

Science & Mechanics

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02062

MAN-CARRYING MODEL PLANE!



- Build it for \$495 (including engine)
- 170 mph
- VW powered
- Trailerable
- 310 pounds
- Styrofoam construction

MILES-PER-GALLON RATINGS FOR ALL DOMESTIC AND IMPORTED CARS!

see page 58

HOW TO BUY A 10-SPEED

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IMMEDIATES

MAN-CARRYING MODEL PLANE



You can build this 160 mph flying machine for only \$500

By Paul Wahl

Maybe it looks like some rich kid's toy plane, but the tiny KR-1 really flies. Its designer/builder, Ken Rand, of Huntington Beach, California, is an aerospace engineer whose long-time hobby has been model airplanes. He combined this dual experience to create a remarkably small aircraft—one capable of impressive performance, yet easily built on a low budget. The first KR-1 cost Rand less than \$500. That's cheap, even for a homebuilt.

A single-seater, this low-winged midget monoplane could be a P-51 Mustang that had a brush with a witch doctor. Wingspan is only 17 ft. 2 in.; it's 12 ft. 6 in. long and stands a mere 42 inches high. Empty weight is 310 lbs.; gross, 600 lbs. With wings detached (a 15-minute operation), the KR-1 is readily transported on a small trailer, and can be hungared in a typical one-car garage.

Constructing the Rand KR-1 is a lot like putting together a model airplane, albeit on a somewhat larger scale. There's no welding involved. All parts can be made and assembled using hand tools and small

power tools to be found in the average home workshop. Because of the plane's very small size, finding a place in which to build it should present no problem.

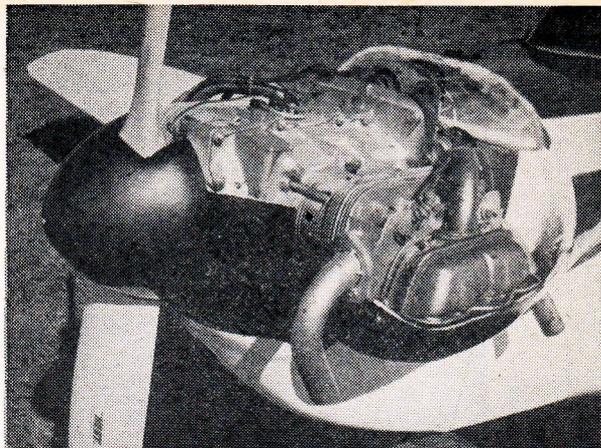
Basic load-carrying members are wood. The main airframe (fuselage) is a simple box structure with spruce stringers, plywood sides and bottom. Holding things together is a 5 ft. 5 in. center section, which also serves to support the seat and retractable landing gear; on it too are the side-mounted joystick and rudder pedals. Outer wing panels are attached to this carrythrough structure, pinned and bolted to steel fittings.

Just about everything else—wings, empennage, forward and aft decks, cowling, etc.—is carved from rigid polystyrene foam (sold in lumber yards as building insulation) and covered with epoxied Dynel fabric. This construction technique, now known in experimental aircraft circles as the "Rand Method," consists of stretching 4-ounce Dynel cloth over the shaped polystyrene foam parts and squeegeeing epoxy resin into the fabric. Glass-smooth, the Dy-



KR-1 (above) stands a mere 42 inches high with a wingspan of 17 ft. 2 in. and a length of 12 ft. 6 in. Empty weight is 310 pounds.

Engine (upper right) is a converted 36 horsepower VW unit. Maximum speed is 170 mph. Cockpit (right) carries full complement of instruments. Wings can be detached (lower right) for towing on trailer.



nel skin actually becomes a structural member. To demonstrate the strength of the ultralight (22-pound) wing, Ken Rand walks around on it!

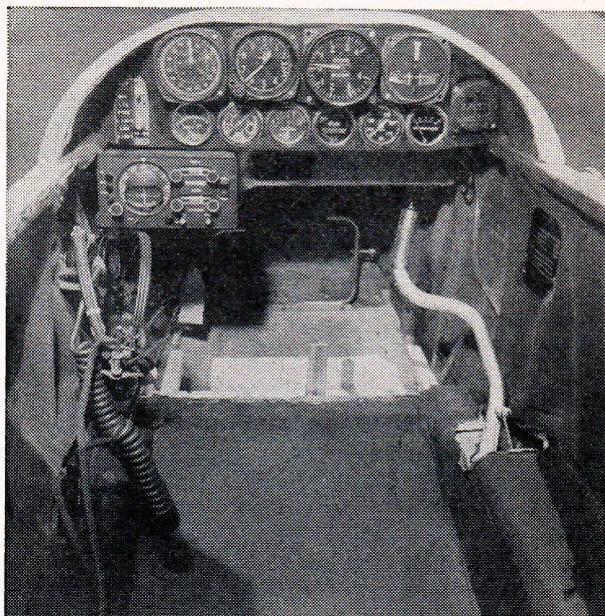
This Styrofoam/Dynel epoxy construction technique would seem to be the answer to many amateur aircraft builders' prayers. Expect to see a lot of other "Styrofoam Airplane" designs in the near future.

