



1/4 scale 1936 WACO YKS-6 "Custom Cabin" ARF

Wingspan:	100 in. (2540mm)
Length:	74 in. (1880mm)
Wing Area:	2496 in ² . (161dm ²)
Flying Weight:	352 oz. (9.98kg)



Introduction & History



WACO is pronounced “wah-co” It rhymes with taco. The WACO Aircraft Co has no relation to Waco, Texas, which by the way, is pronounced “way-ko.”

“The WACO Aircraft Company of Troy, Ohio was the leading aircraft manufacturer of civilian aircraft in the U. S. from 1928 - 1935. Beginning in 1921 as the **W**eaver **A**ircraft **C**ompany in Lorain, Ohio, they moved to Troy in 1924 and became the Advance Aircraft Company but kept the WACO logo. In 1929, the name was changed to simply the WACO Aircraft Company.

WACO produced over 80 models during the years 1919 - 1946, including the large troop carrying gliders used in all the major invasions during WWII. The best selling WACO was the Model 10, with over 1100 being produced from 1927 - 1930. During the years 1939 - 1942, WACO also built just over 600 Model UPF-7's for the CAA and the Civilian Pilot Training program. WACOs were also popular around the world and sold airplanes to 37 different countries with Brazil being the largest buyer.” (WACO Air Museum online, Oct. 2008)



Pilot-1 is pleased to announce the 1/4 scale WACO YKS-6 as part of the Golden Age Civilian Series. *The Pilot-1* WACO YKS-6 encompasses the same attributes in quality construction and handling that made the original WACO a favorite for over 75 years. Our engineers have spent countless hours developing a true-to-scale ARF that looks and flies like the full-scale airplane. We know you will be pleased with its scale looks and balanced maneuverability.





Before starting, use the Contents list to take an inventory and make sure it is complete.
If any parts are missing or are not of acceptable quality, contact Hobby-Lobby.com
Support at 1-866-WE-FLY-RC (1-866-933-5972)

Contents List

- .. Fuselage
- .. Engine Cowl and Plywood Attachment Ring
- .. Landing Gear and Plywood Inserts
- .. Wheels, Velcro, Misc Hardware
- .. Wings and Corrugated Ailerons
- .. Tube Wing Joiners
- .. Airfoil Aluminum Wing Struts
- .. Horizontal Tail and Elevator
- .. Vertical Tail and Rudder
- .. Long Carbon Fiber Pushrods for Tail
- .. Pull-pull cable for rudder and tailwheel

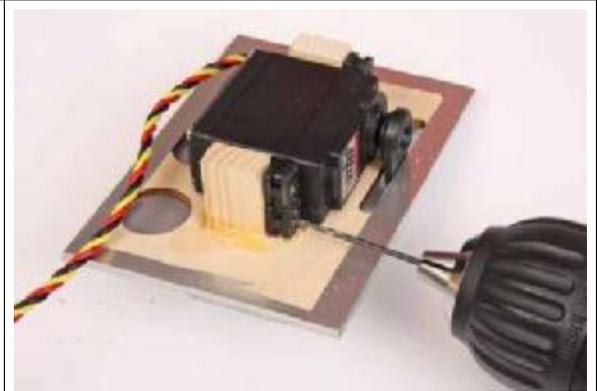
Additional Items Required (electric version)

- .. 4-channel Aircraft Radio w/ Receiver (minimum)
- .. 10 to 12 Lipo cells in series (5000-6000mah)
- .. (5) Hitec HS-635 servos for electric version (add 1 more for gas)
- .. (2) 12" servo wire extensions
- .. 77 amp Jeti SPIN Brushless ESC
- .. AXI 5345/16 Brushless Motor
- .. APC 21x12W Propeller
- .. 5-minute and 30-minute Epoxy Glue
- .. Thin CA Glue
- .. Phillips screwdriver
- .. Hex Drivers
- .. Needle Nose Pliers
- .. Hobby Knife
- .. Soldering iron and electrical solder

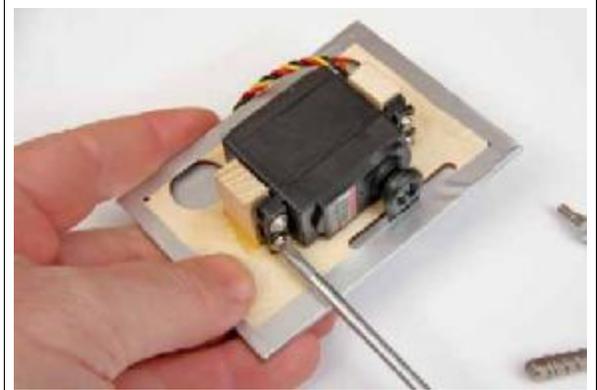
1. Locate the parts shown for the aileron installation.



