

Pitts

S-2B



INSTRUCTION MANUAL

For Intermediate and Advance pilots only



All pictures and specifications shown in this manual are subject to change without notice.

Thank you for purchasing your Kingcraft Pitts S-2B ARF model. We hope you enjoy assembling and flying it as much as we did creating it. This super scale model was created in the true spirit of Curtiss Pitts, it is very straightforward to build and fun to fly, all the hardwork has been done for you.

The airframe is an all wood construction using balsa and plywood and with a painted lightweight fiberglass cowling. It also has plywood inter-plane struts, aluminum landing gear with fairings and scale like working suspension. To bring this balsa bi-plane to the next level we have also included a set of rigging wires for the wings and empennage, a lifelike pilot and a ultra scale dual cockpit with instrument panels which fully resemble that of the full scale Pitts S-2B. The manufacturing level and quality of this Pitts ARF is impressive, most of the woodwork is done by hand and not by machine. The best planes can only be built with pride of a skilful worker, the factory will always do it's best to offer good working conditions to the workers to ensure the quality of their products.

The Kingcraft super scale Pitts S-2B follows an extensive design, development and testing process which brings a reliable and user friendly product to the customer, all parts are extensively quality control checked at the factory.

Please read this instruction manual thoroughly before assembling and flying this model. It is not a toy and if mistreated has the potential to inflict bodily injury or damage property. It is your responsibility to complete final assembly, setup, and routine pre-flight checks. Always make sure to check for any loose screws or parts, and that the airframe is free from damage that may cause failure in flight. HobbyKing is not responsible for any injury or property damage inflicted due to negligence in assembly or maintenance.

Warnings

- Select your flying area carefully. Always choose an open space that is unobstructed from trees, buildings, and away from crowded areas. Avoid flying in areas with roads, electric or telephone wires, or close proximity to full size air traffic.
- Do not fly this model in poor weather including high winds, low visibility, rain, or thunderstorms.

Never attempt to catch this model whilst in flight. Even a slow moving model can cause harm to yourself or other.

- This model is recommended for children no younger than 14 years old. All children should always be supervised by a capable and responsible adult when operating this model.
Always unplug your model battery when not in use. Do not leave the battery installed in the model when not in use.
- Remain clear from the propeller at all times when the flight battery is connected. A spinning propeller can cause bodily injury.
- Before flying always turn ON your transmitter first, then connect your flight battery to the model.
- After flying, always disconnect your flight battery first, then turn OFF your transmitter.
- Always exercise caution when charging batteries. Follow the recommended charging instructions from your battery manufacturer, and use a charger with charging parameters that match your battery type.

TOOL REQUIRED / REQUIRED ITEMS



Ruler



Clear Tape



Hobby Knife



Phillips Screwdriver



Hex Driver 1.5mm 2.5mm



Drill Bit - 2mm



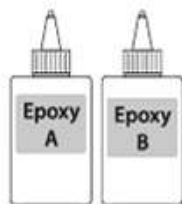
Pliers



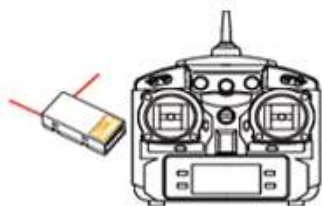
Thread Lock



Thin/Thick CA



5 Min Epoxy



6+ Channel Transmitter + Receiver



Aerodrive
SK3 3548 840kv



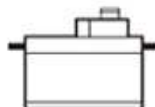
LiPo Charger



4S 4300-5000 mah
35-50C rating



Aerostar 70A Electronic
Speed Controller with 5A BEC (2-6S)



