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KR-1 KR-2 NEWSLETTER

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BUY SELL TRADE

- WANTED . . . Unfinished KR-2 project. Also best buy on engine for same. Prefer within 300 miles of Sacramento, CA. Jim Ducharme 5869 Ambler St., Sacramento, CA 95823 Ph. (916) 422-3186 No Collect calls please.
- FOR SALE . . . KR-2 fiberglass engine cowls, complete with full size firewall and engine baffle templates \$125.00. Dan Diehl - 4132 E. 72nd St., Tulsa, OK 74136 Ph. (918) 492-5111.
- FOR SALE . . . Nylon bar stock for fairleads. 3/4" x 1" x 12" - wt. 5 oz. \$150.00. each postage paid. Jim Snyder - Box 696, Hesston, KS 67062.

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

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

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

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

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

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

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

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

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

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

TIPS FROM OTHER BUILDERS

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

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

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

QUESTIONS & ANSWERS

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

FLYING THE TURBO KR-2

by Philip L. Writer

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

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

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

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

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

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

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

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

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



Fig. 1

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

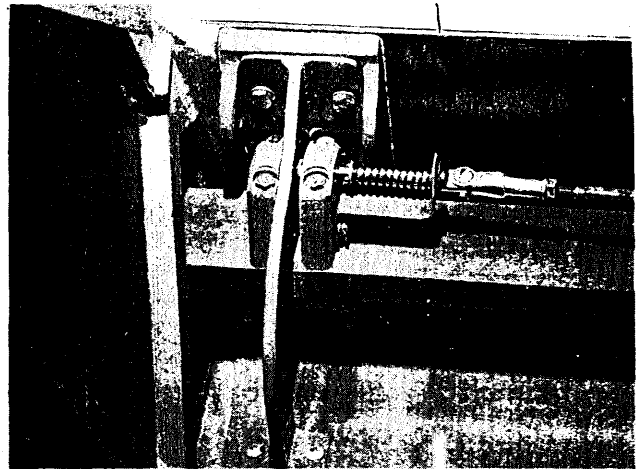


Fig. 4

The tube w/clevis is 1/4 chrom molly w/10-32 stud welded in. The locking pins is 1/4 stainless steel, machined down from 1/2 round The bracket holding spring is .032 chrom molly. The split block is aluminum 6061 & can be cut out in a bandsaw & finished on a sanding disc.

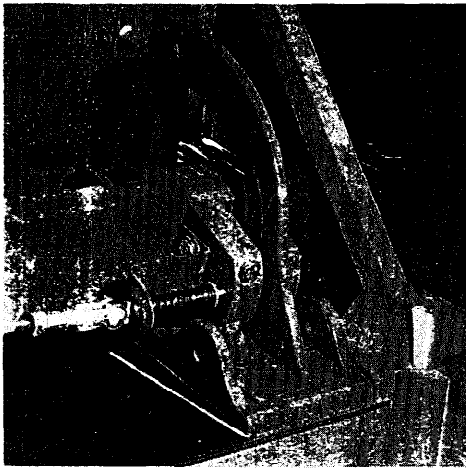


Fig. 2

This position is locked with the wheels down. The curved bar from casting to floor is 6061 alum. 1/4" thick x 1" wide - steel bushing pressed in holes for gear down position.

