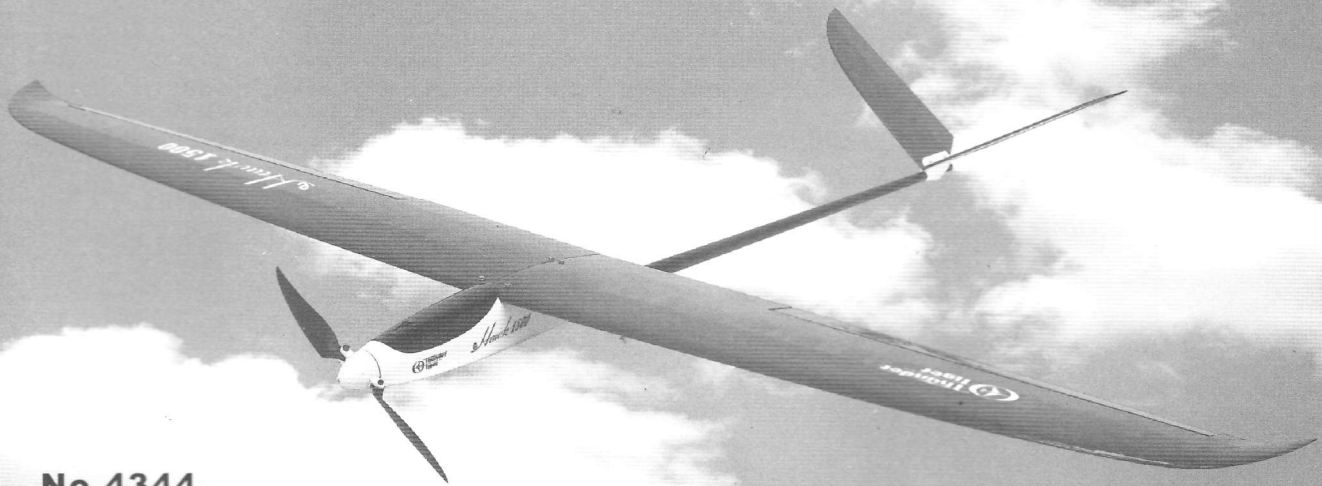




Hawk 1500

Assembly Manual



No.4344

Specifications

Wing Span: 59.84" (1520mm)

Length: 36.42" (925mm)

Wing Area: 341sq. in. (22dm²)

Weight: 1.3 lbs. (600g)

Motor: OBL29/09-07A

Airfoil: RG-15

Warranty

This kit is guaranteed to be free from defects in material and workmanship at the date of purchase. It does not cover any damage caused by use or modification. The warranty does not extend beyond the product itself and is limited only to the original cost of the kit. By the act of building this user-assembled kit, the user accepts all resulting in liability for damage caused by the final product. If the buyer is not prepared to accept this liability, it can be returned new and unused to the place of purchase for a refund. Neither your dealer nor Thunder Tiger Distributors, can accept kits for return if construction has begun.

Notice: Adult Super Vision Required

This is not a toy. Assembly and flying of this product requires adult supervision.

Read through this book completely and become familiar with the assembly and flight of this airplane. Inspect all parts for completeness and damage. Browse www.thundertiger.com for customer service if you encounter any problems.

Introduction

Thank you for your purchase of the Thunder Tiger eHawk 1500 . This new generation of a 1.5M glider is going to lift for those who are eager for the thrill of soaring. Standard equips efficient outrunner OBL29/09-07A and performance folding prop that make eHawk 1500 an outstanding 1.5M EP glider in the market. Advanced from its brother eHawk 1400, the new 1500 combines proven RG15 airfoil plus convenient removable wing halves and V tail design for easy transportation.

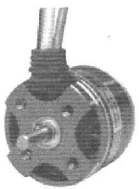
The eHawk 1500 is designed for *intermediate pilot* minded. Before beginning the assembly read the instructions thoroughly to give an understanding of the sequence of steps and a general awareness of the recommended assembly procedures. Check the entire contents of your kit against the parts drawing and photos to make sure that no parts are missing or damaged. This will also help you to become familiar with each component of your plane. If you find that any of the parts are either missing or damaged, please contact Thunder Tiger Distributors for Customer Service.

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OTHER ITEMS REQUIRED FOR ASSEMBLY

A checklist is provided as below which will make shopping for these items easier.



Brushless Motor: Recommend OBL29/09-07A motor (No.2354)



Radio: A 4- channel radio with 3 micro servos is required.



Controller: ACE BLC12A (No. 8026) is a perfect controller that controlling OBL motor efficiently.



Adhesives: You will need two types of adhesives for the eHawk - Epoxy and Instant (cyanoacrylate) adhesives.



Battery: Recommend the use of a ACE Power Lipo battery 3S1P 1100mAh(No.2804)

TOOLS AND SUPPLIES NEEDED

- Mixing Stick for Epoxy
- Medium Grit Sand Paper
- Rubbing Alcohol
- Paper Towel
- Hobby Knife
- Ruler
- Pen, Pencil or Marker
- Phillips&Flat Head Screw Drivers
- Scissors
- Nose Plier
- Drill Bit 9/64"(3.5mm)

Open the box and check that you have all the parts as shown below.

AS6586 Fuselage Set

Fuselage (1)

Standoff (1)

3x5mm Screw (2)

Blind Nut (4)

Servo Tray (1)

Wing Mount A (2)

Wing Mount B (2)

Velcro (2)

AS6593 Canopy

Canopy (1)

2X5 mm Wood Screw (3)

AS6594 Tail Boom

Tail Boom (1)

AS6587 Main Wing Set (T. Magenta)
AS6587L Main Wing Set (T. Blue)
AS6587Y Main Wing Set (T. Yellow)
AS6587X Main Wing Set (Any Color)

Main Wing (L,R/1)

Torque Rod (2)

Carbon Tube (2)

3x20mm Screw (4)

Eyelet (4)

No.2354 OBL 29/09-07A

Outrunner Brushless Motor 29/09-07A (1)

AS6243 Control Horn

Backplate (2)

Control Horn Base (2)

2x22mm Screw (2)

Nylon Horn (2)

AS6588 Tail Set (T. Magenta)
AS6588L Tail Set (T. Blue)
AS6588Y Tail Set (T. Yellow)
AS6588X Tail Set (Any Color)

V Tail (1)

AS6592 Tail MOUNT

Tail Mounting Strip (1)

Tail Mount (1)

2x8mm Washer Screw (2)

3x6mm Setscrew (1)

AS6589 10x6 Folding Prop Set

Blade (2)