4* 17g Servos



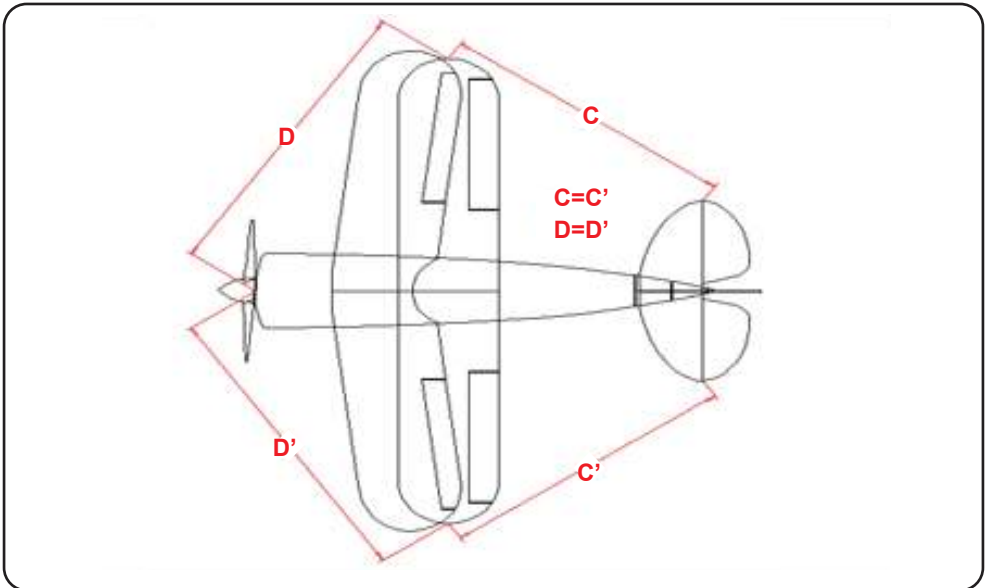
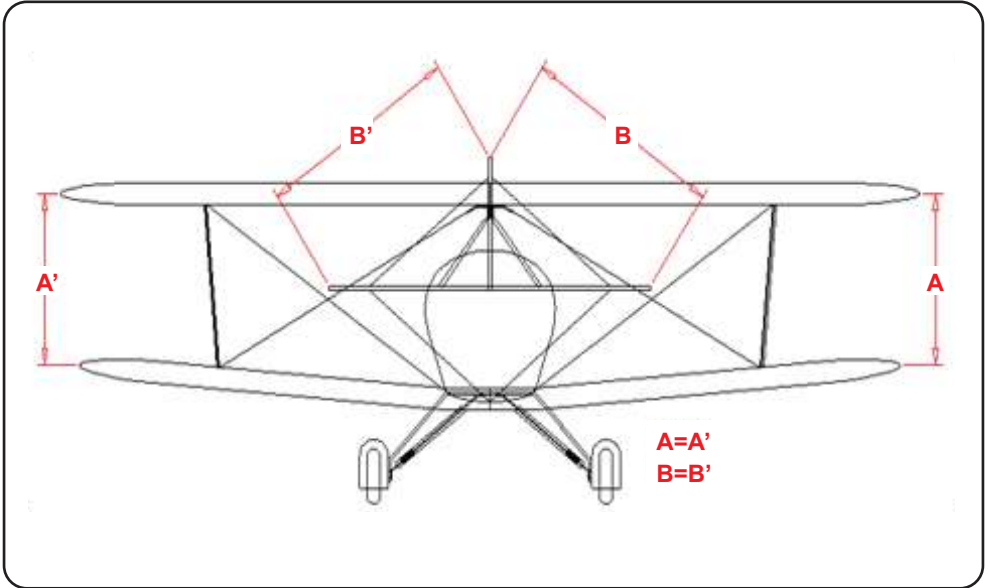
Spinner 64mm



propeller 12x8, 13x4 and 13x 6.5



2*300mm Servo Extensions



AIRFRAME ASSEMBLY



1. Wing assembly components and hardware



2. Take the supplied small balsa block with an opening slot shown in Pic. A. Then sand the balsa block according to the shape of that supplied triangle shape template and this will perfectly match the turtle deck shape. Then stick the balsa block between the stringers (Pic. B) of the turtle deck. This will make a platform for the lock mechanism to sit on.



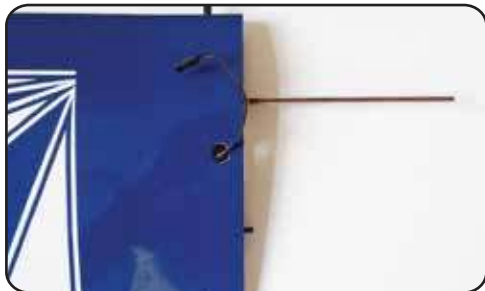
3. Connect some servo extension leads to your aileron servos and screw the servos into the servo bays in the lower wings using self tapping screws. Fit the ailerons to the wings using the supplied hinges and epoxy or CA glue. Ensure the ailerons move freely with no friction once the glue has set.



4. Glue the fiberglass control horns to the ailerons. Solder the supplied pushrods to the 2mm couplers then screw a ball link onto the coupler thread. Install the control linkages to the ailerons as shown with a swing keeper on the aileron horn end.



5. Use epoxy to secure the fiberglass horns to the strip ailerons ready for coupling the top and bottom ailerons. Use the supplied self tapping screws to secure the rigging wire mounts into the wing as shown.