2. Remove the servo mounting plate from the lower wing panels. The mounting layout is for the Hitec HS-635 standard servo. Adjust as necessary if you are using a different servo.
3. Drill the wood blocks with a 1.5mm drill (1/16").



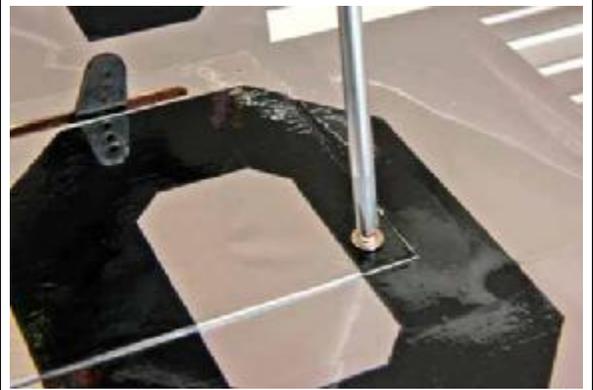
4. Mount aileron servo to blocks with servo screws. Make sure the aileron is centered using a servo centering device.



5. Add a 12" heavy-duty servo extension to the aileron servos.
6. Add a servo plug retainer or tape the connection to protect against accidental disconnection.



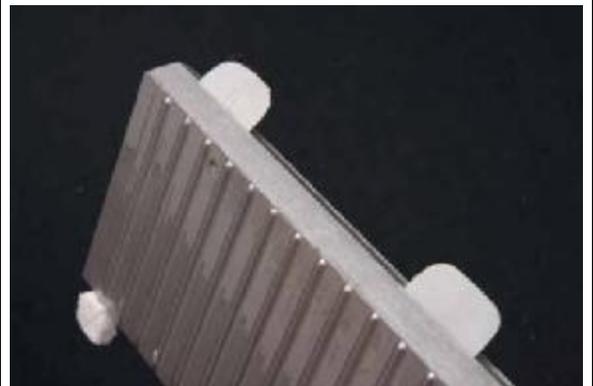
7. Slide the servo extension through the wing to the root.
8. Install servo mounting plate with small sheet metal screws.



9. Untape aileron from main wing panel.
10. Locate CA hinges, four will be used for each aileron.



11. Ailerons and their mating surface have been pre-slotted for CA hinges.
12. Insert CA hinges to their centers in each slot on aileron.
13. Fold the CA hinge sharply upward, This will keep them in place when inserting the hinges in the main wing panel.



14. Install the aileron into position on the main wing panel. Make sure to check the gap at the root of the aileron and the fit at the tip.
15. With the aileron tight against wing and deflected downward, use 3 drops per hinge of thin CA to assure strong bonds. Use paper towel to remove any excess CA before drying.



16. Deflect aileron upwards and repeat application for bottom of wing. Note very small gap between aileron and wing.
17. From the top of the wing install the aileron control horn with its washer. DO NOT tighten yet. Relieve the areas where the washer touches the corrugations. This is most easily accomplished with a Dremel.



18. After marking the location of the washer use a Dremel to trim the corrugations.



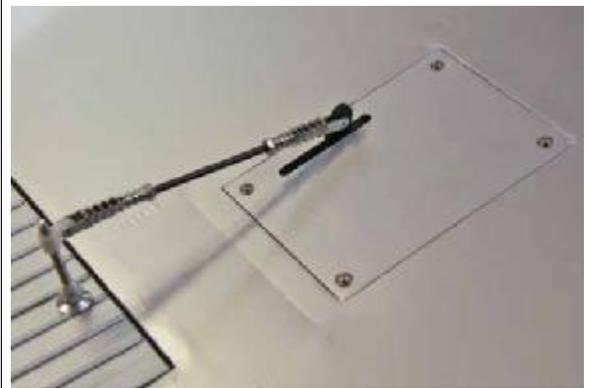
19. Work carefully to maintain a close fit to the washer. (See Photo)



20. Repeat the process for the underside of the aileron.
21. Assemble the aileron control horn and use a drop of thread locker to avoid the unit loosening due to vibration. Snug the nut tight but do not overtighten.



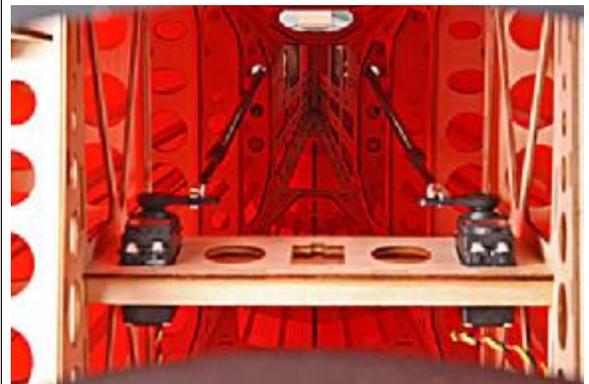
22. Screw nylon control horn linkage to the control horn. The distance from the bottom of the aileron to the center of the hole on the nylon part should be about 28mm (1-1/8").



