

3 D H O B B Y S H O P . C O M

Assembly Manual- 70" AJ SLICK

Thank you for purchasing this 3DHobbyShop ARF RC aircraft. If you have any issues, questions, concerns or problems during assembly, please contact our tech department at: Info@3DHobbyShop.com or 1-830-990-6978 10am-5pm Central M-F

SAFETY in Assembly

During assembly of this aircraft, you will be asked to use sharp knives and hobby adhesives. Please follow all safety procedures recommended by the manufacturers of the products you use, and always follow these important guidelines:

ALWAYS protect your eyes when working with adhesives, knives, or tools, especially power tools. Safety glasses are the best way to protect your eyes.

ALWAYS protect your body, especially your hands and fingers when using adhesives, knives, or tools, especially power tools. Do not cut toward exposed skin with hobby knives. Do not place hobby knives on tables or benches where they can roll off or be knocked off.

ALWAYS have a first-aid kit handy when working with adhesives, knives, or tools, especially power tools.

ALWAYS keep hobby equipment and supplies out of the reach of children.

IMPORTANT NOTE – We strive to provide the absolute best-quality ARF aircraft on the planet. However, the ultimate success or failure of this aircraft is dependent upon proper assembly by you. If you have questions about an assembly step, please contact us, or read the assembly thread for your airplane on RCGroups.com before proceeding. It is always better to slow down and be sure of your assembly than to rush through it and make a mistake which can cause a crash.

SAFETY in Flying

SAFETY NOTICE: This is NOT a toy! It is a very high-performance RC airplane capable of high speeds and extreme maneuvers. It should only be operated by a competent pilot in a safe area with proper supervision.

ONLY fly your aircraft in a safe, open area, away from spectators and vehicles—and where it is legal to fly.

NEVER fly near overhead power or utility lines. If your airplane ever becomes stuck in a line or a tree DO NOT attempt to retrieve it yourself. Contact the authorities for assistance in retrieving your aircraft. Power lines are DANGEROUS and falls from ladders and trees CAN KILL!

Never fly too close to yourself or spectators. Spinning propellers are DANGEROUS!

Never run your motor inside a house or building with the propeller attached – Remove the prop for safety.

Always fly within your control.

Always follow manufacturer's instructions for your radio system.

Always obtain proper insurance before flying – contact the AMA at www.modelaircraft.org

REQUIRED ITEMS

CA Glue – Thin and Medium or Thick
Hobby Knife
Small Phillips Screwdriver
Set Metric Allen Wrenches
Scissors
Small Pliers
Adjustable wrench
Masking tape
Drill and drill bits
Optional – Heat gun and covering iron
Threadlocker (Blue Loctite)
Polyurethane or 30min epoxy glue
Vaseline/petroleum jelly
Rubbing alcohol

Assembly Instructions – Read completely before starting assembly!

UNPACK

Unpack your airplane and examine the components. Check for damage of any kind. If you have damage, please contact 3DHobbyShop to discuss.

WRINKLES

Your airplane was packed in plastic at the factory without any wrinkles in the covering. You may notice some wrinkles now; more likely, you will notice a few in a day or two or the first time you take the plane out to the flying field. These wrinkles are the result of wood shrinkage and/or expansion. Balsa wood changes size and shape slightly as it is exposed to varying humidity in the air. This is a natural property of balsa wood. As your airplane adjusts to the weather in your part of the world, wrinkles may appear and disappear. Wrinkles may be removed with the gentle application of heat to the covering material on your airplane. The best tools to use are a heat gun and covering iron. Apply the heat gently: the covering material will shrink as you apply the heat, and this will remove the wrinkles. **BE CAREFUL!** Too much heat applied too quickly can damage the covering, either by causing it to pull away from the wood at seams and corners or even by melting it. The covering will shrink at low temperature with patient application of heat. **Wrinkles in the covering DO NOT affect flight performance.** If you must shrink on a color-seam, use the iron and go slowly and carefully to avoid any pulling or lifting at the seam.

Remove the canopy before attempting to use heat on your covering! The canopy is made of thermo-activated plastic and WILL deform with the application of heat. Do not apply heat to the canopy.

PAINT

If you need to clean your airplane, we recommend using a damp towel. The paint used on the canopy and cowl is not safe for all cleaners. In particular, **DO NOT** use alcohol on these parts, it will remove the paint.



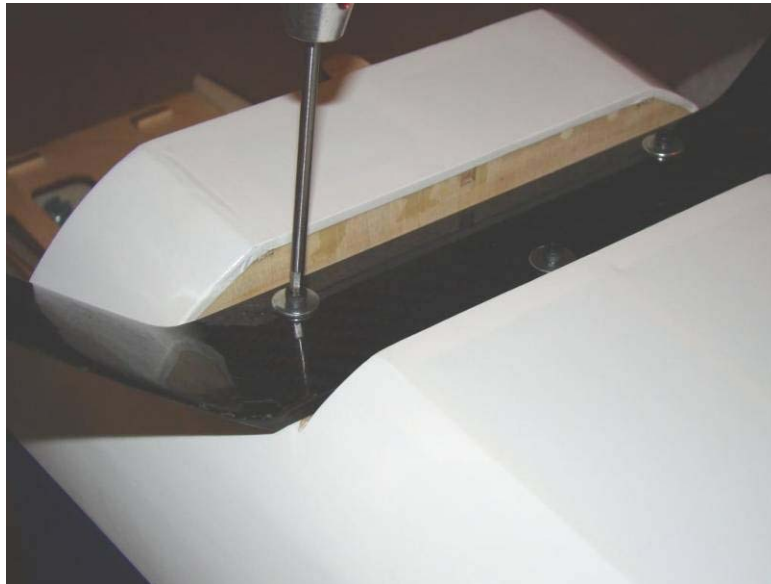
Install the wheels onto the axles and secure with the wheel collars, as shown.



