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1887 — 1930

WHERE THE CARDINAL IS BUILT

THE St. Louis Car Company, parent organization of the St. Louis Aircraft Corporation, are pioneers in the development and manufacture of transportation equipment. It was organized in 1887, its first product being horse-drawn street railway cars. The company is now one of the largest builders of steam railroad and electric railway equipment in the United States. Its sixty-acre plant is located in North St. Louis. This successful organization is behind the CARDINAL.

The St. Louis Car Company is not new to aviation. In the early days of flying this same organization built a single motor and a double motor seaplane designed by the late Tom Benoist and successfully flown by Roger Janis. The seaplanes proved practical but were not put into production. With the entrance of the United States into the World War, the St. Louis Car Company entered the airplane building field on an extended scale. The company built 450 JN4D planes, the stable training models popularly known as "Jennies," for the Government. When these were completed another order for 200 was awarded the company, but due to the Armistice these latter 200 planes were only partially built. Now this same organization has resumed the building of aircraft—its first commercial product being the CARDINAL.

St. Louis Aircraft Corporation

SUBSIDIARY OF THE

St. Louis Car Company

6000 NORTH BROADWAY

St. Louis, Mo.

CARDINAL

Cardinal with Le Blond 85

SPECIFICATIONS *and* PERFORMANCE

	LE BLOND 85	KINNER 110
Wing Span	32 ft. 4 in.	32 ft. 4 in.
Overall Height	7 ft.	7 ft.
Overall Length	21 ft. 3 in.	21 ft. 3 in.
Chord	5 ft.	5 ft.
Wing Area	160 sq. ft.	160 sq. ft.
Aileron Area	15 sq. ft.	15 sq. ft.
Elevator Area	8.7 sq. ft.	8.7 sq. ft.
Rudder Area	4.8 sq. ft.	4.8 sq. ft.
Fin Area	4.1 sq. ft.	4.1 sq. ft.
Stabilizer Area	12.5 sq. ft.	12.5 sq. ft.
Landing Gear Tread	75 in.	75 in.
Weight without Motor	717 lbs.	717 lbs.
Weight with Motor	945 lbs.	1002 lbs.
Useful Load	575 lbs.	561 lbs.
Maximum Speed	120 m. p. h.	125 m. p. h.
Cruising Speed	100 m. p. h.	105 m. p. h.
Landing Speed	35 m. p. h.	40 m. p. h.
Climb fully loaded	700 ft. per min.	1000 ft. per min.
Service Ceiling	13,500 ft.	15,000 ft.
Fuel Consumption	5 gals. per hr.	6 gals. per hr.
Oil Consumption	1 pt. per hr.	1 pt. per hr.
Take off	5 seconds	3.75 seconds

Cardinal with Pontoons. $1275.00 Extra

The CARDINAL

Powered by

Kinner or LeBlond

$3750.00

TWO PLACE CARDINAL CABIN MONOPLANE

THERE are a great many factors to be considered in designing an airplane for the use of the private owner. Safety, speed, stability and visibility are requisite; comfort, economy, and adaptability to various uses are also essential. Of these, safety is the most desired and its best assurance is good engineering together with carefully supervised construction of materials of only the highest quality.

The CARDINAL has been skillfully designed and developed by competent, experienced Engineers and Test Pilots who have at all times had these factors in mind. They have specified Chrome-Molybdenum steel longerons and carry thru members for the wing-strut and landing-gear supports because this type of construction yields the greatest strength and toughness per pound weight (see illustration). They have designed a tri-tube compression member instead of the usual reinforced plywood rib and use eight of them for bracing each wing (see illustration). They specified Duraluminum sheeting to cover the entire bottom of the fuselage to the rear of the cabin and as far back as the door to minimize fire hazard. All of the control surfaces are made of welded steel tubing and the controls, with the exception of the rudder, are of steel tubing with positive push and pull action. The rudder control is a straight pull stranded steel cable without bends. These features are all essential to assure rugged strength and safety and have been built into the CARDINAL at considerable added expense.

