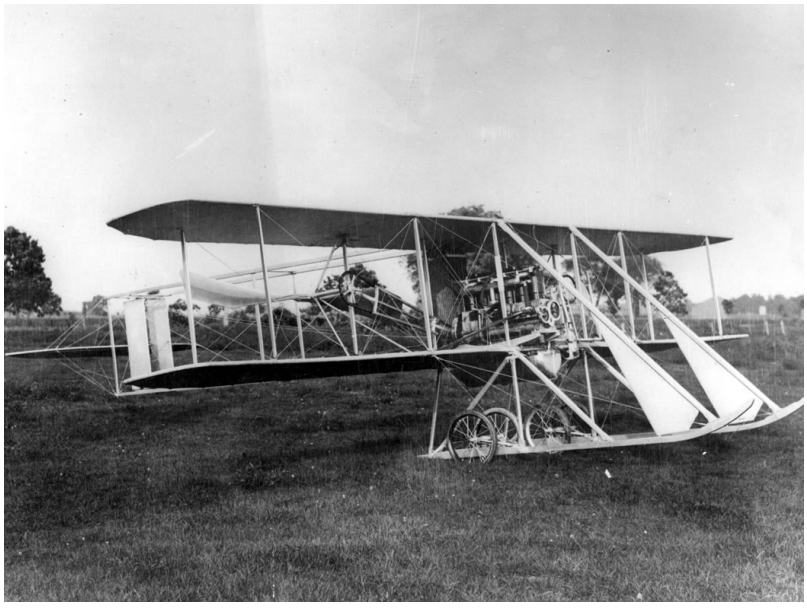
THE WRIGHT KITES, GLIDERS, AND AIRPLANES:

A REFERENCE GUIDE



By

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A Note on the Data in this Guide

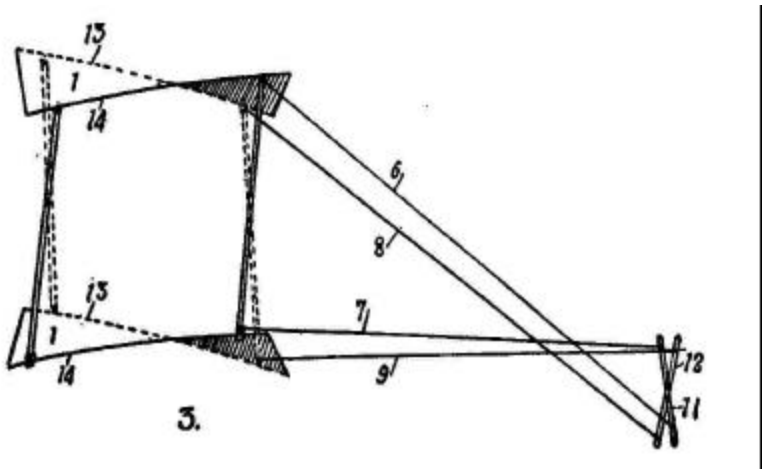
Over the length of their active development and flying careers, the Wright brothers built a profusion of kites, gliders, and airplanes. Subsequently, their designs and design concepts served as departure points for others as well, such as England's Short brothers and the expatriate American Samuel F. Cody (born Cowdery), and France's Ferdinand Ferber and Ernest Archdeacon.

The Wrights were enthusiastic developers, who admirably documented their work, but this same care did not extend to the preservation of technical drawings and summaries for their individual aircraft or, for that matter, for their aircraft themselves. Indeed, it is only by the greatest of good fortune that several key Wright airplanes--notably including the Wright 1903 Flyer (the "Kitty Hawk Flyer," the most famous and significant airplane in aviation history), and the 1905 Flyer, the world's first practical airplane capable of repeated reuse--survive. None of their gliders or kites survive, and few other original aircraft. Not surprisingly then, for those Wright aircraft types that have not survived, dimensional data, and, particularly, aircraft weight and payload data, is difficult to determine with any great accuracy

Sharp-eyed readers familiar with some of the better-known sources on the Wrights may note differences between the data presented in those sources and that presented in this guide. Indeed, a quick perusal of "hard copy" and electronic materials readily shows that multiple sources display greatly differing information, and even the highly regarded references--in particular Marvin McFarland's indispensable 2-volume

The Papers of Wilbur and Orville Wright (New York: McGraw-Hill, 1953)--lack complete data listings, or present information that raises more questions than answers.

The following accumulation of data, therefore, represents what I consider the most accurate interpretation from a variety of reputable (if often contradictory) sources. Information that cannot be determined with absolute exactitude is indicated by the expressions *approximately* or *approx.*, or *est*.



1899 Wing-Warping Kite

Span: 5 ft. 0 in.

Chord: 1 ft. 1 in.

Gap: 1 ft. 0 in. (est.)

Length: approx. 2 ft. 2.875 in.

Wing Area: approx. 10.833 sq. ft.

Aspect Ratio: 4.62[1]

Camber: 1 in 23 (1/23) (est.)

Fixed stabilizer: approx. 0.451 sq. ft. (est.)

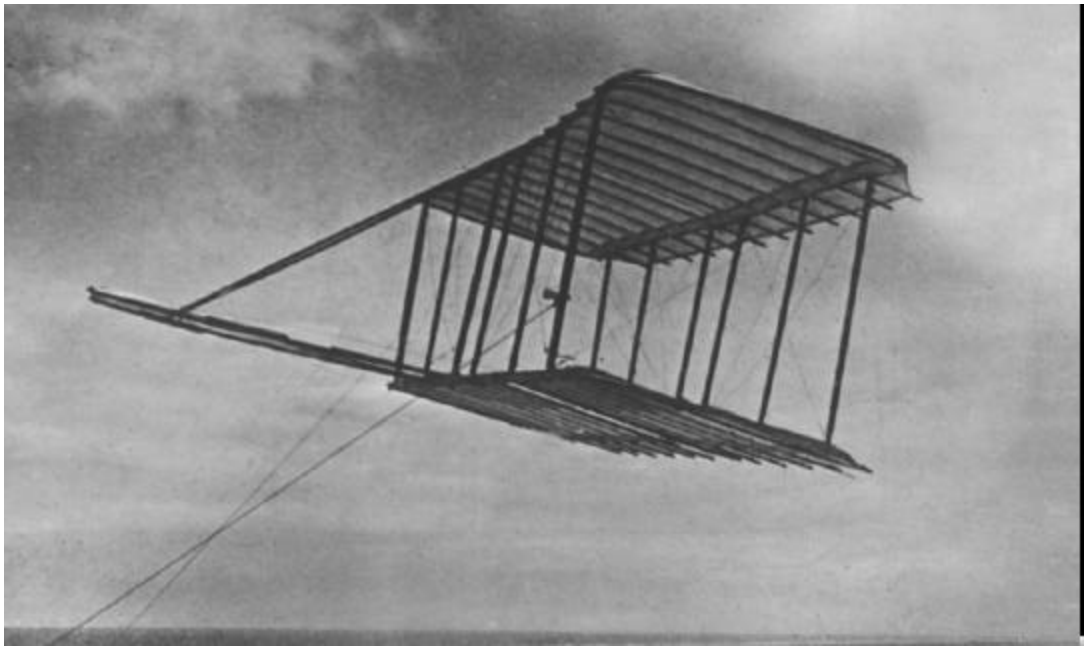
Structure: pine with cloth covering, cord

In July 1899, Wilbur Wright conceived of using wing warping to control the rolling motion (wing up-wing down) of an airplane. "From this," Orville subsequently wrote, "it was apparent that the wings of a machine of the Chanute double-deck [e.g.

[1] Aspect ratio, for a biplane, is twice the square of the wingspan divided by the wing area. Using the above example, [(2) x (5 x 5)] ÷ (10.833) = 4.62. Generally speaking, the higher the aspect ratio, the better the lifting properties of the wing.

biplane with a Pratt-truss structural layout-ed.] type, with the fore-and-aft trussing removed, could be warped in like manner so that in flying the wings on the right and left sides could be warped so as to present their surface to the air at different angles of incidence and thus secure unequal lifts on the two sides [e.g. hence rolling the machine either left wing up or right wing up-ed.].”

The brothers quickly built this biplane kite, constructed from pine with a cloth covering, to test the concept. Flown at Dayton in the summer of 1899, this was the first experimental aeronautical device the Wrights employed in their progression towards creating the first airplane. The warping of the wings was controlled by two sets of control cords running to the top-and-bottom of the outer (wingtip) front support struts. Interestingly, it utilized a fixed horizontal stabilizer aft of the wing, in contrast to their subsequent canard configurations used for all other gliders and aircraft to 1910. This historic "technology demonstrator" was broken up in approximately 1905, following experiments by the brothers on developing an automatic stabilizer.



1900 Wright Glider:

Span: 17 ft. 0 in.

Chord: 5 ft. 0 in.

Gap: approx. 4 ft. (est.)

Length: approx. 10 ft. 0 in.

Height: approx. 5 ft. 0 in.

Wing Area: 165 sq. ft.

Aspect Ratio: 3.50

Camber: 1/22

Canard elevator: 12 sq. ft.

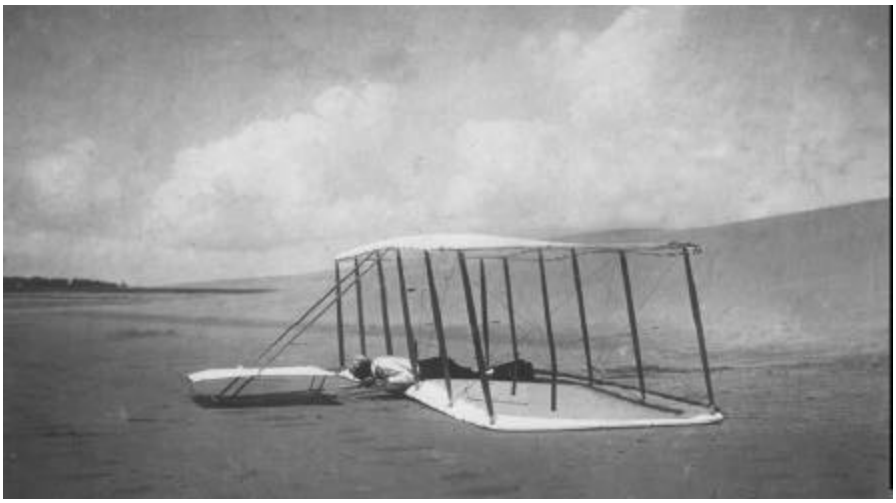
Structure: ash, pine, wire, and French sateen covering

Empty Weight: approximately 50 lbs.

