

## *The Kolb Aircraft Fleet*

Homer Kolb was brought up in rural southeast Pennsylvania where family values and a farm work ethic kept him busy on the farm. His fascination with aircraft design began early on with flying airplane models. After taking an aeronautical home study course during his 20s, Homer would dream while driving the tractor of designing and building his own flying machine.

"As a kid I had developed a theory that because a farmer could build a silo 50-75 feet high without a permit he owned the airspace up to that altitude and should be able to build and fly an airplane that high without a license," Homer explained. "I also didn't think you had to fly with all that power and weight [of conventional aircraft]. I envisioned something really lighter, slow or more maneuverable. It just fascinated the dickens out of me."

The first ultralight marketed by Kolb, the Kolb Flyer, was actually designed and built in the late 1960's and flown in 1970. The Kolb Flyer, after gathering dust for several years, was cleaned up and marketed as a kit in 1980 as Kolb's first ultralight. It was one of the first ultralights that was actually a lightened and scaled down airplane, which happened to fit the FAA definition of an ultralight -- rather than starting with a hang glider and adding an engine. The Kolb Flyer was a 3-axis control, 185-pound, twin engine ultralight; it was powered first with 2 10 hp Chrysler West Bend engines, then later with 2 Solo engines. The Flyer was built with detachable wings.



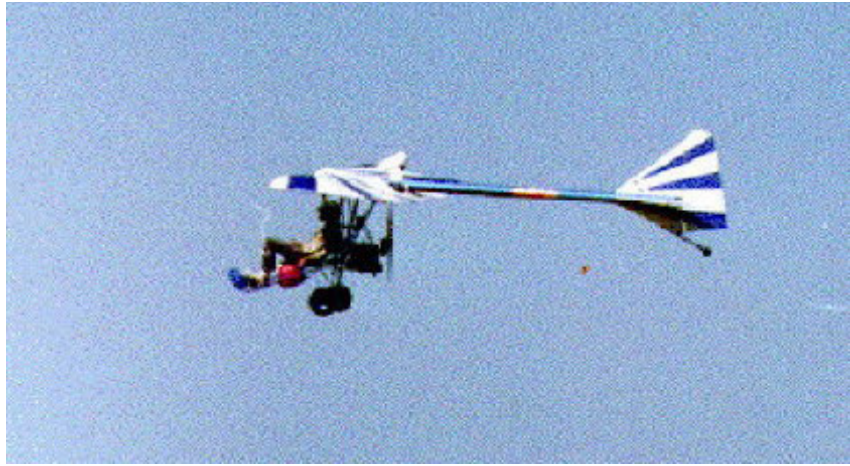


**Photos 1-4: The Kolb Flyer**

***The Kolb Flyer***

Empty Weight:	185 lbs.
Gross Weight:	392 lbs.
Wing Span:	29 ft.
Wing Area:	160 sq. ft.
Engine:	2 - Solo 209 - 11.5 HP each
Cruise Speed:	40 mph
Stall Speed:	20 mph
VNE:	55 mph

Making its appearance in 1982, the UltraStar was marketed for three years. It was designed to utilize the new Cayuna engine at that time. With the UltraStar, Kolb introduced a new method of wing construction using one large tubular aluminum main spar which carried the lift and torsion loads of the wing. The UltraStar was the first to have the folding wings. The first UltraStars folded at the main spar but were too high for most garages so the design was changed to put the fold point at the rear spar. This method of wing construction brought so much success that Kolb made it the standard method of wing construction for all their models since that time. In 1985, the UltraStar was revamped, redesigned and enclosed -- resulting in the very successful FireStar series of aircraft.



**Photo 5: Kolb UltraStar**

***The Kolb UltraStar***

Empty Weight:	235 lbs.
Gross Weight:	470 lbs.
Wing Span:	27.5 ft.
Wing Area:	150 sq. ft.
Engine:	430 Cayuna
Cruise Speed:	50 mph
Stall Speed:	25 mph
VNE:	70 mph

The TwinStar series of two place airplane was introduced in 1984. First came the completely open TwinStar; later the TwinStar was enclosed and named the TwinStar Mark II. The TwinStar Mark II featured side by side seating, was enclosed, and had an exceptional climb rate for a two seat aircraft. Both aircraft are powered by the 503 Rotax engine.



