

ATC # 528  
(3-16-34)  
WACO, MODEL UKC.



*Fig. 89. Waco UKC warming its 210 h.p. Continental engine on factory airport.*

The Waco cabin biplanes for 1934 did not represent any marked structural changes over the concept first introduced by the Model UIC, however, they did offer numerous little aerodynamic refinements and several interior improvements. More attention to detail, both inside and out, added up to a slight increase in performance and a little more to appearance and comfort. Like previous models of the Waco cabin biplane the models for 1934 were basically working airplanes, but now and then a few were spruced up with gay paint and finery to do no more than fly to here and yon on the owner's whim. To create more interest in the new cabin line, and to offer customers the privilege of being choosy, the cabin models of 1934 were offered with 3 different powerplants. The first in the line-up was the model UKC: as powered with the 7 cyl. Continental R-670 engine of 210 h.p. the UKC benefited by the good showing Waco had made the year before, and thus became an early success. Offered also as a seaplane on Edo twin-float gear the UKC also migrated to bush-flying duties in Alaska and Canada. 1934 was a good year for the UKC, but next year in 1935, Waco Aircraft offered still a little more utility to the ship in general and some structural features of dubious importance to owners and operators were eliminated. For 1935 the model UKC

became the UKC-S. Because the "Custom Cabin" models were introduced also in 1935, Waco had to differentiate between the two lines, so the UKC -S (UKC-Standard) became one of the "Standard" cabin biplanes in Waco's line for 1935; its powerplant was an improved version (R-670-A) of the 210 h.p. Continental engine. For the 1936 season the "Standard" cabin biplane, as powered with the 210 h.p. Continental engine, was generally the same without much change and labeled the UKS-6. Delivered price savings and operating economy were stressed as cardinal features of the UKC-S and UKS-6, so they differed greatly from the plush "Custom Cabin" series and were rather plain-looking by comparison. The various seasonal changes wrought into the Continental-powered "Standard" models for 1934-35-36 are shown here in the various illustrations.

The Waco model UKC was a cabin-type biplane with seating arranged for four. Extra dimension inside, over the UIC of the year previous, allowed ample width for 4 big people and more stretch-room for those in the rear. Redesigned appointments offered extra comfort and a more pleasant styling. Ample window area offered good visibility in just about any direction and interior comfort was regulated by ventilation and cabin heat. Pleasant flying was assured