Gross Weight with Pilot: approximately 190 lbs.

Wing Loading: Approx. 0.303 lbs./sq. ft. as kite, 1.152 lbs./sq. ft. with pilot

The 1900 glider, tested at Kitty Hawk, North Carolina beginning in October of that year, gave the Wrights their first aerial experiences. It had the same general configuration as the 1899 kite, lacking (as with the kite) any vertical surfaces. They found it "a rather docile thing," but also noted (during kite trials) that it flew better backwards than forwards: an indication that the canard configuration made it inherently longitudinally unstable. Despite this, so concerned were the brothers about avoiding a Lilienthal-type stall and crash that they persisted with the canard configuration for their subsequent designs. The brothers abandoned the 1900 glider on the dunes after their tests at Kitty Hawk, and a local resident of the Outer Banks used its covering to make dresses for her children; the remaining structure disappeared for good when a gale swept it away in the summer of 1901.



1901 Wright Glider:

Span: 22 ft.

Chord: 7 ft.

Gap: 4 ft. 8 in.

Length: 14 ft.

Height: approx. 6 ft. 0 in.

Wing Area: 308 square feet.

Aspect Ratio: 3.34

Camber: various, between 1/12 and 1/19

Canard Elevator: 18 sq. ft.

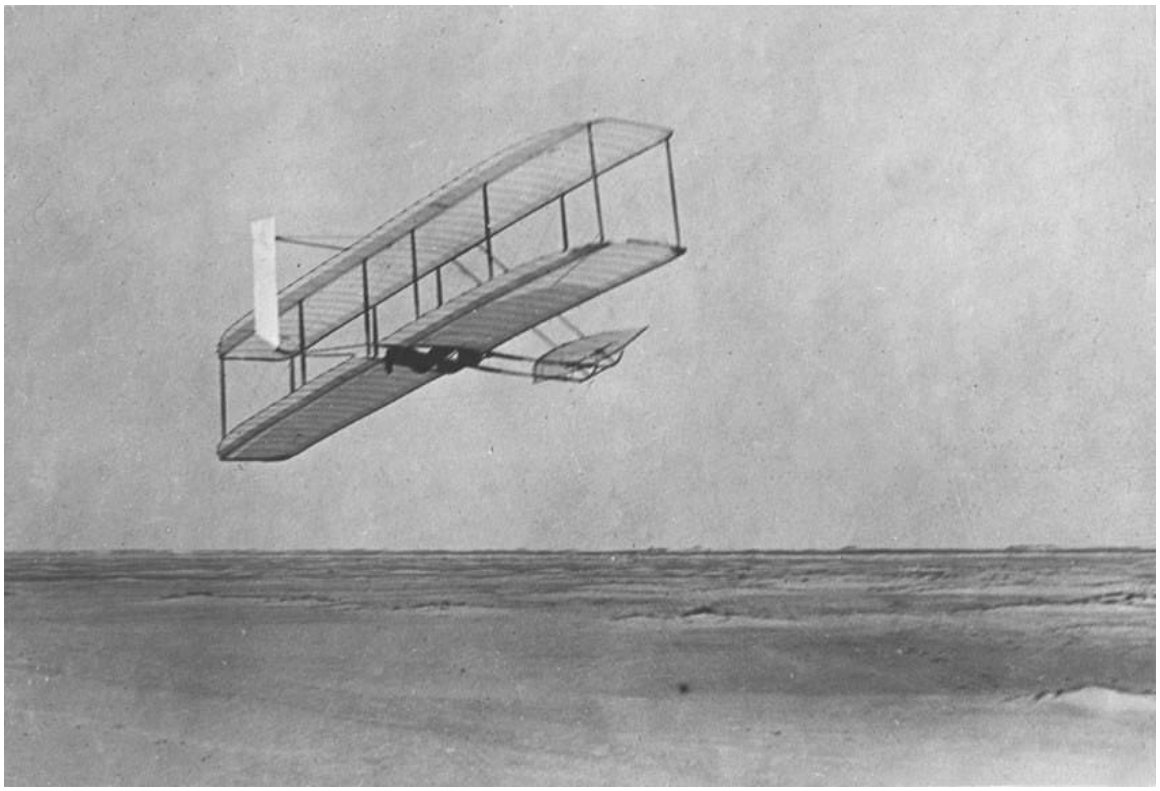
Structure: ash, pine, wire, and French sateen covering

Empty Weight: approximately 108 lbs.

Gross Weight with Pilot: approximately 248 lbs.

Wing Loading: Approx. 0.351 lbs./sq. ft. as kite, 0.805 lbs./sq. ft. with pilot

The 1901 glider proved a serious disappointment, and convinced the brothers that Lilienthal's data tables were incorrect and that, as well, the estimated values for Smeaton's coefficient (commonly accepted at 0.005) were off by "at least 20 percent." Like its predecessors, it lacked any vertical surfaces. After these trials, the Wrights embarked on a ground research program using a bicycle test rig and a wind tunnel of their own design to develop their own tables of lift and drag values for various wing configurations. The 1901 glider's interplane struts were used for the subsequent 1902 glider, but the brothers scrapped the rest of the machine.



1902 Wright Glider:

Span: 32 ft. 1 in.

Chord: 5 ft. (upper wing), 4 ft. 11.75 in. (lower wing)

Gap: 4 ft. 7 in.

Length: 16 ft. 1 in.

Height: approx. 6 ft. 0 in.

Wing Area: 305 square feet.

Aspect Ratio: 6.76

Camber: various, between 1/24 and 1/30

Canard Elevator: 15 sq. ft.

Vertical fin (later rudder): 5.73 sq. ft.

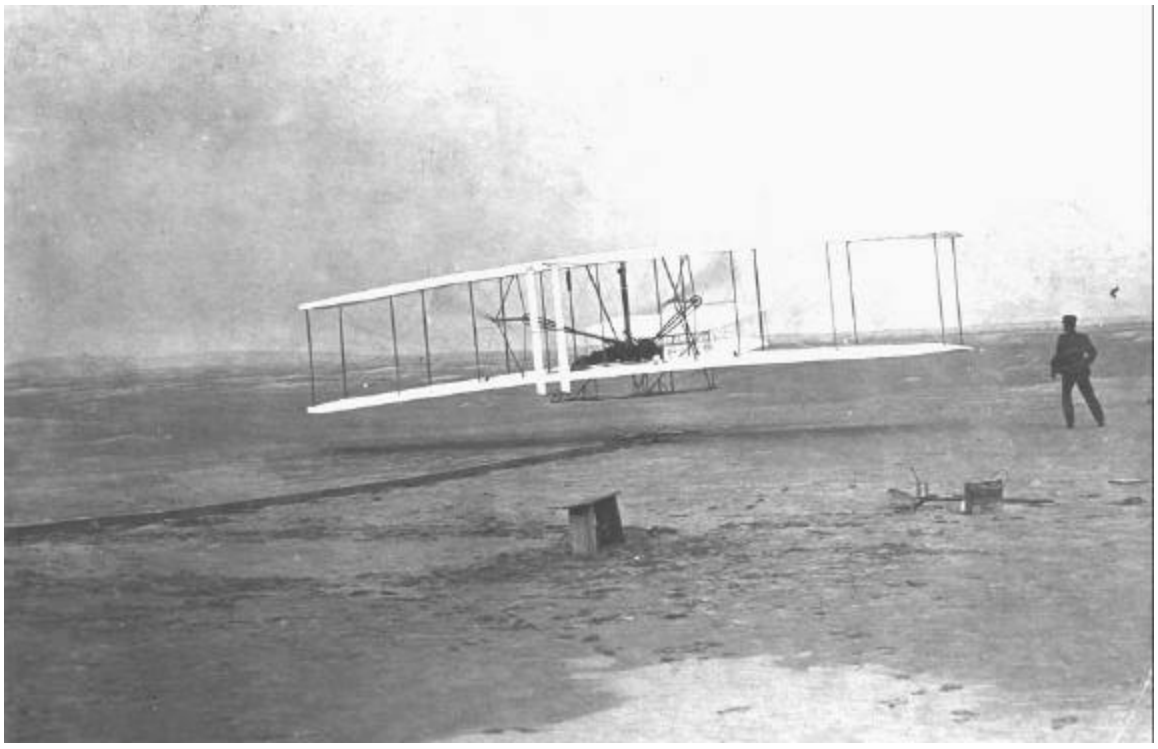
Structure: ash, pine, wire, tire cord (for binding), and French sateen covering

Empty Weight: approximately 112 lbs.

Gross Weight with Pilot: approximately 252 lbs.

Wing Loading: Approx. 0.367 lbs./sq. ft. as kite, 0.826 lbs./sq. ft. with pilot

The 1902 glider marked a major step forward in Wright flight testing. With this machine, they proved not only that they had resolved the design problems revealed in testing of the 1901 glider, but that their wing-warping lateral control system worked well. Testing of the 1902 glider revealed serious lateral, directional, and longitudinal stability problems, and, in an effort to resolve these, the brothers made the fixed rudder moveable, linking it to the wing warping mechanism. Thus, the glider possessed interconnected roll and yaw control (lateral-directional control), and independent pitch (longitudinal) control. The 1902 glider enabled the brothers to acquire extensive flight experience, and gave them the confidence to proceed with the 1903 powered airplane; with the glider, the brothers undertook intensive flying trials in 1903, making as many as 250 flights in two days! Sadly, this historic craft itself no longer exists; the brothers left it locked in a shed at Kitty Hawk in 1903; when they returned in 1908, the building had partially collapsed, seriously damaging the machine, and the brothers never restored it for either exhibit or flying.



1903 Wright Flyer ("Kitty Hawk Flyer"):

Span: 40 ft. 4 in.

Chord: 6 ft. 6 in.

Gap: approx. 6 ft. 2 in.

Length: 21 ft. 1 in.

Height: approx. 9 ft. 0 in.

Wing Area: 510 square feet.

Aspect Ratio: 6.38

Camber: 1/20

Canard Elevator: 48 sq. ft.

Vertical rudders: 21 sq. ft.

Structure: Ash, spruce, wire, and "Pride of the West" muslin covering

Empty Weight: approximately 605 lbs.

Gross Weight with Pilot: approximately 745 lbs.

Wing Loading: Approx. 1.46 lbs./sq. ft.

