epoxy for fiberglass layups of the wing of my KR. It is easy to measure the proper mix ratio with their inexpensive pumps. The resin wets out the glass superbly, gives you adequate working time, and will cure at lower temps than some other epoxies. End of commercial.

Approaching fall weather meant I was running out of acceptable working temperatures in my unheated two-car garage during the months of September and October. Temperatures at night would fall close to freezing. With a plastic tent and a portable electric heater, the protected wing would remain at 70-75°F.



Hold the calls, boys! Yes, this could be a potentially dangerous fire hazard if the builder did not stay closeby.

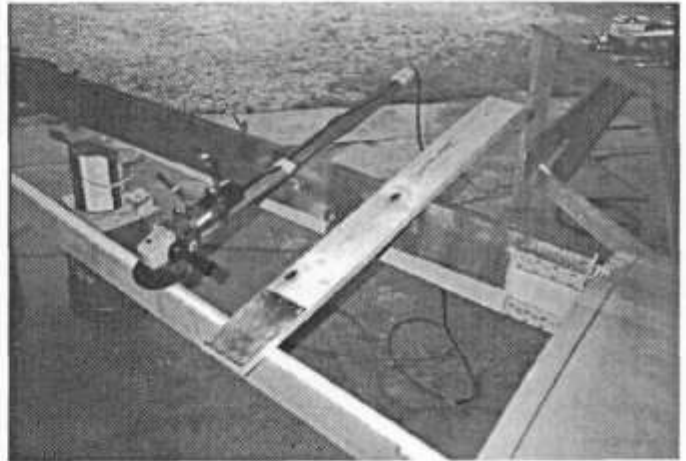
Sanding Spar Caps

Thanks to back issue Number 151, Dec 1989 of the KR newsletter, shaping the wing spar caps to profile was a snap. Here's an added procedure to make the task easier and much faster.

Instead of using a sanding board, use a 4 1/2" surface grinder with a sanding disc. Clamp the grinder to a straight board that is approximately 3 feet long x 4 inches wide. Use large hose clamps. Taper the board's width at the grinder attached end so that it matches the width of the grinder itself.

Paint the top surfaces of the spars and then sand until all the paint disappears. Finish up with a sanding board, if required. The procedure is quite similar to making scarf joints.

The photo should give a general idea of the process. Notice the straight board clamped to the opposite spar for the proper sanding angle of the spar cap. Reverse the process for the forward spar, 'nuff said.



Disc grinder in position to bevel aft spar. Note the guide board clamped to the main spar, right-angle grinder hose clamped to wooden "extension" and the touch-up sanding board with paper stapled in place.



Overall view of KR wing spar beveling operation. Spars are properly spaced by tip rib and supported from below with blocking to help hold position during grinding ops.

Laser Leveling Spars

Purchase an inexpensive laser pointer pen and tape the pen to the top center of any standard 24 or 48 inch level. Use a rubber band to hold the switch to the on position. Now, level the aircraft's top longerons, both lengthwise and crosswise, in the wing area.

Place a straight edged board across the longerons and directly over front spar. Put the level on the straight edge, pointing in the direction of the spar tip. Measure the distance from top of spar cap to the laser's light dot.

Swing the laser level 180° (in place) and check other spar cap tip. The readings should be the same distance. Do the rear spars in a like manner. Caution: This must be done with front and rear spars spread apart the same distance as per plans.

I ordered a regular laser level but improvised as it was backordered for three weeks. In my particular case, this laser procedure was used to check my dihedral, incidence, and wing washout settings previously established on the workbench as called for on the plans.

HOW To'S... continued:

Measuring Hexcel Safe-T-Poxy

I was reluctant to use this kind of epoxy because of the health hazard (read the labels). However, Epolite epoxy is recommended for gas tanks since it can stand most fuels without dissolving, including gas/alcohol mix, plus it came with the KR-2S kit. I used a head hood with air from a diaphragm compressor delivering outside fresh air at all times when handling this epoxy.

Here is an easy and inexpensive method to measure the sticky stuff. Go to your nearest high school and borrow a 100ml graduated cylinder from the chemistry teacher.

Measure 50ml of water and pour it into a small baby food jar. Mark the level of the liquid with a file, etching the glass permanently. Using another baby food jar, pour 22ml of water and likewise, etch the level.

You now have the recommended mix of 7:3 by volume. Using smaller jars, cut ratio in half for 25ml and 11 ml. For larger mixes, just double the larger jars; 100ml: 44ml.

Here's the math, if you're interested.

Volume 7:3 or 70:30

To transfer to milliliters:

$$\frac{10}{30} = \frac{100\text{ml}}{X} \quad 70X = 30 \times 100\text{ml}$$

100 parts, by volume, of resin to 43 parts of hardener. I used 100:44 to make it easier. You're allowed a 5% margin of error. The technique works fine and simply clean the jars with acetone for reuse.

ON THE RAMP

I'll have a blue Christmas without you...

Right now, I am truly perplexed. The number of reader contributions to the KR Newsletter, in the form of builder reports, flight reports, tips, photographs or etceteras is at an all-time low ebb. I am at a loss to explain why. I know there are KR builders and pilots among the readership plus a hefty sized group of KR enthusiasts. What I don't know is why only a very few individuals are sharing their experiences and knowledge.

The KR, in its early years, before Rutan hit the home-built scene with his EZ series, was the pioneer in the then new area of composite construction. Ken Rand hit a market that was waiting for a simple, economical airborne hotrod. Literally thousands of plan sets were sold all over the world! Granted, many of these plans never evolved into flying aircraft but many, many did.

About a year after the introduction of the design, the KR Newsletter appeared. Its subscriber list rapidly hit two thousand names! Many issues featured first flight reports from two or three builders each month. Today's subscribers number closer to twenty percent of that earlier incredible and glorious number.

Many factors contribute to a design's popularity. The KR, by today's kitplane standards, is really more a plans built aircraft than the current trend of snap-together, fifty-one percenter kits. KR builders trade their sweat equity for lower final costs, but with extended construction times. In so doing, I believe we also learn more about aircraft construction, design and skill development. The other side of the coin is that more money spent up front can get you into the air a lot quicker, if that's the only objective.

So times change, you say, and people are busier than ever. Right you are. Me, too. So, my question to you, the reader; Is there still a need for a KR Newsletter? We are rapidly reaching a point where increasing production costs are surpassing subscription income. Combine this factor with the lack of support, save a dedicated few precious individuals, and spending the weekend flying, rather than at a keyboard, becomes quite appealing.

Alright, enough of this cheery banter. Permit me to wish each of you and your families a Joyous Holiday plus a healthy and prosperous New Year. Remember though, the Dark Ages were caused by a Y1K bug!

* * * * *

Veteran KR2 ... Continued:

Over the years, I have met many fine KR drivers. I enjoy the fellowship. I have flown with two other KR's and it's a real ego boost to enter the pattern as a flight of two. On the down side of things, these little plastic and wood beauties need and deserve shelter. The elements of nature, namely sun, moisture, and ice, take their toll as the seasons turn here in Michigan. Now that I have excellent shelter, I'm sure the little craft will last to see 20 years and beyond.

My KR has only told me to land twice. Once, for a cracked cylinder, and the second for a loose fairing. Sorry guys but no trips to the cornfields. My thoughts about you nosewheel jockeys is that you are missing the best feature of the KR. I have never flown in another KR but perhaps at one of the future gatherings I will find a ride in a nosewheel version. I have been to 8000 MSL and have descended at 200 mph. Normally, I cruise at 140 mph and top out at 146 mph.

I have been in aviation all of my adult life. I have spent time in the Air Force (retired), worked for two air carriers, two A&P schools as instructors, a corporate charter operator as the Director of Maintenance, and worked freelance on light and heavy aircraft. I currently hold an A&P license with an IA.

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FOR SALE - EAA Chapter 129 selling KR2 plans with 2S supplement plus parts: wing attach fittings, large roll of fiberglass, flox & micro balloons, foam board, composite tri-gear with brackets, nose wheel and tire, Cleveland mains & brakes, tires and axles plus three wheel fairings. KR bolt kit, extruded piano hinges and misc fittings. Value to \$3800. Like new condition for \$1750. Contact EAA Chapter 129, attn Tom Swearingen, 14 Donna Dr, Normal IL 61761. Phone 309-452-5025.

WANTED - KR wing skins, forward and aft premold deck. Contact Arthur Cabral, 26320 9th St, Highland CA 92346 or telephone 909-864-3107.

The price for the four Spark Plug Adapters with automotive plugs will be \$89.95 after the Introductory Sale. When you need to replace your plugs, the spark plugs are only \$1.99 each, instead of \$20.00 each!

Introductory price is \$79.95.

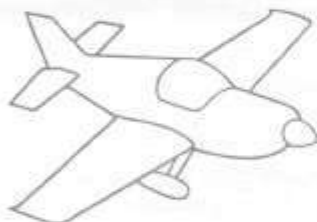
These innovative Spark Plug Adapters connect the standard Slick M2266 Shielded Spark Plug Harness to a standard VW automotive spark plug. They feature full tools are required. Simply reduce the automotive spark plug gap to .017" and install the spark plug as you normally would. Push the spark suppressor over the plug, install the housing and set screw - then hook up the harness! That's all there is to it!

The spark plug adapters are precision machined from 6061T6 aluminum and will last the life of your aircraft. The spark plug suppressor is replaceable if you accidentally break or lose one.



SHIELDED SPARK PLUG ADAPTERS For Type 1 & Type 4 VW's

Never Gun Ang J&A[®] **NEW From GREAT PLAINS AIRCRAFT**

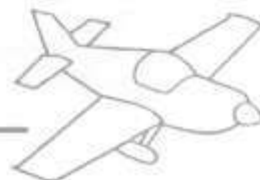


KR NEWSLETTER

624 West University Drive
PMB199

Denton, Texas 76201

Issue 268 Dec 1999





NEWSLETTER

Very "Mello" KR Rolls Out of the Hangar *Long-time Newsletter Contributor Ready to Launch*



KR2 . Stretched and Narrowed Single-Seat • N62509

Stanley J. Mello

917 Sleepy Hollow Road Paso Robles, California 93446 Telephone: 805.238.4841

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New KR Debuts in California

Stanley J. Mello

917 Sleepy Hollow Road Paso Robles, California 93446 Telephone: 805.238.4841

Well, it is finally finished. Six years in the process. Registered as N62509 and passed it's FAA inspection with no glitches this January.

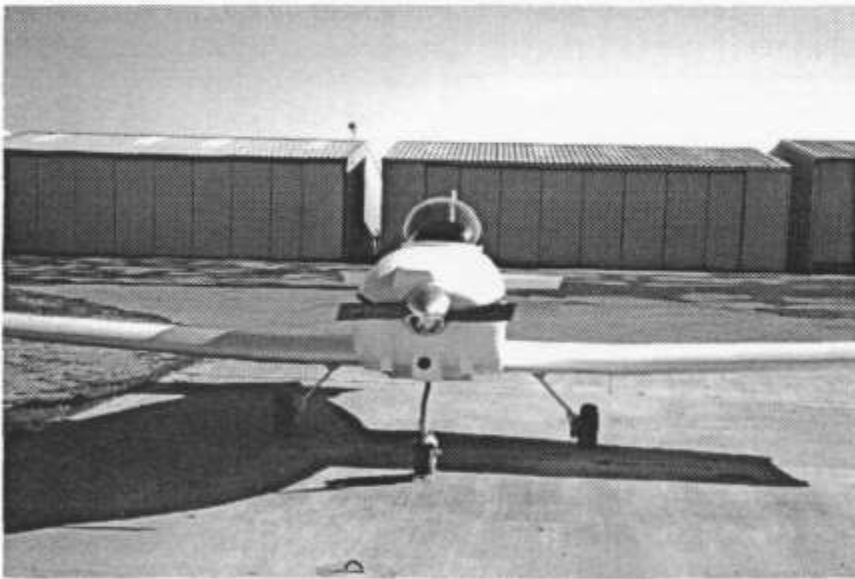
The fuselage of the KR has been stretched 4 inches forward of the main spar and 14 inches aft. It has also been narrowed to a 30 inch width to create a single place KR-2. Empty weight came out to 603 pounds and, with 14 gallons in the wing tanks and pilot on board, gross weight is 899 lbs. The CG came out right on the money.

The engine is an 1835 Volkswagen with Compufire ignition, Zenith cart, Diehl accessory case, and propellor by Props Inc.

Cleveland wheels and brakes occupy the ends of the Diehl tri-gear legs.



Bet your first guess was wrong! it's a custom KR-2 built by Stan Mello of Paso Robles, California. The Dash-One canopy, tri-gear, and lowered aft fuselage deck creates the unique side view.



There's just not a lot of frontal area on the Mello KR. Note the carburetor air intake, exhaust pipe fairings, main gear leg cuffs at wing junction, and that small KR-1 canopy. All are drag reducing design elements. Can wheelpants be far off?

Each wing tank has its own Facet electric fuel pump with a plumbing system that allows the engine-driven mechanical pump to take over in flight.

The paint is Flight Gloss with the UV blocker and Smooth Prime underneath. The final paint does need to be wet sanded with 400-600 grit paper and buffed out for a better shine. The canopy is KR-1.

I am now in the process of fine tuning and trying to get a little more static RPM out of the 52X46 prop. It turns 2700 revs and I am looking for 2950 to 3000 static. The prop may have to be re-pitched.

The first flight will occur soon, I hope. Looks like it may be raining the next few weeks so we shall see. I will send in a First Flight Report when that occurs.

Also, the aircraft is for sale. See the classified section.

KR NEWSLETTER

Serving the Builder, Pilot & Enthusiast

ON TDK RAMP

Rumblings from the Editor

There's a large and popular used book store in town that I regularly check out for aviation goodies. I've purchased several out-of-print and first edition books that are welcome additions to my library. I recently found *Odyssey of a B-17 THE SWOOSIE*, by Herbert S. Brownstein and published by Smithsonian Institution Press.

A Boeing B-17D, s/n 40-3097, The Swoosie is the only surviving US combat airplane to serve on active duty throughout World War Two. In service prior to the attack on Pearl Harbor, The Swoosie made its last flight on December 5, 1953 and now resides with the Smithsonian, awaiting restoration.

At war's end, many, if not most, of the surviving military aircraft were flown to Arizona and placed on the open market. The following is an excerpt from the book and may be interesting to fans of WWII aircraft:

Kingman AZ 1945...

"A standard price for each aircraft, regardless of flying time, was set by the War Assets Administration. A B-17 Flying Fortress or B-24 Liberator could be purchased for \$13,750. A B-25 Mitchell medium bomber's price was \$8,250 and a Lockheed P-38 Lightning brought \$1,250. B-32s and the new A-26 were \$2,000 each. The Northrup P-61 Black Widow night fighter could be purchased at Kingman for \$6,000 and the Republic P-47 Thunderbolt for \$3,500. The Curtiss P-40... could be bought for \$1,250. A Douglas A-24, the Navy's Dauntless dive-bomber... was priced at \$1,650".

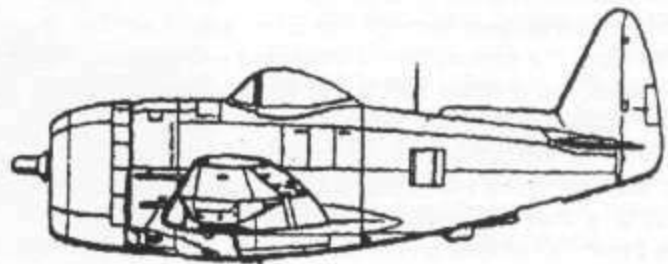
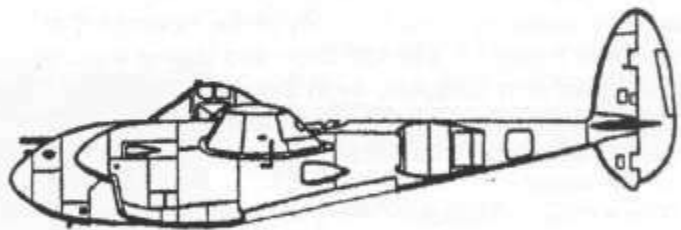
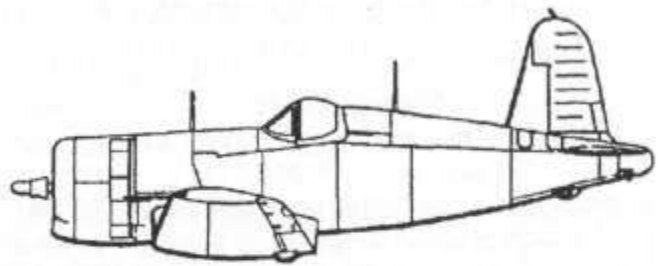
Enough, Already !

I have resisted and held out as long as I can. Although I believe it's simply a fad, much like my old 8-tracks, New Coke, and Beta videos, I have crawled out of the cave, succumbed to the allure of the internet, and signed on.

I'll try just about anything to get you guys to submit a builder's report. For those of you who have asked, here's your opportunity. And, as an inducement to you wired world builders n' pilots, the KR Newsletter will offer... drum roll, please... a free subscription renewal to the individual who submits, in the judge's opinion, the best electronically-submitted article. (Photos are good for extra points.)

The decision of the judge is final, offer expires at close of this millennium, all local, state, and federal taxes are the responsibility of the winner, your mileage may vary, may result in hair loss, gastric distress or other symptoms, blah, blah, blah.

Check the masthead for my dot.com.



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BACK ISSUES

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Corvair to Power Kentucky KR

TriGear Builder Offers Video

Danny Akers

Route 1 • Box 339 • Cynthiana KY41031

Telephone: 606-234-0114

I've decided to crawl out of the closet and share, with the rest of the known world, what I have done... At least with the few and the brave who have put off the desire to actually glue together and build an airplane.

The thought of scratch building a hot rod like the KR-2 has been appealing to me for many years. However, I always have thought it was too short and looked like the landing gear had collapsed even though it was actually sitting on it. However, after seeing the stretched version of the KR sitting on tricycle gear... that was all I needed to order the plans.

The actual construction of my KR-2 Stretch began in 1998, several years after I bought the plans. I first had to try and regain my mental capacity after losing my fifteen year old son. After recovering, which is an ongoing process, I started building the plane.

Of possible interest to other builders may be my video taping of the project through the boat, spar and trigear installation. If a picture tells a thousand words, then this tape could be a great tool for anyone interested in its construction.

I received the plans for the new airfoil from Mark Langford and will video the construction of these wings. My thought is that if someone watches the tape, it could save them a lot of time and mistakes. Yes, I did make mistakes! I'll probably make a few more before I finish but I'll correct them and move on. Should anyone be interested in a copy of the tape, just give me a call.

After talking to Mark, I've decided to build a Corvair engine for my powerplant. OK, so I don't have all my marble back yet. I do think, for the weight of an O-200, I can have 140 horsepower that runs with less vibration and can be overhauled for less than \$2000. Parts are easy to get so upkeep will be economical.

My main landing gear legs were fabricated by Robie Grove, of Grove Aircraft. The nose gear is a unit made for the BD-5 and is free-castering.

Presently, I'm planning a Looney Tunes paint scheme using a PPG base and clear coat system. Wiley Coyote and The Roadrunner will be featured characters. I believe my son would have liked the idea.

I look forward to each issue of the KR Newsletter and have found several parts for my KR in the classified section. Please keep up the good work. I can't tell you how valuable a tool the KR Newsletter is to me.

EDITOR'S RESPONSE

Danny, I'm sure I speak for all our readers when I say how sorry we are for your loss. Thank you for sharing

what must be a most difficult time in your life.

Any possible interest in a how-to video tape? Yikes! You didn't mention if you have a video duping system but I hope readers will contact you first and then send along an unused cassette for your use. Hey, guys... get the hint? We need to keep nice folks like Danny happy.

By the way, Danny - a photo or two of your KR project would look nice in an upcoming issue. That's hint #2.

* * * * *

KR Builder Seeks Assist

John Dal Bon

POB760 • Boyes Hot Springs CA 95416

Telephone:

I have a Rand-Robinson three-bladed prop. Might someone supply extra blades for this product? I have the original blades to copy.

How much horsepower and revs can this prop accept? What were/are their bad points?

I've been at this KR thing for a long time. (Editor's Note: John's EAA number is 124.) I still have the original 1973 article I saw in Popular Mechanics that got me started, along with forty yards of Dynel!

I'd also appreciate some help on my other plane, a KR-2. I have no on-line means to get the 16% AS5046 airfoil to finish the wings.

One last question - Would a reduction drive unit help my Type-4 VW engine?

Here's an engine tip and an idea to share - Valve problems on stored engines can be reduced by loosening the rocker studs so that all the valves remain closed. Also, a smaller sized replica of the exhaust pipe flaps on heavy equipment might prevent moisture entry and valve rust.

EDITOR'S RESPONSE, *Numero Dos*

I just love it when these nice coincidences happen! Two KR builders, clear across the country from each other, have the opportunity to share their knowledge and spirit through the pages of the KR Newsletter. Neat.

John enclosed a photocopy of the 1973 Popular Mechanics article on Ken Rand's amazing KR-1. Sure, it's now twenty-seven years later, but consider that the, "Powerplant in the prototype came out of a junked Beetle of 1957 vintage and cost Rand a mere thirty bucks. Contributing to the Rand mini-monoplane's performance is its retractable main gear - a pair of go-kart wheels... Brakes are the 'drag-on-tire' kind used on Soapbox Derby racers".

The magazine's review closed with the address where you could send your twenty dollars for a set of plans.

Thanks, John, for helping us to remember our roots. I hope a reader will be kind enough to respond to your prop questions and airfoil needs.

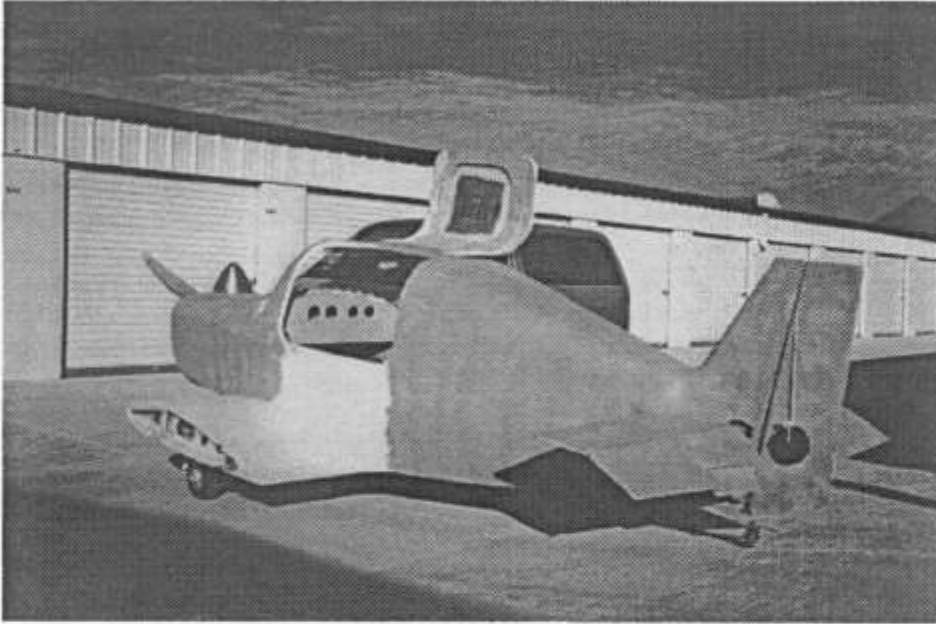
Peyton KR-2 Has Many Unique Features

Enlarged Cockpit Offers Additional Living Space for Builder/Pilot

Doug Peyton

411 West K Place #109 • Jenks, Oklahoma 74037 • Telephone

I made the cockpit quite a bit larger than what most folks do. It's almost as high as the tail! I weigh about 300 pounds, so I wanted to sit on some good heavy-duty 1/2" plywood on top of the spars. I also made the cockpit a couple of inches wider. I made cowlings around the wheels so they are enclosed except for about an inch of rubber peeking out of the bottoms of the cowlings. The instrument panel and gas tank is one unit, held together by the forward turtle deck. I used a Mooney windshield which is fastened in place with machine screws. I bought the trim tab motor from a guy who said it would work in an airplane, but it runs on AAA batteries and looks awful small to me so it probably won't work out.



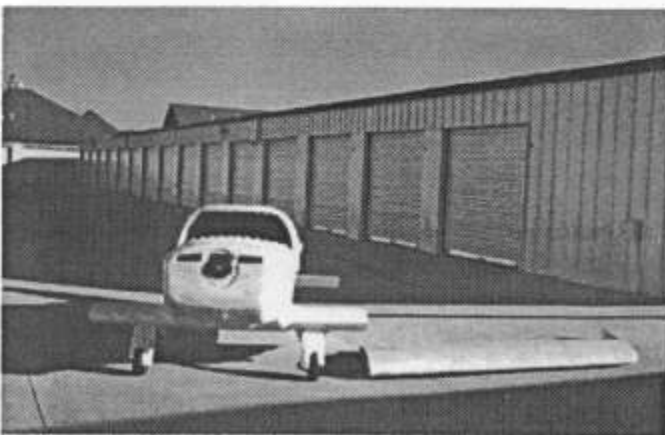
The fixed windscreen, expanded cockpit area, and throw-over door provides additional living space in the Peyton KR-2. Check out Doug's unique external, free-floating, rope-attached rudder counterbalance weight... or is it simply holding down the tail during construction?

I was going to start the FAA paperwork, but after reading the stuff on KNet about property taxes, I want to hold off on that till I'm sure it will be finished.

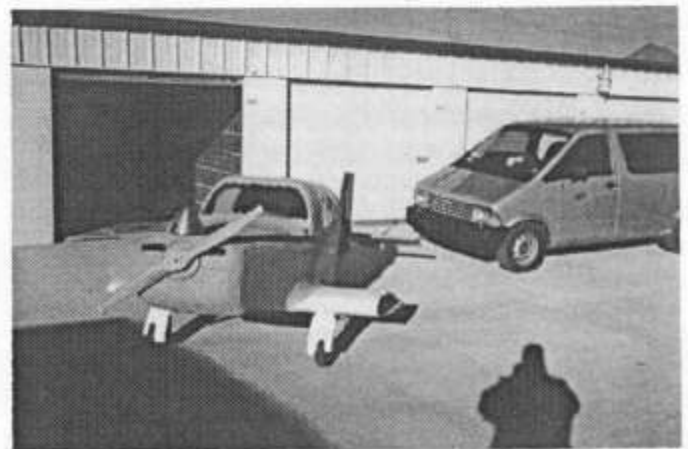
I installed a stock, 1835 cc Type-4 engine, moving it forward a couple of inches. I also moved the seat back a couple of inches to make up for it and extended the shelf aft to the next spruce cross member. Wingtips are the Dan Diehl design, published about ten years ago. I ran separate cables to the tailwheel and rudder. They come together just behind the rear main spar. Counterbalances for the rudder are external, mounted just below the elevator. The elevator balance is inside the fuselage, rotating ahead of the elevator spar.

The gas tank and instrument panel assembly is removable. The unit is held in at the rear by the windshield and three CamLoc fasteners secure it to the back of the firewall.

After I get the engine installation completed, I'll rework and modify the cowlings so that it is more aerodynamic.



An earlier shot depicting cowl development. Aircraft also has custom fiberglass fairings on lower wing that fair in the main wheels when retracted.



With the wings on, the Peyton KR will need a wider hangar! Note Doug's "shadow" selfportrait.

Bryson KR2S on the Circuit

Our Boy Jeff in the Big Time

Jeff Bryson, of Bakersfield CA, recently completed and flew his KR2S. He has shared his experiences with KR News readers on several occasions. Evidently, Jeff is really enjoying flying his new aircraft...

The January 2000 issue of *Kitplanes* reports on the September 1999 Golden West EAA Regional FlyIn and has a fine photo and interview with Jeff and his KR2S, being, states *Kitplanes*, "the first customer to complete a KR2S trigear from a Rand-Robinson kit."

October's stop for Jeff and his KR2S was the EAA Copperstate Regional FlyIn. Actually, Jeff's "stop" was more like a dash, as he launched for Arizona from Apple Valley, California and landed at Coolidge, Arizona, which is close by the Copperstate event. His run garnered a fourth place in the Road Runner Experimental class (to 90 hp) for the 1999 Copperstate Dash - a cross country air race sponsored each year by Aircraft Spruce & Specialty. Jeff's speed over the 304 nm course was 119.22 knots (137.34 mph).

Check out the December 1999 issue of *Sport Aviation* for all the race finishers and their speeds. You'll be surprised at the variety of aircraft Jeff whipped up on.

.

trading KRLandings

Top Ten Ways To Spot a Really Bad One

10. Passenger appears shorter than before takeoff.
9. Big skid marks left on runway and in pilot's clothing.
8. You're cleared to land three different times without having to go around.
7. That scraping noise was the trailing edge of the flaps.
6. You're congratulated on a perfect four-point landing when you have only three wheels.
5. Laughter overwhelms the tower frequency.
4. Rescue workers greet you to ask for an autograph.
3. Your prop has that neat, new "Q tip" look.
2. Huge amount of power needed to taxi off runway.
and the # 1 Way to Spot a Bad One...
1. You can check the tire tread and your top wing skin condition at the same time.

A Note Regarding Your Subscription

As mentioned in previous issues, reader submissions

to the newsletter are way down. As a result, publication

dates get pushed back in an effort to gather additional

material to fill out an issue.

You may have noticed that recent issues have

skipped a month (as December jumps to February) yet

the issue number sequence remains consistent. In other

words, each subscriber will have a continuous number

sequence of newsletter issues even though the month

printed on the cover may be as the above example.

Each subscriber will receive their full twelve issues. It

may take, perhaps, fourteen months to do so, but...

We Hope You Enjoyed This Issue of The KR Newsletter
Thanks to Our Gracious Contributors for Sharing Their Time, Tips & Aircraft
Have YOU Shared the Spirit ?

KR CLASSIFIEDS

Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial style ads will be billed accordingly prior to publication.

The KR Newsletter reserves the right to edit free ads.

FOR SALE - Fixed gear taildragger KR2. 1835 VW with Diehl starter/electrics and IVO inflight adj prop. Has wing tanks, mech brakes, swing-over canopy & dual side-by-side control sticks. Extras with sale. Trade for 0-360 Lye or will sell as de-registered aircraft for \$5000. Full details, contact Bob Easland, 203 Vista Rd, Gatesville TX 76528. Tel: 254-628-8448, days only. Fax: 254-628-7744.

FOR SALE - Volks engine goodies. 1835 and 2180 parts: cams, cranks, heads (both single and dual port), intakes, motor mount, zenith carb plus other small parts. Contact Randy Smith, 940-483-9939 after 8pm CST.

FOR SALE - KR2 wood kit, foam kit and landing gear. Other accessories also available, all at 1980 prices. Kits are complete. Some extras tossed in, too. Contact Cleo Greenhaw, 1201 Princeton, Ponca City OK 74601. Tel: 580-762-2531.

WANTED - I purchased the remaining available back issues during the closeout sale but I'd like to acquire a full set. Anyone wishing to sell, please contact Michael Simpson, POB 1297, Boone NC 28607. 828-898-4644.

FOR SALE - Canopy and windshield, originally designed for Polywagon. Adaptable to and has been used on the plans built KR2 but unsuitable for KR2S, New condition. \$150 plus packing & freight. Ron Dillard, 407-834-3528.

REDUCED PRICE - KR2. 11" longer & 2" wider. Boat with stubs, wings and tail feathers. Converting to fixed gear. Dual controls and reinforced for more HP. 0-time 2180 VW with KR motor mount. Canopy, hardware, lights and most engine/flight instruments. \$2400. Richard Rymer at 562-435-7937 or rlymer@worldnet.att.net.

WANTED - Your unwanted Diehl wing skins for my KR2. Contact Brad Pearson at 909-599-2786 or e-mail me the details at pear91773@aol.

FOR SALE - KR2, N3780B. Near complete conversion to tri-gear, lacks aileron cables, wing walk and wing close. 26 TT Hapi single-plug 1835 plus 200TT Hapi dual-plug 1835 available. \$10,000 OBO or will split up for \$3K each. Call Steve Buckley 6-9pm PDT at 510-656-3329 or email buckOO@earthlink.net.

WANTED - Help in locating and purchasing a fuel tank or fuel bladder that will fit inside my weepy fiberglass unit. Any ideas? Also wanting a good updraft carb for my 1600 VW engine. Contact Fred Sledge, 108 South Lelia, Guymon OK 73942. Phone or fax 580-468-3387.

FOR SALE - Stretched KR2. Primed and ready for color. 1834 VW, Hegy prop, Diehl wings, retracts, professional upholstery. Good to excellent workmanship. \$4500 firm. See KR News #245 for details. John Duffy, 237 Bridge St, Bridgewater MA 02324. Tel 508-378-3411.

FOR SALE - Unregistered 85% KR2 project with fixed fiberglass gear, new Hapi 1834, dual ign and new 52x46 prop. Most major glass work done. Mech brakes, spinner, wing tanks, hidden VOR antenna, all instruments except compass. Wired for position lights. Photos & equipment list avail plus most all KR Newsltrs. Located Cleburne TX (F18). \$6000 OBO. Contact Geo Henderson, 6301 Wrigley Way, Ft Worth TX 76133. Tel 817-292-1614.

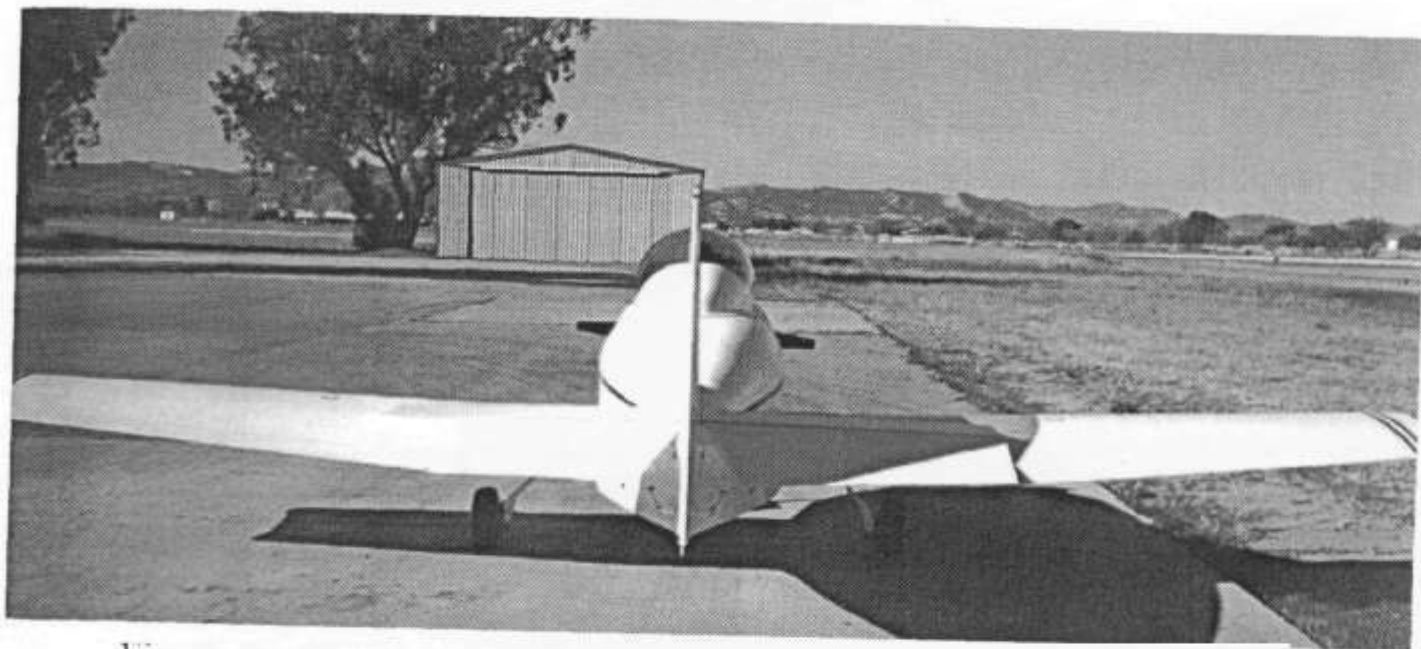
FOR SALE - Diehl wing skins, Rand center section skins, turtledeck, canopy frame, canopy, forward deck, wheel pants, Cleveland wheels and brakes with Cheng Shen tires & tubes, Matco tailwheel plus misc spruce, foam and fiberglass mat'l. All or Part. Call for prices. Bruce McPherson, 817-277-5399 or email karen22@flash.net.

FOR SALE - EAA Chapter 129 selling KR2 plans with 2S supplement plus parts: wing attach fittings, large roll of fiberglass, flox & micro balloons, foam board, composite tri-gear with brackets, nose wheel and tire, Cleveland mains & brakes, tires and axles plus three wheel fairings. KR bolt kit, extruded piano hinges and misc fittings. Value to \$3800. Like new condition for \$1750. Contact EAA Chapter 129, attn Tom Swearingen, 14 Donna Dr, Normal IL 61761. Phone 309-452-5025.

WANTED - KR wing skins, forward and aft premold deck. Contact Arthur Cabral, 26320 9th St, Highland CA 92346 or telephone 909-864-3107.

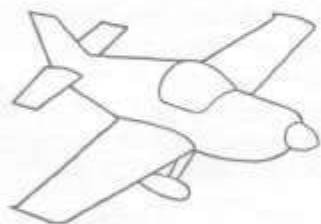
WANTED - Completed KR2 with documented record of flight performance. Prefer fixed gear, 1835 VW power with dual ignition. Call or write to Ed Menges, 6223 Southwood, St Louis MO 63105. Tel 314-726-3085.

FOR SALE - Single place stretched KR-2. Volkswagen 1835 engine with CompuFire ignition. Diehl Ti-gear with Cleveland wheels and brakes, Wing tanks, KR-1 canopy. \$12,000. Contact Stan Mello, 917 Sleepy Hollow Rd, Paso Robles CA 93446. Telephone 805-238-4841.



Here's the View Most Other Pilots Will See of the New Stan Mello KR

Get the Complete Story and All the Photographs Inside This Issue of The KR Newsletter

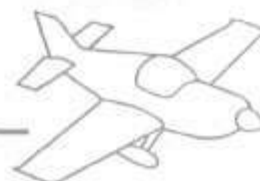


KR NEWSLETTER

624 West University Drive
PMB199

Denton, Texas 76201

Issue 269 Feb 2000





NEWSLETTER

Longtime Builder Approaches Completion

Hauls Lumber Makin's of VW Aircraft X-Cty in VW Bus

David Jones Winner of KR Newsletter Subscription Renewal



David Jones

6615 Sadie Drive • Wendell, NC 27591 • (919)365-5165 • email: Mchljon@aol.com

I just received my latest KR Newsletter and, as always, enjoyed reading it. I thought it time for me to share my story with everyone else.

I saw the *Popular Mechanics* article about the KR1 shortly after it came out and thought, "What a great way to fly cheaply." It took from 1975 to 1990 to get my private. Why do these things take so long?

In 1988 a good friend, Dick Felhner, at Aerosport Ltd. in Holly Springs, North Carolina, showed me a classified ad in *Kitplanes* magazine for KR2 spruce at a good price.

Thus began an epic saga of blood, sweat, tears, strife, misery, marriage, etc, etc. The marriage part is holding up well. My wife, Pat, and I departed Raleigh for Tecumseh,

Michigan in March 1988 to pick up spruce in our 1971 VW bus, equipped with a propane heater for warmth. Four days and one generator bearing later we arrived home with all the spruce for \$125.00!

Bought more spruce and plywood from Alexander Aircraft, which my good uncle brought back on top of his Honda. Work went well through the boat stage and wing spars.

I had great help on fabricating parts from Aerosport Ltd., who built Scamp and Quail kits (the Harris Woods design). I used a modified Scamp VW engine mount for my engine.

I made the KR2 fuselage narrower for single place, extended the aft fuselage by 14 inches, used fixed landing gear from Steve Bennett, plus many engine parts from GPASC. An Ed Sterba prop, 54x42, is mounted to a stock 1915cc VW engine with a GPASC tapered prop hub.

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

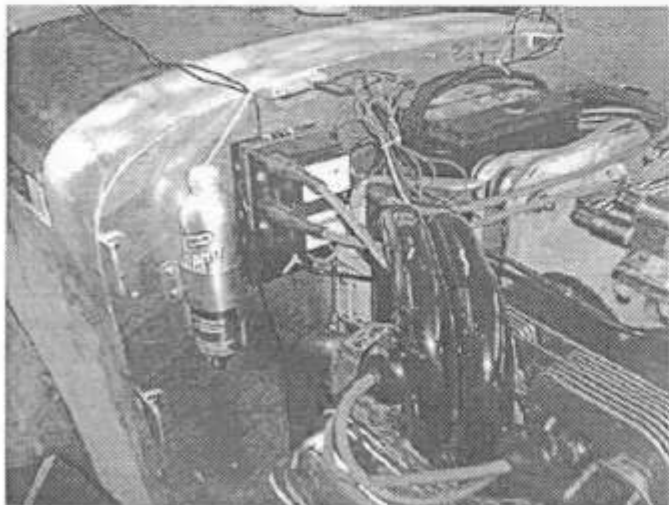
Jones, continued:



David Jones displays his handiwork: a custom single-seat KR2 with several unique engine features.

A Mitsubishi 35A alternator, CompuFire ignition, and Zenith carb round out the engine.

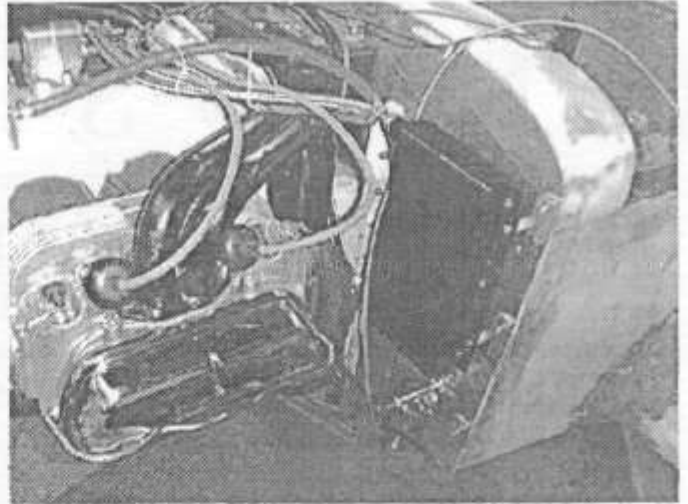
The alternator is driven from the flywheel end of the crank using an MGB water pump pulley. The fiberglass fuel tank was fabricated using Terraphthalic resin for its resistance to gasoline breakdown. I used Piper brake cylinders with my remote fluid reservoir made from an aluminum oil additive can (very light). A system fitting is JB Weld'ed to the bottom of the can.



Note David's solution for a brake fluid reservoir!

Dan Diehl wing skins (economical) were used to avoid all that wing work. And, they went together pretty well. They were purchased used through the KR Newsletter classified ads.

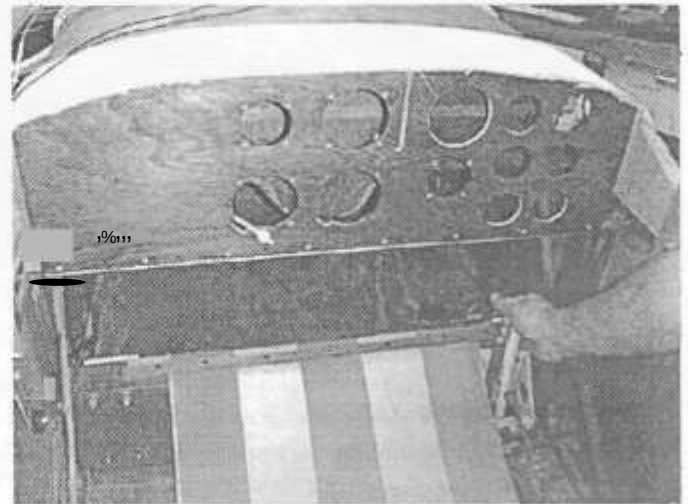
I welded up my own exhaust system using Steve Bennett's GPASC kit. I cannot overemphasize how well I have been treated by Linda and Steve Bennett. They have been first rate in their help -110%.



Remote oil cooler utilizes custom standoffs, permitting fresh air passage. Flywheel pulley-belt drives alternator.

So, last weekend I ran the engine. Only lost a half quart of oil and two fingers. Ha! Boy, that thing is hard to prop. Lots of things to finish, so maybe by the end of 2000 I'll be ready to go. Thanks for all the good work, Monte. I'll send more reports in the future. Keep the blue side up.

P.S. Thanks to my brother Mike for transcribing this article while I searched for the two missing fingers...



Thanks to those readers who participated in the kickoff of the KR Newsletter email submission competition. The editor apologizes for showing the "www dot" copy in front of the email address. I *did* warn ya'll that this W_eird Wired World is, to me, an alien environment... I'm trying!

KR Aileron Bellcrank

Revised Drawing for AS5046 Airfoil

Sam Sayer

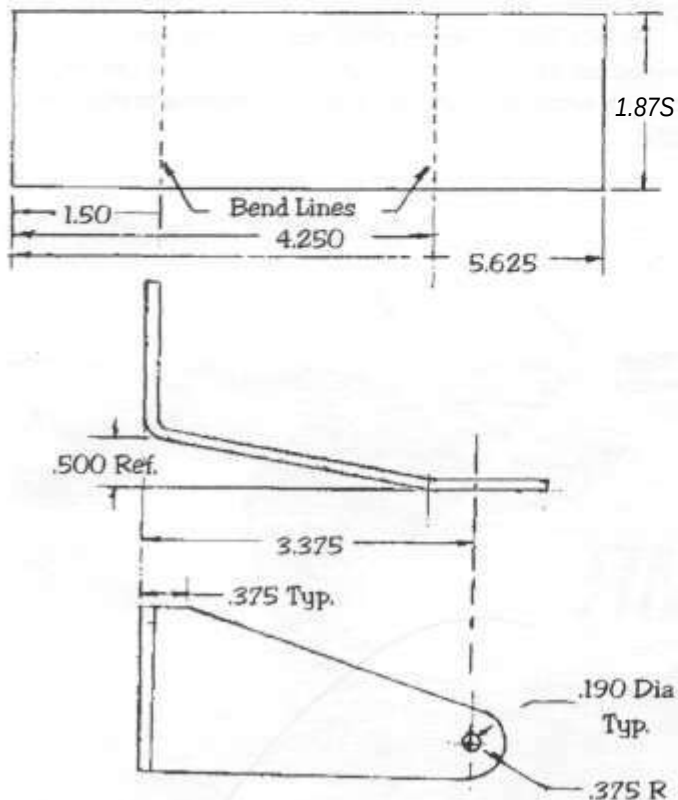
6621 Foxmoor Dr • Zephyrhills FL 33541

Here is a corrected drawing for the upper bracket of the bellcrank that was published in the KR Newsletter, issue #255. Sorry for the inconvenience that I may have caused with respect to the spar mounting.

Per the KR Plans, all bearing holes in the brackets and hinges were as drilled in the aluminum. Thus, I left it up to the discretion of future KR builders as to if they wanted to make any changes.

As for myself, I used .250 inch stainless steel rod, drilled and reamed the I.D. to .1875, and cut off lengths to .125 and .850. All of the .190 holes were then re-drilled to .246 diameter (letter "D" drill). Loctite was then applied to the holes and the new bushings were then pressed into place. All the bushings were then checked with the 3/16 reamer for any possible burrs. I tried using zinc chromate in place of the Loctite, but it was scrapped off with the press fit. These suggestions are not set in concrete as there are many other ways and materials for obtaining good results.

Since my article on bellcranks appeared in the issue 255 of the KR Newsletter, I have had several calls asking



Upper Bracket for Left Wing
Right Side Sym. Opposite

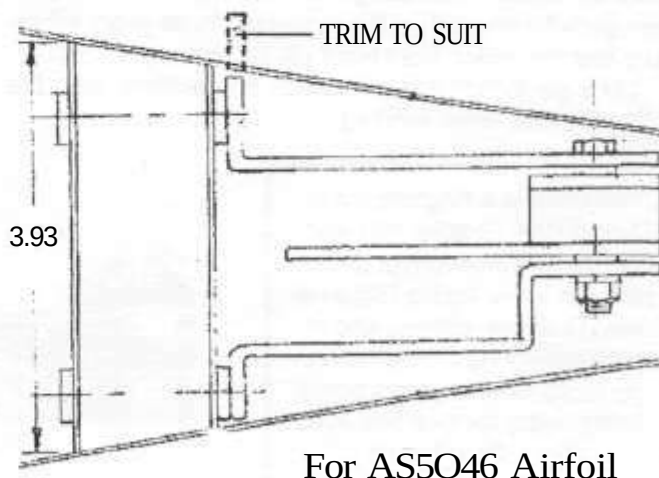
where 5052-H32 x .125 thick aluminum may be purchased as neither Wicks Aircraft Supply nor Aircraft Spruce carry any in the .125 thickness. ENCO (800-8733626) is a company in Chicago that has the .125 x 5052-H32 in the following sizes:

.125 x 12 x 12	Part No. 505-6398	\$ 7.30
.125 x 12 x 24	Part No. 505-3751	\$13.95
.125 x 24 x 48	Part No. 505-3752	\$39.59

For those who would like to use ball bearings in their bellcranks, etc., ENCO also stocks double-shielded ball bearings :

1/4 I.D. x 5/8 O.D. x 13/16	Part No. 505-3408	\$2.61
1/4 I.D. x 3/4 O.D. x 9/32	Part No. 505-3409	\$2.70

With respect to the bellcranks, I recently received a telephone call from Anthony Underwood. His question was, "Where can I get 5052-H32 aluminum and how can bellcranks be fitted on the aft side of the aft spar?" The attached sketch shows the outline of the bellcranks that I made for Anthony. He reported that they fit and work quite well. He is using them on the new KR2 AS5046 airfoil. If there are any requests for drawings of the bellcrank for the AS504X Airfoil, I may submit a drawing in the future.



NOTE:

Lower bracket mounts on last two (2) inner bolts.
Upper bracket - Drill and trim to fit

Thanks, Sam, for sharing your revised drawings with the KR Newsletter. The interest in the new, builder developed wing section for the KR2, combined with your efforts, should make for lots of happy builders.

ON THE RAMP

The Editor's Ramblings

When's My Subscription Up For Renewal?

Here's a quick heads-up on how to tell when your subscription to the KR Newsletter will expire: The three-digit number in the top right corner of your mailing label denotes the last issue number of your current subscription. I will usually stamp your Newsletter with a "reminder" note on the *next to last* issue. You will always receive a printed renewal notice with your *last* issue.

Of course, it's always quite acceptable and in good form to renew early... and often!

EAA Young Eagles Day Annual International Event Set

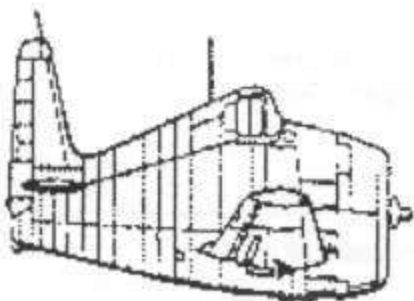
The eighth annual EAA International Young Eagles day is scheduled for June 10, 2000. This annual day is set aside to encourage all EAA members to get out and fly a few Young Eagles.

EAA's ten year long Young Eagle Program is on track of achieving the objective of introducing 1,000,000 young people to aviation by December 17, 2003, the 100th anniversary of the Wright Brothers' first powered flight.

1999's Young Eagle total registered flight number reached 104,014, meeting this year's goal. A four-percent growth rate each of the remaining three years will insure that the million flight mark will be achieved.

Let's go flying! For additional information, visit the EAA web site: www.eaa.org.

The editor is a longtime member of EAA Chapter 661 and has had the pleasure of participating in a few Young Eagle rallies. The time, money, and effort is quickly repaid by the happy faces of youngsters going flying; many for their first-ever flight. Give it a try!



niUIRY I<J1 HELLCAT

Glasairs and Three-Bladed Props

KR2 Pilot Relates His Experiences

John Cromwell

7685 N Star Grass Drive • Tucson AZ 85741

Tel: 520-744-3303 • emailJD-Cromwell@juno.com

I went out to the Ava Valley Airport, near Tucson, trying to get a look at the only KR2 I know of in this area. Looking at a flying example helps me during the building process. I noticed an aircraft in the pattern and, thinking it was the KR2 I wanted to check out, waited until he landed. Turns out, a gentleman by the name of Jim Carr was test flying a newly built Glasair!

After meeting both Jim and the aircraft's owner, I learned that the test pilot had previously built and flown a KR2. It was interesting to discover that he had installed a three-bladed prop. I immediately recalled the article in the KR News from a builder seeking assistance with an early Rand three-blade prop.

Jim related as how he, too, had a concern about using a 3-blader and had made some phone calls. People assured him it was safe.

Later, while flying his KR2, one of the three blades separated during flight. The crash put Jim in the hospital. I relate his story as an aid to other builders. I do not know what brand prop was in use or any other details. Jim was also helpful in answering many of my KR building process questions.

At this time, I am making my ailerons and will then move on to the canopy. After that, it's engine, instruments, paint, etc. Boy, it's been a long time building this bird.



Were it not for those long gear legs mandated by the power-hungry propeller, the Glasair would be difficult to distinguish from a tri-gear KR2S.

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FOR SALE- EAA Chapter 129 selling KR2 plans with 2S supplement plus parts: wing attach fittings, large roll of fiberglass, flox & micro balloons, foam board, composite tri-gear with brackets, nose wheel and tire, Cleveland mains & brakes, tires and axles plus three wheel fairings. KR bolt kit, extruded piano hinges and misc fittings. Value to \$3800. Like new condition for \$1750. Contact EAA Chapter 129, attn Tom Swearingen, 14 Donna Dr, Normal IL 61761. Phone 309-452-5025.

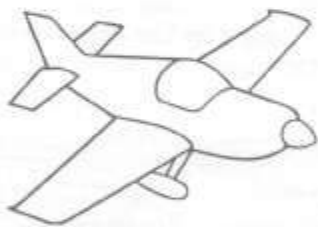
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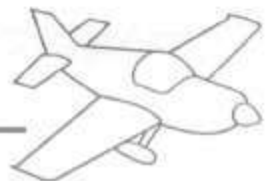
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KR NEWSLETTER
624 West University Drive
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Issue 270 Mar 2000





NEWSLETTER

An Exercise in Patience and Dedication *Builder Works to Overcome Obstacles to KR Construction*



Tom O'Connor and eager grandson constructing KR-2 fuselage side frames

Tom O'Connor

4663 Balboa Drive • Wichita Falls, Texas 76310

Early in 1995, I began looking through KitPlanes magazine to decide what kind of plane I might want to build. I received my plans for a KR2S in December of 1995. After reading through them, I got an idea of what was expected.

I'm a thirty-five year veteran aircraft mechanic. I knew I didn't want to hammer rivets to build an airplane. That, along with having no desire to build a rag plane, plus seeing Tom Bagnetto's magnificent KR1, convinced me that the KR was what I wanted. I sent my check to Rand-Robinson soon after and began to build a workbench in hangar 35 here in Wichita Falls, Texas.

The next decision involved getting the wood for the plane. I thought about using Douglas Fir but could not find any at the local lumber yards worth using so I settled for Spruce. I placed my order with Alpha Aviation in Greenville, Texas and picked up the wood kit about three-four weeks later.

I rushed home to begin cutting the pieces to put the fuselage sides together. Not so fast here... how long are those uprights supposed to be? The plans were not clear to me so I called Jeanette and she didn't know. The dimensions on the plans could be the height either including or excluding the longerons. I decided to include them and plodded on.

I cut enough wood for two sides and was ready to glue up the frames after fitting everything together. Covered the workbench with plastic and left for the night. It rained and, you guessed it, the roof leaked and my bench was covered with puddles. The water didn't get to the wood but still had to wait for the floor puddles to dry up. It didn't take long for me to decide that I would be better off by building the KR at home.

The back yard was measured, gas and sewer lines located, property lines and set backs determined, then a foundation was laid out for a garage kit from Sutherland Lumber.

