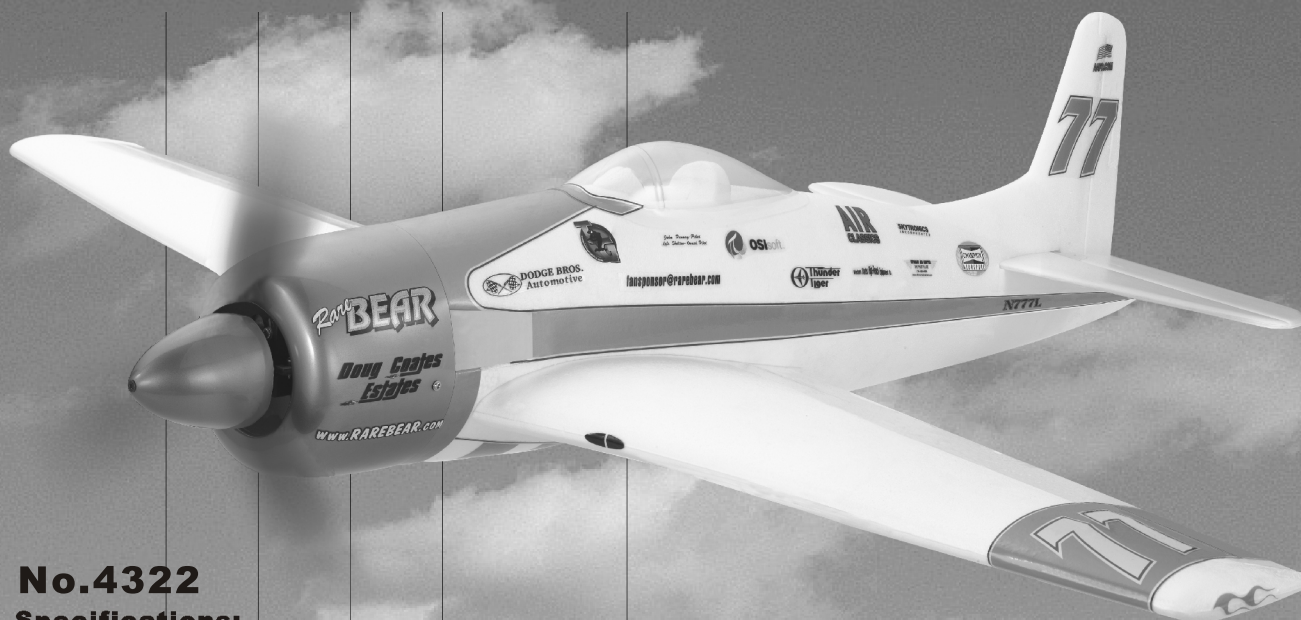




1/12 Unlimited Pylon Racer

Assembly Manual



No.4322

Specifications:

Wing Span: 34"(863.6mm)

Length: 29.75" (755mm)

Wing Area: 221.65 sq.in.(14.3dm²)

Weight: 17.5oz.(500g)

Motor: 370 4:1 Geared Motor Included

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 assembling or controlling this user assembled kit, the user accepts all resulting 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.

Notice: Adult Supervision 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. Contact Thunder Tiger authorized agent if you find any problem or need tech support.

INTRODUCTION

Congratulations on the purchase of one of our finest D.G.A. EP Park Flyer Series. The ever popular Rare Bear piloted by John Penney won the first place in the Unlimited Class of 41th National Championships Air Race & Air Show, which was held in Reno Stead Field. For more information please browse www.rarebear.com for more information.

Thunder Tiger has teamed up with the Rare Bear Racing Team to bring this legendary airplane to your hands; Thunder Tiger is proudly to present the only officially licensed 1/12th replica of the “ Bear” to all the R/C hobbyist alike worldwide! It's a replica that has stayed true to the “ Bear” in its purest form. Now you can experience this unlimited pylon racer in any park. Go Bear !

CAUTION

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.

By following these instructions carefully and referring to the corresponding pictures, the assembly of your model will be both enjoyable and rewarding. The result will be a well built, easy to assembly D.G.A. park flyer which you will be proud to display.

This Rare Bear is designed for **intermediate to advanced pilots** and it requires a assembling and flying skill.

Before you begin, check the entire contents of your kit against the parts list and photos to make sure that no parts are missing or damaged. This will also help your 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 authorized distributors for service.

