

# Fairchild KR-21

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Model designating systems used by various aircraft manufacturers are very arbitrary things and can sometimes be confusing to customers who would logically expect numerical designations to be sequential, relative to model development.

One airplane that is a prime example of seemingly illogical designation is the Fairchild KR-21, which not only carries a lower model number than earlier designs, but combines the initials of the original designing firm with the model number of a later one. Later, the name of a takeover firm was applied to some models, further complicating the situation.

Let's back up a bit and see how all this happened.

From late 1927, the Kreider-Reisner Aircraft Company, Inc., Hagerstown, Md. (founded in 1925 and abbreviated as K-R hereafter), produced a conservative line of three-place, sport-trainer biplanes that differed little from their contemporaries. The basic model was known and marketed as the Challenger and various engine options resulted in separate and sequential alpha-numeric designations from C-1 through C-5.

In April 1929, K-R became a subsidiary of Sherman Fairchild's aeronautical conglomerate and the K-R airplanes were redesignated under the Fairchild system. The C-1 became the 31 to indicate that it was a three-seater and the first of that capacity produced by Fairchild. To identify it as a product of the K-R subsidiary, those letters were used as a prefix to the numerical designation. So, the C-4 became the KR-34. The original line of Fairchild cabin monoplanes was being built at Farmingdale, L. I., at the time, but the K-R subsidiary stayed in Hagerstown.

Starting late in 1928, a new crop of biplanes began to appear in competition with the plodding three-seaters that were the mainstay of the industry. These were slightly smaller two-seaters in the same horsepower range but with a much snappier performance; they were real sportplanes. The best examples are the Fleet Models 1 and 2 and the Great Lakes Model 2T-1A.

K-R spotted the trend and went along with it. Designer Fred Seiler quickly developed a distinctive two-seater that was known at Hagerstown as the C-6, but became the KR-21 as Fairchild's

first two-seater. A little more confusion creeps in here because there was an earlier bona fide Fairchild 21, a two-seat low-wing monoplane developed from the single-seat Ford Flivverplane, but it did not get on the market.

Powered with the new 110-hp Warner Scarab radial engine, the prototype KR-21 appeared at the end of 1928. It was thoroughly conventional in most features, with welded steel tube fuselage and tail, wood frame wings, and fabric covering. The odd features, on several counts, were the wings.

First of all, they were tapered. This presented a minor production handicap in that many more rib jigs were required. However, the aerodynamic benefits were considerable. For one, the efficiency of the biplane arrangement increased greatly as the gap/chord ratio increased toward the narrowing tips. For another, the weight of the wing panels on each side was concentrated

## FAIRCHILD KR-21A

Price \$4,685 in 1929, reduced to \$4,125 in 1930

### Specifications

Engine	Kinner K-5 100 hp @ 1,810 rpm
Span	27 ft
Length	22 ft 1 in
Wing Area	193 sq ft
Empty Weight	1,068 lb
Gross Weight	1,603 lb

### Performances

High Speed	110 mph
Cruising Speed	95 mph
Initial Climb	775 fpm
Ceiling	12,400 ft
Range	330 mi

farther inboard than on straight wings, reducing roll inertia and improving maneuverability.

While tapered wings were not oddities in themselves, the placement of the upper wing on the KR-21 was. First, to simplify the problem of getting into the front cockpit without cutting a door in the side of the fuselage, the upper wing was placed much farther above the fuselage than was common practice. The increased wing gap further improved the aerodynamic efficiency. Second, the