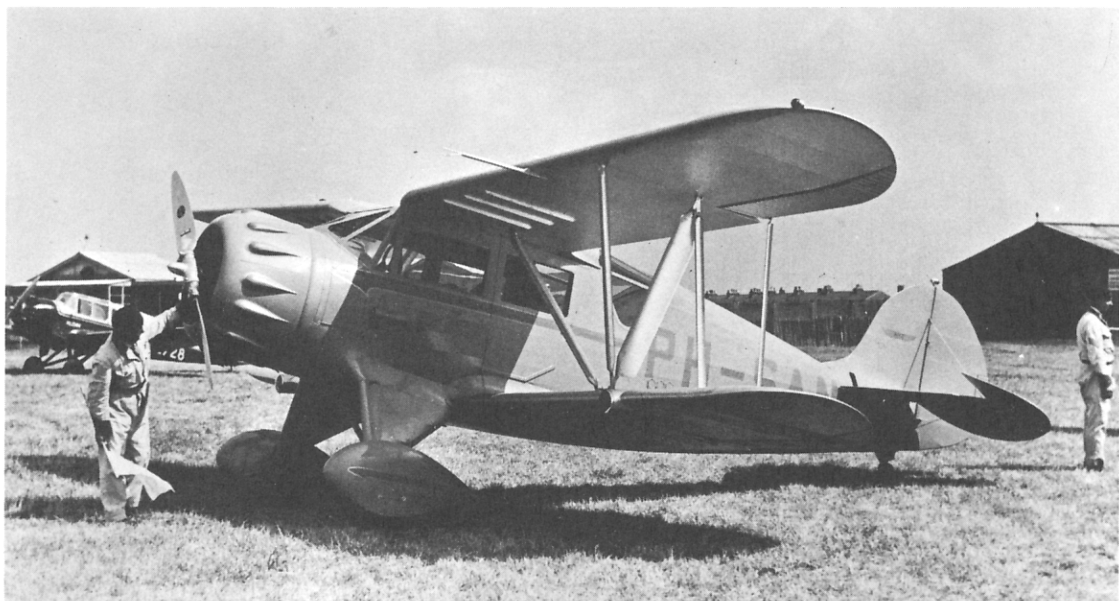


*Fig. 90. Model UKC on Edo floats that operated in Alaska.*

by heavy insulation of the cabin walls for sound-proofing and inherent stability made the piloting chore a little easier on those long flights. Several practical improvements had been incorporated into the UKC for 1934 and as a workaday airplane its acceptance was certainly justified. To further increase its utility for work or for play the UKC was easily converted into an ambulance-plane, an air-taxi, or mounted on Edo floats to operate off water. Most examples were used for business or sport, but the utility and operating efficiency of the UKC-series was easily adapted to many types of commercial work. As powered with the 7 cyl. Continental R-670-A engine rated 210 h.p. the UKC handled its extra weight allowance very nicely, still giving top-notch performance under most adverse conditions. For 1935 this model was offered as the UKC-S and definitely shows a cost-cutting trend to make possible a considerable drop in delivered price. The most significant change was elimination of the rear upper cabin windows and also the wheel streamlines. As a consequence, the UKC-S was \$760.00 cheaper and the 35 lbs. saved in the empty weight was added to the payload; the 5 m.p.h. lost to top and cruising speeds was not worth a quibble in view of the substantial saving in delivered price. This Continental-powered version for 1936 was offered as the UKS-6. Because no factory data was recorded for this model and because none were registered in CAA listings it is quite likely that the UKS-6 was actually offered in the "Standard" line for 1936, but apparently none were built. In 1935 the Continental R-670-B

engine, with a higher compression ratio and using 80 octane fuel, was rated 225 h.p. at 2000 r.p.m.; this was to be an option in the "Standard" line and was labeled the model VKC-S. The following year this 225 h.p. option became the model VKS-6. It could not be determined if any of the VKC-S or VKS-6 were built and sold in the U.S.A., but probably not. The type certificate number for this series was issued 3-16-34 for the UKC with various amendments to include the UKC-S, VKC-S, UKS-6, and VKS-6. These Continental-powered "Waco C" models were built in at least 40 examples and the UKC of 1934 was by far the most popular; manufactured by the Waco Aircraft Co. at Troy, Ohio.

Listed below are specifications and performance data for the model UKC of 1934 as powered with the 210 h.p. Continental R-670-A engine: length overall 25'3"; height overall 8'6"; wing span upper 33'3"; wing span lower 28'3"; wing chord upper & lower 57"; wing area upper 130 sq.ft.; wing area lower 110 sq.ft.; total wing area 240 sq.ft.; airfoil Clark Y; wt. empty 1745 (1755) lbs.; useful load 1105 (1245) lbs.; payload with 50 gal. fuel 605 (745) lbs.; gross wt. 2850 (3000) lbs.; figures in parentheses amended wt. allowance for ser. # 3856 and up; max. speed (with wheel pants) 143; cruising speed at 1900 r.p.m. 128; landing (stall) speed 50 (53); climb 800 (750) ft. first min. at sea level; ser. ceiling 14,000 (13,000) ft.; figures in parentheses for 3000 lb. gross wt.; gas cap. 50 gal.; oil cap. 4 gal.; cruising range at 13 gal. per hour 500 miles; price \$6285.00 at factory field. 70 gal. fuel cap.



*Fig. 91. A UKC with Dutch registration.*

was optional.

All specifications and data for the UKC of 1934 as seaplane on Edo 38-3430 floats were identical to landplane except for the following: length overall 28'10"; height overall 10'7"; wt. empty 2131 lbs.; useful load 1119 lbs.; payload with 50 gal. fuel 619 lbs.; gross wt. 3250 lbs.; max. speed 126 at 2100 r.p.m.; cruising speed 105 at 1900 r.p.m.; landing (stall) speed 56; climb 600 ft. first min. at sea level; service ceiling 11,250 ft.; cruising range at 13 gal. per hour 400 miles; price not announced. Models UKC-S and UKS-6 eligible with Edo 38-3430 floats also; performance would be similar to UKC as listed here.

All specifications and data for UKC-S of 1935 as landplane were identical except for the following: wt. empty 1720 lbs.; useful load 1280 lbs.; payload with 50 gal. fuel 780 lbs.; gross wt. 3000 lbs.; max. speed (no wheel pants) 138; cruising speed 123; landing (stall) speed 53; climb 750 ft. first min. at sea level; ser. ceiling 13,000 ft.; gas cap. normal 50 gal.; gas cap. optional 70 gal.; oil cap. 4-5 gal.; price \$5225.00 at factory field. It can be assumed that all specifications and performance data for the model UKS-6 of 1936 would be more or less typical to that of the UKC-S of 1935. The models VKC-S and VKS-6 with the R-670-B engine, had they been built, would have shown a slight improvement in all-



*Fig. 92. Model UKC against backdrop of Canadian countryside.*



Fig. 93. An experiment with Edo amphibious floats.

round performance.

The fuselage framework was built up of welded 4130 steel tubing faired to shape and fabric covered. The model UKC of 1934 had the upper cabin windows, as introduced in the UIC, for visibility up and to the rear; for 1935-36 this feature was discarded in the interests of simplicity in construction and repair. The wing framework, in 4 panels, was built up of solid spruce spar beams with spruce and plywood truss-type wing ribs; the leading edges were covered with dural metal sheet and the completed framework was covered in fabric. The ailerons, one on each wing panel, were metal-framed and metal covered. The interplane "drag strut", first introduced on the UIC of 1933, was an optional feature, but not particularly popular. The landing gear of 87 in. tread were faired tripods using "Waco" patented shock absorbing struts; Autofan 6.50x10 wheels with brakes were fitted with 7.50x10 low-pressure tires. The UKC was normally fitted with streamlined metal wheel pants, but this feature was an optional extra on 1935-36 models. The fabric covered tail-group was built up of welded chrome-moly steel tubing; the elevators were aerodynamically "balanced" and the horizontal stabilizer was adjustable in flight. The Continental engine was cowled in tightly with an NACA-type fairing and all upper and lower wing-roots were faired in with metal fillets. A wooden propeller, electric engine starter, battery, tail wheel, navigation lights, throw-over control wheel and dual rudder pedals, a compass, air-speed indicator, fire extinguisher, tie-down ropes, first-aid kit, tool kit, and log books were standard equipment. A metal propeller, night-flying equipment, a Westport radio, and custom colors were optional.