Spinner (1)

Back Plate (1)

3x6mm Setscrew (2)

M2.5 Locknut (2)

M2 Hex Wrench (1)

M1.5 Hex Wrench (1)

2x6mm Self-tapping Screw (1)

2.6x16mm Socket Cap Screw (2)

AS6590 Pushrod Set

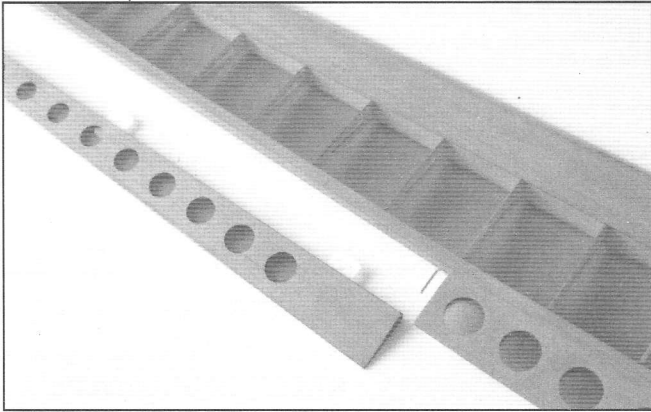
Aileron Pushrod (2)

Elevator Pushrod (2)

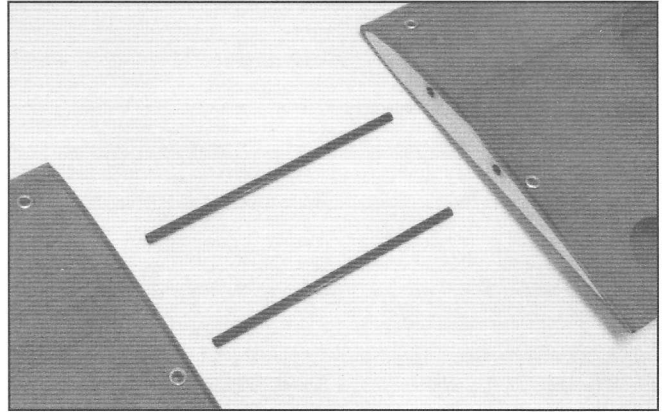
Clevis (4)

AS6591 Decal

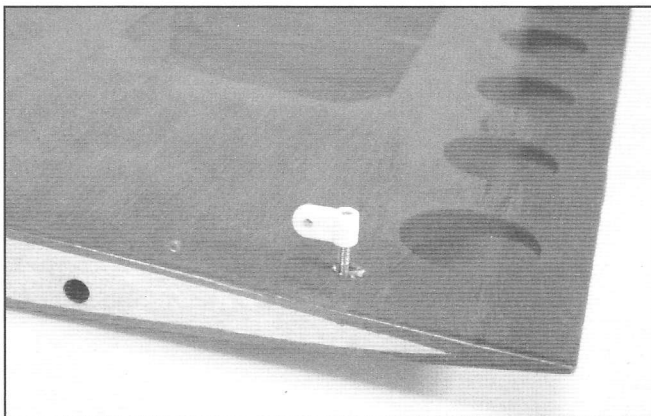
Decal (1)



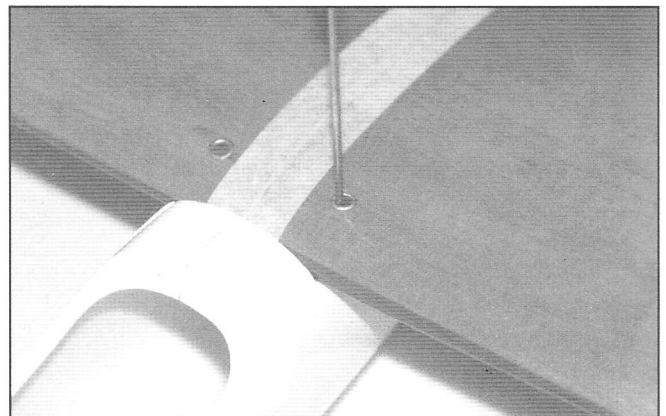
1. Remove aileron then center all CA hinges in place. Apply tiny epoxy in the torque rod hole then install the aileron. Secure all hinges with thin CA glue. After cures, make sure aileron moves freely.



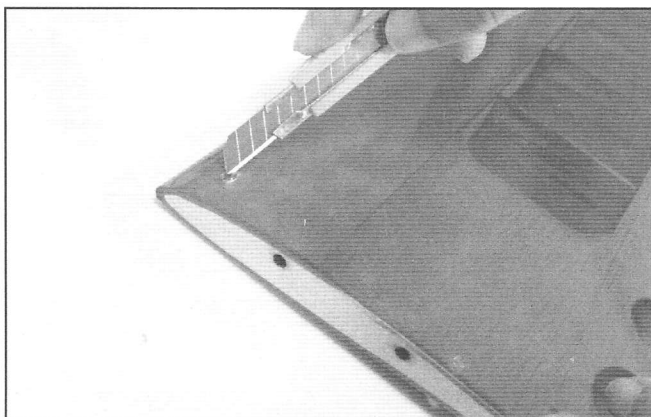
4. Join two wing halves with carbon joiner installed. Apply tape on the wing joint, make sure two wing halves contact each other closely.



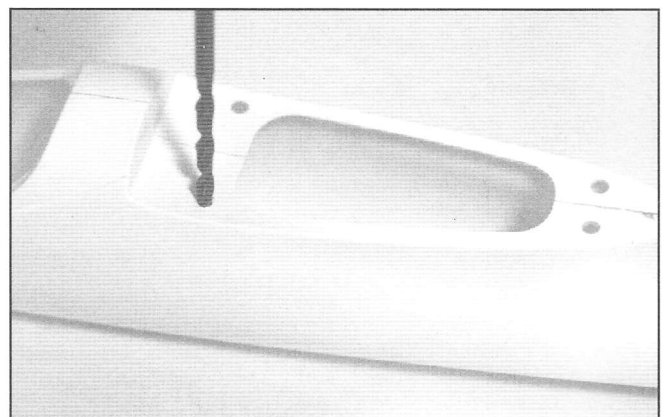
2. Locate the torque rod connector then thread the connector on the aileron torque rod.