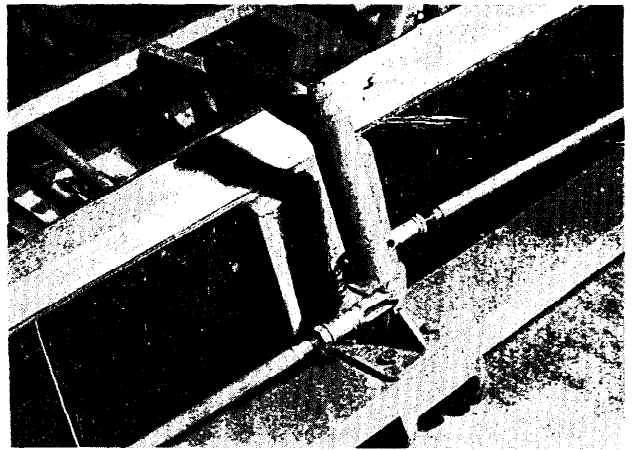


Fig. 5

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

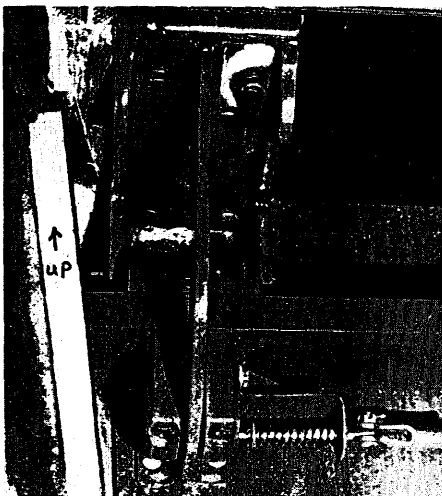
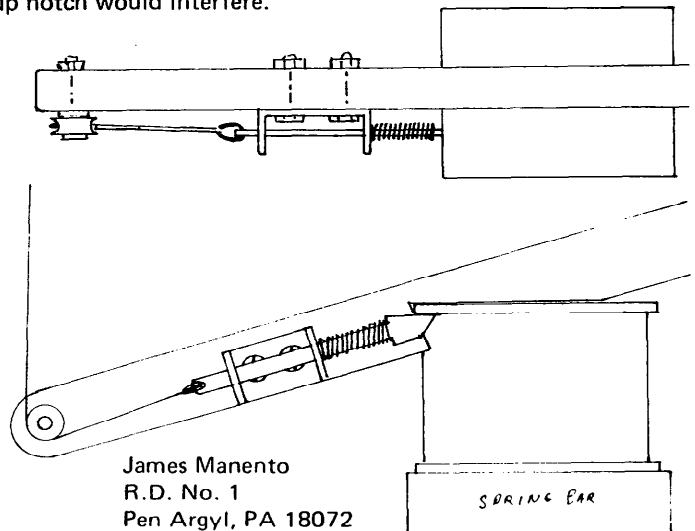


Fig. 3

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

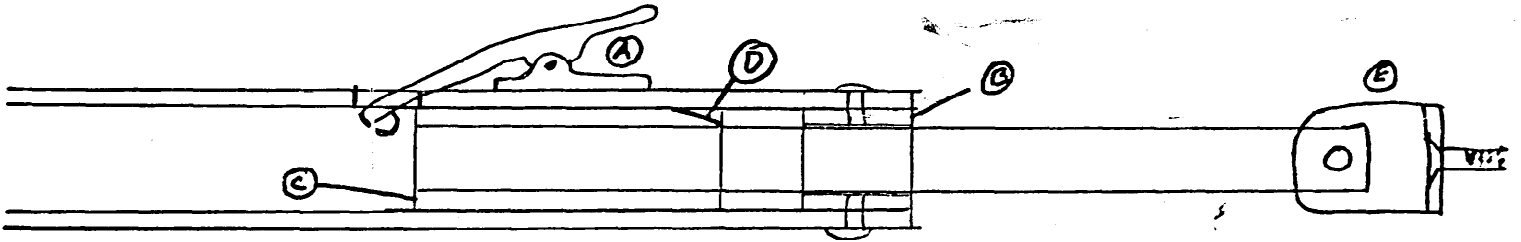
The Slide is spring loaded. When cable is pulled the safety releases first then the gear latch. Safety was installed on one side only because the gear up notch would interfere.



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

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

I cut off one side of the clip, drilled a small hole in the tip of the other side, soldered a small screw in the hole and ground it round. Epoxy the clip (a) to the side of the outside tube in line with the $\frac{1}{4}$ " hole. The next size tubing down is the up (b) stop and slide (c) stop. The slide stop is "ramp" (d) ground so the clip will allow the slide stop to pass the clip automatically. Mounting (e) brackets are aluminum. I found that collapsed it's about 14" long and works fine.



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