**Photo 6: Kolb TwinStar**



**Photo 7: Kolb TwinStar Mark II**

In 1985 the UltraStar embryo evolved into the very successful FireStar series. An instant success, the FireStar exhibited some major noticeable changes such as the placement of the engine on top of the wing allowing for a much larger diameter propeller. The addition of a nose fairing, a short windshield with provisions for a full enclosure and spring landing gear showed the progression of design from the earlier UltraStar.



**Photos 8 & 9: Kolb FireStar**

*The Kolb FireStar*

Empty Weight:	Rotax 447: 275lbs.
Gross Weight:	550 lbs.
Wing Span:	27 ft. 8 in.
Wing Area:	140 sq. ft.
Engine:	Rotax 447
Cruise Speed:	60 mph (75% power)
Stall Speed:	24 mph
VNE:	90 mph

In 1990, some minor styling changes were introduced resulting in the KX series. The rear cage on the original FireStar was covered completely right up to the wing; on the KX series the covering only goes about half way up -- the rest being left open for 360 degree visibility. The KX series may still be fully enclosed by the use of clear lexan windows around the rear cage, which still allows for 360 degree visibility. The cockpit sides were lowered on the KX series to make entry easier, and the windshield is full length up to the wing. The KXP was the KX with a stronger wing to accommodate the more powerful Rotax 503 engine: the KXP had 7 ribs (vs 5 ribs for the KX) per wing panel and a stronger drag strut arrangement. These additional items added only about 5-1/2 pounds to the FireStar KXP wings.





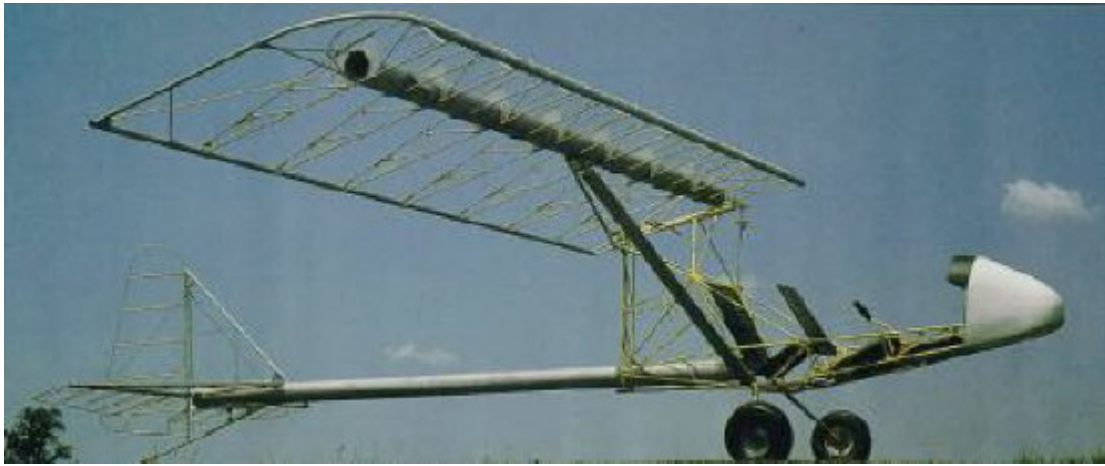
**Photo 10: Kolb FireStar KX**



**Photo 11: Kolb FireStar II**

***The Kolb FireStar KX & KXP  
(Kolb FireStar I & II)***

Empty Weight:	Rotax 447: 280 lbs.; 325 lbs. typically Rotax 503: 300 lbs.; 325 lbs. typically
Gross Weight:	725 lbs.
Wing Span:	27 ft. 8 in.
Wing Area:	140 sq. ft.
Engine:	Rotax 447 or 503
Cruise Speed:	447: 60 mph (75% power) 503: 70 mph (75% power)
Stall Speed:	27 mph 35 mph @ gross weight
VNE:	90 mph



**Photo 12: FireStar II skeleton**

In 1990, after the FAA allowed for heavier 2-place ultralights, the same basic TwinStar Mark II design was strengthened (main spars increased from 5" to 6" diameter) to carry the more powerful Rotax 582 engine and also to increase the gross weight to 1000 lb. resulting in the TwinStar Mark III. In 1993, the Mark III lite was introduced. The lite version was discontinued in 1994 as most people wanted the flaps which the Lite version did not have. Cabin width is 42 inches and entrance is through one of the two gull wing style doors.



