

IDENTIFYING WACO AIRPLANES

Waco airplanes can be divided into three basic groups: "Cabin Biplanes," "Open Biplanes," and "Others." It's easy to identify the first group's members. Just learn what a Staggerwing Beech looks like, and if the cabin biplane you're looking at doesn't look like that, chances are darned good it's a Waco. Members of the last group likewise present few problems: Waco built one low-wing plane and one high-wing plane, and a bunch of gliders, examples of which you will find on succeeding pages. As for the second group of Wacos . . . read on.

Actually, the Waco identification problem isn't so much trying to determine whether or not an aircraft is a Waco as trying to tell which Waco is which. This guide is only a guide, based on the informed words of several Waco experts; in it, we try to present photos and specs on as many Wacos as possible. If any of you readers can add anything to this guide, let us know, and we will pass the info along in future issues.

Basically, Waco airplanes were identified by model number through

the Model 10, and thereafter by three-letter designations. The first letter indicated the engine installed, the second stood for the wing design, and the third was an airframe symbol.

Prior to 1930, Waco used the following (first) letters to designate engine installations: A (Wright J-5, 220 hp), B (Wright R-760, 175 hp), C (Wright R-760, 250 hp), D (Hispano A, 150 hp or E, 180 hp), E (Martin 333, 120 hp), G (Curtiss OX-5, 90 hp), and H (Packard R-980, 225 hp).

After 1930, the following designations were used:

A — Jacobs L-6, 300 hp
B — Wright R-540, 165 hp
C — Wright R-760, 250 hp
D — Wright R-760E1, 285 hp
E — Wright R-760E2, 320 hp
H — Lycoming R-680E3, 300 hp
I — Kinner B-5, 125 hp
J — Wright R-975, 330-365 hp
K — Kinner K-5, 100 hp
M — Menasco C-4, 125 hp
O — Kinner C-5, 210 hp
P — Jacobs LA-1, 170 hp
Q — Continental A-70, 165 hp
R — Warner Scarab, 125 hp

S — Pratt & Whitney Wasp Jr., 420-450 hp

T — Kinner R-5, 160 hp
U — Continental R-670, 210-225 hp
V — Continental R-670, 225-250 hp
W — Wright R-975E2, 440 hp
Y — Jacobs L-4, 225 hp
Z — Jacobs L-5, 285 hp

Hence, a UPF-7 came with a 210-225 hp Continental R-670 engine, an AVN-8 came with a 300-hp Jacobs L-6, and an ATO (pre-1930) came with a 220-hp Wright J-5.

Unfortunately, the second and third letters of the Waco designations aren't so simple to explain. The early ones were: ASO, A for Wright J-5, S for "Straightwing," O for Model 10-type biplane; CTO, C for Wright R-760, T for "Taperwing," O for Model 10-type biplane. The trouble comes with later models, which had more complex designs and more subtle differences. Rather than try to explain these and confuse the issue, we simply give you the following pictorial listing of Waco airplanes.

An attempt to chip away at the complex problem of learning to tell one Waco from another.

Waco Cabin Biplanes

Waco built its popular cabin biplanes from 1931 to 1942, producing 43 models between the first "DC" and the last "KS-7F." Many of these differed only in engine installation, this being noted in the first letter of the model designation. The last two letters of the designation denoted airframe changes.

The earliest Waco cabin biplanes

had the "humpback" fuselage; this gave way to a more streamlined fuselage in 1937. The tricycle-gear VN model was introduced in 1938, and the very streamlined, high-performance RE series came along in 1940. Early Waco cabin biplanes had ailerons on both upper and lower wings, but from 1935 (model OC) on, ailerons were used on top wings only. In 1935, Waco

began to divide its cabin planes into "standard" and the more deluxe "custom" series.

In chronological order, these were the cabin biplanes models built by Waco: DC (1931), EC (1932), IC (1933), KC (1934-5), JC (1934-6), OC (1935), UC (1935), KS (1936-42), QC (1936), GC (1937-9), VN (1938-9), RE (1940-1).