The **KR-1's 53-inch Hegy prop** is turned by a converted 36-hp VW engine with a Revmaster injector carburetor and Slick magneto. Powerplant in the prototype came out of a junked Beetle of 1957 vintage and cost Rand a mere thirty bucks.

Performance of this little plastic bird is really outstanding. Firewalled, the VW-powered KR-1 will do better than 160 mph. It cruises at 150 mph and lands at 50 mph. Stall speed is 42 mph. Rate of climb is 600 feet per minute. Service ceiling is 12,000 feet. And talk about fuel economy! How about 80 miles on a gallon of regular gas? Fuel tank holds 7½ gallons.

Contributing to the Rand mini-mono-plane's performance is its retractable main gear—a pair of go-kart wheels mounted to fold back into the wings when a handle is pushed down to the cockpit floor. Brakes are the "drag-on-tire" kind used on Soapbox Derby racers. This plane is a taildragger; its steerable tail wheel is a dolly caster on a length of automobile leaf spring.

Surely one of today's more handsome



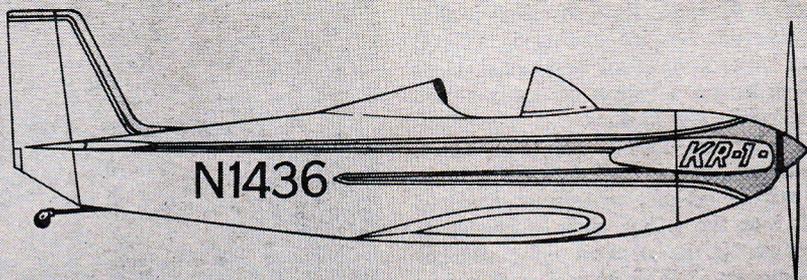
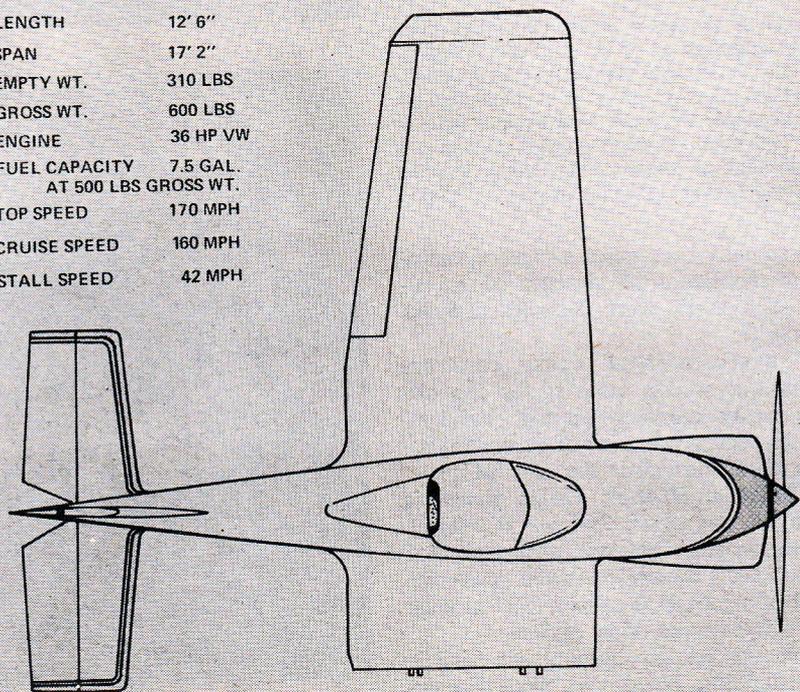
homebuilts, the KR-1 has a feature that should appeal to convertible fans: by just pulling the hinge pin, you can interchange the full bubble canopy with an open cockpit hatch.