23. Prepare 3 full size servos for installation, we recommend the Hitec HS-635.
24. Install the servo arms as shown in the photo.



25. Locate the 2 long elevator pushrods.
26. Install 2-HS-635 Hitec servos into outer mount locations with arms pointing toward center of fuselage. (See Photo) A short Phillips screwdriver is required.
27. Slide the elevator pushrods into position and install each clevis into servo arm about 25mm (1") from the center.
28. We will come back to the rudder servo installation in a few steps.



29. Locate the parts for the tailwheel assembly.



30. Mount the aluminum plate to the bottom of the fuselage with 3 screws. The bend in the aluminum plate goes down.
(See photo)



31. Locate horizontal stabilizer and elevators along with 6 CA hinges. Repeat the assembly process similar to the ailerons. Make sure to adjust the gaps in the hinge line as well as the end gaps prior to gluing.
32. Epoxy horizontal tail into position on the fuselage making sure to center accurately.



33. Prepare the vertical fin and rudder for installation. Install CA hinges in rudder and fin.
34. **NOTE:** Tail wheel must be installed at the same time as the rudder.
35. Epoxy vertical fin and rudder in place along with the tailwheel steering arm.
(See photo)



36. Locate the Pull-Pull rudder control parts. 2 lengths of cable, 4 metal clevises and 4 metal crimp tubes.



37. Thread the bare end of each cable into fuselage at rear. A tube is a pre-installed for you. Pull all but a few inches of cable to the front. Tape the rear of the cables so that they remain accessible.

38. Install clevises at the front end of the cables. Order of assembly: slide crimp on wire, thread wire through hole in clevis, return through crimp, loop end around through front of crimp again.



39. It is easiest to complete the cable setup at the servo end prior to installing the servo in the fuselage.

40. Install servo in center hole in fuselage.

41. Un-tape the cables at the rear of the fuselage and thread the pull-pull cables through the clevises. Just get the basic cable threading done but **DO NOT** crimp yet.



42. Install the pull-pull control horn through the rudder and center. Use thread locker to keep the unit tight.

43. Install the nylon horns on the threaded rod.

44. **TIP:** Connect the rudder servo to a servo centering device and center the servo. Leave connected during the cable adjusting process.



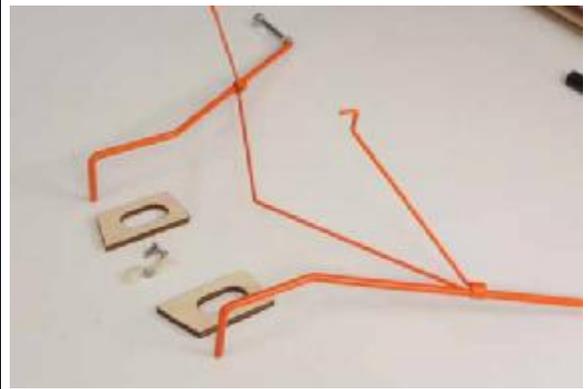
45. After you are satisfied that you have the cable lengths correct for centering your rudder, and that the servo is still in its neutral position, crimp the wire in position.



46. Photo shows the elevator and rudder controls. Tighten the lock nut to maintain the settings.
47. Clip the excess wire in front of the crimp.



48. Locate the pre-painted wire landing gear parts as well as the 2 wooden fillers and the 2 nylon landing gear straps and screws.



49. Insert the landing gear into the pockets on the fuselage making sure to avoid puncturing the covering with the rear landing gear wire.
50. Seat gear fully into position and insert the rear wire in the pre-drilled hole near the front edge of the lower wing. (See photo)



51. Spread epoxy on the sides and edges of the wooden fillers.



52. Insert glued filler in position. Have a small hammer handy to tap the block in place.



53. When fully sheeted the wooden block will still protrude a small amount.

54. Use a paper towel and rubbing alcohol to remove an epoxy that has squeezed out.

55. Repeat process for the other side.



56. Place the nylon landing gear strap in position. (See photo)

57. Drill a pilot hole for the mounting screws.



58. Screw strap into position.



59. After the epoxy has cured sand the wooden filler blocks flush with the fuselage. This is most easily accomplished by using a Dremel with a sanding drum. Work carefully to not damage the finished fuselage.