The Clark Y wing section assures excellent lift and high velocity but with safe lateral control at stalling speeds. The CARDINAL is so carefully balanced that it will cruise indefinitely or fly in a forty-five degree bank without using either the stick or the rudder, and is infinitely more comfortable for long cross country flights because of this and its inherent stability. It must be forced into a spin and will come out of it in less than ¾ of a turn with the controls released. It is extremely maneuverable and light on the controls and will do slow or snap rolls, Immelmans, and will maintain itself in continued inverted flight. The CARDINAL powered with a Kinner Motor will cruise with ease at from 105 to 110 miles per hour with ample reserve for a top speed of 125 and will climb from 1000 to 1200 feet the first minute. The installation of brakes designed and built in our own plant assures positive control on the ground under all circumstances. The performance of the CARDINAL is outstanding and satisfying.

The CARDINAL powered with a Kinner Motor.

Interior of CARDINAL cabin showing instruments, dual controls, seat cushions and miscellaneous equipment.

The well ventilated automobile type cabin is comfortable and clean, for all control tubes and gas lines are concealed. Rich brown Spanish Fabricoid is used in the interior finish and the seat, with its individual upholstered cushions, is 35 inches wide and has been designed to avoid fatigue. The pilot and passenger sit side-by-side in pleasant proximity, which is far more satisfactory than the monotonous isolation of the usual tandem design. The visibility is exceptional, there being 900 square inches of skylight with non-shatterable safety glass in the front and landing windows. The instruments, which are well grouped in a panel of our own design, include in addition to the usual equipment an air-speed indicator and compass. The dual controls for training may be easily and quickly removed or installed and are so arranged that they do not crowd either the pilot or passenger. Everything has been done to insure comfort and safety in the CARDINAL and the well appointed and completely equipped cabin eliminates even the necessity of wearing flying clothes.

We believe that the CARDINAL is superior in workmanship, material, equipment and performance, and that, as the finest plane in its class, it is worthy of the high standard of our parent organization, The St. Louis Car Company.

Approved Type Certificate All Models

St. Louis Aircraft Corporation

SUBSIDIARY OF THE

St. Louis Car Company

8000 NORTH BROADWAY

St. Louis, Mo.

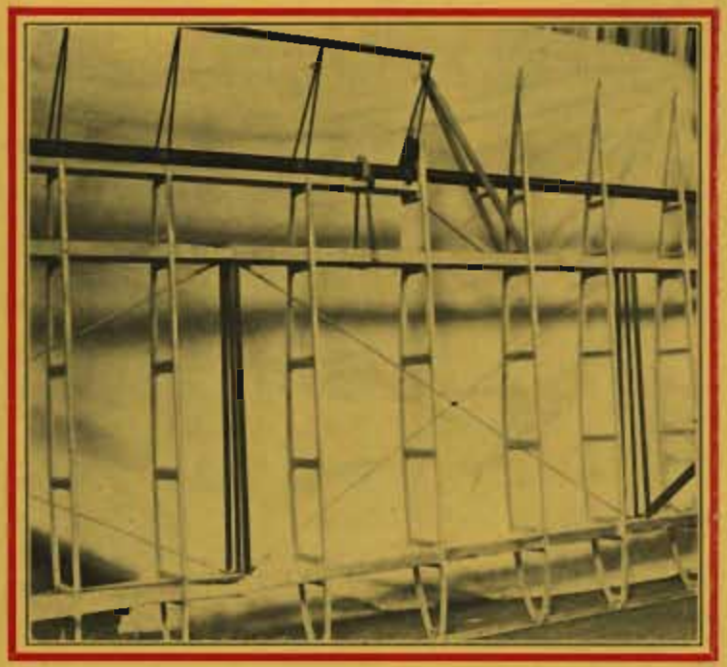
The Cardinal Flying Club Plan

We have had numerous inquiries from aviation enthusiasts who are interested in the co-operative ownership or club plan because of the small initial investment and the minimum operating cost. Under this plan several people (usually five or ten) organize a club and purchase a plane for their mutual use and benefit. They obtain the services of a competent pilot instructor and operate their plane for as little as $2.50 per hour. We have some interesting information concerning the formation of a flying club which we will gladly send you.