I put the KR wood kit under the beds, along the walls, and in the existing garage.

continued on page two

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

Tom O'Connor... continued:

In April, I received a permit to build a 12 x 20 garage with a nine-foot door. Thanks to help from friends, we finished the building and began to move the workbench into the shop. It was necessary to cut two feet off the end and narrow the bench to forty inches.

Late in '96, my grandson helped me lay out one side for gluing. I now have two sides glued up and have started to glue up some spars. That's as far as I got as my boss told me he was retiring as of April 1997. I decided to try and build a business to keep working so there wasn't much progress during the year. Progress was also slow in '98.

Bought a wrecked Subaru to get the engine, a 1982 EA-81. I plan to use a PSRU to drive the prop. Spent most of '98 working and playing with the Subaru. Then, in 1999, I decided to retire and shut down my business. I had already closed down when a customer asked me to get his plane, a Cessna 337 Skywagon, running. "Getting it running" took from July through December! It's now the year 2000 and I'm still waiting to get back to my airplane.

Editor's Note

Tom's report, besides being a great study in patience, is a classic example as to why building an airplane can consume many years before its completion. Life's priorities, one's family and career, may slow the building process, but the job can be done.

We may all learn a little bit about life, and ourselves, from Tom O'Connor. Thanks, Tom, for sharing with us.

* * * * *

A Lesson in Lead Casting *Internal Elevator Balance System*

Stephen Teate

RR 3 Box 858 • Paradise, TX 76073

I should begin by saying I am in the control installation phase of my project. As I will be powering my KR2S with a turbo Subaru, I'm fairly certain I will see 200 mph on more than one occasion.

I have talked with Jeanette and others about mass balancing the tail surfaces and the general consensus seems to be that, if you expect to exceed 200 mph, this is a precaution that you should take. Flutter in a control surface is something to be avoided at all cost. One reason for this is the fact that it can increase in cycle so quickly that by the time you realize what is happening, the control surface has already departed the aircraft or worse, you may not feel it at all.

Believe me when I say that you can spend as much time and money as you want to educate yourself on the subject of aerodynamic flutter. Unless you enjoy reading some pretty detailed engineering texts, I would suggest

that all you really need for a basic understanding of flutter is to read the eight pages in Tony Bingelis' "Sportplane Construction Techniques".

One of my main goals when I started this airplane was to have the absolute cleanest airframe possible. This meant that nothing was going to be hanging out in the slipstream. As seen in the photos, the elevator mass balance will be enclosed in the rudder/elevator intersection behind a removable fairing. The center elevator hinge was modified. A curved piece of aluminum sheet bolts to the horn and rotates in the confined space. The cast weights will attach to this curved piece of aluminum.



General composition of the Teate KR internal elevator balance system. Cast lead counterbalance weight is taped into position on curved aluminum arm.

I started this project just as Tony suggested; I made a concrete mold by pouring about two inches of cement mix into the bottom of a plastic pail. Prior to this, I took the curved piece of sheet metal that will support my weights and used this as a template to cut out two pieces of 3/4" polyurethane foam. The foam pieces were then pressed into the concrete, weighted so that they wouldn't float up, and the concrete was allowed to dry. Once dry, the foam can be easily dug out. You now have yourself a mold. You will probably have some air bubbles trapped beneath the foam. These will create a pretty good wart if you now poured in the lead. I didn't worry about that at the time, but on my next one, I'll fill these with a runny mix of concrete and allow to dry prior to pour.

Speaking of drying, you should allow at least two weeks for the concrete to cure. Any moisture in the mold will cause the molten lead to splatter. Not fun! If it's cold outside (below 60 degrees), bring your mold inside to cure.

You will need to make a smelter pot. I used a 6" piece of 2 7/8" drill stem pipe and a piece of 1/4" flat plate. This pipe has a pretty good wall thickness and when I welded the 1/4" plate to one end, I cranked up the amps and made sure I got a full penetration weld. While I was at it, I welded a piece of square tubing to the side of the pipe

Teate KR2... continued:

for a handle. I also fabricated a stand that would hold my smelting pot at just the right elevation so I could put my propane torch under it and direct the flame to hit the bottom of the 1/4" plate.

Once I had all this welded, I set up my stand, put the pot on it, and cranked up the torch to the highest setting while directing the flame to the bottom of the pot. I suggest you leave the smelting setup alone for the next ten minutes as this will allow the pot to get as hot as the torch is going to get it.

I used #7 1/2 shot for my smelting. You can get it anywhere reloading supplies are sold. I believe my 25-pound bag cost \$20 bucks.

After my cement mold completely dried, I turned the pail over and the block of concrete dropped right out. This is what you want because when it comes time to pour your concoction, you don't want to be pouring it over the rim of a pail. Once again, splattering is not good!

Next, I poured dry shot into the mold flush to the top. This told me approximately how much molten shot I would need to fill the mold. You'll need to add extra shot as the material is round and there are voids between each ball that will have to be filled with molten lead when it is poured. You will also need to add shot because no matter how fast you think you will be, when you take the pot off your burner, the lead will start cooling immediately. The top of your pot will not be as hot as the bottom of your pot. When you pour out all you have melted you will see that there will be a river of lead on the side you used to pour from that has already cooled and stuck to the side of your pot. If you don't allow for this, you will not have enough lead in your pour.



Side elevation reveals elevator control horn's relationship to position of counterbalance assembly.

Take the shot out of your mold and put it and the melt allowance into a container that you can easily pour from. I used an epoxy-mixing cup. Take this to your pot and pour in enough to cover the bottom to about a 1/4".

Here's where the disclaimer comes in. If you read the shot package label, you will see that it is a carcinogen, especially when melted. Unless you have a long tail, can live on cheese, and spend a lot of time in a laboratory, I believe you should worry about getting cancer from something else other than this exercise. However, you are working with a molten material. Eye protection and leather gloves are a must.

When you pour the shot in your smelting pot, you will begin to hear a little crackling. Don't worry about this as I found it to be normal. Once I poured the shot into the pot, I would let it sit for about 5 minutes. Then, use a piece of heavy wire to stir the pot. This makes all the difference in the world.



Starboard side view shows the second cast weight as mounted on opposite side of the balance beam arm. Article discloses tips on lead nuggets for control balance.

Teate KR2 continued on page 4

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Teate KR2... continued:

I found that my torch was not powerful enough to heat the pot to the point of melting the lead the instant I poured it in. That is probably a good thing. After you have stirred the first little bit, pour in some more and do the same thing. Continue this until all of your shot is in. Stir until the molten lead is the consistency of water. You are now ready to pour the lead into your mold.

Before the pour, you need to think about how you will get the pieces out of the mold when they have cooled. Inserting either a bolt, with the head down, or any other kind of lifting device which will allow you to exert some force and extract the part from the mold can do this. The bolt is good because you can then use it to mount the weight wherever you need it.

Place the mold on the ground right next to the smelting stand. You need to remove the pot and pour it as quickly as you can into the mold. This is the trickiest part of the entire process. You don't want to dilly-dally and you don't want to spill any molten lead.

If you have more than one weight to make, you'll need to have a separate pour for each weight. Don't worry

should you pour more than the mold will hold. You can use the torch and the wire mixer to go around the piece, melting and scraping off the excess.

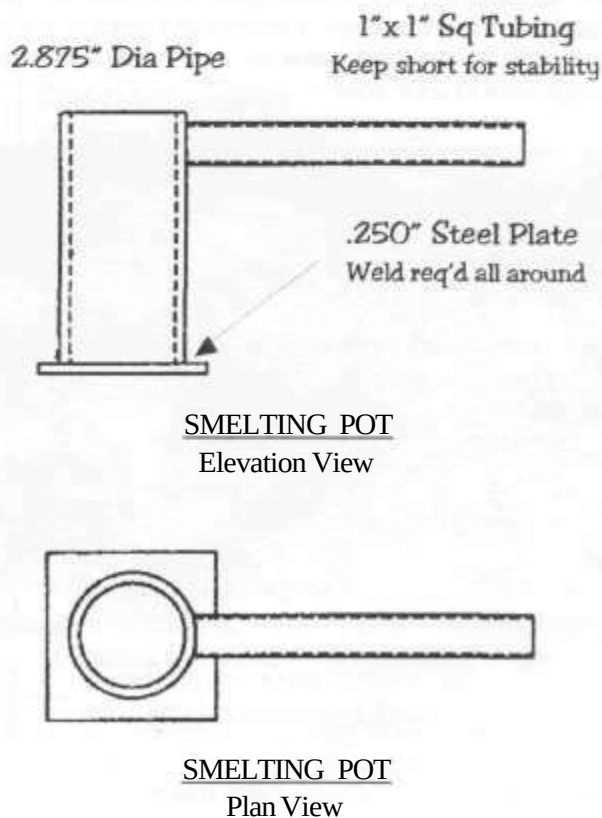
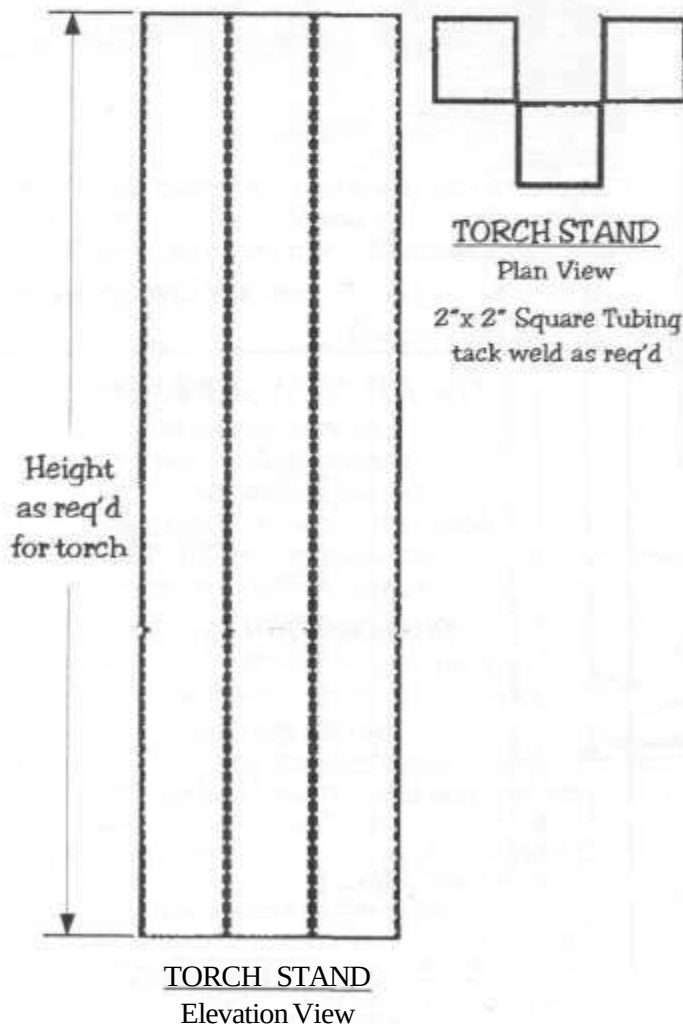
Depending on size, you should allow 3-4 hours for your cast to cool. I removed my parts by holding on to the bolts and tapping the mold lightly on the floor of my hanger. This caused my form to crack and break, but since I was only making two pieces, I didn't care. Should you want to make multiple pours from the same mold, you should add some type of reinforcement to your mold prior to pouring your concrete. Be sure that whatever you add won't interfere with the foam plugs you will be using to cast your parts.

You should now have a nice, little weight in your hands. Clean it up with a Dremel tool and a cutoff wheel. The weight can also be drilled or sawed. Remember to factor in any trim and drill operations into the components required final weight.

By the way, I know you builders look forward to the KR Newsletter as much as I do, so take a few minutes to jot down that idea or construction technique and get it to our Newsletter editor. I need them and others do, too.

Teate Foundry Site Plan

Stephen Teate • Paradise, Texas



Engine-Turn Finish How To... *Shop-Made Jig Replicates Custom Look*

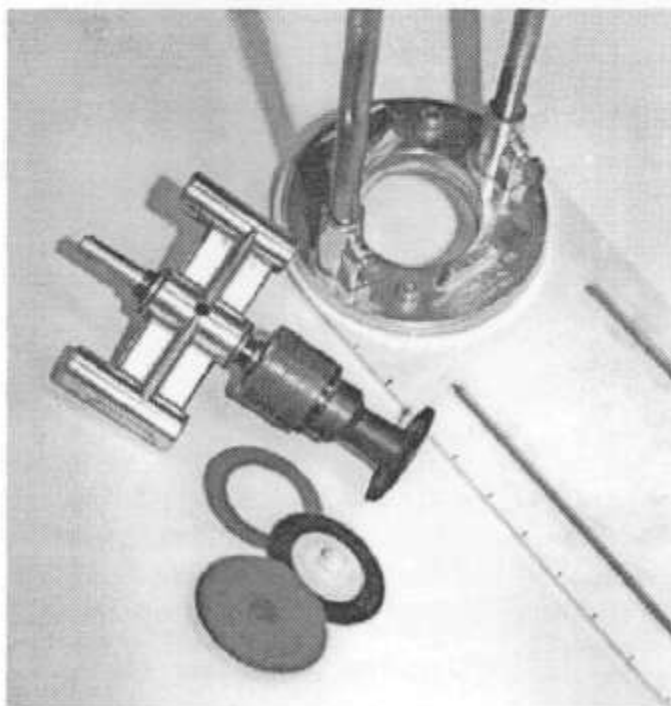
Details seem to be a big part of the allure of homebuilt aircraft; well crafted engine cowlings, the fit of various fairings, aero-styled exhaust exits, flush fitting inspection doors, and a myriad other eye-catching details. However, if you've ever watched spectators at a fly-in, they always seem to be drawn to the cockpit. Here's something to catch the eye of the fan *and* the judges.

The instrument panel is a very personal part of each builder's aircraft. It's construction and finish, not to even mention how it's populated, can often define the entire aircraft. Should you be contemplating a simple, sheet aluminum panel, as both a time and money saver, consider putting an engine-turned finish on the aluminum. Top it off with the warm, golden glow of an alodine chemical treatment, and you'll have a head-turning cockpit.

Backing up for just a moment, for those builders asking, "What's engine-turning?", think Spirit of St. Louis and its firewall forward aluminum cowling. Oh, yeah!

Creating the effect is labor intensive, to say the least. If it were simple to do, everyone would use it. However, the words "labor intensive" are nothing new to veteran KR builders!

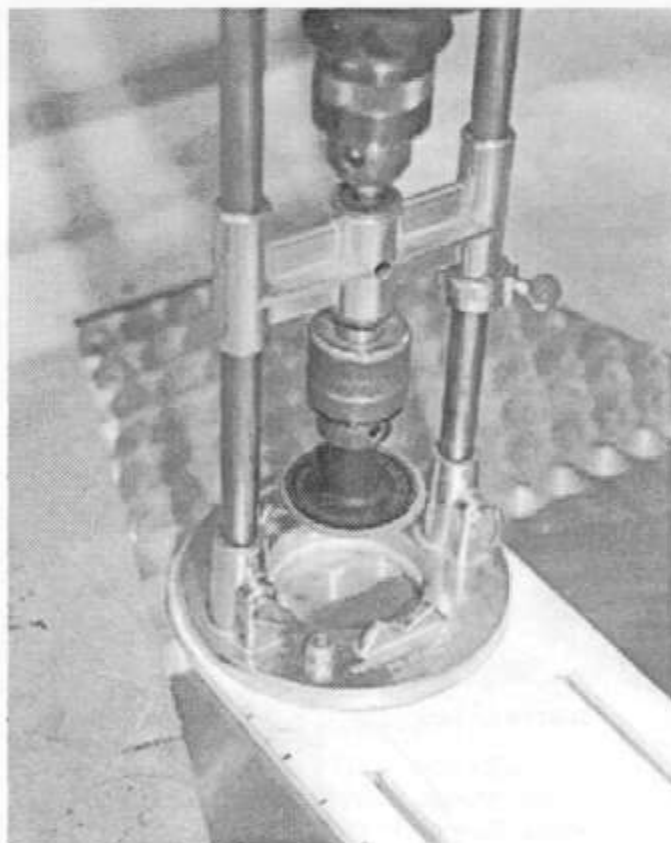
To achieve the visually pleasing, overlapping "fish scale" effect, it is important to maintain accurate spacing and alignment, both vertically and horizontally, during the entire finishing operation. A carpenter's square takes care of this chore but must be used every time the jig is moved to a new *vertical* position.



Basic components req'd for engine-turn finish. Note the thin cardboard circular shim. See text for details.

Two-inch diameter 3M brand sanding discs (fine or medium grit, your choice) are used in conjunction with a hand drill accessory known as a "Port-Align". The drill accessory, available at a variety of tool houses, is attached to the jig and the jig is secured, at its lower end, to the work table surface. The overall length of the main jig component is determined by the physical size of the aluminum to be worked.

A horizontal scale, marked in .875 increments, is attached to the work bench and used as a workstop. This piece should be no thicker than the aluminum being worked and long enough to permit the piece to be moved left or right without running out of support. The attached jig should be shimmed with AN-970 style washers to the same thickness as the horizontal guide. This will help keep all components secure during the "turning".



All parts aligned and working. Technique is simple but labor intensive. Efforts achieve worthwhile finish.

Note the .875 inch vertical marks on the jig's vertical edge. These will align with the horizontal marks to maintain spacing. Each operation will require moving the aluminum panel .875 inch until the worked line is completed. Then, the jig is moved down .875 inch, squared up, and the next row is begun.

text and drawing continue on next page

Engine-Turn Finish... continued:

You must stagger the "scales" for optimum effect, hence the second set of equal marks on the horizontal scale. Failure to do this results in the pattern missing the offset that is so attractive. Experiment on some scrap before diving in!

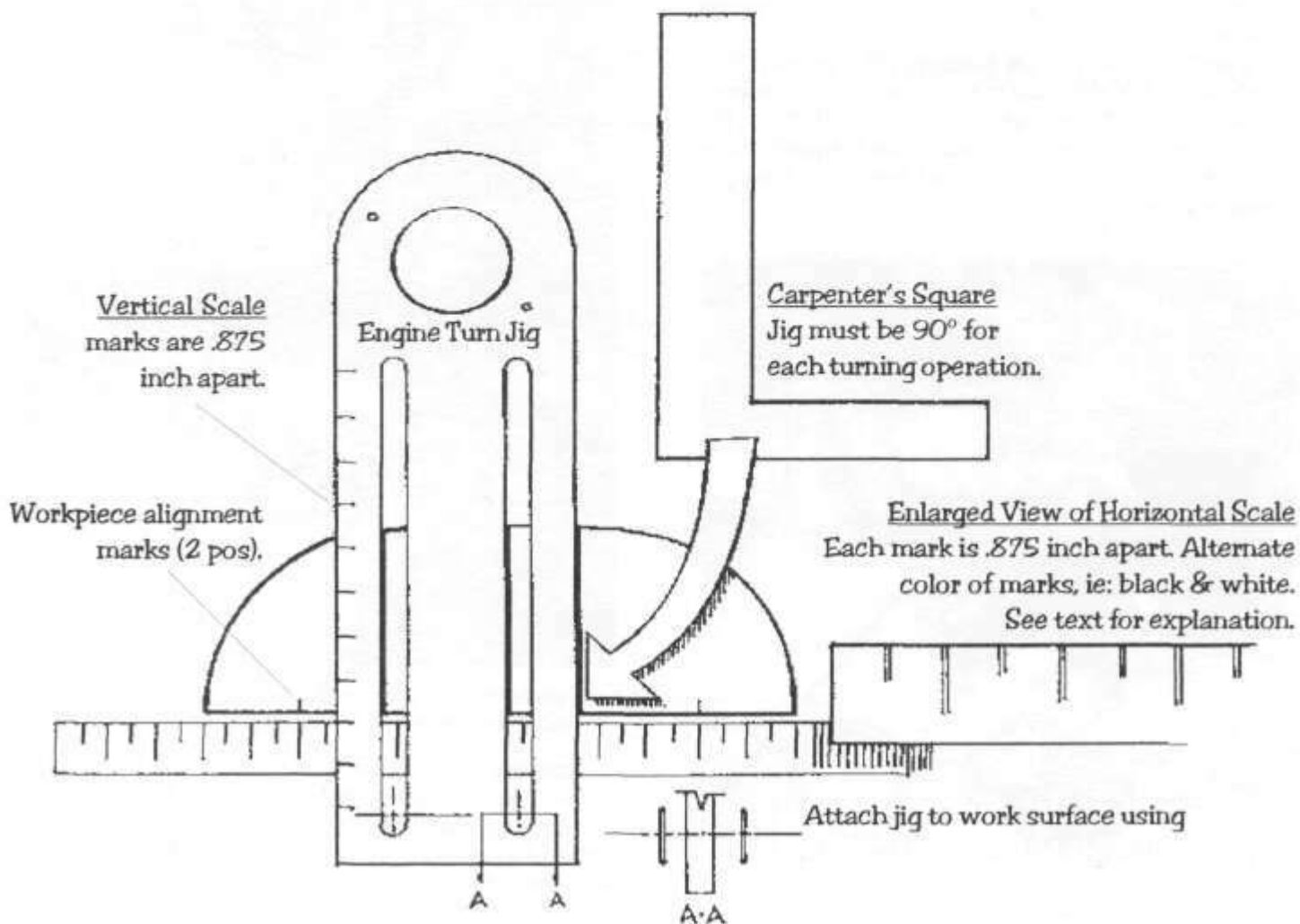
After the panel has been completed, follow the directions of the chemical products you have selected and apply a protective alodine coating to the aluminum. In my case, I found it much easier to layout and complete all panel openings *before* beginning the engine-turn finish work. It's mighty hard to lay out accurate lines on the textured aluminum.

Fabricate jig from any dimensionally stable material available. Original is .250 inch rigid PVC sheeting *used*, in sign making trade.

Oh, yeah...look back at the component photo. Note the circular cardboard shim. The 3M sanding discs have a bit of a crown in the center after installing to the holder. This high spot can prevent full contact, thus full coverage, of the disc when in operation.

Cut out a thin cardboard shim to install between the disc and holder. Keep the width of the "washer" fairly narrow as a wide ring will only compound the problem, but in reverse. So, thin cardboard and a thin material width will get the job done.

Again, you'll need to experiment, on scrap stock, with all the components, materials, and positioning before you crank up on that beautiful aluminum panel. Practice with different pressures to get the effect you like best.



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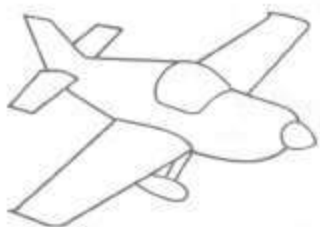
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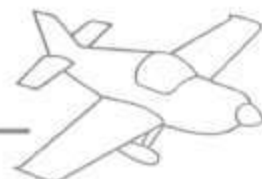
KR NEWSLETTER

624 West University Drive

PMB199

Denton, Texas 76201

Issue 271 Apr 2000





NEWSLETTER

Suba' Dave Blucher Hanging It Up *Longtime Contributor & KR Driver Planning Changes*

"...the time has come... to hang it up and sell my labor of love"

- Dave Blucher



Well, the time has come. I've decided to hang it up and sell my 'labor of love', KR-2S N197DB. There are several personal reasons for this - none medical. Flying has always been something I've done on my own and, as no one else in the family has any interest, I've pretty much decided to get out of aviation and concentrate on my golf game. At least one of my sons is interested in that.

I really enjoyed the whole 1700 hours of construction time. The first year I still had a regular job and could only work evenings and weekends. Then, I retired and was able to work on it every day.

Over that three and one half years, I fought the oppressive Florida heat. Some days I was only able to work in that un-airconditioned building for three hours in the morning, but I made an effort to do at least one thing each day.

I think that's the thing that made me finish the job. I found out from an earlier project that even after a short period of inactivity, it's hard to get started again. It's funny but during that time, I would go to bed at night and lie there and think about the the work I had done and the problems I faced the next day. Many solutions were worked out in my head that way and I looked forward to getting started the next morning.

I guess the most satisfying time of the building process was when it first sat on its wheels. That's the time when you can put in a fake seat and get some cockpit 'dream time'. The most exciting time, of course, was the first flight. What an unforgettable experience. Anyone who has constructed and flown their own creation has had a feeling of pride and accomplishment no one else can imagine.

I'm sure I could have finished this project in a

continued on page two

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Blucher continued:

thousand hours if I had used a VW engine. The firewall forward design and construction for the Subaru took a lot of time and effort but it's really been worth it. Regular maintenance consists of oil changes every 50 hours and checking the plugs when I feel like it. I do compression checks annually. Very little change in 107 hours.

I've attached a data sheet for your information. I don't expect you to publish that; however, I am enclosing an ad I'd like you to include in the next issue if possible.

Thanks for the enjoyable hours of reading. I'll probably keep up my subscription just to keep abreast of news from the KR 'Family'.

Dave Blucher • 616 Viscaya Ave • Orlando FL 32839
Telephone: 407 855-8071 • email: krluch@aol.com

* * * * *

INFORMATION SHEET FOR KR-2S, N197DB

KR plans S/N8688 with 2S plans S/N 277

Signed off by FAA: 4/23/97

Signed off by EAA: DAR 4/24/97

First flight: 5/25/97

Total time as of 5/1/00: 107 hours

Finish: Exterior: white with red stripes.

Interior: white vinyl with red 4-point harness.

Fuel capacity: 12 gal. header tank & 6+ gal. each wing.

Engine: NSI Subaru 1.8L with NSI 1.694:1 gear reduction unit rated 100hp (dyno sheet shows 107hp max) S/N 257433. 50 amp alternator. Dual, crank-fired ignition (single plug/cyl). Dual fuel pumps (in series). Dry sump oil system and Ellison throttle body carburetor.

Propeller: Sterba 56x68 (diameter reduced to 54"), installed. Spare: Prince P-Tip 52"X59"

Panel: Engine instruments: tachometer, oil pressure, engine oil temp, trans, oil temp, water temp, dual EGT, voltmeter, fuel gauge for 12 gallon header tank

Flight instruments: magnetic compass, altimeter, air speed, turn and bank, rate of climb. GPS III Pilot (snaps onto panel), 12 circuit breakers.

Sub panel (pilots side): VAL 760 comm., Terra 250 mode C transponder

Sub panel (center): Fuses for Comm and xponder, 12v aux outlet, headset plugs, main fuel shutoff, selector valve for wing tanks, aux pump switch.

Other: ELT, intercom with two headsets, wheel pants, landing light in left outer wing, taxi light in right outer wing. Cleveland wheels and brakes. New tires.

Performance: Cruise 140 mph (could be better with slight reduction in prop pitch).

Fuel burn: 4.5 to 5 gal./hour (any auto fuel or 100LL).

Rate of climb: With 160 lb pilot, 800 fpm.

Empty weight: 714 lbs.

OK Dave... Keep Your Head Down and Swing Through the Ball-

Several reasons for running Dave Blucher's farewell... the least of which is his multi-year support of the KR Newsletter. Lots of you guys have received a booster shot of enthusiasm each time one of Dave's reports hit the page. As his KR reached completion, his Subaru engine commentaries rivaled the humor of Kitplanes Dick Starks and his Dawn Patrol adventures.

The info sheet on Dave's Two-S will be helpful for many builders, so it is included in the issue. Alas, don't even bother calling to buy the beauty; an email from Dave on 10 June stated that he will soon be delivering 197DB to its new owner in Columbus, Georgia.

Thanks, Dave, for your support, your enthusiasm, your humor and sharing. I believe it was Mark Twain who once said, "Golf just spoils a good walk."

- the editor

Rear Spar Compression Brace

Anthony Underwood

802 Center Street • Morristown TN 37813

Telephone 423-587-0624

Well, I guess it's time that I made my little contribution to the KR Newsletter so the pages will be filled and we can have something to read.

As you can see, I made dual sticks for my KR based on drawings and pictures in previous newsletters. I deviated from the original design in that I used 6061 aluminum instead of steel. Now before anybody gets bent out of shape about my use of aluminum, permit me to remind you that most large and military aircraft also use aluminum. Besides, if you jerk on the controls hard enough to bend or break the components, well, you have already panicked and are fix'n to crash anyway!



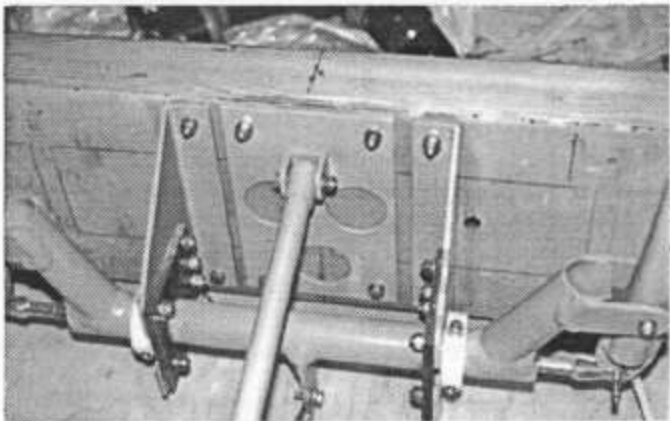
Aft spar attach detail for spar compression brace. Empty u-channel is for attaching the rear tube of the seat sling.

Compression Brace ...continued:

For the rear spar compression brace, my DAR (Designated Airworthiness Representative), while inspecting my friend's DR-1 and Pietenpol, looked at my "boat" and made a suggestion. He commented on a KR accident where the pilot was killed because the rear spar broke in two, ejecting the pilot. He said the spar had broken where the seat belts attached.



Main spar forward attachment for spar compression brace. Unit mounts on aircraft centerline and does not interfere with dual control stick assembly. Note details of both components.

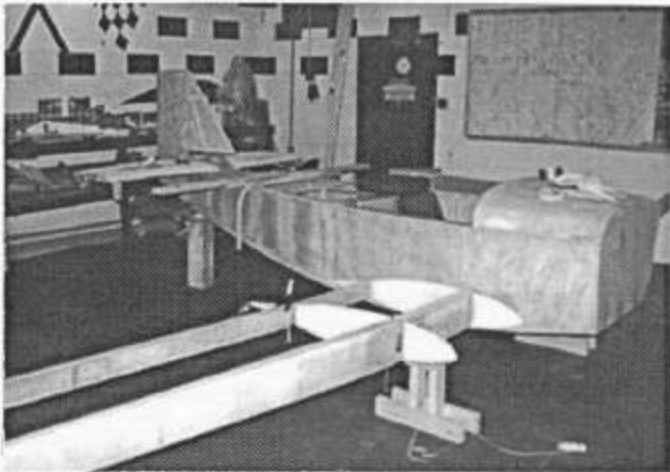


Close up of the forward attach point. Fine workmanship.

I didn't think much about this for awhile (we're never gonna crash...right?), but because I'm using a single push-pull rod going to a bellcrank mounted on the aft face of the rear spar with cables going from there to a balanced elevator, I had noticed the spar would flex fore and aft when the stick was moved. So, this is what I did and it didn't cost anything extra. By using some tubing that was left over from the rudder pedals, some U-channel that was left over from the elevator hinges, and some aluminum plate that was laying around... viola!

Now, not only is the spar more stable but there is something for club footed passengers to step on instead

of the control linkage and, when sitting in the seat, you don't even notice it. As a side note, I'm using the new wing (thanks to Mark) along with some trick aileron bellcranks from Mr. Sam Sayer plus a Corvair motor that should look good on the side.



Overview of the Underwood KR-2S factory. Note the simple 2x4 support jigs holding aircraft prior to main gear installation... plus all that floor space.

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email: montmil@flash.net

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Gadgets, Widgets, and Whatchamacallits

Todd Servaes

PO Box 685 • Loomis CA 95960

Tel: 916-652-6226 • email: tasetvae@netzero.net

In the airplane building game we become intimate with any number of tools, jigs and hardware that normal folks would never recognize. Indeed, we often find that we must develop and build our own. This oddly named column's purpose is to share the gadgets, widgets and Whatchamacallits found or developed by builders I meet or, occasionally, by me as I build my KR2S.

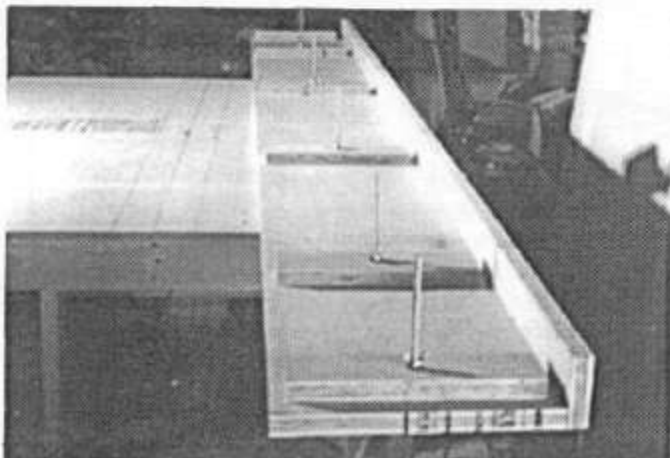
The items chosen for this column are picked simply because I think they are useful and not commonly used. When I come upon an item, my first thought is either, "Why didn't someone think of that sooner?", or, "Why didn't I know that it is going to be shared here?".

Many of the items may be untested so as always, when it is your butt that will be flying it, use your own best judgment before incorporating anything you see here into your project.

We KR builders begin our projects with woodwork and in this first installment of "Gadgets, etc" we'll look at four woodworking ideas.

Taper Cutting Jig

Conventional taper cutting jigs do not allow the precision required in aircraft woodwork because they do not have a good reference for where the cut will actually be. Dan Kennelly, a KR-2 builder, devised a much improved taper cutting jig which solves this problem. Dan's jig is simply a long strip of heavy plywood with hold down clamps to secure the work piece. The work piece is clamped with the cut line on the edge of the jig, which has already been sawn slightly and the saw left set exactly as it was when the jig was sawn. On the cut through the work the cut is thus precisely along the edge of the jig.



On mine, I added a back to run against the saw fence.

Plywood Working Table

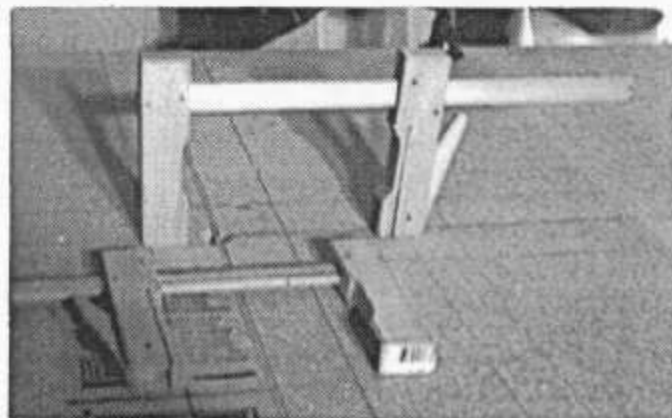
This idea is my own and stems from my being less than happy with the quality of saw cuts in aircraft plywood. I knew how smoothly and accurately a router could cut, but standard router tables are made for shaping edges and are too small to handle a large flexible sheet of plywood. A specialized home built router table was a simple project. I built a 3' x 4' work bench with the router mounted in the center and a removable fence. This table not only makes terrific cuts, but as any builder knows any additional workbench area is a great bonus.

Wood Anchor Nut

Bill Burger, a Corby Starlet builder, created this great little piece of hardware. Production anchor nuts are great for metal airplanes but have far too little surface area to adequately distribute fastening pressure on wood. Bill's solution is to rivet them to large diameter AN 970 "wood" washers. If more than one anchor nut is needed in close proximity, an aluminum plate with the required number of anchor nuts attached can replace the AN 970. These assemblies can then be bonded with structural epoxy wherever needed. A few well placed small diameter holes drilled in the washer or plate can improve adhesion by creating epoxy "rivets".

Cool Clamps

These handy little clamps are not very common but have become my favorite bar clamps. I found them at a local surplus tool store, and I am told they are used mostly by string instrument builders. One of their sides slides against the piece to be clamped and then the lever applies the clamping pressure. The little lever is not only quick but it ensures that you do not apply too much pressure which is all too easy with screw clamps. The cork pads make these clamps self cushioning but, unlike plastic pads, they will bond with epoxy. Slip a sandwich bag over each end of the clamp to facilitate removal.



The quick lever action and the cushioning of the cork make these clamps very quick and handy

Custom Wheel Pants for the KR *Can't Find What You Want? Build 'em!*

Howard Trampenau
924 Scio St • Elmira NY 14901
Telephone: 607-732-0517

N23HT is finally finished with the completion of the trim and addition of my homebuilt wheel pants. Very few prefabricated parts were used in the construction of my stretched KR-1.



I've been flying since 1938. This KR is the third aircraft I've built. In 1962, I built a BC-12B sailplane, then a KR-2 and most recently, the modified KR-1. All the ships are still flying.

The wheel pants, as mentioned, are homemade; the pant halves being formed in homebuilt plaster female molds.

I began by shaping the pant from two pieces of two-inch foam cut to the pant outline. Cement the pieces together with a few spots of glue placed away from the outlined edge so as not to create a problem during the sanding.

After smooth sanding the foam to final shape and marking the axle location, paint the wheel pants with any sandable coating. Sand the pants to a very smooth finish and you will have created a good wheel pant pattern and ultimately, a good mold. Carefully split the wheel pant into two matching halves.

The base for the mold should be perfectly flat. Plywood or a formica countertop sink cut-out makes a good base. Construct the side frame, making it four inches deep. Some waxed paper attached to the side frames will aid in its removal after the plaster is poured.

A mold is needed for each wheel pant half. Secure the pattern to the base and pour in plaster. Strike off the

plaster at the top of the forms. Let the molds cure until plaster does not feel damp... perhaps a week or more.

After the mold has cured and the frame is removed, coat the inside of the mold with a parting agent to aid in removing the finished pant half. I used polyester resin and thin fiberglass mat to make the pants, one to three percent hardener to resin gives ample time to wet out and roll the mat into the mold.

After the two halves are cured, they are temporarily joined together on the exterior using aluminum plates

and pop rivets. The wheel opening is then cut and this access is used to apply a few layers of fiberglass to the inside seam. After this material has cured, the pop rivets and aluminum plates are removed and the seam is filled and sanded smooth.

Aluminum reinforcing is installed around the axle opening and the area that will attach to the brake's backing plate. Aluminum attach plates may be pop riveted to the brake plate, checking first for brake operation interference.

Final attachment details and finishing will be adjusted for the particular aircraft installation.

By the way, I am eighty-four years old and have finally decided that the FAA has just gotten too hard to deal with.

See Howard's advertisement for his KR-1 in the classified section of this issue of the KR Newsletter.

Casting Comments

C J Morehead

2628 Royal Park Drive • Cameron Park CA 95682

Just a quick note on Stephen Teate's article, "A Lesson in Lead Casting". If you make the pattern out of soft wood, sand it smooth and taper the sides, it will slip out of the mold material.

The smoother the pattern, the smoother the casting will end up, thereby requiring less clean up. You should varnish the pattern as it will help in the finished product.

Fine foundry sand, held together with as much as three percent water or oil by weight, will hold the sand together while you remove the pattern and pour in the molten lead.

If you have a foundry in your area, they will probably give you enough foundry sand to complete your project.

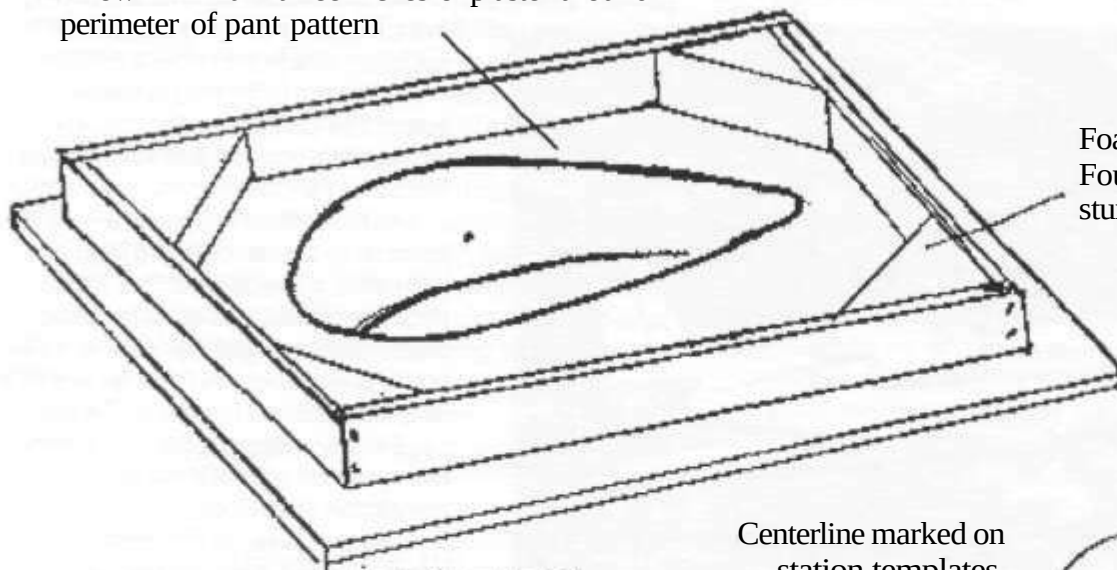
Fabricate Your Own Custom-Designed Wheel Pants

Plaster Mold Technique Can Be Utilized For Fairings, Wing Tips and More

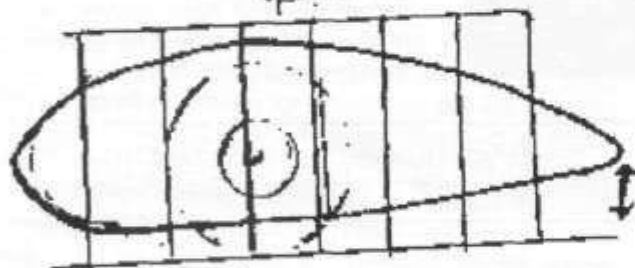
article, photograph and drawings courtesy of
Howard Trampenau

924 Scio Street • Elmira NY 14901 • Telephone 607-732-0517

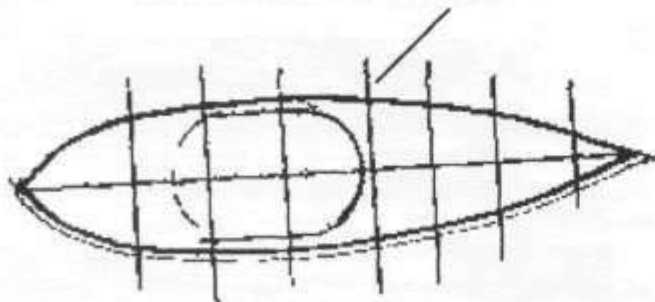
Allow minimum three inches of plaster around
perimeter of pant pattern



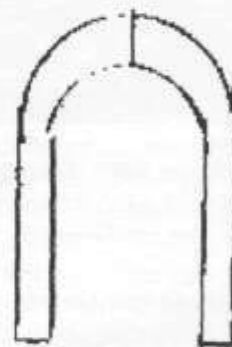
Foam filler in corners.
Four-inch frame rests on
sturdy, flat base.



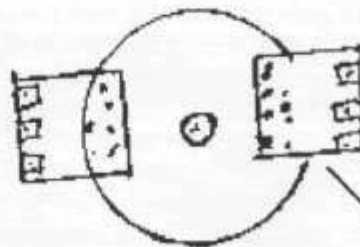
Position layout stations as required



Centerline marked on
station templates.
Quantity of
templates
dictated by shape.



Station Template (typ)



.060 alum wheel pant mounting tabs are pop
riveted to caliper side of brake backing plate.

Kit CLASSIFIEDS

Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial style ads will be billed accordingly prior to publication.

The KR Newsletter reserves the right to edit free ads.

FOR SALE - KR2 wood kit, foam kit and landing gear. Other accessories also available, all at 1980 prices. Kits are complete. Some extras tossed in, too. Contact Cleo Greenhaw, 1201 Princeton, Ponca City OK 74601. Tel: 580-762-2531.

REDUCED PRICE- KR2. 11" longer & 2" wider. Boat with stubs, wings and tail feathers. Converting to fixed gear. Dual controls and reinforced for more HP. 0-time 2180 VW with KR motor mount. Canopy, hardware, lights and most engine/flight instruments. \$2400. Richard Rymer at 562-435-7937 or rlymer@worldnet.att.net.

WANTED - Your unwanted Diehl wing skins for my KR2. Contact Brad Pearson at 909-599-2786 or e-mail me the details at pear91773@aol.

FOR SALE - KR2, N3780B. Near complete conversion to tri-gear, lacks aileron cables, wing walk and wing close. 26 TT Hapi single-plug 1835 plus 200TT Hapi dual-plug 1835 available. \$10,000 OBO or will split up for \$3K each. Call Steve Buckley 6-9pm PDT at 510-656-3329 or email buckOO@earthlink.net.

WANTED - Help in locating and purchasing a fuel tank or fuel bladder that will fit inside my weepy fiberglass unit. Any ideas? Also wanting a good updraft carb for my 1600 VW engine. Contact Fred Sledge, 108 South Lelia, Guymon OK 73942. Phone or fax 580-468-3387.

FOR SALE- Diehl wing skins, Rand center section skins, turtledeck, canopy frame, canopy, forward deck, wheel pants, Cleveland wheels and brakes with Cheng Shen tires & tubes, Matco tailwheel plus misc spruce, foam and fiberglass mat'l. All or Part. Call for prices. Bruce McPherson, 817-277-5399 or email karen22@flash.net.

WANTED- KR wing skins, forward and aft premold deck. Contact Arthur Cabral, 26320 9th St, Highland CA 92346 or telephone 909-864-3107.

WANTED - Completed KR2 with documented record of flight performance. Prefer fixed gear, 1835 VW power with dual ignition. Call or write to Ed Menges, 6223 Southwood, St Louis MO 63105. Tel 314-726-3085.

FOR SALE - Single place stretched KR-2. Volkswagen 1835 engine with CompuFire ignition. Diehl Ti-gear with Cleveland wheels and brakes, Wing tanks, KR-1 canopy. \$12,000. Contact Stan Mello, 917 Sleepy Hollow Rd, Paso Robles CA 93446. Telephone 805-238-4841.

FOR SALE - KR2 plywood and spruce kits. Wing attach fittings, bolt kit, alum tubing, channel, angle, plus KR2 plans. Alpha Aviation price in 1986, \$833.00, less plans. Any trades considered, also other plans. Let's get together. Sid Woolen, POB 34, Kaw City OK 74641. Tel: 580-765-3801.

FOR SALE- KR1 stretched to KR2 size. 1835 VW, Diehl accessory case with 20 amp alternator, Handheld STS 720 channel Transceiver. Empty weight 540 lbs. Large open trailer. Howard Trampenau, 607-732-0517. Lost my medical. A bargain for someone.

FOR SALE- KR-2S, N197DB. Tail dragger. 100 hp NSI Subaru. 107 hrs TT. Dual, crank fired ignition (single plug), 50 amp alt, dual fuel pumps, dry sump oil system. Sterba prop and spare Prince P-tip prop. Diehl main gear, Cleveland wheels and brakes. WJM tanks. Flaps. VAL 760 com radio. Terra 250 mfcie 01t<nsponder. GPS III Pilot (snaps onto pyiejEjLTWitercom and 2 headsets. New tires. Cruise^JPo mph @ 4.5 to 5 gph. 24 gallons+ equals bladder buster range. ROC 800 fpm. Empty weight 714 lbs. All logs and manuals. Dave Blucher, 616 Viscaya Ave, Orlando, FL 32839. Phone: 407-855-8071 or email: krbluch@aol.com.

YOUR AD COULD BE HERE! ...

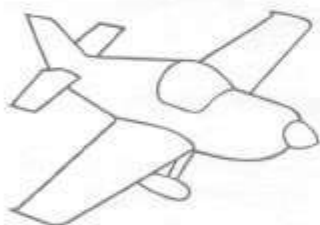
Annual KR Gathering

Returns to Lake Barkley (KY) State Park
September 2000

Watch the KR Newsletter for Updates

NOTICE TO ADVERTISERS

If your item has been sold or your ad requires updating, please contact the KR Newsletter with the details. Telephone, snail or email will work just fine.

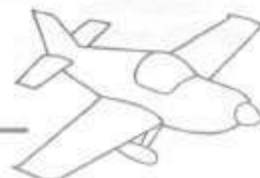


KR NEWSLETTER

624 West University Drive
PMB199
Denton, Texas 76201
Issue 272 May 2000

*"You know they invented wheelbarrows to teach FAA inspectors
to walk on their hind legs."*

Martin Caidin
pilot, author, raconteur





NEWSLETTER

Newsletter Stringer Locates Local Builder *Both KR Projects Aided by Mutual Support*



Jerry Burchfield, of Allen, Texas, displays his Revmaster 21 ODD

Fellow KR'er Found *EAA Connects Builders*

Ken Jordan

Ace KR News Stringer

512 Red Oak Street • Allen TX 75002

I recently met a fellow KR builder right here in my "new" hometown of Allen, Texas. At several local EAA Chapter meetings, Jerry Burchfield and I had discussed our respective projects. I asked him if I might stop over and get the scoop on his KR-2.

Just like me, Jerry has had a long-term relationship with his fledgling KR. The aircraft was hatched about ten years ago in Southern California, then relocated to Texas awhile back.

Jerry has his Revmaster 2100D Volkswagen conversion mounted on its own test stand. He attempted to start it up for me but, alas, the battery was flat.

Jerry is taking advantage of many pre-molded parts and is making good use of them. His fuselage will accept a pre-molded fiberglass fuel tank. The Diehl fixed gear installation is well underway as is most of the plumbing and cable for brakes and controls.

Dual controls are being installed. Stock design KR rudder pedals have hydraulic brakes on the pilot's side.

Jerry's clever use of his two-car garage allows him to park his car inside without interfering with his KR project which sits on a modified boat trailer. His wings are complete

continued on page 2

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Maybe Things Ain't So Bad After All

Who among us hasn't, at one time or another, wished for a larger two-car garage, shop or basement in which to build their KR? I've personally spent, in my mind, thousands of dollars adding on to my house just to get a few extra square feet of playroom...uh, shop space.

Came across this twenty-two year old photo of a KR-1 builder doing his thing in a Connecticut trailer house. Besides having to crawl under the fuselage to leave the room, those black socks, tennis shoes and the plate collection cracked me up. I had to share it with ya'll. This dedicated builder is obviously a bachelor... or, at least, soon will be!



Bedrooms, living rooms, New York brownstones or an open shed... if you have the desire to build, you'll find a way... just as this gentleman has.

Burdfield KR ...continued:

with Diehl skins. They are stored in an overhead rack.

Jerry asked me about making a turtledeck and forward deck; in my opinion, these components, although large, are easy to construct.

Together, we have agreed to lend that oft necessary "third hand" to one another. I hope to see his KR airborne soon.



Eventually, it will all come together... the Burchfield KR

Sitka Spruce Source Custom Cut to Your Specs

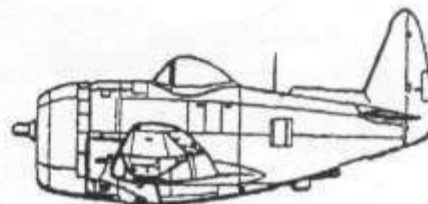
Here's a source supplier for aircraft grade Sitka Spruce that's willing and able to produce your order to a specific set of requirements, even to length... something occasionally unavailable.

Richard Walton
R.A.W. Resources, Inc.

98-205 South Shore Road, Box 1219
Cowichan Lake, B.C., Canada VOR-2GO
Tel 250-749-4024 • email
raw@seaside.net

Several of my building acquaintances have purchased lumber from Richard and have been very happy with the service, delivery and product.

Remember to factor in freight costs, depending on your locale. However, the US dollar will buy a bit more in comparison to the Canadian buck so maybe it's a wash. Check him out.



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Installation of the Rand Canopy

Shortcuts to Success with PreMolds

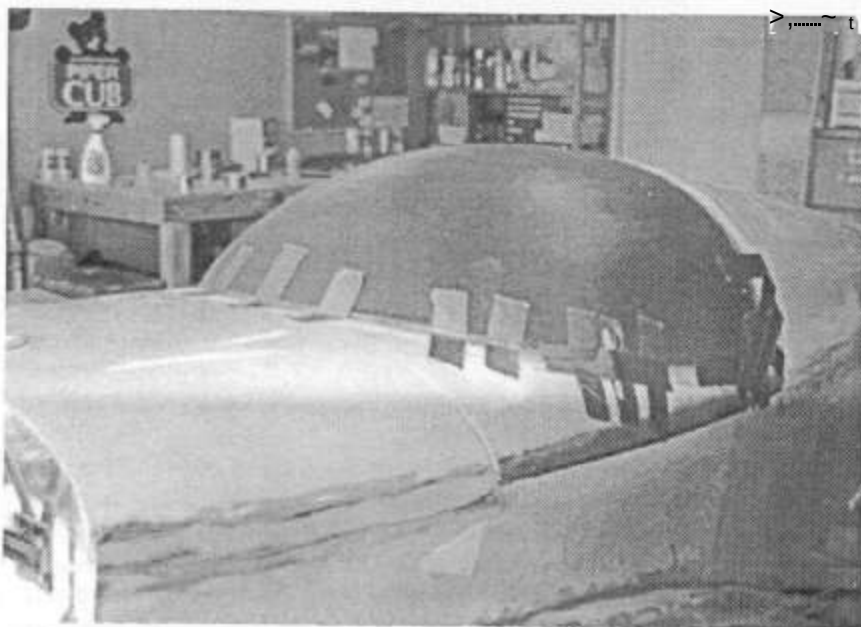
After hearing more than a few builders lament that the canopy construction was the hardest part of their project, I would work up a pretty good sized anxiety attack each time I walked by that expensive chunk of plexiglas occupying space in my house. It had been sitting so long that it was getting dusted just like the furniture it was hiding behind.

Looking back, seems the fussy fellows all had non-stock canopies and frames. All had added complexity, cost, time, and weight to their projects...not to mention a start on an ulcer. Deviate from the plans and you're asking for additional work. My KR utilized all the available premolds from R-R.

Before the canopy frame goes on, the forward and aft decks must be complete as they determine final canopy frame trim cuts. Won't hurt to have the instrument panel blank in position along with anything else that might affect canopy function.

Trimming the canopy to fit the installed frame can be nerve wracking. Besides worrying about scratching and breaking, you have to trim to some pretty exact dimensions. Not enough and the plex won't lay in the frame joggle. Too much and you really are in trouble. Hence the anxiety. Fine. Tell me something I don't already know. OK, the canopy can be trimmed, with less chance of error, prior to installing the frame onto the fuselage.

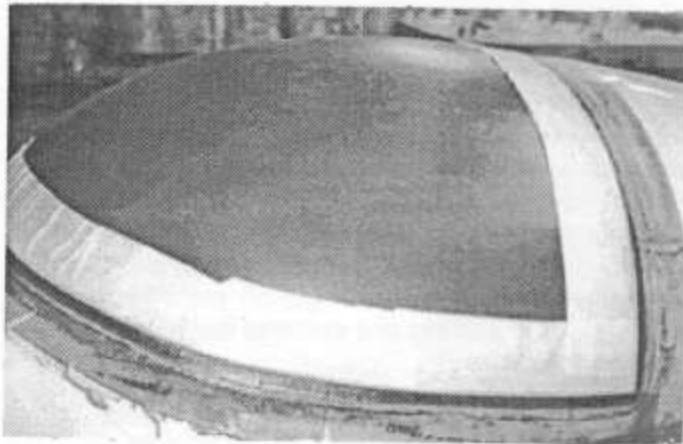
Use string, tape, or both to pull the bare canopy frame into the same width as it will be when installed; doesn't have to be exact...for now, a one-inch tolerance is close enough. Check it against the fuselage.



Duct tape positions canopy bubble within completed canopy frame. Spot glue in place using epoxy and cotton floss. Retain maximum amount of SpratLat covering.

Position the canopy bubble *inside* the frame and while holding it pressed against the frame, run a marker around the frame cutout. A trim cut can be marked parallel to the first mark and the excess cut away. When it's time to bond the canopy to the frame, you'll be hours ahead and you won't need the Roloids.

The canopy's frame sills can be shaped from the spruce saved after cutting down the wing spars. It's 1/4" to 5/16" thick and just right for our needs. *You do save that expensive lumber, don't you?* Shape them to match the upper longerons, less an amount equal to the thickness of the canopy frame. Bevel the outside edge of the sills to mate with the frame for a better fit and bond.