Most of the UKC type seen about the country were a riot of color. One example had fuselage, fin, and interplane struts in Waco Vermillion; wings, rudder, and horizontal tail in Diana Cream. The rudder was scalloped in Vermillion and upper wings were Vermillion on top side; all Vermillion was outlined in Gold. Center stripe on fuselage was Black and outside stripes in Gold; cowl bumps were trimmed with Black and Gold poly-wogs. A more sedate example had fuselage, engine cowl, fin and rudder in Black with wings and horizontal tail in Silver; fish-hook stripe on fuselage was Vermillion edged in Silver. The UKC-S was generally seen in solid colors; entire airplane in French Grey with fish-hook fuselage stripe in Dark Blue edged in Gold was a popular combination. Custom colors were very popular and varied greatly; combinations of Green and Cream, Blue and Cream, Black and Yellow, or Grey and Red were embellished with varied striping. Fine-line and fish-hook striping were common in 1934-35 models, while funnel-striping or "Lockheed" striping was common in 1936, but the customer's preference prevailed. The next development in the Waco cabin biplane was the model YKC as described in chapter for ATC # 533 of this volume. The next development in the UKS series were the UKS-7 and VKS-7 as approved on ATC # 648.

Listed below are UKC and UKC-S entries as verified by factory records:

NC-13895:	UKC	(# 3838)	Continental 210.
-13898:	"	(# 3841)	"
-13897:	"	(# 3842)	"
-13896:	"	(# 3843)	"
-13899:	"	(# 3844)	"
-13891:	"	(# 3845)	"
-13892:	"	(# 3846)	"

CF-AUR: " (# 3847) "  
 -14003: " (# 3848) "  
 -14004: " (# 3849) "  
 -14011: " (# 3850) "  
 -14010: " (# 3851) "  
 -14016: " (# 3852) "  
 -14017: " (# 3853) "  
 -14012: " (# 3854) "  
 -14007: " (# 3855) "  
 NS-16: " (# 3856) "  
 NS-17: " (# 3857) "  
 NS-18: " (# 3858) "  
 NS-19: " (# 3859) "  
 NS-20: " (# 3860) "  
 -14015: " (# 3861) "  
 -14022: " (# 3862) "  
 CF-AVL: " (# 3863) "  
 -14020: " (# 3864) "  
 PH-SAN: " (# 3865) "  
 NC-5003: " (# 3866) "  
 -14040: " (# 3867) "  
 -14043: " (# 3868) "  
 CF-AVN: " (# 3869) "  
 LN-ABW: " (# 3870) "  
 CF-AVR: " (# 3871) "  
 CF-AVS: " (# 3872) "  
 : " (# 3926) "  
 -14052: " (# 3927) "  
 -14088: " (# 3928) "  
 -14060: " (# 3929) "  
 -14061: " (# 3930) "  
 CF-AVV: " (# 3931) "

CF-AWC: " (# 3932) "  
 CF-AWD: " (# 3933) "  
 -14047: " (# 3966) "  
 -14606: UKC-S (# 3977) "  
 -14611: " (# 3978) "  
 -14617: " (# 3979) "  
 NC-3003: " (# 3980) "  
 -15214: " (# 3981) "  
 -14086: UKC (# 4220) "  
 NC-14609: UKC-S (# 4235) "

This approval for ser. # 3838 and up; ser. # 3838 thru # 3855 held to 2850 lb. gross wt.; ser. # 3856 and up allowed 3000 lb. gross wt.; ser. # 3842 del. to Pure Oil Co.; ser. # 3843 on floats in Alaska; ser. # 3844-45-46 del. to Philippine Aerial Taxi Co.; ser. # 3847 del. to Canada; ser. # 3853 del. to Elgin National Watch Co.; ser. # 3856-57-58-59-60 del. to (CAA) Dept. of Commerce; ser. # 3859-60 later registered as NC-1319 and NC-1320; ser. # 3863 del. to Canada; ser. # 3865 del. to Holland; ser. # 3866 del. to Henry B. Dupont; ser. # 3867 del. to Packard Motor Car Co.; ser. # 3869 del. to Canada; ser. # 3870 del. to Norway; ser. # 3871-72 del. to Canada; ser. # 3926 del. to Johannesburg, So. Africa; ser. # 3931-32-33 del. to Canada; ser. # 3966 del. to Shell Oil Co. of Calif.; ser. # 3980 del. to Alice F. Dupont; ser. # 3981 later modified to YKC-S; this approval expired 9-30-39.