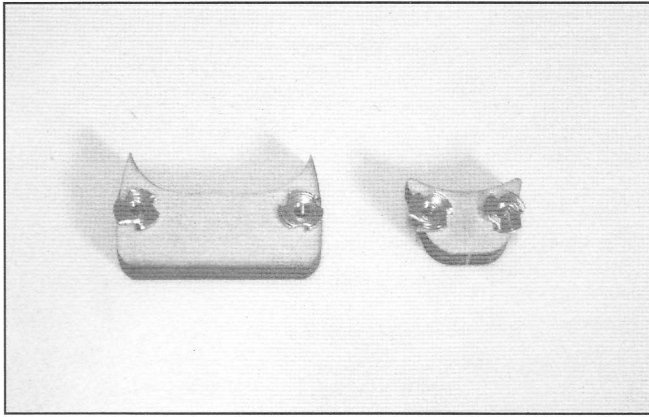
5. Place the main wing on fuselage, make drill mark when it centered.



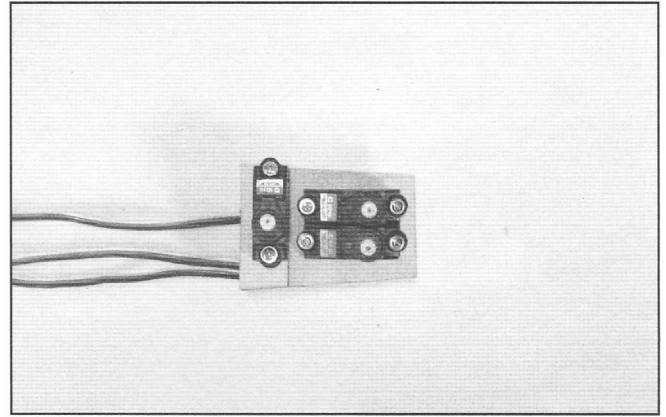
3. Use hobby knife to cut away the covering on the hole. Next install the eyelet in place, apply CA glue to secure the eyelet on the wing.



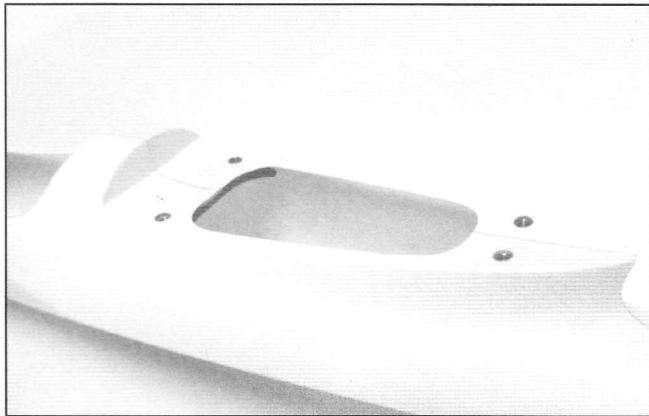
6. Locate the wing mount as the drilling guide to make sure that mark you drew are correctly. Adjust to accommodate the wing mount holes if necessary. Next drill 3.5mm hole on the marks.



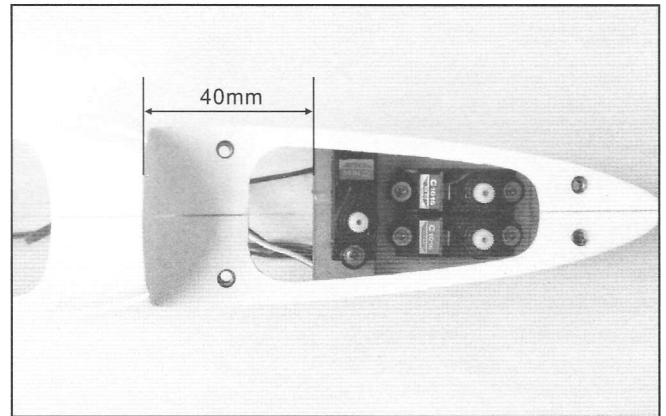
7. Install the blind nut on the wing mounts as shown.



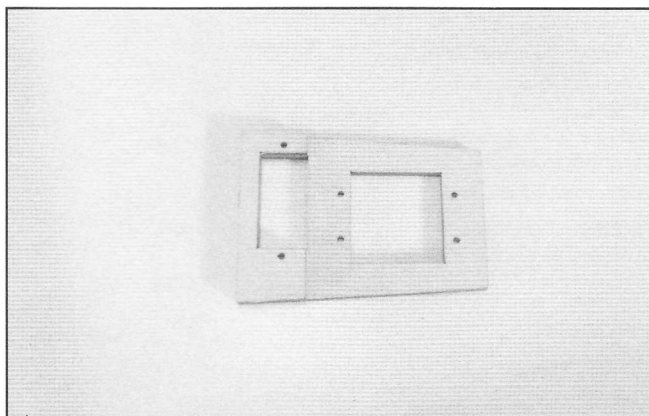
10. Secure the servo with the grommet, eyelets and wood screws which come with the servo as photo shown. Note the orientation of the servos.



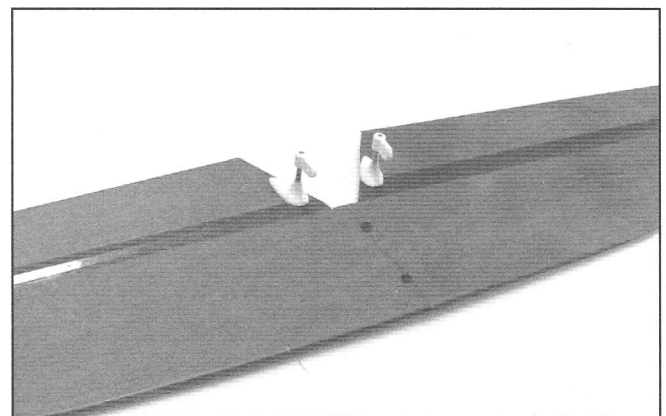
8. Glue wing mounts in place. You may need to sand the glue area to enhance the adhesion. Make sure there is no glue in the blind nut.



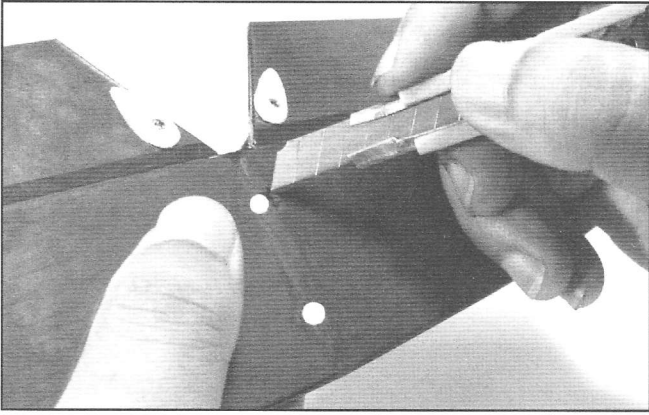
11. Glue the servo tray in fuselage. Note: do not push in too much as it might brake the fiberglass. Recommend the servo tray edge is 1-1/2" (40mm) to the fuselage wing leading edge.