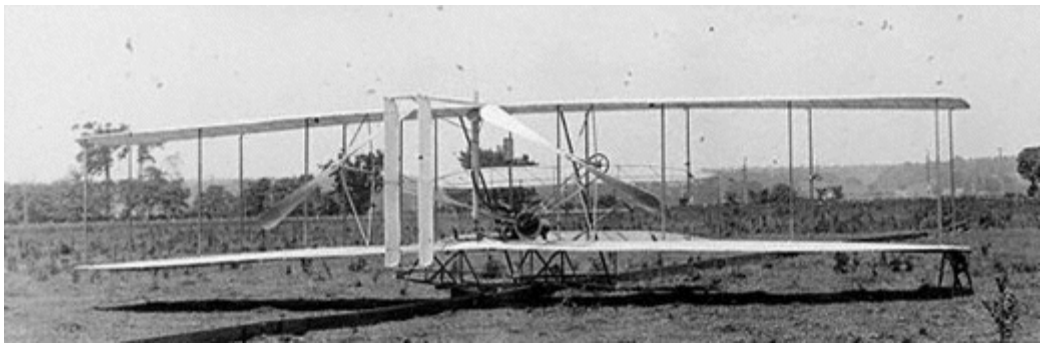
Engine: One water-cooled four-cylinder 8.25-16 hp (12 hp on first flight) horizontal inline of 201 cubic inch displacement running at from 670 to 1,200 rpm, chain-driving two contra-rotating ("handed") 8 ft. 6 in. two-bladed propellers; engine weight approx. 11.25 lbs./h.p; bore and stroke, 4 in. x 4 in.

Maximum speed: approx. 30 mph.

Total flights: 4

The Wright 1903 Flyer, commonly called the "Kitty Hawk Flyer," and known by the brothers as "The Whopper Flying Machine," was the world's first successful manned airplane, achieving the world's first powered, sustained, and controlled winged flight. Significantly larger than the earlier gliders, it nevertheless had a clear resemblance to them, using the same general canard configuration. It had, as well, the same significant degree of pitch instability, having its center of gravity significantly aft of its neutral point, giving it a negative "static margin" of approximately -20%. The Flyer had wings of slightly unequal span, to compensate for differences in weight between the pilot and the engine. The engine, mounted just to the right of the aircraft centerline, weighed approximately 34 lbs. greater than the pilot, who lay in a warp-controlling hip cradle just to the left of the aircraft centerline. Accordingly, the right wing had a 4 inch greater wing span, furnishing the right wing with approximately 2.17 sq. ft. of additional wing area. As evidence of the brothers' careful attention to design, the two propellers were "handed," that is, when seen from behind the Flyer, the left propeller rotated

counterclockwise, and the right propeller rotated clockwise. This cancelled out any torque problems, somewhat easing the piloting task. Unlike the gliders, which were "hand launched" using a guide holding onto each lower wing, the Kitty Hawk Flyer rested on a small skate-like "truck" that ran along a guide monorail. At engine start, the pilot would move a starting lever that would sever a cotton tie-down, and the Flyer would accelerate along the monorail and thence into the air. The Flyer completed four flights on December 17, 1903, beginning with Orville Wright's historic first flight at 10:35 a.m. that morning. It was badly damaged by wind after its last landing. Fortunately, and unlike with their previous gliders, the brothers returned the wreckage to Dayton, placing it in storage. Over the next two decades it appeared in several aeronautical exhibitions. In 1928, as a result of a feud between Orville Wright and the Smithsonian Institution, Wright sent it to the Science Museum, South Kensington, London, England. Following settlement of the Wright-Smithsonian dispute, it returned to the United States after the death of Wright in 1948, and was installed in the Smithsonian Institution's Arts and Industries building on December 17, 1948. Moved to the new National Air and Space Museum, which opened on July 1, 1976, it is the centerpiece of that museum's collection, the most historic airplane in the world.



1904 Wright Flyer:

Span: 40 ft. 4 in.

Chord: 6 ft. 6 in.

Gap: approx. 6 ft. 2 in.

Length: 21 ft. 1 in.

Height: approx. 9 ft. 0 in.

Wing Area: 510 square feet.

Aspect Ratio: 6.38

Camber: 1/25

Canard Elevator: 48 sq. ft.

Vertical rudders: 21 sq. ft.

Structure: ash, spruce, wire, and muslin covering

Empty Weight: approximately 760 lbs.

Gross Weight with Pilot: approximately 900 lbs.

Wing Loading: Approx. 1.76 lbs./sq. ft.

Engine: One water-cooled four-cylinder 15-21 hp horizontal inline of 214 cubic in displacement running from 1,070 to 1,360 rpm, chain-driving two contra-rotating

("handed") two-bladed propellers; engine weight approx. 8.10 lbs./h.p.; bore and stroke, 4 1/8 in. x 4 in.

Maximum speed: approx. 30 mph

Total flights: 80

Believed dimensionally generally similar to the 1903 Flyer, the 1904 machine nevertheless differed in many details, most dramatically in weight, largely as an attempt by the brothers to overcome obvious deficiencies in longitudinal stability by using ballasting (as much as 70 lbs. of iron bars). The 1904 had improved propulsion performance, thanks to a more powerful engine, revised propeller design (giving improved thrust), and a changed sprocket ratio on the chain-drive (from a ratio of 2.875 : 1 to 3.3 : 1). The 1904 machine, tested at Huffman prairie, east of Dayton, Ohio, demonstrated the world's first controlled circling flight by a piloted airplane, and also was the first to make use of a weight-driven catapult as a takeoff device. Tests with this plane indicated persistent longitudinal stability problems, problems the brothers attempted (unsuccessfully) to address by shifting the aircraft center of gravity aft, and then, far more successfully, by ballasting the canards with iron bars. The equally persistent lateral instability, resulting from the pronounced anhedral (wing droop) of the 1903-1904 design, eventually caused the brothers to remove the droop, with dramatically improved results. The 1904 machine, very much an interim design, was nevertheless an important step forward for the Wrights as they sought to move their concept of the airplane from experiment to production. It accumulated a total flying time of approximately 45 minutes, including two flights that each exceeded five minutes

duration. Unfortunately, it was scrapped in 1905, the propulsion system and other fittings going to the new 1905 Flyer, and the wings and other structure being unceremoniously burned--a sad fate.

1905 Wright Flyer:

Span: 40 ft. 6 in.

Chord: 6 ft. 6 in.

Gap: 5 ft. 11 ¼ in.

Length: 28 ft. 0 in.

Height: approx. 8 ft. 0 in.

Wing Area: 503 square feet.

Aspect Ratio: 6.52

Camber: 1/20

Canard Elevator: 83 sq. ft.

Vertical rudders: 34.8 sq. ft.

Structure: ash, spruce, wire, and unbleached cotton covering

Empty Weight: approximately 710 lbs.

Gross Weight with Pilot: approximately 850 lbs.

Wing Loading: Approx. 1.69 lbs./sq. ft.

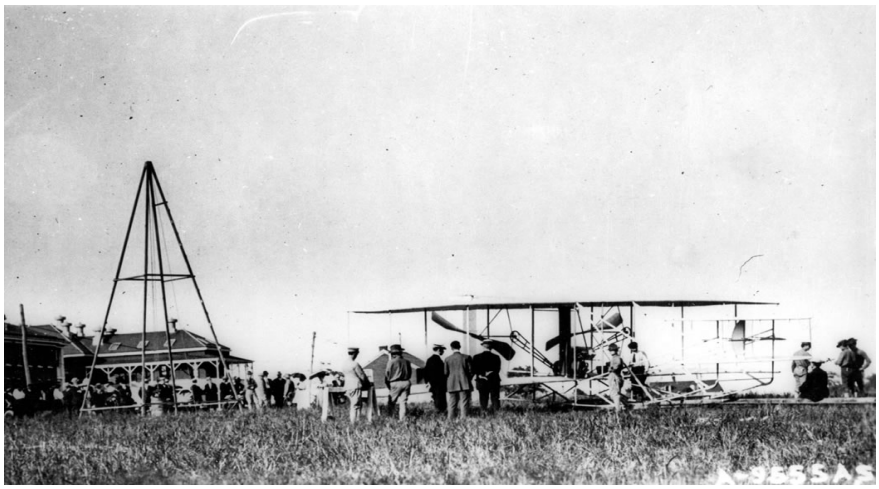
Engine: One water-cooled four-cylinder 15-21 hp horizontal inline of 214 cubic in. displacement running from 1,070 to 1,360 rpm, chain-driving two contra-rotating ("handed") two-bladed propellers; engine weight approx. 8.10 lbs./h.p.; bore and stroke, 4 1/8 in. x 4 in.

Maximum speed: approx. 36 mph

Total flights: 62 (40 in 1905, and 22 in 1908)

The Wright 1905 Flyer was the first "practical" airplane, in that it was capable of repeated reuse. Much modified over its active life, which ran from 1905 through 1908, it was also the first Wright design to, ultimately, have independent three-axis control, and upright seating for the pilot. It was, as well, the first airplane capable of carrying a passenger. The 1905 Flyer likewise had much improve longitudinal stability, thanks to dramatic changes in aircraft length and weight distribution; as a result, the -20% static margin of the 1903-04 Flyer was reduced to approximately -8%, though the 1905 Flyer still remained an inherently unstable design. It made use of the launching catapult first used with the 1904 Flyer. Flown between late June and early November 1905, and then placed in storage, the 1905 Flyer had a greatly strengthened structure. Its most notable flight was on October 5, when Wilbur Wright covered a distance of 24 miles in 39.5 minutes, essentially a series of continuous circles over Huffman prairie. Though originally built both with the prone piloting position and interconnected warping and rudder controls of the 1903 and 1904 machines, it was later modified with independent three-axis controls and, ultimately, two upright seats. In this modified form, the brothers returned it to the air in May 1908 at Kitty Hawk (where the winds eliminated any need

for the launching catapult, so they flew it like the 1903 machine, simply off the monorail). It was used as a "trainer" for their subsequent Ft. Myer and European trials undertaken with other aircraft later that year. Fortunately, it has survived, and is now on exhibit at Carillon Park, Dayton, Ohio, the second-most historic airplane in the world.



1907 Wright Flyer:

Span: 41 ft. 0 in.

Chord: 6 ft. 6 in.

Gap: 6 ft. 0 in.

Length: approx. 31 ft. 0 in.

Height: approx. 8 ft. 0 in.

Wing Area: approx 510 square feet.

Aspect Ratio:6.60

Camber: 1/20 (est.)

Canard Elevator: 70 sq. ft.

Vertical rudders: 23 sq. ft.