STRUCTURE CARDINAL MATERIALS

CARDINAL Wing. The span is 32'4" and the chord 60", giving an area of 160 sq. ft. It is wired for navigation lights and tubed for air speed indicator. The gasoline tanks are located between the spars in the wing on both sides of the fuselage and have a total capacity of twenty-six gallons. In both models there is a three gallon reserve tank built into the leading edge of the center section. Solid spruce, routed spars run the full length of the wing with a 12 to 1 splice at the center section. The ribs are of basswood and spruce webbing reinforced with three-ply birch veneer and spruce cap strips. There are eight compression members. Each of these is made of two 5/8 x .025 steel tubes top and bottom and one ½ x .035 centers. These are welded to end plates and wire terminals and the entire assembly bolted top and bottom thru the plates to the spars. Lateral buckling and spar warpage is thus completely eliminated even under the most severe strains. McWhyte Army and Navy specification drag wire is used for tie rods. Grade A Flitex with four coats of clear and two coats of pigmented dope covers and completes the wing.

CARDINAL Fuselage is built of Chrome Molybdenum and 1025 Carbon Steel tubing. All tubing and welds are rigidly tested before fuselage is covered. The interior of all tubes is oil treated to prevent corrosion. Warren type truss is used assuring greatest strength per pound weight and eliminating all bracing wires and the attendant distortion or loosening due to stretching. The motor mount is of welded steel tubing and is bolted to the fuselage at four points with 5/16" nickel steel bolts in such manner as to make it possible to swing out entire motor assembly for inspection and adjustment. Aluminum cowling covers fuselage on the top and sides as far back as the door, while the bottom is aluminum covered to the back of the cabin, thus eliminating fire hazard from oil-soaked fabric. Balance of fuselage is covered with Grade A Flitex tightened and strengthened with six coats of dope.



Structural section of Cardinal wing showing Tri-tube compression members, steel aileron and control tube.

Skeleton of fuselage.

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6000 NORTH BROADWAY
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CARDINAL Control Surfaces. The tail group and ailerons are of welded 1025 carbon steel tubing. The stabilizer is adjustable from 1° positive to 4° negative, making it possible to adjust for fore and aft balance and to fly hands off at all engine speeds. The ailerons are suspended at the hinge thru three duraluminum bearings and braces.

CARDINAL Controls. Ailerons, elevators and stabilizer are rod controlled. A 1½ x .035" steel tube runs thru full length of the ailerons and on to the center section just aft of the rear spar from where it is moved by push and pull rods from the control stick in the cabin. This assures positive action and eliminates play and lost motion. Individual dual sticks and rudder pedals can be quickly removed. Latest design throttle control in center of instrument panel is handy to either instructor or student. Brake controls are located just above the left set of rudder pedals.

CARDINAL Instruments. Special Consolidated Instrument Panel with altimeter, tachometer, oil pressure and oil temperature gauges. Air Speed Indicator and Compass included as standard equipment. Gasoline cocks handily located at pilot's left.

CARDINAL Landing Gear. Split type axle of Chrome Molybdenum steel with Oildraulic shock struts assure safe and easy landings under all conditions. The suspension is such that impact is dissipated thru three points, at top, bottom and center of fuselage, giving greater safety with minimum strain on either gear or fuselage. 26" x 4" streamline wheels with a spring tail skid are standard equipment. This, together with the brakes, designed in our Engineering Department, assure an ease of ground control that is safe and simple.

CARDINAL Cabin. The cabin is completely finished in Spanish Fabricoid and has a full upholstered air-cushion seat. The instrument panel contains altimeter, tachometer, oil pressure and temperature gauges, air-speed indicator, and engine switch. The compass is installed on the front spar just above the line of vision. Dual controls, fire extinguisher, first aid kit, tools and log-book are also included as standard equipment.