The 3M tapes are attached along with additional wide protective masking tape. Fiberglass tapes are applied to the prepped canopy frame-bubble junction.

Fit and bolt the canopy hinge to both the canopy sill and longeron, checking for function. Position the port sill and secure with small C-clamps. Add temporary weatherstripping to the aft deck where the canopy frame closes against it. This will help space the frame to a finished position and avoid damaging the completed assembly.

Don't forget to use some waxed paper resists during gluing or you just might bond the sills to the longerons.

To save later hassles, complete the centering pin installation prior to blocking in the interior cockpit foam. Doing this now will eliminate repairing your just glassed rails plus provides better drill access.

The interior foam and glass work goes smoothly and adds considerable rigidity to the frame, although you'll develop a back-ache while stretching over the wing stub to complete this chore. The manual calls for an aft stiffener of one-inch thick foam by three inches deep. To save some headroom and eliminate this big, foam rainbow hanging over your head, try shaping the stiffener to the di-

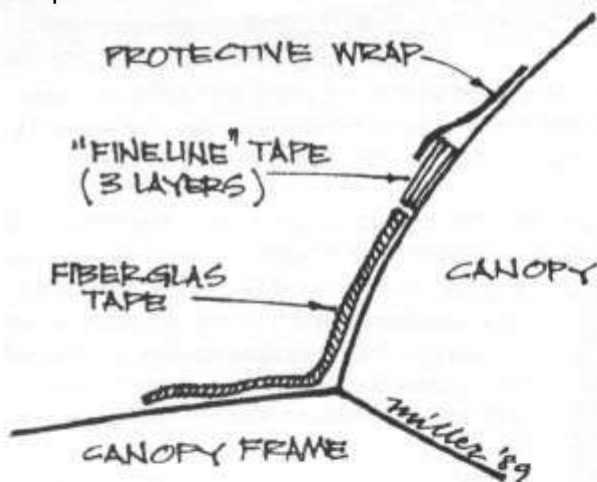
mensions of the aft turtledeck flange. A thicker cross section works just as well, or better, than a thin section. Round the exposed edge and use the resin-flox technique on the square corner adjacent the deck flange. This work is to be done in two steps, per manual, to insure proper curing of the frame in its final installed position.

Final detail work should be completed prior to bonding the canopy bubble. Latches, locks, supports, whatever...take care of those specifics now.

The previously trimmed canopy can now be fine tuned for its fit within the canopy frame joggle. As the fiberglass resin will not adhere properly to the gelcoat surface, it's critical to thoroughly scuff sand these parts prior to glassing. Removing the thick gelcoat and exposing the fiberglass substrate insures a good bond and aids in fairing the bonding tapes into the airframe.

Attach the canopy using epoxy-flox, secure with lots of duct tape, and allow to cure. Follow up with the fiberglass tapes as per the Rand manual.

Details on developing a good fiberglass to plexiglas junction (see sketch) ...use a minimum of three layers of 1/4" Scotch Fineline tape (body shop stuff) attached one inch away from the canopy edge, per plans instructions. Do a good job aligning and securing the tape, one layer on top of the other.



Scuff sand the plexiglass bubble and adjacent deck areas. Apply the fiberglass tapes, butted against, but not overlapping, the Fineline tape. After full cure, remove only two tape layers and use a mill file to carefully smooth any small surface zits. Removing the last tape strip will reward you with a beautiful, consistent trim line. Final sanding, filling, and smoothing is a matter of your own patience. It's a drag but has to be done.

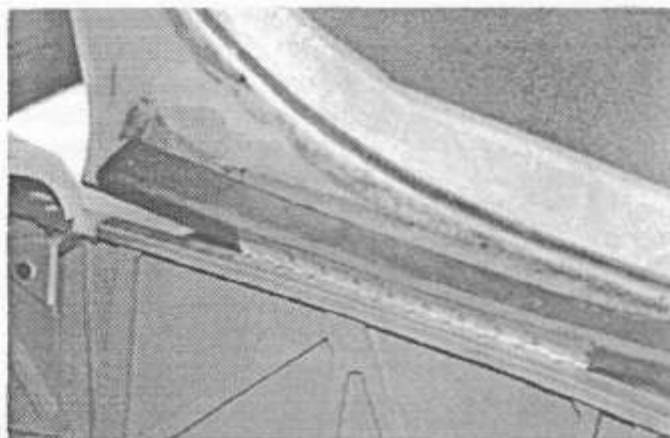
The completed canopy frame assembly is quite rigid; much different than the floppy individual components. Take your time in shaping and fitting all the various parts within the assembly and there'll be no urge to add weighty and unnecessary beefing up.

KR guru Dan Diehl once said that he, "felt canopies comprised nine-tenths of the work on an aircraft. Get

through it and you've got only ten percent to go." True or not, it's a nice feeling. Makes for a nice hideout, too!



Prior to attaching canopy bubble, interior foam and fiberglass stiffeners must be completed. Note that arc of aft canopy frame stiffener matches the molded turtle-deck flange. After cure, framework is quite rigid.



Upper hinge strip is recessed into canopy sill. Lower half is mounted on top of fuselage longeron. Keep hinge strip as long as possible for secure installation.

Here's a detail for your project that costs only a few minutes of your time but will add to the life of your aircraft. Everything you'll need is already in your shop.

As designed, the cockpit canopy structure utilizes a cut down AN-3 bolt as a centering pin. The pin mates to a matching hole drilled into the wooden longeron, aligning the canopy as it closes. The idea system works, but the pin will soon pound dings into the longeron as you close the canopy and miss the hole. This ongoing damage will contribute to the eventual enlargement of the locating hole. The beat up hole will stare at you every time you open the canopy. Worse yet, the whole world will see it.

The fix is simple; do it before you damage the longeron. Use a Dremel to cut a recess into which an AN960-10 washer will be epoxied. The washer should be just flush with the longeron's surface. Use a non-grease lubricant similar to Door-Ez on the centering pin to avoid locking your canopy down permanently as the epoxy cures.

Kit CLASSIFIEDS

Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial style ads will be billed accordingly prior to publication.

The KR Newsletter reserves the right to edit free ads.

FOR SALE - KR2 wood kit, foam kit and landing gear. Other accessories also available, all at 1980 prices. Kits are complete. Some extras tossed in, too. Contact Cleo Greenhaw, 1201 Princeton, Ponca City OK 74601. Tel: 580-762-2531.

REDUCED PRICE - KR2. 11" longer & 2" wider. Boat with stubs, wings and tail feathers. Converting to fixed gear. Dual controls and reinforced for more HP. 0-time 2180 VW with KR motor mount. Canopy, hardware, lights and most engine/flight instruments. \$2400. Richard Rymer at 562-435-7937 or rlymer@worldnet.att.net.

WANTED - Your unwanted Diehl wing skins for my KR2. Contact Brad Pearson at 909-599-2786 or e-mail me the details at pear91773@aol.

FOR SALE - KR2, N3780B. Near complete conversion to tri-gear, lacks aileron cables, wing walk and wing close. 26 TT Hapi single-plug 1835 plus 200TT Hapi dual-plug 1835 available. \$10,000 OBO or will split up for \$3K each. Call Steve Buckley 6-9pm PDT at 510-656-3329 or email buckOO@earthlink.net.

WANTED - Help in locating and purchasing a fuel tank or fuel bladder that will fit inside my weepy fiberglass unit. Any ideas? Also wanting a good updraft carb for my 1600 VW engine. Contact Fred Sledge, 108 South Lelia, Guymon OK 73942. Phone or fax 580-468-3387.

FOR SALE - Diehl wing skins, Rand center section skins, turtledeck, canopy frame, canopy, forward deck, wheel pants, Cleveland wheels and brakes with Cheng Shen tires & tubes, Matco tailwheel plus misc spruce, foam and fiberglass mat'l. All or Part. Call for prices. Bruce McPherson, 817-277-5399 or email karen22@flash.net.

WANTED - KR wing skins, forward and aft premold deck. Contact Arthur Cabral, 26320 9th St, Highland CA 92346 or telephone 909-864-3107.

WANTED - Completed KR2 with documented record of flight performance. Prefer fixed gear, 1835 VW power with dual ignition. Call or write to Ed Menges, 6223 Southwood, St Louis MO 63105. Tel 314-726-3085.

FOR SALE - Single place stretched KR-2. Volkswagen 1835 engine with CompuFire ignition. Diehl Ti-gear with Cleveland wheels and brakes, Wing tanks, KR-1 canopy. \$12,000. Contact Stan Mello, 917 Sleepy Hollow Rd, Paso Robles CA 93446. Telephone 805-238-4841.

FOR SALE - KR2 plywood and spruce kits. Wing attach fittings, bolt kit, alum tubing, channel, angle, plus KR2 plans. Alpha Aviation price in 1986, \$833.00, less plans. Any trades considered, also other plans. Let's get together. Sid Woolen, POB 34, Kaw City OK 74641. Tel: 580-765-3801.

FOR SALE - KR1 stretched to KR2 size. 1835 VW, Diehl accessory case with 20 amp alternator, Handheld STS 720 channel Transceiver. Empty weight 540 lbs. Large open trailer. Howard Trampenau, 607-732-0517. Lost my medical. A bargain for someone.

FOR SALE - KR-2S, N197DB. Tail dragger. 100 hp NSI Subaru. 107 hrs TT. Dual, crank fired ignition (single plug), 50 amp alt, dual fuel pumps, dry sump oil system. Sterba prop and spare Prince P-tip prop. Diehl main gear, Cleveland wheels and brakes. Wftg tanks. Flaps. VAL 760 com radio. Terra 250 mtde eTransponder. GPS III Pilot (snaps onto Jany JELL Intercom and 2 headsets. New tires. CruiseM^O mph @ 4.5 to 5 gph. 24 gallons+ equals bladder buster range. ROC 800 fpm. Empty weight 714 lbs. All logs and manuals. Dave Blucher, 616 Viscaya Ave, Orlando, FL 32839. Phone: 407-855-8071. or email: krbluch@aol.com.

YOUR AD COULD BE HERE! ...

Annual KR Gathering

Returns to Lake Barkley (KY) State Park
September 22-24, 2000

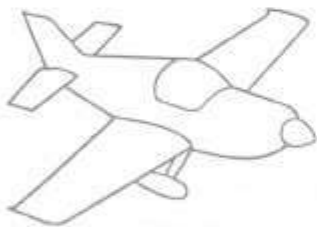
Catered lunch & dinner Fri, lunch Sat, on field
Banquet Saturday night at Barkley Lodge

Watch the KR Newsletter for Updates

NOTICE TO ADVERTISERS

If your item has been sold or your ad requires updating,
please contact the KR Newsletter with the details.

Telephone, snail or email will work just fine.

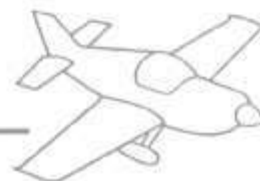


KR NEWSLETTER

624 West University Drive
PMB199
Denton, Texas 76201

Issue 273 Jun 2000

Good judgment comes from experience. Experience comes from bad judgment.





NEWSLETTER

Dedicated Builder Fine Tunes a KR

"I have 104 flying hours on my KR2 and I love it!"



Ronald Kent • Tri-Gear KR2 • N561 RK
13884 Doolittle Road • Wattsburg PA 16442 • Telephone 814-739-2705

continued on page 2

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

One Thing Leads to Another

Ronald Kent & N561RK

Ron began construction of his KR-2 in 1981. After about four point five years, the aircraft flew as originally designed by Ken Rand; with the Rand-design retractable landing gear. The wheels were equipped with the original cable-activated, mechanical go-kart brakes. During the discussion of his aircraft, Ron mentioned that, due to the brake system, he, "...tended to leave the runway."

Eventually, the Kent KR was converted to a fixed-gear tail dragger configuration. Still not totally pleased with the habits of his airplane, Ron again grounded the KR while he converted to a tricycle landing gear. The design is custom, both in its original designer and in Ron's rework of the system.

After getting the aircraft back in the air, Ron noticed that it was difficult to hold the nose gear off the runway during the landing. The nose wheel would come down with a rather strong motion. So... back to the shop where the main gear was moved forward three inches, resulting in a well-mannered KR-2 that Ron has flown for over 104 flight hours. These days, Ron has, "Gotta be careful getting in; the KR sometimes wants to sit back on its tail."

Less you get the idea that Ron spent all his time experimenting with various KR landing gear, he did top off the latest wheeled goods with toe-operated Cleveland's.

This little addition required that a new fuel tank be fabricated to provide extra space for brake pedals and Ron's toes. The tank removal and rebuild lead to the replacement of the original KR-2 bubble canopy with a fixed windscreen and pilot-side gullwing canopy hatch. The new patio cover is all flat wrapped plexiglas.

N561RK is powered by an 1835 Hapi Volkswagen conversion that Ron assembled. A Hapi accessory case handles the starter and electrical components required for the dual-ignition - magneto and electronic. Originally fitted with a Posa carburetor, the Volks now draws fuel through a floatbowl carburetor on unknown origin that Ron said he, "...found in my desk drawer at work." Steve Bennett, of Great Plains Aircraft Supply, helped with confirmation of venturi size requirements and Ron took it from there.

While on retracts, the Hapi turned a 52x48 prop. After the tri-gear was flying, Ron opted for a bit less bite from a 52x41. Still, the aircraft cruises along at about 145 mph. Not a bad speed at all for a KR with an empty weight of around 650 pounds.

Although equipped with flaps, Ron says, "They do a little bit, but not much. I may add a belly-board speed brake."

Over it's lifetime, Romeo Kilo has spent nearly ten years in the shop for various modifications. For the past four years, Ron has been doing nothing to the KR other than flying it. "If I had hydraulic brakes from the start, I would probably have kept the aircraft on the retracts."

Estate Sale of KR-1 Project

The following items are offered for sale from the estate of the late John Dowling, KR-1 builder of Pomona, California. John's wife, Sally, provided an extensive list compiled by Tom House of EAA Chapter 224. Values of items are from Rand-Robinson and Aircraft Spruce catalogs. Mrs. Dowling notes that opening bids of half value or lower will be entertained.

The KR Newsletter extends its condolences to Mrs. Sally Dowling and daughters Kim and Cindy on their loss.

Due to number of items, full descriptions have been edited.
Limited additional information is available from seller.

1. Aluminum venturi	32.00
2. Essex engine primer, ABSEM-K2404	40.00
Cole ignition switch	116.00
3. Prop, new-in-box 52x42 for VW	190.00
4. Westberg tach, 3CT5-2#1084	160.00
5. Westberg CHT, Cat.No.201	105.00
6. Oil temp gauge, 2" with probe & 54" lead	33.00
7. Airborne Mod.2M3-2 vacuum reg valve	180.00
8. Westberg EGT, 2" Cat.No.202-#783	104.00
9. ASI, 220 mph, US Gauge #AW-2 3/4-20-8	235.00
10. Altimeter, 20K, certified	390.00
11. Compass, Airpath C-2300	155.00
12. Turn & Bank, Bendix1700-1A-C1	575.00
13. Hobbs meter, Stewart-Warner #15002	35.00
14.1835 VW engine w/hub, 4 to 1 exhaust	2740.00
15. Motor mount with bushings and bolts	310.00
16. Main gear, fixed alum with axles & brake fitgs	600.00
17. Mech brakes with cables & 6.00x6-6 ply tires	775.00
18. Tailwheel, 4" full swivel with tail spring	168.00
19. Instrument panel template, unfinished	10.00
20. Control cables, turnbuckles, misc fittings	90.00
21. Canopies, 1 loose, 1 framed and hinged	535.00
22. Wheel pants, pair,36" length	260.00
23. Tools and Misc fasteners	100.00
24. Spinner, 12" Alum #BN-1	115.00
25. Shoulder harness, 2" straps with ratchets	65.00
26. Throttle quadrant, three lever	95.00
27. Fuselage, ply & composite with fuel tank	700.00

Contact Mrs. Sally Dowling

Res:909-392-9482 • Cell.909-237-7498

Fax:909-392-9487

Put a Tourniquet On It!

Jim Marshall

10602 Winterhawk • Boise ID 83709

Telephone: 208-362-9225

Jim sends along a little tip that might help builders when it's time to install fuselage crossmembers; use a tourniquet! Best let Jim explain...

I drilled small holes in my plywood-skinned sides, located at each crossmember. Then, I ran nylon twine through the holes, looped the line up and over and tied the ends together as tight as I could.

A long nail, a short screwdriver or a scrap stick of lumber is used to twist the nylon line to the desired tightness. It's easy to slide the nail, or whatever, against the crossmember to secure it while the epoxy cures.

Along with this tip, Jim mentioned in his note that he feels this is an inexpensive alternative to buying pricey clamps and all-thread for assembling the KR fuselage. The idea might just keep you working!

* * * * *

New Owner

of Dave Blucher's Subaru-powered KR-2S
N197DB, last featured in issue number 272, is

Glenn Matthews

2212 Winchester Dr • Columbus GA 31904
Tel: 706-324-3123 • email: tgm007pi@aol.com

Glenn states that he is, "...very impressed with the workmanship. Dave put his heart in it."

KR fans with questions regarding Glenn's spiffy, new airplane are welcome to contact him by email or other.

Favorable Changes in Store for EAA Golden West Fly-In

With its move in September from Atwater to Sacramento, California, the 2000 Golden West EAA Regional Fly-In invites aviation enthusiasts to its "house warming".

According to Fly-In Chairman Bill George, "Golden West will be offering many improvements to its annual event on September 8, 9 and 10. We invite everyone to visit our new home and expect there will something to please each of you."

The most welcome change will be the condensed convention area with the show plane display areas only a *short* walk from the exhibitor displays and other activities. However, *condensed* won't mean less and Golden West planners have made sure the convention site will be able to easily park 1,500 aircraft and host the 150 exhibitors expected to arrive for the three day fly-in.

Another change to be appreciated by visitors will be more shade, thanks to the support of SAC FBO's Patter-

son Aviation, Clarksburg Air Repair and C & M Aircraft. Exhibitor displays, the Youth Education Center, many of the daily workshops and the dining court will be inside large hangars at either end of the central convention area. The Volunteer Center will be housed in a hangar to the north of the exhibitor displays.

To kick off the "house warming", Aircraft Spruce and Specialty will be sponsoring an air race from their base at Corona, CA to Sacramento on Friday, September 8 with presentation of the race winners on Saturday. Friday will be designated Kids Day with special tours and speakers. For the first time at Golden West, Young Eagles rides will be available during the fly-in to introduce youths to the excitement of flying.

Not everything is changing, however. The many Forums and Roundtables will remain housed in tents in the central convention area. Aircraft judging awards will be presented on Sunday and each day will offer aerial demonstrations, manufacturer's showcase flights and pilot flybys. Careful planning for the Special Events will offer improved meals at both the Friday evening Welcome Dinner and Saturday evening's dinner with a key-note speaker and music.

Bill George adds, "The move to Sacramento has been smoother than anticipated. We have received wonderful support from airport management and the businesses based at Sacramento Executive Airport as well as the community. We have seen increased participation by new volunteers excited by our choice of location. The larger metropolitan area of Sacramento will provide us with a greater opportunity to introduce aviation to many more people."

-More EAA Golden West Fly-In on next page...

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EAA Golden West Fly-In ...continued:

With easy access by airplane and automobile, Sacramento Executive Airport is located 3 miles south of downtown Sacramento. The area offers a variety of reasonably priced hotels. Executive Airport will be operating two runways during the fly-in, the longest measuring 5,500 x150 ft. September usually offers perfect flying weather with temperatures in the mid to high 80's. An ILS approach is available when Mother Nature becomes unpredictable. NOTAMS will be published for arrival procedures that will be in use during the fly-in.

The annual Golden West EAA Regional Fly-In is presented by Golden West Aviation Association, Inc., a 501(c)(3) charitable organization with a mission for the furtherance of aviation technology, education and the preservation of aviation history.

Mark your calendar and make plans now to participate in the fun on September 8, 9 and 10 at the third annual Golden West EAA Regional Fly-In at Executive Airport, Sacramento, California. Be sure to check the Golden West web site (<http://www.gwfly-in.org>) for more details and the latest news. For further information, contact the Golden West EAA Regional Fly-in office at (916) 428-8429, or Fly-In Chairman Bill George, at (530) 642-8063.

Rand-Robinson & Company

will have an exhibitor display at
the EAA Golden West Fly-In

• *Be sure to stopby for a visit* •

Gadgets, Widgets, and Whatchamacallits

Volume Two

Todd Servaes

PO Box 685 • Loomis CA 95960

Tel: 916-652-6226 • email: taservaes@netzero.net

We again view the impressive and necessary inventiveness of our experimental aircraft community with more great ideas for tools, hardware and aircraft components. In this installment, we'll look at some control surface trim tabs, a KR rudder pedal modification and I'll climb up on a little soap box I carry regarding the value of cross country air races.

Clean and Pretty Fixed Trim Tabs

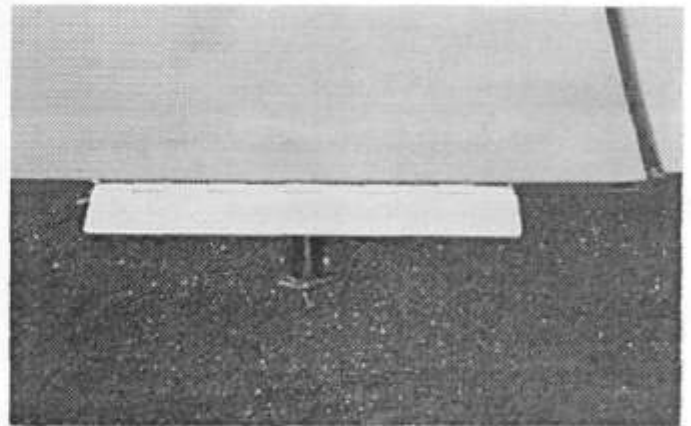
Fixed trim tabs are often necessary evils. Usually added after early test flights to correct slight misrigging, larger than expected torque effect or as add-ons, they are often the aerodynamic and cosmetic equivalent of warts on a beauty queen. By planning for their potential

need, a Glasair builder - who I never found at his plane and thus cannot credit him by name - made his tabs both clean and pretty.

On the rudder and an aileron surface, an appropriately sized rectangle of aluminum was sandwiched between the skins of the control surface. The tabs thus formed where then bent to the required deflection as determined by test flight. If no tab was needed on a surface, a little Dremel work could make the tab disappear.

Planning is the aeronautical version of *Compound W* - Not So Pretty, But Easy

If your airplane is too far along before trim tabs come to mind, or you simply can't wait to get it flying, try this Lancair builder's approach for an adjustable tab. He simply attached a section of large MS20001 extruded piano hinge to the trailing edge of his aileron and riveted a control horn to the trailing half of the hinge.



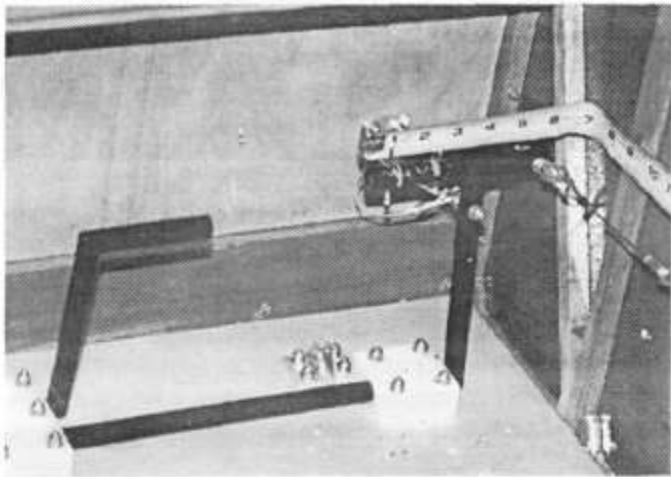
This hinge is the easiest cockpit adjustable trim tab installation imaginable

KR Rudder Pedals Cable Attachment

The KR-2S rudder pedals supplied by Rand-Robinson Engineering are good examples of the "keep it light and keep it simple" concepts that result in good airplanes. However, they have a small failing in that they cause the rudder cables to intrude into the cockpit more than needed.

Richard Oliver was having his KR-2S inspected by Greg Duda, EAA Chapter 526 Technical Counselor, when Greg offered an easy fix. He suggested that Richard remove the short section of tubing which forms the inverted "L" on which the pedal pivots and replace it with a longer section to form a "T" shape. The pedal pivots on the inside segment and the cables attach to the outside segment, near the fuselage sides.

As seen in the photo, Richard made a neat job of this modification by placing his cables out of harms way and gaining some precious space in his KR.



Enhanced cockpit safety and comfort in modification of plans-designed rudder pedal bars

Cross Country Air Races and Real Performance

The performance claims made for experimental aircraft range from optimistic projections to outrageous exaggerations. Performance sells airplanes. Anyone who has built an airplane has a large piece of their ego invested, so neither kit companies nor builder/pilots can be blamed for seeing their airplanes through rose-colored glasses. However, we need good, impartial performance information on which to base our purchase and construction decisions.

I believe cross-country air races, like those held in conjunction with the larger EAA Fly-ins, are one of the best sources for impartial and verifiable performance information. The pilots may get overly competitive and run their airplanes harder than normal but, other than this aspect, the races fairly mimic the way sport planes are used. Granted, usually only the better built examples of a given design are raced, but this lets us know what performance the design is capable of.

Searching all the race results I could find was how I chose the KR-2S as the fastest two seat aircraft with affordable engine options. I cannot over emphasize the value of the information these races provide. If you have a flying airplane, please consider racing it.

Check Your Fuel System Leading Cause of Engine Failures

Since 1983, more than seventy percent of the engine failures in amateur-built aircraft were caused by fuel system problems. Many times, the direct cause of engine failures was dirt and debris in the fuel tank and lines that was left behind during the manufacturing process.

From *The Fort Worth Wings* publication,
reprinted courtesy FAA Fort Worth (TX) FSDO

Wing Attach Fittings Require Precision Installation Critical, Not Impossible

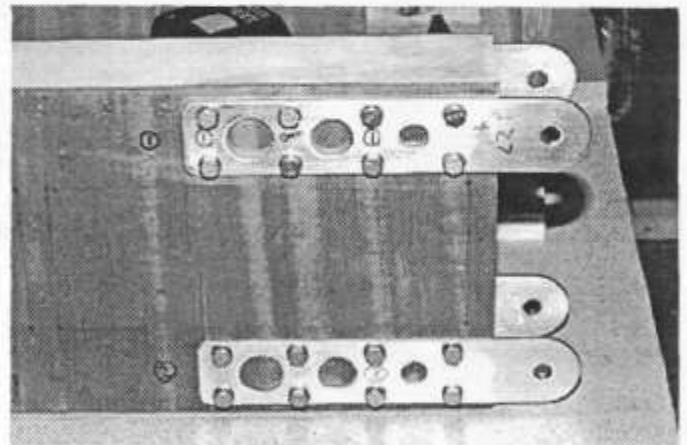
Tom Kadszewski

217 Church Street • Malvern PA 19355

Tel: 610-644-3475

I am building a taildragger KR-2S and am now at a point where I should decide on the engine. I have the Rand-Robinson cowling and motor mount to accept a 2180 VW with the Dan Deihl case adaptor. However, I'm starting to lean towards the Continental O-200. I would appreciate any feedback on the pros and cons of each engine. I realize that if the O-200 were used, a new engine mount would be necessary and the cowling would have to be replaced or modified. The firewall has not yet been attached. I would like to know what modifications to the fuselage would be required to accept the O-200 engine.

The project began almost three years ago but was side tracked for a while. I had reached the point of attaching the center section spars when I realized I would run out of building space once they were installed. A two and a half car garage gets small when the space is shared with other toys, such as a 22 foot long sailboat. Either the boat or the plane had to be relocated. Fortunately, I came across a fantastic deal for two 12'x20' sheds. These were rebuilt in the back yard into an L-shaped building 12'x32' long with a 16 foot extension at one end.



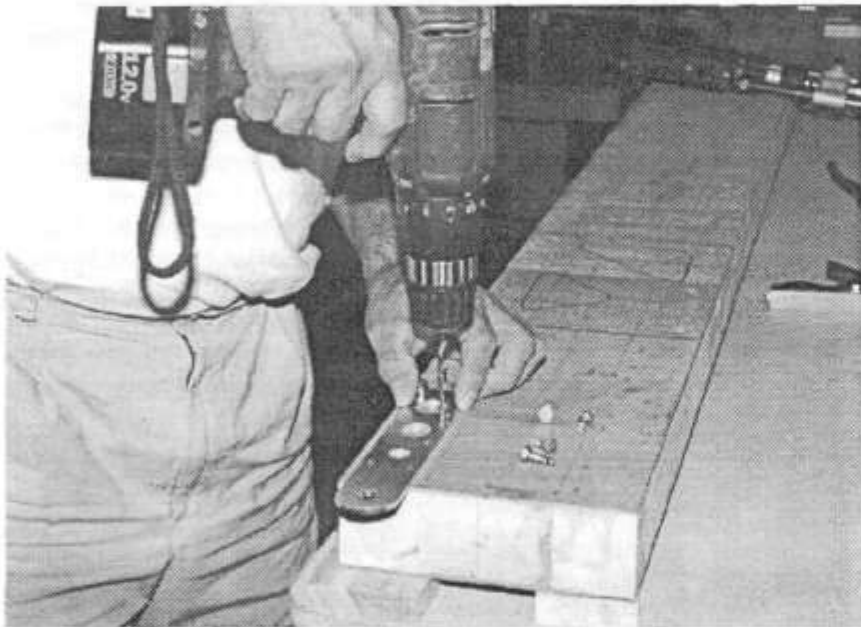
This is what it's all about... Precision, the first time.

With 400 square feet of space available, I couldn't decide whether to use the new shed for the boat or the plane. I finally decided that it would be safer for the plane to be isolated from the routine traffic through the garage. This decision snowballed into making the shed habitable. Electricity, windows and insulation were added. By the time the interior was completed, I had an airplane factory with enough storage and work tables for everything (so he says *now*), including a fully reflective ceiling to reduce shadows, forced ventilation system, air conditioning and even a computer station with CAD. You could say that I got side tracked... big time.

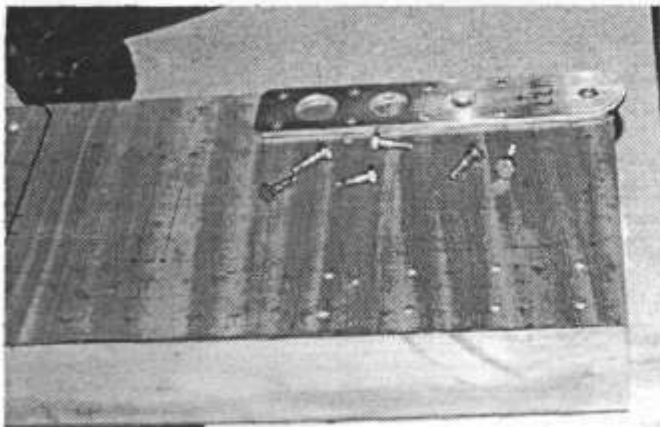
Wing Attach Fittings ...continued:

There was some anxiety to drilling all those holes through the spars for the spar attachment brackets and this was one of my excuses that delayed work on the plane. I have a drill press but decided, even with an extension table, that it would be both difficult and cumbersome to maintain spacing alignment for all of these holes. I felt that it would be better to move the drill rather than to move the spar for each hole.

I found a drilling guide attachment for hand drills at the local home improvement center which turned out to be just the tool required for the job. The manufacture of my drill guide is General Too! and it was purchased at a Home Depot. It has the precision to drill straight holes and is portable to allow easy hole spacing alignment. It was first tried on the holes in the main spar for securing the aluminum landing gear brackets of the Diehl composite landing gear.



Positioning of Wing Attach Fittings on spar face is critical to initial drilling of pilot holes. Time spent in careful measurements will repay dividends.



Shallow pilot holes insure accurate drill guide positioning

The real test was to drill through a spar and still maintain alignment with the holes of attachment brackets that would be located on both sides of the spar.

This is how I drilled the spars for the attachment brackets:

1. Wing Attach Fittings are positioned per the KR plans.

Multiple clamps and wooden templates help maintain correct spacing and angle alignment of the spars. The outline of each attach fitting is traced onto one side of the spar.

2. With spar now laid flat on the workbench, reposition a Wing Attach Fitting. Drill a 1/4" deep pilot hole into spar, using the Attach Fitting as a guide. Recommend the first pilot hole be located at end of fitting. A short AN4 bolt is inserted through attach fitting and into pilot hole for alignment. After confirming Attach Fitting is matched with traced outline, drill a second pilot hole and pin with AN4 bolt. Subsequent remaining pilot holes may then be accurately located.

3. Remove Wing Attach Fitting and use the General Tool Drill Guide to complete the spar drilling operation. Bolt holes near the end of the spar allow only about one-quarter of the drill guide's base to remain in contact with the spar face. For accurate work, shim base to match spar thickness. The General Drill Guide provides two small barbs on the tool's base that help grip the stock. They may be retracted, if desired.

4. Prior to inserting each bolt for final assembly of the Spar Attach Fittings, the drill was chased through both positioned brackets and the spar. When completed, there was no play and alignment was perfect. During initial fit-up of the Wing Attach Fittings, the actual AN4 bolts for final assembly were used in conjunction with red-painted common nuts. When satisfied with the assembly, the mock-up nuts are replaced with the specified AN365 nylon locking nuts. All common-grade hardware used in this project during trial fitting is painted with the "Reminder Red" and replaced during final assembly.

It is very important that each wing attach bracket be match-marked to its corresponding location on the spar before it is removed. Note that the wing attach fittings on one end of each center section spar must be removed before the spars are installed through the fuselage.

Additional photos on page 8...

Kit CLASSIFIEDS

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ESTATE SALE KR-1 See listing on page two, this issue.

FOR SALE - KR2 plywood and spruce kits. Wing attach fittings, bolt kit, alum tubing, channel, angle, plus KR2 plans. Alpha Aviation price in 1986, \$833.00, less plans. Any trades considered, also other plans. Let's get together. Sid Wooten, POB 34, Kaw City OK 74641. Tel: 580-765-3801.

FOR SALE- KR1 stretched to KR2 size. 1835 VW, Diehl accessory case with 20 amp alternator, Handheld STS 720 channel Transceiver. Empty weight 540 lbs. Large open trailer. Howard Trampenau, 607-732-0517. Lost my medical. A bargain for someone.

FOR SALE - Diehl wing skins. Call for price. Bruce McPherson, 817-277-5399 or karen22@flash.net.

FOR SALE - Original KR-2 Retractable Landing Gear assembly - complete with spring bar, gear legs, wheels, tires, brakes, etc., \$275. Continental O-200 crankshaft (GPU converted) in good condition, \$600. Continental A-75 crankshaft with fresh regrind to .010 under, \$600. Contact M. T. Sparks, 10232 Kit Carson Pl, Santee CA 92071. Telephone 619-448-4945.

YOUR AD COULD BE HERE! ...

*If helicopters are so safe, how come
there are no vintage and classic
helicopter fly-ins?*

- Jim Tavenner

Annual KR Gathering

Returns to Lake Barkley (KY) State Park
September 22-24, 2000

Catered lunch & dinner Fri, lunch Sat, on field
Banquet Saturday night at Barkley Lodge

Barkley Lodge 800-325-1708

Watch the KR Newsletter for Updates

NOTICE TO ADVERTISERS

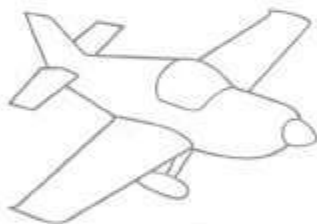
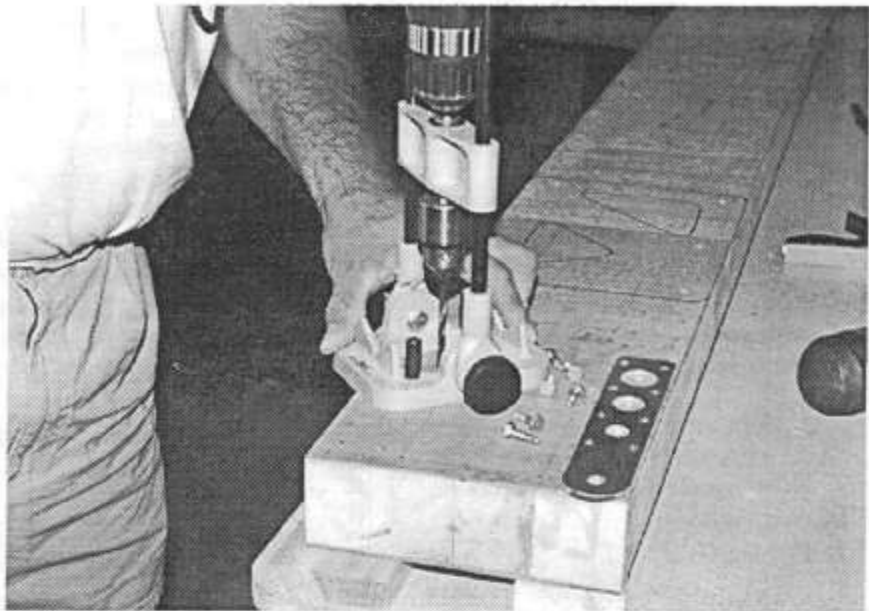
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please contact the KR Newsletter with the details.
Telephone, snail or email will work just fine.

In This Issue:

How To Install Wing Attach Fittings

Tom Kadyszewski, KR-2S builder from Malvern, Pennsylvania, provides a detailed photographic report on this important construction step.

A variable at many hardware and home improvement stores, the General Tool Company's Drill Guide is a solid alternative to the KR Builders Manual suggestions as to completing the important Wing Attach Fitting installation.

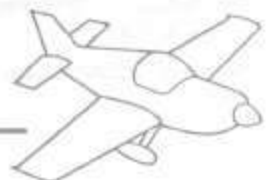


KR NEWSLETTER

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Issue 274 Jul 2000

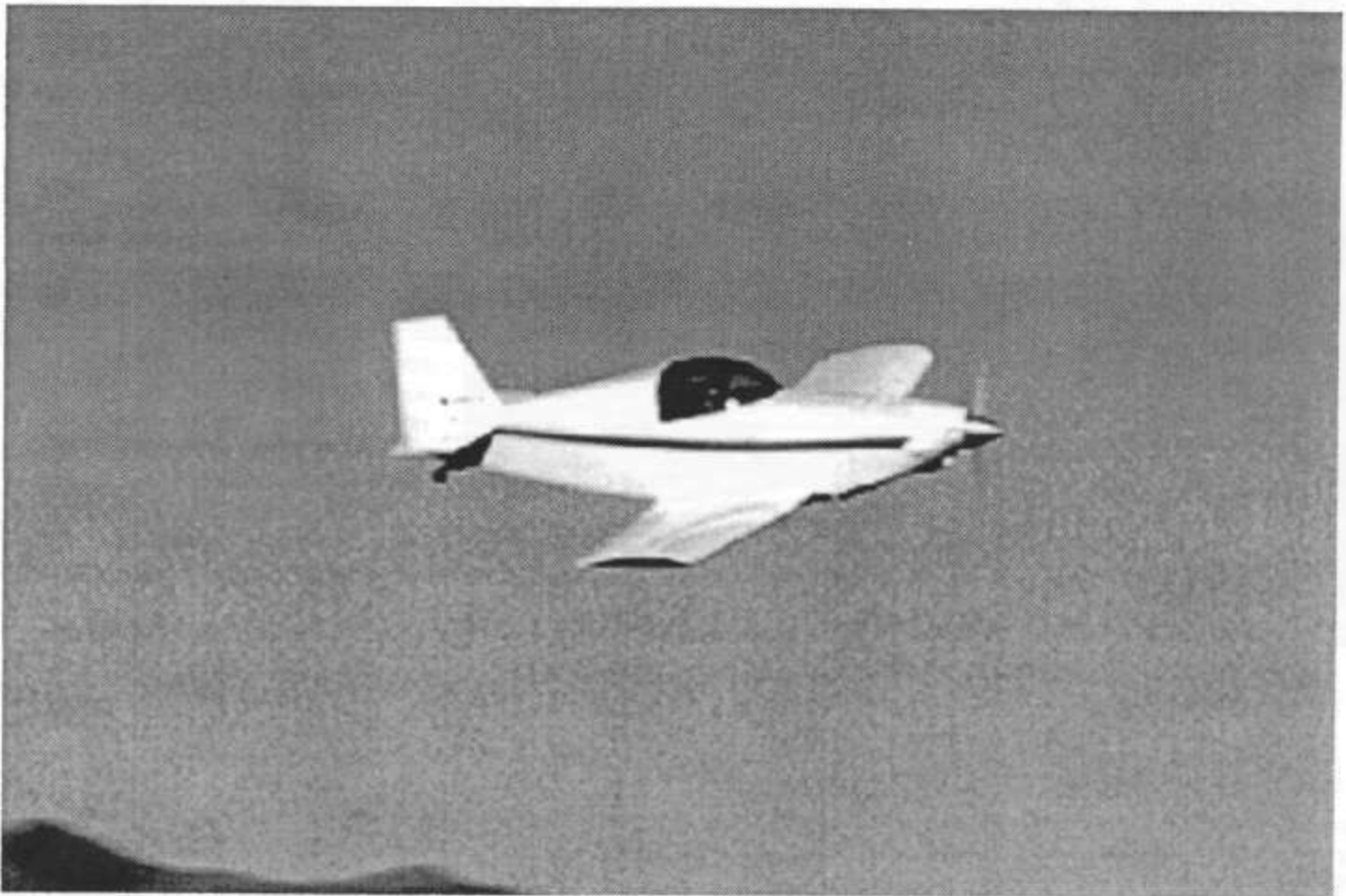
Remember, gravity is not just a good idea, it's the law. And it's not subject to repeal.





NEWSLETTER

One Thousand Hours in a KR-2 *Summer 2000 Marks Flight Milestone*



David Feiger . KR-2 N39426 . John Day, Oregon

One Thousand Hours and Still Cookiri

story on page 2

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

1000 Hour KR-2

Summer 2000 Marks Flight Milestone

David Feiger

P.O. Box 581 • John Day OR 97845

Tel: 541-575-8766

My KR-2, N39426, is still flying and doing well. On June 24th of this year, she reached the 1000th hour of flying while approaching Prosser, Washington for an EAA Chapter 391 breakfast fly-in.

It ain't fast, but cruises with my new Sterba 52x44 prop at 140 mph and 3400 rpm. I gave up a little speed in exchange for good climb performance.

The Sterba is a smooth running prop. I have to pull back the power in order to keep the engine below 3800 rpm during my 185 mph fly bys!

The inside top portion of the canopy has been painted with a silver enamel to act as a sunshade. This keeps cockpit heat down and a lot more livable as blue skies and hot temperatures are the summer norm here in eastern Oregon.



Running n' ready... the Feiger KR-2. with two on board, shows off its classic lines. Note cowl details, such as the refined openings and inlets, plus the canopy sunshade. Veteran pilots know about solar heating!

A rebuilt HAPI 1835, with new valves, bearings and heads, powers the 640 pound aircraft. N39426 is built pretty much to plans. The original style retractable landing gear has saved both me and the aircraft on several off airport landings. The gear simply collapses in the rough stuff rather than digging in and flipping the aircraft over.

Editor's Note: In the past, several KR pilots have noted, when faced with a gear up landing, that since the main wheels protrude about half way below the wing's lower surface, touching down on relatively smooth surfaces often results in minor damage; mostly ground down exhaust pipes, cowl cosmetics and a once airworthy prop.

Georgia KR Fly-In?

Reader Ready to Work

A recent note from KR-2S builder Glenn Matthews in Columbus, Georgia says, "I would be interested in doing a KR fly-in in this area if people would please contact me and let me know if they are interested in attending." Glenn mentions that there's lots to do and see in his neighborhood once they arrive.

Interested builders, pilots and enthusiasts are invited to contact Glenn via email or snail mail. Give this gentleman some input as it's always refreshing to see someone willing to volunteer their time and energy.

Glenn Matthews

2212 Winchester Drive • Columbus GA 31904

email TGM007PI@aol.com

Early Birds Get to Eat

2001 Sun n' Fun KR Dinner

It's been frequently said that good planning will insure success. This being the case, then the future 2001 Sun n' Fun KR Dinner blowout is bound to be a record setter.

Virgil Salisbury, perpetual KR Dinner host-with-the-most, has already announced plans for 2001. You, too, may be assured of making your belly happy by marking 7:00pm Tuesday, April 10, 2001 as the date of the annual gathering in Lakeland, Florida.

Sixteen bucks will get you two entrees, salad, veggies, potatoes, dessert and coffee or tea. Early reservations and payment will help Virgil. He's actually covering a bit of the expense out of his own pocket. Whatta guy! Updates in the KR News or for additional info:

Virgil Salisbury

Telephone: 305-271-3608

email: virgnvs@juno.com

2001 KR Gathering Location Set

Return to Pine Bluff, Arkansas

Nominations from representatives of three different states were considered for the site of the 2001 KR Gathering. After a vote by those attending the annual Saturday night awards banquet, it was announced that Tommy Waymack will be the point man for next year's event in Pine Bluff, Arkansas.

Further details will be published in the KR Newsletter as they become available. Ya'll get building!

Stroker Crankshafts *Engine Clearancing Requirements*

The following item is from an email provided by a New Zealand-based VW-powered aircraft builder. Those interested in increasing the displacement of the VW Type 1 engine may be interested.

John Dolan • jdolan@clear.net.nz

I put a 78.6 stroker crankshaft in a Type 1 VW engine case. Because the journal is 53mm, rather than 55mm, and since the rods protruded less than the VW type, I thought I would get away with only minimal case clearancing.

However, I ended up assembling and disassembling the case about ten times; using a Dremel grinder to relieve the case just to get the engine to turn over. Even when I had finished, the rods hit if they were permitted to fall to the bottom of the bores. I am sure an 82mm crank with VW rods would require heavy clearancing if used in the Type 1 case.

A 74mm crankshaft with stroker rods would possibly fit without clearancing. This would be an expensive way to get only a small increase in displacement. The standard 1600 engine utilizes 85.5mm cylinders with a 69mm crankshaft to produce 1584 cc. The 74mm crank, combined with the 85.5mm cylinders, would equal 1699 cc.

I might suggest that it is better to use either 90.5, 92 or 94 mm piston/cylinder sets with the standard crankshaft to achieve 1775, 1835 or 1915 cc displacements. As well as a larger displacement, these engines will be 4 or 5 pounds lighter than the stroker since the standard 69mm crank has no counterweights which, in my opinion, are not required at our lower engine speeds.

Great Plains Aircraft Supply states that even the use of a 74mm crankshaft will require some case clearance work. With the 82mm stroker crankshaft, the camshaft also has to be machined, although GPASC sells a cam with the machine work already completed.

Venturi in Wing Root Fairing *Revisiting a Neat Idea*

There are more than a few KR's (and other home-builts) among us utilizing vacuum-driven instrument panels. Most are easily spotted by the presence of the rather oddly out of place, draggy, exterior-mounted venturi.

While rummaging through some old photographs - read: searching for newsletter material, this photo emerged. The aircraft belonged to Garth Hess and was on display during a fly-in at Chino, California, circa 1979.

What is of interest is the wing root fairing with it's buried venturi. Air enters at the wing leading edge and

exits from a swoopy looking, mid-root exhaust. It's unknown if there is a reduction in drag compared to the externally mounted venturi; however, the buried installation is much in keeping with a composite aircraft.



IT'S STILL SAFE TO FLY

Don't we all just love to tell non-pilot friends that other forms of transportation are more dangerous than airplanes? Here are the latest numbers, straight from the NTSB off the Avweb, to back you up.

In 1998, in the U.S. and its territories, 43,920 people died in transportation-related accidents. Aviation accounted for 683 deaths with 621 of them in GA.

Bicyclists, recreational boaters and people walking in front of trains notched 794, 808 and 831 fatalities, respectively.

So ... go flying and have a safe day!

The KR NEWSLETTER

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Editor and Publisher, Monte Miller
Evening and weekend tel: 940.566.5871
email: montmil@flash.net

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BACK ISSUES

The KR Newsletter maintains a database of selected articles from past issues. Printout available at \$7.50 US, \$10.00US Canada & \$15.00US Foreign. Copies of material available at \$1.00 per page, please include estimated postage. Articles over one page in length will be billed for amount due.

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Aileron Spar Installation

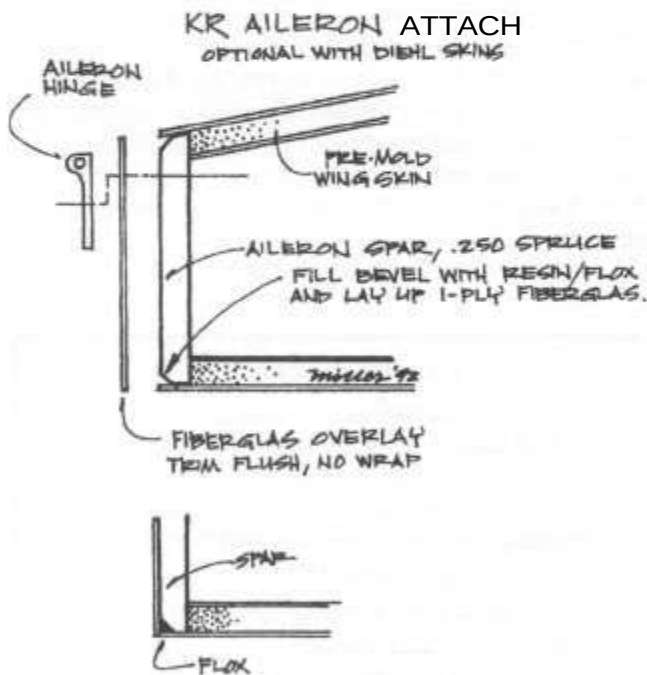
Tips for the Popular Diehl Wing Skins

Monte Miller, Editor • KR-2 N684LM

I can't stand to sand fiberglass layups, especially that vinylester resin ... it clogs sandpaper and is terribly slow going. I had held off doing the aileron spar installation in the premolded Diehl wing skins simply because of my dislike of sanding. Every builder has only so many hours of sanding within his personal capabilities and I was fast approaching my max out limits. Came up with a technique that is easier, strong and requires far less sanding.

During the aileron fabrication, the KR Builders Manual directs the builder to wrap the aileron sub spars with fiberglass and then feather sand and blend the layup into the existing wing skin. The builder's manual is a bit vague through this section so it's necessary to read between a few lines.

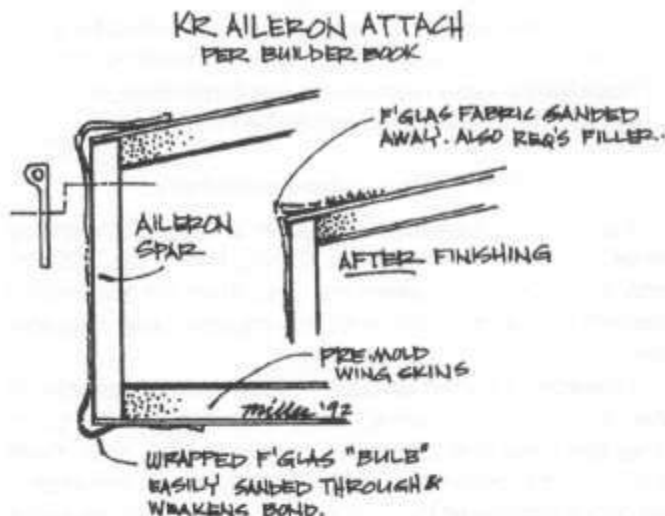
The sketches should explain all. I even used a mill file to dress the trimmed out fiberglass edges and eliminated sanding almost entirely. This doesn't save you from shaping the wing leading edge tapes. Can't escape sanding altogether.



As a reference, the following sketch describes the aileron spar attachment method as called out in the Rand KR Builders Manual. In reality, it is impossible to get the fiberglass cloth to make a tight wrap around a corner. The fabric wants to pull away from the very spot that its strength is most needed.

Remember, this spar attach technique works only in conjunction with the Diehl premolded wing skins; these

wing skins have a fiberglass layer on both the outside and the inside of the molded surfaces.



Some Additional Diehl WingTips

SPARS ... Besides doing the required bevel cuts on the tops of both the main and aft spars, you can achieve a much better wing skin fit by putting a small angle on the bottom of the main spar's leading edge. The manufactured transition from the thicker foam core area to the glass-only fiberglass spar cap area in the wing skins may have something to do with this. At any rate, the fit to the spar is better and provides a greater bonding surface.

AILERONS ... After cutting the ailerons free from the wing structure and while you're looking inside the wing to see if that epoxy-flox mixture really did bond to the wing skins, you may notice the skins, in the aileron area, sagging a small amount between the ribs - similar to the look of a fabric covered wing. Do not attempt to shape the aileron spars to fit the wing's wavy outline. Cut the spars straight and they will help pull the wing skin into alignment as you bond the parts together.

Same thing goes for that long piano hinge used for the aileron. Attach it to the spars straight and true. Attempting to eyeball match the hinge to the wing's upper surface can result in a wavy hinge line and increased resistance to control surface movement.

BONDING SKINS ... That vinylester resin "goes off" too fast to suit me. There's just not enough working time and too many things to check. I was fearful of running out of working time before I was satisfied with the bonding.

A fellow KR builder suggested bonding the trailing edge, tip, and leading edge *after* the top and bottom skins had been bonded to the spars. This idea worked well and allowed time to do a through flox job on the spars and ribs, taking care of the perimeter when the skins were solidly attached.

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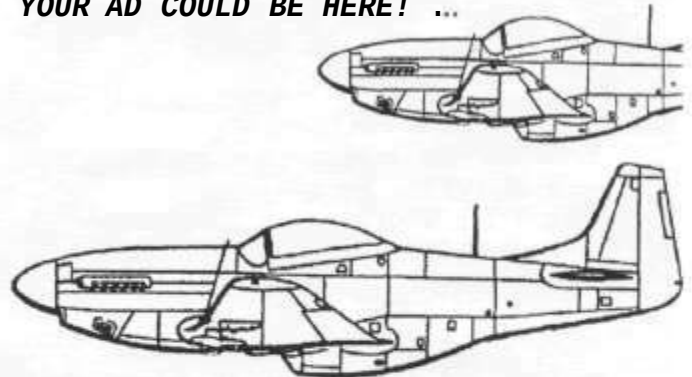
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WANTED - Any or all back issues of KR Newsletter from 256 thru 264 plus 267 & 268. Contact Jerry Pryce, 549 Tipperary Drive, Vacavill CA 95688. Tel: 707-447-4349.

FOR SALE - Hapi VW conversion. 1835cc with dual plug heads, alternator, starter and KR motor mount. Engine has tuned exhaust system, floatbowl carb, spinner and 52x48 Props, Inc propellor. Engine run-in by Hapi, zero hours since. \$3000. William Kirby, 618-298-2918 or emailGrandma2@accessus.net.

YOUR AD COULD BE HERE! ...



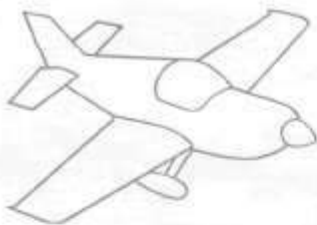
HELP • HELP • HELP

The mailbag of reader contributions is awfully dry! If you have not sent along a project report in some time, please consider doing so. Thanks a lot!

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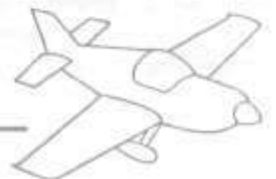


KR NEWSLETTER

624 West University Drive
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Issue 275 Aug 2000

*If you push the stick forward, the houses get bigger. If you pull the stick back, they get smaller
...for aivMe.*





NEWSLETTER

Rendezvous of Three Aviation Classics *EAA's B-17, Rand's KR-2 & Georgia's Bob Muse*



Robert Muse, Sr. pictured with his KR-2 N28RM and the EAA Boeing B-17 "Aluminum Overcast"

Isn't this an outstanding, once-in-a-lifetime photo opportunity? Bob Muse, of Marietta, Georgia, can justifiably be called the "Dean of KR Pilots" by virtue of his most probably logging more hours in his completely scratch-built Rand KR-2 than anyone else. His enduring support of many sport aviation fly-ins along with the annual KR Gatherings and his willingness to share his extensive knowledge with others has earned him the lasting respect of the KR community.