Structure: ash, spruce, wire, and unbleached cotton

Empty Weight: approximately 800 lbs.

Gross Weight with Pilot and passenger: approximately 1,100 lbs.

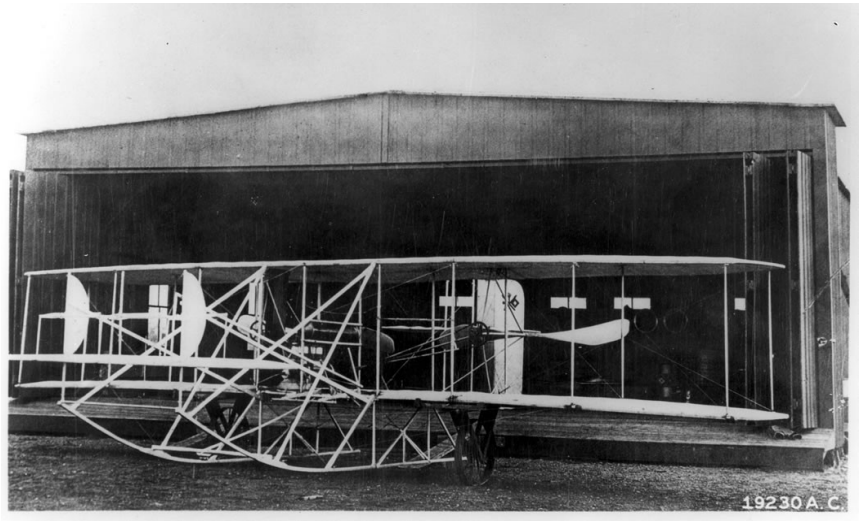
Wing Loading: Approx. 2.16 lbs./sq. ft.

Engine: One water-cooled four-cylinder 28-42 hp vertical inline of 240 cubic in. displacement running from 1,325 to 1,500 rpm, chain-driving two contra-rotating ("handed") two-bladed propellers; engine weight approx. 4.29 lbs./h.p.; bore and stroke, 4 3/8 in. x 4 in.

Maximum speed: approx. 35 mph

Total flights: Well over 266

This generic model constituted the first "production" airplane in world history. At least eleven aircraft made between 1907-1910 share the above technical characteristics; the Wrights made seven in America, and four others were manufactured under license in France. These include the Flyers the brothers demonstrated in 1908 at Ft. Myer, Virginia, and in 1908-09 in France, Italy, Germany, and New York; and, as well, foreign Flyers flown by pioneers including the Comte de Lambert, Paul Tissandier, Mario Calderara, Eugène Lefebvre (tragically killed in September 1909 in a French Wright built for Louis Schreck), Marcel Baratoux, a Monsieur Defriès, and a Comte Brancsy. All made use of the launching catapult first tested on the 1904 and 1905 machines, though the Shreck and Baratoux machines were modified to use wheels and, thus fitted, flew from Port-Aviation, the world's first specially built airport, located at Juvisy, south of Paris. All these aircraft are typically referred to as "Wright A" designs, to distinguish them from earlier and later machines. Only one of these early Wrights, built by the brothers in Dayton and shipped and flown in Germany, still exists, exhibited at the Deutsches Museum, Munich.



1909 Wright Signal Corps Flyer:

Span: 36 ft. 6 in.

Chord: 5 ft. 10 in.

Gap: 5 ft. 0 in.

Length: approx. 28 ft. 11 in.

Height: approx. 8 ft. 0 in.

Wing Area: approx. 415 square feet.

Aspect Ratio: 6.42

Camber: 1/20 (est.)

Canard Elevator: 80 sq. ft.

Vertical rudders: 16 sq. ft.

Structure: ash, spruce, wire, and unbleached cotton

Empty Weight: 735 lbs.

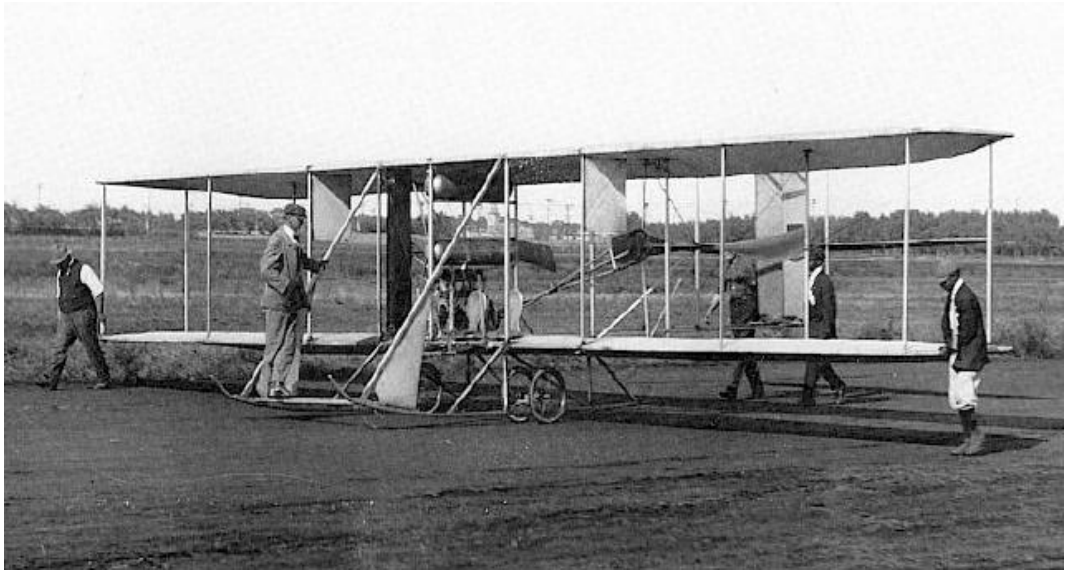
Gross Weight with two- person crew (pilot and observer): approximately 1,200 lbs.

Wing Loading: Approx. 2.89 lbs./sq. ft.

Engine: One water-cooled four-cylinder 28-42 hp vertical inline of 240 cubic in. displacement running from 1,325 to 1,500 rpm, chain-driving two contra-rotating ("handed") two-bladed propellers; engine weight approx. 4.29 lbs./h.p.; bore and stroke, 4 3/8 in. x 4 in.

Maximum speed: 44 mph

The historic 1909 Signal Corps Flyer was the world's first military airplane accepted into military service. Smaller yet heavier than previous Wright machines, it was also faster, and, though still inherently unstable (with a negative longitudinal static stability margin of approximately -5%), it had better flying characteristics than any of its predecessors. Despite the appearance of the wheeled undercarriage on new European designs, the Wrights persisted in using the awkward and cumbersome catapult and launch track take-off system. The 1909 Flyer, given the serial "Signal Corps No. 1" (S.C. 1), underwent extensive trials at Ft. Myer, Virginia, the Signal Corps flight test establishment at College Park, Maryland, and, ultimately, at Fort Sam Houston, San Antonio, Texas. During these trials, undertaken primarily by Lieutenant Benjamin Foulois, the Army experimented with both major and minor changes to its configuration, including removing the front elevator and relocating it to the rear, adding a wheeled undercarriage, and changing its flight control system to that incorporated on the newer Wright Model B. By early 1911, it had fulfilled its purposes as the first military aircraft, and the Army returned it to the Wrights, who restored it almost (though not quite) to its original configuration and then donated it to the Smithsonian Institution (this was prior to the ill-will between the brothers and the Institution). It has remained there to this day, the antecedent of all American military airplanes.



1910 Wright Model B:

Span: 39 ft. 0 in.

Chord: 6 ft. 3 in.

Gap: 5 ft. 4 in.

Length: 29 ft. 9 in.

Height: approx. 8 ft. 0 in.

Wing Area: 480 sq. ft..

Aspect Ratio: 6.34

Camber: 1/20 (est.)

Elevator: 40 sq. ft.

Vertical rudders: 16 sq. ft.

Structure: ash, spruce, wire, coated with aluminum powder; unbleached cotton or rubberized fabric covering

Empty Weight: 800 lbs. (est.)

Gross Weight with two- person crew (pilot and passenger): approx. 1,250 lbs.

Wing Loading: approx. 2.60 lbs./sq. ft.

Engine: One water-cooled four-cylinder 28-42 hp vertical inline of 240 cubic in. displacement running from 1,325 to 1,500 rpm, chain-driving two contra-rotating ("handed") two-bladed propellers; engine weight approx. 4.29 lbs./h.p.; bore and stroke, 4 3/8 in. x 4 in.

Maximum speed: 44.6 mph

The Model B marked a major departure for the Wrights: the recognition that their reliance upon an inherently unstable canard biplane configuration was seriously out of step with the latest developments in Europe and elsewhere, and, as well, the recognition that the catapult means of operation was a serious liability. As the 1903 Kitty Hawk Flyer had established a "design standard" for all subsequent Wright canard designs, the 1910 Model B established a "design standard" that would last through Orville Wright's tenure with the company he founded. As early as 1909 the Wrights experimented with placing the elevator behind the wing. Though the Model B retained essentially the same wing cellule and propulsion layout--a Pratt-truss wing, side-by-side seats on the leading edge, and an engine chain-driving two pusher propellers--it had a greatly lengthened tail boom structure aft of the wing. Gone was the front elevator, now moved to the rear, aft of the vertical rudder, a change that led to this machine being dubbed, after the fashion of the day, the "headless Wright." (Curtiss aircraft that also displaced the canard elevator aft of the wing were likewise dubbed "headless" aircraft). The front framing of the machine was now used simply as protective structure and bracing for the front skids, and, as well, had two small triangular-shaped fixed vertical finlets for added directional stability. The Model B was the first inherently stable Wright machine, with the center of

gravity ahead of the airplane's neutral point, thus giving it longitudinal static stability, something that all of its predecessors had lacked. As well, the Model B incorporated a wheeled undercarriage that greatly simplified its operation.