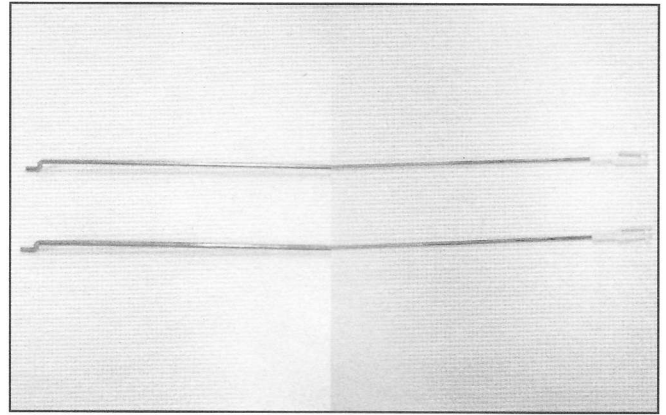
9. Glue the servo standoff on the servo tray as shown.



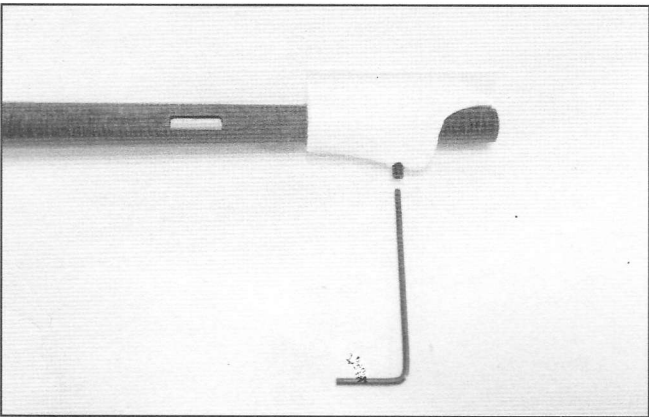
12. Locate and install elevator control horn then thread the connector as shown.



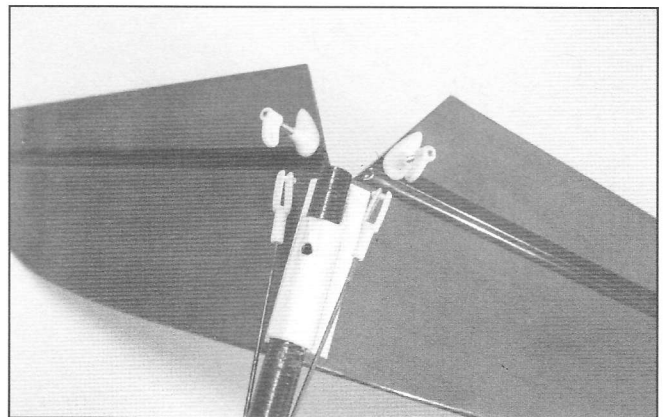
13. Cut away the mounting hole covering with hobby knife. Iron the center mounting area if necessary.



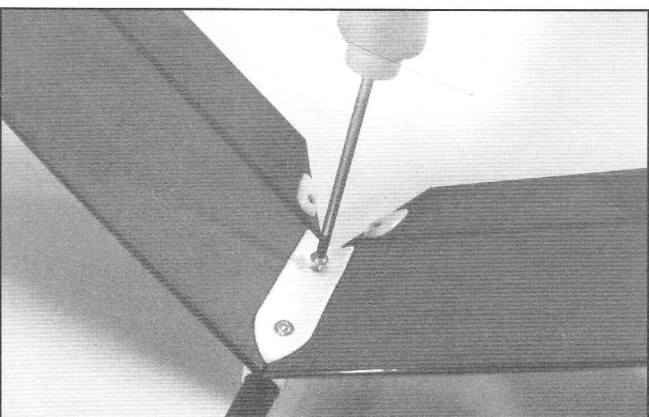
16. Thread the clevis on the pushrod, note the orientation of Z-bend end and clevis.



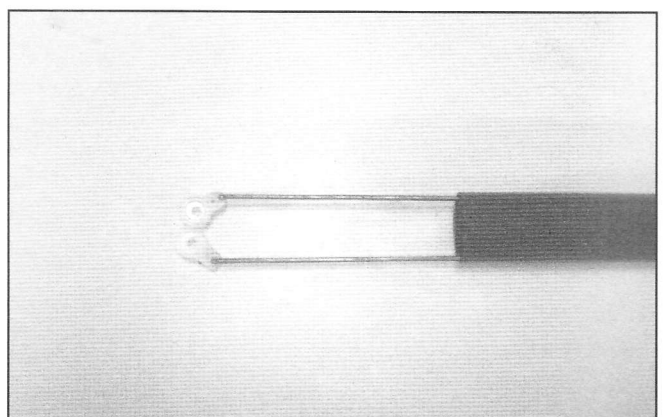
14. Locate the tail boom and the tail mount. Secure the tail mount in place with 3x6mm set screw as shown. Note that the pushrod exit holes are level with the mount.



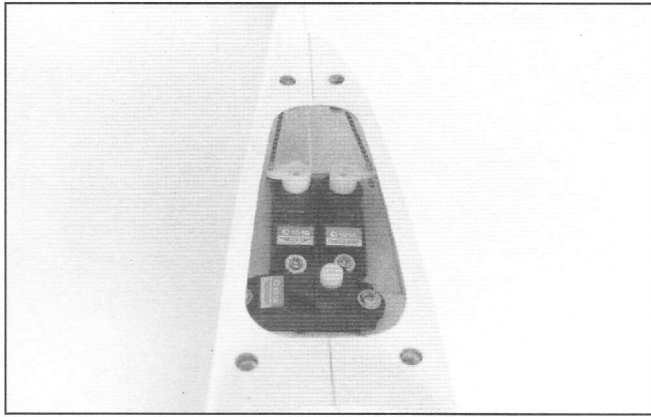
17. Insert the Z-bend end of the pushrod to the exit hole as shown. Do not snap on the clevis at this moment.