60. Once satisfied with the fillers, cut 2 patches from the supplied orange covering to hide the installation.



61. Using a covering iron with a sock on it, iron the covering into position.



62. Locate the gear leg covers and their inserts.



63. After trial fitting, epoxy the gear legs into position.



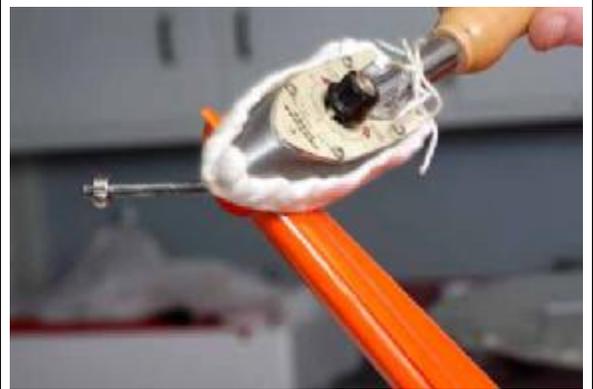
64. Insert balsa strips into the groove to finish the inside of the gear leg.



65. Once satisfied with the position of the fillers, CA them in place with thin CA.



66. Cut lengths of orange covering to finish the interior of the gear legs. Iron one edge of the covering into position.



67. Slit the covering to go around the smaller wire and complete the ironing process.



68. Locate the scale wheels.



69. Slip one wheel collar on the axel then the wheel and another wheel collar.

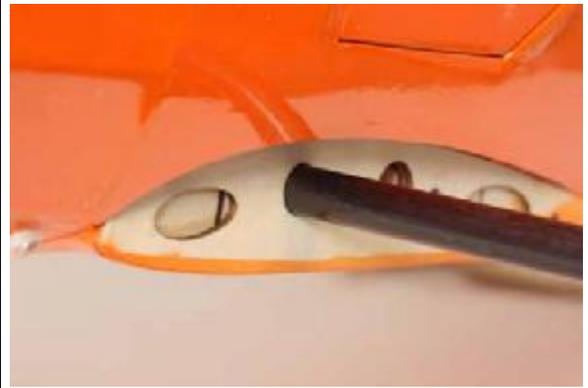


70. Tighten wheel collars.

NOTE: The nuts on the wheel disc face the inside of the model. (see photo)



71. Install the 2 wing tubes. The longer one (approx. 25") is the bottom tube. The shorter tube (approx. 21-1/2") is for the upper wing.



72. Slide the 4 wing panels into position.

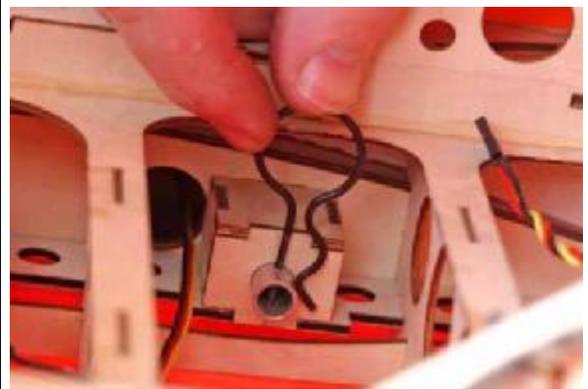


73. Locate the 4 hitch pins. The wing panels are held in place with these pins, no screws or bolts are required.



74. Press the hitch pin into position to hold the wing panel in place.

NOTE: For convenience and to avoid the chance of forgetting or losing the pins, we suggest that you use a short length of string and tether each of the pins near where they are to be used.



75. Locate the 8 pre-painted airfoiled aluminum wing struts.

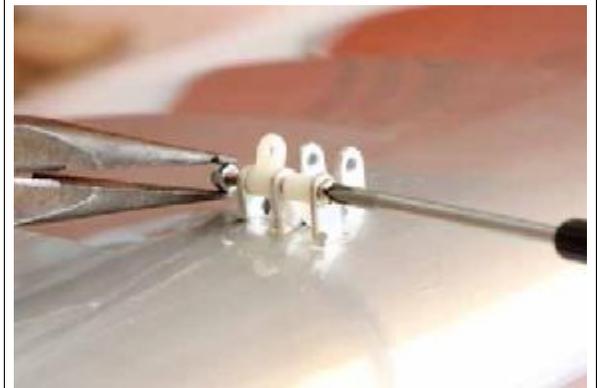


76. Locate the hardware for the struts.

- 16 Nylon fittings pre-drilled.
- 4- 3x30mm screws (shorten to 25mm)
- 8- 3x15mm screws
- 16- 3x10mm screws
- 28- 3mm nylock nuts



77. Install 2 nylon fittings with on 3x25mm screw and one 3mm nyloc nut. Orient the nuts toward the middle of the wing.



78. For the single fitting locations use the 3x15mm screw and 3mm nylock nut.



79. When all fittings are installed on the wings begin to install the struts with the long diagonal strut.

80. Attach the bottom of the strut to the single fitting on the leading edge of the bottom wing, make sure to align the airfoil with the thick end forward. Use a 3x10mm screw and a 3mm nylock nut.