6. First slide the wing joining rod into the wing joiner tube and secure it with 5min epoxy. Join the 2 wing halves together using 30 min epoxy and put aside until it has set.



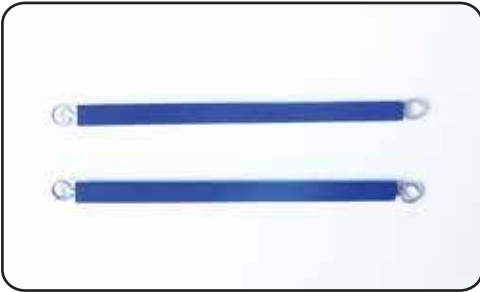
7. Test fit the bottom wing to the fuselage and use the supplied screws and wing mount reinforcement plate to secure the wing onto the fuselage.



8. Install the rigging wire/wing mounts underneath the top wing at the center as shown. Note that the larger mounts go to the rear and the smaller ones near the front as shown in the picture above.



9. Install u-shaped rigging mounts to the top wing. Carefully cut open all the wing center cabane struts access holes and openings on the fuselage as shown in the pictures above.



10. Use epoxy or CA glue to secure the metal rings to the cross struts. Install the front, rear and cross aluminum wing struts as shown. Please take note, shorter tubes are located to the front while the longer ones are at the rear.



11. Install the top wing to the cabane struts, remove the openings for inter-plane strut mounting tabs as shown.



12. Trial fit the inter-plane struts to the wings. Then use the supplied screws to lock the inter-plane struts and make sure the tabs are fully seated into the wings. Ensure the top/bottom wings are straight and true to the fuselage and without any stress or distortion to the wings. Then epoxy the tabs into the wings when everything fits and lines up perfectly.



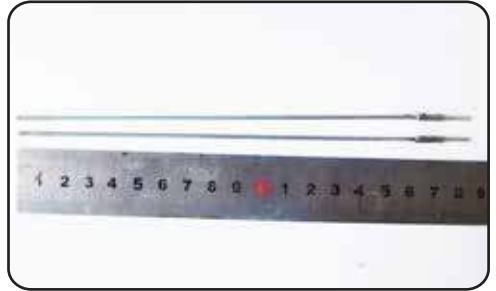
13. Undercarriage components. Use a knife to cut out the covering on the side of the fuselage right beside the landing gear mount for the U-shaped rigging mount installation.



14. Insert the rigging wires to the mounting tabs as shown. Insert the rigging mounting tabs inside the slot on both sides and install the landing gear with supplied screws and lock everything in place at the same time.



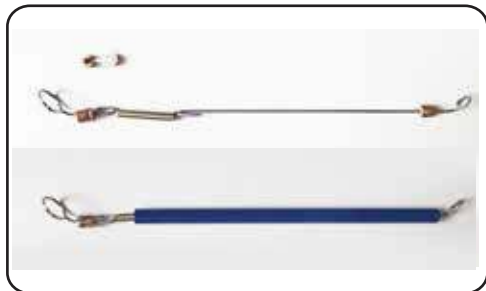
15. Prepare rigging clevis assembly and attach it to the top wing rigging mount tabs, do this to both sides.



16. Thread the rigging wires through the rigging mounting tab on the top wing at the center rear. Prepare rigging clevis then attach it to the bottom wing rigging mounting tabs, do this to both sides.



17. You may also attach the aileron control linkage at this stage. Install the fiberglass undercarriage fairings on the landing gear.



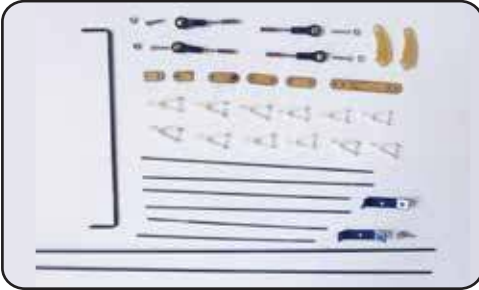
18. Insert the landing gear suspension assembly into the aluminum tube provided. Then install landing suspension struts to the landing gear as shown in the pictures above.



19. Install the landing gear axle and suspension assembly to the aluminum landing gear plate at the same time. Please loctite all the axle bolts and nuts.



20. Install the wheel pants, wheels and wheel collars. Ensure the wheels spin freely and without touching the wheel pants. Lock it with the wheel collar and loctite the grub screws. Align the wheel pants and secure with self tapping screws.