The Model B quickly entered production, though it could not return the Wrights to the position of predominance in aeronautics that they had held until 1909. Examples flew in both civilian and military service (after briefly borrowing and evaluating a privately owned Model B, the U.S. Army Signal Corps flew three Model B aircraft, S.C. 3, 4, and 7; though used for notable military experiments including bomb-dropping, all eventually crashed). The world's only surviving "pure" Model B, purchased by Grover Cleveland Bergdoll in 1912, is on exhibit in The Franklin Institute, Philadelphia, Pennsylvania. This aircraft completed at least 748 flights totaling 312 hrs. and 34 mins. before being retired to the Institute--after a final flight at Central Airport, Camden, New Jersey, by Marshall Reid on 17 December 1934. Reid thus was almost certainly the last individual to fly an original Wright airplane, and this Model B is likely the "high time" champion of all the Wright aircraft ever built. Further, with a claimed 97% of its structure original to the airplane (according to Institute curator John Alviti), this particular Model B is likely the most complete and authentic of all extant Wright machines. A modified Model B is at the U.S. Air Force Museum. A trainer flown by Howard Rinehart at Mineola, New York, in 1916, and last flown in October 1924 by Lieutenant John Macready at air races held at Dayton, Ohio, it has an 8 cylinder Rausenberger engine of 75 hp, and ailerons on the upper and lower wings (connected by an actuating rod) replacing the original wing-warping for lateral control.

1910 Wright Model R:

Span: 26 ft. 6 in.

Chord: 3 ft. 6 in.

Gap: 3 ft. 6 in.

Length: approx. 20 ft. 0 in.

Height: approx. 7 ft. 0 in.

Wing Area: approx. 180 sq. ft..

Aspect Ratio: approx. 7.80

Camber: 1/20 (est.)

Elevator: 27.2 sq. ft.(est.)

Vertical rudders: 10.2 sq. ft.(est.)

Structure: ash, spruce, wire, coated with aluminum powder; unbleached cotton or rubberized fabric covering

Empty Weight: 750 lbs.

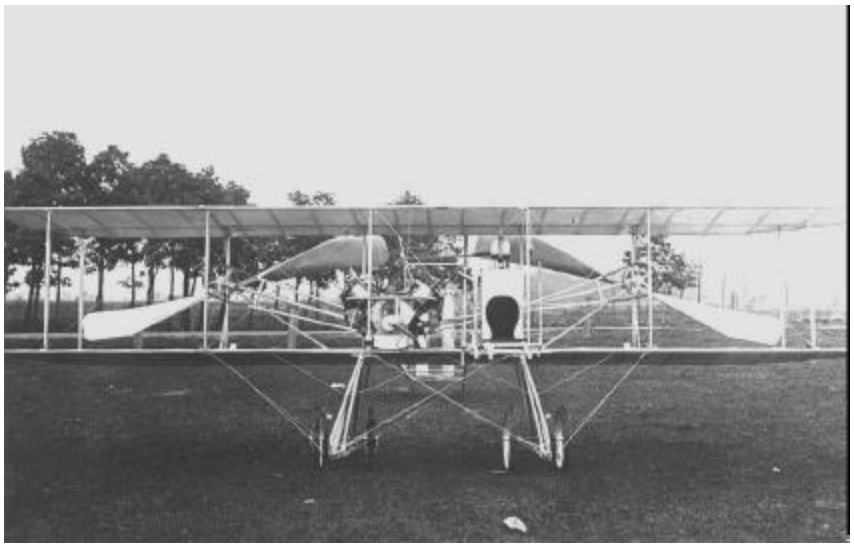
Gross Weight: approx. 925 lbs.(est.)

Wing Loading: approx. 5.14 lbs./sq. ft.

Engine: One water-cooled four-cylinder 28-42 hp vertical inline of 240 cubic in. displacement running from 1,325 to 1,500 rpm, chain-driving two contra-rotating ("handed") two-bladed propellers; engine weight approx. 4.29 lbs./h.p.; bore and stroke, 4 3/8 in. x 4 in.

Maximum speed: approx. 55 mph

The Wright Model R (for “Roadster”) was a single-seat air racer and aerial demonstration airplane, and it influenced the later design of the Wright Model D “Speed Scout” (which see) for military purposes. Essentially it represented a scaled-down variant of the Wright B.



1910 Wright “Baby Grand”

Span: 21 ft. 5 in.

Chord: 3 ft. 6 in.

Gap: 3 ft. 6 in.

Length: approx. 19 ft. 6 in.

Height: approx. 6 ft. 10 in.

Wing Area: approx. 145 sq. ft..

Aspect Ratio: approx. 6.32

Camber: 1/20 (est.)

Elevator: 27.2 sq. ft.(est.)

Vertical rudders: 10.2 sq. ft.(est.)

Structure: ash, spruce, wire, coated with aluminum powder; unbleached cotton or rubberized fabric covering

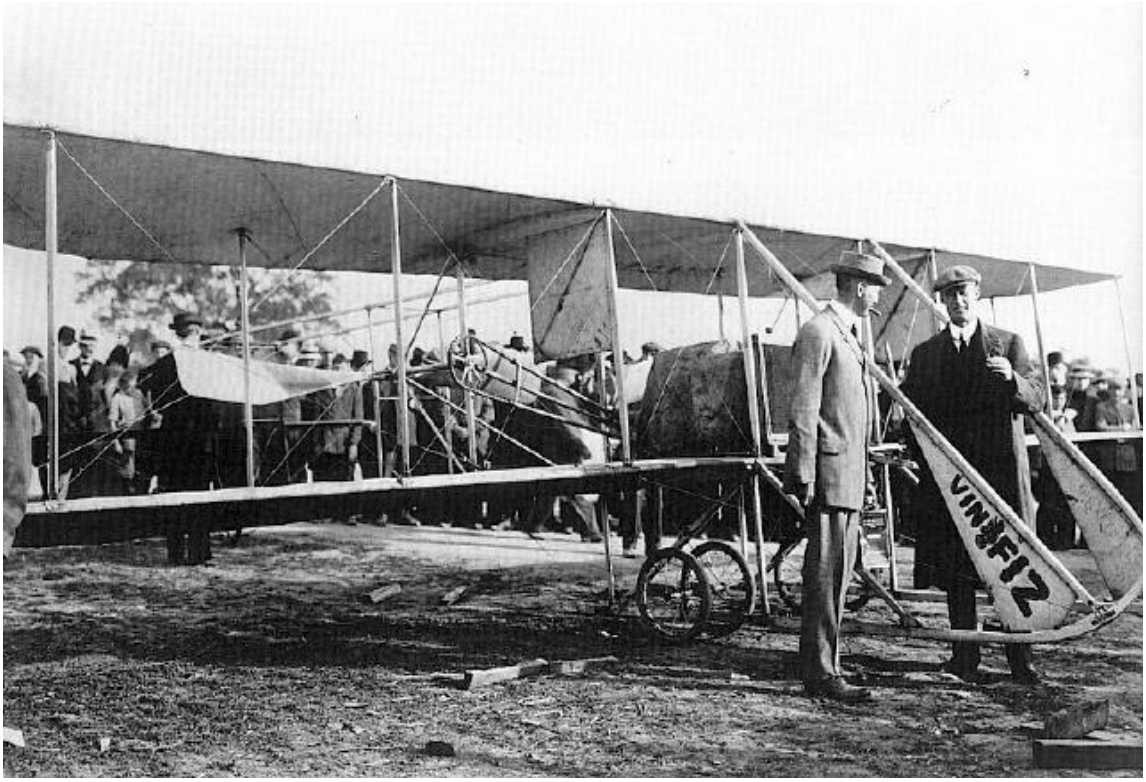
Empty Weight: 710 lbs. (est.)

Gross Weight: approx. 860 lbs.

Wing Loading: approx. 5.93 lbs./sq. ft.

Engine: One water-cooled eight-cylinder 60 hp 90º Vee of 481 cubic in. displacement, running at an est.1,325 to 1,500 rpm, chain-driving two contra-rotating ("handed") two-bladed propellers; engine weight approx. 5.0 lbs./h.p.; bore and stroke, 4 3/8 in. x 4 in. Maximum speed: approx. 75 mph

Intended as a flashy air racing and altitude-record-setting speedster, the Baby Grand, a short-span variant of the Model R, constituted the smallest derivation of the basic Model B formula. Orville Wright piloted it at the Belmont Park Meet in 1910, attaining nearly 80 mph. This design was flown by other Wright pilots as well, including Ralph Johnstone, Alec Ogilvie, and W. R. Brookins; the latter crashed it following engine failure, preventing its participating in the Gordon Bennett Cup race.



1911 Wright Model EX:

Span: 31 ft. 6 1/2 in.

Chord: 5 ft. 0 in.

Gap: 5 ft. 0 in.(est.)

Length: 21 ft. 5 in.

Height: 7 ft. 4 in.

Wing Area: 305 sq. ft..(est.)

Aspect Ratio: 6.52 (est.)

Camber: 1/20 (est.)

Elevator: 30 sq. ft.(est.)

Vertical rudders: 10.2 sq. ft.(est.)

Structure: ash, spruce, wire, coated with aluminum powder; unbleached cotton or rubberized fabric covering

Empty Weight: 735 lbs.

Gross Weight: 903 lbs.

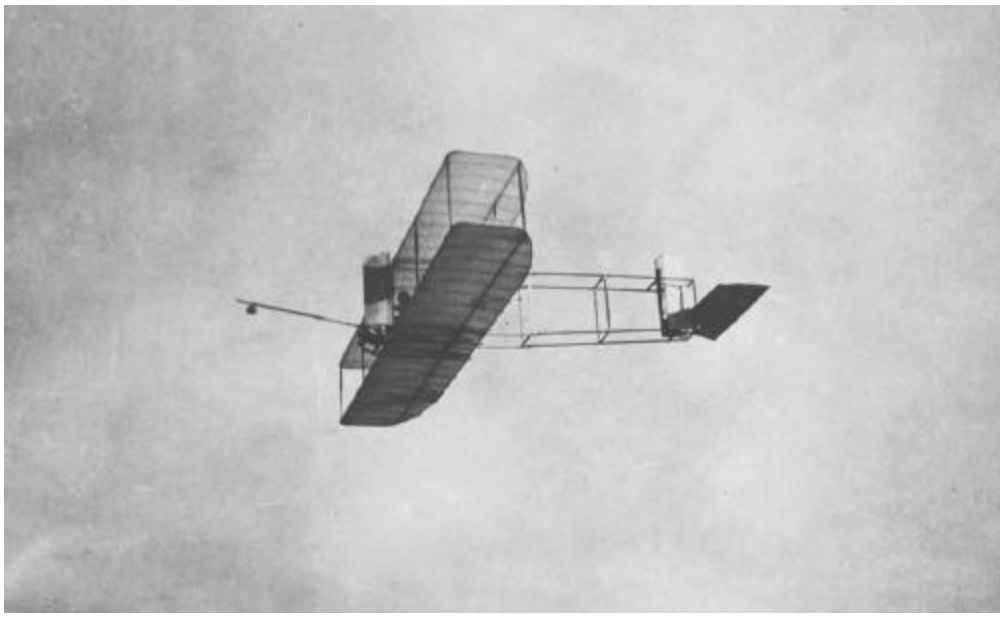
Wing Loading: approx. 2.96 lbs./sq. ft.