81. Hold the nut with a pair of needle nose pliers while you screw the Phillips head in place. Repeat at the upper end.



82. The N struts are 3 different lengths with the longest at the rear, the shortest in the middle (the diagonal) and the middle length strut at the front. The photo shows the upper connection of the N struts at the rear of the wing.



83. Photo shows the upper connection of the N strut at the front of the wing.



84. Photo from the rear of the diagonal strut and the N struts at the front of the lower wing.



85. Photo of the rear N strut connection at the rear of the lower wing.
86. Install all hardware and snug each nut, do not over tighten.



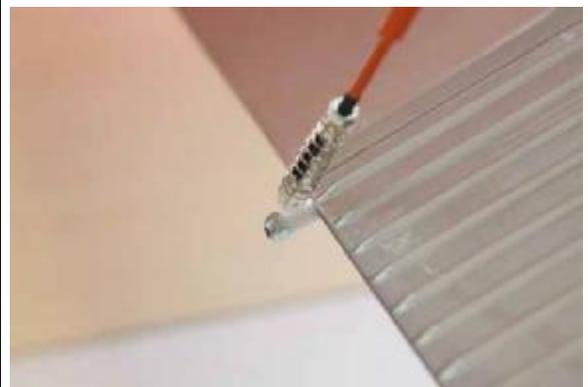
87. Locate the hardware for the aileron interconnection.

- 4-Nylon connectors
- 4-3mm nylock nuts
- 2-Pre-painted inter connectors

88. Screw the nylon part to the pre-installed threaded stud at the trailing edge of the ailerons, secure with 3mm nylock nut.



89. Install aileron inter connector celvis to the nylon part.



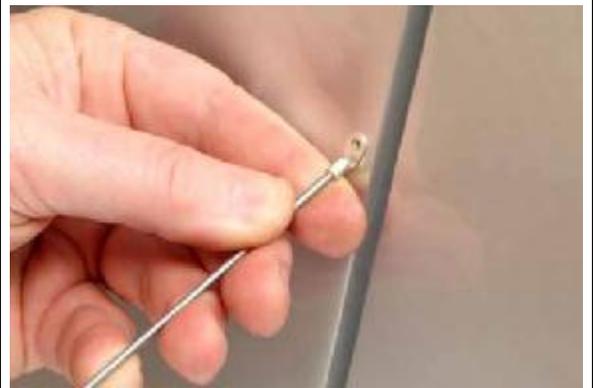
90. Adjust the length of the inter connector so that both upper and lower aileron are in neutral position.
91. Connect and tighten lock nuts to secure.



92. Locate the tail brace wires and solder on electrical ends as well as the 3-3mm allen head screws and 3mm nylock nuts.



93. You will be soldering the ring electrical connectors to the ends of the brace wires.
94. Pre-bend one of the solder-on connectors as shown in the photo.
95. Solder the connector to the brace wire.



96. Adjust the length of the brace wire and solder it in place with the connector held with the bolt. (See photo)



97. Tighten the 3 threaded allen head bolts.



98. On the bottom brace wires solder the terminal so that a wood screw can be used to attach it to the fuselage. Pre-drill the fitting before installing the screws.
99. See photo for the location of the brace wires.



100. Photo shows the general layout of tail parts.



101. Bottom view of elevator pushrods, pull-pull rudder with tail wheel steering and the lower mount points for the tail brace wires.



102. You may wish to paint the interior of the fiberglass cowl with a matt finish black paint.

103. Put the dummy motor into the cowl but **DO NOT** glue in place at this time.



104. The cowl mounting ring is pre-installed at the factory. Installation is by placing the cowl over the cowl mount screws and rotating slightly in a counter-clockwise direction to hold in place.

105. Before flying you may choose to tighten several of the screws by using a long Phillips screwdriver from the front of the cowl.



106. Locate the wooden AXI motor mounts

107. There is a light line burned on the 2 side pieces, this line is 15mm from one edge of the plywood. If you are using a 5330 series motor, assemble the parts without modification.

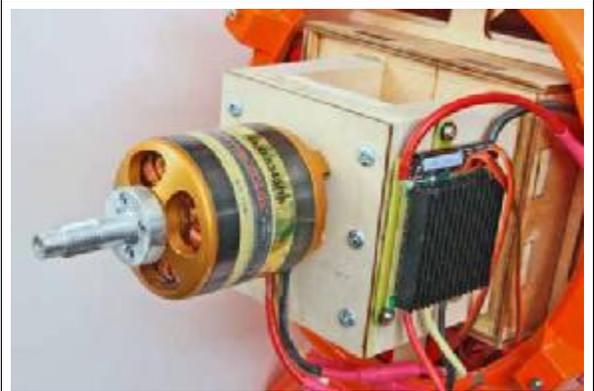
108. If you are using the 5345 series motor you will need to cut off 15mm of each side to achieve the proper motor distance from the firewall.