WACO DC

Type: 4-place cabin biplane
Wingspan: 33'2"
Wing Area: 245 square feet
Length: 23'2"
Height: 8'5"
Empty Weight: 1541 pounds
Gross Weight: 2581 pounds
Top Speed: 116 mph
Cruise: 105 mph
Landing Speed: 50 mph
Service Ceiling: 15,000 feet
Rate of Climb: 700 fpm



Waco QDC (Underwood)

WACO IC

Type: 4-place cabin biplane
Wingspan: 33 feet
Wing Area: 245 square feet
Length: 25'2"
Height: 8'6"
Empty Weight: 1680 pounds
Gross Weight: 2800 pounds
Top Speed: 145 mph
Cruise: 128 mph
Landing Speed: 50 mph
Service Ceiling: 15,000 feet
Rate of Climb: 1000 fpm



Waco UIC

WACO JC

Type: 4-5 place cabin biplane
Wingspan: 34'10"
Wing Area: 264 square feet
Length: 25'8"
Height: 10'8"
Empty Weight: 1976 pounds
Gross Weight: 3200 pounds
Top Speed: 152 mph
Cruise: 134 mph
Landing Speed: 52 mph
Service Ceiling: 16,000 feet
Rate of Climb: 850 fpm



Waco CJC Floatplane (Lemux)

WACO KS

Type: 4-5-place cabin biplane
Wingspan: 33'3"
Wing Area: 244 square feet
Length: 25'3"
Height: 8'6"
Empty Weight: 1945-1981 pounds
Gross Weight: 3250 pounds
Fuel Capacity: 70 gallons
Top Speed: 142-152 mph
Cruise: 135-144 mph
Service Ceiling: 12,500-14,000 feet
Rate of Climb: 750-850 fpm



Waco VKS-7

WACO VN

Type: 4-place cabin biplane
Wingspan: 34'9"
Wing Area: 246 square feet
Length: 27'7"
Height: 8'6"
Empty Weight: 2493 pounds
Gross Weight: 3800 pounds
Top Speed: 161 mph
Cruise: 151 mph
Service Ceiling: 14,200 feet
Rate of Climb: 900 fpm
Note: This was the only tricycle-gear Waco cabin biplane



Waco AVN

WACO RE

Type: 5-place cabin biplane
Wingspan: 34'9"
Wing Area: 285.2 square feet
Length: 27'10"
Height: 8'8"
Empty Weight: 2563-2761 pounds
Gross Weight: 4000-4200 pounds
Fuel Capacity: 125 gallons
Top Speed: 185-204 mph
Cruise: 177-200 mph
Service Ceiling: 18,000-24,000 feet
Rate of Climb: 1170-1600 fpm



Waco SRE (UC-72)

WACO QC

Type: 4-5 place cabin biplane
Wingspan: 35 feet
Wing Area: 244 square feet
Length: 25'9"
Height: 8'8"
Gross Weight: 3350 pounds
Top Speed: 159 mph
Cruise: 140 mph
Rate of Climb: 760 fpm



Waco YQC

WACO GC

Type: 5-place cabin biplane
Wingspan: 35 feet
Wing Area: 246 square feet
Length: 26'7"
Height: 8'8"
Empty Weight: 2130 pounds
Gross Weight: 3650 pounds
Top Speed: 164 mph
Cruise: 158 mph
Landing Speed: 52 mph
Service Ceiling: 16,500 feet
Rate of Climb: 800 fpm



Waco AGC-7 (AeroGraphics)

WACO KC

Type: 4-5-place cabin biplane
Wingspan: 33'3"
Wing Area: 240 square feet
Length: 25'3"
Height: 8'6"
Empty Weight: 1720-1773 pounds
Gross Weight: 3000 pounds
Fuel Capacity: 50 gallons
Top Speed: 138-143 mph
Cruise: 125 mph
Service Ceiling: 13,000-15,000 feet
Rate of Climb: 750-800 fpm

WACO EC

Type: 4-place cabin biplane
Wingspan: 33 feet
Wing Area: 245 square feet
Length: 24'8"
Height: 8'6"
Empty Weight: 1667 pounds
Gross Weight: 2700 pounds
Top Speed: 133 mph
Cruise: 117 mph
Landing Speed: 49 mph
Service Ceiling: 15,000 feet
Rate of Climb: 1000 fpm