Slide one wheel/axle assembly into a wheel pant, and install the wheel assembly on the landing gear leg. Tighten the locknut as shown to secure the assembly onto the gear leg. Repeat for other side.



Install wood screws through gear into pants as shown



Attach the gear to the fuselage with 4-40 screws, use loctite.



Install gear cover plate as shown, using thick CA or epoxy glue.



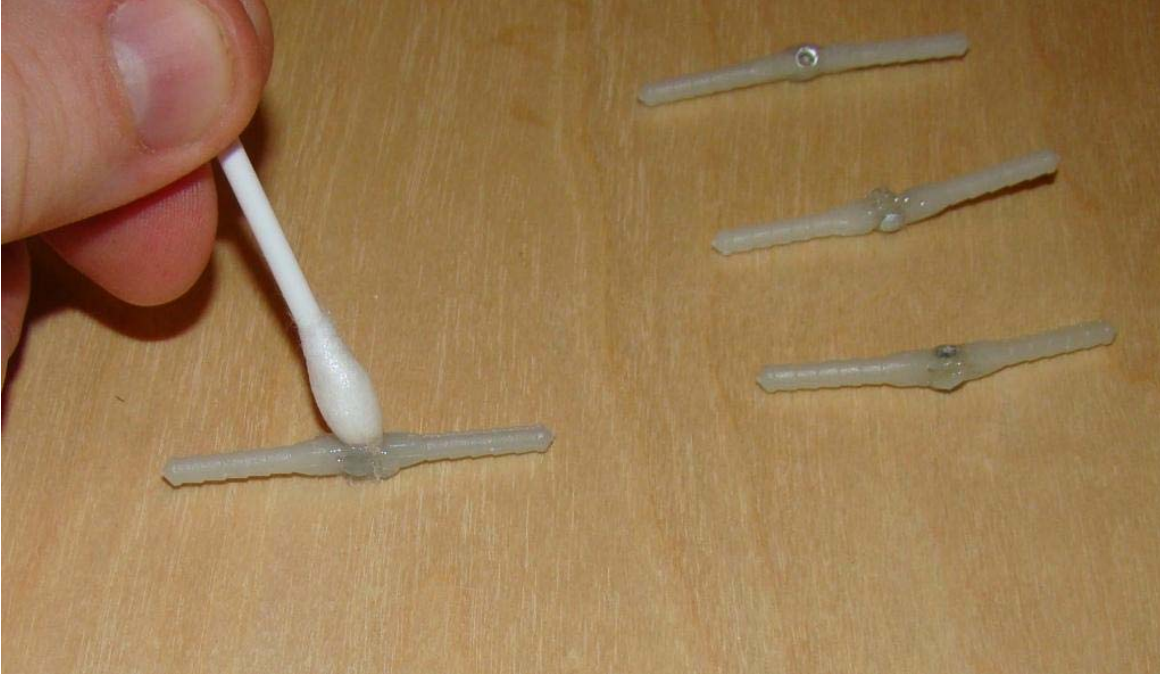
Install tailwheel onto fuselage as shown, using QTY 2 4-40 screws and washers, with loctite.



Remove the covering over the pre-fabricated cooling holes in the bottom of the fuselage, as shown.

HINGING

The 70" slick comes with pre-hinged and pre-gap-sealed wings/ailerons to save time during your build. You will need to hinge the tail. All tail hinges are the same type and work the same way. The below instructions cover the use of polyurethane and epoxy glue. If you are using a type of specific RC-hinge glue, follow the direction on the hinge glue bottle.



Remove the hinges from the tail surfaces. Use a q-tip to apply Vaseline to the center area of the hinge. We do this to keep glue out of the rotating part of the hinge. We use Vaseline, instead of oil, so that we can contain the Vaseline to only the center part of the hinge. We need the ends of the hinges to remain dry and clean so that the glue will bond them securely.



Place several drops of either polyurethane glue (gorilla glue – honey-colored) or epoxy (30 minute is preferred) into the hinge holes on both the vertical stab and rudder. Wipe away any excess which drips out with rubbing alcohol on a paper towel. Insert the rudder hinges into the holes in the stab, making sure they are aligned correctly so that the rudder can swing back and forth.