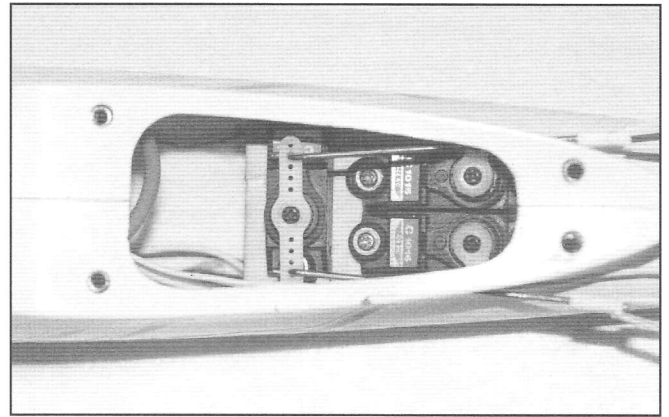
15. Bend the horizontal tail then place the tail on the mount next secure the tail on the tail mount with mounting strip and 2X8mm washer screws.



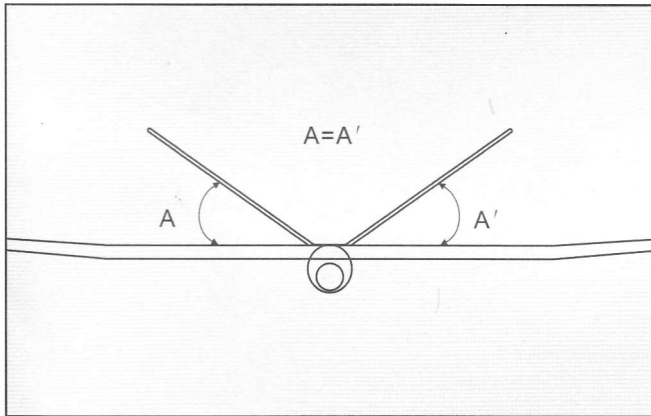
18. Locate the servo horn, insert the Z-bend end at the second hole. Trim away the excess portion of the servo horn as it will contact the fuselage.



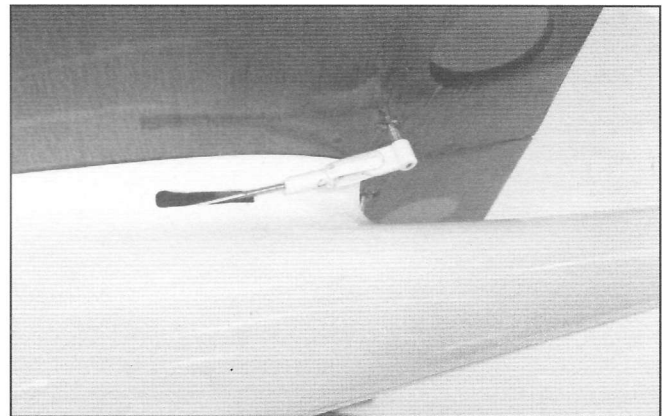
19. Attach the tail boom then reach two pushrods on the servo. Make sure the pushrod should be cross to each other. That is to say the left elevator servo controls the right elevator. Secure the servo horn with servo screw when servo is in neutral position.



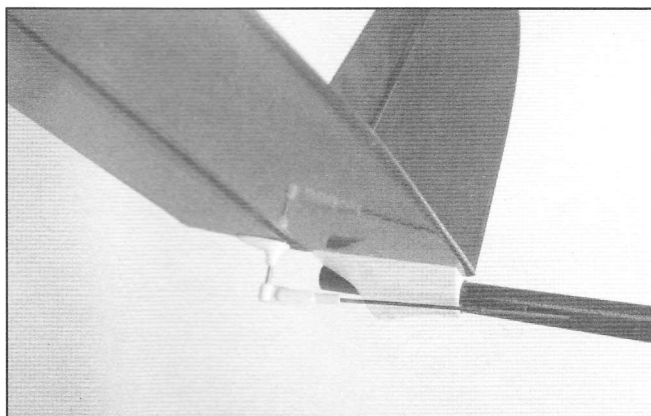
22. Remove the main wing, install the aileron servo horn and pushrod. Thread the clevis on the pushrod.



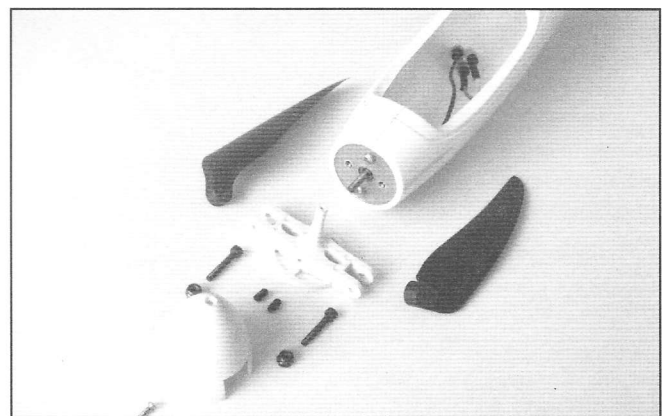
20. Temporarily install main wing on fuselage with four 3x20mm screws. Adjust the tail boom make sure V tail is at the same angle to the main wing next glue the tail boom in place.



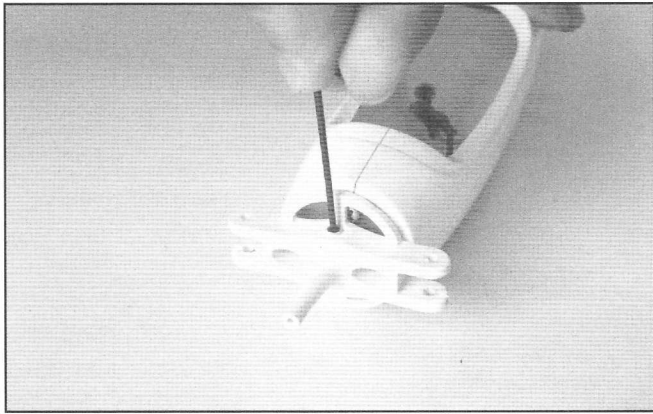
23. Install the main wing again, adjust the clevis and snap it onto the control horn when servo is in neutral position.



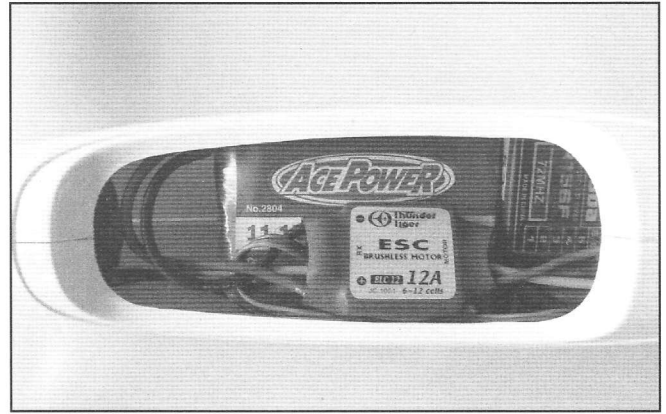
21. Adjust the clevis and snap on the elevator control horn.