Table of Contents

Introduction.....	2	Fuselage.....	6
Pre-Assembly Notes.....	3	Wing	7
Other Items Required.....	3	Motor	9
Optional Parts.....	3	Landing Gear.....	10
Tools and Supplies Needed.....	3	Radio.....	11
Parts Drawing.....	4	Balance.....	13



PRE-ASSEMBLY NOTES

1. Please assemble your model according to this instruction manual. Do not attempt to modify or change your model in any way as doing so may adversely change its flying characteristics. Doing so will be out of warranty.
2. For Super Combo version, some assembly steps are finished by factory craftsman. We recommend you to read the manual to familiar with the whole plane as well and just skip the assembled steps.
3. Before you begin please check entire contents of this kit against the parts list and parts drawings to be sure that no parts are missing or damaged. This will also help you to become familiar with each component.
4. If you find that any parts are either missing or damaged, please contact your dealer immediately for replacement. Note: Your dealer cannot accept kits from return if construction has begun.

Remember we have worked very hard to make this model as easy to assemble as possible while still maintaining our high standard of quality. Your assembly of this model is very important and will determine the final flight capabilities of your model, so use extra care and follow the assembly procedure exactly.

OTHER ITEMS REQUIRED

Radio: You will need at least a 3 channel radio control system with 2 micro servos for you model. Thunder Tiger provides 3CH Single-Stick (8304) and Dual-Stick(8305) radio for your choice.



ACE8304



ACE8305



ACE8117

ESC-10: ACE ESC-10 (P/N ACE8015) with BEC for controlling the power of your model as well as eliminating the need of a separate radio battery. The BEC (Battery Eliminator Circuitry) in this controller will automatically turn off the power to the motor when the battery reaches a factory present discharge level leaving about 10 minutes of light time for the radio system.



Battery: We recommend the use of a 8-cell 9.6V 600mAh AAA size NiMH battery. (P/N ACE 2945)



Charger: You will need a quick charger to charge your power battery. We recommend our economical DC Quick Field Charger. (P/N ACE 2626)



Super Combo Version contains 3CH radio system (either Single-Stick or Dual Stick), ESC-10, Battery and Charger as mentioned above.

OPTIONAL PARTS

OBL 2928/09 (P/N 2354)
OBL Motor Mount (P/N AS6380)

The OBL2928/09 installed on outrunner motor mount as photo shown is a perfect upgraded power unit for Rare Bear EP. Great for user who desires a Park Pylon Racing.



Prop Adaptor (P/N AQ0751)

Prop Adaptor is a must buy part for Rare Bear EP if user intend to install Outrunner and the standard 3-blade propeller.



AcePower Lipo Battery 1050mAh 3S1P 11.1V (P/N 2804)

The AcePower Lipo battery is a high discharging rate battery which provides continuous discharging rate at 15C and the burst up to 20C(5~10 sec). Note: Lipo battery is extremely dangerous, always use care when charging or discharging.

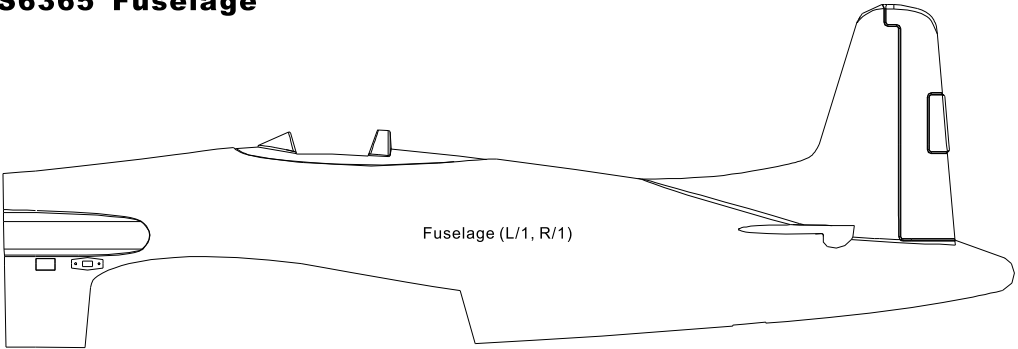


TOOLS AND SUPPLIES NEEDED


Mixing Stick for Epoxy
Medium Grit Sandpaper
Rubbing Alcohol
Paper Towel
Hobby Knife
Ruler
Pen, Pencil or Marker
Phillips Screw Drivers
Curved Scissors
Mylar Tape (3/4" in width)