Engine: One water-cooled four-cylinder 28-42 hp vertical inline of 240 cubic in. displacement running from 1,325 to 1,500 rpm, chain-driving two contra-rotating ("handed") two-bladed propellers; engine weight approx. 4.29 lbs./h.p.; bore and stroke, 4 3/8 in. x 4 in.

Maximum speed: 52 mph

The Wright Model EX was yet another derivation of the Model B, slightly smaller and carrying only the pilot, intended (as with the racers) for air exhibition purposes. The most famous of the EX series, the so-called *Vin Fiz*, was the first airplane to fly across the United States, completing the journey over nearly three months (with no less than seventy landings and multiple crashes) in 1911, piloted by Calbraith Perry Rodgers. If nevertheless distinguished, the *Vin Fiz* had a deeply troubling, indeed unsettling, history, for it killed no less than two of its pilots. The trouble began on the cross-country journey, when it crashed repeatedly; so many pieces of this aircraft were replaced that when it landed in California only the rudder and two wing struts were "original" components. Shortly thereafter, this aircraft was destroyed in an accident that killed Rodgers; the wreckage was rebuilt, flown, and again crashed with fatal results, killing pilot Andrew Drew. The wreckage was restored once more, and the plane flew until finally grounded

as a result of a lawsuit filed by Rodger's mother in 1914. Orville Wright subsequently recollected that the plane was scrapped at the Wright factory. In fact, from the accumulated assemblage of spares and scraps, the (or perhaps one should say "a"!) *Vin Fiz* was, in fact, eventually rebuilt. In 1917, Rodger's mother donated the rebuild to the Carnegie Institute in Pittsburgh, Pennsylvania, which eventually passed it to the Smithsonian Institution in 1934, where it is currently on exhibit. (Ironically, offered the plane in 1912, the Smithsonian originally turned it down). The chain of accidents and misfortunes mean that the airplane, as exhibited today, is little more than an assemblage of parts that, at one time or the other, were incorporated on the *Vin Fiz* during its multiple "lives:" a sad case where the plane had far greater "survivability" than its pilots!



1911 Wright Kitty Hawk Glider:

Span: 32 ft. 0 in.

Chord: 5 ft. 0 in.

Gap: 4 ft. 6 in. (est.)

Length: 29 ft. 9 in.

Height: approx. 8 ft. 0 in.

Wing Area: approx. 300 sq. ft..

Aspect Ratio: 6.82

Camber: 1/20 (est.)

Elevator: 40 sq. ft.

Vertical rudders: 16 sq. ft.

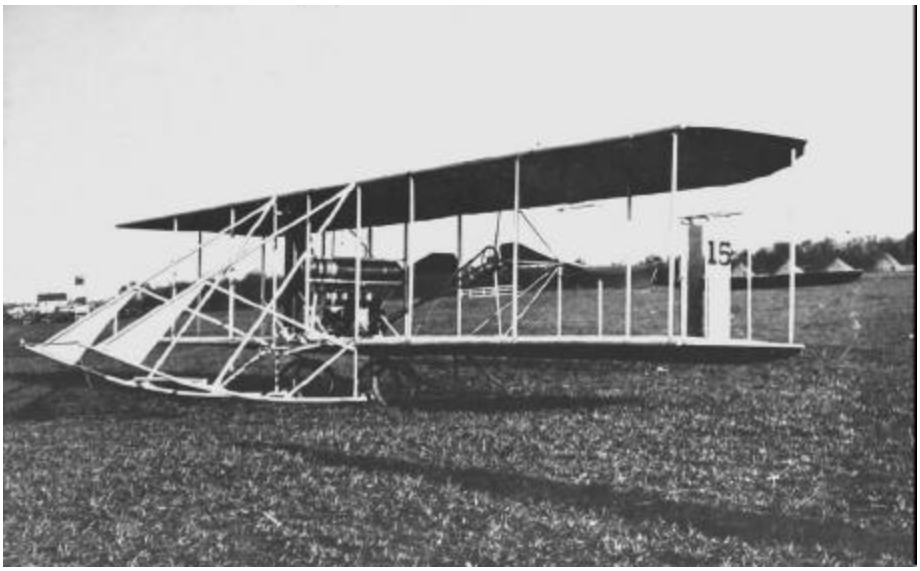
Structure: ash, spruce, wire, coated with aluminum powder; unbleached cotton or rubberized fabric covering

Empty Weight: 158 lbs.

Gross Weight with pilot and 12 lbs. sand balance: approx. 315 lbs.

Wing Loading: approx.1.05 lbs./ sq. ft.

In 1911, the Wright brothers built a glider to test concepts of automatic stability they were researching. The glider followed the generalized layout of the Model B, but on a smaller scale, though that it used a B's tail booms and tail surfaces. Flight tests at Kitty Hawk in October 1911 indicated a need for larger tail surfaces and a forward stabilizing fin for increased directional stability. Thus modified, the glider flew much better, and on October 24, in the face of a forty mph wind, Orville Wright remained aloft for 9 minutes 45 seconds, essentially "parking" over a single spot of dune and gently weaving back and forth over it. The record stood for a decade, anticipating the golden era of soaring on the Wasserkuppe after the First World War. Left at Kitty Hawk, the glider was eventually donated by a local citizen to a Massachusetts enthusiast, but "was mutilated in a well-meaning attempt to turn it into an authentic museum piece." (McFarland, *Papers of Wilbur and Orville Wright,* v. 2, p. 1201).



1912 Wright Model C "Weight Carrier":

Span: 38 ft. 0 in.

Chord: 6 ft. 0 in.

Gap: 5 ft. 0 in.

Length: 29 ft. 9 in.

Height: 7 ft. 4 in.

Wing Area: approx. 440 sq. ft.

Aspect Ratio: 6.56

Camber: 1/25 (est.)

Elevator: 40 sq. ft)

Vertical rudders: 16 sq. ft.

Structure: ash, spruce, wire, coated with aluminum powder; unbleached cotton or rubberized fabric covering

Empty Weight: 800 lbs. (est.)

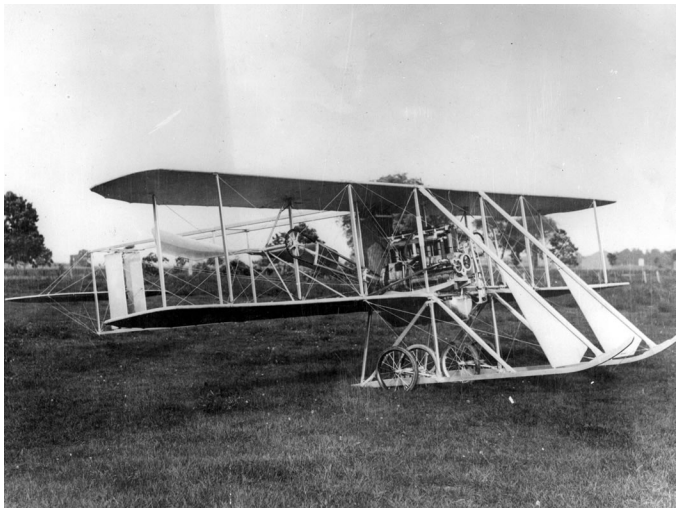
Gross Weight: 1,270 lbs. (est.)

Wing Loading: approx. 2.87 lbs./sq. ft.

Engine: One water-cooled six--cylinder 50-75 hp vertical inline of 406 cubic in. displacement running from 1,400 to 1,560 rpm, chain-driving two contra-rotating ("handed") two-bladed propellers; engine weight approx. 4.0 lbs./h.p.; bore and stroke, 4 3/8 in. x 4 1/2 in.

Maximum speed: 60 mph (est.)

Developed as a long-endurance (four-hour) two-man military scout and "weight carrier," the Model C replaced the Model B as the standard Wright production machine. Externally, it most noticeably differed from the Model B in having two braced vertical finlets (resembling parallel standing rulers) mounted ahead of the wing, replacing the sail-like triangular finlets installed on the Wright B and its derivatives. Most significantly, the Model C had a more powerful 6 cylinder Wright engine, and a rugged structure that the Wrights tested (without incident) to an ultimate load of 1,960 lbs. Sadly, the Model C extended the growing reputation of Wright airplanes as dangerous. The U.S. Army operated seven Model C aircraft: S.C. 10 (assigned twice, once as a replacement), 11, 12, 13, 14, and 16; six of the seven crashed, and the seventh (S.C. 16) was condemned as non-airworthy in 1914.



1912 Wright Model D “Speed Scout”:

Span: 27 ft. 0 in.

Chord: 3 ft. 6 in.

Gap: 3 ft. 6 in. (est.)

Length: approx. 20 ft. 0 in.

Height: approx. 7 ft. 0 in.

Wing Area: approx. 180 sq. ft..

Aspect Ratio: approx. 8.10

Camber: 1/20 (est.)

Elevator: 27.2 sq. ft.(est.)

Vertical rudders: 10.2 sq. ft.(est.)

Structure: ash, spruce, wire, coated with aluminum powder; unbleached cotton or rubberized fabric covering

Empty Weight: 825 lbs.

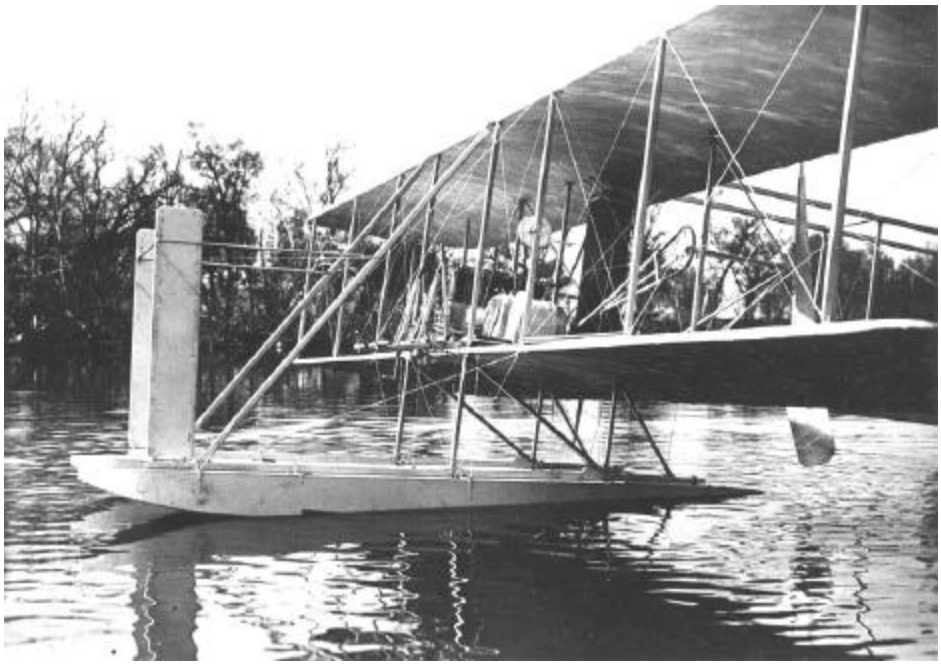
Gross Weight: approx. 1,050 lbs.(est.)