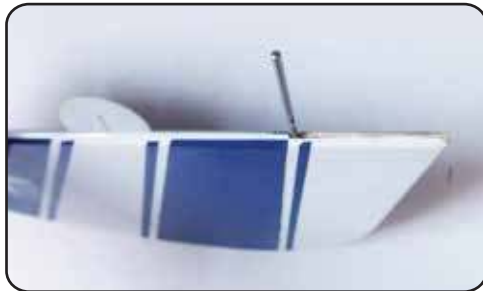
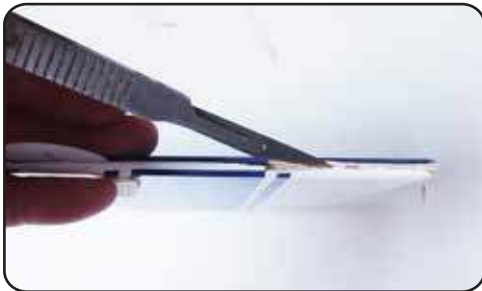
21. Hardware for the tail assembly. Trial fit the stabiliser onto the fuselage tail section. Ensure the stabiliser is true, square and level. Mark the area's which are going to be glued on the tail section and remove the covering so that you are bonding wood with wood, not to the covering.



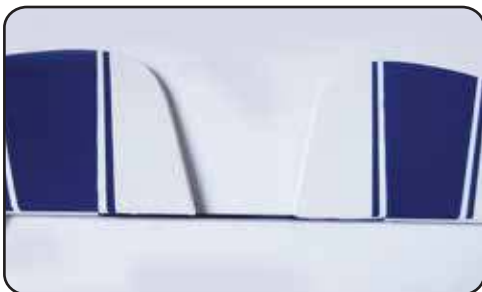
22. Please take note. When you use a knife to remove the covering on the stabilizer make sure you trim just inside the marks you have made so that a small amount of covering is glued to the rear fuselage as well. Otherwise you will see a thin strip of bare wood where the glue joint is.



23. Trim away the covering on the rudder carefully for the control horn and tail landing gear steering horn. Center the supplied U-shaped linkage rod on the elevators and use a pen to mark where it is to fit.



24. According to your marks use a knife to carve a slot and drill a hole for the U-shaped rod installation as shown above.



25. Epoxy glue the U-shaped rod to the elevator halves and ensure the halves stay perfectly flat without twisting whilst the glue sets. Then slide the elevator assembly into the fuselage tail section as shown.



26. Make sure the stabiliser is true and level to the fuselage and wings before you apply CA glue. Use epoxy or CA glue to hinge the elevator to the stabiliser. Ensure free movement of the elevator when the glue has set.



27. Check the alignment of the fin then glue into place. Check alignment then hinge the rudder to the fin with epoxy or CA glue.



28. Glue the control horns to the elevator and rudder with epoxy or CA glue.



29. Solder the pushrod to the threaded coupler fitting for the rudder and elevator control linkages. Attach it to the servos as shown in the picture above.



30. Tape a small piece of cardboard paper on the elevator and rudder to protect the film covering while you are going to work on the thread coupler soldering. Solder the pushrod to the thread coupler fitting on the other end of the push rod. Then attach it to the rudder and elevator control horns.



31 Tail wheel assembly. Assemble the tail wheel according the picture.



32. Install the tail wheel assembly and rigging mounting plate at the same time to fuselage. Attach all the supporting struts to the stabiliser and fuselage.



33. Attach the tension spring to the rudder steering arm and the tail wheel control arm.



34. Attach rigging struts to the fin and stabiliser as shown.



35. Cowling and motor mount assembly parts. Secure the motor mount with epoxy glue.



36. Use the method shown to locate the mounting screws holes on cowling. Then install your preferred brushless motor onto the motor mount. The motor box has a built in 3 degrees of right thrust. Make sure the motor is offset a few millimetres to the left so as to bring the motor shaft back to center of the cowl when it has been installed.



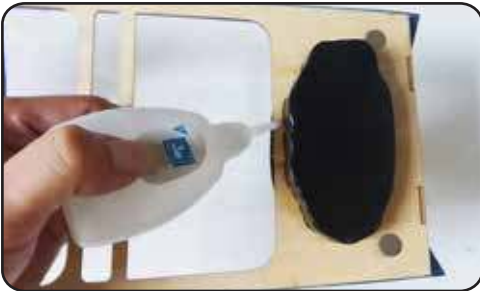
37. Trial fit the cowling onto the fuselage. In the meantime, you may also install the propeller and spinner to the motor and align everything together and find the perfect fit of all components. Once satisfied with the fit of the cowl you can mark it as shown using masking tape and then drill the holes for mounting.