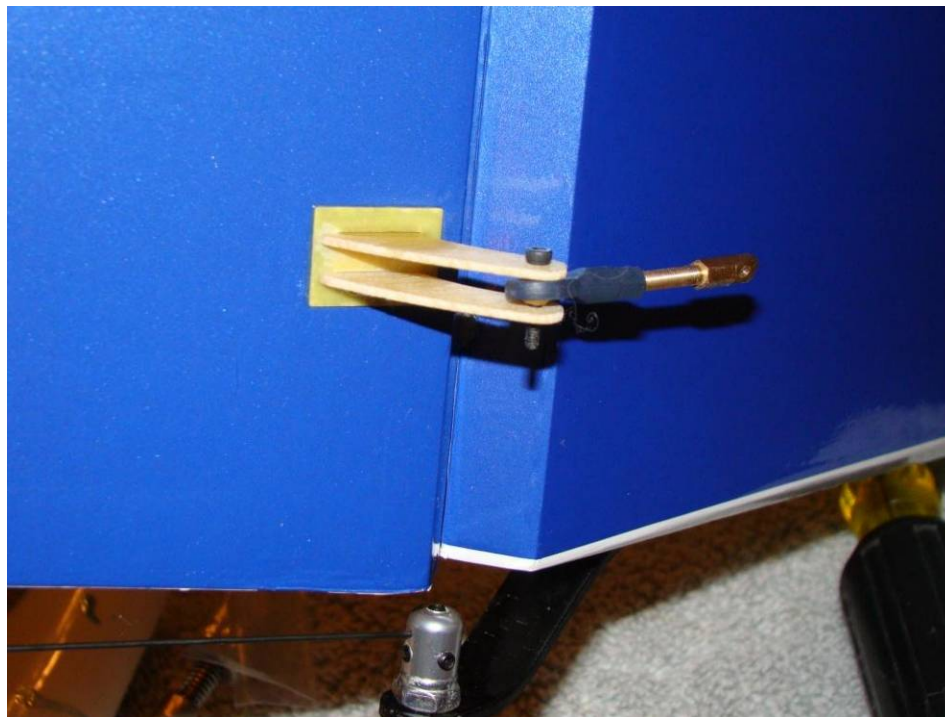


Insert the rudder onto the hinges and tail-wheel tiller wire as shown. Swing the rudder back and forth several times to make sure it swings easily 45 degrees each way. Clean any glue which seeps out of the hinges and allow to dry. If using polyurethane glue, you may see more glue seeping out as it dries. Wipe this away with alcohol. Allow to dry.

Note about rudder servo: For virtually all setups, you will use a pull-pull cable rudder system. The following instructions describe this. If you install a very heavy power system, however, you can use a push-pull rudder system. Photos are included at the end of the manual.



Remove covering over the rudder control arms slots, as shown, on both sides of the rudder.



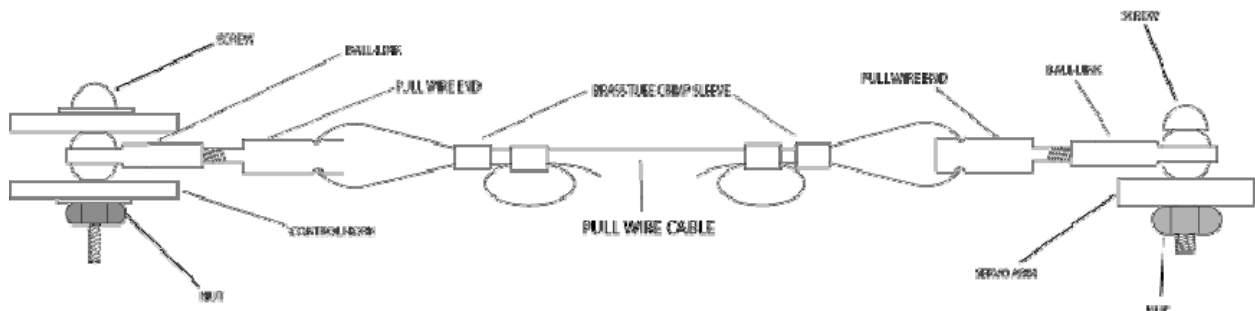
Using plenty of epoxy or polyurethane glue, install the rudder horns as shown, on both sides of the rudder. Use the ball-joint and pull-cable end, as shown, to hold the rudder horn in perfect alignment while the glue dries. Clean up any excess glue with alcohol. Allow to dry.



A NOTE about servo arms on the 70" Slick. The Slick uses ball-links on its controls for precise control-surface motion. It is extremely important to make sure that the ball-links have free motion throughout the servo travel, and do not touch the servo arms. For example, when using Hitec servo arms, this is easily accomplished by cutting or sanding away the corner of the arm as shown.



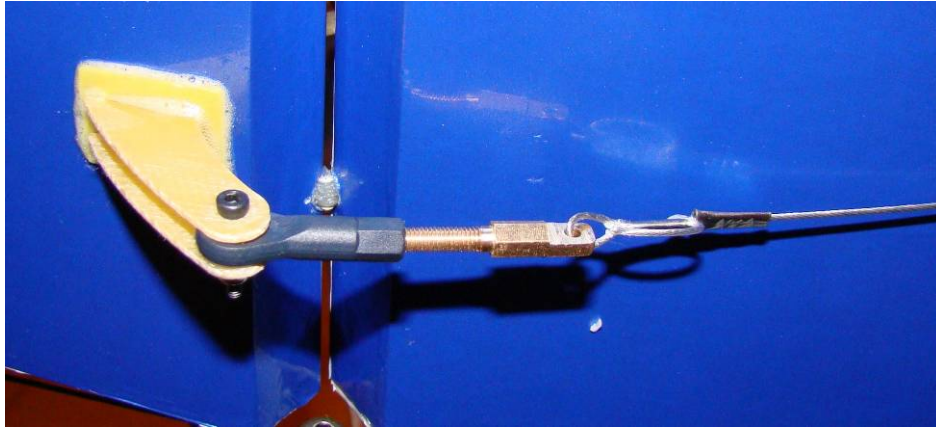
Install the rudder servo, servo arm, and ball links with locking nuts as shown.