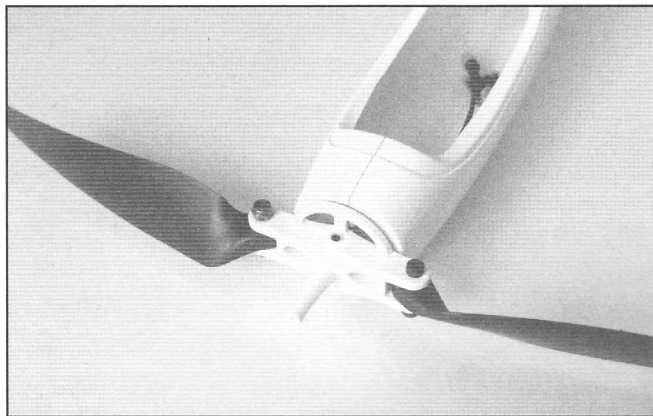
24. Secure the motor (recommend Thunder Tiger OBL29/09-07A) with 3x5mm screw. Make sure the wires do not contact to the motor can. Tape the wires if necessary. Locate the Folding Prop accessories as shown.



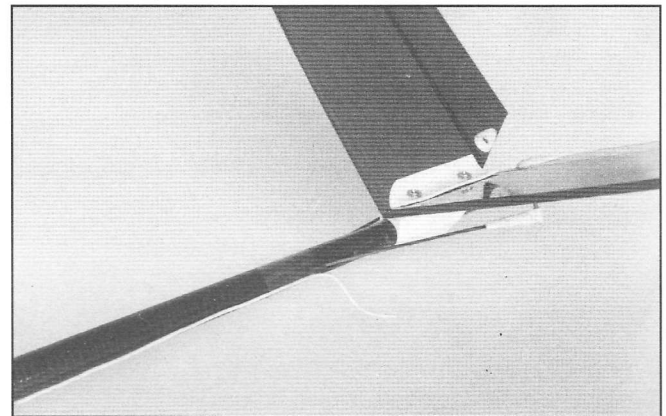
25. Install the blade holder on the motor with two 3x6mm set screws. Make sure the holder does not contact the screw but as close as possible to the fuselage.



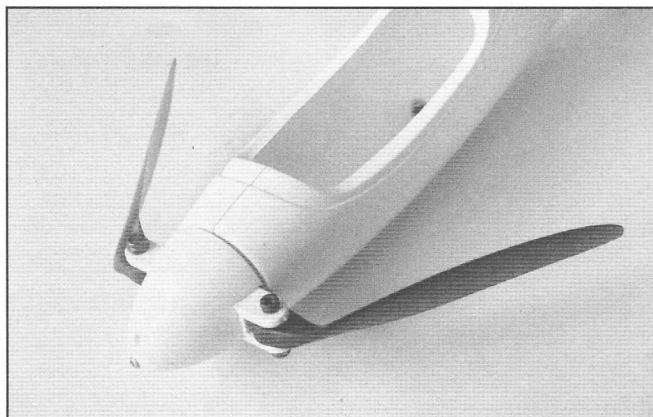
28. Locate Velcro and cut it into two pieces. Attach the Velcro to battery pack and attach the other halves of Velcro to the fuselage. Refer to manufacturer's Receiver and ESC manual then connect all connectors properly and setup V-tail function. The ESC and RX are located as shown.



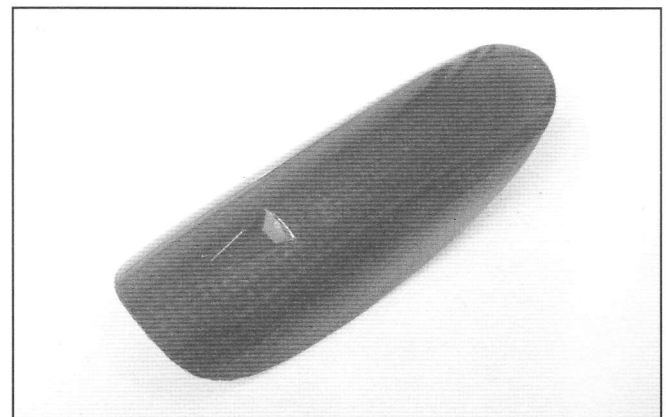
26. Install the folding prop with the 2.6x16mm socket screws and M2.6 locknut. Do not over tighten the screw make sure it can fold back freely.



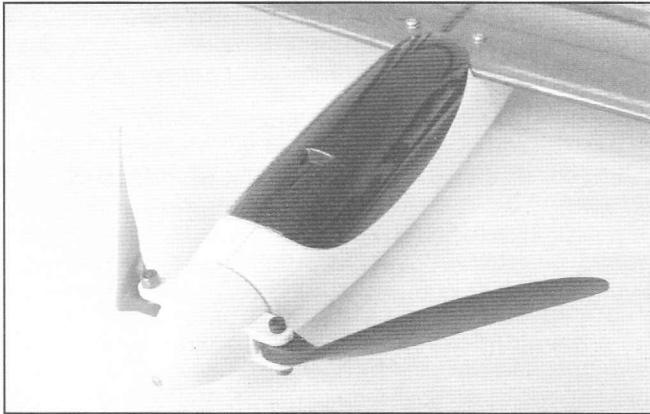
29. Thread the antenna through the aileron exit hole then tape it on the boom to the tail.



27. Install the spinner with 2x6mm self-tapping screw as shown.



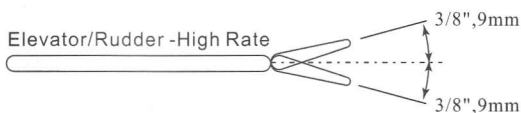
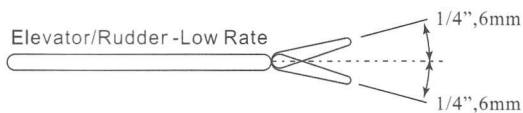
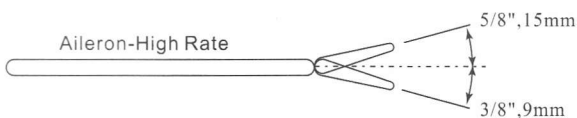
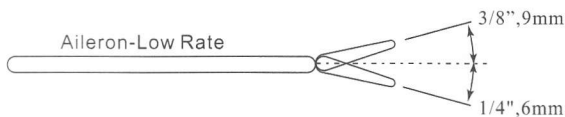
30. Trim the canopy along with the molded line. Cut away the air inlet for cooling.