During a recent Georgia aviation event, the Experimental Aircraft Association's Boeing B-17G "Aluminum Overcast" dropped in at McCollum Field to visit EAA Chapter 268 and offered a bit of shade for Bob and his KR-2.

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First Flight for the Stan Mello KR-2

Stan Mello

917 Sleepy Hollow Road • Paso Robles CA 93446
Telephone 805-238-4841 • email melloflyer@hotmail.com

First flight for KR2-M, N62509, was the morning of May 27, 2000. Boy, what a thrill; this thing is quick and sensitive! Thanks to reading the flight reports in the KR News for all of these years, there were no surprises.

Takeoff was at 875 pounds gross weight. The air temperature was 68° F. Engine static RPM was 3000 with takeoff at 2900.

Rotated for lift-off at 65 mph indicated and climbed at 90. Due to rising engine temperatures, I then lowered the nose and increased speed to 100 mph.

After climbing to 2500 feet, I leveled off to allow the temps to drop. Power was pulled back to 2600 rpm but the temperatures remained at the upper limits. Flew for three-quarters of an hour and landed. Again, no surprises. Thank goodness, as I was nervous enough and didn't need any more! Six years of building was certainly worth it.



Coming at you, the Mello KR2-M displays its low frontal area, KR-1 style cockpit canopy and multiple drag reducing fairings. Very sleek.

Prior to the next flight, I reworked some of the baffling and installed a fence inside the cowling just in case there was some interior turbulence that was causing the high CHT temps at the rear cylinders. The temps were better on the next flight, but not good enough even with the power jet needle on the carburetor set full rich.

OK, what's with this thing? Dug out the Newsletters and started doing some research. KR Newsletter #171, August 1991, had what seemed a plausible fix. I threw away the VW "cool tin" and built new tin around the cylinder barrels and heads, according to Revmaster's recommendations. This made a great improvement on the next flight. However, overtime at full power settings and the temps would eventually rise to the upper limits.

While at Oshkosh this year, I had the opportunity to talk to Steve Bennett, of Great Plains Aircraft Supply, and he indicated that the Zenith carb jet in the bottom of the float bowl needed to be drilled out to 0.110; that's one hundred n' ten

thousandths of an inch. The temps are now low. In fact, on a cool day, the oil barely gets into the green and it takes a long time to warm up prior to takeoff. Looks as though I will be installing an adjustable air door for the oil cooler.

The numbers at this time are:
1835cc with 8.5:1 compression
Sterba 54X48 prop
900 pound Gross

Climb 2900 rpm and 900 fpm at 95 mph
Cruise 3100 rpm, 130 mph and 4.5 gph
Full throttle is 3200 rpm and 140 mph

Other preliminary figures are:

Best rate of climb is 95 mph and 600 fpm
Best angle of climb is 95 mph
Best glide is 85 mph

Definitely less bite in the propeller is needed to get the engine revs up. Approach speeds that seem to work well are 2500 rpm and 90 mph on downwind, 2000 rpm and 85 mph on base and 1500 rpm and 80 mph on final.

With no flaps, finals must be long and flat to prevent air speed from building. Flare at 70 and allow it to touch down at 65 mph and 1500 rpm - to help keep rudder effect positive and the elevator able to hold the nosewheel off and not drop it hard as the main gear touches.

I now have 35 hours on the plane and this works for me. However, I may change this technique if I find something that works better. Perhaps others may elaborate on their techniques.

And yes, the aircraft is still for sale even though I am having a lot of fun with it. See the classified section. This is my story and I'm sticking to it!



The "before" shot. . . before the hours spent installing those beautiful wheel and gear leg fairings on N62509.

ON THE RAMP

The Editor's Rumblings

Yes, loyal subscribers and faithful readers, it really has been awhile since you've received the most recent issue of the KR Newsletter. Each day, your anxious editor trudges uphill, both ways, through the snow and heat, to the postal outlet in hopes of finding a small scrap of news, perhaps a photograph, or maybe a construction report from a builder... anything to help him fill the pages of your eagerly awaited KR Newsletter. Surely, someone will help fill these empty pages?

OK, guys. It's not snowing in Texas and I never walk when I can ride nor do I ride when I can fly. However, the empty mailbox depression syndrome is true. In reality, like you, I'm also busy dealing with the demands of everyday life and understand that messing with these airplanes is a leisure time activity. Preparing a newsletter article probably ranks near dental work.

I still miss hearing from ya'll. Recall the dying mule skinner's last words in "Dances with Wolves"...

"Why don't he write?"

In an effort to help keep newsletter things on a somewhat even keel, I've deleted printing the month on each issue of the KR Newsletter masthead. The issue numbers are in their correct sequence and, yes, you will always receive twelve issues, although they might get stretched out a bit due to dry spells.

Anyway, publishing this rag is supposed to be a leisure time gig for me, too. At least it started out to be that way and rapidly became an operation requiring daily attention. Al'right, that's enough sniveling. . .

Next year, the KR Gathering returns to historic Grider Field at Pine Bluff, Arkansas. Tommy Waymack also returns as the experienced host for the annual fly-in.

Keep positive thoughts that the weather wizards will smile, granting CAVU for the week. During the 1996 event, a heavy-duty thunderstorm blew through on opening day Friday but Saturday and Sunday were great.

Interesting bit of Grider Field minutia... the editor's father-in-law did some WWII flight training here before transitioning into P51D's with the 3rd Air Commandos in the southwest Pacific. Small world. As additional 2001 KR Gathering information filters in, the KR Newsletter will keep you posted.

2000 Gathering Lake Barkley Winners

photos on pages 4 & 5

Steve Bennett - Best KR-1

Marty Roberts - Oldest Pilot, Best KR-2 and winner of the unofficial spot landing contest

Jim Faughn - People's Choice, Best Interior, Best KR-2

Bill Kirkland - Farthest Distance Flown (in a C-150!)

2001 KR Gathering Location Set

Return to Pine Bluff, Arkansas

Nominations from representatives of three different states were considered for the site of the 2001 KR Gathering. After a vote by those attending the annual Saturday night awards banquet, it was announced that Tommy Waymack will be the point man for next year's event in Pine Bluff, Arkansas.

Further details will be published in the KR Newsletter as they become available. Now ya'll get busy building!

1996 KR Gathering Results

Grider Field, Arkansas

Bobby Muse - Best Interior

Jim Faughn - Best KR

Martin Roberts - Spot Landing

Troy Petteway - Best Engine

Steve Alderman - Farthest Distance

Les Palmer - People's Choice

* * * *

Back to Work on KR-2

Builder Gets Back in the Saddle

Chris Collins

14414 N Dove Ln • Bluford IL 62814

Tel: 618-732-9831 • email: ccollins@ultronic.com

"I am finally starting work on my project. It's an early 1980's KR-2 that has been taxied but never flown. It's been sitting idle since 1990 or so.

The KR Newsletter comes in handy. I've studied every one, cover to cover. Keep up the good work."

The KR NEWSLETTER

is published monthly at

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Denton, Texas 76201

Editor and Publisher - Monte Miller

Evening and weekend tel: 940.566.5871

email: montmil@flash.net

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BACK ISSUES

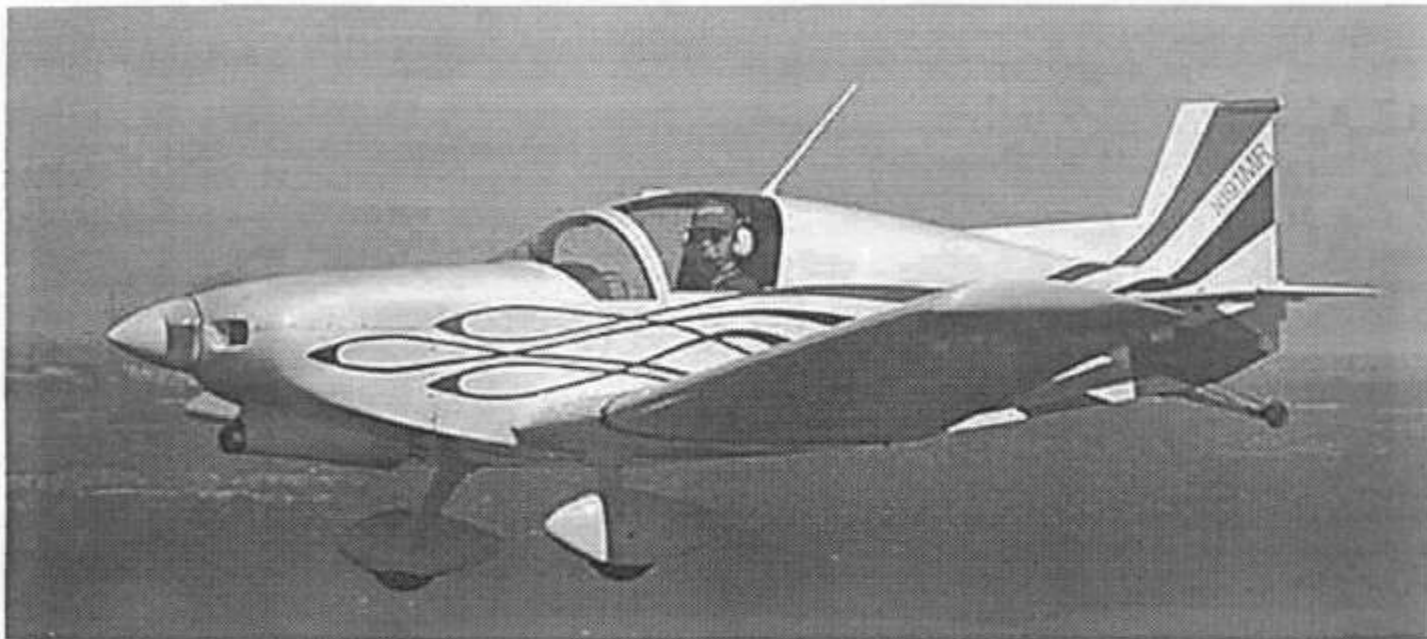
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Images of the 2000 KR Gathering at Lake Barkley, Kentucky

The 2000 KR Gathering is now history. It joins a line of other successful fly-ins hosted by dedicated, hardworking and unpaid volunteers such as this year's host, Dana Overall. In spite of some minor, last minute logistical setbacks and a bit of marginal IMC weather that bracketed both ends of the event, Dana and his crew presented yet another enjoyable, safe and well attended event.

Photographs and notes of this year's KR Gathering are graciously provided by KR builder Mark Langford, courtesy of his personal website. To view these photos and many more in color, explore information on the new KR AS5046 airfoil, learn about Corvair power for the KR, or to get updates on Mark's KR project, visit his website at <http://home.hiwaay.net/~langford/barkley2000/>



Resplendent in a new paint scheme, Tutsan Marty Roberts brings his O-200 powered KR2 alongside Jim Faughn and his KR2 for a bit of formation flying, Barkley-style. Digital image by copilot Mark Langford.



What every KR builder dreams about... Jim Faughn turns final for the Lake Barkley runway and the 2000 KR Gathering in his personal KR2. Weather fronts delayed some pilots but nice weather blessed the annual event.



Impromptu hangar flying breaks out in a variety of locations during KR Gatherings. Here, Steve Bennett, Terry Chizek, Martin Roberts and Jim Faughn swap stories when enjoying Terry's trigear KR2.

2001 KR Gathering will be at Grider Field, Pine Bluff, Arkansas

*Additional 2000 KR Gathering Photographs Available OnLine At
<http://home.hiwaay.net/~langford/barkley2000/>*



Terry Chizek flew in with his white over purple trigear KR2 and promptly took Gathering attendee Bill Kirkland for his first ever flight in a KR. Bill arrived in a Cessna 150 and left with the "Farthest Flown" award.



Steve Bennett, proprietor of Great Plains Aircraft Supply and VW engine guru, taxis to the active in his latest mount, a KR 1.5. Steve has an Ellison throttle body top-mounted on his GPASC Volkswagen engine.



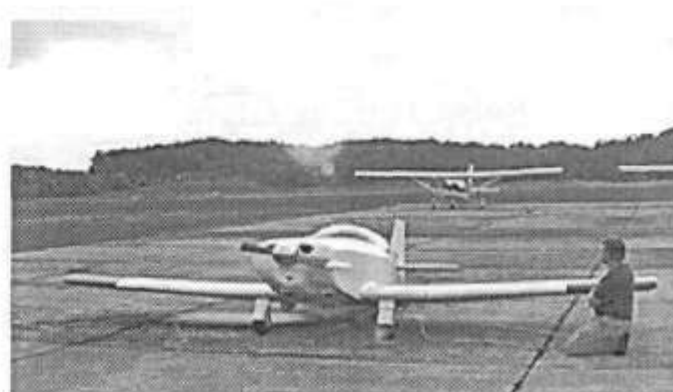
A pulse-quickenning blow out of a left side tire didn't slow Iron Man Marty Roberts for long. A mechanics creeper and a few willing hands had him back on the ramp in short order, repaired and ready to continue flying.



A Continental O-200 with C-85 pistons bumps up the compression on the Marty Roberts hotrod KR2. Turning the engine at 3100 rpm, Marty can dazzle the crowds with his high-speed passes. He gives a few rides, too.



Jim Faughn's KR2, N891JF, is a regular attendee at the KR Gatherings. The aircraft sports neatly faired wheel-pants and elegant rear-quarter cockpit windows. Jim is also the composer of the popular "We Are Flyers" song.



As the sun sets on this year's KR Gathering, a pilot takes a moment for some personal contemplation. Building and flying one's personal aircraft is the culmination of a extraordinary journey. Keep the spirit.

Gadgets, Widgets, and Whatchamacallits

Volume Three

by Todd Servaes

The Model Shop

Whether you call it the model shop or the hobby shop, with careful consideration, it can be a very useful source of tools and materials for a sportplane project. If you are one of the lucky ones who may have been involved with RC models as a lifelong hobby, this may be old news. However, if like me, you only had a passing boyhood fancy for models of any type, then this column is not only going to point out a tool and materials source for your sportplane project but a great dose of nostalgia.

Models are cool and I am a kid in a candy store where the candy won't rot your teeth.

Nostalgia aside, we are here to look for tools or components for a real airplane. We have to carefully consider what we choose to transfer from the model box to the hangar.

Zona Universal Razor Saw

When I first started my project, one of the tools universally recommended by experienced wood builders was a razor saw. I promptly went out and bought one of those for the interchangeable blade hobby kits and, contrary to the rave reviews from these other builders, I found the flimsy little saw to be worse than useless.

I was determined to find the utility my elders spoke of yet all I found were crooked cuts and bent saw blades. That saw will rest forever in the bottom of my tool cabinet.

During a recent trip to the model shop, I found the Zona Universal Razor Saw. This is the best \$5.00 tool I have ever bought. The sturdy little, wood handled, fixed blade, pull cut saw has really delivered the utility I was told about. Cuts are smooth and straight and it is a pleasure to use for any small or delicate job. Can anyone say corner blocks?

Balsa Trailing Edges

Straight, well shaped trailing edges can be a challenge in any wet lay-up composite construction. The standard procedure - a lay-up of one skin, then cut away a wedge of foam, fill the wedge area with an epoxy-flox mixture and, finally, lay up the other skin - is proven but full of opportunities for both surface irregularities and overall straightness problems.

All-wood airplane construction techniques and model shop materials give us an easy and accurate solution; pre-shaped balsa trailing edges. Many wooden airplanes use shaped spruce to achieve straight and accurate trailing edges. However, since we derive our structural

requirements from the glass and epoxy matrix rather than the wood, spruce is overkill. Balsa model airplane trailing edges are light, available, pre-shaped and are adequately tough when impregnated with epoxy and covered with fiberglass.

Suggested Procedure for Balsa Trailing Edges

- 1) Scarf joint the balsa trailing edges to required length.
- 2) Epoxy the balsa TE and foam in place.
- 3) Shape foam using guide ribs and TE as templates.
- 4) Clamp or temporarily glue a supported straight edge of wood or metal angle along the TE to add support and ensure a straight TE.
- 5) Apply glass lay-up to first side opposite the temporary trailing edge support. Allow to cure. Remove support and reattach to opposite side.
- 6) Apply remaining glass.

The result is consistently straight, smooth and reinforced trailing edges.

Small Streamlined Aluminum Tubing

As most already know, cylindrical objects are terrible sources of drag. Some are hard to avoid; OAT probe, fuel vents, pitot tube, antennas and more.

The small, streamlined tubing used for model airplane struts will make light and easy aerodynamic fairings for any tubing vents or simple pitot tubes by installing over the high drag round tubes. OAT probes are slightly more difficult to fair this way with the only caveat being that the streamlined tubing must have good contact with the probe to quickly conduct temperature changes.

Antennas present a problem because any fairing can reduce their effectiveness. A metal fairing would do so severely. Perhaps the solution is to simply construct the antenna from the small streamlined tubing. This should work very well as long as the length is matched to the frequency range needed.

* * * * *

Rand Robinson Address Change *Where to Send Your Money*

The commercial office location of Rand-Robinson Engineering, Inc. has been closed. Jeanette Rand will now operate the business from her residence.

Ya'll update your files to reflect the current business address of your favorite charity:

RAND ROBINSON ENGINEERING, INC.
7071 Warner Avenue #F, PMB 724
Huntington Beach CA 92647

Tel; 714-898-3811 • Fax; 714-890-1658
KRWeb site: <http://www.fly-kr.com>

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The KR Newsletter reserves the right to edit free ads.

FOR SALE - PRICE REDUCED - KR2, N3780B. Near complete conversion to tri-gear, lacks aileron cables, wing walk and wing close. 26 TT Hapi single-plug 1835 plus 200TT Hapi dual-plug 1835 available. \$7500 or will split off the spare engine for \$1500. Call Steve Buckley, 6-9pm Pacific Daylight Time, Tel: 510-656-3329 or email buckOO@earthlink.net.

WANTED - Help in locating and purchasing a fuel tank or fuel bladder that will fit inside my weepy fiberglass unit. Any ideas? Also wanting a good updraft carb for my 1600 VW engine. Contact Fred Sledge, 108 South Lelia, Guy-mon OK 73942. Phone or fax 580-468-3387.

WANTED - KR wing skins, forward and aft premold deck. Contact Arthur Cabral, 26320 9th St, Highland CA 92346 or telephone 909-864-3107.

WANTED - Completed KR2 with documented record of flight performance. Prefer fixed gear, 1835 VW power with dual ignition. Call or write to Ed Menges, 6223 Southwood, St Louis MO 63105. Tel 314-726-3085.

FOR SALE - Single place stretched KR-2. Volkswagen 1835 engine with CompuFire ignition. Diehl Ti-gear with Cleveland wheels and brakes, Wing tanks, KR-1 canopy. \$12,000. Contact Stan Mello, 917 Sleepy Hollow Rd, Paso Robles CA 93446. Telephone 805-238-4841.

FOR SALE - Brand new and still in original packaging! Ed Sterba 52x44 propeller, hub drilled for Volks. Offers to James Anderson. Tel: 425-228-8287. Renton WA.

FOR SALE - KR2 plywood and spruce kits. Wing attach fittings, bolt kit, alum tubing, channel, angle, plus KR2 plans. Alpha Aviation price in 1986, \$833.00, less plans. Any trades considered, also other plans. Let's get together. Sid Wooten, POB 34, Kaw City OK 74641. Tel: 580-765-3801.

FOR SALE - Original KR-2 Retractable Landing Gear assembly - complete with spring bar, gear legs, wheels, tires, brakes, etc., \$275. Continental O-200 crankshaft (GPU converted) in good condition, \$600. Continental A-75 crankshaft with fresh regrind to .010 under, \$600. Contact M. T. Sparks, 10232 Kit Carson Pl, Santee CA 92071. Telephone 619-448-4945.

WANTED - Any or all back issues of KR Newsletter from 256 thru 264 plus 267 & 268. Contact Jerry Pryce, 549 Tipperary Drive, Vacavill CA 95688. Tel: 707-447-4349.

FOR SALE - Hapi VW conversion. 1835cc with dual plug heads, alternator, starter and KR motor mount. Engine has tuned exhaust system, floatbowl carb, spinner and 52x48 Props, Inc propeller. Engine run-in by Hapi, zero hours since. \$3000. William Kirby, 618-298-2918 or email Grandma2@accessus.net.

FOR SALE - 1835cc VW engine, firewall forward, with only 4TTE. Dual ignition, 52x46 prop and motor mount. Simply bolt to your firewall, plumb it, wire it and go fly it. \$2950. Also Corvair short block with std crank and OT10 cam. Rods and front cover completed, all by William Wynne. Have Wynne Corvair engine mount with trigear bracket for KR-2. All for \$1000. Sorry, will not part out. Mike Barbez, message at 712-778-2449 or email: msgtlg@netins.net.

FOR SALE - KR2S taildragger modified to single seat, approx 50% completed. Electric elevator and aileron trim. Includes wing skins, deck and canopy kits plus Cleveland brake package. \$14K invested, all for \$7000. Call Wes Hennis, 727-526-6596. St. Petersburg FL.

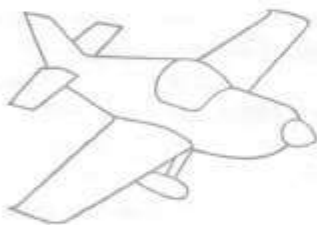
FOR SALE - KR2 Project. Fuselage widened 2", taildragger sits on Diehl gear. Controls in, hydraulic brakes, wing stubs covered, flaps installed, most tail feathers on. Diehl wing skins still in box. Older 2100D Revmaster engine with 17 TT, mount and cowl. Some instruments, many parts, materials, AN hardware, all KR Newsletters. Lost my medical. #3500. Contact Ted O'Dell in Milan MI. Email tjodell1@msn.com or call 734-439-2439.

FOR SALE - 1998 KR-2S Tri-Gear with 70hp 2180cc GPASC VW and Bosch 009 ignition. Cleveland brakes, wheel pants, 12 gal tank. Dual headsets, intercom, ICOM IC4 Comm and Garmin 195 GPS. Twice raced in Copper-state Dash. Cruises 140@3200. Always hangared, Looks good and runs great. 85 TTSN. See KR News, Nov 98. Asking \$35K but will accept \$16K. Jeff Bryson, Bakersfield CA. Telephone 661-665-9449.

ESTATE SALE - KR-1 project and A/C many parts. See component listing in issue 274 - KR Newsletter.

NOTICE TO ADVERTISERS

If your item has been sold or your ad requires updating, please contact the KR Newsletter with the details. Telephone, snail or email will work just fine.

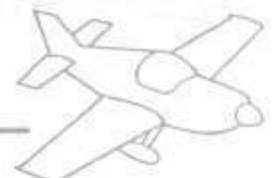


KR NEWSLETTER

624 West University Drive
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Denton, Texas 76201
Issue 276

*The KR Newsletter comes in handy. I've studied every one, cover to cover.
Keep up the good work.*

-Chris Collins





NEWSLETTER

Rand "Bella Italia" KR-2S *Sleek and Sexy Tri-Gear with a Ferrari Flavor*



Alessandro "Albert" Pecoraro

Via Cavallermaggiore, 22 • Torino 10139 Italy • email: gryphonflier@earthlink.net

As the homebuilt aircraft industry has grown within the United States, there are now few material obstructions in the way of an individual who desires to build their own airplane. A simple phone call brings your desired kit, parts or components within a couple of days. It's all so easy.

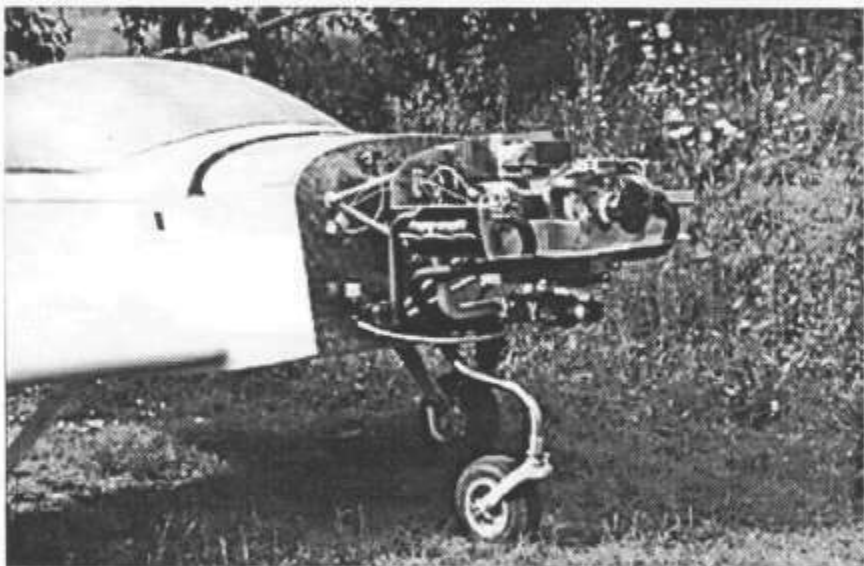
Building an experimental aircraft in other parts of the world can often be an expensive exercise in frustration combined with long waits for needed supplies. It requires a very unique and dedicated individual to complete a task of this magnitude. Meet Albert Pecoraro and his KR-2S...

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

Details, Details and More Details Make this a KR-2S for *Spectacular*



Fuselage carries the Rand-Robinson fuel tank in its stock, plans location. However, the entire forward deck and fuel tank assembly is removable - held in position with full-length hinge strips and several bolted attach points.

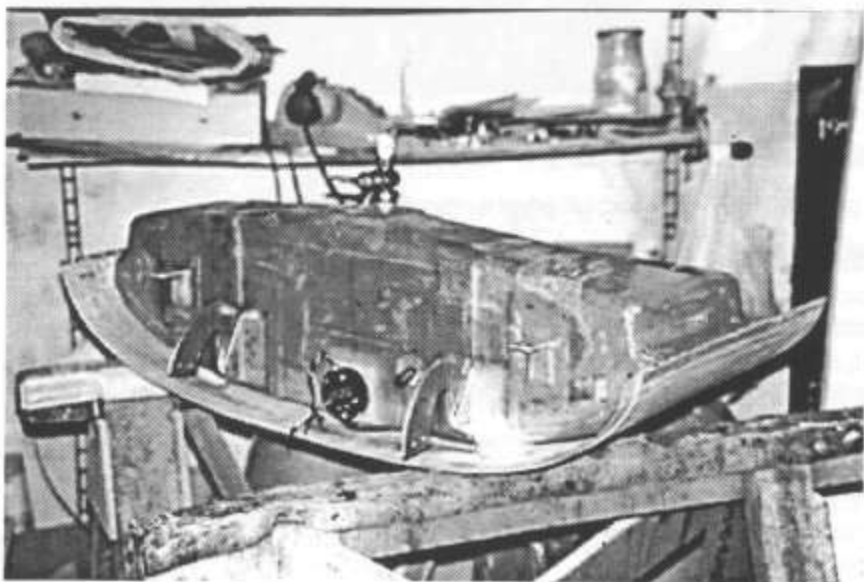


Firewall has a beautiful, engine-turned metal finish that highlights Albert's impressive power plant installation. The 2180cc Volkswagen is a Type 1 from Great Plains Aircraft Supply and draws its fuel through a RevFlo carburetor. A four-into-one exhaust system clears the nose gear leg as it exits the cowl below the pilot's position.

The few remaining cecoc indicate engine baffling is nearing completion.

Builder's flawless attention to multiple details of firewall forward installation is typical of entire Pecoraro project.

A German engine, supplied by an American firm and installed in a U.S. designed kit aircraft built in Italy. Truly a global undertaking.



The 2S's forward fiberglass deck is bonded to the fuel tank with an epoxy-flox mixture. Entire assembly is secured to airframe with hinge strips and bolted hard points. It is removable for service to all the aircraft's forward systems, including rudder controls.

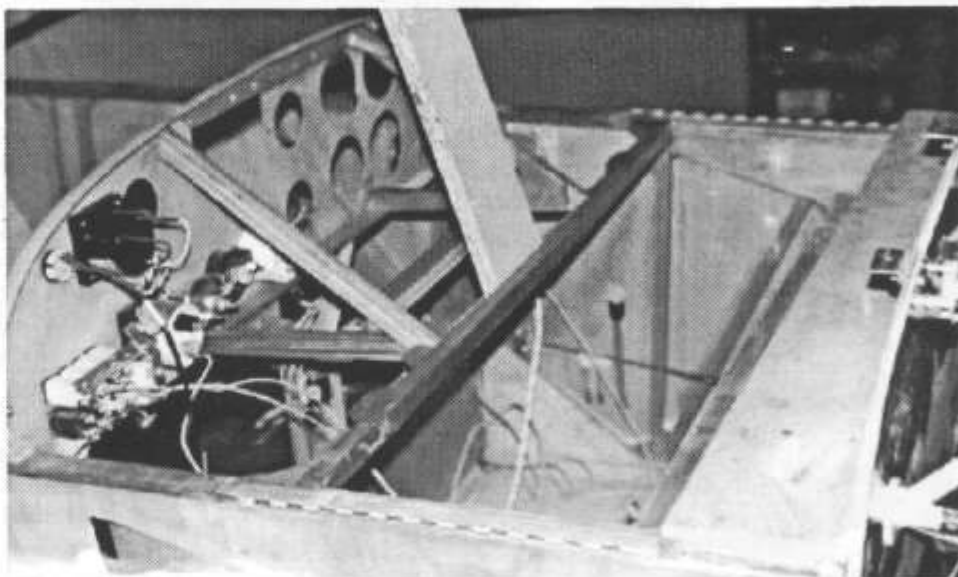
Photo reveals: 1) aluminum tank mount brackets that will bolt to a reinforced fuselage crossmember; 2) hinges for forward opening canopy; 3) electric fuel quantity sender; 4) reinforced fuel sump mounting a fuel valve and partially hidden vent tube; 5) AN fitting for...?

Builder Modifications Provide for Ease of Service Access

Spruce structure, reinforced with plywood gussets, is forward of instrument panel and will mate with fuel tank mounting tabs.

Note the small doublers drilled to accept tank hold down bolts, the longeron-mounted hinge strips, plus the firewall-mounted tabs to secure forward deck/fuel tank assembly.

Alec states that the slab of particle board is only a brace and not part of the airframe.



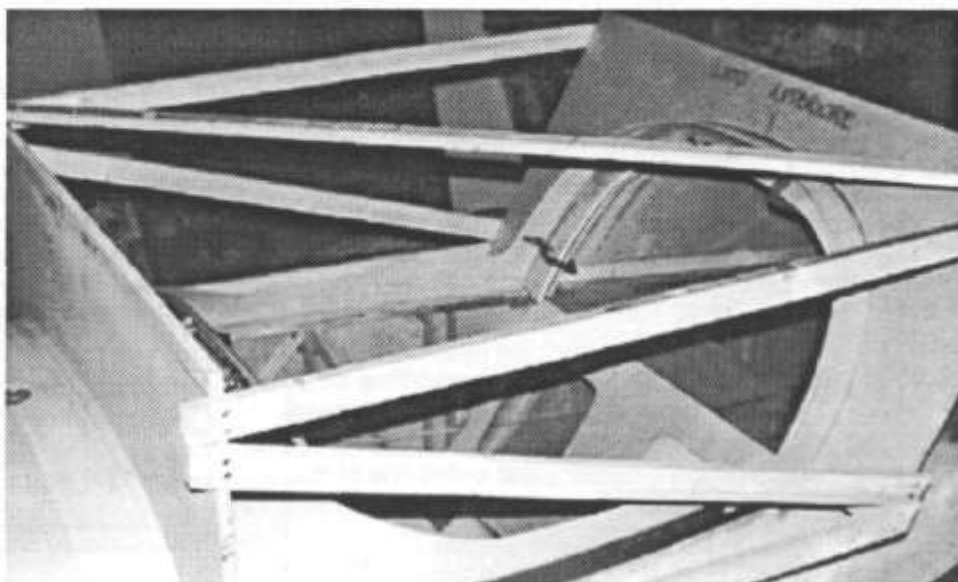
Builder hard at work during the initial panel wiring chores. Some builders become quite anxious when contemplating multiple instrument plumbing and electrical connections but solid help is available in the Tony Bingelis four book series available from the EAA or other av book suppliers.



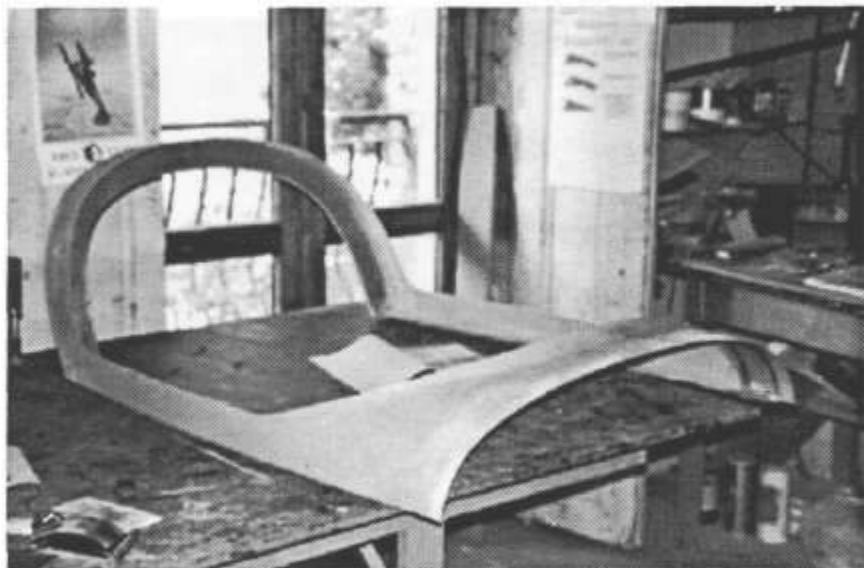
By itself, the fiberglass frame for the KR's canopy can be pretty flexible. To solve the problem of matching the canopy frame to the forward and aft deck profiles, Alec developed a fairly simple jig.

Note how the two particle board formers match the Rand premolded components. Interior canopy frame formers are then bonded to the pre-mold frame to secure its required shape.

This same canopy jig is then used during the canopy's interior framework and plexi bubble installations. Details in next photo...

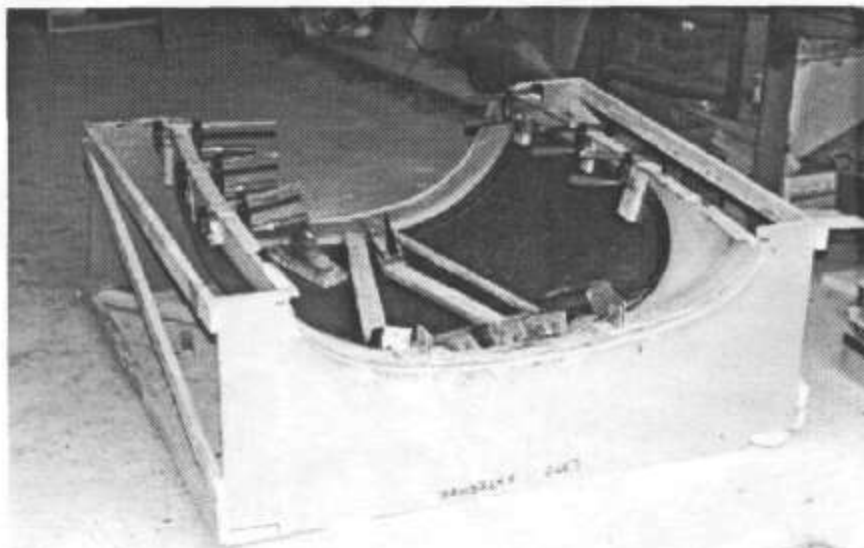


Simple Jig Insures Fit of the Pecoraro KR-2S Canopy



Following complete epoxy cure, the jig and canopy frame may be removed from the airframe for installation of additional components.

Of note is the relatively lightweight nature of both the aft canopy frame former and the canopy frame rails. Experience has proven that these parts, when combined with the completed frame rails and a fully installed bubble, create a very rigid assembly. Resist the urge to overbuild. You'll only add extra weight.



After the canopy's interior formers are secured, the jig is removed, turned upside down, and utilized again to position the remaining components of the KR-2S canopy assembly.

Photo reveals canopy bubble in place along with continuing fit up of the canopy rails, forward hinge components, and aft positioned overhead canopy latch.

Careful preparation of the canopy jig will be critical to the overall final conformity and finish. Planning, patience, and lots of clamps-both simple and improvised-will also come in quite handy.

Tail Feather Hinge Tip for the KR

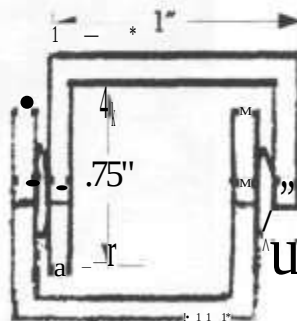
John Weikel

P.O.Box 2384 • Kerrville TX78029 • Tel: 830-895-1285 • email: jandd@maverickbbs.com

The tail feather hinges for the KR aircraft are made from one-inch aluminum channel.

Install the hinge components by using a 3/16" diameter rod which will pass through and align the hinge parts. Glue the hinge halves in place using epoxy mixed with a bit of cotton flax. When the epoxy has cured, drill the required bolt mounting holes.

Use backing plates on the spars and install one of the hinge halves using two bolts to prevent hinge movement and possible control lock up.



AN3 blunt hinge pin with washers to prevent galling of aluminum parts.

Vinyl Ester and Epoxy

How to Bond One to the Other

Rick Junkin

St. Charles MO • EagleGator@aol.com

I spoke with Dan Diehl about whether vinyl ester resin would bond to epoxy or vice versa, and his answer was that either way will work with the proper preparation.

Here's what he said about each:

Vinyl ester laminating resin is "air inhibited" during cure, which means that the surface of the resin exposed to the air does not completely cure. This is the reason why your sandpaper gets gummed up so quickly when sanding a vinyl ester layup. When used as a laminating resin for multiple layups, this characteristic allows successive layups to essentially "melt" into the previous layup and provides for a very homogeneous finished product. However, epoxy will not bond to this surface.

You've probably heard the story about one KR-2 builder who tried to put his Diehl wing skins on with epoxy, and they ended up just peeling off the spars. Dan said that in order to get the epoxy to bond, you have to sand all the way down to the glass fiber, removing all of the uncured vinyl ester resin.

The mistake most people make is not removing enough material when performing this process. Dan said you have to remove at least .002-inch of material to properly prepare the vinyl ester surface for epoxy to bond to it. The other option here is to use peel ply when you do your final vinyl ester layup, as the resin beneath the peel ply will be sealed from the air and will fully cure. Epoxy will bond to this fully cured surface.

Epoxy has its own unique curing properties. The surface of an epoxy layup develops a "blush" which must be removed before anything will bond to it. He recommended using only water to remove this surface material. Acetone will not remove it, it will just spread it around, kind of like trying to clean up oil with a wet rag.

The epoxy surface must also be well sanded before vinyl ester will bond to it. In addition, it also must be sanded for another coat of epoxy to bond to it. Again, using peel ply will leave a surface ready for bonding as the blush will have formed on top of the peel ply.

Given his choice, Dan said he would rather put epoxy over a properly prepared vinyl ester surface. He gave the example of a boat he repaired using a vinyl ester patch. The boat, constructed with a polyester resin, is now beginning to show signs of wanting to leak in the area of the repair. For the purpose of this discussion, he said that both polyester and vinyl ester resins were about the same. He said he will have to completely remove the patch, and plans to grind away about half of the three quarter inch thickness of the bottom of the boat in preparing it for a new patch using epoxy. He also said that he uses epoxy to seal the wood pattern molds he uses in his

business. The epoxy coating is waxed before he starts his layups, and the vinyl ester layups separate out of them easily.

Things To Remember

when preparing surfaces for bonding

1. "Make glass dust" with your sand paper. Remember that initially, your sand paper only makes about 10% contact with the surface you are working on due to the properties of the grit surface. You will need to do a substantial amount of work to remove enough material to prepare the surface for a good bond.

Since you will be adding another layer of glass that will be bonded to the material you expose, strength will not be compromised. If you are worried about it, add an extra layer of glass tape at the joint (my words, not Dan's).

2. Anticipate where you will be bonding parts of different composition together and use peel ply in those areas to save yourself some work and worry.

3. DON'T FORGET TO REMOVE THE PEEL PLY! There are horror stories about builders who have done multiple layups and forgotten to pull the peel ply off, causing a delamination and structural failure. Don't let this happen to you.

• HELP WANTED •

Builder progress reports, flight reports, photos, tips. Send to the KR Newsletter. Share experiences, ideas, motivation.

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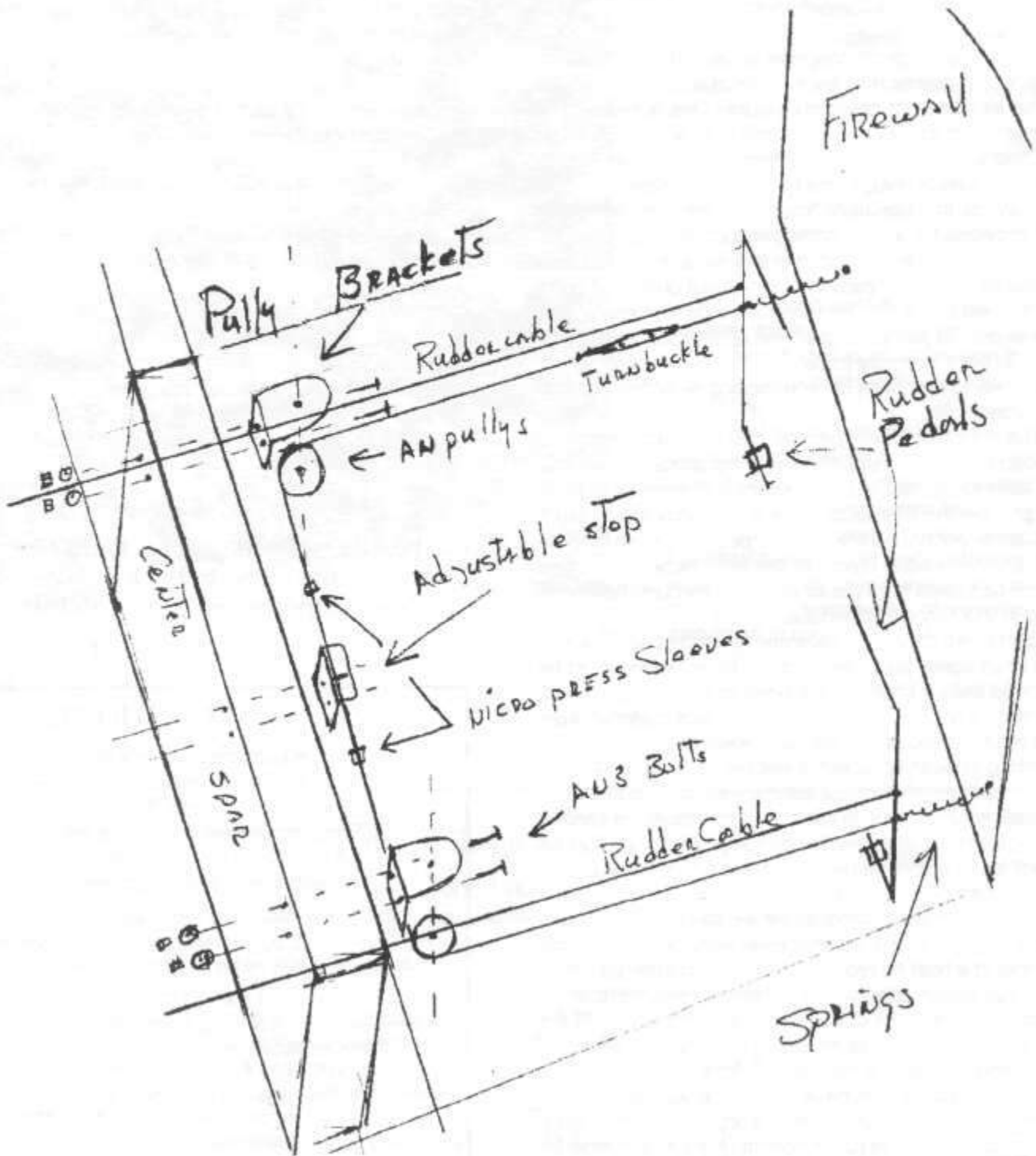
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Rudder Cable Balance System

Stan Mello

917 Sleepy Hollow Road • Paso Robles CA 93446 • Tel: 805-238-4841

Cable balance system removes the stress from the rudder horn, particularly if you have toe brakes on your rudder pedals.



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FOR SALE-PRICE REDUCED - KR2S taildragger modified to single seat. Approx 50% completed. Electric elevator and aileron trim. Includes wing skins, deck and canopy kits plus Cleveland brake package. \$14K invested, all for \$5000. Contact Wes Hennis, 727-526-6596, St. Petersburg FL.

FOR SALE- KR2 project. Fuselage widened 2", taildragger sits on Diehl gear. Controls in, hydraulic brakes, wing stubs covered, flaps installed, most tail feathers on. Diehl wing skins still in box. Older 2100D Revmaster engine with 17TT, mount and cowl. Some instruments, many parts, materials, AN hardware, all KR Newsletters. Lost my medical. \$3500. Contact Ted O'Dell in Milan MI. Email tjodell1@msn.com or call 734-439-2439.

FOR SALE - 1998 KR2S tri-gear with 70hp 2180cc GPASC VW and Bosch 009 ignition. Cleveland brakes, wheel pants, 12 gal tank. Dual headsets, intercom, ICOM IC4 Comm and Garmin 195 GPS. Twice raced in Copperstate Dash. Cruises 149@3200. Always hangared. Looks good and runs great. 85TTSN. See KR News Nov 98. Asking \$35K but will accept \$16K. Jeff Bryson, Bakersfield CA. Telephone 661-665-9449.

ESTATE SALE - KR-1 project and many A/C parts. See component listing in issue 274 of KR Newsletter. This is last month for ad to be published.

FOR SALE - Tri-gear KR-2, less engine. Cleveland wheels and brakes. Aircraft has cowl and all controls, including throttle, mixture, carb heat. Canopy, aluminum fuel tank, motor mount, trim tab cables. Instruments include compass, alt, air speed. Spinner and Sterba 52x48 prop. ELT. Asking \$2000. J.A. Wynne at 314-521-2572 or email to olds4423@aol.com.

FOR SALE - Posa Carb, new in box, \$100 or some trade. KR gear retract parts, less springbar. Make offer or trade. Contact Bobby Laird, 209-392-3436.

WANTED - Set of KR2-S plans with latest revisions. Please contact Randy Eakle, 3918 North Vincent, Peoria Heights IL 61614. Tel 309-688-4378 (between noon and 2:00pm) or email to annstreet@365.com with price and details.

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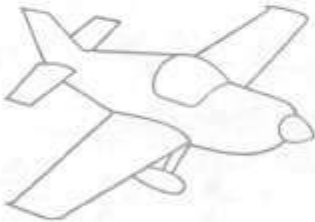
FOR SALE - KR-2S, N197DB taildragger. Featured in issue 272 KR Newsletter. 100 hp NSI Subaru 115 TT. Dual, crank fired ignition (single plug). 50 amp alt., dual fuel pumps, dry sump oil system. Sterba prop and spare Prince P-tip prop. Diehl main gear, Cleveland wheels and brakes, and flaps. VAL 760 com radio, Terra 250 mode-C transponder, GPS III Pilot (snaps onto panel), ELT, intercom and two headsets. New tires. Fuel burn 4.5-5 gal/hour, auto fuel or 100LL. 12 gal main tank & 6 gal in each wing. All logs and manuals maintained. Selling to get bigger plane. Glenn Matthews (706)587-3563 or email TGM007PI@aol.com.

The Leader In Recreational Aviation



members. Whether you are selecting a project or getting ready for a test flight, one of these programs is right for you. Expert advice is here for the asking. **Best of all, it's part of your membership privileges.** EAA wants you to have a safe and reliable aircraft. Members who participate in these programs receive discounts through EAA Aircraft Insurance Plan coverage that might not otherwise be available. Another great source of valuable members-only information is EAA's safetypdata.com. To learn more about these programs available only through EAA, contact the EAA Safety Programs Department at 920-426-6864 or e-mail at safetypprograms@eaa.org.

Let EAA Guide You Through Your Project!



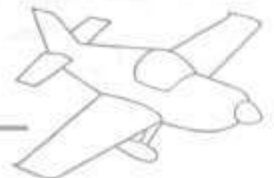
KR NEWSLETTER

624 West University Drive
PMB 199
Denton, Texas 76201

Issue 277

Flying in an aeroplane with only a single propeller to keep you in the air. Can you imagine that?

- Captain Jean Luc Picard





NEWSLETTER

Charlie Tennstedt Modified KR-2 *Sunshine State Flyer is a Single-Seat Beauty*



Charlie Tennstedt

2537 Cross Country Drive • Daytona Beach, Florida 32124 • Telephone 904-761-9537

This issue, the cover of the KR Newsletter features Charlie Tennstedt's beautiful rendition of the popular Rand KR-2. A proven flyer, the aircraft continues to be modified in an effort to meet the builder's demands. Details on the next page...

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

C.R. Tennstedt Modified KR-2

My KR-2 kit, purchased in 1985, was completed and first flown in January of 1997 after twelve years of part-time work. It's powered by a Revmaster 2100 Volkswagen conversion that swings an Ed Sterba propeller. I have accumulated about sixty flight hours on the aircraft.

The engine is fed by an Ellison throttle body. Future plans are to develop a mixing chamber (plenum) to install between the intake and throttle body for a more even distribution of the fuel mixture. Presently, the right side cylinders runs rich while the left side runs lean.

The aircraft features a fixed windscreen and a sliding canopy. Canopy height and configuration problems led me to finish the aircraft in a single-seat form. All dimensions are standard KR plans measurements. Dan Diehl pre-molded wing and tail skins were used.

The completed aircraft is heavy and has some undesirable pitch tendencies. With the CG well forward, the tail appears to stall out. In an attempt to correct the condition, I have enlarged the area of the stabilizer but have not yet flown the modified tail as I am still sorting out the carburetor installation,



Your KR Newsletter editor built his Dash Two, like many others, in an ever increasingly cramped double garage. It's very difficult not to lust after Charlie's spacious, clean hangar!

KR's Over Texas Fly-In

April 27-29, 2001 • Thompson Field • Canton, Texas

The FlyIn is on for April 27th thru 29th at Thompson Field, Canton Texas (N 32° 36.967', W 095° 52.117'). This is a hard surface with a clear approach at both ends, with a row of trees down the north side of the runway. The airport is a private field about 50 miles east of Dallas and two miles north of I-20. If driving, take Hwy 859 north from I-20 towards Edgewood. Turn east on Hwy 3119. There is a big, 4-bladed WW II propeller sign at 3119. It's worth the trip just to see the sign. There are plenty of big hangars for your airplane.

This is going to be a camp out so bring your tent, trailer, motor home, plane or whatever. I was told that this is also the weekend for the claimed US's largest trades day, The Canton Texas Trades Days. If that is the case, I was also told there would be scant motel space as they are often booked months in advance. We have offers on site for sleeping in some insulated hangars. Bring your air mattresses, cots, sleeping bags, whatever.

There are shower facilities available. We will serve all meals on site. So, if you get sick, too bad... you'll

have to eat our stuff anyway! We have some KR guys who have offered to cook. We will just hope that their cooking is as good as their airplane building.

Arrivals will start Friday afternoon. We will have dinner Friday night, a Saturday morning pancake breakfast, grilled burgers for lunch and probably smoked beef and chicken for Saturday night. We may have a Country band Saturday night.

We will have a swap meet so bring all of your don't wants and sell or trade for your wants. We're going to talk KR's too, so bring your show and tell stuff and if you have any questions, bring those, too.

Kerry Miller and Curtis Wright (*that's right, Curtis Wright. He's the Wright I know*) said they may have a little composite workshop and show how to vacuum bag fiberglass components.

This FlyIn is for anyone from anywhere. If you have the time and desire, we would like to have you. If you have any questions or suggestions, other than where I can go, email me, Larry Howell, at laheze@aol.com.

Confession is Good for the Soul

Bonds - Not the Matrimonial Kind

Sidney M. "Sid" Wood, Jr.

31010 Point Lookout Road • Mechanicsville MD 20659
swood@mail.tqci.net

I'm writing in regard to the article in the KR Newsletter, Issue 277, "Vinyl Ester and Epoxy - How to Bond One to the Other" by Rick Junkin. Rick mentions the story about one KR-2 builder who tried to put his Diehl wing skins on with epoxy and they ended up just peeling off the spars.

I've told this story to lots of folks at Oshkosh, Sun N Fun, Fly-Ins, EAA Chapter meetings and just about anywhere else I can get someone to listen. It is a true story -
I am that builder I

The original instruction sheets, which Dan Diehl sent with the wing skin kit, listed several epoxy brands that could be used. I had lots of Saf-T-Poxy, which was also listed, so that is what I used.

The day after I had finished attaching the skins, my brother-in-law came over for a visit. As we stood around admiring my handiwork, we heard a little tick. Curious. Why would a new wing give a little tick? Then, it did it again.

I gave a little tug on the horizontal stabilizer skin at the aft spar. The whole skin peeled off with minimal effort as did the rest of the skins! The epoxy had bonded quite well to the wooden spars, but absolutely nowhere on the skins.

In our telephone conversation, Dan was quick to state that his instruction sheet was all wrong. I needed to use vinyl ester resin. Dan sent me two liters of vinyl ester resin and some MEKP catalyst that same day. I sanded off the cured epoxy on the spars and reattached the wing skins using vinyl ester resin without further incident.

I have done several experiments with bonding epoxy and vinyl ester resin structures. I have also consulted several chemical engineers and read a few books on the subject. Here is what I have found.

Without any particular surface preparation, vinyl ester will not bond to a cured epoxy surface; nor will epoxy bond to a cured vinyl ester surface. One problem is the "blush" that Rick refers to. Actually, the blush is a film of wax that has formed on the epoxy surface.

Epoxy manufactures blend a small quantity of the wax in the epoxy resin. The curing epoxy resin is hygroscopic; it will absorb moisture from the air. Vinyl ester resin will do the same. The absorbed water will interfere with the resin cure and degrade the ultimate strength of the epoxy. The wax film prevents moisture absorption during the cure process. You cannot make a viable bond to a wax surface. Remove the wax film and the vinyl ester will bond to the cured epoxy surface. This vinyl ester/epoxy joint will have approximately 75 percent of the peel or

shear strength of the same epoxy-epoxy joint or vinyl ester-vinyl ester joint. It's a polymer molecular mismatch thing.

You can get laminating epoxy resin from Aircraft Spruce that does not contain wax. You must lay up another ply right over the last one, put on the peel ply, vacuum bag or whatever to protect the curing epoxy from moisture. The same goes for the vinyl ester resin that contains no wax at all.

Dan's recommendation to sand all the way down to the glass fiber, removing all the uncured vinyl ester resin will work, but you run the risk of taking out more glass than you realize. True, you can put all manner of glass cloth on the leading edge seam but you cannot put extra cloth on that critical bond between the spar and wing skin. You cannot put any cloth on the trailing edge seam.

My recommendation is to use the same family resin for bonding as the original part was made with. If the wing skin was made with vinyl ester, then use vinyl ester to glue that skin on to the airplane. What is the hang-up with having to use epoxy for everything? The vinyl ester joints will be as strong as you can get. The vinyl ester is less than half the price of epoxy.

For wing tanks, the vinyl ester is fuel-proof. Epoxy will resist gasoline but not the alcohol and butane found in most auto gasolines.

The down side is the styrene fumes from the curing vinyl ester will turn your shop into a gas chamber. You must use a charcoal filter or fresh air mask when working with the catalyzed vinyl ester resin. Fresh air ventilation is a non-negotiable must have. Of course you must use common sense precautions like protective gloves and eye protection. Forget the barrier creams. These will wear off in a few minutes. Guess where they wear off? You got it - right on the material you are handling. Barrier creams work just like wax (and the oil in your finger prints) to prevent glue bonding. Allergic to latex? Get the vinyl examination gloves at pharmacies, grocery stores and large hardware stores. They come in four sizes. Get the non-powdered type if you are allergic to the talcum powder often used.