Wing Loading: approx. 5.83 lbs./sq. ft.

Engine: One water-cooled six--cylinder 50-75 hp vertical inline of 406 cubic in. displacement running from 1,400 to 1,560 rpm, chain-driving two contra-rotating ("handed") two-bladed propellers; engine weight approx. 4.0 lbs./h.p.; bore and stroke, 4 3/8 in. x 4 1/2 in.

Maximum speed: 70 mph

The single-seat Model D blended the small size of the previous Model R with the higher power of the larger two-seat Model C. It closely resembled the Model R, and reverted to the two sail-like triangular stabilizing finlets forward of the wing, rather than the vertical finlets used on the Model C, CH, and later E. Orville Wright considered the Model D extremely strong and "the easiest to control of any we have ever built" (OW to Israel Ludlow, 24 Dec. 1912), though he later conceded "its high speed in landing is its only drawback" (OW to Hap Arnold, 22 March 1913). The Army, which eventually acquired two (S.C. 19 and 20) in August 1912, was more critical of the plane, and for good reason: of the two, one was wrecked (and subsequently rebuilt) during its official trials, and both were flown only infrequently until being retired in June 1914. The Model D was the last "classic" Wright pusher that clearly showed its lineage back to the 1903 machine. From this point on, the Wright company would increasingly adapt the layout and practices of others.



1913 Wright Model CH:

Span: 38 ft. 0 in.

Chord: 6 ft. 0 in.

Gap: 5 ft. 0 in.

Length: 29 ft. 9 in.

Height: 7 ft. 4 in.

Wing Area: approx. 440 sq. ft.

Aspect Ratio: 6.56

Camber: 1/25 (est.)

Elevator: 40 sq. ft.(est.)

Vertical rudders: 16 sq. ft.(est.)

Structure: ash, spruce, wire, coated with aluminum powder; unbleached cotton or rubberized fabric covering

Empty Weight: 1,000 lbs. (est.)

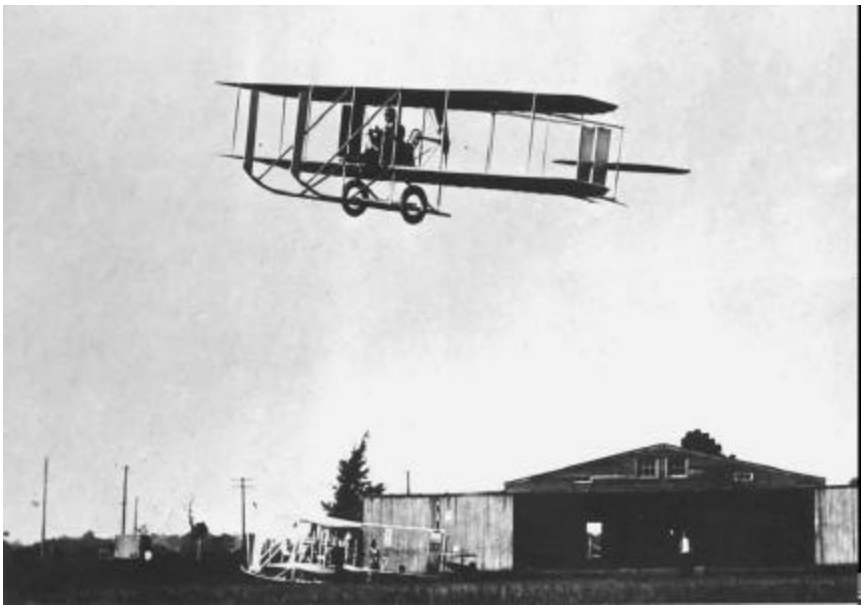
Gross Weight: 1,475 lbs. (est.)

Wing Loading: approx. 3.35 lbs./sq. ft.

Engine: One water-cooled six--cylinder 50-75 hp vertical inline of 406 cubic in. displacement running from 1,400 to 1,560 rpm, chain-driving two contra-rotating ("handed") two-bladed propellers; engine weight approx. 4.0 lbs./h.p.; bore and stroke, 4 3/8 in. x 4 1/2 in.

Maximum speed: 45 mph (est.)

Undoubtedly goaded by the commercial and military success of Glenn Curtiss' float-equipped pushers, the Wrights responded with their own attempt at a "hydroaeroplane," the Model CH. Basically an adaptation of the Model C as a float seaplane, and first tested along the Miami River in the spring of 1913, the CH initially featured long twin floats attached to the skids of a Model C. However, this twin-float arrangement proved a failure, as it changed the dynamic characteristics of the aircraft during turns, making it even more difficult to control than the already tricky Model C. Accordingly, Orville Wright swapped the twin floats for a single large float, adding additional small stabilization floats attached under the vertical fin and at the lower wing tips; thus modified, the CH had much more acceptable flying control characteristics, though undoubtedly higher drag and, hence, lower overall performance. Perhaps not surprisingly, the CH did not prove a commercial success, though it did mark the beginning of Wright interest in adapting their design for maritime and naval use.



1913 Wright Model E:

Span: 32 ft. 0 in.

Chord: 5 ft. 1 in.

Gap: 4 ft. 0 in.

Length: 27 ft. 11 in.

Height: 7 ft. 0 in.

Wing Area: approx. 316 sq. ft.

Aspect Ratio: 6.48

Camber: 1/20 (est.)

Elevator: 27.2 sq. ft.(est.)

Vertical rudders: 10.2 sq. ft.(est.)

Structure: ash, spruce, wire, coated with aluminum powder; unbleached cotton or rubberized fabric covering

Empty Weight: 730 lbs.

Gross Weight: 900 lbs.(est.)

Wing Loading: approx. 2.85 lbs./sq. ft.

Engine: One water-cooled four-cylinder 28-42 hp vertical inline of 240 cubic in. displacement running from 1,325 to 1,500 rpm, chain-driving a single four-bladed propeller; engine weight approx. 4.29 lbs./h.p.; bore and stroke, 4 3/8 in. x 4 in.

Maximum speed: 55 mph (est.)

Strictly intended as an air exhibition aircraft (and, as a result, designed for quick assembly and disassembly), the Model E owed its inspiration to the earlier Model EX, from which it nevertheless differed greatly. The wing, as seen from above, was more perfectly rectangular in planform than other Wright machines. But most significantly, this airplane marked (albeit temporarily), the "abandonment" of the decade-old twin-chain-driven "handed" twin-bladed propeller formula that the Wrights had followed ever since the spring of 1903. Instead, the Model E used a single four-bladed (and hence much smaller diameter) propeller chain driven from the engine, which remained off-set next to the pilot on the lower wing. Because of the single engine-single propeller combination, the Model E had a completely different tail-boom structure that, though it looked similar to earlier ones from the side, nevertheless looked totally different when viewed from above or below. The tail booms, conforming to Curtiss or European practice, were broader set at the wing trailing edge so as to afford clearance for the propeller, then swept sharply inwards before joining the tail group of elevator and rudder. Finally, the Model E used forward vertical stabilizing vanes generally similar in appearance to those of the Model C, but with less bracing, and a two-wheel, not four-wheel, undercarriage. It was in this machine that Orville Wright successfully

demonstrated a pendulum-controlled automatic stabilizer on December 31, 1913, for which he won the Robert J. Collier trophy, but his triumph was short-lived, as rival Glenn Curtiss sponsored work by Lawrence Sperry that resulted in the successful demonstration the following year of a remarkable gyroscopic stabilizer, an important step on the road to the invention of the true autopilot..

1913 Wright Model F:

Span: 42 ft. 0 in.

Chord: 6 ft. 0 in.

Gap: 5 ft. 0 in.

Length: 32 ft. 10 in.(est.)

Height: 9 ft. 0 in.(est.)

Wing Area: approx. 485 sq. ft.(est.)

Aspect Ratio: 7.28 (est.)

Camber: 1/20 (est.)

Elevator: 45 sq. ft.(est.)

Vertical rudders: 17.75 sq. ft. (est.)

Structure: ash, spruce, metal alloy, wire, coated with aluminum powder; unbleached cotton or rubberized fabric covering

Empty Weight: 1,000 lbs. (est.)

Gross Weight: 1,600 lbs. (est.)

Wing Loading: approx. 3.30 lbs./sq. ft.(est.)

Engine: One Austro-Daimler 90 hp engine chain-driving two contra-rotating ("handed") two-bladed propellers.

The Wright Model F was built to an Army requirement in 1913. Though the Model F reverted to the twin-chain-driven propeller layout abandoned with the Model E, it represented a radical departure from the previous Wright design philosophy in virtually all other respects. Though a land plane, the Model F featured a boat-like fuselage, with the crew sitting in tandem, above twin landing wheels. The engine, of foreign manufacture (at government insistence, but for reasons that are unclear) and mounted in a curvaceous streamlined nose, had an extension shaft that passed (like the later P-39) under the crew seats, and then chain-drove twin tractor propellers located ahead of the wing. The elevator, previously carried on a tail-boom and located behind the twin vertical rudders, was now supported by the fuselage, and served as the base for the twin rudders. The fuselage assumed a slab-sided tapered rectangular form aft of the wing, and featured a landing tail-skid (though it was not, as has been said, the first Wright machine to feature a tail-skid). Flight tests resulted in two design changes to the production machine delivered to the U.S. Army: the propellers were changed from tractors to pushers, and the crew arrangements were changed from tandem seating to side-by-side seating for better cockpit communication and coordination. The Army's Model F (S.C. 39) was delivered at the end of June 1914, and underwent protracted trials that occupied the next nine months before its acceptance. Thereafter, it only completed seven flights before being dropped from the Army's inventory on June 13, 1915.

1913 Wright Model G Aeroboat:

Span: 38 ft. 0 in.