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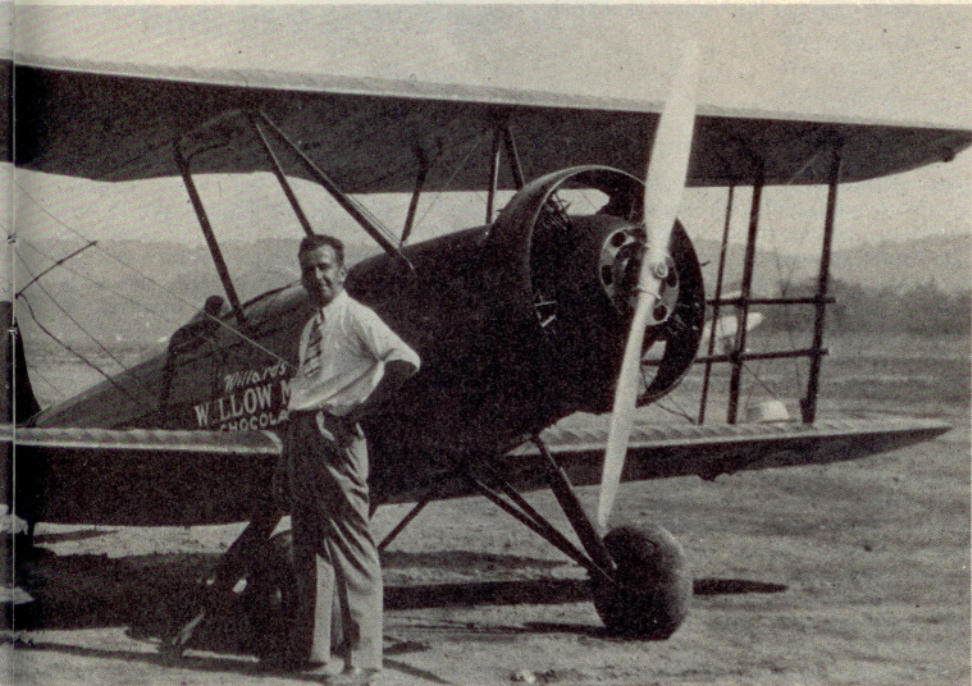
One KR-21A was fitted with a 100-hp British Armstrong-Siddeley Genet Major engine and sold to Canada. Note the left-hand propeller and the addition of a ring cowl.

The single KR-125 was essentially a KR-21A airframe with the 125-hp Fairchild Ranger engine. Landing gear, center-section struts and cutout in upper wing were revised considerably.

## YESTERDAY'S WINGS



The production Fairchild KR-21A of 1929 featured a 110-hp Kinner K-5 engine instead of the 110-hp Warner used in the prototype. Tapered wings with a high gap/chord ratio and the upper wing placed well aft were distinguishing features.





Fitted with the 135-hp Ranger, the two KR-135s reverted to the wing and landing gear configuration of the KR-21A. Lettering on the fin indicates that this example is being demonstrated as the Pilgrim 135 of The American Airplane and Engine Corp., not as a Fairchild.

#### FAIRCHILD KR-21 continued

upper wing was almost directly over the lower one and not well ahead of it, or staggered, as on most contemporaries. The whole setup was sufficiently different from the famous Waco Taperwings and Curtiss Hawks to make the KR-21 a distinctive design on its own.

The Warner-powered version was not put into production; that honor went to the KR-21A, powered with the 100-hp Kinner K-5 engine. Approved Type Certificate (ATC) 215 was issued on August 26, 1929, and approximately 46 were built. The 100-hp Kinner left a little to be desired, however, and the obvious route of better performance via higher horsepower was quickly taken. The KR-21B, with the 125-hp Kinner B-5, received ATC-363 in September 1930.

While the airplane performance improved, the aviation business did not. Sporty biplanes were among the first aeronautical casualties of the depression and only three KR-21Bs were built and sold, plus two converted from the earlier model.

The engine division of Fairchild had the great misfortune to be overtaken by the depression just as it introduced a new 125-hp, air-cooled, inverted six that was a great improvement over equivalent radials for streamlining and forward visibility. It was logical that this new engine should go into the KR-21. It did, but instead of the airplane becoming the KR-21C it became the Fairchild 125 to indicate its horsepower. Only one was built, however, under ATC-368 in September 1930.

The longer nose resulting from the

in-line engine emphasized the far-aft position of the upper wing and made the Fairchild 125 even more distinctive than the KR-21. Using the basic engine, upped to 135 hp, the Fairchild 135 was certificated in March 1931, but had the same negative sales results as the KR-21B and the 125, and only two were built. The engine went on, however, to become the famous 175- to 200-hp Ranger that powered later Fairchild airplanes built into the early post-WW II years.

While the depression ended production of the K-R biplanes and the big monoplanes that Fairchild had been building in Farmingdale, the company did not fold. After going through some drastic reorganization, Fairchild concentrated its airplane building at Hagerstown. The K-R biplane designs were transferred to the Ranger Division of the American Airplane and Engine Corp., which had taken over the Farmingdale operation and designs. The pre-1931 Fairchilds and K-Rs then became known as Rangers. While the KR-21 and its numbered variants were advertised as Rangers, no further examples were built under that name. The Ranger name was applied retroactively to some existing airplanes, however, so a few of the distinctive taperwings were identified as Rangers rather than K-Rs or Fairchilds in the 1930s.

When the new Hagerstown-designed, two-place Model 24 appeared in 1932, it combined the old K-R and newer Fairchild systems by being designated Fairchild 24C8, Fairchild's fourth two-seater and the eighth Challenger. That designation stuck through successive increases in capacity to three and four seats. □