Ken Rand has proved his design in well over 100 hours of flying the prototype. With its excellent performance, good handling characteristics, low cost, and short construction time, the KR-1 is well on its

way toward becoming one of the more popular homebuilt designs. Already, more than 1,500 sets of plans have been sold and quite a number of these aircraft are now under construction.

If you'd like to build yourself a nice little airplane, \$20 buys a set of plans and instructions from Rand-Robinson Engineering, Inc., 6171 Cornell Drive, Huntington Beach, CA 92646. They offer parts kits too.●

- LENGTH 12' 6"
- SPAN 17' 2"
- EMPTY WT. 310 LBS
- GROSS WT. 600 LBS
- ENGINE 36 HP VW
- FUEL CAPACITY 7.5 GAL.
AT 500 LBS GROSS WT.
- TOP SPEED 170 MPH
- CRUISE SPEED 160 MPH
- STALL SPEED 42 MPH



GUIDE TO AUTO PRICES!



Buying a new car usually involves a nerve-racking haggling session with a professional car salesman. Knowing the dealer's cost for a car and each option would put you in a much better bargaining position. As a service to readers who are in the market for a new car, we are printing a series of tables showing the dealer's cost and base price of popular cars, taken from the pages of *AutoFacts*. A complete list of dealer costs for American cars and light trucks, plus dealer cost for all options, is contained in *AutoFacts*, available for \$1.75 from Davis Publications, 229 Park Ave. So., N.Y., N.Y. 10003. For more information, please see page 97.

This month's comparison: low-priced intermediates

Description	Mfg. Code	Cost to Dealer	Mfg's. Sgstd. Price
AMC Matador 4-Dr. Sedan (6-cyl.)	15-7	\$2355	\$2853
AMC Matador 2-Seat Wagon (6-cyl.)	18-7	2615	3179
AMC Matador 2-Dr. Hardtop (6-cyl.)	19-7	2383	2887
AMC Matador 4-Dr. Sedan (V-8)	15-7	2436	2934
AMC Matador 2-Seat Wagon (V-8)	18-7	2696	3260
AMC Matador 2-Dr. Hardtop (V-8)	19-7	2464	2968
Chevy Chevelle 2-Dr. Coupe (6-cyl.)	1AC37	2233	2743
Chevy Chevelle 4-Dr. Sedan (6-cyl.)	1AC29	2215	2719
Chevy Malibu 2-Dr. Coupe (6-cyl.)	1AD37	2357	2894
Chevy Malibu 4-Dr. Sedan (6-cyl.)	1AD29	2340	2871
Chevy Chevelle 2-Dr. Coupe (V-8)	1AC37	2254	2769
Chevy Deluxe 2-Seat Wagon (6-cyl.)	1AC35	2534	3106
Chevy Deluxe 3-Seat Wagon (V-8)	1AC35	2718	3331
Dodge Charger 2-Dr. Coupe (6-cyl.)	WL21	2256	2771
Dodge Charger 2-Dr. Hardtop (6-cyl.)	WH23	2455	3021
Dodge Coronet 4-Dr. Sedan (6-cyl.)	WH41	2420	2978
Dodge Charger 2-Dr. Coupe (V-8)	WL21	2351	2882
Dodge Coronet 2-Seat Wagon (V-8)	WH45	2761	3403
Dodge Coronet 3-Seat Wagon (V-8)	WH46	2865	3521
Ford Torino 2-Dr. Hardtop (6-cyl.)	25	2207	2732
Ford Torino 4-Dr. Hardtop (6-cyl.)	27	2181	2701
Ford Gran Torino 2-Dr. Hardtop (6-cyl.)	30	2357	2921
Ford Gran Torino 4-Dr. Hardtop (6-cyl.)	31	2329	2890
Ford Torino 2-Dr. Hardtop (V-8)	25	2285	2826
Ford Torino 4-Dr. Hardtop (V-8)	27	2260	2796
Ford Torino 4-Dr. Wagon (V-8)	40	2593	3198
Plymouth Satellite 2-Dr. Coupe (6-cyl.)	RL21	2211	2716
Plymouth Satellite 4-Dr. Sedan (6-cyl.)	RL41	2267	2785
Plymouth Satellite 2-Dr. Coupe (V-8)	RL21	2307	2828
Plymouth Satellite 4-Dr. Sedan (V-8)	RL41	2363	2897
Plymouth Satellite 2-Seat Wagon (V-8)	RL45	2632	3233
Plymouth Roadrunner 2-Dr. Coupe (V-8)	RM21	2632	3233