**Photo 13: Kolb Mark III**

***The New Kolb Aircraft Mark III experimental aircraft.***

Empty Weight:	430 lbs.
Gross Weight:	1000 lbs.
Wing Span:	30 ft.
Wing Area:	160 sq. ft.
Engine:	Rotax 582
Cruise Speed:	75 mph
Stall Speed:	35 mph
VNE:	95 mph

A legal ultralight with Rotax 447 engine, the FireFly features high performance and is absolutely awesome in how the 40 hp engine pushes the 254 lb aircraft into action. One needs to watch the FireFly fly to truly appreciate what it can do. Again, this aircraft sports the unobstructed all-around visibility common to Kolb airplanes. With the FireFly, visibility is greater than in any other design.



**Photo 14: Kolb FireFly**

***The New Kolb FireFly***

Empty Weight:	252 lbs. (typically)
Gross Weight:	500 lbs.
Wing Span:	22 ft.
Wing Area:	117 sq. ft.
Engine:	Rotax 447
Cruise Speed:	65 mph (70% power)
Stall Speed:	27 mph (per FAR 103.7) 33 mph (actual, clean) 30 mph (actual, flaperons)
VNE:	80 mph



The design goal for the SlingShot was to provide the speed of entry level general aviation aircraft along with the fun, short field performance and portability of the ultralight companions. Having gained experience and confidence in their aircraft, many pilots are looking for faster aircraft to expand their flying horizons. The SlingShot fits the need perfectly. Featuring tandem seating, it can be built with 65hp Rotax 582 installed with an empty weight of 345 lb. The SlingShot remains very portable with the quick folding wings characteristic of Kolb aircraft.



**Photos 15 & 16: Kolb SlingShot**

***The New Kolb SlingShot***

Empty Weight:	Rotax 582: 345 lbs.
Gross Weight:	850 lbs.
Wing Span:	22 ft.
Wing Area:	110 sq. ft.
Engine:	Rotax 503, 582, 912, Jabiru 2200
Cruise Speed:	503: 78 mph / 582: 87 mph
Stall Speed:	41 mph
VNE:	115 mph

The Kolbra, a two seat tandem airplane, was introduced at Oshkosh 1999. The Kolbra uses a similar wing and tail sections as the Mark III. Built with either a Jabiru 2200 80 hp engine as the King Kolbra experimental airplane or a Rotax 582 65 hp engine as the Kolbra Trainer, they perform magnificently. The Kolbra Trainer is designed to weigh in at under the 496 pound limit for two seat ultralight trainers operated under the exemption granted by the FAA to the EAA, USUA, ASC and USHGA.



**Photo 17: Kolb King Kolbra**



**Photo 18: Kolb Kolbra Trainer**



**Photo 19: Kolb Kolbra Trainer**

### ***The New Kolb King Kolbra and Kolbra Trainer***

Empty Weight:	550/496 lbs.
Gross Weight:	1000 lbs.
Wing Span:	28 ft. 4 in.
Wing Area:	154 sq. ft.
Engine:	Jabiru 2200/ Rotax 582
Cruise Speed:	85 mph, both
Stall Speed:	45 m.p.h.
VNE:	110 mph, both

The Mark III was renamed the Mark III Classic with the introduction of the more aerodynamic Mark IIIExtra. The New Kolb Aircraft Company debuted the Mark IIIExtra at Sun 'N Fun in Lakeland, FL on April 1, 2000. The Mark IIIExtra is aerodynamically designed to offer increased speed over the standard Mark III. With the expertise of Barnaby Wainfan, enhancements were made to the fuselage section of the aircraft which enabled a gain of 10 mph in cruise speed over the Mark III. The fuselage was lengthened 18 inches resulted in more cockpit space, more baggage space, and more legroom. The cockpit has been modified by moving the instrument panel closer to the pilot. The larger windshield area adds even more to the outstanding visibility offered by Kolb Aircraft. With the redesign comes an option to add a molded plastic 19 gallon fuel tank with built-in electrical sending unit. The full enclosure doors are also modified to swing forward to facilitate easier entry and exit of the aircraft. While it embodies all the design features and flying characteristics of the Mark III Classic, the Mark IIIExtra features like STOL performance, roomy cabin, superior visibility, sturdy construction, quick folding wings and tail, superb handling, and the ability to carry large people and pay loads have only improved. The Mark IIIExtra Trainer was introduced at Oshkosh 2001. It is designed to fill the two seat ultralight training vehicle exemption granted to the EAA, USUA, ASC and USHGA by the FAA.