One last parting shot... Save yourself, literally, a lot of lost time and wasted material on *guess and by golly* approaches. Attend one of the hands-on training sessions for composite construction offered by SportAir in partnership with EAA. Go to www.eaa.org and it will take you right to it. Construction techniques, safety considerations, sound advice and practice with experienced instructors are well worth the nominal price. Can't get to a session? Check out the free mini-sessions at Oshkosh and Sun-N-Fun. Experience is the name we give to our mistakes, if we survive them.

Build Safe, Fly Safe.

Builder and Pilot Support Aids Bill Gaudlip in First Flight of KR-2

Dedicated Builder Completes a Long-Term Project in Style

William "Bill" Gaudlip

919 Barn Street
Hooversville PA 15936
Tel: 814-798-2320
bgaudlip@lenzlink.net.

It's been a long time coming, but I finally did it! Finished my KR, that is, after eight and a half years of intensive off and on work.

It all began in 1991. I received my airworthiness certification for N839BG on June 16, 1999. The first flight was made on August 28, 1999, by my test pilot, Barney Custer. The flight was uneventful. However, we did find that we needed



Bill Gaudlip shows off his completed KR-2 at the Somerset County Airport Fly-In.

to shim the right side of the engine mount to compensate for P-factor and torque as the test pilot needed full left rudder to maintain level flight. This situation left no rudder for maintaining coordinated turns. After these adjustments were made, the turn coordinator ball returned to center and we've got proper rudder travel for the turns.

Without the support of my local EAA Chapter 633 Tech Counselor, John Hankinson, the plane would still not be finished. John contributed four years of hands-on labor and ideas to the project.

As those of you who have read the July 1997 KR Newsletter know, the airplane has gone from a taildragger configuration to the present Diehl Tri-Gear. Seeing Bobby Muse's KR at Oshkosh, plus my slight mishap on a runway, were the deciding factors in making this change. Taxiing is now a breeze and the overall visibility is greatly improved. By the way... beautiful plane, Bob!

My KR sports a scratch-built 2180cc Great Plains VW turning an Ed Sterba prop. The engine features a Zenith updraft carb, single Slick magneto ignition and carries a full electrical system. It has an empty weight of 672 pounds and a basic VFR panel. A 4.5 gallon header tank is fed by two 7.5 gallon wing tanks. I use a King KX97A for tower communications and a Pilot III GPS for navigation. A nav-strobe light kit remains to be installed.

The completed aircraft is true to the basic KR2 plans as far as the airframe is concerned. The only pre-molded parts used were the cowling and canopy bubble; everything else was wet lay-up on foam. I used the Saf-T-Poxy II system with a pump dispenser for the fiberglass application.

I found the canopy frame component to be one of the most difficult parts to produce. A custom turtleneck, more square in shape, will accommodate a 6'2" pilot or passenger. Although I am only 5'10", I can sit in the left seat with my Dave Clarks and have plenty of headroom. This change was made after sitting in several other KR's and finding them to lack sufficient side headroom.

For those of you building or contemplating scratch-building a KR2, I found that a difficult part of construction was engineering custom components of the aircraft, such as the control sticks, and fitting everything under the cowling. Thanks to the KR Newsletter, I was able to totally rebuild my dual control sticks using the ideas and plans provided by another builder.

Keep track of your progress with pictures and written documentation. When the FAA airworthiness inspector comes to check you out, the first thing he'll want to see, before he even looks at your plane, is your paperwork. Dot your i's, cross your t's and make sure you have that important weight and balance form.

Other than the test pilot, who is also a corporate pilot and CFI, I have been able to log only 0.7 hours in the plane with him. That's not much time for a low-timer like me to be comfortable with solo. The plane is very responsive and takes a gentle touch on the stick. I'm looking for anyone out there with a finished and flying KR2 that would be able to help me in getting some dual time in their machine or mine. I want to play it safe and get comfortable so as not to do anything stupid. If any one can help me out with this matter, I'd be forever grateful.

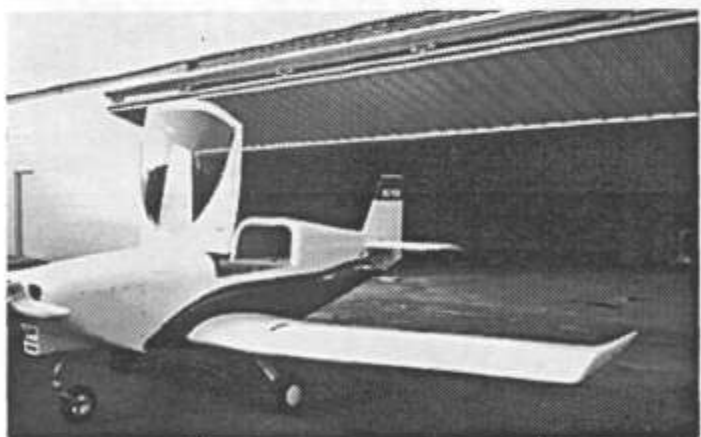
Gaudlip TriGear KR-2 N839BG



Roll out for the first flight of the Bill Gaudlip KR-2.



A low sun angle casts deep shadows as test pilot Barney Ouster prepares for the first flight of N839BG. EAA Tech Counselor John Hankinson and builder Bill Gaudlip assist.



Custom built, forward-hinged canopy mates with a widened turtledeck and provides adequate headroom for tall pilots. Cowling has a built-in landing light above air intake.

Overall, I'm thrilled to death with the way my project finished up and I'm looking forward to getting in the air. To those of you still building or just thinking about building, I know you've heard it a thousand times but just keep pecking away at it. Never give up and someday your dream, like mine, will come true.

KR FATHERING 2001

Sept 21-23 • Pine Bluff AR

Fly-In Director, Tommy Waymack
870-535-3294 or blindate@seark.net

• LODGING •

Best Western Pines 800-528-1234 or 870-535-8640

Hampton Inn 800-HAMPTON or 870-850-0444

mention you are with The KR Gathering

Tentative KR Gathering 2001 Schedule

Friday, Sept 21 - Arrivals and hangar flying

Saturday, Sept 22 - Flying, Demonstrations, Judging

Sunday, Sept 23 - Farewells and departures

It's not too early to begin planning for your trip to the 2001 KR Gathering in Pine Bluff, Arkansas. Veteran Gathering host and Air Boss Tommy Waymack will be providing additional fly-in information. Start blocking those vacation requests right now!

• • • • •

FREE BBQ at Sun n' Fun

Steve and Unda Bennett of Great Plains Aircraft Supply will be hosting a Customer Appreciation BBQ

Monday, April 9th, 5:30pm on the field at Sun n' Fun.

You may RSVP for the meal at their booth or by email to gpasc@earthlink.net.

Linda needs to know how many to plan for!

The KR NEWSLETTER

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Editor and Publisher - Monte Miller

Evening and Weekend tel: 940.566.5872

email: montmil@flash.net

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BACK ISSUES

The KR Newsletter maintains a database of selected articles from past issues. Printout available at \$7.50 US, \$10.00US Canada & \$15.00US Foreign. Copies of material available at \$1.00 per page, please include estimated postage. Articles over one page in length will be billed for amount due.

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Turtledecks and Strakes

Tips & Ideas for the KR-2

Philip Spade

Box 327 • Gwinn MI 49841

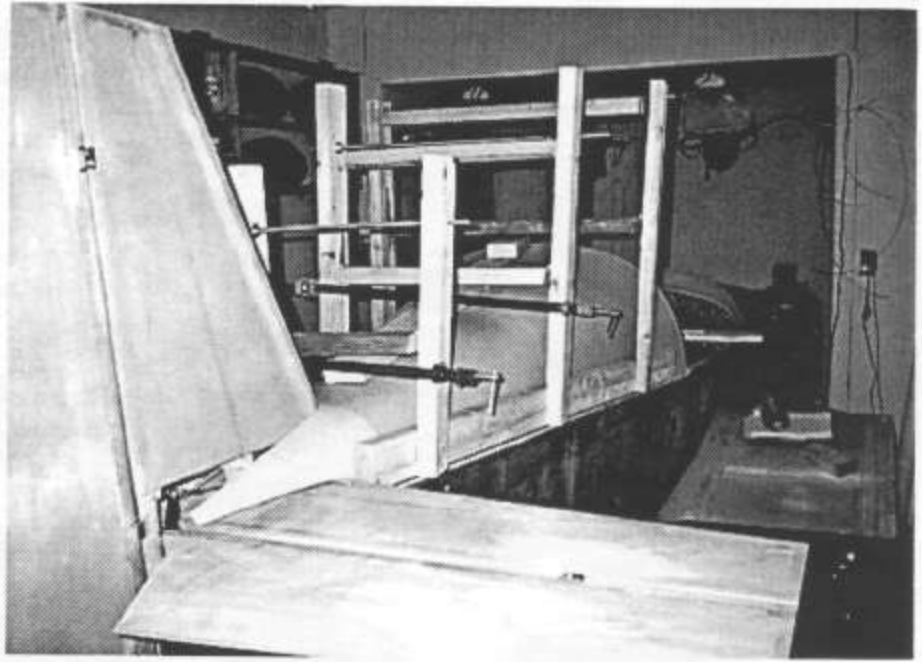
Telephone 906-346-3237

Turtledeck Clamp Jig

Trial fit of the rear turtledeck proved the bow opening needed further inward pulling. After the cap strips were secure, the turtledeck was compressed up to the strips by the clamping jig shown in the photo. This three-station clamp has threaded rods on top for adjustable pressure. The bottom cross 2x4's are the pivotal point of the clamp; they are hinged to allow compression.

The two rear stations have an added bar clamp because the hinges at those stations were too weak and began to pull apart.

The most difficult part of making the clamping jig was to cut the bottom of the upright 2x4's with a notch on an angle to compensate for the rear taper of the turtledeck.

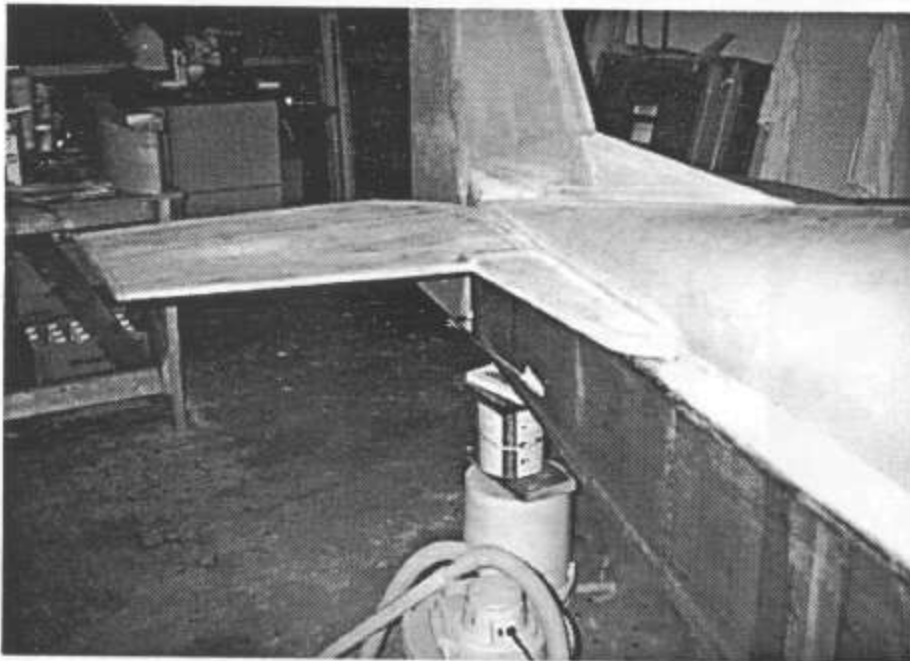


Clamps and jigs take on many forms. Phil Spade developed this technique of securing the KR's premolded turtledeck during the bonding process.

Pitch Sensitivity

There is a lot of evidence that points to the KR's as having a problem with pitch sensitivity. Some of the problem may be an inadequate sized horizontal stabilizer and elevator.

If you look at the blueprints of the KR-2 vs the KR-2S, you find a substantial increase in the vertical fin and rudder area without an equivalent increase in the horizontal tail surfaces.



After researching his idea, builder added area to the KR horizontal tail surfaces by the addition of strakes. Article details reasoning for changes.

An easy fix is to add several inches to both ends of the stabilizer and elevator. I don't think that would be a good idea because it may be too much strain on the spars. However, adding a triangular dorsal strake ahead of the horizontal fin could solve the pitch sensitivity without redesigning the entire horizontal fin and elevator and their spars.

The photo shows my solution that was simple to construct and adds little or no strain on the spar. It may add some drag but it could also reduce drag by a more constant level flight. The size of each strake is 84 square inches.

I did some homework before adding the strakes. Read the cover article in the November 1999 KR Newsletter, "Adding four inches, each side, to fin and elevator." Another influence was found in Kitplanes, Jan 2000, page 76, Wind Tunnel by Barnaby Wainfan. Also, take a good look at a Glastar's tail.

KR CLASSIFIEDS

Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial-style ads will be billed accordingly and must be paid for prior to publication. The KR Newsletter reserves the right to edit free ads.

FOR SALE - KR2 plywood and spruce kits. Wing attach fittings, bolt kit, alum tubing, channel, angle, plus KR2 plans. Alpha Aviation price in 1986, \$833.00, less plans. Any trades considered, also other plans. Let's get together. Sid Wooten, POB 34, Kaw City OK 74641. Tel: 580-765-3801.

FOR SALE - Original KR-2 retractable landing gear assembly complete with spring bar, gear legs, wheels, tires, brakes, etc. \$275. Continental O-200 crankshaft (GPU converted) in good condition, \$600. Continental A-75 crankshaft with fresh regrind to .010 under, \$600. Contact M.T. Sparks, 10232 Kit Carson Pl, Santee CA 92071. Telephone 619-448-4945.

WANTED - Any or all back issues of KR Newsletter from 256 thru 264 plus 267 & 268. Contact Jerry Pryce, 549 Tipperary Drive, Vacaville CA 95688. Tel: 707-447-4349.

FOR SALE - Hapi VW conversion. 1835cc with dual plug heads, alternator, starter and KR motor mount. Engine has tuned exhaust system, floatbowl carb, spinner and 52x48 Props, Inc propeller. Engine run-in by Hapi, zero hours since. \$3000. William Kirby, 618-298-2918 or email Grandma2@accessus.net.

FOR SALE - Parting out KR2 project. Wing skins, tail-wheel, engine cowl and most hardware has been sold. Please call, write, or email for list of remaining components. Contact Ted O'Dell, 14033 Tuttle Hill Rd, Milan MI 48160. Email tjodelH@msn.com or call 734-439-2439.

FOR SALE - 1998 KR2S tri-gear with 70hp 2180cc GPASC VW and Bosch 009 ignition. Cleveland brakes, wheel pants, 12 gal tank. Dual headsets, intercom, ICOM IC4 Comm and Garmin 195 GPS. Twice raced in Copperstate Dash. Cruises 149@3200. Always hangared. Looks good and runs great. 85TTSN. See KR News Nov 98. Asking \$35K but will accept \$16K. Jeff Bryson, Bakersfield CA. Telephone 661-665-9449.

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WANTED - Mosler Power dual ignition coils and wiring diagram info. Please call Lee Pendleton, 423-559-2603.

FOR SALE - Molds to make fiberglass Revmaster-style cowlings for the KR-2. \$200 OBO. Contact Ken Boyer, 573-543-5538.

FOR SALE - Retract Gear System removed from KR-1. Pair of gear leg castings, go kart brakes, spring bar, hardware, etc. Make offers to Sam Bailey, 914 West 4th, Pratt KS 67124. Day-316-672-7426 or Eve-316-672-3325.

FOR SALE - One each Revmaster & VW motor mount, set of Rand KR2 rudder pedals, bolt kit, metals kit, complete retract gear. 2100D Revmaster w/Subaru starter firewall forward and 3-blade G/A prop with Warnke hub. \$2500US for the lot. Gene MacDonald, Box 60, Hague, SK S0K1X0, Canada. Telephone 306-225-5770.

FOR SALE - KR2 stretched to KR2S, per plans. A&P built boat. Premolded turtledeck, wings & wing stubs, tails, canopy, forward deck. Lacks wings and fuel tank assembly. No wheels or brakes. 2180 VW w/dual ignition 200 hours, manifold and carbs, engine mount, Sterba prop. \$9500. Contact Jim, 909-313-8937.

FOR SALE - KR2S T/D modified to single seat. Near 50% complete on gear w/Clevelands, tail feathers and spars finished. \$2200. Wes Hennis, 727-526-6596, FL.

FOR SALE - KR2S wing skins, deck and canopy kits. Rand lists at \$6610. A real deal at \$2000. Wes Hennis, St Petersburg FL. Tel: 727-526-6596.

FOR SALE - Starlight canopy. Will fit KR-1. Unit has forward section to bond in place and a rear section to be hinged. \$50 plus UPS. For specs, call Howard, 607-732-0517 or email Howard Trampenau@aol.com.

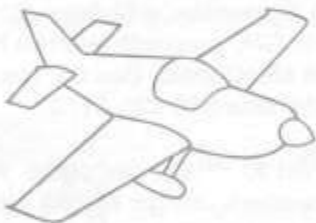


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Another great source of valuable members-only information is EAA's safetydata.com.

To learn more about these programs available only through EAA, contact the EAA Safety Programs Department at 920-426-6864 or e-mail at safetyprograms@eaa.org.

Let [] Guide You Through Your Project!



KR NEWSLETTER
624 West University Drive
PMB 199
Denton, Texas 76201
Issue 278

Charles Lindbergh was the first to fly to Paris. He did it by the airplane method.

-Aviation, as explained by kids





NEWSLETTER

KR Disc Brake and Wheel Assembly How-To *Contemporary Ideas from a KR Builder*



It's been said that many of the newest technological developments and fresh ideas within the aviation community originate within the ranks of homebuilders. The all-knowing "they" are most probably correct. One KR builder has shown that it doesn't require a mega-dollar production facility to develop an alternative hydraulic disc brake system for aircraft. Learn how Anthony Underwood might be able to upgrade your KR's brakes and save some money for you in the bargain.

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Affordable Disc Brake and Wheel Assembly How-To

Anthony Underwood

802 Center Street

Morristown TN 37813

Tel: 423-587-0624

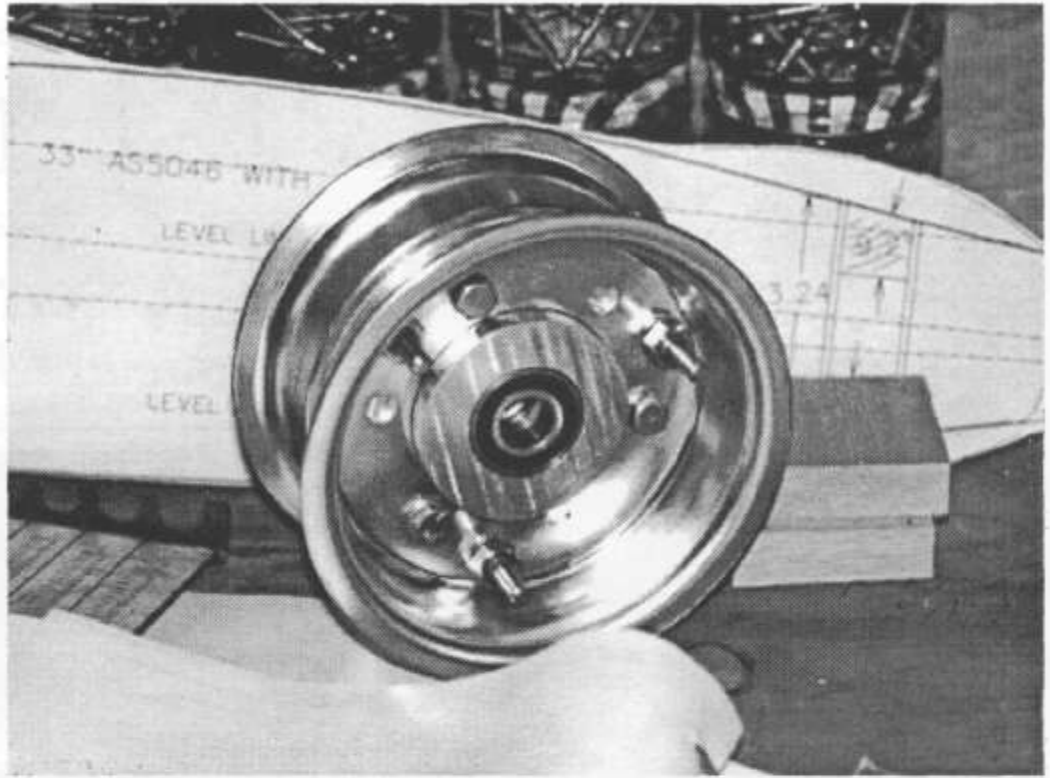
Before I begin this article, I would like to urge all the KR builders, flyers and enthusiasts to support and send your articles to the KR Newsletter. The Internet is fine but there are those who don't have access to the net and the KR Newsletter is the only contact we have with other KR lovers.

This is my second submitted article. I'd like to let everyone in on something I've come up with that new builders may like and the retract guys might *really* like.

If you check the current prices for the Cleveland hydraulic brake set-up, you might just get price sticker shock - I know I sure did. Even if you might buy them, those KR's with retractable gear can't use them at all. So what I've come up with is an affordable, hydraulic wheel and brake assembly. The design will work with either fixed gear or retracts. KR's with mechanical brakes could also be up-graded to reliable hydraulic power.

The brakes are off-the-shelf discs provided by Tracy O'Brien Aircraft Specialties. They operate on the same braking principal that large jets use. Basically, you have a rotating disc mated to the wheel with a hydraulically driven pressure plate and a back up plate. Very simple.

The brakes come with the standard five or six-inch diameter Azusa wheel which I immediately looked at and thought was too wide, even for fixed gear KR usage.



Wing and rim assembly with sealed, high-speed axle bearings installed. Three studs will engage the brake assembly and transfer braking power to the wheel and tire.

As designed, the brakes attach to the side of the wheel. This compounds the width problem. After studying the set up for an extended time, I thought what needed to be done was to mount the brakes inside the wheel, again, like the jets.

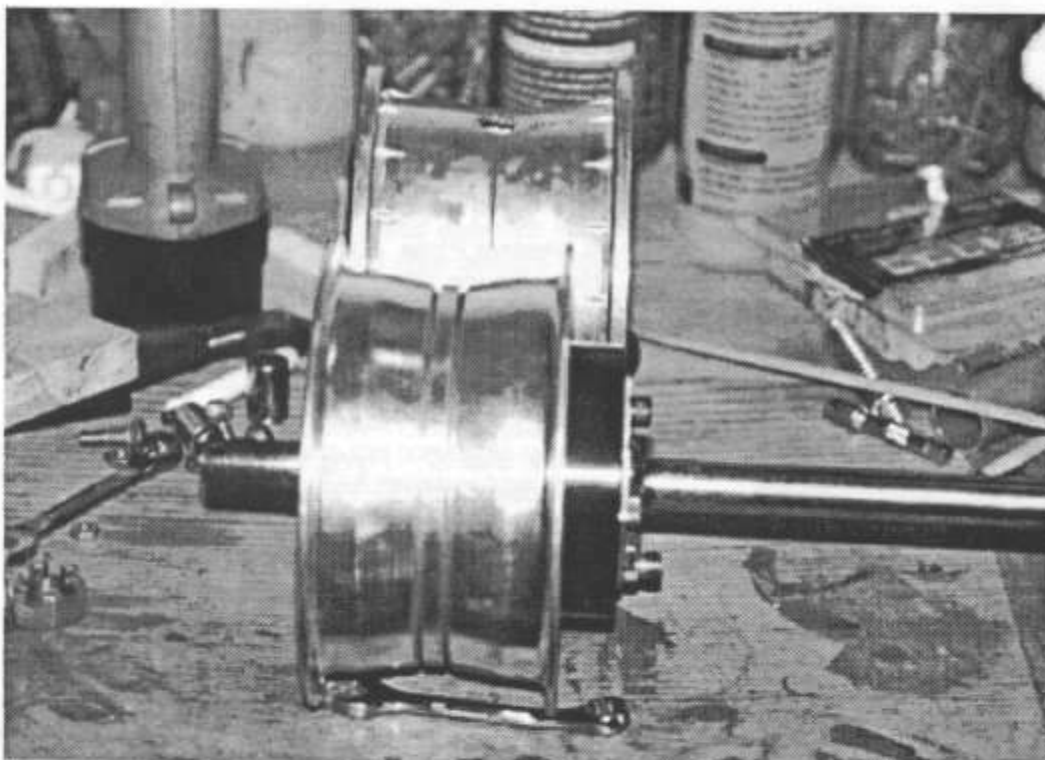
I talked to Tracy a few times and he agreed with me, but he didn't have anything that would work; I was on my own. After a lot of phone calls to different wheel people and a dry run with an ultralight parts house, I found a wheel manufacturer in California that understood the problem but didn't have time for one off products. He did sell me the two wheel halves that you see in the article and made a good suggestion. I bought the wheel, made several drawings, and scratched my head a lot over what I needed. Finally, I delivered my drawing to the local vocational school where they machined the center part for the wheel. This component is the key that enables the whole thing to work.

What I have developed is a hydraulic disc brake and wheel assembly that is narrower than the Azusa wheel alone. This is the first one, but with a little more engineering, it could be a tubeless set up as well. The design is what the retract planes really need and I'm positive it would go right on with a minimum of work.

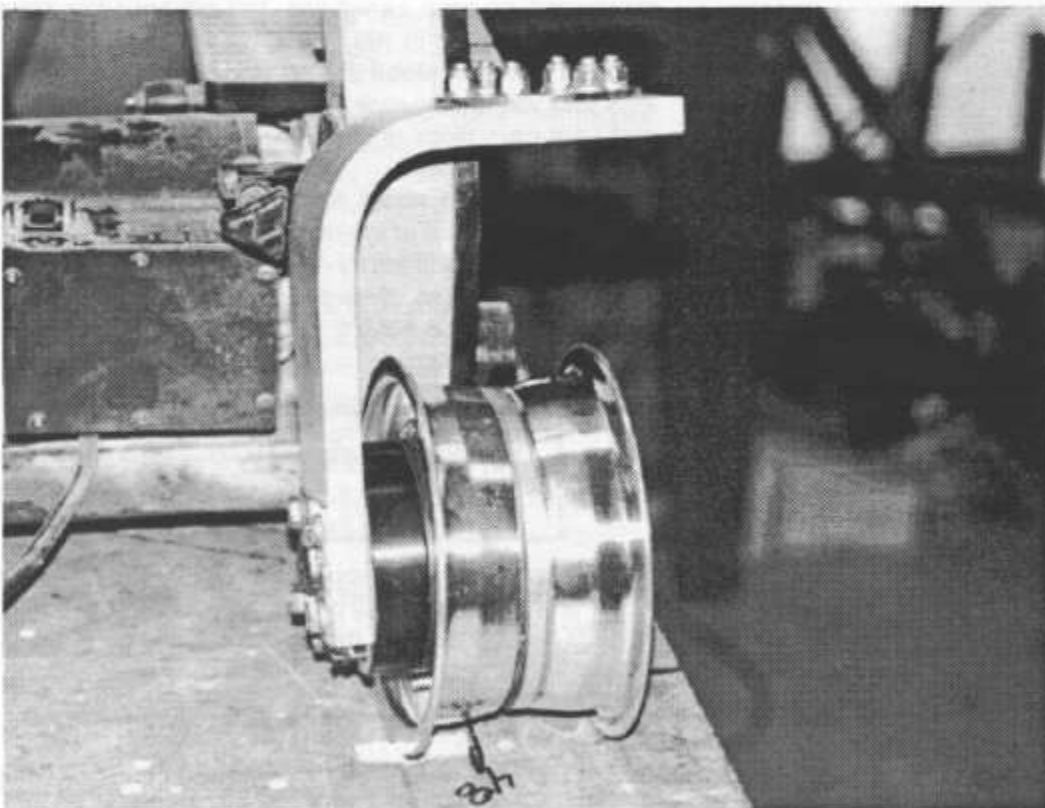
In one of the photographs, you'll note that if you need to change tires, inspect the brakes or something else, you simply jack the airplane, remove the axle nut and slip off the wheel - the brake remains on the gear. You can't make it any easier than that! Of course, this works on fixed gears only. With the retractable gear system, I don't believe removal would be any more difficult than what is now required.

I'm going to fabricate either an inward swinging retract or a fixed gear, utilizing motorcycle fork tubes. As for the trick looking, 90 degree bend, pieces of aluminum in the photo, Grove Aircraft custom made these two aluminum pieces for me. Gary Grove is a pleasure to work with and will take whatever time is needed to help with a project. Nicely made, the prototype gear legs even have a Grove part number on them.

The plan for using the motorcycle fork tube involves turning it upside down and weld-



In the foreground is the Underwood wheel and brake assembly. Compare its width to the brakeless Azusa hub parked behind it. The custom wheel, with the hydraulic brake installed, is still narrower than the Azusa rim alone. Should easily fit wheel pants.



Both axle and hydraulic brake assembly attach to the gear leg. Wheel and tire may be removed for service without disturbing brake. Those flying with Cleveland disc brakes must remove part of the brake pad attachment hardware to accomplish same task.

Disc Brake & Whed

HOW-TO, *continued:*

ing the component to a top plate. I will figure out scissor links and the "ecceteras" ing the component to a top plate. I will figure out scissor links and the "ecceteras" later on. I'm unsure of final costs but I really believe I will be a lot less than the Cleveland wheel and brake parts.

At the present time, my plane is upside down. I'll have to wait until the wings are nearly done before finishing up the gear and determining how well everything works together.

So in the meantime, to the builders, keep building. And to the flyers, please keep us inspired with your photos and articles.

Resource Contacts

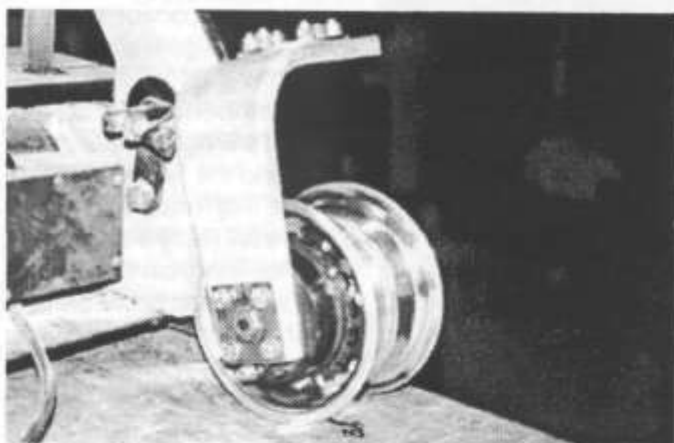
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Aircraft Specialties
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Chehalis WA 98532
360-748-4089
www.tracyobrien.com

Grove Aircraft Company
18601 JoeCrosson Dr
El Cajon CA 92020
1-888-GEARLEG
www.groveaircraft.com

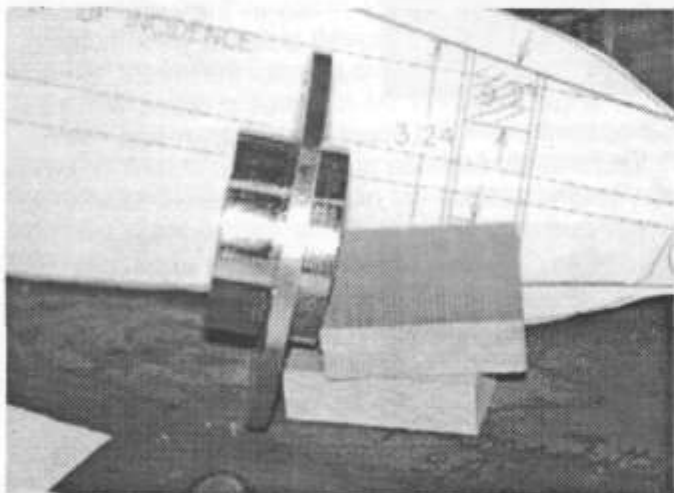


Miss an issue of the
KR NEWSLETTER
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in the doghouse!
Renew Today

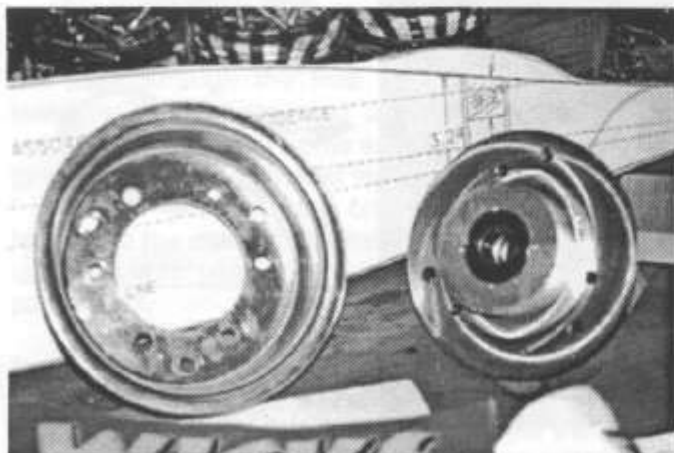
More Underwood Wheel & Brake...



View shows compact design of wheel and brake assembly. Note how wheel studs engage flange.



Machined aluminum wheel hub center section is key to narrow overall dimensions. Hub carries axle bearings.



Wheel hub on right is ready to bolt into wheel halves. Brake studs combine to secure wheel halves and also locate brake assembly within the wheel.

KR GATHERING 2001

Sept 21-23 • Pine Bluff AR

Fly-In Director, Tommy Waymack
870-535-3294 or blindate@seark.net

• LODGING •

Best Western Pines 800-528-1234 or 870-535-8640

Hampton Inn 800-HAMPTON or 870-850-0444

mention you are with The KR Gathering

Tentative KR Gathering 2001 Schedule

Friday, Sept 21 - Arrivals and hangar flying

Saturday, Sept 22 - Flying, Demonstrations, Judging

Sunday, Sept 23 - Farewells and departures

Tom Stokes

Pine Bluff, Arkansas

tomstokes1@juno.com or tomstokes1@aol.com

Work Days - tom.stokes@pba.army.mil

1 spoke with Tommy Waymack, our coordinator for the 2001 KR Gathering, and he authorized me to send the following information.

The plans for the upcoming KR Gathering are coming along smoothly. The dates for this year's gathering will be September 21-23. We will provide you with additional information as soon as we can. We will have the same hanger that we had in 1997. Also, we will again try to use the Best Western Motel at The Pines Mall, but Tommy asks that you wait to make your reservations so that he might set up a block of rooms and work out a discount with the management.

We are located about 40 miles south of Little Rock, Arkansas at the end of Interstate 530. If there is anything I can do for anyone, I will try. E-mail me or call me at 870-247-5975. I have an answering machine, if I am not at home. I work from 6 AM until 5 PM so evenings would be best, if you are calling.

Tony Bingelis, 1920-2001

Mr. SportPlane Builder

EAAers and the homebuilder movement lost a great friend on Thursday, March 30, when Antonio "Tony" Bingelis passed away at the age of 80, unable to totally recover from a heart attack suffered in early March.

A native of Austin, Texas, Tony wrote the highly regarded *Sportplane Builder* column in EAA's *Sport Aviation* magazine from February 1972 to December 1996. His monthly columns and books on homebuilding became the bible for homebuilders throughout the world, and he continues to share his wisdom and expertise and teach new generations of builders through his books.

Tony Bingelis ...

"I was saddened by the death of Tony Bingelis on Thursday," said EAA President Tom Poberezny. "Tony was extremely well known throughout homebuilt aviation through his *Sportplane Builder* column in *Sport Aviation* and his books, which are considered essential volumes for any builder. His expertise and style brought vital aircraft information to aviation enthusiasts worldwide and to thousands of people who never had the chance to meet him."

EAA Founder and Chairman of the Board Paul Poberezny lamented another loss to the homebuilt movement. "Tony was a longtime loyal EAA member from the early days, and a good friend," he said. "A lot of people who desired to build their own airplanes were helped by Tony."

Tom Poberezny added, "Tony represented homebuilt aviation in the best way - his innovation and enthusiasm brought life to material that could very easily become dry. He related well to the average builder and kept people energized through his writings. When he retired in 1996, it left a large hole to fill in our publications. His passing now leaves an even larger void, although his legacy and knowledge lives on through his vast body of work. Our sympathies go out to Tony's wife, Morine, and his family."

The son of Lithuanian immigrants, Tony built model airplanes as a child. After enlisting in the U S Army in 1940, he transferred to aviation in 1943. He retired from the U.S. Air Force as a major with 23 years of service to his country.

In 1963 Tony was a founding member of EAA Chapter 187 in Austin, and he organized the first Southwest Regional Fly-In in Georgetown, Texas. And he built airplanes, including two Emeraudes, a VP-1, a Flaglor Scooter, a Turner T-40, a Falco, an RV-6, and an RV-3. Many of these projects illustrate Tony's books, *Sportplane Builder*, *Firewall Forward*, *Sportplane Construction Techniques*, and *Tony Bingelis on Engines*.

Tony entered the EAA Homebuilders Hall of Fame in 1995. And in 1996, when Tony retired his *Sport Aviation* column, Editor in Chief Jack Cox wrote, "Tony's great gift has always been the ability to present technical subject matter in terms the ordinary person could understand, and we're fortunate that, like us, he was attracted to aviation and used that gift to benefit our field of endeavors."

*Not alone into the sunset
but into the company of friends
who have gone before them*

ON THE RAMP

Ramblings from the Editor

When Does My Subscription Expire?

It's quite easy to determine when your subscription to the KR Newsletter expires - the issue number is printed on your mailing label.

Right now, you're reading issue #279. Check the top right corner of the address label and note the three-digit number. That's the last issue in your current subscription. If the number is, for example, 281. . . you have only two issues left.

As a back-up, subscribers receive an expiration insert reminder with their last issue. So, renew early and often!

KR's Over Texas Fly-In

Scheduled for April 27-29 at Thompson Field near Canton, Texas and announced earlier in the KR Newsletter, this regional gathering is but eight days away as this column is being written. As such, the event may be over by the time the DSPS delivers this issue. Your editor plans to attend. Man, I hope the weather was nice!

Watch the next issue of the KR Newsletter for photo coverage on attending aircraft, workshops, and folk.

Empty Mail Bags

For most of us, springtime and warmer weather are spreading across the country. Many aircraft projects are being uncovered inside once chilly workshops. So...

Please share your activity with the KR Newsletter. We need builder reports and photos, no matter what stage of the game you're presently in. Snail or email, how 'bout it?

Sport Aviation's Loss

Several years ago, my wife and I were enjoying the Texas Hill Country ambiance along with the Southwest Regional EAA Fly-In at Schreiner Field in Kerrville, Texas. And I was on the lookout for someone very special to me, Mister Sportplane Builder, Tony Bingelis.

Tony proved fairly easy to find. He was usually surrounded by people that were sharing hangar tales and laughing a lot. We simply followed the racket.

Always an approachable guy, Tony was willing to autograph a photo of my KR-2 but he did ask, "Why would you want me to sign a picture of your airplane?"

"You helped me build it.", was my reply. "I couldn't have done it without your articles and books. Thanks."

This fine gentleman is no longer with us. Our sympathies and prayers are with Tony's wife, Morine, his family, and his expansive circle of friends in sport aviation.

Yesterday, I bought a small frame for that photo. Tony's signature will remain as a reminder to me that none of us live in a vacuum. We need one another for guidance, care, and friendship. Blue skies, Tony.

The Correct Use of VW Prop Hubs

Steve Bennett

Great Plains Aircraft Supply Co., Inc.

Here at Great Plains Aircraft Supply, we have read the discussions on internet groups as to why there are different prop hubs for VW engines and what their individual uses are. Some of these exchanges ended with confusion and still others left many unanswered questions. It is important to note that not all prop hubs are designed to be used with all crankshafts. The following is an explanation of GPASC prop hubs and their correct usage:

Shrink Fit Hub

This is the oldest prop hub design offered. The hub has a .002 to .003" interference fit on the end of the crankshaft and extends 1.5" out from the engine case. The hub features reverse threads on the engine end of the hub to "sling" the oil back into the engine. All of the hubs we offer are made from 4140 preheat treated steel.

The Shrink Fit Hub is designed to be used on/yon a stock 69mm forged German crankshaft or the 74-78mm forged crankshafts as used in 1/2 VW conversions.

Many of the early hubs made by others allowed the prop hub retaining bolt head to pass completely through the hub thereby relying only on the washer for prop hub retention to the crankshaft. Plus, many early hubs (from other suppliers) were made of aluminum and cracked in the prop hub keyway after a few short hours of operation. The Great Plains Shrink Fit Hub is the most popular prop hub sold for a stock 69mm crankshaft or the 74-78mm 1/2 Volkswagen crankshaft.

3° Standard Taper Hub.

This prop hub is also made from 4140 preheat treated steel. The hub extends out 2.5" from the engine case. The prop hub is designed to be used with an oil seal that is epoxied onto the engine case. The crankshaft must be tapered to match the taper of the hub.

With our Standard Taper Hub, the head of the bolt will not pass through the hub. The prop hub keyway features slightly rounded comers to minimize the possibility of cracking. Some earlier hubs manufactured by other companies allowed the head of the bolt to pass through the hub, depending on only the washer to retain the hub to the crankshaft. The GPASC Standard Taper Prop Hub is for use on/yon stock 69mm forged German crankshafts.

Force One Prop Hub

The Force One Hub is also made from 4140 preheat treated steel. The hub extends 5.675" from the end of the case. The hub is designed to be used with a bearing/seal/housing that requires the engine case to be machined. The crankshaft must be tapered to match.

The taper extends back to the brass drive gear on the crankshaft.

Our current design uses a 1/2" bolt and special washer for prop hub retention. Older designs used a stock 20mm bolt and hardened washer. This prop hub can be used on stock 69mm forged German cranks or forged 82mm aircraft-style cranks as well. The Force One Prop Hub and Main Bearing setup are mandatory for use on all Type 4's, direct drive applications and Type 1 Stroker Crankshafts.

The GPASC Force One Prop Hub was designed as a result of having stroker crankshafts break while using shrink fit and standard taper hub types. Back in the mid to late 80's, we replaced quite a few stroker crankshafts used by another company (and one of our own) that had broken with the shrink fit or standard taper style hubs made by other companies and we still replace Stthree to four per year. Since the introduction of the Force One Hub, crankshaft breakage has been almost eliminated. To date, when used in combination with our aircraft-style 82mm stroker crankshaft featuring a 1/2" bolt, etc., not one has broken.

In a nut shell, torsional vibration is the culprit. Stop and think for a moment; you have a prop on one end of the crankshaft and a flywheel on the other end - plus combustion. Both masses are accelerating and decelerating at different rates and speeds. Additionally, you have the gyroscopic loads being transmitted to the prop hub and crankshaft by the prop itself. Failure occurs when the hub and/or the hub and crankshaft can no longer absorb and dissipate the different loading imposed. For a more complete story, check out the Great Plains Aircraft Supply website at www.greatplainsas.com.

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Evening and Weekend tel: 940.566.5871
email: montmil@flash.net

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BACK ISSUES

The KR Newsletter maintains a database of selected articles from past issues. 40+ page printout available at \$7.50, \$10.00US Canada & \$15.00US Foreign. Copies of material available at \$1.00US per page, please include estimated postage. Articles over one page in length will be billed for amount due.

Reproduction of any material within the KR Newsletter by print, electronic or other means without permission of publisher will be considered copyright infringement and will be subject to aggressive legal action.

KRCLASSIFIEDS

Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial-style ads will be billed accordingly and must be paid for prior to publication.

The KR Newsletter reserves the right to edit free ads.

FOR SALE - Original KR-2 retractable landing gear assembly complete with spring bar, gear legs, wheels, tires, brakes, etc. \$275. Continental O-200 crankshaft (GPU converted) in good condition, \$600. Continental A-75 crankshaft with fresh regrind to .010 under, \$600. Contact M.T. Sparks, 10232 Kit Carson Pl, Santee CA 92071. Telephone 619-448-4945.

WANTED - Any or all back issues of KR Newsletter from 256 thru 264 plus 267 & 268. Contact Jerry Pryce, 549 Tipperary Drive, Vacaville CA 95688. Tel: 707-447-4349.

FOR SALE - Hapi VW conversion. 1835cc with dual plug heads, alternator, starter and KR motor mount. Engine has tuned exhaust system, floatbowl carb, spinner and 52x48 Props, Inc propeller. Engine run-in by Hapi, zero hours since. \$3000. William Kirby, 618-298-2918 or email Grandma2@accessus.net.

FOR SALE - Parting out KR2 project. Wing skins, tail-wheel, engine cowl and most hardware has been sold. Please call, write, or email for list of remaining components. Contact Ted O'Dell, 14033 Turtle Hill Rd, Milan MI 48160. Email tjodelh@msn.com or call 734-439-2439.

FOR SALE - 1998 KR2S tri-gear with 70hp 2180cc GPASC VW and Bosch 009 ignition. Cleveland brakes, wheel pants, 12 gal tank. Dual headsets, intercom, (COM IC4Comm and Garmin 195 GPS. Twice raced in Copperstate Dash. Cruises 149@3200. Always hangared. Looks good and runs great. 85TTSN. See KR News Nov 98. Asking \$35K but will accept \$16K. Jeff Bryson, Bakersfield CA. Telephone 661-665-9449.

FOR SALE - Posa Carb, new in box, \$100 or some trade. KR gear retract parts, less springbar. Make offer or trade. Contact Bobby Laird, 209-392-3436.

WANTED - Set of KR2 plans with latest revisions. Please contact Randy Eakle, 3918 North Vincent, Peoria Heights IL 61614. Tel 309-688-4378 (between noon and 2:00pm) or email to annstreet@364.com with price and details.

WANTED - Help locating and purchasing a motor mount for a Subaru 1.8 liter EA-81. Philip Spade, Box 327, Gwinn MI 49841. Tel: 906-346-3237.

WANTED - Mosler Power dual ignition coils and wiring diagram info. Please call Lee Pendleton, 423-559-2603.

FOR SALE - Molds to make fiberglass Revmaster-style cowlings for the KR-2. \$200 OBO. Contact Ken Boyer, 573-543-5538.

FOR SALE - Retract Gear System removed from KR-1. Pair of gear leg castings, go kart brakes, spring bar, hardware, etc. Make offers to Sam Bailey, 914 West 4th, Pratt KS 67124. Day-316-672-7426 or Eve-316-672-3325.

FOR SALE - One each Revmaster & VW motor mount, set of Rand KR2 rudder pedals, bolt kit, metals kit, complete retract gear. 2100D Revmaster w/Subaru starter firewall forward and 3-blade G/A prop with Warnke hub. \$2500US for the lot. Gene MacDonald, Box 60, Hague, SK S0K1X0, Canada. Telephone 306-225-5770.

FOR SALE - KR2 stretched to KR2S, per plans. A&P built boat. Premolded turtledeck, wings & wing stubs, tails, canopy, forward deck. Lacks wings and fuel tank assembly. No wheels or brakes. 2180 VW w/dual ignition 200 hours, manifold and carbs, engine mount, Sterba prop. \$9500. Contact Jim, 909-313-8937.

FOR SALE - KR2 Parts: Rudder pedal assy w/nylon bearings, 7 front & 8 rear spar attach fittings, vertical stab templates, 5 aileron bellcrank ftgs w/bushings, 20 angle brackets & gussets, flat seat w/attach angles. \$185 value asking \$140. Ray Goree, 817-795-4779, Arlington TX.

FOR SALE - KR2 project approximately 80% completed. For full details, contact A.C."George" Cummins, 3109 Whittle Way, Midland TX 79707. Tel: 915-520-8334.

FOR SALE - KR2S modified to single-seat. Approx 50% complete. On gear w/Clevelands. Has elec aileron and elevator trim. Tail feathers and spars finished. Includes-foam and fiberglass kits. Excellent workmanship. I'm grounded. \$1500. Wes Hennis, 727-526-6596 - Florida.

List your stuff... KR Classifieds work

"I sold my KR2S wing skin, canopy, and deck kits thanks to the KR Newsletter."

— Wes Hennis

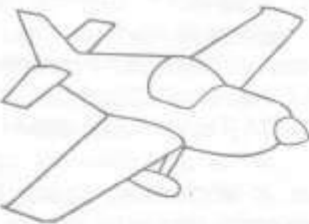


To learn more about these programs available only through EAA, contact the EAA Safety Programs Department at 920-426-6864 or e-mail at safetyprograms@eaa.org.

Another great source of valuable members-only information is EAA's safetydata.com.

EAA Aircraft Insurance Plan coverage that might not otherwise be available. reliable aircraft. Members who participate in these programs receive discounts through **it's part of your membership privileges.** EAA wants you to have a safe and these programs is right for you. Expert advice is here for the asking. **Best of all,** The EAA Technical Counselor and Flight Advisor programs are ready and able to help members. Whether you are selecting a project or getting ready for a test flight, one of

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KR NEWSLETTER

624 West University Drive
PMB199
Denton, Texas 76201

Issue 279

Just one more repossession and I'll be debt free

- bumper sticker seen at a local airport





NEWSLETTER

KR-1 in Mid-America Air Museum *Aircraft Former Sam Bailey Air Show Mount*



Rand-Robinson KR-1 N31SB

Sam Bailey • P.O. Box 455 • Pratt, Kansas 67124 • Daytime Telephone 316-672-7426

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

Sam Bailey Air Force

Prolific Kansas KR Builder

Sam Bailey has been involved with the KR-1 design for so long that he has accumulated three of them. Actually, Sam's now down to only two Dash One's as his first project currently resides in the Mid America Air Museum in Liberal, Kansas.

November Thirty-One Sierra Bravo, powered by an 1835cc Volkswagen conversion, amassed over 700 flight hours prior to its retirement from active duty. During that time, Sam received his FAA Unlimited Aerobatic ticket in the KR-1 and flew many air show performances in the Rand design.

Besides his two remaining KR-1's, Sam also flies a Team AirBike but does his serious traveling in a Cessna Skylane.

Of particular interest is that the KR's fly with the oft-Slandered Posa carburetors which Sam swears by, not at. Bailey skillfully tunes these unique fuel metering devices for optimum and safe performance.

* * * * *

KR's Over Texas Fly-In

Promise Shown by Great Effort with First Event

Saturday morning, Marty Roberts and his O-200 powered KR-2 were really hummin' over Thompson Field (1TA7) at Tailwind Airpark, near Canton, Texas, during the first-ever KR's Over Texas Fly-In. For many attendees, this was their initial contact with a living, breathing, and flying KR. None of the visitors from Texas, Oklahoma, Louisiana, and Tennessee were disappointed, including arriving KR pilot Bud Wilson. After landing his tri-geared and Subaru-powered KR2, Bud stated that if it were not for Marty's impromptu air show, he would probably have missed seeing the airport!



Marty's impromptu fly-bys and low approaches got the crowd on their feet. This photo was taken just as the O-200 hot rod exited the east hangar door!

The entire weekend was blessed with "chamber of commerce" weather. Even the usual Texas springtime winds were very light and right down the rather narrow and tree-lined runway. This did create a bit of a nuisance for Chief Burger Flipper and Event Organizer Larry Howell, as his lunchtime duties around the "UFO" grill got kinda smoky. Food was most excellent, including the delicious KR Fly-In cake baked and decorated by Larry's charming daughter, Kristin. Thanks, ya'll.

A few KR wannabes showed up, too. . .several RV-6's, including one powered by a Chevy Vortec V-6 engine, plus a quite nicely turned out Zenith and a two-place Challenger. Still, the emphasis remained on the KR's.

Kudos to the event organizers, hosts, and airpark operators Jesse and Mark Thompson. Thanks, too, go out to Curtis Wright and Kerry Miller, custom KR Grafters who produced a nice composites workshop for the attendees. Let's hope this event will become an annual Texas "thang".

Thompson Field and Tailwind Airpark is an aviation community offering both custom homesites, with runway access, and unique hangar-homes. For additional info, visit their website at www.tailwmdairpark.com. Be sure to check out the aerial pics of the airport.

A Reminder of the

Rand Robinson Address Change

The commercial office location of Rand-Robinson Engineering, Inc. has been closed. Jeanette will now be handling plans sales and operating the business from her residence.

Please update your records to reflect the current business address of your favorite homebuilt aircraft.

RAND ROBINSON ENGINEERING, INC.
PMB724
7071 Warner Avenue #F
Huntington Beach CA 92647
Tel: 714-898-3811 • Fax: 714-890-1658
KR Web site: <http://www.fly-kr.com>

...wonder if Marty'll
take me for a ride?"

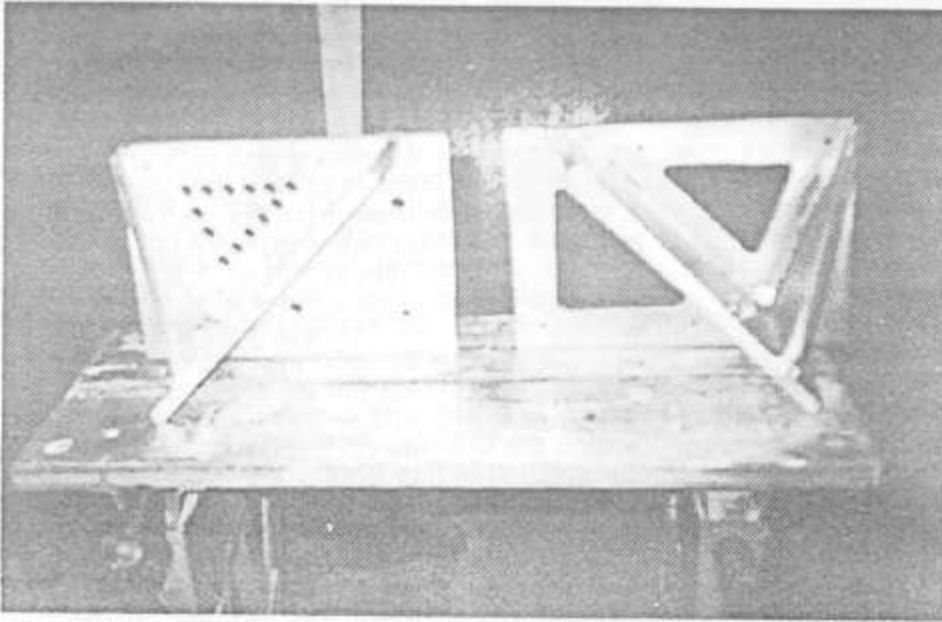


Canadian Builder Rehabs a KR-2

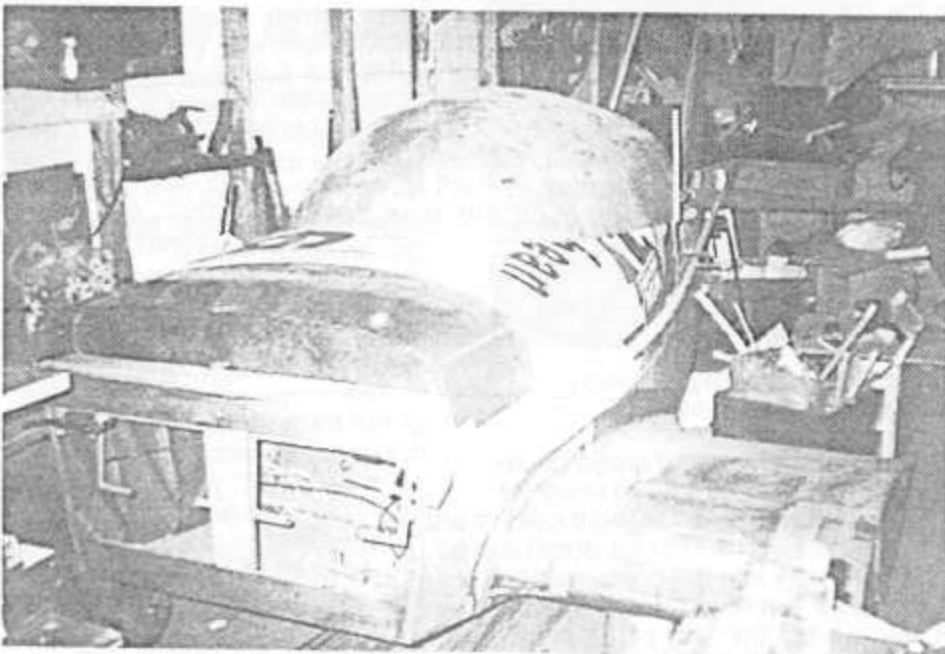
Gene MacDonald • Box 60, Hague, SK • Canada S0K 1X0

Here it is renewal time again. Funny, though I have trouble parting with money for many things, I seem to have no trouble parting with over forty-one dollars Canadian to ensure that the KR News arrives in our mailbox on time. My wife knows that it is my favorite piece of mail. I sure do look forward to receiving each edition.