The rudder pull-pull cables are assembled as shown in the diagram. Crimp the crimp tubes firmly with pliers, and use a drop of thin CA glue on each crimp tube after you are done crimping.



Crimp the servo end of the cables first. The cables cross once inside the fuselage to form an "X".



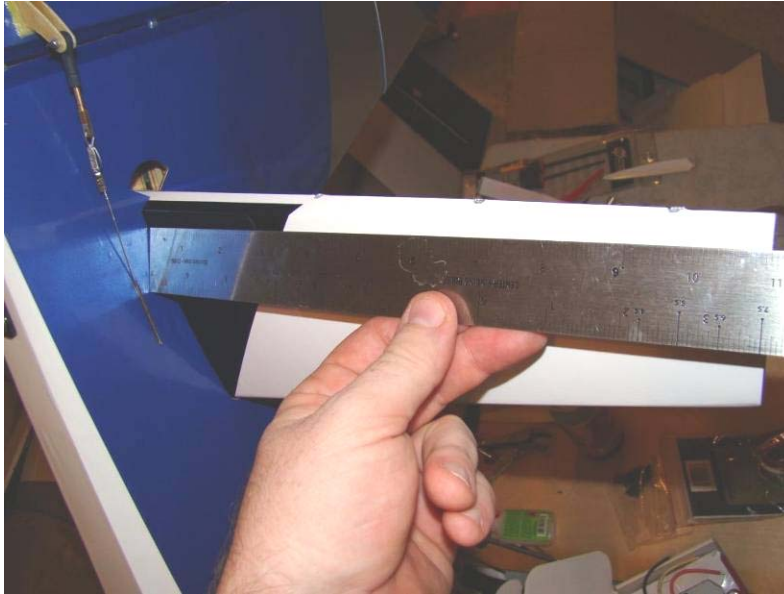
Use a lock nut to tighten the ball link into the rudder control horn. Assemble the cables onto the pull-wire ends, pulling the cables snug before crimping. We do not need the cables to be extremely tight, just snug and without sagging. Use the threaded pull-cable ends, screwing them into the ball joints as necessary, to tighten the cables.



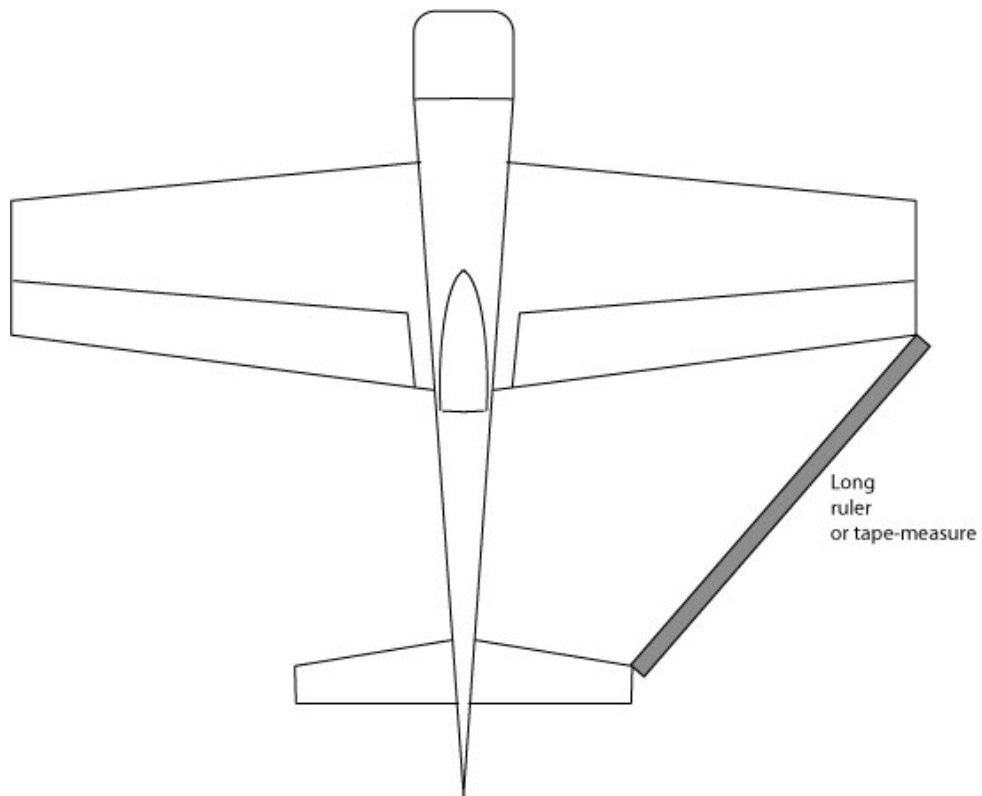
Remove the covering over the wing spar tube hole, the wing bolt hole, and the other holes in the front of the fuselage as shown.