**Photo 20: Kolb Mark IIIExtra**



**Photo 21: Kolb Mark IIIExtra Trainer**

***The New Kolb Mark IIIExtra and Mark IIIExtra Trainer***

Empty Weight:	550/496 lbs.
Gross Weight:	850 lbs. normal, 1000 lbs. max.
Wing Span:	30 ft.
Wing Area:	160 sq. ft.
Engine:	Rotax 582/ Rotax 912/Jabiru 2200
Cruise Speed:	77 mph / 90 mph / 90 mph
Stall Speed:	38 mph (solo), 41 mph @ gross weight
VNE:	110 mph

The wing structure is built around a 5" diameter aluminum spar for the FireStar and a 6" spar for the Mark III. The wing ribs slide onto the spar and are positioned with proper spacing to provide a rigid construction which has proven to be a problem-free structural design. The number of ribs ranges from 14 to 18 depending on the model. The drag strut ranges from 1" to 1 1/4" diameter aluminum tube.

Poly Fiber covering process is standard on all Kolb designs. It allows for a smoother surface producing less drag and tighter fabric tension, which maintains a more accurate airfoil shape. In addition, the coating system encourages ultraviolet light protection, adding years to the life of the fabric.

Conventional controls (stick and rudder pedals) characterize all Kolb designs. Ailerons are activated by a torque tube and push-pull tubes to the ailerons. Elevators and rudder are controlled by aircraft cable and pulleys; connections are made with aircraft turnbuckles and clevis. All the tail wheels are steerable.

The Kolb aircraft line displays larger wing areas than is typical on this type aircraft. This feature means the ability to fly slower. As Kolb emphasizes, it's not particularly how fast one can fly, but how slowly one can fly that makes for enjoyment and fun flying. Slower flying means more pleasurable open-air flying, the ability to fly lower more safely, and a smaller turning radius meaning greater maneuverability. The larger wingspan also keeps the stall speed low, enabling one to land more slowly as well as to utilize the shorter, less improved airstrips. In an emergency, slower speeds may make all the difference in the safety of the landing.



Portability is a strong priority for Kolb. The folding wings and tails allow for extremely easy setup and takedown – a process involving about 10 minutes. No tools are required. No additional brackets are required. Everything stores right on the airframe.



**Photo 22: FireStar fuselage folded for storage**

Kolb features a unique tail dragger on their aircraft for a variety of reasons. It is lightweight – about 15 lbs. The tail wheel has almost no drag and is very stable on rough terrain. It requires very little maintenance. Kolb's lightweight feature enables their aircraft to handle more like tricycles than the traditional tail dragger.

A feature addressed earlier is that of visibility. Contributing to the "view" factor is the pusher prop feature engaged in the Kolb fleet. This allows an unobstructed view, and also prevents prop blast in the face on open-air flying. The unlimited visibility feature of the Kolb airplane is definitely a plus in one's enjoyment in flight.

A noticeable characteristic is the long fuselage tube. The use of a longer tail arm helps to minimize the problematic interaction that sometimes occurs between the wings and the tail on the typical aircraft of this type. This bonus detail also produces a docile-type handling which has contributed to the solid reputation of responsive control.

Kolb has designed a tail with vertical stabilizer and rudder area above and below the horizontal stabilizers and elevators. This unique design means a 7-piece tail unit. In a spin, the horizontal stabilizers and elevators blanket the air to the rudder which diminishes spin recovery. With the Kolb rudder projecting below the horizontal stabilizers and elevators, blanketing of the lower portion of the rudder does not occur.

All Kolb airplanes are made from construction type kits, which means more is involved than just bolting parts together and pulling sailcloth on wing sleeves. Tubing must be cut to length, holes located and drilled, nicopress swages put on cable ends, covering put on, painting done, etc. Time involved could vary from 400 to 500 hours depending on the options, instrumentation, degree of finish, and so on.

The New Kolb Aircraft Company  
Phone (606) 862-9692  
Fax (606) 862-9622