31. Position the canopy in place. You may use tape to tape the canopy in place. Or you may drill three 1/16" (1.5mm) holes then secure the canopy with furnished 2x5mm wood screws.

Control Throws

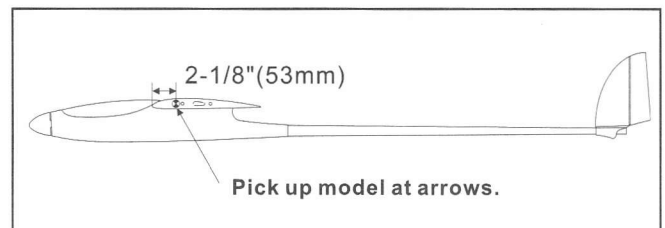
Make sure the direction of servo moves correctly. If not, switch the reversing switch on the transmitter. Adjust the control throws as following suggested.



Balancing Your Plane

IMPORTANT-Do not fly your model before completing this very important section. A model that is not properly balanced will be unstable could cause serious damage and/or injury.

1. Turn the wing (and plane if assembled) up side down and measure about 2-1/8" (53mm) from the Leading Edge of the wing root then make a mark with your felt-tip pen. This is the balance point.
2. With your model fully assembled turn the model upright and pick it up with one finger at each of the balance marks you made earlier. If balanced properly the plane will hang horizontally.



Balance

Balancing your model is very important and must not be overlooked. The center of gravity (CG) is 2-1/8" behind the leading edge of the wing near the wing root, parallel with the fuselage. You can adjust the battery pack forward or backward to reach the right CG.

FIRST FLIGHTS

Checks You Should Make

Before you attempt to fly your model you should perform some final checks:

1. Fully charge your radio and flight batteries following the manufactures instructions.
2. Check the direction of travel of your control surfaces and the operation of the motor controller per the manufacturers instructions.
3. Range check your radio system per the manufacturers instructions.
4. Double check that you have installed the screws in the servo control arms and that the clevises are snapped tightly on the control horns.

We strongly recommend that you get help from an experienced R/C pilot if you are just beginning. You should be able to find help at your local dealer or club field.

Flying eHawk 1500

First of all, if you are flying with other flyers, check to make sure they are not operating on the same frequency as you. If they are, do not turn on your radio until they have safely landed and have turned their radio off.

Secondly, even though the eHawk 1500 is very easy to fly, if you are a novice modeler/pilot, we highly recommend that you seek the help of an experienced modeler for your first few flights. He can save you a lot of time and possible disappointment by helping you get your model in the air safely and getting it trimmed out for you.

Important: The radio control system is set up to operate the control surfaces just like a real airplane as if the pilot (you) are sitting in cockpit controlling the airplane. When you want the plane to dive, you push the elevator stick forward (up), to climb you pull the stick back (down), to turn right, you move the aileron stick to right with elevator up and vice versa. When you want to turn the motor on you push the throttle stick forward and when you want to turn the motor off you pull the stick back. It is the turning that causes the most problems with novice pilots because when the plane is flying towards you a right turn command on the transmitter cause the plane to turn to your left (which is the planes right). Get the picture? Fortunately the up and down commands do not change. The easiest way to conquer this problem is to try and always face your body near the direction the planes are flying. This means that you will have to look over your shoulder at times, but many modelers find this an easy way to learn.

THE FIRST FLIGHTS

You should always use the first few flights to get accustomed to your new airplane and its flying characteristics. Keep the model upwind and climb to a good comfortable altitude to cut off the motor and trim your eHawk 1500 for a glide. At altitude cut the motor and start your glide. Have an experienced modeler adjust the trims of the transmitter for you until the plane will glide straight and level without any other control input. Once the trims are set practice making smooth turns in both directions while losing as little altitude as possible. When the eHawk 1500 starts to get too low for comfort turn the motor back on and climb back up to altitude. Practice this climbing and gliding until you are comfortable with the airplane.

Depending on the battery you use the eHawk 1500 will make 5 to 6 good climbs up to a nice thermal searching altitude from single battery charge. Once the ESC shuts off the power to the motor you will need to set up for your landing. Continue to make smooth gently turns while lining up the eHawk 1500 with your landing strip. Once you are set up to land keep the wings level and let the model settle in for an nice gentle landing while adding up elevator to keep the nose up slightly as the plane slows down. Make several flights like this to really familiarize yourself with the characteristics of your model and to learn the glide and distance covering abilities of the eHawk 1500. Once you have mastered a good "comfort level" you are ready to start searching for thermals which will really increase your flight times.

THERMALS

Thermal soaring is one of the most interesting and challenging types of flying there is. Believe it or not, your eHawk 1500 is capable of flights thousands of feet

high, lasting for several hours, and covering dozens of miles. The following paragraphs will help explain how to take advantage of nature's energy sources called thermals.

"Thermal" is the term applied to columns of rising air. This air is rising because it is warmer than the surrounding air. A dust devil is simply a thermal which has picked up some dust. Even a tornado is very similar to a thermal, but of course much stronger.

Thermals occur when the sun, or other heat source, heats the air in one location faster and/or warmer than the surrounding air. Darker surfaces (plowed fields, asphalt parking lots, etc.) absorb the sun's energy faster than lighter colored and are generally good thermal generators. This warmer air is lighter (less dense) than the cooler air and thus rises. The rising air naturally starts to rotate, much like water going down a drain, and forms an inverted funnel shaped column that usually gets larger with altitude. This warmer air often contains water vapor which condenses as it reaches the cooler air high above the earth forming big puffy Cumulus clouds that experienced sailplane flyers will watch to determine where the thermals are forming. Thermals vary in strength, but often contain air that is rising at speeds over 1200 feet per minute. Some thermals are so strong they can even rip a sailplane apart, especially if the plane is flying fast when it passes through the thermal.

THERMAL SOARING

It takes lots of practice and concentration to thermal soar like the Hawks and Eagles. Since the pilot is not sitting inside a model sailplane, he cannot feel the thermal, he can only see his sailplane's reaction to the thermal. Therefore, the majority of the time, unless the pilot is paying careful attention to the plane, he may not even realize that plane is near a thermal. Since most thermals are relatively small, less than a hundred feet in diameter near the ground, the sailplane will rarely fly directly into the thermal and start rising. More likely, it will fly near a thermal and the wing closest to the thermal will rise turning the plane away from the thermal. So as you can see, an inexperienced pilot may bounce around between the thermals with ever knowing that he is encountering rising air.