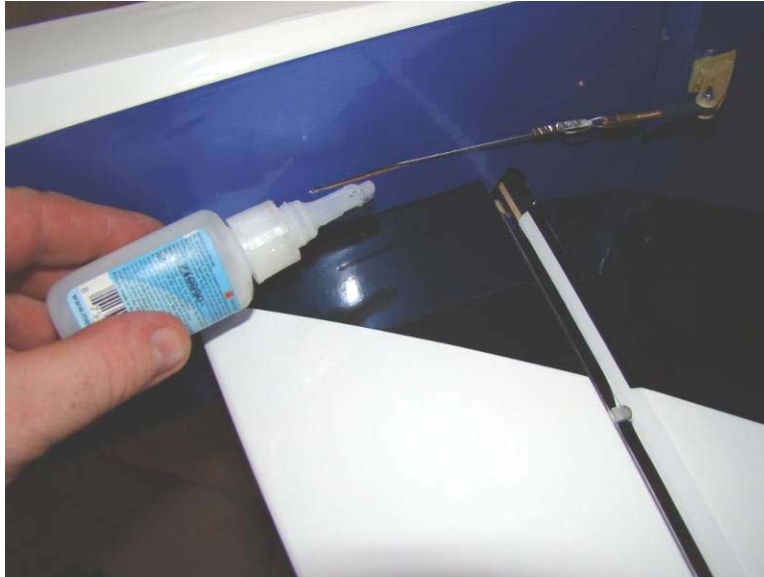
Remove covering over the horizontal stabilizer opening. Insert horizontal stabilizer – **DO NOT GLUE YET. Temporarily install the wings onto the fuselage.**



Use a ruler to align the stab side-to-side.



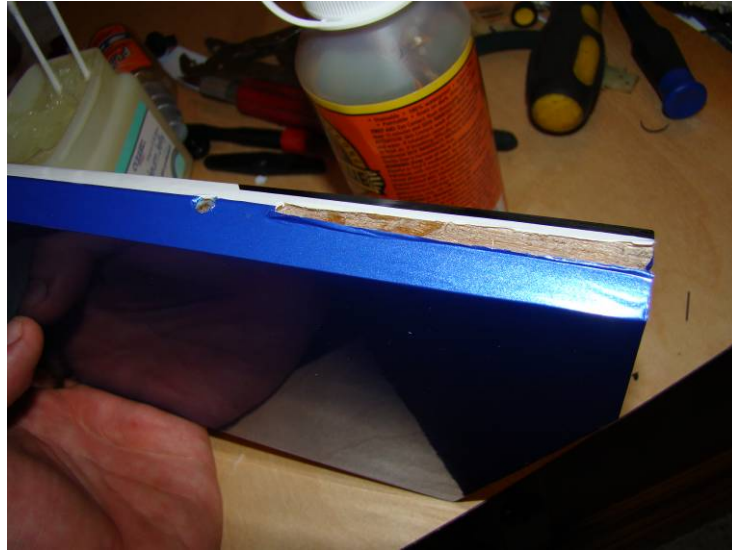
Using a tape measure or long ruler, measure from the stab to the wing tips as shown in the diagram. Equalize that measurement right and left to be sure your stab is aligned.



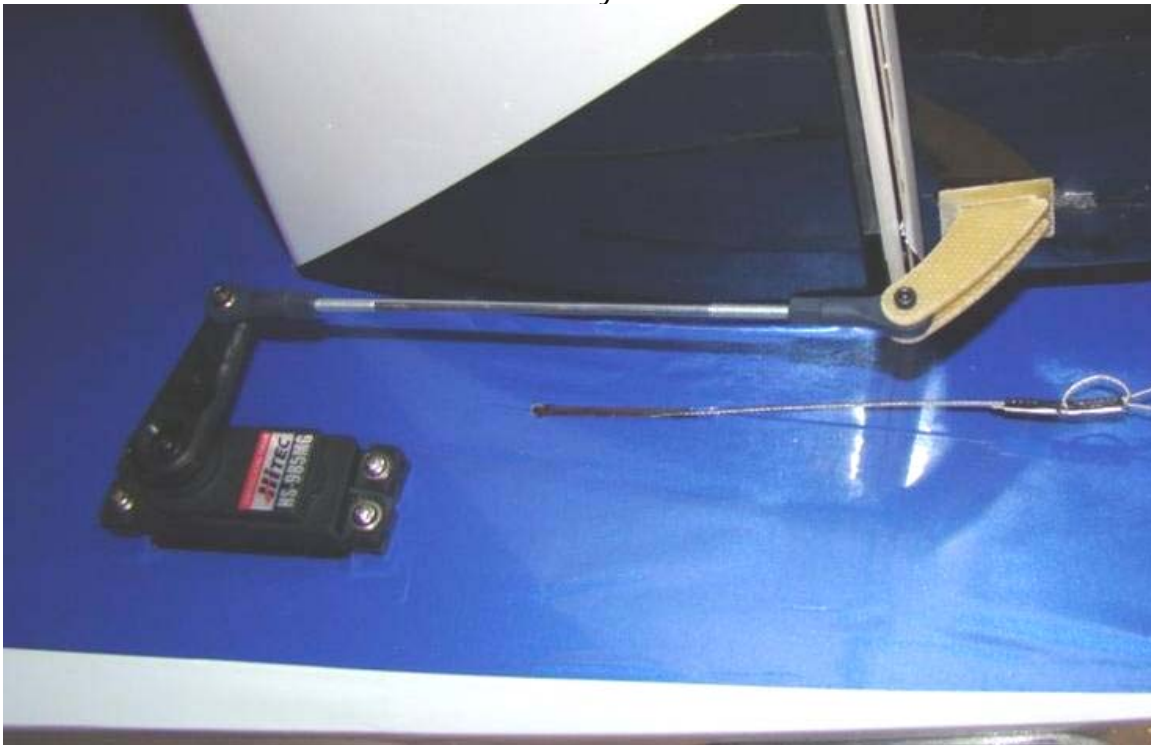
When stabilizer is centered and aligned, drip Thin CA glue onto the stab-to-fuselage joint top and bottom. NOTE: We do not remove any covering from the horizontal stabilizer. This keeps the stabilizer strong, and thin CA makes an excellent joint to covering material. If your stab joint is not tight enough for thin CA glue, or if you have to trim the opening to align the stab, you can use thick CA glue as well.