38. Canopy & Cockpit assembly.



39. Glue the small white box and the white tubing fittings into place as shown.



40. Glue the pilot into place. Use silicon glue to secure the front dash board into place as shown.



41. Glue the rear dash board into place with silicon glue.



42. Canopy locking mechanism assembly.

(Picture A)



(Picture C)



(Picture B)



43. Sand the supplied small balsa block with an opening slot shown in picture A below, sand according to the small triangle shape template supplied in the pack. Note: Please follow picture B below for the correct orientation of the balsa blocks curvature surface. Once you have finished sanding the block it should be a perfect fit with the turtle deck. Then glue the balsa block in between the stringers (Picture C) of the turtle deck, this will make a platform for the locking mechanism to sit on.

44 Before you make a slot in the turtle deck use a sealing iron or a low heat soldering gun to ensure the covering film is firmly adhered around the area of the balsa block.

(Picture A)



(Picture B)



45. Use a sharp knife to cut an opening in the covering film according to the slot on the balsa block as shown in picture A. Glue the plastic lock mechanism to the balsa block by using epoxy as shown in Picture B. Note: Just apply enough epoxy to glue it in place otherwise excess glue may seep into the mechanism and cause it to jam.

(Picture A)



46. Trial fit the plywood doubler to the canopy as shown. Place the canopy on the fuselage and align it with the locking mechanism, once you are satisfied with the fit, glue the doubler into place. See picture A.

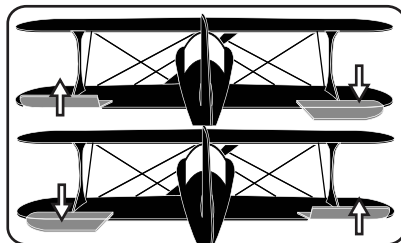
Check all control surfaces are moving in the correct direction with the applicable stick input (see below)



Roll left



Roll right



Aileron (Roll)

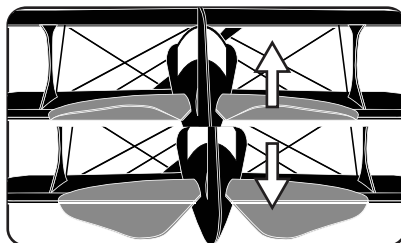
Ailerons $\pm 23\text{mm}$ Expo: 15-20%



Pitch up



Pitch down



Elevator (Pitch)

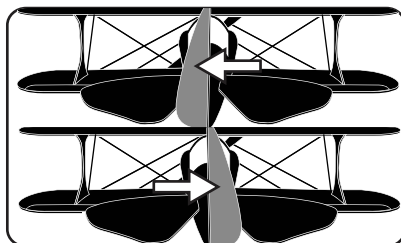
Elevators $\pm 15\text{mm}$ Expo: 15-20%



Yaw left



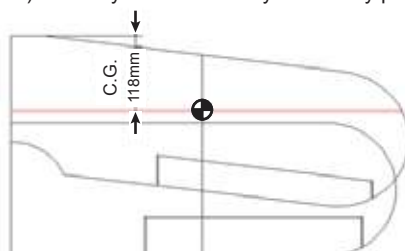
Yaw right



Rudder (Yaw)

Rudder $\pm 25\text{mm}$ Expo: 15-20%

The easiest way to find the balance is to pick your Pitts up under the centre of the top wing near the C of G location. (See diagram below) You may need to move your battery pack to balance the model.



Flying tips:

During take off head the model directly into the wind, hold in full up elevator and apply the throttle gently to around 50%. Make sure you keep the planes three wheels on the ground until you have good directional control on the rudder, keep it straight down the runway. Slowly bring the power up to 70-80% and release some of the elevator, the tail wheel will lift off gently from the ground followed by the model taking off. Keep flying it straight in a shallow climb to get more airspeed and climb to a safe altitude. You can ease the throttle back a bit when at a safe altitude and fly into a rectangular flight path and trim out the plane as necessary until it flies straight and level. If you have trimmed it properly, you are able to fly the Pitts S-2B dead straight with your hands off!

Flying aerobatics is what this R/C Pitts S-2B shines at, it can perform all the scale like aerobatics in the book and we are sure that you will have a grin on your face on your first flight and every flight after that.

Landing the Pitts is always uneventful. Line it up to the runway and keep the throttle at about a quarter until it is 3-4 feet above the runway, Then slowly decrease the throttle and slightly ease in some up elevator to pitch the nose up a bit and flare for a 3 point touch down.

Enjoy you flight!

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Made in China