In order to take advantage of thermals, you need to fly smoothly with as few control inputs as possible. Watch the sailplane carefully and it will tell you what the air around it is doing.

When a sailplane does fly directly into a thermal it will either start rising or stop sinking at its normal rate. Either case is reason enough to explore further. Continue flying straight ahead until you have obviously passed through the area of strongest lift. Now start circling in fairly tight, but smooth circles. Because of the thermals inverted funnel shape, the lower the planes altitude, the tighter the circles need to be. As the plane gains altitude, the diameter of the circles can be increased. If you see the plane falling off on one side of the turn, move the circle over into the stronger lift. Thermals are swept along by the wind so allow

your circle to drift downwind with the thermal. Be careful when following a thermal downwind though as you still have to be able to make it back to the field!

If the sailplane is flying along and all of a sudden turns by itself, it has probably flown near a thermal. Keep in mind that thermal will have tendency to turn the plane away, so make a 180 degree turn and fly back towards the thermal. If you don't quickly encounter lift start searching around that area. If you find the thermal, follow the procedure outlined above to take advantage of it.

Thermals can be generated at any time of the day, but the strangest thermals are usually produced when the sun is directly overhead 10:00am to 2:00pm seems to be the best time to find the strongest thermals.

If you find yourself getting too high or you're having trouble getting out of a strong thermal. DO NOT dive the plane to lose altitude. This will very quickly over-stress the airframe and blow the wings off the plane. The easiest and safest way to quickly lose altitude is to apply full rudder (either right or left) and full up elevator. This will put the plane into a tight spin that will normally not over-stress the airframe. This is especially useful if the sailplane gets sucked into a cloud or gets too high to see. The spinning action will give the sun a better chance of reflecting off of the wing and catching your attention.

As you might expect, with all this rising air, there must also be some sinking air. This sinking air is the

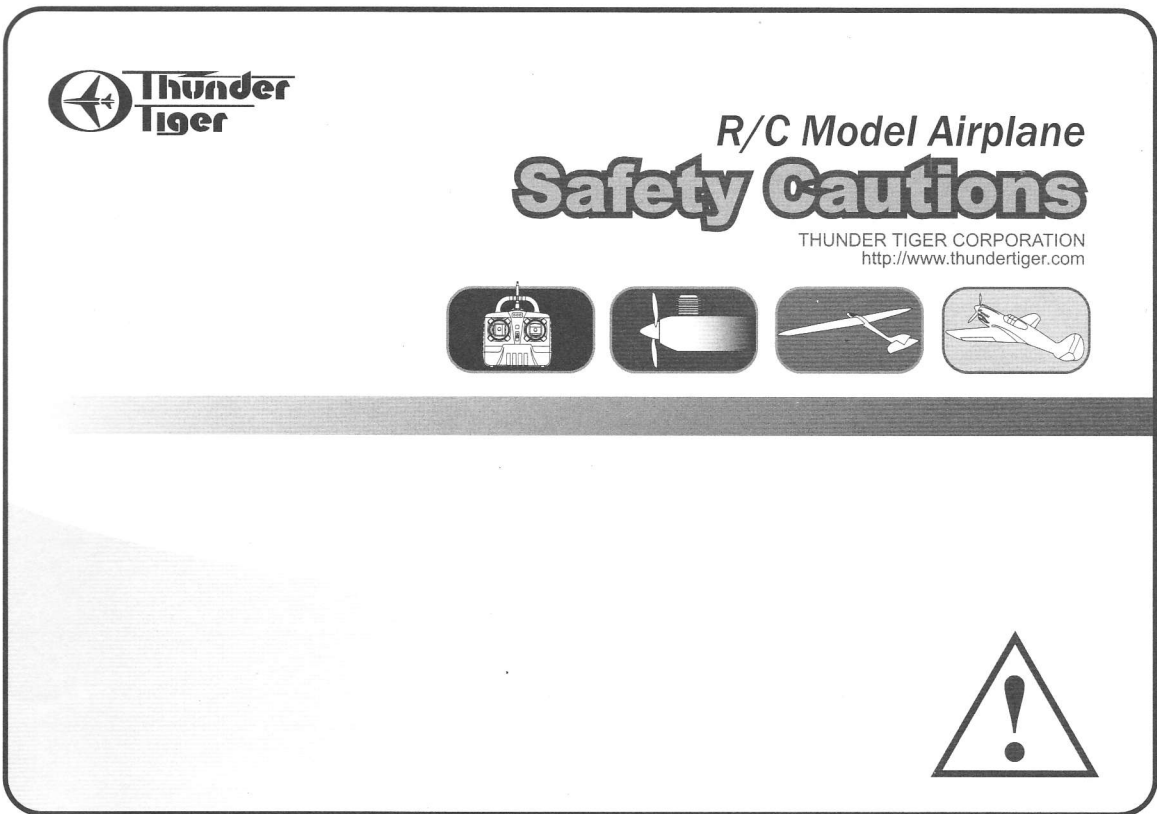
sailplane pilots enemy and one of the factors that really make eHawk 1500 challenging. "Sink" as it is referred to, is usually not as strong as the nearby thermals, but it can quickly put a sailplane on the ground. Sink in one of the reasons, you have to be very careful when chasing a thermal downwind. If you encounter sink, immediately turn and fly 90 degrees to the direction of the wind. Apply a little down elevator to pick up some speed and get out of the bad air as quickly as possible.

Safety Precautions

You as the pilot of this radio controlled model are responsible for any accidents that may occur during its use. We recommend that you fly your model at a model club field which is specially set up for model flying. But always be sure that you operate the model in a safe and careful manner and read the Safety Cautions which enclosed in the kit as following.

Congratulations

Now that you have completed the assembly of your eHawk 1500 model we feel that you have a very capable and good looking 2-meter electric sailplane. We hope that you will enjoy this model and get many hours of flying pleasure from its use. Thank you for purchasing this eHawk 1500 from Thunder Tiger and we look forward to providing you with other great R/C products in the future.



The graphic features the Thunder Tiger logo in the top left corner. To its right, the text reads "R/C Model Airplane" in a smaller font, followed by "Safety Cautions" in a large, bold, stylized font. Below this, the text "THUNDER TIGER CORPORATION" and the website "http://www.thundertiger.com" are displayed. A horizontal line separates this text from a row of four icons: a radio transmitter, a propeller, a wing, and a sailplane. At the bottom right of the graphic is a large warning triangle containing an exclamation mark.