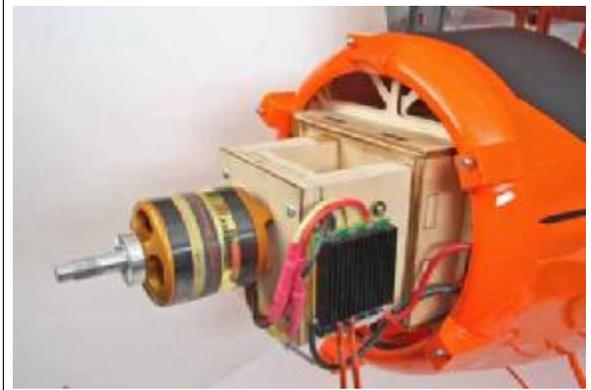
109. Install the motor on the front mount and screw the front face to the sides, do not glue the front plate to the sides.

110. Epoxy this unit to the firewall box using the centering reference that is burned into the firewall.

111. If you wish to screw this mount to the firewall block, pre-drill some pilot holes and screw the mount in place from inside the fuselage.



112. Photo shows AXI5345/16 motor and a Jeti 99A SPIN ESC. The ESC is screwed to the side of the motor mount and it is in the airflow inside the cowl.



113. The power wires are routed back to a Series connector in the battery box inside the fuselage. This series connector has 3 male Deans connectors, 2 for connection to flight batteries and 1 to be used with a jumper female Deans as an arming plug.

114. Photo shows cowl mounted and the dummy radial engine with the center relieved for the electric motor. Dummy motor has been detailed with some paint and self-stick aluminum tape on the pushrods. Propeller is an APC 21x12W electric prop.



115. A pre-assembled and painted instrument panel is provided.



116. There is a printed sheet with the instruments at the rear of the manual. You can cut this out and attach it to the rear of the panel.

117. Scale instruments with raised bezels and clear faces in color are available from Hobby Lobby. The holes in the panel are designed for these instruments. HL part# PP41008 American Aircraft of the 30's



118. Fit the windshield and attach either with small screws or canopy glue.



119. Access to the radio system and the batteries is through the operable doors.
120. In addition to flight batteries you will need to supply your radio system with power. Use an external BEC like the Jeti JE512 combined with a 2-cell 2100-2500mAh Lipo pack. The BEC can be set to 6V output for stronger servo response.
121. Secure this system to the front of the cabin with Velcro and cable ties.



122. Locate your radio receiver on the floor of the cabin with easy access. 6" servo extensions on the 2 aileron channels of the receiver will make connecting the ailerons easier.
123. Make sure to label them so that an inadvertent misconnection is avoided.



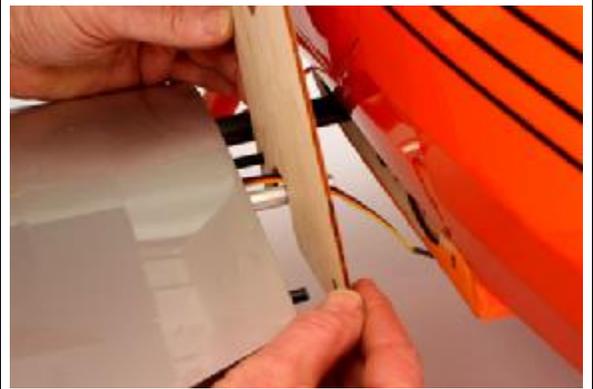
124. Flight batteries are installed in the inside of the motor box in the nose of the aircraft. You will need to build a platform on which to attach the batteries. The exact dimensions of this will be determined by your choice of batteries. Make sure that they are secure before flight.
125. Two 6-cell 5000mAh Thunder Power packs balanced our airplane without any additional ballast.



126. To remove the wing panels as sets first remove the hitch pins.



127. Unplug the aileron extensions from your receiver and slide the wings away from the side of the fuselage about 2-3".
128. Slip the provided plywood wing jig into place on both the lower and upper root ribs.



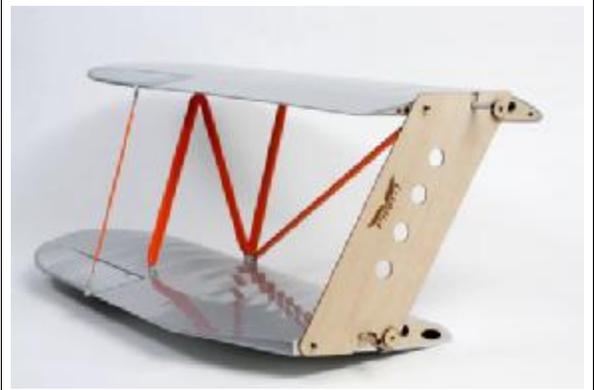
129. With the ply jig in place slide the wing set the rest of the way off of the tube joiners.