WACO OC

Type: 5-place cabin biplane
Wingspan: 35 feet
Wing Area: 238.8 square feet
Length: 25'4"
Height: 8'1"
Empty Weight: 1880 pounds
Gross Weight: 3100 pounds
Fuel Capacity: 50 gallons
Top Speed: 151-155 mph
Cruise: 133-137 mph
Service Ceiling: 15,300-16,300 feet
Rate of Climb: 920-1000 fpm

WACO UC

Type: 5-place cabin biplane
Wingspan: 35 feet
Wing Area: 239 square feet
Length: 25'2"
Height: 8'3"
Empty Weight: 2017 pounds
Gross Weight: 3350 pounds
Top Speed: 168 mph
Cruise: 155 mph
Landing Speed: 55 mph
Service Ceiling: 16,500 feet
Rate of Climb: 900 fpm

Waco's Open Biplanes

The old Weaver (or Western) Airplane Company was formed in 1919 by C. J. Brukner, Buck Weaver, and Sam Junkin. It turned out a few miscellaneous monoplanes and biplanes,

but had no real production model until April, 1925, when the Model 9 was introduced. The 9 was followed by the 10, the XE (an improved 10), the SO (a 10 with various engine options)

and the TO (Model 10-T Taperwing) by 1929. Several other open biplane models followed (YM, NF, CF, BF, CA, BA, LA, HD, MF, PF), ending with the last UPF-7, produced in 1942.

WACO 9

Type: 3-place open-cockpit biplane
Wingspan: 31'7"
Wing Area: 290 square feet
Length: 23'3"
Height: 9'3"
Empty Weight: 1320 pounds
Gross Weight: 2100 pounds
Fuel Capacity: 37 gallons
Top Speed: 92 mph
Cruise: 79 mph
Landing Speed: 35 mph
Service Ceiling: 12,000 feet
Rate of Climb: 500 fpm



Waco 9 (Bachmann)

WACO NF

Type: 3-place open-cockpit biplane
Wingspan: 29'6"
Wing Area: 241.5 square feet
Length: 20'8" — 22 feet
Height: 8'4"
Empty Weight: 1125-1195 pounds
Gross Weight: 1872-1911 pounds
Fuel Capacity: 32 gallons
Top Speed: 110-118 mph
Cruise: 93-100 mph
Landing Speed: 35 mph
Service Ceiling: 14,500-16,000 feet
Rate of Climb: 720-800 fpm



Waco RNF

WACO 10

Type: 3-place open-cockpit biplane
Wingspan: 30'7"
Wing Area: 286 square feet
Length: 23'3"
Height: 9'2"
Empty Weight: 1199 pounds
Gross Weight: 2025 pounds
Fuel Capacity: 50 gallons
Top Speed: 96 mph
Cruise: 85 mph
Landing Speed: 40 mph
Service Ceiling: 13,500 feet
Rate of Climb: 700 fpm



Waco 10 (Spencer)

WACO CF

Type: 3-place open-cockpit biplane
Wingspan: 29'7"
Wing Area: 241 square feet
Length: 20'4"
Height: 8'9"
Empty Weight: 1317 pounds
Gross Weight: 2181 pounds
Top Speed: 126 mph
Cruise: 108 mph
Landing Speed: 45 mph
Service Ceiling: 16,000 feet
Rate of Climb: 1050 fpm



Waco QCF (Bachmann)

Note: Models XE, 125, and SO were similar, differing mainly in engines installed.