Hinge the elevators onto the horizontal stabilizer, starting with the elevator which has the joiner attached. Use the same procedure as on the rudder. Make sure the elevator can swing 45 degrees up and down, minimum.



Before installing the elevator with the slot which accepts the joiner, practice fitting it once, the joiner is very tight in the slot. Use plenty of polyurethane or epoxy glue in the slot, and install the elevator. Make sure it can swing freely at least 45 degrees up and down. Allow to dry.



Install elevator horn as shown, using the same technique as for the rudder horns. Remove covering over the elevator servo opening, and install elevator servo, attached to an 18-24" extension, as shown. Assemble pushrod and install, using black screws and locking nuts to attach the ball joints to the servo arm and control horn.

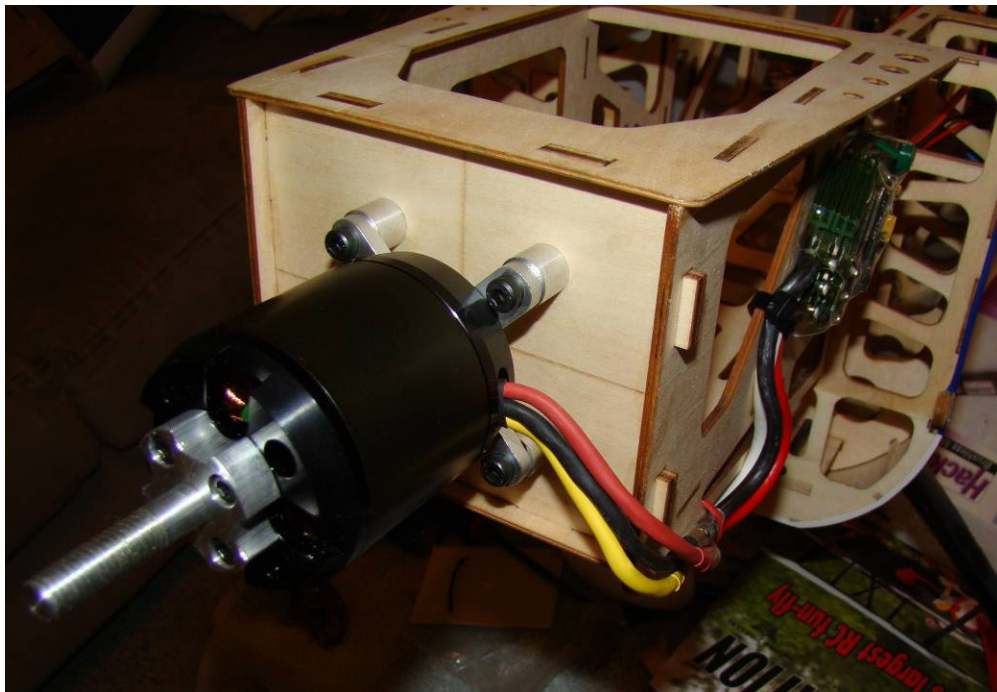
NOTE: We recommend the use of one elevator servo with metal gears and at least 100 oz/in of torque. However, enough hardware is supplied in your kit to install a second elevator servo, in "mirror image" fashion, on the other side of the fuselage. Note that this may result in a tail-heavy condition unless you are using a large and heavy power system.



NOTE: The firewall of the Slick is pre-drilled for popular motor types. If your motor uses a different bolt pattern, mark and drill the firewall as shown.

The firewall of the Slick is arranged to allow the widest possible selection of motors to fit. Extra space has been provided for long motors and long prop adaptors. For this reason, if your motor is compact, you will need to use spacers between the motor and firewall. A set of wooden spacers is included in your kit, these can be sanded to length, or other plastic, wood, or metal spacers set can be used. NOTE: The correct distance between the firewall and the back of the spinner plate is 80mm.