Finally passed my "six-oh" last fall, and Helen and I have our "four-oh" coming up in five days time. I can say, for sure, it just gets better as time goes by!



Main gear attach fittings for the MacDonald KR are fabricated of aluminum plate and heliarced. Components will bolt to center section main spar.



Business end will eventually mount a Revmaster 21 ODD Volks conversion- Good idea to leave the firewall area open for as long as possible during construction as the access is of great benefit. . . to your back!

During the past three-plus years, I have been "trying out" various new careers and have been spending as much money as income. I have finally given up on it all and decided to go traveling again, turning a long-held dream into reality.

After taking a few trips last fall with a friend who is an eighteen-wheeler pilot, I went to school and earned my ticket for driving the Big Rigs on the road. A local transport company has decided to take me on as one of their trainees. I am as excited as a kid again.

I have not been doing much physical labor lately on the nicely built KR-2 "boat" that I bought a few years back. In 1998, I made up a set of fixed main gear using an extra R-R retractable gear spring that I had. I also spent considerable time planning and building the top decks, rebuilding the elevator tab control, etc. With Dan Diehl's help, I also installed a Subaru starter on my Revmaster 21 ODD.

Then I started to dig into the stub wing. Jackhammer anyone? The first cut showed a great build up of fiberglass and material on the rear of each main spar around the original folding gear. There is also a very sturdy plywood wing-walk built into the left side. Of course, it is all in the area where I want to install my fixed tri-gear. I just haven't taken courage yet to tear it all out and grind the mess carefully off of the spars. Ah well, the six months of cold, cold weather is again my excuse for just sittin' n thinkin'.

continued on next page

More of the MacDonald KR-2..



Cockpit canopy goes through an initial test fitting with a mock-up of the aft deck.



Scratch-built aft deck utilizes formers and stringers to maintain position of structural foam prior to application of fiberglass skin.

I have an article idea. . . I have some scratched and pitted tinted plexiglass windows from a wrecked Mooney. The fuselage had been used for pellet gun practice after it was stored in a local farmer's field. During the 98' KR Gathering, I overheard Bob Muse, Jr. chatting with someone about a method to restore scratched plexiglass. I didn't break into the conversation and I forgot to ask Bob about it later. It would be fun to cut down and try to restore the plexiglass to shiny new, especially the two-piece windshield. Perhaps Bob might write up such an article? I'm sure it would be helpful and interesting to many builders.

Thanks for getting the KR Newsletter out to us. I sure do appreciate it and gobble-read it up the moment I get it from our local Post Office.

Adjusting the Posa

Jim Faughn
4323D Laclede
St Louis MO 63108
Tel:314-652-7659
jfaughn@mvp.net

The Posa has a major design flaw since the air intake is a non-linear opening (a circle) and the fuel needle is linear (Ground at a constant angle; small at idle and large at full throttle.) The problem is that you will only be able to get the right fuel to air mixture at one setting of the so called carb. Therefore, you must change the needle to a non-linear shape to match the air intake. This is easier than making a square out of a round hole.

The way I did this was, with the mixture control set full rich, set the air slide opening in the middle and adjust the needle for its optimum mixture setting. At this point, you have the air and fuel mixture balanced at this throttle setting.

Next, you go to idle and you will be running rich. At idle, you have two choices. First, you can change the adjustment on the carb to allow more air in through the small hole in the slide, which is exposed at low RPM's, and was Posa's attempt to fix the problem, or you can build up the needle at that end with solder and scrape it so the fuel to air mixture is correct. I like to have it a little rich at idle in case I have to do an emergency go around. When I push for maximum throttle, I have a little extra fuel to make up for the sudden inflow of air. . . kind of like a carburetor's pump circuit.

The same situation will exist at full throttle, except Posa did not come up with a solution that I am aware of. When you go to full throttle, the air from the maximum setting is not as much as the amount of fuel you will get from the needle, so you will be rich. You might be able to adjust this out with the mixture setting.

more Posa next page. . .

Tweaking the Posa for Performance...continued

However, if you go to 10,500 feet as we did at the KR Gathering to meet the guys from Oklahoma, you won't have enough mixture adjustment left. Therefore, the only answer I have heard and made work is to reshape the needle. Now comes the hard part, as if this explanation isn't too long already.

To adjust the needle you need to make two measurements with a vernier caliper or a micrometer. These will tell you how much to build up your needle. First, with your airplane solidly tied down, go to full throttle with the mixture control at full rich. Then, cut off the fuel to the engine. The engine will speed up as it is now running rich.

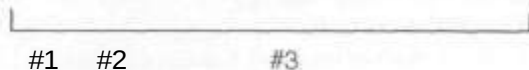
When the engine has stopped, shut off all mags and electric and get out of the plane without changing the throttle setting. Access the needle in the Posa from the front of the plane and put a vertical scrape on the needle. This will be mark #1.

Next, get back in the plane and restart the engine (back to idle) and go to full throttle. This time, lean the mixture out to the correct mixture according to either the EGT or RPM, whichever method you have available. Again, without changing any throttle or mixture setting, shut off the fuel and let the engine die. The engine shouldn't gain in RPM much at all. Shut everything off without moving the throttle or mixture controls and go around and make another vertical scrape on the needle. This is mark #2. Finally, set the throttle (you can do this visually) with the air slide in the center. This is the point you had it running with the correct mixture without playing with the mixture. Make another vertical scrape on the needle as mark #3. At this time, you may remove the needle.

Count the turns as the needle is removed to ensure when it's put it back in, it's put back in the exact same place. I did this by unscrewing one turn at a time and pulling on the needle with pliers until it came out.

Now you have three scrapes on the needle, one in about the center, another near the end, and another in between.

Thinnest Thick - where it attached to
the adjusting screw



Measure, with a vernier caliper, the thickness at point #1 and at point #2. What you have to do is to build up the needle so that it is the #2 thickness (less) at the #1 position.

Back to air fuel mixture theory for a moment. We are reducing the fuel that flows in because the air slide is not linear and didn't allow enough air in at full throttle to support the fuel. Obviously, this isn't the only point it has to be built up, instead it must be

built up from point #3 all the way back to point #1 with point #1 ending up as the thickness of point #2. If you aren't confused by now, then God help us all! I wish I could provide a drawing of the finished needle because that would explain it better than I can with words alone.

The way I did this was to get out my soldering gun and solder up the needle with a thin coat of solder just to the left of #3, building up to a thicker coat at point #1. Since you have the vernier measurements, you can measure the thickness at point #1 and keep building up the solder until you get it right. Then, after I built it up high enough, I began scraping the solder with a razor knife to re-taper the needle. This allowed me to change the thickness of the needle and ultimately get the right air to fuel mixture. The advantage of using solder is if you mess up, you can do it again. What you are trying to do is make a non-linear needle for fuel flow to match the curve of the non-linear air slide.

If you chose to do the idle end, and I did, all you have to do is repeat the process on the other end. Good luck.

Perhaps this is too detailed for only words. I could probably be talked into removing my Posa's needle at the next Gathering and, with a few pictures, I think I could make the explanation more understandable.

The bottom line was that I am very happy with my Posa. I may be the only one in the world. My plugs burn a nice ash color and I have only changed them once in 170 hours and I really didn't have to replace them at the time.

I would like to give special thanks to both Steve Bennett, of Great Plains Aircraft Supply, and Dan Diehl who got me on this track of re-tapering the needle. I changed their procedure a bit but they did help me understand what was wrong.

Jim Faughn, KR driver and singer of songs, along with his beautiful KR taildragger N891JF, are a big part of the annual KR Gatherings. His knowledge regarding modifications to the Posa carburetor are based upon years of actual flight experience.

KR GATHERING 2001

Sept 21-23 • Pine Bluff AR

Fly-In Director, Tommy Waymack
870-535-3294 or blindate@seark.net

• LODGING •

Best Western Pines 800-528-1234 or 870-535-8640
Hampton Inn 800-HAMPTON or 870-850-0444
mention you are with The KR Gathering

Tentative KR Gathering 2007 Schedule

Friday, Sept 21 - Arrivals and hangar flying
Saturday, Sept 22 - Flying, Demonstrations, Judging
Sunday, Sept 23 - Farewells and departures

Experiments with Fiberglass & Plywood Laminates

Alternative Construction Ideas

Tracy O'Brien
T. O'Brien Aircraft Specialties
Telephone: 360-748-4089
email:tracy@localaccess.com

I've been considering the idea of using fiberglass to cover the fuselage of an aircraft ever since the original article on Ol' Ironsides was published in the November 1971 issue of *Sport Aviation*. In the summer of 1972, I was involved in fabricating some panels to be used as wing skins on a CA-61.

Alex Strojnik deals with this very subject beginning on page 176 of his book, "Low Power Laminar Aircraft Technologies". The late Dr. Strojnik also presents a strong case for the use of fiberglass covered plywood. It's well worth reading about.

Ultimately, I made up a large number of test panels in the last year to evaluate possibilities for my current project. I made up samples with various combinations of 4-, 6- and 10-ounce fiberglass cloth, 0.75-ounce fiberglass matt, Coremat and Nexus cloth. I have data for each of these laminates that includes thickness, weight per square foot, and specific gravity, expressed in pounds per cubic inch.

I have compared each of these laminates with both unfinished Occoume marine plywood and the same plywood that has been epoxy sealed on one surface and sheathed with 4-ounce cloth and epoxy on the other surface.

The "composite" panels were much less stiff for their weight than the plywood panels. The stiffest composite laminate for its weight was made up of 2mm Coremat with 4-ounce faces. This panel weighed .0317 pounds per cubic inch, but weighed .397 pounds per square foot.

The 0.125" (3mm) Occoume marine plywood, with 4-oz cloth and an epoxy sealed back, weighed the same per square foot as the 4-oz/Coremat/4-oz cloth laminate. However, the plywood is noticeably stiffer.

Based on my findings, I have decided to use sheathed 3mm Occoume for the fuselage and sheathed 1.5mm Occoume for the wing and aileron skins. I will use premolded fiberglass leading edges made up from 2 layers of 6-oz cloth that has been "racked" prior to laminating. Racking involves pulling on the opposite corners of the cloth so that the cross weave is as close to 45 degrees to the long weave as possible. Each of the two layers will be racked in the opposite direction to create a sort of triaxial laminate. This laminate weighs 0.218 pounds per square foot.

The 4-oz cloth used to sheathe the wing skins will be applied after the wings are assembled and will go over the fiberglass leading edges. This will bridge the plywood to fiberglass joint and add an additional layer of cloth to the leading edge.

ON THE RAMP

Mag Check with the Editor

Years ago, I had the opportunity to practice my craft on a real, live, living n' breathing **P-51D** Mustang. The owner, who possessed a distaste for decals, had recently repainted the aircraft and contracted with me to do all the major placards, plus the obligatory pilot's name on the canopy frame, with a brush and a bit of 1-Shot signwriter's enamel. After completing the job, that Mustang was as much mine as it was the owner's. . . lots of sweat in that job.

Tragically, the owner would die in this same Mustang as he attempted to turn back to the runway after the engine burped on takeoff - too low, too slow, stall and spin. The accident occurred on my Denton Muni home field as friends and family had gathered to celebrate the pilot's birthday; many getting rides in the classic warbird.

A few weeks ago, we lost a KR pilot and his passenger as they attempted the exact maneuver. A loss of engine power on takeoff was followed by the classic turn, stall, spin and fatal crash.

Kenny James and his passenger were flying a recently purchased KR. Our condolences to their families and friends.

Call me a nagging, sermonizing, preachy pain in the posterior if you wish, but how many times must we be reminded that you never, ever, no way Jose, attempt to turn back to the runway should you experience a loss of power just after rotation. NEVER ATTEMPT THIS! Airplanes can be replaced. They are insignificant when compared to the value of a human life.

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The KR Newsletter reserves the right to edit free ads.

FOR SALE - Original KR-2 retractable landing gear assembly complete with spring bar, gear legs, wheels, tires, brakes, etc. \$275. Continental O-200 crankshaft (GPU converted) in good condition, \$600. Continental A-75 crankshaft with fresh regrind to .010 under, \$600. Contact M.T. Sparks, 10232 Kit Carson Pl, Santee CA 92071. Telephone 619-448-4945

WANTED - Any or all back issues of KR Newsletter from 256 thru 264 plus 267 & 268. Contact Jerry Pryce, 549 Tipperary Drive, Vacaville CA 95688. Tel: 707-447-4349.

FOR SALE - Hapi VW conversion. 1835cc with dual plug heads, alternator, starter and KR motor mount. Engine has tuned exhaust system, floatbowl carb, spinner and 52x48 Props, Inc propeller. Engine run-in by Hapi, zero hours since. \$3000. William Kirby, 618-298-2918 or email Grandma2@accessus.net.

FOR SALE - Parting out KR2 project. Wing skins, tail-wheel, engine cowl and most hardware has been sold. Please call, write, or email for list of remaining components. Contact Ted O'Dell, 14033 Tuttle Hill Rd, Milan MI 48160. Email tjodelh@msn.com or call 734-439-2439.

FOR SALE - 1998 KR2S tn-gear with 70hp 2180cc GPASC VW and Bosch 009 ignition. Cleveland brakes, wheel pants, 12 gal tank. Dual headsets, intercom, ICOM IC4 Comm and Garmin 195 GPS. Twice raced in Copperstate Dash. Cruises 149@3200. Always hangared. Looks good and runs great. 85TTSN. See KR News Nov 98. Asking \$35K but will accept \$16K. Jeff Bryson, Bakersfield CA. Telephone 661-665-9449.

FOR SALE - Posa Carb, new in box, \$100 or some trade. KR gear retract parts, less springbar. Make offer or trade. Contact Bobby Laird, 209-392-3436.

WANTED - Set of KR2 plans with latest revisions. Please contact Randy Eakle. 3918 North Vincent, Peoria Heights IL 61614. Tel 309-688-4378 (between noon and 2:00pm) or email to annstreet@364.com with price and details.

WANTED - Help locating and purchasing a motor mount for a Subaru 1.8 liter EA-81. Philip Spade. Box 327, Gwinn MI 49841. Tel: 906-346-3237.

WANTED - Mosler Power dual ignition coils and wiring diagram info. Please call Lee Pendleton, 423-559-2603.

FOR SALE - Molds to make fiberglass Revmaster-style cowlings for the KR-2. \$200 OBO. Contact Ken Boyer, 573-543-5538.

FOR SALE - Retract Gear System removed from KR-1. Pair of gear leg castings, go kart brakes, spring bar, hardware, etc. Make offers to Sam Bailey, 914 West 4th, Pratt KS 67124. Day-316-672-7426 or Eve-316-672-3325

FOR SALE - One each Revmaster & VW motor mount, set of Rand KR2 rudder pedals, bolt kit, metals kit, complete retract gear. 2100D Revmaster w/Subaru starter firewall forward and 3-blade G/A prop with Warnke hub. \$2500US for the lot. Gene MacDonald, Box 60, Hague, SK SOK1X0, Canada. Telephone 306-225-5770

FOR SALE - KR2 stretched to KR2S, per plans. A&P built boat. Premolded turtledeck, wings & wing stubs, tails, canopy, forward deck. Lacks wings and fuel tank assembly. No wheels or brakes. 2180 VW w/dual ignition 200 hours, manifold and carbs, engine mount, Sterba prop. \$9500. Contact Jim, 909-313-8937.

FOR SALE - KR2 Parts: Rudder pedal assy w/nylon bearings, 7 front & 8 rear spar attach fittings, vertical stab templates, 5 aileron bellcrank ftgs w/bushings, 20 angle brackets & gussets, flat seat w/attach angles. \$185 value asking \$140. Ray Goree, 817-795-4779, Arlington TX.

FOR SALE - KR2 project approximately 80% completed. For full details, contact A.C."George" Cummins, 3109 Whittle Way, Midland TX 79707. Tel: 915-520-8334.

FOR SALE - KR2S modified to single-seat. Approx 50% complete. On gear w/Clevelands. Has elec aileron and elevator trim. Tail feathers and spars finished. Includes-foam and fiberglass kits. Excellent workmanship. I'm grounded. \$1500. Wes Hennis. 727-526-6596 - Florida.

FOR SALE - KR2, 85-90% complete and almost ready for primer. VFR instruments, 1834 VW with Diehl case. Sting tuned exhaust. Cam locking-type manual retracts, 5-ply Lamb tires. Excellent work and a real deal at \$6500. Contact Pat McFall, 515-276-3936 in Des Moines IA.

List your stuff... KR Classifieds work

"I sold my KR2S wing skins, cnnovi/, and deck kits thanks to the KR Newsletter."

— Wes Hennis

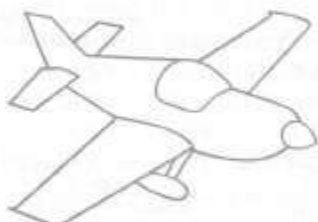


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Let ☐ Guide You Through Your Project!



KR NEWSLETTER

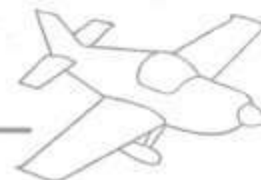
624 West University Drive
PMB199

Denton, Texas 76201

Issue 280

Drag in an airplane is the same as thrust, only just the opposite.

- Aviation, as explained by kids

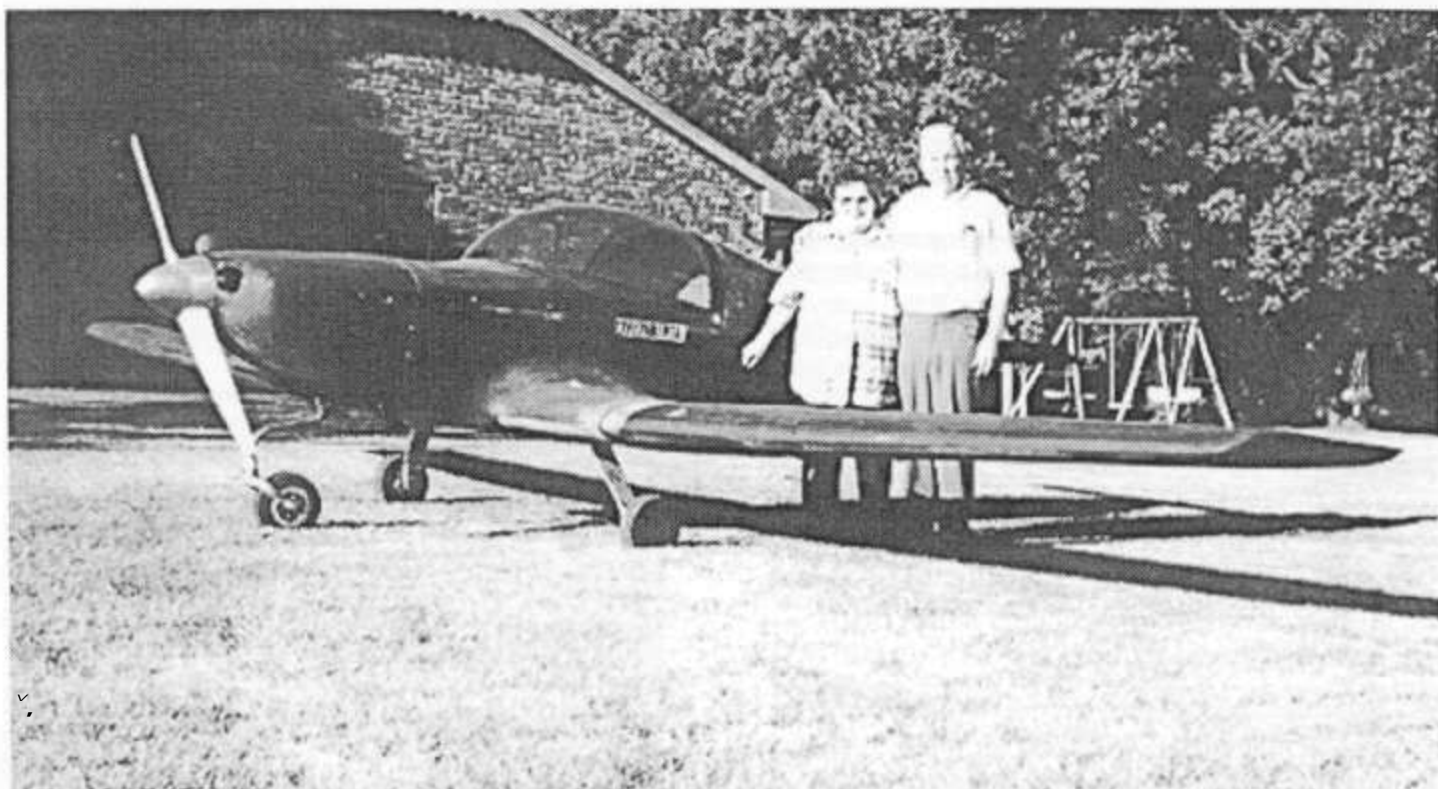




NEWSLETTER

KR's and Okies from Muskogee

Another Pilot Planning for Pine Bluff!



KR-2 • N837JJ

Jack Daugherty • 4400 West 26 North • Muskogee, Oklahoma 74401

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

Oklahoma Tri-Gear KR-2

Painting for Pine Bluff

Jack Daugherty

4400 W. 26 North • Muskogee OK 74401
telephone: 918-682-4986

We received our airworthiness certificate on April 13, 1999. I flew our KR2 for the first time in December 1999, at Davis Field in Muskogee, Oklahoma.

I had taxied N837JJ several hours during the year and had made some adjustments and corrections. I fully intended to take some dual instruction in a friend's KR2, but after taxiing at high speeds several times on Davis Field's 7200 feet of runway, I developed a good feel for the controls, which are different than a Cessna, so I took to the sky.

My first flight was two times around the pattern. I made my approaches fast since I had 7200 feet of runway in front of me. Plus, I wanted to get a feel for the aircraft's sink rate. She handled wonderfully and the adrenaline flowed for a week afterward.

The KR is still in it's primer paint. I'm sanding and painting right now. I hope to get it painted and fly to the Pine Bluff KR Gathering in September.

Our KR is named JJ, after Jack and Joyce Daugherty. My wife has encouraged me and done a million things in the construction of our KR.

The KR has an 1835cc Volkswagen engine, Diehl wing skins, dual stick controls, and a Diehl nose gear. The empty weight is 580 pounds. Wing span is 23 feet, six inches and the aircraft is 15 feet from the tip of the spinner to the rudder's trailing edge.

* * * * *

California to Copperstate to AR

West Coaster Plans for Pine Bluff

Jeff Bryson

9017 Hemingway Place • Bakersfield CA 93311
Tel: 661-665-9449 • email: flyboy76@netzero.net

It has been awhile since I have written to the KR Newsletter. I apologize.

Having been a pilot for twenty-five years prior to completing my KR, I was extremely anxious to get into the air. I had not flown anything during the four years while I was building. Knowing my limitations and patience, I gave very special attention to the aircraft's construction.

In the summer of '98, when it came to the finish sanding, filling, sanding, filling, sanding, etc., I realized that I would never have a cherry airplane. After 100 hours, I said, "From thirty feet, it looked OK." I guess my point is to have fun flying. You don't need a show stopper.

My hat goes off to all of you that have spent the

thousands of hours perfecting your airplane. My KR is fast, strong, the center of attraction at airports, light, fun, and ugly. I love it. When I attend airshows, I don't park on the show line. I have approximately one-hundred hours on my KR and it just keeps running better and better.

From here in Bakersfield, California, it's about 1800 miles to Pine Bluff, Arkansas. If the weather permits and the creek don't rise, I'm going to attempt to attend our next KR Gathering. My longest cross-country has been the two EAA Copperstate Fly-In races to Coolidge, Arizona. Anybody with suggestions would be appreciated.

I think the articles in the KR Newsletter are great. Don't give up, keep the faith, and take no prisoners.

* * * * *

KR Gathering & Fly-In 2001

Sept 21-23 - **Pine Bluff AR**

Fly-In Director, Tommy Waymack
870-535-3294 or blindate@seark.net

- **LODGING** •

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mention you are with The KR Gathering

Tentative KR Gathering 2001 Schedule

Friday, Sept 21 - Arrivals and hangar flying

Saturday, Sept 22 - Flying, Demonstrations, Judging

Sunday, Sept 23 - Farewells and departures

Memories of Perry, Oklahoma



Do you like your KR's in bunches? With lots of variety and fresh ideas? Like-minded friendly folks who talk your language? If you've got the fever, we got the cure.

The photograph is from a prior KR Gathering and Fly-In at Perry, Oklahoma. KR driver Don Betcham was our host for two years in a row and did a fantastic job as the weekend's Air Boss.

This year, the event returns to Pine Bluff under the capable direction of Tommy Waymack. His KR is in the photo. Can you spot it? Can you identify the other KR aircraft and their owners? See you there!

2001 Gathering Host Remodels a KR from Folder to Fixed

N995BG now sleeker, slimmer, smoother, and so seductive

Tommy Waymack

2901 West 26 • Pine Bluff AR 71603
870-535-3294 or blindate@seark.net

My KR-2, N995BG, has undergone a full refurbishment. The photos and comments will explain what has been done.

I'm looking forward to again hosting the KR Gathering in Pine Bluff. I hope everyone will make an effort to attend.

* * * * *

Tailwheel Endorsements, FAR's, and the Experimental Aircraft

The following information was extracted from an internet discussion of FAA-required tailwheel endorsements and KR aircraft. For privacy considerations, names have been deleted. This is an interesting subject which may be researched in your copy of the Federal Aviation Regulations/Airman Information Manual.

Original Message

To: krnet@mailinglists.org

Subject: KR tailwheel endorsement

As a brand new pilot - my Private Pilot FAA check ride was last Saturday - I'll pull out my new and still warm FAR/AIM...

Per FAR 61 (i)(2): The training and endorsement is not required if the pilot logged pilot-in-command time in a tailwheel airplane before April 15, 1991.

The rest of us have to log time with an instructor and have the sign-off; most likely a notation in the midst of logged time. My Cessna Pilot Center logbook has a special block for this in the back, but few others will. Now that I'm a pilot, it's time to get working on something to fly.

One response:

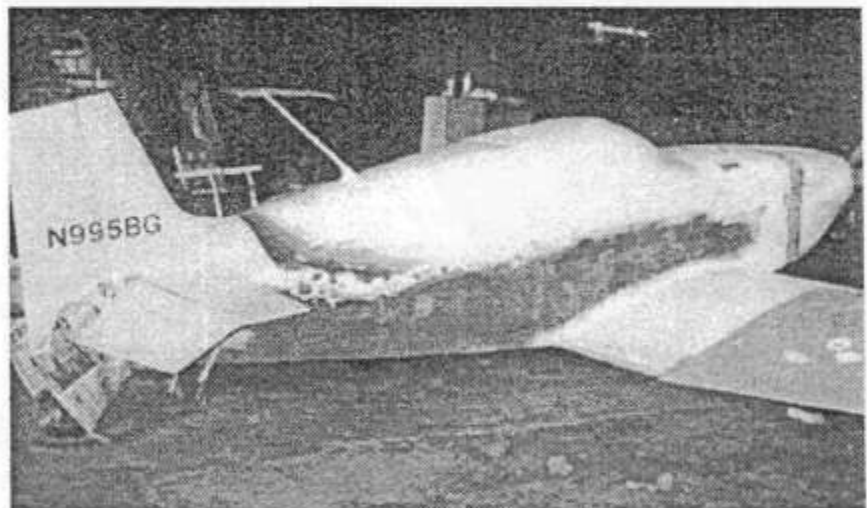
This same topic came up on the Drag-onfly list a while back. I assume that

continued on page 4:



What a transformation! This is Tommy's retractable gear KR-2 before the metamorphosis. Quite obvious that a considerable amount of time and energy went into the rebuild. Tommy says time estimates may vary.

See how many changes you spot. Better yet, visit Tommy's KR in person September 21-23 in Pine Bluff, Arkansas.



After many years of use, 995BG's fuselage plywood needed a protective overlay of fiberglass cloth. The darker area between the aft turtle-deck and wing stubs shows the area that required the removal of all previous finishing materials. This photograph was taken about August 2000. Cowl was also extended 2.50 inches to contain the bigger engine.

Countdown to Pine Bluff

2001 KR Gathering & Fly.In
September 21-23, 2001

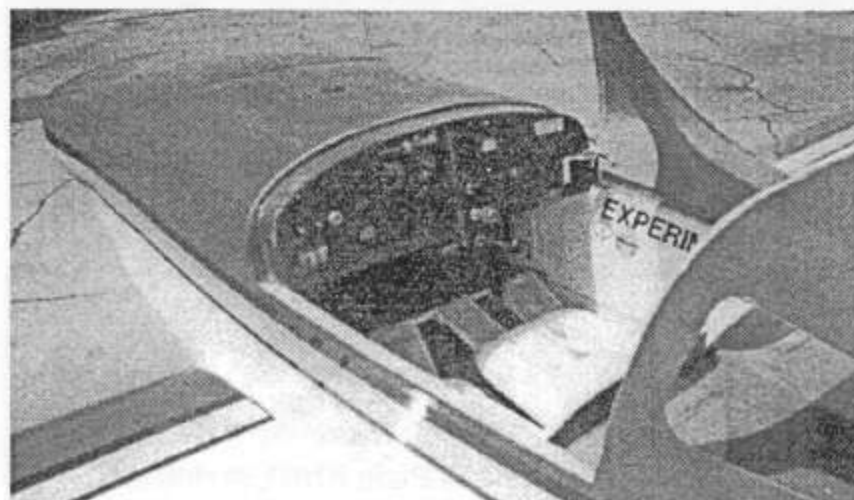
Grider Field (KPBF) Pine Bluff, Arkansas



Noel, a biker bro', student pilot, and friend, joins me in a discussion of the Revmaster installation and the new, fixed main gear. The holes are still visible on the bottom of the wing stubs. 1996 KR Gathering attendees will recognize the hangar; it was our Fly-In home that year.



No, my KR did not sink into the hangar floor! This is the modified cowling after the white paint was applied. The stripes went on while the cowl was on the airplane; much easier to get everything lined up. Now it's really starting to look like an airplane.



The last photo is of my new office, complete with starter, dual controls, electric pitch trim, and mixture control. The dual control stick assembly is from Rand-Robinson.

* * * * *

Tailwheel Endorsement. . .

continued:

you are talking about flying a tailwheel equipped experimental airplane? If so, you need to read a little further down the page to the exceptions.

The chapter is 61.31. Each chapter will have two things for you to look for. One is the applicability, the other is exceptions.

Here's the condensed version:

61.31 TYPE RATING REQUIREMENTS, ADDITIONAL TRAINING, AND AUTHORIZATION REQUIREMENTS

- snip -

(i) Additional training required for operating tailwheel airplanes.

(1) Except as provided in paragraph (i)(2) of this section, no person may act as pilot in command of a tailwheel airplane unless that person has received and logged flight training from an authorized instructor in a tailwheel airplane and received an endorsement in the person's logbook from an authorized instructor who found the person proficient in the operation of a tailwheel airplane. The flight training must include at least the following the maneuvers and procedures:

- snip -

(2) The training and endorsement required by paragraph (i)(1) of this section is not required if the person logged pilot-in-command time in a tailwheel airplane before April 15, 1991.

- snip -

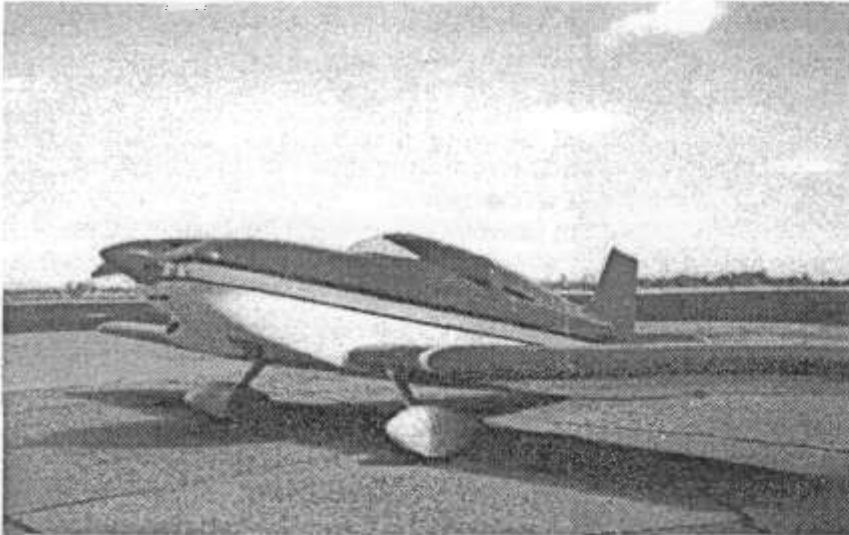
Now, this is for the money. Gotta read those exceptions:

(k) Exceptions.

(1) This section does not require a category and class rating for aircraft not type certificated as airplanes, rotorcraft, or lighter-than-air-aircraft, or a class rating for gliders or powered lifts.

(2) The rating limitations of this section

continued on page 5:



As of late June, 2001, I have six test flights totaling maybe two hours. An oil leak around the pushrod tubes could probably have been prevented had I installed new seals and tubes during the engine tear down, inspection, and reassembly of my new / used Revmaster VW conversion.

The oil temperature is a little high, but I'm getting that down by opening up the intake for the remote oil cooler along with adding a higher volume oil pump.

Tailwheel Endorsement...

continued

do not apply to (i) An applicant when taking a practical test given by an examiner;

(ii) The holder of a student pilot certificate;

And here it is!

(iii) The holder of a pilot certificate when operating an aircraft under the authority of an experimental or provisional aircraft type certificate;

* * * * *

Websites Worth Checking Out

<http://registry.faa.gov>

This interesting site allows you to locate an aircraft by type, serial number, or N-number. Forms are available to secure your own N-number reservation, research those available, print out forms, and even submit the tax. uh, excuse me, the five-dollar "fee".

<http://www.100dollarhamburger.com>

OK, most everyone's been here, but it's still a good spot to check fuel prices for an upcoming x-cty. You may be surprised at the price variance for a gallon of 100LL

<http://www.nts.gov>

This site can be a learning experience, if you'll read between the lines.

HUMOR-1970 vs 2001

1970 - Long Hair

2001 - Longing for hair

1970-The perfect high

2001 - The perfect high yield mutual fund

1970-KEG

2001 - EKG

1970-Acid Rock

2001 - Acid Reflux

1970 - Moving to California because it's cool

2001 - Moving to Florida because it's warm

1970 - Growing pot

2001 - Growing pot belly

1970 - Watching John Glenn's historic flight with your parents

2001 - Watching John Glenn's historic flight with your children

1970 - Trying to look like Marlon Brando or Elizabeth Taylor

2001 - Trying NOT to look like Marlon Brando or Elizabeth Taylor

1970 - Seeds and stems

2001 - Roughage

1970-Parr

2001 - AARP

1970 - Being caught with Hustler magazine

2001 - Being caught with Hustler magazine

1970-Killer weed

2001 - Weed killer

1970-Hoping for a BMW

2001 - Hoping for a BM

1970-TheGrateful Dead

2001 - Dr. Kevorkian

1970 - Getting out to a hip new joint

2001 - Getting a new hip joint

1970- Rolling Stones

2001 - Kidney stones

1970 - Being called into the principal's office

2001 - Calling the principal's office

1970 - Screw the system

2001 - Upgrade the system

1970 - Peace sign

2001 - Mercedes logo

1970-Take acid

2001 - Take antacid

1970 - Passing the driver's test

2001 - Passing the vision test

1970-"Whatever"

2001 - Depends

NTSB Identification: FTW01LA128

Accident occurred Thursday, May 24, 2001 at Wichita Falls, TX

Aircraft: Blucher KR-2S, registration: N197DB

Injuries: 2 Fatal

This is preliminary information, subject to change, and may contain errors. Any errors in this report will be corrected when the final report has been completed.

On May 24, 2001, approximately 1905 central daylight time, an Blucher KR-2S amateur built airplane, N197DB, was destroyed when it impacted the ground following a loss of engine power and loss of control while maneuvering near Wichita Falls, Texas. The airplane was owned and operated by the pilot. The private pilot and the passenger were fatally injured. Visual meteorological conditions prevailed, and a flight plan was not filed for the 14 Code of Federal Regulations Part 91 personal flight. The flight originated from the Wichita Valley Airport at an undetermined time.

A witness observed the airplane in a climbing turn when its "engine began to sputter and quit." The airplane nosed over, and began to spiral toward the ground. The witness observed the airplane until it descended from view.

An examination of the accident site by the FAA inspector revealed that the airplane impacted the ground "relatively flat" on a magnetic heading of 180 degrees. The cockpit was crushed flat, and the tail was separated aft of the cockpit. Both main landing gear were shoved up into their respective wing.

The inspector reported that the fuselage fuel tank and both wing tanks were empty. The fuselage fuel tank was compromised, and the fuel lines to the wing fuel tanks were fractured; however, the ground under the wreckage was dry and there was no odor of fuel.

http://www.nts.gov/nts/brief.asp?ev_id=20010531X01041&key=1

The above preliminary accident information is a word for word reproduction of the NTSB's web site report. Final accident reports are usually published anywhere from 30 to 180 days after the initial report, depending on the specific accident.

Some Folks Are Just Naturally Thoughtful

When C.W. Spratt, of Sun Valley, California, renewed his subscription to the KR Newsletter, he also enclosed two tickets for a recent \$132 million Super Lotto drawing.

Unfortunately, the drawing had come and gone but Mister Thoughtful's note sez, "These didn't work for me."

As I mentioned, some folks are just turned that way...

A Reminder

The commercial office location of Rand-Robinson Engineering, Inc. has been closed. Jeanette will now be handling plans sales and operating the business from her residence. Update your records to reflect the current business address of your favorite homebuilt aircraft.

RAND-ROBINSON ENGINEERING, INC.
PMB 724

7071 Warner Avenue #F
Huntington Beach CA 92647

Tel: 714-898-3811 • Fax: 714-890-1658
KR Website: <http://www.fly-kr.com>

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Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial-style ads will be billed accordingly and must be paid for prior to publication.

The KR Newsletter reserves the right to edit free ads.

FOR SALE - Original KR-2 retractable landing gear assembly complete with spring bar, gear legs, wheels, tires, brakes, etc. \$275. Continental O-200 crankshaft (GPU converted) in good condition, \$600. Continental A-75 crankshaft with fresh regrind to .010 under, \$600. Contact M.T. Sparks, 10232 Kit Carson Pl, Santee CA 92071. Telephone 619-448-4945.

WANTED - Any or all back issues of KR Newsletter from 256 thru 264 plus 267 & 268. Contact Jerry Pryce, 549 Tipperary Drive, Vacaville CA 95688. Tel: 707-447-4349.

FOR SALE - 1998 KR2S tri-gear with 70hp 2180cc GPASC VW and Bosch 009 ignition. Cleveland brakes, wheel pants, 12 gal tank. Dual headsets, intercom, ICOM IC4 Comm and Garmin 195 GPS. Twice raced in Copperstate Dash. Cruises 149@3200. Always hangared. Looks good and runs great. 85TTSN. See KR News Nov 98. Asking \$35K but will accept \$16K. Jeff Bryson, Bakersfield CA. Telephone 661-665-9449.

FOR SALE - Posa Garb, new in box, \$100 or some trade. KR gear retract parts, less springbar. Make offer or trade. Contact Bobby Laird, 209-392-3436.

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FOR SALE - One each Revmaster^^ VW motor mount, set of Rand KR2 rudder oedaiviipit kit, metals kit, complete retract gear^lipD Aevmaster w/Subaru starter firewall folwrdCncj3-DrS3e G/A prop with Warnke hub. \$2500US TBntheiot. Gene MacDonald, Box 60, Hague, SK SOrtXO, Canada. Telephone 306-225-5770.

FOR SALE - KR2 stretched to KR2S, per plans. A&P built boat. Premolded turtledeck, wings & wing stubs, tails, canopy, forward deck. Lacks wings and fuel tank assembly. No wheels or brakes. 2180 VW w/dual ignition 200 hours, manifold and carbs, engine mount, Sterba prop. \$9500. Contact Jim, 909-313-8937.

FOR SALE - KR2 Parts: Rudder pedal assy w/nylon bearings, 7 front & 8 rear spar attach fittings, vertical stab templates, 5 aileron bellcrank ftgs w/bushings, 20 angle brackets & gussets, flat seat w/attach angles. \$185 value asking \$140. Ray Goree, 817-795-4779, Arlington TX.

FOR SALE - KR2 project approximately 80% completed. For full details, contact A.C."George" Cummins, 3109 Whittle Way, Midland TX 79707. Tel: 915-520-8334.

FOR SALE - KR2S modified to single-seat. Approx 50% complete. On gear w/Clevelands. Has elec aileron and elevator trim. Tail feathers and spars finished. Includes foam and fiberglass kits. Excellent workmanship. I'm grounded. \$1500. Wes Hennis, 727-526-6596 - Florida.

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I'm dog-gone sad...
Both my food bowl *and*
the KR News mail bag are
empty. Won't somebody
fill 'em up, *please?*



The Leader In Recreational Aviation



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To learn more about these programs available only through EAA, contact the EAA

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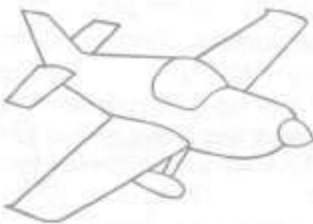
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these programs is right for you. Expert advice is there for the asking. **Best of all,**

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The EAA Technical Counselor and Flight Advisor programs are ready and able to help

Let ☐ Guide You Through Your Project!



KR NEWSLETTER

624 West University Drive

PMB 199

Denton, Texas 76201

Issue 281

Good judgment comes from experience . . .

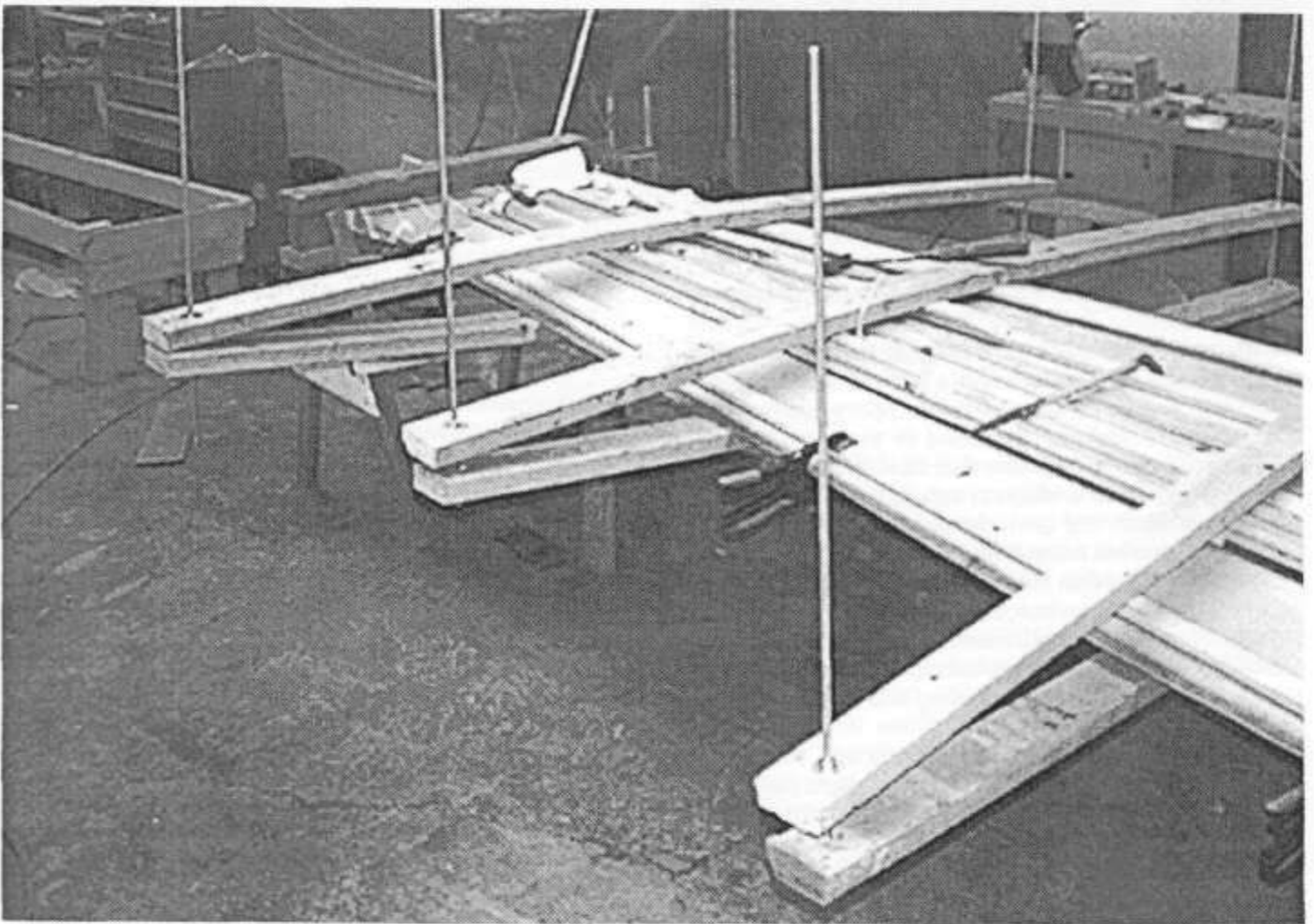
Unfortunately, the experience usually comes from bad judgment.





NEWSLETTER

Fresh Idea for Attaching Wing Skins *Tandem Texas KR Terrors Team Up*



Texans Kerry Miller and Curtis Wright are building their KR's together as a team effort. The clever installation clamps for molded wing skins again proves that good prep and planning is half the construction battle.

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Novel Idea Aids Wing Skin Install Prep Work Speeds & Improves Task

Kerry Miller

2953 Ridgeview Rd • Caddo Mills TX 75135

Tel: 903-527-5027 • email: kmillerOI@ticnet.com

I finally got a picture for you. I'll try to come up with a description of our "new" clamps. In the meantime, here is an email picture of them to see if the quality is good enough. I'm sending two versions of the same picture; one 256 color jpg and a grayscale jpg. If it's not good enough, let me know and I'll try again. . if we put the clamps together again.

The story is like this. . . We glued down the first wing skin on Curtis' plane (That's Curtis Wright, Kerry's building partner) using the instructions that come with the wing skins from Dan Diehl. We used the little furring strips to hold it down and they just didn't give us enough pressure on the spars. So, we took eight-foot 2x4's and drilled holes in the ends for a 3/8" threaded rod and put nuts and body washers on the bottom and top of the boards. This way, we could adjust the clamps and get the pressure where we needed it.

I'll come up with an article in the next couple of days. If you get close to deadline and haven't heard from me, start pestering me! Here are the photos, let me know if they're usable.

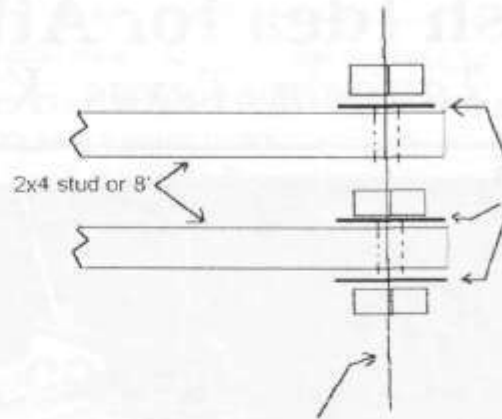
When we were installing the Diehl wing skins on Curtis Wright's plane, we were having a few problems getting sufficient pressure across both spars using the "Campbell clamps" as described in the instructions. There were a couple of places that looked like they might not have had quite enough pressure on the first wing skin, so we made our own clamps on the second wing skin and it came out much better.

The plans from Dan Diehl call for little 1x2's taped together with nylon reinforced packing tape to use as clamps. The wood we got seemed pretty flimsy and we broke several pieces while clamping the first wing. Here's a quick description, drawing and picture of what we did on the second wing skin.

First, we got eight 2x4 studs and drilled 1/2" holes near the ends of the boards. We used eight pieces of 3/8" threaded rod to hold the clamps together, but wanted the holes in the wood big enough so they wouldn't get into a bind if the boards weren't exactly square. We only put a nut and washer on the top of the top board and the bottom of the bottom board, but discovered in the middle of the lay-up that it would have been handy to have the bottom boards bolted solid with a nut and washer on the top of the bottom boards also so I've added that to the drawing.

Before we mixed the resin, we got the clamps ready by running the bolts about two-thirds of the way down on the end towards the front of the airplane (we used four clamps per wing), then pushed the bottom board of the

clamps under the wing but swiveled the top board 90 degrees to keep it out of the way. Once we had the skins in place and glued down, we used furring strips directly over the spars, then applied the clamps, running the nuts down by hand on the threaded rod to get the pressure we needed. To insure even pressure across the wing, we used small wood shims under the clamps after the initial clamping, then ran the nuts down as needed to get enough pressure over both spars the entire length of the spars.



But Wait. . . There's More

Now that you've got your wing skins securely bonded to the spars, check out page 4 for a previously published idea on how to attach the aileron sub spars. A fringe benefit that comes with the technique is that there is no sanding required! We hate sanding!

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Welcome to the Hornet's Nest *We Keep It Stirred Up*

Lots of people read the KR Newsletter. Granted, the ideas and opinions expressed are those of the writer and should be used at the reader/builder's discretion. . . at least that's the gist of the disclaimer on the cover of every issue of the KR Newsletter. Anyway, the following letter offers additional information on the subject of tailwheel endorsements and Experimental Category aircraft.

What continues to muddy the waters is the letter's mentioned FAA Order 8130.2D. Interestingly enough, down in this neck of the woods, the FSDO supplied Operational Limitations are heavily weighted towards the need to avoid the congested DFW Bravo airspace while also staying away from overflights of populated areas. Two completed and flying, tailwheel equipped Exp Cat aircraft have rolled out of the editor's hangar... without mention of Order 8130.2D. As the letter states, best to check your paperwork!

* * * * *

More on Tailwheel Endorsements *Better Check Those Op Limitations*

Charlie Becker

Executive Director • EAA Aviation Information services
Tel: 920-426-6530 • Fax: 920-426-6560

In issue 281 of the KR Newsletter, you have a discussion of "Tailwheel Endorsements, FAR's and the Experimental Aircraft". I agree with the analysis however, it omitted one important item: Operating Limitations.

Every experimental aircraft is issued a set of operating limitations that govern the use of that specific aircraft. Operating limitations have evolved over time so you have to review your aircraft's specific operating limitations to find the answer to the tailwheel question. Currently, FAA Order 8130.2D, which is the guidance FAA inspectors and DAR's use to inspect aircraft, contains a recommended set of operating limitations. The following is one of those recommended operating limitations:

"The pilot in command of this aircraft shall hold a category/class rating, or an authorized instructor's log book endorsement. The pilot in command must meet the requirements of Section 61.31(e), (f), (g), (h), (i), and (j) as appropriate."

As we learned in the earlier discussion, Section 61.31(i) is the section that requires a tailwheel sign-off. So, a pilot of any aircraft with this operating limitation must have either a tailwheel sign-off or have logged pilot in command time in a tailwheel aircraft prior to April 15, 1991.

Hope this clears this up and thanks for keeping EAA on your mailing list.

For those who may have only recently checked out of the monastery, this is your last reminder of this year's

KR Gathering & Fly-In 2001

Sept 21-23 • Pine Bluff AR

Fly-In Director, Tommy Waymack
870-535-3294 or blindate@seark.net

• LODGING •

Best Western Pines 800-528-1234 or 870-535-8640

Hampton Inn 800-HAMPTON or 870-850-0444

mention you are with The KR Gathering

Tentative KR Gathering 2001 Schedule

Friday, Sept 21 - Arrivals and hangar flying

Saturday, Sept 22 - Flying, Demonstrations, Judging

Sunday, Sept 23 - Farewells and departures

Get Connected with the KR News *KR Builder Networking Works*

Peter Johnson

109 Mascott Ave • Kenora Ontario Canada P9N 3A2

Tel: 807-468-4764 • email: pjohnson@voyageur.ca

I'm building a stretched and fattened KR-2S with a Corvair in the front and retractable tricycle gear.

Keep up the good work, Monte. Through the KR Newsletter, I met Anthony Underwood. I'm presently designing a retract system for his plane in exchange for a set of his wheels.

* * * * *

KR2 Fuel Question & Caution

Robert Nafe

21791 NW 8th Place • Pembroke Pines FL 33082

Tel: 954-436-5976 • email: r.nafe@worldnet.att.net

I have recently subscribed to the KR Newsletter and enjoy it very much. A KR2 is presently in my work shop in the boat stage. After reading issue 281, the fuel system concerns me. It appears other KR's have had their engines "sputter and quit" after a normal takeoff, go-around, or just showing off. The results were tragic for the ones I have heard of; usually due to no altitude for recovery or turning back to the airfield at too low an altitude.

continued on next page

KR2 Fuel Question & Caution...continued.

In the KR plans and builder's book, the main fuel tank has a flat bottom with no apparent sump and (the fuel pick-up point) is just aft of center of the tank. The wing tanks do not have any sump or drain shown on the plans.

I would like to hear from others if they have had similar experiences of power interruptions at high climb rates with a quarter tank of fuel, more or less? I speculate this power interruption may be caused by fuel starvation due to the location of the fuel outlet.

The boat I have was to be fitted with an Aeronca fuel tank, also flat bottom, with a fuel outlet at the center of the tank. Design changes are under way to provide for a one gallon sump tank to be fitted to the bottom in an effort to maintain positive fuel pressure at all times and angles of climb. If wing tanks are to be installed, I believe they should have a sump and drain system installed as well. Any other options before I get started?

After reading the classifieds, I did buy my project from Gene MacDonald. I was glad to see his project in the KR Newsletter and talked with him on several occasions during the transactions. I am happy indeed.

Aileron Sub-Spar Installation

Ref. KR Builder's Manual 10.58

Monte Miller, Editor KR Newsletter

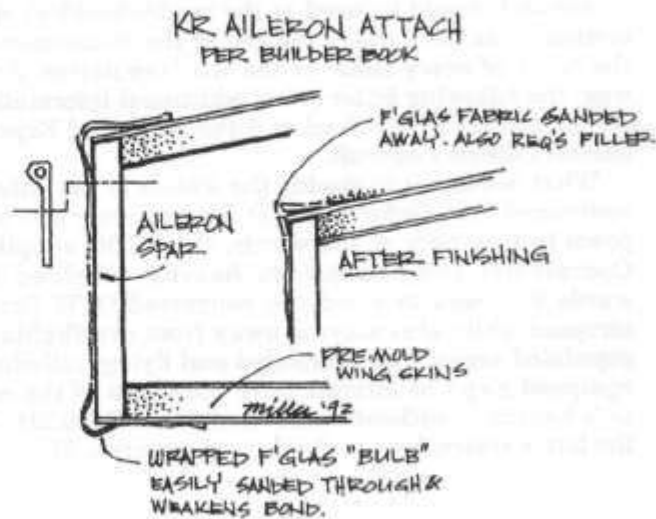
I can't stand to sand fiberglass layups, especially vinyl ester resin. The resin clogs sandpaper and makes for slow going. I held off doing the aileron spar installation in the premolded Diehl wing skins simply because of my dislike of sanding. Finally came up with an alternative technique that is easier and stronger.

After bonding the spars in place, the manual suggests the builder wrap the aileron sub spars with fiberglass and then feather sand to blend the layup into the existing wing skin surface. The builder's manual is a bit vague through this section so it's necessary to read between a few lines.