WACO TO

Type: 3-place open-cockpit biplane
Wingspan: 30'3"
Wing Area: 227 square feet
Length: 22'6"
Height: 9 feet
Empty Weight: 1677-1787 pounds
Gross Weight: 2600 pounds
Fuel Capacity: 76-100 gallons
Top Speed: 137 mph
Cruise: 110-115 mph
Landing Speed: 52 mph
Service Ceiling: 19,000 feet
Rate of Climb: 1200 fpm



Waco ATO (Von Aspe)

Note: This was the famous Waco Taperwing (originally model 10-T)

WACO BF

Type: 3-place open-cockpit biplane
Wingspan: 29'7"
Wing Area: 241 square feet
Length: 20'9"
Height: 8'5"
Empty Weight: 1380 pounds
Gross Weight: 2300 pounds
Top Speed: 132 mph
Cruise: 116 mph
Landing Speed: 42 mph
Service Ceiling: 16,500 feet
Rate of Climb: 1500 fpm



Waco UBF (Underwood)

WACO BA

Type: 2-place open-cockpit biplane
Wingspan: 29'6"
Wing Area: 241 square feet
Length: 21'11"
Height: 8'8"
Empty Weight: 1302 pounds
Gross Weight: 1985 pounds
Top Speed: 114 mph
Cruise: 98 mph
Landing Speed: 40 mph
Service Ceiling: 15,000 feet
Rate of Climb: 875 fpm



Waco IBA

WACO PF

Type: 2-3 place open-cockpit biplane
Wingspan: 30 feet
Wing Area: 244 square feet
Length: 23'1"
Height: 8'5"
Empty Weight: 1870 pounds
Gross Weight: 2650 pounds
Fuel Capacity: 50 gallons
Top Speed: 136-141 mph
Cruise: 117-123 mph
Landing Speed: 48 mph
Service Ceiling: 15,800-16,500 feet
Rate of Climb: 1000 fpm



Waco UPF-7 (AeroGraphics)

WACO HD

Type: 2-place military/sport biplane
Wingspan: 32'9"
Wing Area: 256.3 square feet
Length: 25'6 1/2"
Height: 8'11 1/2"
Empty Weight: 2452-2512 pounds
Gross Weight: 3800 pounds
Fuel Capacity: 89 gallons
Top Speed: 170-180 mph
Cruise: 155-162 mph
Service Ceiling: 15,500-18,000 feet
Rate of Climb: 1100-1350 fpm



Waco S3HD (Bachmann)

WACO MF

Type: 3-place open-cockpit biplane
Wingspan: 30 feet
Wing Area: 233.5 square feet
Length: 23'4"
Height: 8'5"
Empty Weight: 1485-1540 pounds
Gross Weight: 2500 pounds
Fuel Capacity: 50 gallons
Top Speed: 143-147 mph
Cruise: 128 mph
Landing Speed: 47 mph
Service Ceiling: 14,500-16,000 feet
Rate of Climb: 1100-1250 fpm



Waco YMF

WACO CA

Type: 2-place open-cockpit biplane
Wingspan: 29'7"
Wing Area: 241 square feet
Length: 20'4"
Height: 8'9"
Empty Weight: 1300 pounds

Gross Weight: 1985 pounds
Top Speed: 100 mph
Cruise: 85 mph
Landing Speed: 42 mph
Service Ceiling: 10,500 feet
Rate of Climb: 700 fpm

WACO LA

Type: 2-place open-cockpit biplane
Wingspan: 29'6"
Wing Area: 241 square feet
Length: 23'6"
Height: 8'9"
Empty Weight: 1411 pounds

Gross Weight: 2300 pounds
Top Speed: 122 mph
Cruise: 105 mph
Landing Speed: 42 mph
Service Ceiling: 14,500 feet
Rate of Climb: 850 fpm

WACO RG

Type: 1-3-place open-cockpit biplane
Empty Weight: 1359 pounds
Gross Weight: 2600 pounds
Fuel Capacity: 80 gallons
Top Speed: 154 mph
Cruise: 130 mph
Landing Speed: 45 mph
Service Ceiling: 17,000 feet
Rate of Climb: 1200 fpm

Other Wacos

In 1940, Waco built a prototype two-place, open-cockpit aerobatic trainer, featuring a laminar-flow low wing. This airplane, designed for military use, was designated "RPT," and used a 125-hp Warner radial. WW II interrupted the RPT's testing program, with Waco keeping busy building gliders, and the little trainer never got beyond the prototype stage.