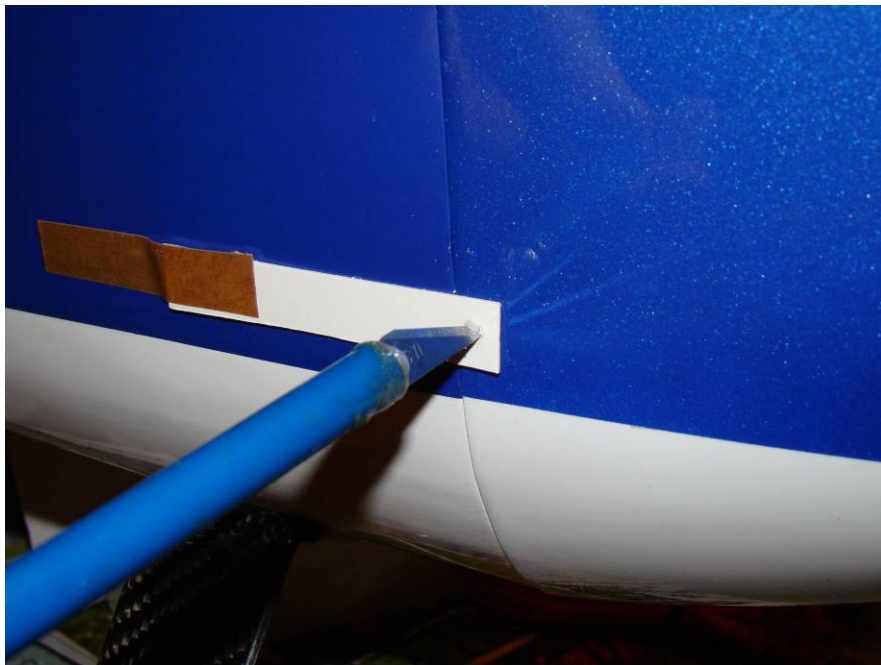
NOTE: Now is a good time to go over all joints on motor box, landing gear mount, and battery tray with thin CA glue for extra strength in these high-stress areas.



Attach the motor using the provided 4mm screws and blind nuts. Use loctite on the mounting bolts. Mount the speed control to the side of the motor box as shown using Velcro and/or Zip ties.



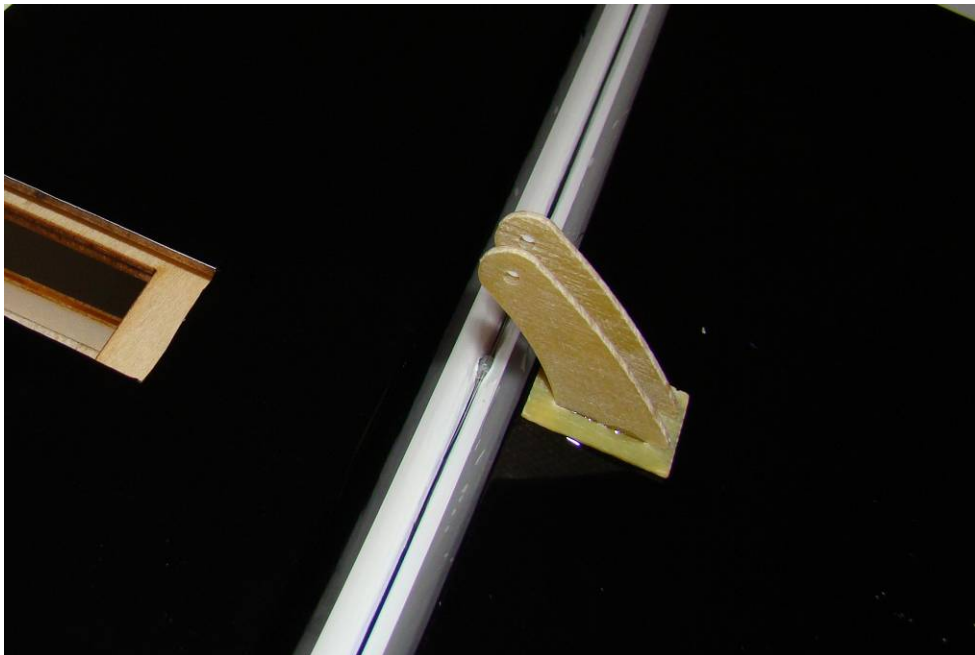
Cut small strips of paper or card stock and use masking tape to affix them to the fuselage as shown, to indicate the exact location of the four cowl-mounting tabs which extend forward from the fuselage.



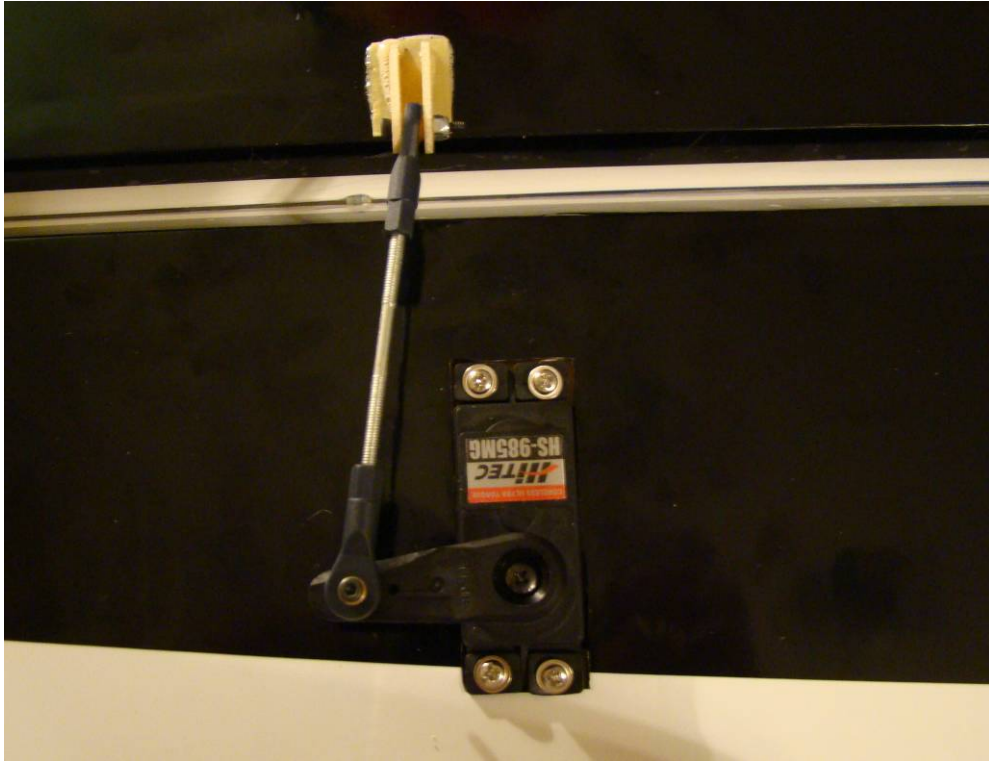
Install the cowl, and use the paper strips as guides to make holes in the cowl over the tabs. You can use a twisting motion with your hobby knife to start these holes. Use a 1/16" or smaller drill bit to finish making these holes. Install wood screws into these holes, and then remove. Remove the cowl and screws and soak the plywood mounting tabs in thin CA glue. This will strengthen the mounting tabs. Re-install the screws.