130. The operation should take less than a minute per side of the aircraft.



131. The wings transport easily beside the fuselage for quick and pain free assembly at the flying field.



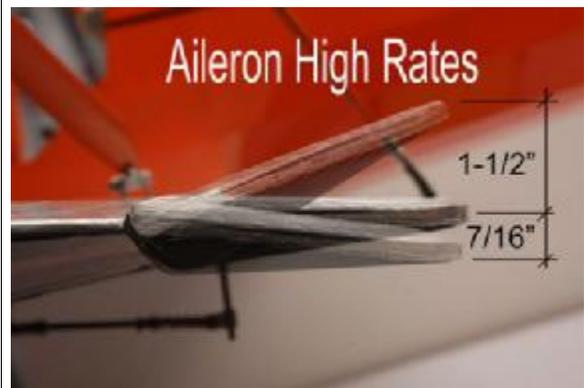
Aileron Low Rates:

**1-1/4" UP
3/8" DOWN**



Aileron High Rates

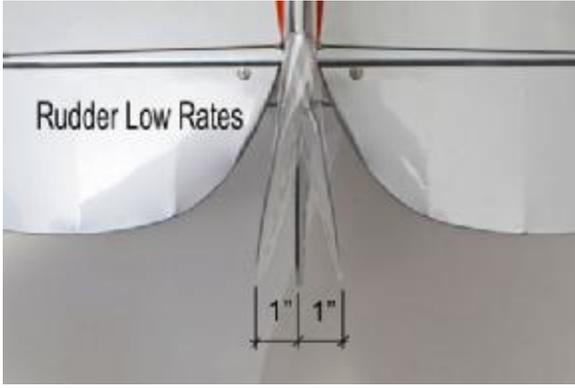
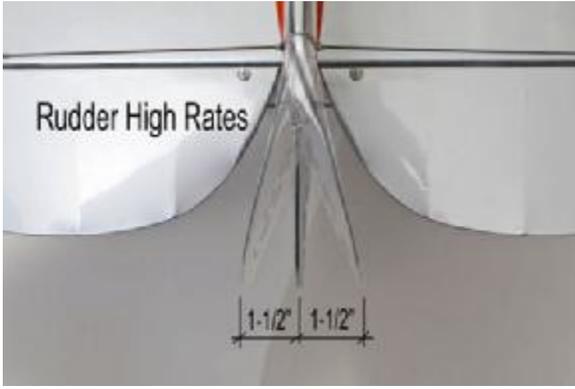
**1-1/2" UP
7/16" DOWN**



Elevator Low Rates

**1" UP
1" DOWN**



<p>Elevator High Rates</p> <p>1-3/4" UP 1-3/4" DOWN</p>	
<p>Rudder Low Rates</p> <p>1" in each direction</p>	
<p>Rudder High Rates</p> <p>1-1/2" in each direction</p>	
<p>CG</p> <p>6" back from the leading edge of the upper wing where it meets the fuselage</p> <p>NOTE: This is about in line with the leading Edge of the lower wing</p>	



Instrument panel can be cut out and installed behind the wooden panel.

Preflight

If you are new to flying R/C aircraft, or a seasoned modeler, we recommend you have a fellow R/C modeler help you with the first flight. Some items you will need to complete on your first preflight are:

1. Aircraft assembled correctly and ready for flight.
2. All control throws and expos are set per this manual.
3. Transmitter fully charged and on correct model.
4. Aircraft balances at the recommended location.
5. Flight Battery is fully charged and secure.
6. All electronics are operating correctly, proper direction, and secure.
7. Complete a radio Range Check per your radio manual.
8. Balance propeller and make sure it is secure.
9. Wait for a calm or light wind day for first flights.

Flying

You will soon find out the *Pilot-1* Cabin WACO YKS-6 is a real pleasure to fly. Takeoffs, landings, and scale aerobatics are easy and well behaved. Even if you have never flown a tailwheel airplane before, the *Pilot-1* Cabin WACO YKS-6 should be an easy transition. Landings are best accomplished by "three-pointing." This means that all three wheels should touch at the same time and a little up-elevator is held until the aircraft comes to a complete stop. Except for takeoff and climb, you will only use about 1/2 throttle to maintain a scale flying speed. You can expect flight times of 8+ minutes depending on battery used and throttle management.

We hope you enjoy your *Pilot-1* Cabin WACO YKS-6 as much as we do!

Happy Landings!

WARNING – THIS IS NOT A TOY!

Radio controlled model aircraft are capable of inflicting serious injury and/or property damage if not assembled, operated, and maintained in a competent and safe manner. If you are not already experienced with radio controlled models, we strongly suggest that you find an experienced modeler to assist you.