Chord: 6 ft. 0 in.

Gap: 5 ft. 0 in.

Length: 28 ft. 0 in.

Height: 8 ft. 0 in.(est.)

Wing Area: approx. 430 sq. ft.

Aspect Ratio: 6.72

Camber: 1/20 (est.)

Elevator: 40 sq. ft

Vertical rudders: 18 sq. ft. (est.)

Structure: ash, spruce, metal alloy, wire, coated with aluminum powder; unbleached cotton or rubberized fabric covering

Empty Weight: 1,000 lbs. (est.)

Gross Weight: 1,800 lbs. (est.)

Wing Loading: approx. 4.19 lbs./sq. ft.(est.)

Engine: One Wright 6-60 water-cooled six--cylinder 50-75 hp vertical inline of 406 cubic in. displacement running from 1,400 to 1,560 rpm, chain-driving two contra-rotating ("handed") two-bladed propellers; engine weight approx. 4.0 lbs./h.p.; bore and stroke, 4 3/8 in. x 4 1/2 in.

Maximum speed: 60 mph (est.).

The Wright Model G Aeroboat, yet another attempt to respond to Glenn Curtiss' success (this time, his Model F flying boat), was designed by Wright associate Grover Loening in 1913, and tested on the Miami river. It featured a metal-clad wooden boat hull of pleasing (indeed, streamlined) appearance joined to an essentially Model C airframe (though the elevator was of different configuration, being shorter in span and deeper in chord than that of the Model C, and the engine was buried in the fuselage hull, in line with--but not resting on top of--the lower wing). The Model G's hull, at 300 lbs., weighed only 60 lbs. more than the single float of the Model CH; two smaller floats located at mid-span under the lower wing provided necessary stabilization. It also featured small wingtip paddles for steering on the water. The Model G demonstrator led to a refined variant produced in 1914, that had a relocated and redesigned elevator (to the top of the vertical fin, making it the first "T-tail" aircraft in aviation history, as well as the first Wright aircraft to have a separate horizontal stabilizer and pivoted elevator), relocated stabilizing floats (now under the lower wing tips), and a relocated engine (shifted forward into the bow of the aircraft, like the Model F, and similarly using an extension shaft that passed under the aircrew's seats to drive the propellers).

1914 Wright Model H:

Span: 38 ft. 0 in.

Chord: 6 ft. 0 in.

Gap: 5 ft. 0 in.

Length: 26 ft. 6 in.

Height: 9 ft. 0 in.(est.)

Wing Area: approx. 430 sq. ft.

Aspect Ratio: 6.72

Camber: 1/15 (est.)

Elevator: 40 sq. ft

Vertical rudders: 18 sq. ft. (est.)

Structure: ash, spruce, metal alloy, wire, coated with aluminum powder; unbleached cotton or rubberized fabric covering

Empty Weight: 1,150 lbs.

Gross Weight: 2,000 lbs. (est.)

Wing Loading: approx. 4.65 lbs./sq. ft.(est.)

Engine: One Wright 6-60 water-cooled six--cylinder 75 hp vertical inline of 406 cubic in. displacement running from 1,400 to 1,560 rpm, chain-driving two contra-rotating ("handed") two-bladed propellers; engine weight approx. 4.0 lbs./h.p.; bore and stroke, 4 3/8 in. x 4 1/2 in.

Maximum speed: 56 mph

Though a smaller aircraft, the Wright Model H represented a refinement of the design philosophy first exemplified with the disappointing Wright Model F, having a front fuselage that faired more pleasingly into the slab-sided contours of the aft fuselage, and, as well, slight wing dihedral, the latter representing the final overturning of Wright aerodynamic design philosophy, which had previously stressed anhedral, and then a "flat" level-wing planform.

1915 Wright Model HS:

Span: 36 ft. 0 in.

Chord: 6 ft. 0 in.

Gap: 5 ft. 0 in.

Length: 26 ft. 6 in.

Height: 9 ft. 0 in.(est.)

Wing Area: approx. 420 sq. ft.

Aspect Ratio: 6.18

Camber: 1/25 (est.)

Elevator: 40 sq. ft

Vertical rudders: 18 sq. ft. (est.)

Structure: ash, spruce, metal alloy, wire, coated with aluminum powder; unbleached cotton or rubberized fabric covering

Empty Weight: 1,050 lbs.

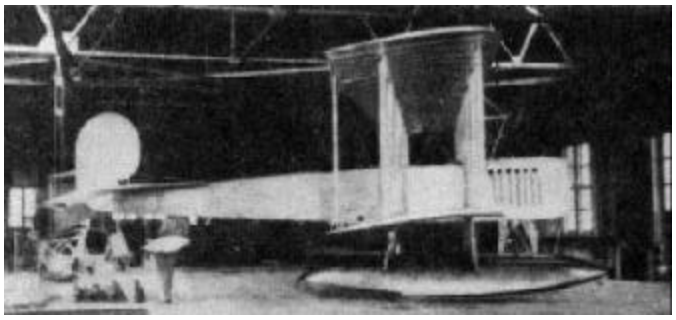
Gross Weight: 1,900 lbs. (est.)

Wing Loading: approx. 4.52 lbs./sq. ft.(est.)

Engine: One Wright 6-60 water-cooled six--cylinder 75 hp vertical inline of 406 cubic in. displacement running from 1,400 to 1,560 rpm, chain-driving two contra-rotating ("handed") two-bladed propellers; engine weight approx. 4.0 lbs./h.p.; bore and stroke, 4 3/8 in. x 4 1/2 in.

Maximum speed: 60 mph (est.)

In 1915, Orville Wright directed that the Model H be slightly reduced in span and lightened by approximately 100 lbs., in an effort to increase its speed. The result was the HS, which was not a commercial success. Note: Though other accounts state that the wingspan of the HS was 32 feet, Wright remembered it in 1919 as 36 feet; though hardly seeming a significant reduction in size, since this number reflects his recollection, I have used it in this listing rather than the figure of 32 feet.



1915 Wright Model K:

Span: 38 ft. 7 in.

Chord: 6 ft. 0 in.

Gap: 5 ft.6 in.

Length: 24 ft. 2 in.

Height: 10 ft. 6 in.

Wing Area: approx. 450 sq. ft.

Aileron area (each wing): 14 sq. ft.

Aspect Ratio: 6.62

Camber: 1/20 (est.)

Horizontal stabilizer: 45.5 sq. ft. (est.)

Elevator: 20 sq. ft (est.)

Vertical fin: 3.50 sq. ft. (est.)

Rudder: 8.50 sq. ft. (est.)

Structure: ash, spruce, metal alloy, wire, coated with aluminum powder; unbleached cotton or rubberized fabric covering

Empty Weight: 1,000 lbs.(est.)

Gross Weight: 1,460 lbs.

Wing Loading: approx. 4.52 lbs./sq. ft.(est.)

Engine: One Wright 6-60 water-cooled six--cylinder 75 hp vertical inline of 406 cubic in. displacement running from 1,400 to 1,560 rpm, chain-driving two contra-rotating ("handed") two-bladed tractor propellers; engine weight approx. 4.0 lbs./h.p.; bore and stroke, 4 3/8 in. x 4 1/2 in.

Maximum speed: 60 mph (est.)

In October 1915, Wright sold his interest in the company and settled into a career of general inventing, largely outside the aviation field. Even so, the first product of the reorganized Wright company after his departure, the Model K twin-floatplane, still reflected a lingering influence of the 1903 machine, namely the twin chain-driven pusher propellers. However, in virtually all other respects, it marked a significant departure from previous Wright practice—perhaps not too surprising, given Orville Wright's leave-taking. Of generally pleasing appearance, the two-man plane had a completely enclosed fuselage of box-like cross-section, and rested on two long floats. The engine installation generally followed the philosophy of the earlier Model F, G, H, and HS, namely, being located in the nose and driving the propellers via an extension shaft connected to the chain-drive mechanism. The propellers themselves were tractors, mounted ahead of the wing, and much higher than on other Wright machines, the centerline of the propeller being about two-thirds of the gap from the lower to the upper wing, presumably to eliminate water impingement upon them during taxiing and takeoff and landing operations. The U.S. Navy accepted one Model K, which received the serial AH-23, later renumbered A51, but despite its generally trim and purposeful appearance, and its generous payload capacity, it was not a success.

1916 Wright Model L “Military Tractor”:

Span: 29 ft. 0 in.

Chord: 6 ft. 6 in.

Gap: 5 ft. 9 in.

Length: 24 ft. 2 in.

Height 10 ft. 6 in. (est.)

Wing Area: approx. 360 sq. ft.

Aileron area: 14 sq. ft.(each wing)

Aspect Ratio: 4.68 (est.)

Camber: 1/20 (est.)

Horizontal stabilizer: 45.5 sq. ft. (est.)

Elevator: 20 sq. ft (est.)

Vertical fin: 3.50 sq. ft. (est.)

Rudder: 8.50 sq. ft. (est.)

Structure: ash, spruce, metal alloy, wire, coated with aluminum powder; unbleached cotton or rubberized fabric covering

Empty Weight: 850 lbs.

Gross Weight: 1,150 lbs. (est.)

Wing Loading: approx. 3.19 lbs./sq. ft.(est.)

Engine: One Wright 6-60 water-cooled six--cylinder 75 hp vertical inline of 406 cubic in. displacement running from 1,400 to 1,560 rpm, -driving a single two-bladed tractor propellers; engine weight approx. 4.0 lbs./h.p.; bore and stroke, 4 3/8 in. x 4 1/2 in.

Maximum speed: 80 mph (est.)

The Wright Model L incorporated some of the design philosophy of the Model K, and thus can be considered the "last" of the Wright airplanes incorporating inputs from one or both of the Wright brothers. It first flew in 1916, and was intended as a light single-seat scouting airplane. Its design represented an essential rejection of any previous Wright concept: it was a tractor biplane of (very) conventional layout, with a direct-drive engine, ailerons on all four wings (each pair connected by an actuating rod), an enclosed fuselage, a wheeled undercarriage, a separate horizontal fin and elevator, a Fokker-like "comma" tail (though with a separate fin and rudder), and was inherently stable. Even so, its simple, straight lines (except for the curved nose panels) and overlarge tail surfaces (part of the legacy to the Model K) gave it an almost "amateur" or model airplane-like appearance. It obviously lagged behind the contemporary design standard of combat aircraft on the Western Front, and, not surprisingly, failed to secure production orders. Later aircraft using the Wright name represented the concepts and designs of others.