Victor Kirby, of Hannibal, Missouri, bought the RPT in 1962 and had it re-

stored. A 165-hp Kinner engine was installed and the plane flew about 30 hours in the experimental category before it was issued ATC #A8CE in 1965.

During WW II, Waco built some 1500 cargo/troop gliders for the U.S. Army, under the designations XCG-3, XCG-4, CG-4A-WO, XCG-13-WO, XCG-15, XCG-15A, and CG-15A. Most of these gliders were 15-seaters.

The last airplane built by the old

Waco company was the Model W "Aristocraft," a high-wing four-seater with a pusher prop. The W was flown for the first time on 31 December 1946, and it logged about 40 hours before being retired in June, 1947. A second Model W was begun but never completed. Terry O'Neill, of Ft. Wayne, Indiana, discovered the number one Model W in a hangar at the old Waco factory in Troy, Ohio, in late 1962, purchased it, and restored it.

WACO RPT

Type: 2-place, open-cockpit, low wing mono plane
 Wingspan: 31'3"
 Wing Area: 153 square feet
 Length: 25 feet
 Empty Weight: 1,499 pounds
 Gross Weight: 2139 pounds
 Fuel Capacity: 31 gallons
 Top Speed: 150 mph
 Cruise: 130 mph
 Landing Speed: 45 mph
 Rate of Climb: 1250 fpm
 Range: 275 miles

Waco RPT (Kirby Flying Service/Underwood)



WACO W

Type: 4-place cabin monoplane
 Wingspan: 38 feet
 Length: 25'6"
 Height: 7'8"
 Empty Weight: 2237 pounds
 Gross Weight: 3200 pounds
 Fuel Capacity: 60 gallons
 Top Speed: 154 mph
 Cruise: 135 mph
 Rate of Climb: 960 fpm
 Range: 520 miles

Waco W (Waco Archives)



Waco CG-4A Glider (AAF Museum)



The New Waco Company

The old Waco company furnished airmen with good, sturdy, wonderful biplanes. The new Waco Aircraft Company, a subsidiary of Allied Aero Industries in Pottstown, Pennsylvania, is doing its thing for U.S. airmen in a different way: It's giving us a chance to fly several fascinating foreign airplanes.

Most of the new Waco line comes from the SIAI-Marchetti factory at Varese, Italy. The SIAI-Marchetti S.205 is the basis for three new Wacos, the four-place S-220-4 Sirius, the five-seat S-220-5 Vela, and the turbocharged TS-220-5 Vega, while S-M's SF.260 is Waco's sporty Meteor.

The new Waco line also features a

French STOL plane called the Minerva, which comes from Sud-Aviation in Paris.

All the new Waco models use 220-hp Franklin engines (the Franklin Engine Company is another subsidiary of Allied Aero) except the Meteor, which has a 260-hp Lycoming.

WACO MINERVA

Type: 4-place, low-wing STOL monoplane
 Wingspan: 31.5 feet
 Wing Area: 132 square feet
 Length: 23.5 feet
 Height: 9.2 feet
 Empty Weight: 1360 pounds
 Gross Weight: 2430 pounds

Fuel Capacity: 45 gallons
 Top Speed: 162 mph
 Cruise: 148 mph
 Landing Speed: 58 mph
 Service Ceiling: 14,800 feet
 Rate of Climb: 1020 fpm
 Range: 650 miles

WACO S-220

Type: 4-5-place, low-wing cabin monoplane
 Wingspan: 35.6 feet
 Wing Area: 173 square feet
 Length: 26.3 feet
 Height: 9.8 feet
 Empty Weight: 1650-1673 pounds
 Gross Weight: 2753-2973 pounds

Fuel Capacity: 55 gallons
 Top Speed: 178-215 mph
 Cruise: 170-195 mph
 Landing Speed: 55-60 mph
 Service Ceiling: 20,330 - 28,000 feet
 Rate of Climb: 1150-1600 fpm
 Range: 575-775 miles

WACO METEOR For Waco Meteor data, see report on page 8.

The new Wacos pose with an old one: At 9 o'clock, the Minerva; at 12, the Meteor; at 3, the S-220 Sirius; at 6, a 10. (Stensvold)