Warranty

Hobby-Lobby guarantees this kit to be free from defects in both material and workmanship at the date of purchase. This warranty does not cover any component parts damaged by use or modification. In no event shall Hobby-Lobby's liability exceed the original cost of the purchased kit.

2008 Official Academy of Model Aeronautics National Model Aircraft Safety Code

GENERAL

1. A model aircraft shall be defined as a non-human-carrying device capable of sustained flight in the atmosphere. It shall not exceed limitations established in this code and is intended to be used exclusively for recreational or competition activity.
2. The maximum takeoff weight of a model aircraft, including fuel, is 55 pounds, except for those flown under the AMA Experimental Aircraft Rules.
3. I will abide by this Safety Code and all rules established for the flying site I use. I will not willfully fly my model aircraft in a reckless and/or dangerous manner.
4. I will not fly my model aircraft in sanctioned events, air shows, or model demonstrations until it has been proven airworthy.
5. I will not fly my model aircraft higher than approximately 400 feet above ground level, when within three (3) miles of an airport without notifying the airport operator. I will yield the right-of-way and avoid flying in the proximity of full-scale aircraft, utilizing a spotter when appropriate.
6. I will not fly my model aircraft unless it is identified with my name and address, or AMA number, inside or affixed to the outside of the model aircraft. This does not apply to model aircraft flown indoors.
7. I will not operate model aircraft with metal-blade propellers or with gaseous boosts (other than air), nor will I operate model aircraft with fuels containing tetranitromethane or hydrazine.
8. I will not operate model aircraft carrying pyrotechnic devices which explode burn, or propel a projectile of any kind. Exceptions include Free Flight fuses or devices that burn producing smoke and are securely attached to the model aircraft during flight. Rocket motors up to a G-series size may be used, provided they remain firmly attached to the model aircraft during flight. Model rockets may be flown in accordance with the National Model Rocketry Safety Code; however, they may not be launched from model aircraft. Officially designated AMA Air Show Teams (AST) are authorized to use devices and practices as defined within the Air Show Advisory Committee Document.
9. I will not operate my model aircraft while under the influence of alcohol or within eight (8) hours of having consumed alcohol.
10. I will not operate my model aircraft while using any drug which could adversely affect my ability to safely control my model aircraft.
11. Children under six (6) years old are only allowed on a flightline or in a flight area as a pilot or while under flight instruction.
12. When and where required by rule, helmets must be properly worn and fastened. They must be OSHA, DOT, ANSI, SNELL or NOCSAE approved or comply with comparable standards.

RADIO CONTROL

1. All model flying shall be conducted in a manner to avoid over flight of unprotected people.
2. I will have completed a successful radio equipment ground-range check before the first flight of a new or repaired model aircraft.
3. I will not fly my model aircraft in the presence of spectators until I become a proficient flier, unless I am assisted by an experienced pilot.
4. At all flying sites a line must be established, in front of which all flying takes place. Only personnel associated with flying the model aircraft are allowed at or in front of the line. In the case of airshows demonstrations straight line must be established. An area away from the line must be maintained for spectators. Intentional flying behind the line is prohibited.
5. I will operate my model aircraft using only radio-control frequencies currently allowed by the Federal Communications Commission (FCC). Only individuals properly licensed by the FCC are authorized to operate equipment on Amateur Band frequencies.
6. I will not knowingly operate my model aircraft within three (3) miles of any preexisting flying site without a frequency-management agreement. A frequency management agreement may be an allocation of frequencies for each site, a day-use agreement between sites, or testing which determines that no interference exists. A frequency-management agreement may exist between two or more AMA chartered clubs, AMA clubs and individual AMA members, or individual AMA members. Frequency-management agreements, including an interference test report if the agreement indicates no interference exists, will be signed by all parties and copies provided to AMA Headquarters.
7. With the exception of events flown under official AMA rules, no powered model may be flown outdoors closer than 25 feet to any individual, except for the pilot and located at the flightline.
8. Under no circumstances may a pilot or other person touch a model aircraft in flight while it is still under power, except to divert it from striking an individual.

9. Radio-controlled night flying is limited to low-performance model aircraft (less than 100 mph). The model aircraft must be equipped with a lighting system which clearly defines the aircraft's attitude and direction at all times.
10. The operator of a radio-controlled model aircraft shall control it during the entire flight, maintaining visual contact without enhancement other than by corrective lenses that are prescribed for the pilot. No model aircraft shall be equipped with devices which allow it to be flown to a selected location which is beyond the visual range of the pilot.



Hobby Lobby International, Inc.
5614 Franklin Pike Circle
Brentwood, TN 37027

1-866-WE-FLY-RC
(1-866-933-5972)

www.hobby-lobby.com