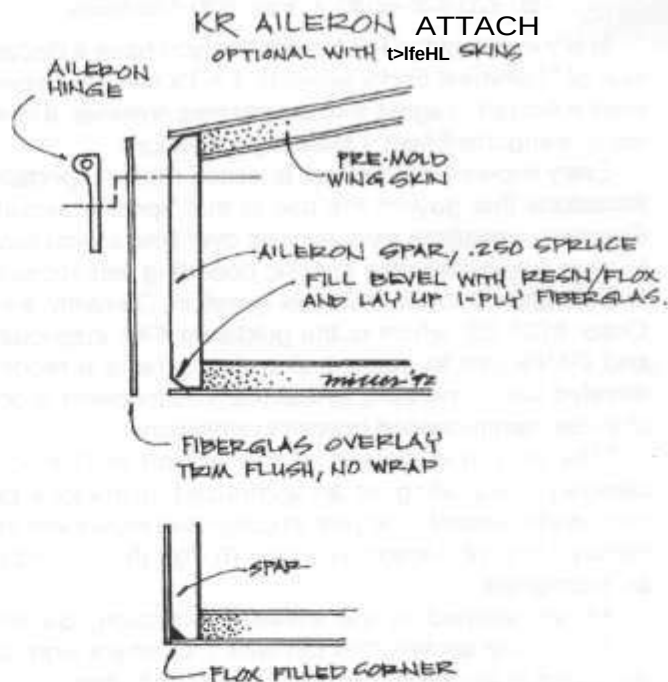
The sketches should explain all. I even used a mill file to dress the trimmed out fiberglass edges and eliminated sanding entirely. This doesn't save you from shaping the wing leading edge tapes. Can't escape sanding entirely.

As a reference, the following sketch describes the aileron spar attachment method as called out in the Rand Builders Manual. In reality, it is impossible to get the fiberglass cloth to make a tight wrap around a corner. The fabric wants to pull away from the very spot where its strength is needed the most.

Remember, this spar attach technique works only in conjunction with the Diehl premolded wing skins. These wing skins have a fiberglass layer on both the outside and the inside of the molded surfaces.



Above drawing represents aileron sub-spar installation as presented in the KR Builders Manual. Note that the technique applies to the built-up foam and fiberglass wing.



With the Diehl-style pre-formed wing skins, it is possible to modify the aileron spar installation using a resin and flox, reinforced corner, similar to the manual's trailing edge fabrication and reinforcement technique as used on the KR's rudder and elevator.

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FOR SALE - Engenfeller geared reduction drive for E81 Subaru engine. New, never been mounted on engine. My cost, \$2195.00 plus shipping. Will part for \$1650.00 plus shipping. Matched lightweight starter included at no extra cost. Will bring to Sept's Pine Bluff KR Gathering. Sam Sayer, 6621 Foxmoor Dr, Zephyrhills FL 33541. Phone 813-782-3302 or email karibird37@msn.com.

FOR SALE - Subaru EJ22 engine. Was removed from a new car. \$1000. Call Bill Boot, evenings, 530-824-5541.



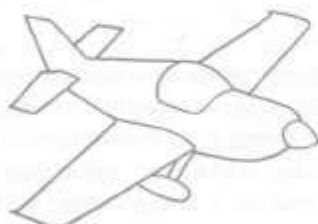
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Let ☐ Guide You Through Your Project!



KR NEWSLETTER

624 West University Drive
PMB199

Denton, Texas 76201

Issue 282

Aviation as Explained by Kids

- Borrowed from the San Diego Antijuer *Neivsletter*

"The first female aviator was Kitty Hawk."





NEWSLETTER

Great Northern Canadian KR Launches *Roy Larson Tri-Gear KR-2 Over Ontario*



Rand-Robinson KR-2 - C-GFYR

Ray Larson • 2 Pinecrest Place • PO Box 794 • Fonthill, Ontario, Canada L0S 1E0

Another classic KR-2 has taken to the sky - this time over Canada! Ray Larson provides us with a quick look and report on his beautifully constructed aircraft. His photograph shows off the Dan Diehl tricycle landing gear with nicely faired wheels. Also note the engine cowling with its tightly positioned prop spinner and sleek air intake. More flight reports are to follow.

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Canadian KR-2 First Flight *Keep Working and They Will Fly*

Ray Larson

2 Pinecrest Place • PO Box 794
Fonthill, Ontario, Canada L0S 1E0
Tel: 905-892-6389

The project began in February of 1994 with acquisition of KR plan set S/N 059 along with assorted bits and pieces required to put our plane together. As of August 2001, we are now flying.

Our KR flies with the Diehl pre-molded wing skins and Dan's tri-gear conversion. Cleveland wheels and brakes are fitted beneath fiberglass wheel fairings.

The 2180cc Volkswagen aero conversion from Steve Bennett's Great Plains Aircraft Supply utilizes the popular Force One crankshaft assembly. The cockpit panel is full of VFR and engine instruments.

As they become available, performance figures will be shared with the readership.

We are based at Ontario's Welland/Port Colborne Airport, near Niagara Falls.

This year's KR Gathering will be missed but we hopefully can attend future events and try to be contributors to the KR Newsletter, which we really enjoy. Keep up the good work and thanks, again.

Congratulations, Ray! Your dedication and efforts will be a great inspiration to many KR builders. We look forward to a future report on the performance of your beautiful aircraft.

ON THE RAMP

Difficult Days for All of Us

Obviously, this issue of the KR Newsletter is late. The past few weeks have been very difficult for our family due to the sudden and tragic death of my father and the need for my brother and I to assume the complete responsibilities associated with a loss of this kind. I truly apologize for the tardiness of the newsletter, appreciate the patience everyone has demonstrated, and hope that the future will calm down a bit.

A China-Burma-India "Hump" flyer who left school and enlisted in the Army Air Corps the day after Pearl Harbor, an Eagle Scout, private pilot, Civil Air Patrol pilot, aircraft owner, and a pretty fair golfer my dad was. He was also, according to Tom Brokaw's book, a member of what has become popularly known as "The Greatest Generation".

Dedicated to his wife, he now leaves it to my brother and I to show our mother how to put fuel in her car, manage her personal and home finances, and even how to write a check - things she never had to do throughout 57 years of marriage. Typical of "the generation", my father handled everything and most probably believed he would live forever. Unfortunately, he did not.

The tragic events of September 11, 2001 are still fresh in everyone's mind. Let us remember this date by taking a moment of each day for quiet reflection and re-dedication to our great nation. God bless America.

The on-off-on again 2001 KR Gathering was a success in spite of events and actions that threatened to force its cancellation. KR folks rock!

Unsure if the event would actually take place due to actions far out of control of the Gathering's organizers, your editor held a C-172 in readiness until the FAA grounded us all within the DFW Enhanced Class B Airspace restriction. OK, let's plan for Red Oak in 2002.

Support of the KR Gathering coverage in the newsletter goes to Mark Langford for his excellent images, event organizer Tommy Waymack for his editorial and copy writing efforts, and photo mission pilot Larry Flesner. Kudos.

* * * * *

2002 KR Gathering & Fly-In

September 20-22, 2002

Red Oak Municipal Airport (RDK) • Red Oak, Iowa
41 00.63N 95 15.59W

Mike Garbez, 2002 KR Gathering Host

Tel: 712-778-2449 after 5:30 pm central time
E-mail: msgtlg@netins.net

The Red Coach Inn - 712-623-4864

Super 8 Motel - 712-623-6919

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2001 KR Gathering & Fly-In *Pine Bluff, Arkansas*



In spite of all the obstacles placed in its path, the 2001 KR Gathering & Fly-In held at Grider Field in Pine Bluff, Arkansas, came off as one of the best yet.

Kudos to photographer Mark Langford for his excellent effort and to KR Gathering host Tom Waymack for his help in writing this article.

While over Pine Bluff, Troy Pette-way and Richard Shirley do some nice formation work for Mark Langford's camera. Piper TriPacer camera plane flown by Larry Flesner.



Bob Lester scooped up the lion's share of the 2001 KR Gathering's awards with his Subaru powered KR2.

A Best Interior award really surprised Bob as he felt his entry was not the best on the field. However, the judges were impressed with his cockpit's overall quality and layout.

Bob's outstanding Subaru engine package was voted the Best Engine Installation (FWF). Note that twin radiators flank each side of the custom made cowlings.

On a roll now, Bob pulled off the hat trick and also flew away with the Best KR award.



It just doesn't get much better than this for all the loyal KR builders, pilots, and their families.

Pine Bluff's Grider Field, the site for two KR Gatherings, was constructed by the US Army Air Corps during the Spring of 1941, just prior to WWII. By 1943, over 10,000 US Army pilots had received their primary flight training in PT-19's. Ultimately, the field was sold to the City of Pine Bluff for the sum of one whole U.S. dollar.

2001 KR Gathering & Fly-In *Pine Bluff, Arkansas*



Dean Selby and Dawn Burr arrived from Sparta, Tennessee in a nice KR2

Magneto problems associated with the sparkplug wires plagued them on the trip to Pine Bluff. Upon arrival, helpful folks determined that the mags required solid core ignition wires rather than those commonly used on HEI set-ups. The wires were changed and their trip home was great.



Foley, Alabama resident Gene Knight and his unique KR2 were accompanied to Pine Bluff by a Piper Cherokee piloted by his son, Michael. The father and son team managed to get their KR2 flying in only eighteen months'

The wmglets looked interesting but no data was available on their performance



2001 KR Gathering and Fly-In host Tommy Waymack garnered the People's Choice award for his beautifully reconstructed KR2.

Formerly on retracts. Tommy added an upgraded engine, modified cowling, fixed gear with wheel pants, and a maximum effort paint refinishing.

Tommy thanks all who voted for his aircraft and now believes that his two years of sanding has finally paid off.

2001 KR Gathering & Fly-In *Pine Bluff, Arkansas*

Gathering attendees swarmed the KR of Troy Petteway and son Graeme upon their arrival at Grider Field-Pine Bluff.

Troy and his young son, from Columbia, Tennessee, flew a KR2 outfitted with the new wing design that offers so much promise as a performance modification to both existing and under construction KRseries aircraft.



Rich Seifert flew his traditional retract-equipped KR2 alongside Richard Shirley's KR1 as they made the cross-country trip to Arkansas from Southern California. Note the speed brake panel deployed below the KR1's belly.

As they fly from the same airport, both shared in the award for Farthest Distance Flown. The plaque will look great on their hangarwall.



Arriving a day early was Steve Bennett and his slick KR1.5.

Steve is most probably the leader in continuing development and support of the air-cooled Volkswagen engine as a reliable and capable aero conversion. Mr. Bennett and his wife Linda operate Great Plains Aircraft Supply Co. (GPASC) and will most probably be deeply involved in the 2002 Gathering as the event will occur almost in their backyard.



2001 KR Gathering & Fly-In *Pine Bluff, Arkansas*

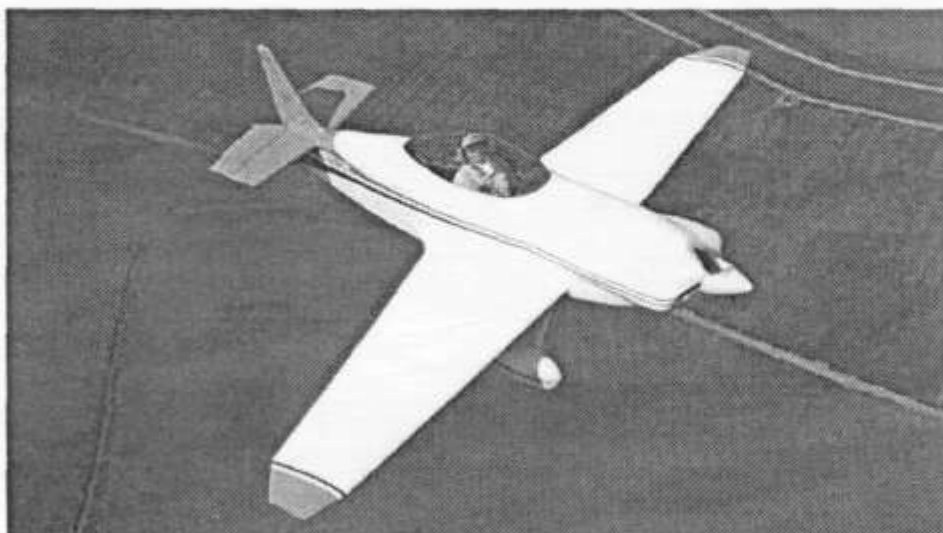


Terry Chizek flew in from Marion, Kansas with his fine flying KR2. Both are becoming regular faces at the KR Gatherings.



2001 KR Gathering and Fly-In host Tommy Waymack taxis by in his award winning KR2. His dedicated efforts resulted in this year's event being held despite multiple pot holes being placed in his path. Well done, Tommy!

A previous issue of the KR Newsletter detailed the lengthy rehab of the Waymack ride. The effort has paid off.



The planform view of Richard Shirley's much modified KR-1 shows well the beautiful wing in this outstanding photo by Mark Langford.

Many years have passed since Ken Rand flew his prototype open cockpit KR-1. He would undoubtedly be amazed at the quantity and quality of aircraft that have evolved from his original idea.

KR CLASSIFIEDS

Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial-style ads will be billed accordingly and must be paid for prior to publication.
The KR Newsletter reserves the right to edit free ads.

FOR SALE - Original KR-2 retractable landing gear assembly complete with spring bar, gear legs, wheels, tires, brakes, etc. \$275. Continental O-200 crankshaft (GPU converted) in good condition, \$600. Continental A-75 crankshaft with fresh regrind to .010 under, \$600. Contact M.T. Sparks, 10232 Kit Carson Pl, Santee CA 92071. Telephone 619-448-4945.

WANTED - Any or all back issues of KR Newsletter from 256 thru 264 plus 267 & 268. Contact Jerry Pryce, 549 Tipperary Drive, Vacaville CA 95688. Tel: 707-447-4349.

FOR SALE - 1998 KR2S tri-gear with 70hp 2180cc GPASC VW and Bosch 009 ignition. Cleveland brakes, wheel pants, 12 gal tank. Dual headsets, intercom, ICOM IC4 Comm and Garmin 195 GPS. Twice raced in Copperstate Dash. Cruises 149 mph @3200. Always hangared. Looks good and runs great. 85TTSN. See KR News Nov 98. Asking \$35K but will accept \$16K. Jeff Bryson. Bakersfield CA. Telephone 661-665-9449.

FOR SALE - Posa Garb, new in box, \$100 or some trade. KR gear retract parts, less springbar. Make offer or trade. Contact Bobby Laird, 209-392-3436.

WANTED - Set of KR2 plans with latest revisions. Please contact Randy Eakle, 3918 North Vincent, Peoria Heights IL 61614. Tel 309-688-4378 (between noon and 2:00pm) or email to annstreet@364.com with price and details.

WANTED - Help locating and purchasing a motor mount for a Subaru 1.8 liter EA-81. Philip Spade, Box 327, Gwinn MI 49841. Tel: 906-346-3237

WANTED - Mosler Power dual ignition coils and wiring diagram info. Please call Lee Pendleton, 423-559-2603.

FOR SALE - Retract Gear System removed from KR-1. Pair of gear leg castings, go kart brakes, spring bar, hardware, etc. Make offers to Sam Bailey, 914 West 4th, Pratt KS 67124. Day-316-672-7426 or Eve-316-672-3325.

FOR SALE - KR2 stretched to KR2S, per plans. A&P built boat. Premolded turtledeck, wings & wing stubs, tails, canopy, forward deck. Lacks wings and fuel tank assembly. No wheels or brakes. 2180 VW w/dual ignition 200 hours, manifold and carbs, engine mount, Sterba prop. \$9500. Contact Jim, 909-313-8937.

FOR SALE - KR2 Parts: Rudder pedal assy w/nylon bearings, 7 front & 8 rear spar attach fittings, vertical stab templates, 5 aileron bellcrank ftgs w/bushings, 20 angle brackets & gussets, flat seat w/attach angles. \$185 value asking \$140. Ray Goree, 817-795-4779, Arlington TX.

FOR SALE - KR2 project approximately 80% completed. For full details, contact A.C."George" Cummins, 3109 Whittle Way, Midland TX 79707. Tel: 915-520-8334.

FOR SALE - KR2, 85-90% complete and almost ready for primer. VFR instruments, 1834 VW with Diehl case, Sting tuned exhaust. Cam locking-type manual retracts, 5-ply Lamb tires. Excellent work and a real deal at \$6500. Contact Pat McFall, 515-276-3936 in Des Moines IA.

FOR SALE - KR2, approx 70% completed. 1835 VW engine has only 30 minutes run time. Some instruments included for \$4000 OBO. Also offering a Midget Mustang center section and wings. Flush riveting on wing skins has not been done \$2500 OBO. Contact Ken Squires at 702-457-2559 after 6:00 pm Mountain Time or email, birddog24@gocrazyonline.com.

FOR SALE - Engenfeller geared reduction drive for E81 Subaru engine. New, never been mounted on engine. My cost, \$2195.00 plus shipping. Will part for \$1650.00 plus shipping. Matched lightweight starter included at no extra cost. Will bring to Sept's Pine Bluff KR Gathering. Sam Sayer, 6621 Foxmoor Dr, Zephyrhills FL 33541. Phone 813-782-3302 or email karibird37@msn.com.

FOR SALE - Subaru EJ22 engine. Was removed from a new car. \$1000. Call Bill Boot, evenings, 530-824-5541.

FOR SALE - KR-2 boat, wings & tail. 2 liter VW mounted. VFR instruments, canopy, hardware. Was \$2800, now priced at \$2400 OBO. Moving. Richard Rymer, telephone 562-435-7937. Email rlymer@relaypoint.net.

FOR SALE - Two KR2's under construction. \$2750 and \$1250 each. For complete details, please contact Ted McClurg, 5843 Rainbow Heights Rd, Fallbrook CA 92028. Tel: 760-723-7446, email: pwmclclurg@aol.com.

2001 KR GATHERING T-SHIRTS Limited supply but a few still available in sizes M, L, XL, XXL. \$15.00 each, postpaid. Send your size request and return address to Tommy Waymack, 2901 W 26th, Pine Bluff AR 71603.



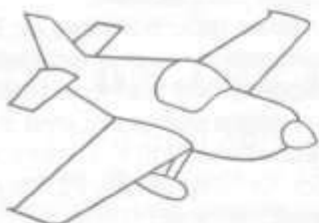
Safety Programs Department at 920-426-6864 or e-mail at safetyprograms@eaa.org.

To learn more about these programs available only through EAA, contact the EAA

Another great source of valuable members-only information is EAA's safetydata.com.

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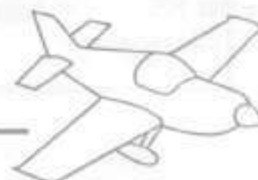
KR NEWSLETTER

624 West University Drive
PMB199
Denton, Texas 76201

Issue 283

"You may delay, but time will not."

- Ben Franklin





NEWSLETTER

KR Seat/Shoulder Restraint Saves Pilot *Aircraft a total loss but pilot walks away*



All website photos from Don Reid, EAA Chapter 231 uvb page, Richmond VA

What's the saying, "Any landing you can walk away from..."

The cover photograph on this issue of the KR Newsletter will shock many readers. However, the story is actually about good news. A well-planned and properly installed lap belt/shoulder harness combination allowed the pilot of this KR-2S to walk from the shattered remains of his aircraft with only minor injuries. That fact alone makes for a happy outcome.

Considering the number of hours flown within the General Aviation community, the possibility that a pilot will have to depend upon a restraint system for his survival is fairly remote. All the same, let's keep the odds on our side.

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

Preliminary accident report from the NTSB website

NTSB Identification: MIA02LA038

Accident occurred Saturday, December 01, 2001 at Linden, NC

Aircraft: Byrd KR-2S Registration: N366KR Injuries: Unavailable

This is preliminary information, subject to change, and may contain errors. Any errors in this report will be corrected when the final report has been completed.

On December 1, 2001, at about 1705 eastern standard time, an experimental Byrd KR-2S, N366KR, registered and operated by a private individual as a Title 14 CFR Part 91 personal flight, crashed while on final approach for landing in the vicinity of Linden, North Carolina. Visual meteorological conditions prevailed and no flight plan was filed. The aircraft received substantial damage and the private-rated pilot, the sole occupant, was not injured. The flight departed Raleigh-Durham about 15 minutes before the accident.

According to the pilot, while on short final approach to runway 22, he was blinded by the sun's rays, and just about the time he decided to execute a go-around, his left wing caught a tree and spun the aircraft to the terrain.



During impact, a portion of the forward fuselage broke away along with the firewall, engine and cowling. The engine remains attached to the motor mount. What initially appears to be a large hole in the port wing center section is actually a bit of debris hanging on a small branch. Other than damage to the port tip, the entire wing is remarkably intact.

From Don Reid & EAA Chapter 231 at <http://Uwv.eaa231.org/photos/crash.htm>

On December 1st, 2001, while on short final to Flyers Airpark in Linden, North Carolina, Gene Byrd was blinded by the sun. He initiated a go-around but the wing snagged a tree. Gene had only minor injuries, a cut to the head and hand plus bruises from the seatbelt and shoulder harness. Gene unfastened his seatbelt and walked away.

Seat Belt Anchor Points

Reprint from KR Newsletter
by Monte Miller

Ref. KR 7.6 Sling Seat

I've been struggling with ideas for installing seat belts and a shoulder harness with each solution more complex and heavier than the last.

On page 45 of the Rand KR Builders Manual, there is a cross section of the seat sling installation. By replacing the called for AN-3 bolts at each end and center of the seat's anchor tubing with AN43B-17 eye bolts, you'll be able to not only secure the seat sling assembly, but provide an anchor point for the seat belts. The center belt attach bolts will capture the tubing's Adel clamps as well as the lower elevator pulley bracket. Check out the sketch and refer to page 72 of the Rand manual.

A shoulder harness anchor should be located, ideally, on the same level as the shoulders or at a point slightly above. Any anchor point that pulls the body downward should be avoided. No doubt something to do with spinal compression.

Remembering the KISS principle of construction, an anchor location about 4-6 inches aft of the seatback shelf and fabricated as shown in the sketch, will provide an adequate and secure anchor point. Remember, adding too much weight aft of the CG will only cause you additional problems.

Refer to the accompanying article and drawing on page three regarding the seat belt and aft shoulder harness anchor installations.

Shoulder Harness Anchor

Article by Monte Miller reprinted from KR Newsletter, May 1990

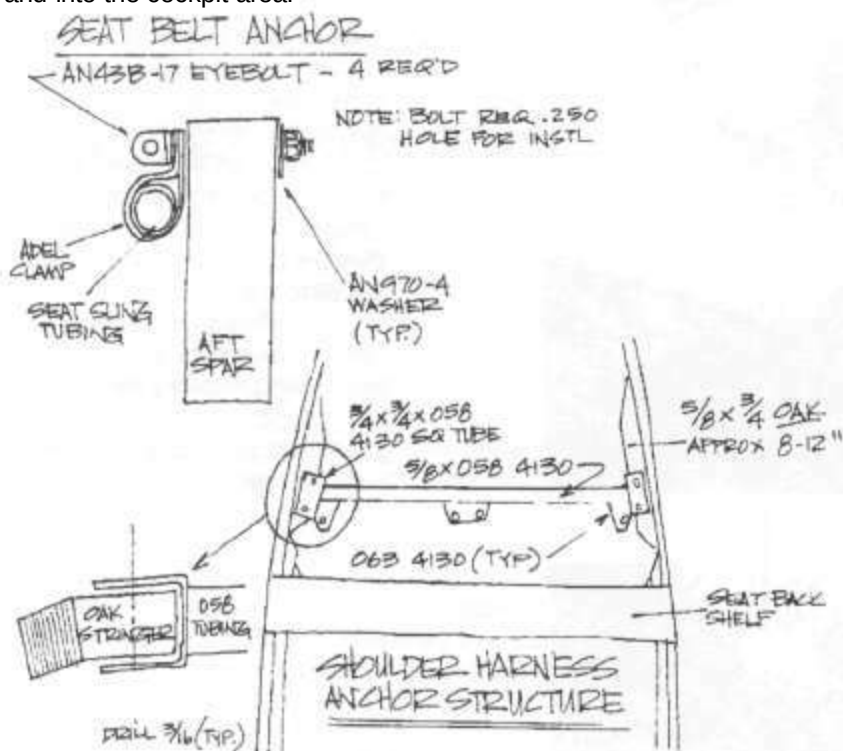
Ref. KR 3.24: Tail Wheel Filler Block

Every aircraft should have both a seat and shoulder harnesses. Not only is this fact born out by common sense but statistics prove that shoulder harness use saves injury and life. Many years ago, the EAA began a campaign whereby members would sign a pledge card indicating that they would install a shoulder harness in their homebuilt aircraft. Today, such installations are all but taken for granted. How times change.

The KR builder's manual makes no mention of shoulder harness or, for that matter, even seat belts. This area is obviously left up to the individual builder. The best time to install harness anchor points is when the fuselage is largely open and accessible during the early "boat" stage.

The tailwheel filler block, bonded in the aft fuselage structure and pretty well locked into the stern tailpost assembly, is an excellent location for the anchor hardware installation.

Stainless flexible aircraft cable can be utilized as the major portion of a shoulder harness restraint system. A sturdy bracket, anchored securely and combined with quality AN hardware, will get the job done. Coil the excess cable and secure it in the aft fuselage until it's time to route forward and into the cockpit area.



Commentary About the Byrd KR-2S Crash

Insightful Thoughts from the KR Net

from Ross Youngblood <rossy65@home.com>

There are two solutions I've seen, one of which is out on the web some place. Monte Miller submitted an article to the paper KR newsletter showing a steel bar with "C" channel ends which are bolted to a length of oak (about 12" or so). The oak is laminated to the spruce top longeron, and has to be long enough to distribute the impact forces across a long

enough area so that it doesn't sheer off at or around the glue joint. This looked good, and it is the solution I went with.

I also saw a Rand-approved seat back shelf drawing which I think is available on the internet someplace. It involves building up the shelf region behind the seat for attaching the belts.

- Editor's note: See the Rand plans book addendum in this issue.

I'm not sure we can really draw any conclusions from the post crash photos of the tail section. One would need to see a slow motion film with crash dummies to tell for sure when the tail detaches and if it is after the harness has safely restrained the passengers. If you've ever watched the crash films of cars, you can see a lot happens before things come to rest. My choice of seat belt attach points was more one of personal preference and a "hunch" and not entirely 100% sure that it is better than using the tailcone.

I think the Byrd crash photos show that a lot of energy gets absorbed by the spruce at impact. This is also consistent with the KR-1 crash photos you mentioned. I'm not a strength of materials person, but I wonder if wood doesn't offer better energy dissipating characteristics than other aircraft materials in a crash situation.

Perhaps if cars were made out of wood, crash test results would be very interesting.

-floss

from Don Reid, Bumpass VA
<donreid@erols.com>

<http://www.eaa231.org/photos/crash.htm>.

Go to the photo link at bottom of page and click on KR crash pics. You should not have trouble with the EAA 231 web site. It works fine for older versions of Netscape and Explorer. I always check with older versions to make sure that everyone can access them.

-Don

from Jack Cooper

Gene's seatbelt was attached to the aft spar and the shoulder harness attached to the tail cone by cables. One side of the seatbelt pulled out of the spar.

-Jack



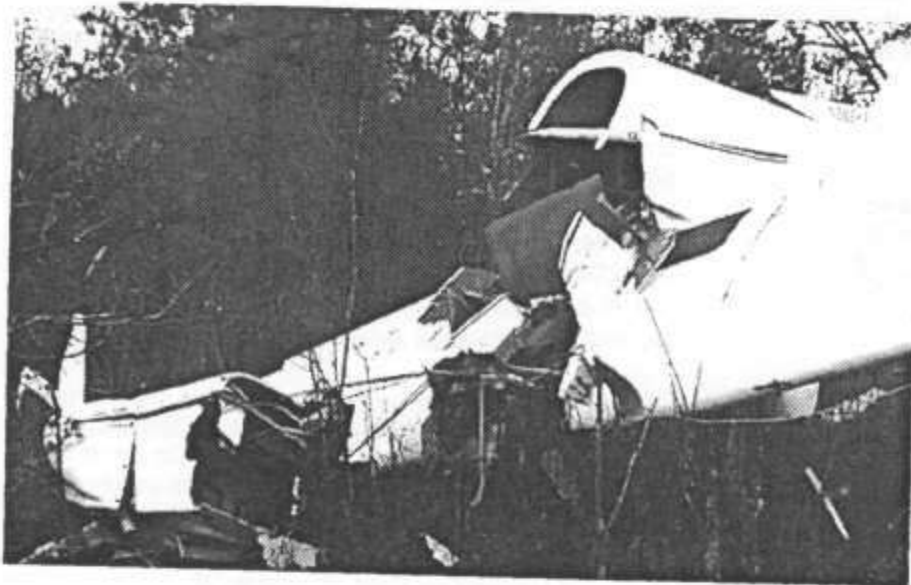
KR-2S • N366KR

01 December 2001

Flyers Airpark-Linden NC

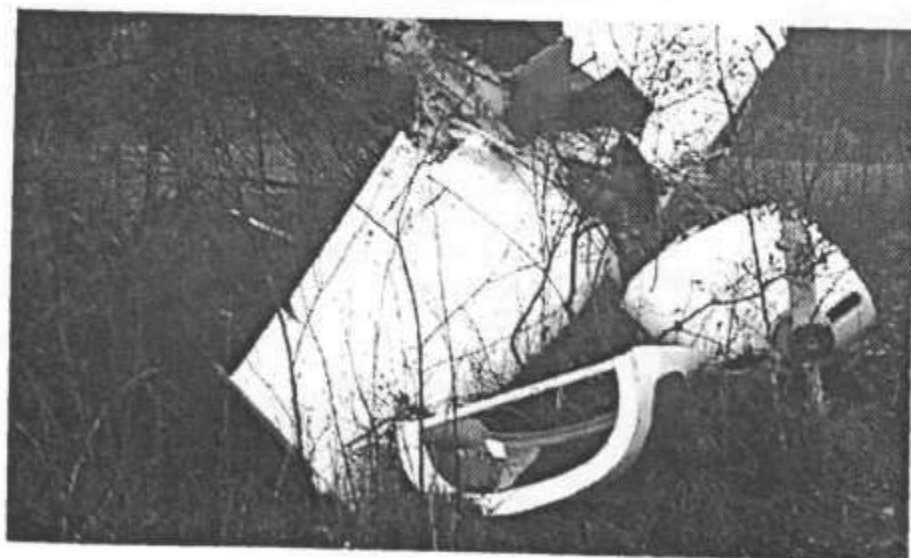
In this photograph, the rear fuselage of N366KR appears to have broken away from the cockpit area. Note the destruction of the fuselage sides as both the forward and aft portions of the fuselage are separated from the center section.

It would seem the seat is still firmly attached to the wing spars. Both the lap belt and shoulder harness are visible in this view.



The KR's wings and center section appear to have retained their structural integrity during the crash. Photos may confirm aircraft's disintegrating fuselage absorbed and distributed most of the impact loads thereby reducing crash forces to pilot.

Even though foot well of cockpit was exposed as forward fuselage broke away during impact, pilot reportedly sustained no injury to lower body or feet.



Canopy and its framework appear largely intact despite total destruction of cockpit side walls. Note again the inherent strength of the KR's wing spars and premolded wing skins.

Fuselage top longerons are not evident in any of the photographs; they perhaps having been shattered by the force of impact.

ON THE RAMP

The Editor's Rumbblings

Well, here it is the year 2002 already. Remember the big commotion about whether or not the world's computers would go belly up when the new millennium rolled through? Seems a long time ago... much has happened.

To all the KR families, a wish for a healthy, happy and safe New Year from our hangar to yours. Renew your commitment to your family, your faith and your Nation. We will prevail. And get to work on that KR project!

As a general rule, I don't like to emphasize news of KR accidents. It often doesn't do much to help promote sport aviation in one's home where the significant other may have occasion to read your KR News. With this issue, I felt it was important. Happily, the pilot was able to walk off from the wreckage with little more than a slight cut on his head. As mentioned, I'm jumping with joy for the pilot's good fortune... brought about, in part, by his safety harness and the progressive crushability of the KR design.

SAFETY, SAFETY, SAFETY

- - - - -

Useful Tips from GPASC

Beetle Flyer, December 2001

Great Plains Aircraft Supply Company, Inc.

PO Box 545 • Boystown NE 68010

Info 402-493-6507 • Orders 800-922-6507

email: gpasc@earthlink.net • www.gpasc.com

www.greatplainsas.com

Poor Crankcase Breathing can show up as increased oil consumption as oil can be forced past the oil control ring on the piston's skirt.

A Vacuum Gauge should read "0" at wide open throttle. If you get the wide open throttle reading before the throttle is wide open, your carb is likely oversized to your engine. If you cannot get the wide open throttle readings at wide open throttle, your carb is likely undersized.

A Vacuum Gauge can also be used to check the engine for internal leaks. To test, disconnect all ignition systems, close the throttle and seal off carburetor body. When cranking, you should see a steady needle and at least 4 inches of vacuum should be produced.

Should you suspect that your **exhaust valves are leaking**, you can do a simple test. Remove the prop. Have someone start your engine. At idle, a piece of paper will be sucked against the exhaust pipe of a leaking exhaust valve during the intake stroke. Don't let your engine run very long without cooling air!

2002 KR Gathering & Fly-In

September 19-22, 2002

Red Oak Municipal Airport (RDK) • Red Oak, Iowa
41 00.63N 95 15.59W

Mike & Teri Garbez, KR Gathering Hosts

Tel: 712-778-2449 after 5:30 pm central time

e-mail, msgtlg@netins.net

www.krgathering.org

First I would like to thank Tommy for the 2001 gathering, I think it was a good time for all. We were glad to see everyone and have the opportunity to invite the KR Group to Red Oak, IA for the 2002 KR Gathering.

The Red Oak Municipal Airport (RDK) is located one-half mile west of town at 1674 200th Street Red Oak IA 51566. Airport telephone is 712-623-6523 and the Unicom frequency is 122.8. Set your trusty GPS at co-ords 41 00.63N 95 15.59W.

There are two motels; they are The Red Coach Inn, 712-623-4864 and the Super 8 Motel, 712-623-6919. Both are within 1.5 miles of the airport. Motel reservations can be made anytime now - the sooner the better. The banquet will be held Saturday evening at the Red Coach Inn Banquet Room.

Mike & Teri Garbez are the resident 2002 KR Gathering hosts assisted by Steve & Linda Bennett along with Jim & Deb Faughn. For the latest updated information, log onto www.krgathering.org.

The Red Coach Inn • 712-623-4864

Super 8 Motel • 712-623-6919

Make your reservations anytime, the sooner the better

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Marcy Analytics Corporation

6068 S. Lakeview St
Littleton CO 80120

Seat Belt and Shoulder Harness Attachments

The purpose of this brief memorandum is to document computations and data presented at the KR-2 Forum during the 1996 Sun 'n Fun Fly-In.

1. Assume the pilot and passenger each weigh 200 lbs, with a 20g impact force applied. For each person, the applied force is 4000 lbs, taken as a load limit, and 6000 lbs as the ultimate load. Assume there are two attachments for each seat belt (one at each side) and two attachments for each shoulder harness. This makes the ultimate load for each attachment 1500 lbs. This is a conservative assumption for shoulder harnesses, as the seat belt is likely to take more load than the shoulder harness, since it is located closer to the CG of the occupant. Now add 500 lbs to each attachment to account for eccentric and off-axis loading to make the ultimate load 2000 lbs (Fig 1).

2. Assume the shoulder harness is bolted to a plywood web, and assume the bolts apply their loads to the wood by compression of the circular hole sides (Fig 2).

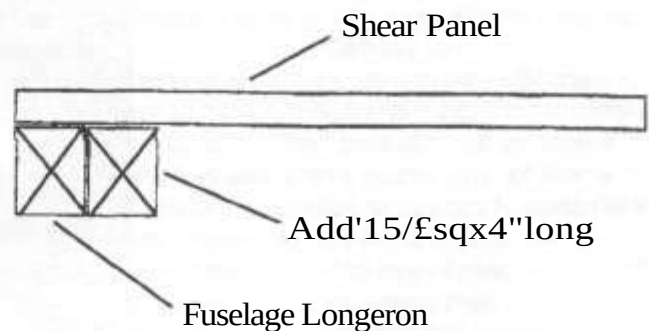
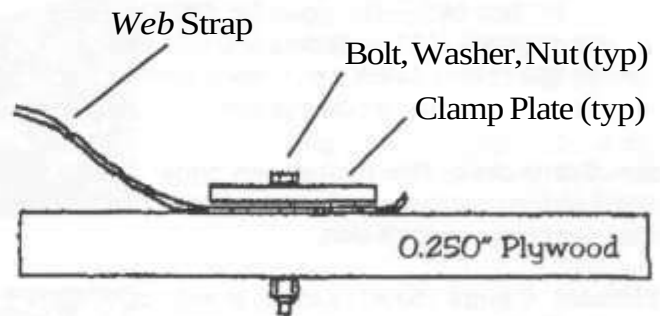
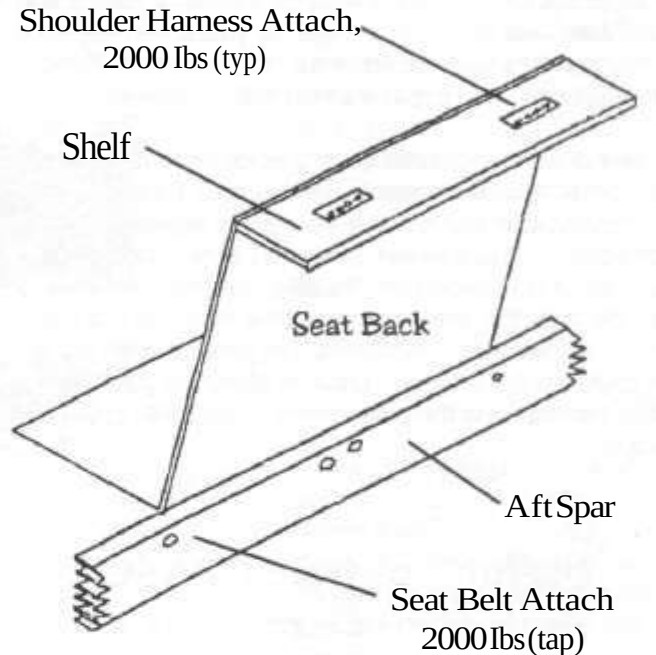
For birch, the compression strength is 7300 psi. The required total hole depth times diameter is $2000/7300 = 0.274$ square inches. Five (5) $1/4$ " diameter holes in $1/4$ " plywood is 0.312 square inches; the same for four (4) $5/16$ " holes in $1/4$ " thickness.

3. The bolt loads apply shear along forward acting planes in the plywood, which has a shear strength of 1500 psi. We therefore need at least 1.50 square inches of cross section in front of the attach bolts. Each bolt has two shear planes so a four bolt attachment has eight planes, each carrying 188 lbs of shear, requiring $0.1/8$ inch of cross section. This is $1/2$ inch edge distance in $1/4$ " plywood, measured forward from the edge of the hole to the edge of the piece.

4. The KR-2 plans call for a $3/32 \times 4$ -inch shear panel glued across the longerons behind the seat back, with $5/8$ sq spruce cross members at each edge. This is not enough cross section for the bolt holes. For new construction, use a $1/4$ " ply sheet instead of $3/32$. For existing construction, a $1/8$ or $1/4$ -inch ply panel should be glued over the shear panel, with the bolts going through both sheets.

5. The total shear area attached to each longeron is $4 \times 5/8 = 2.50$ square inches. The strength of aircraft spruce in shear is 750 psi, so the ultimate allowable shear in the spruce is 1875 lbs. Assuming that both shoulder harnesses are attached to this web, the total applied load

to each longeron is 2000 lbs, requiring 2.67 square inches of glue area between the web and the spruce. Accomplish this gluing an additional $5/8$ square strip along each longeron between the cross members (fig 3).



KR CLASSIFIEDS

Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial-style ads will be billed accordingly and must be paid for prior to publication.

The KR Newsletter reserves the right to edit free ads.

WANTED - Any or all back issues of KR Newsletter from 256 thru 264 plus 267 & 268. Contact Jerry Pryce, 549 Tipperary Drive, Vacaville CA 95688. Tel: 707-447-4349.

FOR SALE - 1998 KR2S tri-gear with 70hp 2180cc GPASC VW and Bosch 009 ignition. Cleveland brakes, wheel pants, 12 gal tank. Dual headsets, intercom, (COM IC4 Comm and Garmin 195 GPS. Twice raced in Copperstate Dash. Cruises 149 mph @3200. Always hangared. Looks good and runs great. 85TTSN. See KR News Nov 98. Asking \$35K but will accept \$16K. Jeff Bryson, Bakersfield CA. Telephone 661-665-9449.

FOR SALE - Posa Garb, new in box, \$100 or some trade. KR gear retract parts, less springbar. Make offer or trade. Contact Bobby Laird, 209-392-3436.

WANTED- Set of KR2 plans with latest revisions. Please contact Randy Eakle, 3918 North Vincent, Peoria Heights IL 61614. Tel 309-688-4378 (between noon and 2:00pm) or email to annstreet@364.com with price and details.

WANTED - Help locating and purchasing a motor mount for a Subaru 1.8 liter EA-81. Philip Spade, Box 327, Gwinn MI 49841. Tel: 906-346-3237.

WANTED - Mosler Power dual ignition coils and wiring diagram info. Please call Lee Pendleton, 423-559-2603.

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FOR SALE - Engenfeller geared reduction drive for E81 Subaru engine. New, never been mounted on engine. My cost, \$2195.00 plus shipping Will part for \$1650.00 plus shipping. Matched lightweight starter included at no extra cost. Will bring to Sept's Pine Bluff KR Gathering Sam Sayer, 6621 Foxmoor Dr, Zephyrhills FL 33541. Phone 813-782-3302 or email karibird37@msn.com.

FOR SALE - Subaru EJ22 engine. Was removed from a new car. \$1000. Call Bill Boot, evenings, 530-824-5541.

FOR SALE- KR-2 boat, wings & tail 2 liter VW mounted. VFR instruments, canopy, hardware. Was \$2800, now priced at \$2400 OBO. Moving. Richard Rymer, telephone 562-435-7937. Email rlymer@relaypoint.net.

FOR SALE - Two KR2's under construction. \$2750 and \$1250 each. For complete details, please contact Ted McClurg, 5843 Rainbow Heights Rd, Fallbrook CA 92028. Tel: 760-723-7446, email: pwmccclurg@aol.com.

2001 KR GATHERING T-SHIRTS Limited supply but a few still available in sizes M,L,XL,XXL \$15.00 each, postpaid. Send your size request and return address to Tommy Waymack, 2901 W 26th, Pine Bluff AR 71603.

WANT TO BUY- Plans and Builder's Manual for the KR-2. Contact Mervyn Selvage, 1737 Nedra Ave, Eureka CA 95501 or email mervyn_selvage@hotmail.com.

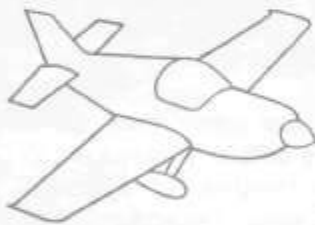
WANT TO BUY - KR2S project. Contact Kenneth Lobb, HCR 63, Box 411, Raton NM 87740. Tel: 505-445-5766.

FOR SALE - Kawasaki 440A L/C. 2.6:1 redrive, Powerfin ground adjustable prop, tuned exhaust. \$1000 Kenneth Lobb, HCR 63, Box 411, Raton NM 87740. Telephone 505-445-5766.



The EAA Technical Counselor and Flight Advisor programs are ready and able to help members. Whether you are selecting a project or getting ready for a test flight, one of these programs is right for you. Expert advice is there for the asking. **Best of all, it's part of your membership privileges.** EAA wants you to have a safe and reliable aircraft. Members who participate in these programs receive discounts through EAA Aircraft Insurance Plan coverage that might not otherwise be available. Another great source of valuable members-only information is EAA's safetydata.com. To learn more about these programs available only through EAA, contact the EAA Safety Programs Department at 920-426-6864 or e-mail at safetyprograms@eaa.org.

Let ☐ Guide You Through Your Project!

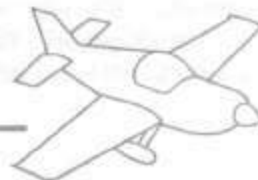


KR NEWSLETTER
624 West University Drive
PMB199
Denton, Texas 76201

Issue 284

"Roger Wilco invented the language of communications."

- Aviation as explained by kids





NEWSLETTER

Photo Footnote in History of the KR-2

A stroll down memory lane revisits our roots



1993 Reno Air Races

Kevin Kelly, a former associate of Rand-Robinson Eng., developed, built, and flew the KR-100 as a design exercise. Several of the concepts employed ultimately evolved into the popular KR-2S.

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

Late in the Game Wing Tanks Builder Decides It's Never Too Late

Philip A. Spade

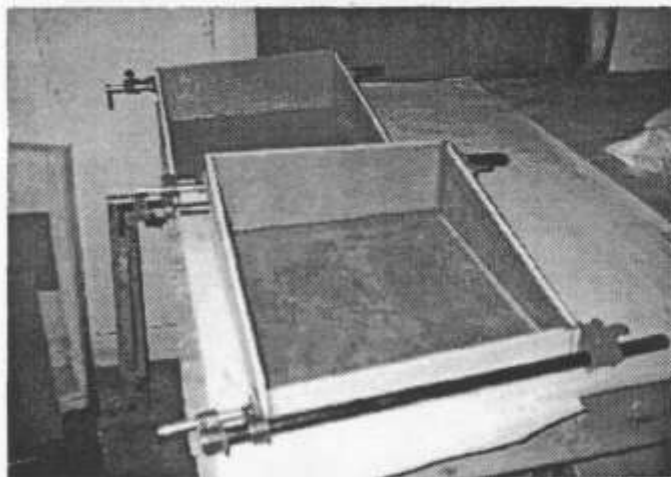
Box 327 • Gwinn MI 49841

Telephone 906-346-3237

When I began building the wings for the KR-2S, the cold Fall weather caught up with the project. See *KR Newsletter* 268. As a result, the wings were completed and closed without fuel tanks. Twelve gallons of gas in the header tank seemed enough. Anyway, why stretch the building time by adding wing tanks?

Well guess what. I changed my mind because it makes the aircraft just a bit more versatile. What the heck. I've been building this project for so long another couple of months won't make much difference. The tanks were time consuming and complicated but worth it.

I began by reading Tony Bingelis' "Sportplane Construction Techniques" articles on composite fuel tank construction. I followed his basic procedures by using quarter-inch Last-a-Foam and glassing two layers of cloth inside and out. Tank size and shape was the difficult part. The tanks had to be a snug fit between foam ribs and wooden spars. I also had to allow for the wing's taper and the thickness of the tank walls. In their final form, the fuel tanks have a double taper fore and aft and inboard to outboard.

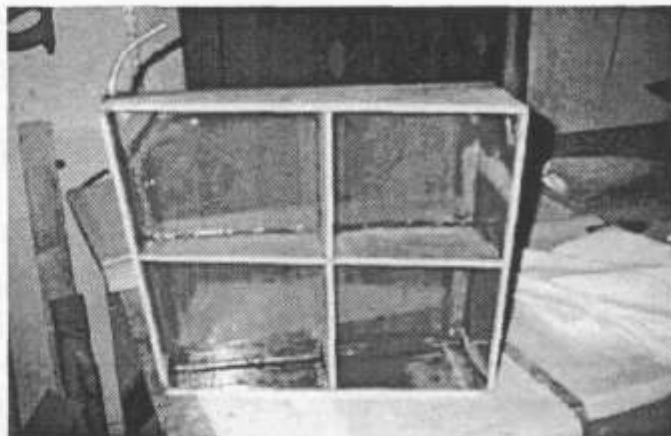


Simple bar clamps hold wing tank components during critical alignment and bonding process. In their final form, the fuel tanks must fit within the existing wing's taper and airfoil dimensions.

Epolite epoxy was used on all inside fuel tank surfaces because of its excellent fuel proof resistance. The exterior was epoxied with the West System. I could have used Epolite throughout but my supply was running low and working with an air hood over my head was getting tedious.

The rest of the project was straight forward with baffles,

screened outlets, and vents. Fuel filler necks and caps would be fashioned at the time of in-wing installation. Each tank is about four gallons. This is a bit less capacity than a wet wing would be but they are not likely to leak.

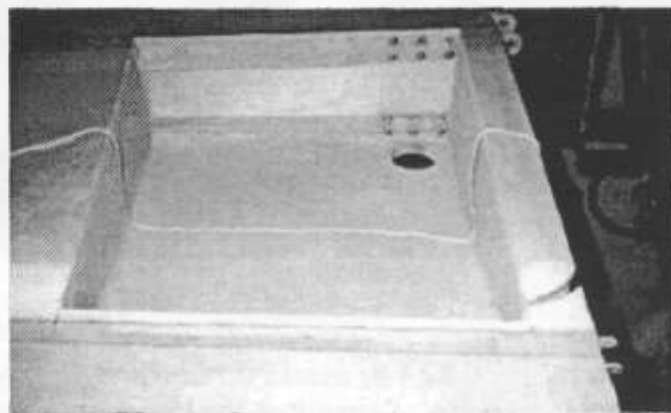


Tank's baffle installation will all but eliminate undesirable fuel sloshing which can create flight stability concerns. Location of the pickup point for fuel line is another critical safety of flight issue.

Wing Tank Installation

I had previously made ink marks on both front and rear spars to locate the space between the first two foam ribs. After carefully laying out the perimeter, I cut through the bottom foam and glass with a fine tooth hacksaw blade. The cut was at angle so the removed panel would act as a wedged plug when epoxied back into position. Next question.. would the tank fit?

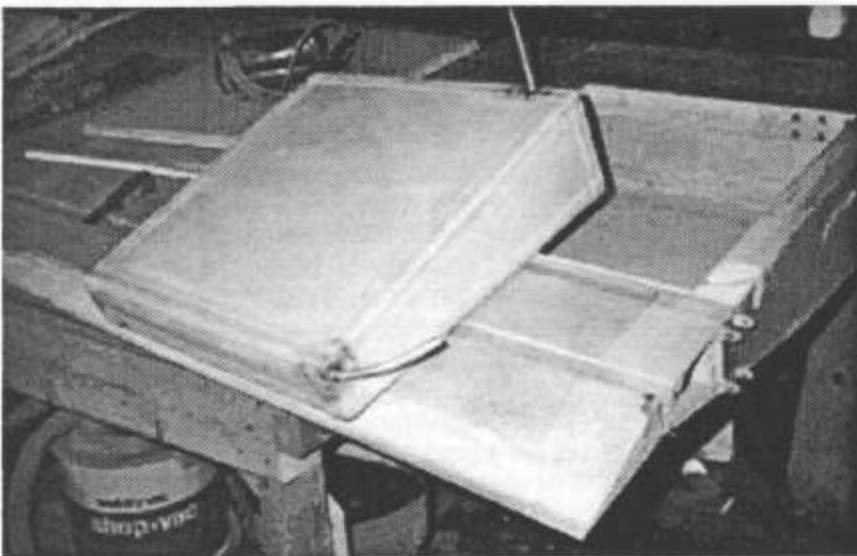
I placed a strong string in the bottom of the wing cavity to aid in pulling the tank back out if it became wedged in place. The fit was not perfect, but with some sanding to adjust the depth in both the front and rear spar areas, the tank finally fit satisfactorily.



Cavity for wing tank installation is accessed through an opening in lower wing skin. Heavy string aids in removal of tank during frequent test fit operations.

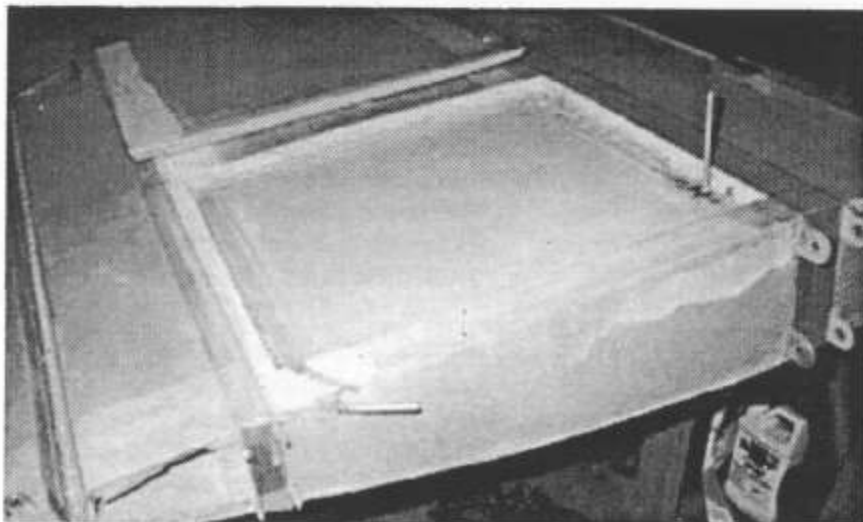
The filler neck and gas cap had to be located on the tank, cut out, and epoxied into place. No epoxy yet. First, I had to determine how much the filler neck had to stick up out of the tank and then adjust it to just barely stick out of the top of the wing skin.

I also had to locate the hole in the wing to match the filler neck. This was done by first wedging the filler neck in the tank to secure it in place. Next, the top of the neck and gas cap were rubbed with carbon black to leave an impression on the cavity. This little exercise created the exact location for the hole to be cut. After the hole was cut, the filler neck was again wedged to conform to proper depth and angle. Finally, the filler neck was epoxied and glassed into place.



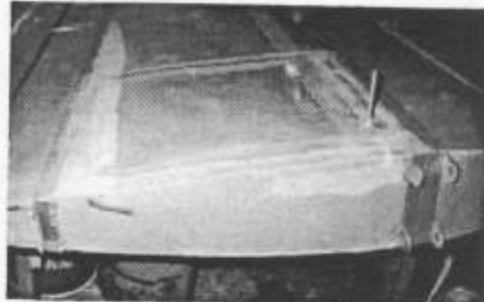
Completed wing tank is ready for installation in wing cavity. During construction, it's always a good idea to keep all tank openings plugged to prevent possible future fuel contamination problems.

The tank was finally lowered and bonded into place. Any voids were filled in with liquid foam. Further anchoring was done by an epoxy cloth strip applied to the tank one inch and on up the walls of the cavity. This glass strip just about fills the kerf left when cutting out the wing panel.



Tank permanently installed. Care in removal of original lower wing skin panel aids in smooth reinstallation. Bond tank securely in wing cavity. Landing loads created with full tanks can be surprisingly heavy.

The bottom cut-out panel was re-placed and epoxied. Two layers of glass cloth tapes around the panel finished the task. Note that the tanks were in and out of the wings at least a dozen times. Don't forget the string. It makes for easy tank removal.



Lower wing panel has been glassed into position. Later, vent tube will be trimmed to required length.

Removable Fwd Deck *More Access, The Better*

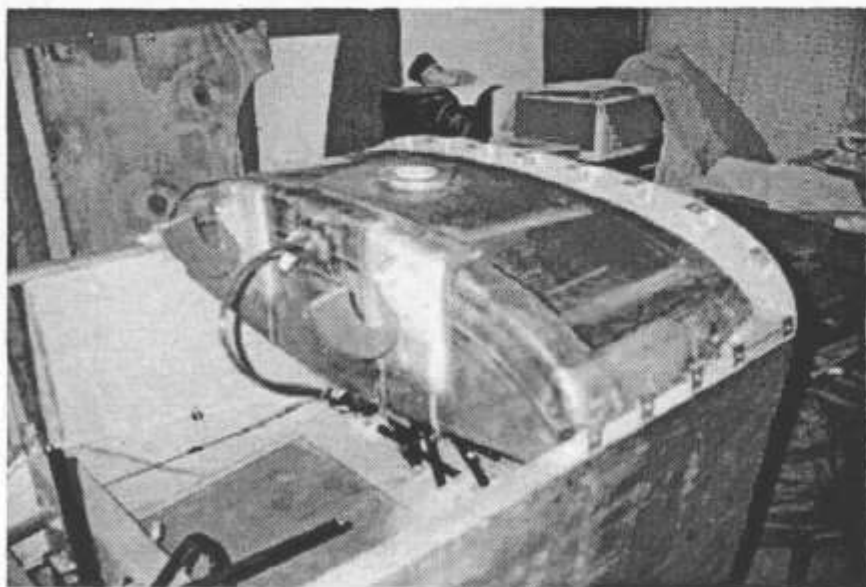
The more panels on my KR that are removable, the better I like it. If you're planning to develop a removable forward deck as I did, let me suggest doing it before you permanently secure the header fuel tank in place.