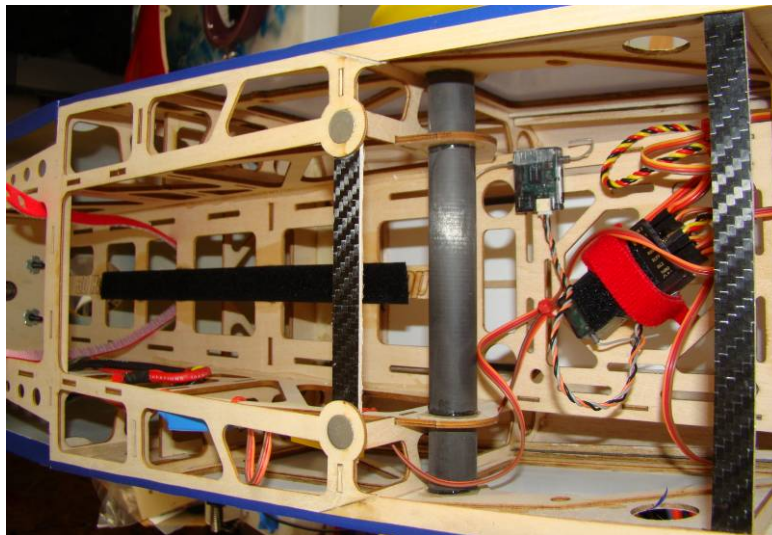
Remove the covering over the aileron servo openings and the aileron control horn slots as shown.



Use epoxy or polyurethane glue to install the aileron horns into each wing as shown.



Attach servo extensions to aileron servos. Use the string installed in the wing to pull the servo wire through the wing, then install the servo into the wing as shown. Assemble the aileron pushrod as shown and attach the pushrod to the servo arms and aileron horn with black allen-head screws and lock nuts.



Apply one side of the self-adhesive Velcro tape to the battery tray, the other to your battery. Use the Velcro strap as a "seatbelt" to hold your battery in position. Always make sure your battery is firmly strapped down before flight.

Install your receiver as shown on the receiver tray.



Balancing: The AJ Slick can use a wide range of center-of-gravity locations. For your maiden, we suggest a more forward CG location, since you can always move your CG rearward to suit your flying style if necessary.

For maiden and precision flight - 155-160mm from leading edge of wing at root
This is approximately the forward edge of the carbon wing spar tube.

When trimming your CG, keep in mind that a “neutral” CG (one with which you can roll the airplane inverted and the airplane neither climbs nor dives) is good for 3D aerobatics, but a more forward CG (one with which you must hold some “down” elevator to keep the airplane flying straight while inverted) is often better for precision flight and is much easier to land gracefully.

Control Throws - Throws are given both in degrees and in millimeters, measured at the end of the surface (where the throw is greatest). A throw meter is included to measure these angles.

Ailerons-	Low Rate 15 degrees	30% exponential
	High Rate 30 degrees	70% exponential
Elevator-	Low Rate 15 degrees	30% exponential
	High Rate Maximum possible throw, at least 45 degrees	75% exponential
Rudder-	Low Rate 30 degrees	30% exponential
	High Rate 45 degrees	75% exponential

Make your first flight with the controls set on low rates. During the trimming phase, we recommend landing with some throttle, and not attempting to “dead stick” the airplane. This may mean you need to time your flights and keep them a bit shorter than usual. After your first flights, check all control connections and motor and prop mounts for tightness.

ADDENDUM – Rear rudder servo mount



We have provided a rear rudder servo mount and pushrod for the 70" Slick. Note that unless you are using a very heavy power system, the use of this rear rudder servo mounting location may lead to you being unable to balance your Slick.

Also note that, depending on the type of servo arm you use, it may be necessary to mount the ball joint to the inside face of the servo arm and perhaps also use a spacer to keep the rudder pushrod from contacting the elevator as it swings.

We hope you enjoy your 3D HOBBY SHOP Aircraft.
Be sure to look for new aircraft and products coming soon from
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