Fastening of the forward deck on my KR-2S was accomplished by mounting aluminum tabs along all the edges where the deck meets the airframe. Ninety-degree tabs of aluminum were perforated and epoxy-floxed to the rear of the firewall and to the upper surface of the longerons. Each tab has an 8-32 nutsert press fitted into its center.



Hand premolded forward deck is drilled to match nutserts installed in aluminum tabs along perimeter of firewall and longerons. Aft edge of deck has been reinforced with additional layups of fiber-glass strips. Plan this area to fit panel.

The top longeron tabs will have to be bent to conform with the angle formed by the deck and longeron junction. I did this by securing one leg of the tab in a vice and using a mallet to bend them over the vice jaws. The jaws in my shop vice are worn enough to prevent any overly sharp bends or scratch marks. Builders may want to cushion the aluminum by using some scrap wood for temporary jaw pads.



Note position and number of aluminum tabs and nutsert locations along with relationship of header tank in airframe. Of interest are the hinge components for forward opening canopy bonded to aft face of tank.

Drilling the top deck holes to match the tab nutserts was the next hurdle. To accomplish this, I drew a centerline on the deck and then placed some weights on the forward edge of the deck to keep it centered and free from shifting. A bright light was positioned under each tab to be match drilled. The light will show the tab as a shadow while the hole in the nutsert will be a bright spot.

Drill each hole using an undersized bit, then carefully enlarge the hole to fit the 8-32 machine screw. Begin at the deck's top forward center and work down toward the longerons, alternating side-to-side for each hole. Trim the bottom edge of the deck as you near the last firewall tab. The sides on my deck needed about a half-inch trim. Drill holes for the longeron tabs as you did for the firewall; match drilling the holes and alternating fore and aft.



Completed flush-mount filler cap for header tank. Deck secured to tank with machine screws and nutsert fittings. Preplan instrument panel installation during deck fitting process.

Install the header tank: Cut the hole for the filler neck and fuel cap. Wedge the neck in place and mark for location by using the bright light trick. It's best to cut the hole for the filler neck slightly undersize and shape to proper fit. Finally, adjust the filler neck to its correct height and bond into the tank.

By attaching a metal flange to the filler neck, just below the interior surface of the top deck, you can secure the deck to the tank in this area.

In my situation, three nutserts, evenly spaced around the flange plate, hold the deck in place. Reinforce the aft edge of the deck with three layers of glassed cloth strips, turning up about a three-quarter inch portion to act as a stiffener.

Subaru J-22 in KR-2S... ? Builder Seeks Info

Ted McClurg sent a note along with his recent newsletter renewal check asking about the Subaru J-22 engine. His note asks...

I've recently purchased a Subaru J-22 engine and planned to install it in my KR-2S. There has been little published on this venture. Some time back, in issue 234-235 of the KR Newsletter, there was an article by Pat James and some work being done by Bill Hall. Search and write as I may, the trail ends.

I'd sure like to know how the KR people (Rand-Robinson Eng.) feel about a J-22 as they have been hesitant regarding the Continentals, Lyes, and commercial four-bangers before I proceed further in this project.

I have on hand a Subaru 1.8 and the propeller reduction gear. The fellow that was all hot to buy the project left me in the lurch as he felt that big bod needs more power... thus I've got a handful of projects and no takers.

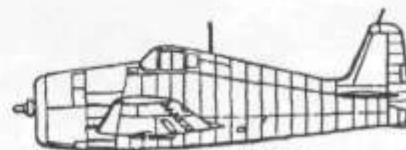
I'll be eighty-two come June. FAA told me "no" at seventy-five, though I still go with the projects to keep my little hands out of mischief. My wife passed a year ago, thus the little birds are my life now.

Thank you for an excellent magazine and all the effort you put into it.

OK, guys... anyone able to assist Ted with some guidance and knowledge regarding the Subaru package and KR's?

Contact information:

Theodore McClurg
5843 Rainbow Heights Rd
Fallbrook CA 92028
Tel: 760-723-7446



Airplane Tests New Belt Type Potential Exists for Exp Aircraft

The following article is reprinted from the 21 January 02 issue of Global Design News (www.DesignNews.com)
Submitted by KR builder John Gregory,
201 Plum Creek Lane, Dripping Springs TX 78620

Candiana, Italy - Designed for extreme working conditions, new-generation Panther belts from Dayco Rubber first proved their mettle where it counts the most: high in the air between engine and prop. Their story begins in 1993 when Italian airplane manufacturer Jeof s.r.l. initiated development of the company's recently introduced SAX 86 family of aircraft. Offering both carbureted and electronic fuel-injected versions, the SAX 86 model line is based on the well-known FIAT FIRE car engine.

In 1997, Jeof looked to replace the reduction gear with a belt to reduce noise, vibration, and cost. The company teamed up with Dayco's R&D department and built a rig for testing different belt structures under dynamic conditions. Test goal: design a high performance, low-weight, low-noise belt able to transmit requested power with a 50mm maximum width.

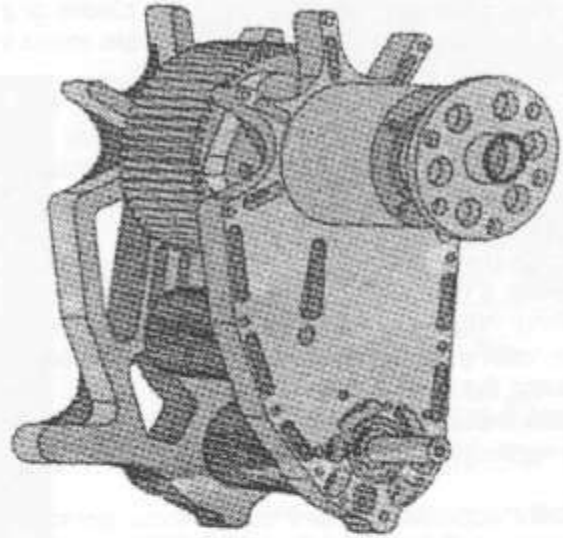
One of the belts tested was an RPP8 Panther construction, 50 mm wide. Recommended for compact drives characterized by high-torque loading, RPP Panther belts feature:

- Belt body of aramid fiber blended "ICR" (Improved Chloroprene Rubber) for high strength and high tooth hardness, resistance to flex fatigue and ozone, and heat resistance to 100° centigrade.
- Aramid fiber tension member for breaking loads greater than those possible with fiber-glass cord, and for shock compensation, flexibility, and resistance to liquids.
- Patented, double-nylon fabric bonded to the tooth belt surface, to improve carrying load. The outside cover features a patented graphite-impregnated fabric for self-lubrication, abrasion resistance, and improved drive efficiency.
- Ground back allowing use of idlers on the belt's backside.

Test results? Excessive propeller inertia in the transition periods during the start and stop phases require additional measures to address and shock loading. Jeof, consequently, introduced a torque limiter on the shaft soon after the propeller. Dayco, in turn, proposed a fiber-glass tension member with an elastic modulus greater than the Aramid fiber. In addition, a body compound offers a hardness of 95 Sh(A) - 5 Sh(A) more than the normal Panther compound - for improved resistance at shear loads.

In the end, collaboration between Jeof and Dayco has benefited both companies with new product lines: For Jeof, the SAX 86 family of liquid-cooled, four-stroke, four-cylinder airplanes; For Dayco, a next-generation Panther belt suitable for transmission and other extreme applications.

David Bak
Editor-in-Chief, Global Design News



Compared to mechanical gear reduction, states GDN,
a belt reduction saves weight and space.
Redrive ratio is 2.6:1.

The KR NEWSLETTER

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Monte Miller, Editor and Publisher
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email: montmil@flash.net

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The Amazing Propeller

David Rabe
Aviation Safety Counselor

As you take the active and power up for takeoff, did you know that not only does the propeller tip approach the speed of sound, but also centrifugal loads pull outward up to twenty tons per blade? On top of that, add the natural twisting and flexing of the prop blades and you can really begin to appreciate the incredible stress that a propeller must endure.

These stresses imposed on the propeller are even more concentrated in the small areas that may be cut or nicked. Seemingly insignificant nicks or scratches can act as stress risers which can weaken the blade and lead to possible failure.

Fortunately, prop failures happen only one or two dozen times a year nation wide. When it does though, the resulting imbalance can tear the engine from the airframe, putting the center of gravity far beyond limits, and rendering the aircraft uncontrollable.

Here are a few caveats to remember when near that amazing propeller:

1. Never approach the propeller without personally insuring the magnetos are off. Displaying the keys on the aircraft dashboard is one technique.
2. Never push or pull the aircraft by the propeller. Take the time to get the towbar. The engine and propeller are designed for uniform loading, not the loads imposed by horsing the whole aircraft by the prop.
3. Avoid pushing on the spinner. They are designed to be quite light and as a result are rather fragile.
4. If the propeller must be moved to use the towbar, move the propeller backward, never forward.

It's easy to take the prop for granted. The next time you fly, here's what to look for on your preflight:

1. Investigate scratches, pockmarks, and nicks carefully as this is where blade separations begin. Generally, a nick that is less than 1/32-inch wide and/or deep can be deferred to the next maintenance cycle. Anything larger, or if there is a preponderance of nicks, address the problem immediately.
2. If your engine is equipped with an adjustable prop, make sure the blades are tight in their sockets.
3. Insure that the spinner is centered and secure. Grasp the tip and try to move it in a circular fashion. Don't overdo it; the spinner and backplate can be easily damaged.
4. Check for loose bolts or a damaged tip.
5. During the runup, listen and feel for unusual noises and vibrations.

ON THE RAMP

The Editor's Ramblings

...and I actually thought Spring was here! Sleet, snow, 25 mph breezes, and 14°, *not* factoring in the wind chill. Now, the weather wizards predict sunshine and seventies next week. Ah, Texas. Don't like it? Go to Sun 'n Fun.

Hope you all enjoyed this issue's wing tank construction and installation article by Philip Spade. His efforts actually make an editor's job fun; clear writing and thought process, good photo documentation - the or "one picture" analogy - and a project that will interest almost everyone. Thanks, Phil, for a great effort.

Now then, who'll be next with their building report?

Sun 'n Fun Fly-In

KR & Related Activities

Sun 'n Fun VW Engine Workshop will be held again on Monday through Thursday, April 8-11, 2002. Engine disassembly program in the mornings with reassembly in the afternoon. Watch Steve sweat while you learn lots.

GPASC 5th Annual Customer Appreciation Cookout will be held Monday evening, April 8, in the Sun 'n Fun Engine Workshop Forum Tent. Check the GPASC web site, www.grasc.com, for up to date information as the fly-in approaches. Please RSVP via telephone, 402-493-6507, or email, gpasc@earthlink.net, so Linda and Steve Bennett will know how many tons of brats, polish, hot-dogs, and other stuff to prepare. Free eats! Be there early and watch Steve sweat over a hot grill.

Virgil Salisbury Hosted Annual KR Dinner will probably be held, as usual, but the KR Newsletter has not yet received confirmation. Make an early stop at the GPASC booth for details. Lots of KR talk and Virg don't sweat!

2002 KR Gathering & Flyin

The KR Gathering & Flyin will be held Sept 19-22, 2002 at the Red Oak Municipal Airport (RDK) in Red Oak, Iowa. Mike and Teri Garbez are the residents hosts with assistance from Great Plains Steve and Linda Bennett. Info, after 5:30 Central Time, 712-778-2449 or, for latest updates, log on to www.krgathering.org.

KR NEWSLETTER

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FOR SALE - Engenfeller geared reduction drive for E81

Subaru engine. New, never been mounted on engine. My cost, \$2195.00 plus shipping. Will part for \$1650.00 plus shipping. Matched lightweight starter included at no extra cost. Will bring to Sept's Pine Bluff KR Gathering. Sam Sayer, 6621 Foxmoor Dr, Zephyrhills FL 33541. Phone 813-782-3302 or email karibird37@msn.com.

FOR SALE - KR-2 boat, wings & tail. 2 liter VW mounted. VFR instruments, canopy, hardware. Was \$2800, now priced at \$2400 OBO. Moving. Richard Rymer, telephone 562-435-7937. Email rlymer@relaypoint.net.

FOR SALE - Two KR2's under construction. \$2750 and \$1250 each. For complete details, please contact Ted McClurg, 5843 Rainbow Heights Rd, Fallbrook CA 92028. Tel: 760-723-7446, email: pwmclclurg@aol.com.

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WANT TO BUY - Plans and Builder's Manual for the KR-2. Contact Mervyn Selvage, 1737 Nedra Ave, Eureka CA 95501 or email mervyn_selvage@hotmail.com.

WANT TO BUY - KR2S project. Contact Kenneth Lobb, HCR 63, Box 411, Raton NM 87740. Tel: 505-445-5766.

FOR SALE - Kawasaki 440A L/C. 2.5:1 redrive, Powerfin ground adjustable prop, tuned exhaust. \$1000 Kenneth Lobb, HCR 63, Box 411, Raton NM 87740. Telephone 505-445-5766.

FOR SALE - Brand new, in the box, 2si (AMW/Cuyuna) 460 F-45 complete with twin carbs, exhaust system, 2.65 reduction drive gear box mounted in the down position. Serial #60200. Offers to Don Pugh, 972-387-8660.

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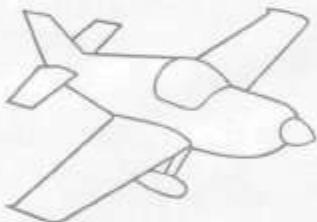


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KR NEWSLETTER
624 West University Drive
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Issue 285

"I have learned that life is like a roll of toilet paper...
the older it gets, the faster it goes."

- Andy Rooney





NEWSLETTER

Subaru EJ-22 Powers New KR2-S *Taxi Tests Precede First Flight*



Ron Vogt
945 Ward Drive • Santa Barbara, California 93111 • email ronevogt@aol.com

The KR Newsletter is devoted to the promotion of education and safety in the construction of KR series aircraft. Opinions and ideas expressed in this publication are solely those of the writer. Responsibility for application of any ideas or suggestions contained herein is solely that of the experimental aircraft builder. The KR Newsletter is intended to provide the builder with reliable, unbiased information and is not affiliated with Rand-Robinson Eng., Inc.

Subaru EJ-22 Powers New KR-2S

Taxi Tests Precede First Flight

Ron Vogt

945 Ward Drive • Santa Barbara CA 93111 • email: ronevogt@aol.com



Thanks for the interest in my little airplane. I am flattered to know that you think that I've done a good job on the project. The interest in this airplane with an EJ-22 installation could indeed be a hot issue in the world of homebuilt aircraft.

I began my project two years ago with the intent to use every possible upgrade that was available for the KR-2. The first decision was to look on the internet for a partially completed KR-2S. I wanted an airplane that needed only engine and instruments in order to be completed. What I found was an airplane that was about 50% completed. Close enough.

The former owner had installed a Continental O-200, but sold it separately. After much investigation and research, I decided on a Subaru EJ-22. For about 10% of the cost of a rebuilt O-200, I feel I have a superior engine. The R&D required to install the Subaru probably increased the build time by a year. However, I feel the effort was well worth it.

In addition to the modern engine, I bought tricycle landing gear, the wing skin kit, and an engine cowl from Diehl Aeronautical.

My name is Ron Vogt. I'm 47 years of age and currently hold CFI, At, MEI, and ATP ratings, since 1976, I have about 6,000 hours of flight time logged.

Currently, I'm working as a cargo pilot and flying the Cessna Caravan for Union Flights. My flight training was provided by the USMC, Naval Air Training Command, and the Veterans Administration; all through your tax dollar. Thanks everyone! Previously, I have worked as a flight instructor, charter pilot, agricultural pilot, corporate pilot, and now as a freight dog.

This is my first attempt at aircraft construction. However, I have restored many automobiles in the past twenty years. Airplanes are simpler and cleaner.

Flight performance, well, your guess is as good as mine right now. I've done several taxi tests, but don't plan to fly the airplane for a few more weeks- You might want to write this story in two parts.

Airframe modifications include a speed brake. After having looked at a few different designs, I decided to invent my own deployment system. It uses a brake handle located between the seats- like a Johnson bar on a Piper- to deploy the speed brake in increments up to thirty degrees.

Construction of the engine mount, testing and development of the cooling system, and alteration of the cowling were the most challenging aspects of the job. Since no one that I know of has used this engine in this airplane, I had to use a combination of designs to come up with an engine mount that I felt was adequate.

It's similar to the mount used for a KR with the O-200. A mod was made to the lower part of the mount to integrate it into the Diehl nose gear assembly. The O-200 mount has four attach points. My design uses seven points and gussets are added where appropriate.

The Diehl Aeronautical wing kit is used on my KR. It's six inches longer at each tip in order to compensate for heavier than average KR's. Putting the wing together and cutting out the ailerons was one of the more difficult aspects of building this airplane. A landing lights is installed in the left wing root. Navigation lights are also installed to facilitate night flying.

No one makes an engine cowl to fit an EJ-22 installation on the KR-2. The next best thing is to buy a cowl from Diehl Aeronautical and modify it to fit.

In order to get a tall engine to fit in front of a short airplane, I needed to hang the engine in front of a mockup firewall and adjust the height of engine to fit. Due to the huge intake manifold that comes with the EJ-22, the engine thrust line is lowered about 3 1/2 inches below the upper longeron. The plans call for the thrust line to be at the same level as the upper longeron.

EJ-22 KR-2S... continued:

In addition to the motor mount work, the front, top and bottom of the cowling had to be modified to compensate for the change in the location of the prop attach point, intake manifold and oil pan. RFI is currently developing a low profile intake manifold for sale to KR-2 builders which should make this aspect of the job considerably easier.

Once the compromise in engine height is achieved, the builder can weld the engine mount together. After removing it from the mockup firewall, install gussets, grind the welds, paint, and then install it on the airplane. The entire process took me about two weeks.

RFI builds a prop hub and starter adapter plate that makes this engine conversion possible. For a little over \$700, these components can be bought and installed on the EJ-22 with ease and precision. In fact, RFI has built over 400 sets of these components for installation in autogyros. Ron Parham, the main man at RFI, is a driving force for the use of this engine in aviation.

"The single most significant factor in designing a dependable auto engine installation in an airplane is the correct design of the cooling system." These are the words of Richard Finch in his book, "Converting Auto Engines for Experimental Aircraft". The misspelling of the last word in the title is intentional.

Before attempting to install an automobile engine in an airplane, any builder should read this book. My installation is similar to the one pictured on page 65. That is, the radiator is located between the engine and the firewall.

To get a decent paint job on a wooden and fiberglass airplane, it's necessary to fill the pores of the material to be painted. Polyester putty works well for this.

Then, use standard auto primer



Subaru EJ-22 is neatly cowled in the Vogt KR-2S. The paint scheme includes a beautiful blue-green on the lower portion of the fuselage along with a subdued stripe that makes the 2S look even longer and leaner than it already is.

and touch up all of the pits that you missed the first time around. When I was satisfied that the airplane was ready, I painted the parts with PPG acrylic enamel. A "car quality" paint job goes a long way on an airplane.

Several readers have inquired as to the use of the Subaru EJ-22 as a powerplant for the KR-2 and 2S. Ron has done a magnificent job in fitting the engine to the airframe while maintaining the good looks of the Rand 2S. We wish him well with the taxi test phase and look forward to seeing the aircraft in flight.



ON THE RAMP

The Editor's Rumblings

Aviation Business Opportunity

KR Newsletter seeking new owner

The KR Newsletter began its publishing run in 1975, during the heyday of the Ken Rand aircraft designs. Since that initial one-page issue, several different editors have diligently worked to continue publishing the KR Newsletter at a fairly regular rate. Each new publisher, while adding their personal touches, accepted the challenge of maintaining what has always been a subscriber-driven publication.

The current owner and publisher, Monte Miller, assumed ownership of the KR Newsletter in April of 1997. With over thirty years experience in the graphic arts and printing industry, plus having built and flown a KR-2 with its multi-year construction documented through the pages of KR Newsletter, it was a natural fit when the previous publisher decided to retire from the business and sell the KR Newsletter. And now, after a 27 year run, it's again time for new leadership as both business and personal opportunities demand more time from the editor.

The KR Newsletter is for sale. Hopefully, someone will accept the opportunity and the challenge to continue what is one of the longest running 'type-club' newsletters in the history of sport aviation.

Interested parties may contact the owner for complete details via email or telephone. Please, telephone evenings or weekends when I'm usually around mi casa. Contact information may be found in the information block on this page.

Meanwhile, dear readers, do not send in a renewal payment as all subscriptions will be continued through the August 2002 issue at which time, lacking a new owner, the KR Newsletter must close down and all assets and publication rights will then be assigned to the library archives of the Experimental Aircraft Association.

It's been an enjoyable, interesting, and challenging opportunity to serve the readers of the KR Newsletter.

Cockpit Trim Tab Control

Everybody says that the KR's are built just like a big model airplane. OK, what better place to buy parts for your KR than the local model airplane hobby shop?

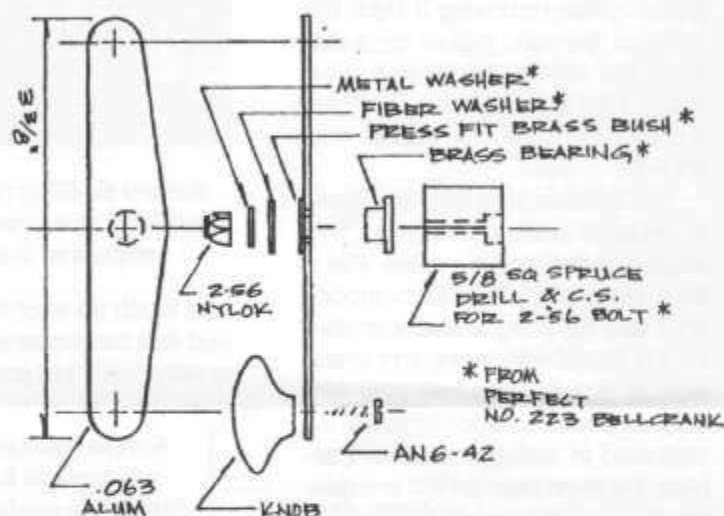
A simple, effective, and light cockpit trim tab control can be made up from scrap aluminum, a small wooden knob, and a one dollar hobby shop purchase. Bet you've still got some 5/8" square spruce left from the project.

Check the sketch for details. The trim tab is driven by a Sullivan Products quarter-scale R/C pushrod and is plenty strong. The aft fuselage bellcrank is just like the

cockpit unit and terminates in a cable driven "golden rod" to the tab. Be sure to secure the pushrod along its route at each fuselage upright to prevent flexing. A round notch in a sort piece of 5/8 spruce is all that's needed.

Glue the beveled spruce mounting block to the interior fuselage skin and position it tangent to a fuselage member....remembering to first floc the small bolt in place.

The dollar? It goes for a Perfect Brand No.223 bellcrank. Push out the brass press fit bushing using a couple of small sockets and throw away the bellcrank- it's too thin and soft for our needs. The rest is easy. In operation, snug the nylok down for just the right amount of friction to hold your selected in-flight trim setting. Get fancy and epoxy-floc the nylok into a small wooden knob for easy tension adjustments.



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Evening and Weekend tel: 940.566.5871
email: montmil@flash.net

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Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial-style ads will be billed accordingly and must be paid for prior to publication.

The KR Newsletter reserves the right to edit free ads.

FOR SALE- Posa Garb, new in box, \$100 or some trade. KR gear retract parts, less springbar. Make offer or trade. Contact Bobby Laird, 209-392-3436.

WANTED - Set of KR2 plans with latest revisions. Please contact Randy Eakle, 3918 North Vincent, Peoria Heights IL 61614. Tel 309-688-4378 (between noon and 2:00pm) or email to annstreet@364.com with price and details.

WANTED - Mosler Power dual ignition coils and wiring diagram info. Please call Lee Pendleton, 423-559-2603.

FOR SALE - Retract Gear System removed from KR-1. Pair of gear leg castings, go kart brakes, spring bar, hardware, etc. Make offers to Sam Bailey, 914 West 4th, Pratt KS 67124. Day-316-672-7426 or Eve-316-672-3325.

FOR SALE - KR2 stretched to KR2S, per plans. A&P built boat. Premolded turtledeck, wings & wing stubs, tails, canopy, forward deck. Lacks wings and fuel tank assembly. No wheels or brakes. 2180 VW w/dual ignition 200 hours, manifold and carbs, engine mount, Sterba prop. \$9500. Contact Jim, 909-313-8937.

FOR SALE - KR2 Parts: Rudder pedal assy w/nylon bearings, 7 front & 8 rear spar attach fittings, vertical stab templates, 5 aileron bellcrank ftgs w/bushings, 20 angle brackets & gussets, flat seat w/attach angles. \$185 value asking \$140. Ray Goree, 817-795-4779, Arlington TX.

FOR SALE - KR2 project approximately 80% completed. For full details, contact A.C."George" Cummins, 3109 Whittle Way, Midland TX 79707. Tel: 915-520-8334.

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KR fathering and Fly-In

Sept 19-22, 2002 • Red Oak, Iowa

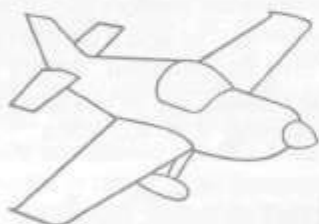
Mike & Teh Garbez are the resident 2002 KR Gathering hosts, assisted by Steve & Linda Bennett along with Jim and Deb Faughn. Garbez phone is 712-778-2449. Please call after 5:30p.m. CT weekdays or on weekends.

Red Oak Municipal Airport (RDK) is located 0.5 mile west of town at 1674 200th St, Red Oak IA 51566. Phone (712) 623-6523. (41 00.63N - 95 15.59W)

There are two motels; they are The Red Coach Inn (712) 623-4864 and the Super 8 Motel (712) 623-6919. Both are within 1 1/2 miles of the airport. Motel reservations can be made anytime now (the sooner the better). Also the banquet will be held Saturday evening at the Red Coach Inn Banquet Room.

Any questions, just e-mail Mike at msgtlg@netins.net. For the latest updated KR Fly-In information, log onto

www.krgathering.org

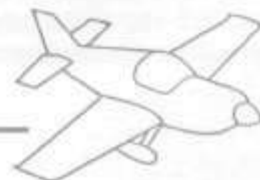


KR NEWSLETTER

624 West University Drive
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Denton, Texas 76201

Issue 286

Pilots believe in clean living.. .
They never drink whiskey from a dirty glass.





NEWSLETTER

Subaru EJ22 Powers Palmer KR-2S

New propeller unleashes improved performance



Les Palmer flies his Subaru EJ22-powered KR-2S

3247 High Lark Drive . Dallas, Texas 75234 • Tel: 972-241-4387

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Les Palmer's KR2

A Pocket Rocket - Part 1, Engine

K. Truemper

Les Palmer is a special builder. He takes fiberglass, resin, plywood, aluminum stock, steel tubing, and various other materials and turns them into parts, combines the parts to assemblies, and then combines the assemblies into amazing machines such as airplanes, at unbelievably low cost. Of course, everybody likes to save money when building a plane. But for Les, doing everything from scratch is not just a matter of saving money but also of pride.

His latest plane is a special KR2. Its first flight was about 4 years ago. Since then, he has improved it considerably, to the point where it has amazing performance. In a two-part article, we look at this neat airplane. It has a narrower fuselage than the typical KR2 and has plenty of space for the pilot and baggage, but cannot take along a passenger. Les is not exactly anorexic and wanted the plane to be really comfortable for him.



The Palmer 2S is based at Aero Country (T31) north of Dallas. A Subaru EA81 originally powered the aircraft but has been replaced with a more powerful EJ22 engine. Flight performance has been vastly improved with the change to a new, builder-crafted propeller.

A good candidate was the water-cooled Subaru EJ22 engine. It has 2.2 liter displacement, outputs 150 hp, and weighs about 45 lbs more than the EA81 engine.

The installation of the EJ22 engine proved to be quite involved. Les decided to keep the entire electronic control system of the engine. Thus, the engine has fuel injection and electronic ignition. At the moment, a single electric fuel pump supplies fuel to the injectors. But Les has already worked out a dual pump arrangement where the second pump automatically takes over if the primary pump cannot maintain the fuel pressure.

To protect the control computer from heat and vibration, he placed it in the cabin under the seat. Due to the heavier weight of the new engine, the CG was too much forward, and the battery had to move from the firewall to the baggage area behind the seat. For the same reason, the main landing gear had to move forward by an inch or so.

Next, Les made the reduction drive. It is a belt system with large belt, bearings, and shafts, and therefore with a ruggedness that promises long and reliable life.

Les selected two evaporators of automotive air conditioning units as radiators. They are made of aluminum, were tested in the factory to several hundred pounds of pressure, and are cheap when bought used. The radiators are mounted aft of the engine near the firewall. Two fiberglass ducts bring air from two intake scoops to the radiators.

There is little space in the cowl above the engine, so the air intake for the engine has to be routed from the side of the engine to the top by another fiberglass duct.

Originally, Les installed the water-cooled Subaru EA81 engine, which has a 1.8 liter displacement, outputs 100 hp, and weighs about 210 pounds. The plane had anemic take off and climb performance. On a good day, it would climb at 500 feet per minute. On not so good days, which in Texas means during the summer, it would climb at 400 fpm. Top speed was 140 mph. Not bad for that small of an engine. For Les the performance was unacceptable so he began looking for a bigger engine.

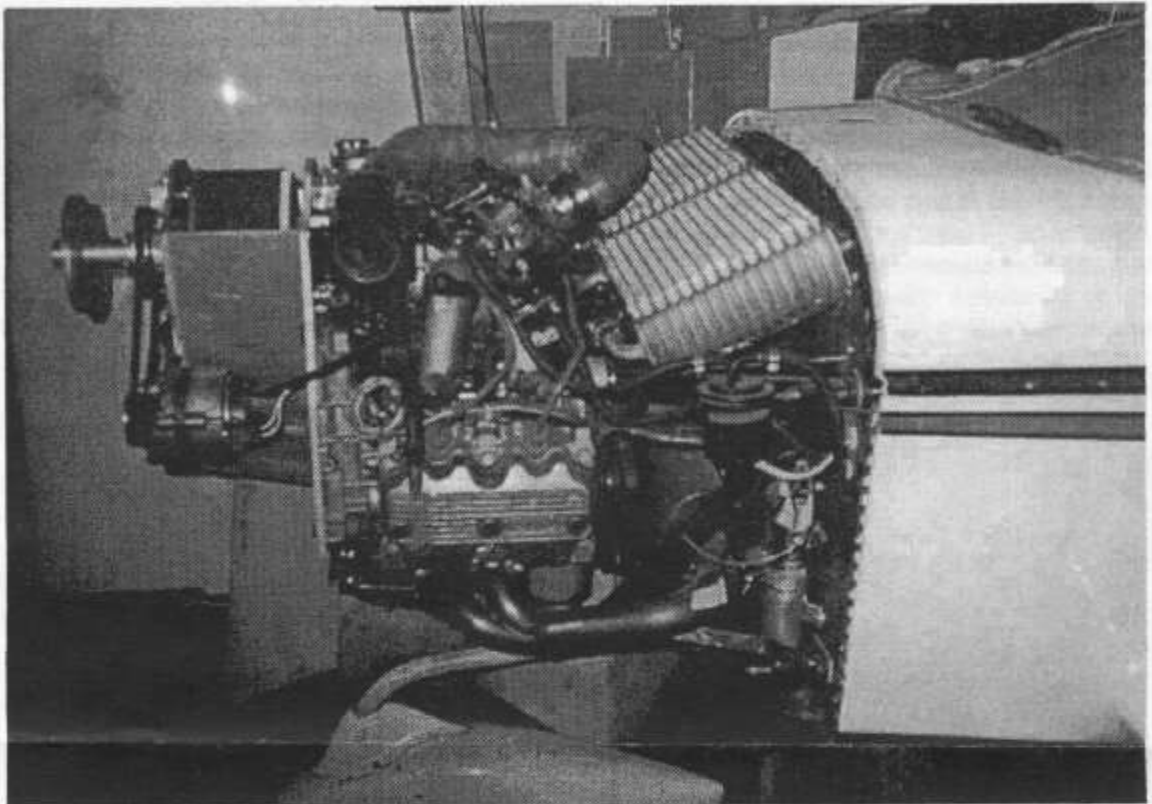
more Palmer KR2S Subaru tales on following pages...

Nothing of the automotive exhaust for the engine fits the installation. Stainless steel tubing had to be bent, welded, and fitted to a small custom muffler, with one large pipe at the bottom of the muffler leading the exhaust gases away from the bottom of the fuselage.

The cowl was produced as follows. The engine was completely wrapped in plastic. Balled-up newspaper filled large gaps and cavities, then plaster was added until the desired cowl shape was achieved.

Once the plaster had hardened and dried, carwax was buffed on the plaster, as release agent for the fiberglass to come. Several layers of fiberglass produced the entire cowl. To get the cowl off the plaster, the shell was cut horizontally into two pieces. A lot of finishing work followed, and Les had a cowl that fitted the engine like a glove.

The engine installation required a lot of work, but very little money. Les estimates that total cost of the engine and modifications is less than \$3000.



Custom redrive leads mods to Palmer's EJ22 aero conversion. Dual auto air conditioner evaporators keep engine temps happy. Custom stainless exhaust and fiberglass intake ducting visible.

Now the tough part: Making it all work. Besides the problem of getting the engine sensors to function correctly, there is the water cooling problem. On the first run, the system boiled over in minutes. Les analyzed the problem using his water-column differential gauge. According to the pressure readings, air was getting into the cowl but did not have enough motivation to leave. The fix was addition of a lip on the lower cowl that helps draw the air out of the cowl.

How well does the plane perform with the new engine? The initial test flights showed that the propeller used on the EA81 engine was not a good match for the new EJ22 engine. Les anticipated a trial and error process to find the right propeller. The easy answer would have been purchasing some propellers, trying them out, and selecting the best one. This is not a cheap solution since propellers are not returnable. Instead, Les decided to design and build a machine for carving propellers, which would then produce various propellers for the new engine. In the second part of this article, we see how Les accomplished this difficult project, and how the plane performs with a suitable propeller.

Les Palmer's KR2

A Pocket Rocket, Part 2 - The Propeller

In the first part, we looked at Les Palmer's engine installation of the Subaru EJ22 engine in his KR2. Here we focus on the propeller for that plane.

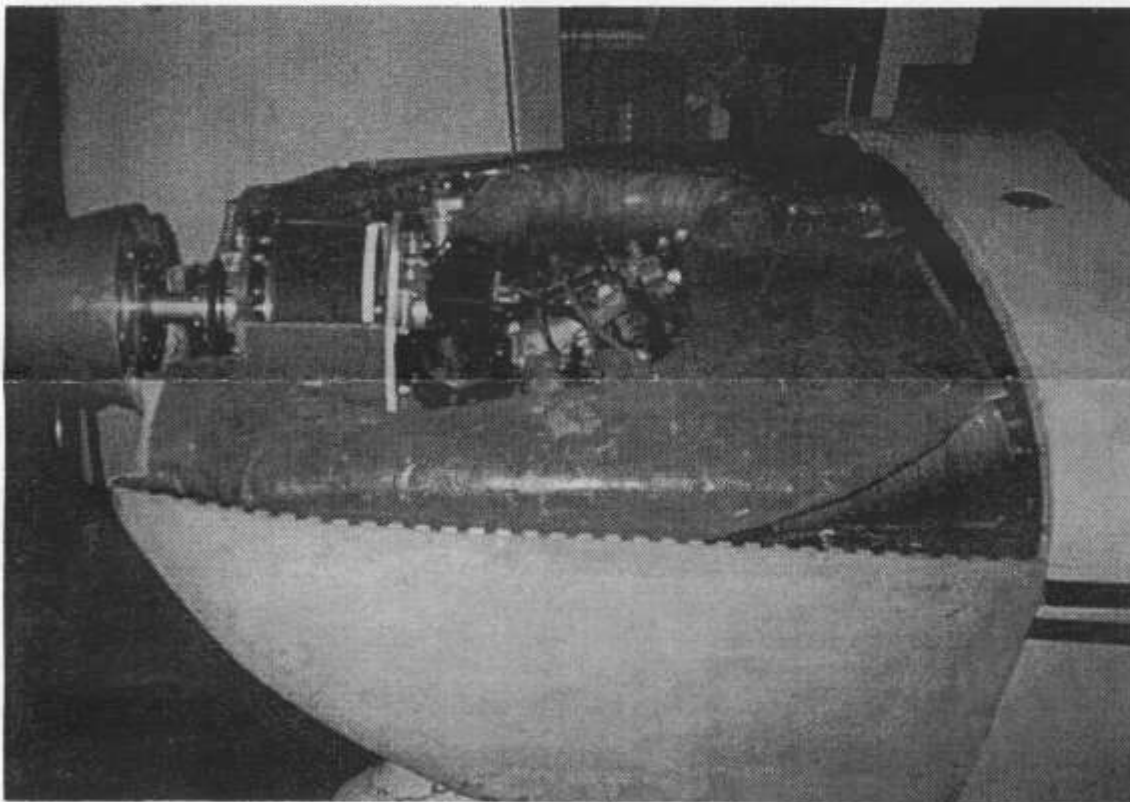
When the EJ22 engine had been installed, tested, and declared ready for flight, Les used the propeller of the previous Subaru EA81 installation for the initial flights. This is not the place to be critical of products or brands, so we will not mention the propeller manufacturer. But that propeller turned out to be a miserable performer. In fact, the propeller was barely good enough for getting the plane off the ground and for investigating the initial cooling problem. Climb and cruise performance were far from the expected results. Even at moderate to low power settings, coolant temperatures hovered near 212 deg F on 70 deg F days. Flying the plane during summer temperatures seemed out of the question. The word that best summarized Les's emotions was DISAPPOINTMENT.

the Palmer EJ22 KR2S, continued:

At the time, it was not clear that the propeller was at the root of the problem, and plenty of discussions took place in the hangar at Aero Country. Passersby gave lots of advice, some of it good, but some of it irrelevant. It was hard to figure out what was wrong. Maybe the entire EJ22 installation was a mistake.

To the rescue came Bud Wilson, rather unintentionally. He has a KR2 with the Subaru EA81 engine, quite similar to Les's original installation. Bud had installed a propeller of the manufacturer we shall not mention here, just like Les. After some discussions of the non-virtues of that propeller, Bud became intrigued enough to remove it from his plane and to use instead an old wood propeller that Les had in his shop. It clearly was not the right prop, or so it seemed: wrong chord, not enough pitch, probably lousy performance- these were the comments. Anyway, he installed the thing and you know what? The plane climbed like a homesick angel- that was to be expected due to the pitch-AND it had much better cruise and top speeds. It also was more quiet and weighed 25 lbs less. Clearly, the previously used prop was a very poor choice.

Now what? There were lots of propellers that could be bought and tried. Surely one of them would be terrific. The thought of the expense was intimidating enough, but really annoying to Les was the fact that he would buy finished product off the shelf. He only buys aluminum, fiberglass, wood, and steel stock, and he makes from these materials whatever else he needs. By golly, he was not going to change and buy a bunch of propellers in search of a good one.



With lower cowl and fiberglass air ducting fitted, EJ22 installation is positively sleek. With completion of engine installation and final prop design, Les is ready to paint the new engine cowl.

Les made phone calls, studied propeller copying processes, and decided on a design that could be built with parts he had in his shop, such as electric motors previously used for heating/cooling installations, and reduction gearboxes. He even used the take-up wheel and cable of an old garage door opener.

Lots of problems had to be solved. There is not enough space here to discuss them. After weeks of trials and refinements, he was done. The above photo shows the finished machine. It accepts a propeller, the "pattern", and a wood piece consisting of bonded together layers, the "blank". A sensor wheel traces the pattern and transmits its movement to the cutting wheel, which converts the blank into the propeller copy. Here is a picture of the result of an early trial, where a 2X6 wood piece has been converted into half a propeller.

A disadvantage of the method is that one must have pattern propellers. They do not have to be airworthy. In fact, they may have been constructed from foam pieces, or plaster, or Bondo, or whatever can be easily shaped. Les searched and called and inquired to find pattern propellers. He located a builder in Pennsylvania who had used output of the Prop Optimizer PC program sold by Bates Engineering (Sport Aviation has their ad) to create a rather odd-looking propeller odd-

There are several ways to make a wood propeller. One- carve it by hand using a number of cross-section templates; Two- use a copying process to duplicate an existing propeller; or Three- carve the propeller on CNC equipment where a computer program drives the carving tool. Choice number one was too tedious since several propellers would have to be produced. Choice number three obviously would have involved considerable costs. That left Les with the remaining choice- number Two.

looking propeller that had astonishing performance in an RV6/Subaru installation. The builder shipped the prop for a trial flight and agreed that Les could copy it.

The trial flight with that propeller was on a Sunday that won't soon be forgotten. At takeoff rpm, the prop produced a high-pitched screeching sound like a howler monkey in distress, plus a low-frequency wow-wow like a gorilla in heat. The test flight drew pilots, mechanics, and visitors out of the hangars at Aero County. What they heard was terrifying, but what they saw was impressive: The plane climbed and had top speed like never before.

Following the test flight, the propeller was measured. It had been completely hand-made from templates, had irregular chord and pitch, and an uneven surface. Les decided to copy one half of the propeller using a large, non-laminated chunk of wood.

He manually reshaped and resurfaced that half-propeller using Bondo and lots of sanding, until it was dimensionally consistent and had smooth and flowing surface. Using it as pattern, he carved a real propeller for the next test flight. This time, the horrible noises were gone, but the performance was impressive as before. The pitch was a bit too small, so he created yet another one with increased pitch. This was easy to do since pitch changes are readily accomplished by offsetting the blank relative to the pattern.

Now to the performance. Keep in mind that the current KR2 does not have any fairings for the wide main wheels. On an 80 deg F day, at 2000 ft MSL, climb rate was 1800 fpm at 110 mph. Max speed was 165 mph at that altitude, with the engine turning 5100 rpm and the propeller turning 2700 rpm. Cruise speed was 150 mph at 4800 rpm for the engine and 2500 rpm for the propeller.

Coolant temperature never exceeded 205 deg F during climb. During cruise, coolant temperature was 180 deg F. Once the main wheels have been faired, max speed and cruise speed should increase by at least 10 mph. Les's grin went from ear to ear when he saw that performance.

In the works is a fail-safe fuel delivery system for the fuel injected EJ22 engine. Since that system may be of interest to other builders, we will cover it upon completion and testing as Part III of Les's KR2 saga.

If you'd like to chat with Les about his propeller carving machine, prop making, his custom-machined KR components, or Subaru conversions, call 972-241-4387.

A special 'thank you' to Les Palmer for sharing his experiences gained through the multi-year developmental period of his Subaru-powered KR-2S. The KR Newsletter also extends thanks to author K. Truemper and Hangar Tales, the newsletter of Dallas' EAA Chapter 168. Contact Les for info on his machine shop offerings for the KR designs.

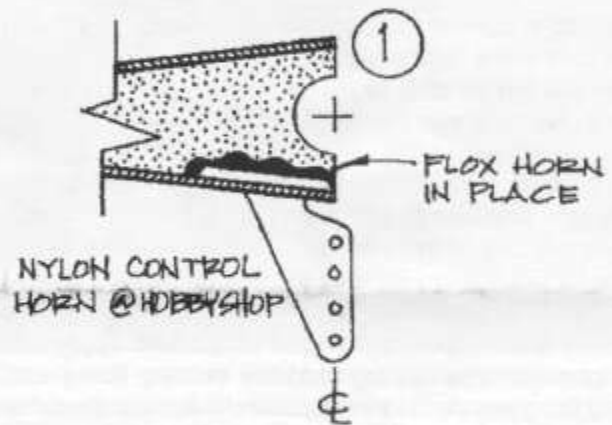
Trim Tab Construction

Ref. KR Manual 8.20 Elevator Trim Tab

The brief description of the elevator trim tab construction in the KR Builder's Manual is an example of just enough information to baffle you.

Here's some help that will fill in some blank spots.

1. Complete the glassing of the left elevator except for the vertical surface that forms the rudder cutout. Let the glass work cure.
2. Utilizing the plans dimensions, mark an outline of the trim tab, keeping the ends parallel to each other and the hinge line parallel to the elevator trailing edge. Using the inside face of the elevator rib as one trim line, cut the tab free. A Zona razor saw works great as it does not try to tear or pull the glass away from the foam.



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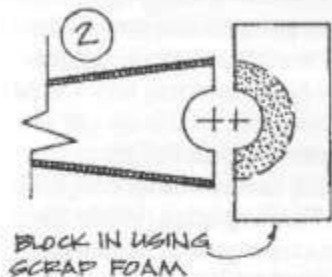
BACK ISSUES

The KR Newsletter maintains a database of selected articles from past issues. Printout available at \$7.50, \$10.00/113 Canada & \$15.00US Foreign. Copies of material available at \$1.00US per page, please include estimated postage. Articles over one page in length will be billed for amount due.

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KR Trim Tab Construction, *continued*:

3. Buy two pieces of brass tubing from the hobby shop. The outer tube should be approx 1/4 to 5/16 O.D. and the inner tube should be a slip fit. Try several pieces before you buy...I've found a variety of tolerances. Do not cut the tube to length just yet.



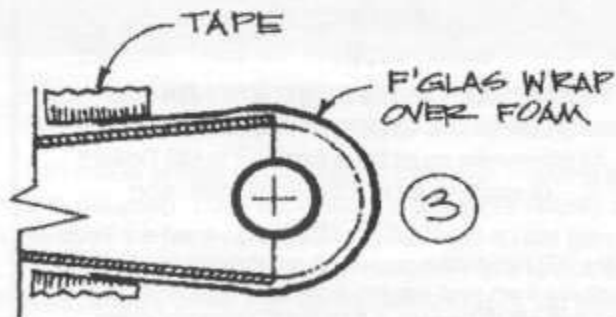
foam piece flush with the tab face. Don't glue in yet.

4. Sand out a notch in the leading edge of the trim tab that accepts half the diameter of the outer brass tube. A rat tail file works well. Using an oversized piece of scrap foam, sand a matching second notch to capture the outer tube and fit the

5. Install a control horn of choice. Check the nylon horns sold in the hobby shops. Use plenty of epoxy-flox as you will not be able to do any later additional gluing without chopping into the tab. Ugh!

6. Rough up the outer surface of the exterior tube and epoxy tube and cap to tab. Leave tube long as this will keep epoxy out of the tube bearing and makes a nice handle for the coming glass work.

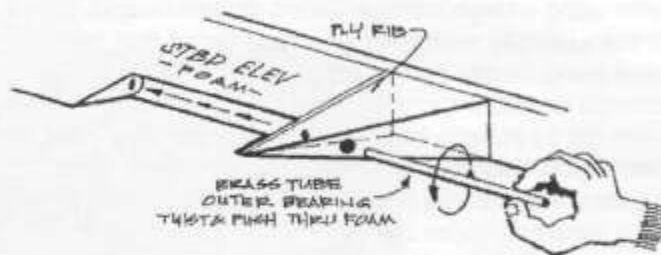
7. Sand foam cap to a rounded shape and apply one layer of glass, overlapping onto the existing fiberglass. Getting the glass cloth to wrap around the small diameter curve of the tab and lay down with the resin can be difficult. Defeat this pesky problem by using a piece of glass cloth that is large enough to permit the use of masking tape to pull and hold the fabric as the resin cures. A little caution with the resin will allow you to keep the last bit of fabric dry and attached to the existing cured fiberglass.



8. Carefully trim the excess tubing. Deburr the ends, then seal both with a small piece of tape. Prepare the bare foam ends, using a flox-resin mix to reinforce the corners, and cover with one layer of fiberglass. After set-up, an Xacto blade will trim out the small tape pieces and any debris from the tube.

9. Prepare the elevator to accept the trim tab by sanding a recess in the foam that will fit the tab's leading edge. Leave enough space so that the tab can move freely. Don't get caught up in the hassle of trying to glass the elevator's curved tab recess as you'll never be satisfied. Simply smear a mixture of resin and flox onto the bare foam and work a bit of it onto the elevator's skin. The job will be quicker and it's out of sight anyway. Glass the vertical surface, leaving clearance for filler, paint, and trim tab movement.

10. Here's where you need to pay close attention- the description is far more difficult than the actual chore of installing the tab and it's hinge tube.



Begin by carefully sharpening the end of the inner brass tube, just enough to resemble a paper punch.

Eyeball the approximate location of the tab's inner hinge tube in relation to the wood elevator rib. Working from the rudder cut out, dig out enough foam so you have room to work. Remember, the foam can be refilled easily. Using a drill slightly larger than the outer diameter of the hinge tube, put a hole through the elevator rib. By using a drill slightly larger than the tube, you'll have space to make small position adjustments during bonding.

Temporarily secure the completed tab in position within the elevator cut out and use the tube's sharpened end to carefully twist through the vertical glass skin on the elevator's cut out.

11. Check the tab for freedom of movement without slop in the bearing tubes. When satisfied, use a flox-epoxy mixture to secure both ends of the inner brass tube. Exercise caution to keep adhesive out of the bearing. A tiny smear of oil might help. Tape the tab in a neutral position while the epoxy cures.

12. You can now foam, fill, and glass the elevator vertical surface inside the rudder cut out. It's done. The description of the trim tab construction sounds difficult. The actual work is far easier.

Allow plenty of cure time for the epoxy and glass required in each step. Go tinker with another KR job and you won't be tempted to rush the trim tab installation. When completed, the tab will be ready for the final control cable hookup from cockpit to tail.

KR CLASSIFIEDS

Free subscriber classified ads will be accepted on a private party basis only and space available. Advertising must be within the KR realm of goods or materials. Commercial-style ads will be billed accordingly and must be paid for prior to publication.

The KR Newsletter reserves the right to edit free ads.

WANTED - Mosler Power dual ignition coils and wiring diagram info. Please call Lee Pendleton, 423-559-2603.

FOR SALE - Retract Gear System removed from KR-1. Pair of gear leg castings, go kart brakes, spring bar, hardware, etc. Make offers to Sam Bailey, 914 West 4th, Pratt KS 67124. Day-316-672-7426 or Eve-316-672-3325.

FOR SALE - KR2 stretched to KR2S, per plans. A&P built boat. Premolded turtledeck, wings & wing stubs, tails, canopy, forward deck. Lacks wings and fuel tank assembly. No wheels or brakes. 2180 VW w/dual ignition 200 hours, manifold and carbs, engine mount, Sterba prop. \$9500. Contact Jim, 909-313-8937.

FOR SALE - KR2 Parts: Rudder pedal assy w/nylon bearings, 7 front & 8 rear spar attach fittings, vertical stab templates, 5 aileron bellcrank ftgs w/bushings, 20 angle brackets & gussets, flat seat w/attach angles. \$185 value asking \$140. Ray Goree, 817-795-4779, Arlington TX.

FOR SALE - KR2 project approximately 80% completed. For full details, contact A.C."George" Cummins, 3109 Whittle Way, Midland TX 79707. Tel: 915-520-8334.

FOR SALE - KR2, 85-90% complete and almost ready for primer. VFR instruments, 1834 VW with Diehl case, Sting tuned exhaust. Cam locking-type manual retracts, 5-ply Lamb tires. Excellent work and a real deal at \$6500. Contact Pat McFall, 515-276-3936 in Des Moines IA.

FOR SALE - KR2, approx 70% completed. 1835 VW engine has only 30 minutes run time. Some instruments included for \$4000 OBO. Also offering a Midget Mustang center section and wings. Flush riveting on wing skins has not been done. \$2500 OBO. Contact Ken Squires at 702-457-2559 after 6:00 pm Mountain Time or email: birddog24@gocrazyonline.com.

FOR SALE - KR-2 boat, wings & tail. 2 liter VW mounted. VFR instruments, canopy, hardware. Was \$2800, now priced at \$2400 OBO. Moving. Richard Rymer, telephone 562-435-7937. Email rlymer@relaypoint.net.

FOR SALE - Two KR2's under construction. \$2750 and \$1250 each. For complete details, please contact Ted McClurg, 5843 Rainbow Heights Rd, Fallbrook CA 92028. Tel: 760-723-7446, email: pwmccclurg@aol.com.

2001 KR GATHERING T-SHIRTS Limited supply but a few still available in sizes M,L,XL,XXL \$15.00 each, postpaid. Send your size request and return address to Tommy Waymack, 2901 W 26th, Pine Bluff AR 71603.

WANT TO BUY - Plans and Builder's Manual for the KR-2. Contact Mervyn Selvage, 1737 Nedra Ave, Eureka CA 95501 or email mervyn_selvage@hotmail.com.

FOR SALE - Brand new, in the box, 2si (AMW / Cuyuna) 460 F-45 complete with twin carbs, exhaust system, 2.65 reduction drive gear box mounted in the down position. Serial #60200. Offers to Don Pugh, 972-387-8660.

FOR SALE - KR-2, registered N81VM. built in 1983 by A&E, certified, with Revmaster 2100D engine. Engine sent to factory in 1995 for new forged crank, new Rev-Flow carb, new high-nickel valve seats and "run-up". Engine re-installed May 1995. T/T approx 170 hrs with zero hours since engine re-work. Airplane needs non-structural repair to leading edge of center section; slid-off trailer at air show. Excellent workmanship and a bargain with trailer at \$7,500 OBO. Terry Stephenson, 23809 5th Ave West, Bothell WA 98021. email: Terryv119@cs.com. cell: 206-979-1089 or tel evening: 425-402-8264.

FOR SALE - KR-1 "fastback" project, 40% complete from firewall aft except for outer wings. Manual retract. Removeable canopy permits open cockpit profile. Nine instruments plus some engine accessory parts, engine mount, Posa carb. \$2500 OBO to Jim Snyder, 720 Seminole Trl, Hewitt TX 76643. Tel: 254-666-6004 or jsnyder@clearsource.net. Jpeg pics avail w/add'l info.

after Oshkosh, don't forget the... KR Gathering and Fly-In Sept 19-22, 2002 • Red Oak, Iowa

Mike & Teri Garbez are the resident 2002 KR Gathering hosts, assisted by Steve & Linda Bennett along with Jim and Deb Faughn. Garbez phone is 712-778-2449. Please call after 5:30p.m. CT weekdays or on weekends.

Red Oak Municipal Airport (RDK) is located 0.5 mile west of town at 1674 200th St, Red Oak IA 51566. Phone (712) 623-6523. (41 00.63N - 95 15.59W)

There are two motels; they are The Red Coach Inn (712) 623-4864 and the Super 8 Motel (712) 623-6919. Both are within 1 1/2 miles of the airport. Motel reservations can be made anytime now (the sooner the better). Also the banquet will be held Saturday evening at the Red Coach Inn Banquet Room.

Any questions, just e-mail Mike at msgtlg@netins.net. For the latest updated KR Fly-In information, log onto

www.krgathering.org

Please email Linda Bennett at Great Plains Aircraft Supply, Inc. and let her know how many in your party plan to attend the dinner buffet. email to: gpasc@earthlink.net. Upon your arrival at Oshkosh, please stop by the Great Plains booth in Building C to prepay for the dinner.

The KR Dinner will be in Forum Tent 9, on Friday, July 26, at 6:30 pm. The buffet price will be \$12-15.00 each, depending on the number of attendees. Mrs. Rand needs a tentative head count for the buffet.

Presentations will be by Jim Faughn—KR builder & pilot, and Mrs. Jeanette Rand of Rand Robinson, Inc.

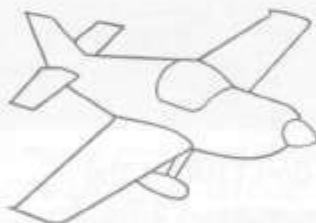
To all KR Enthusiasts bound for Oshkosh

There will be a KR Forum at Oshkosh on Wednesday, July 24, at 4:00 pm

Well, folks, it appears the fat lady done sung her song and Elvis has left the building. Yes, the KR Newsletter has recently changed ownership. New publisher, Larry Capps, has fresh plans for the future of the KR Newsletter. With the new proprietorship comes a new address. Latest data is in this issue.

HE RAMP

The Editor's Ramblings



KR NEWSLETTER
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Issue 287

Been nowhere, done nothing

- Local bumper sticker

Larry Capps
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