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

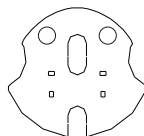
AS6365 Fuselage




Fuselage (L/1, R/1)




Velcro (2)



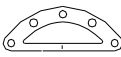
Firewall (1)



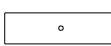
Wood Motor Mount (1)




Motor Mount Support (2)




Wing Dowel Plate I(1)




Wing Mount (1)




Nut Retainer (1)




Cowling Mount (2)



Servo Tray (1)

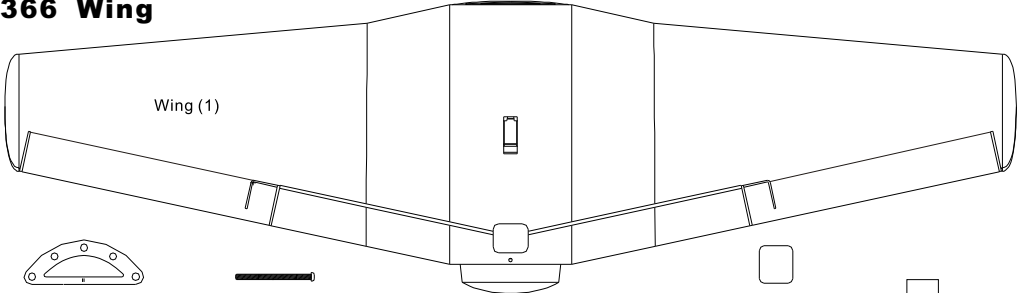


Pushrod Support (1)




M3 Nut (1)

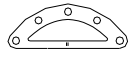
AS6366 Wing




Wing (1)




Double Side Tape (1)




Wing Dowel Plate II(1)




Wing Bolt (1)



Torque Horn Retainer (2)

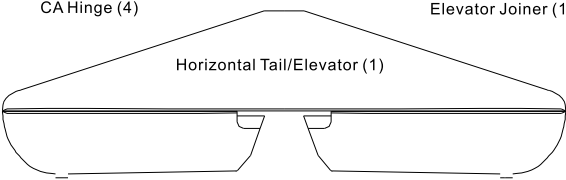


Wing Dowel (2)




Washer (1)


AS6367 Horizontal Tail



Horizontal Tail/Elevator (1)

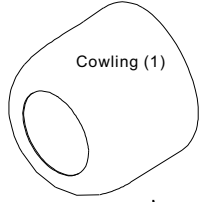


CA Hinge (4)




Elevator Joiner (1)

AS6368 Cowling

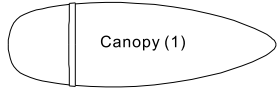


Cowling (1)




2 x 8mm Wood Screw (2)

AS6369 Canopy




Canopy (1)

AS6370 Dummy Retract



Dummy Retract (L/1, R/1)

AS6371 Spinner



Spinner (1)

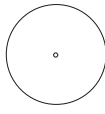




Plate (1)

AS6353 370 Super Motor




370 Motor (1)

AS6373 3-Blade Propeller



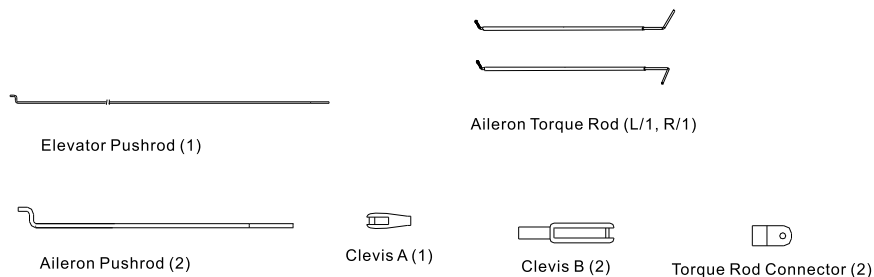
Blade (3)



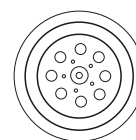
Blade Holder (1)

If anything is missing please contact your dealer.

AS6374 Pushrod Set

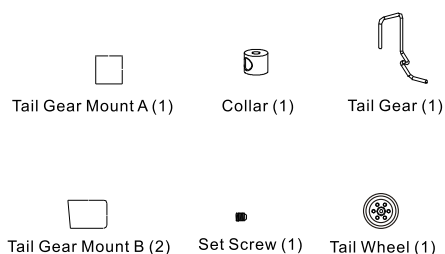


AS6375 Ultralite Wheel

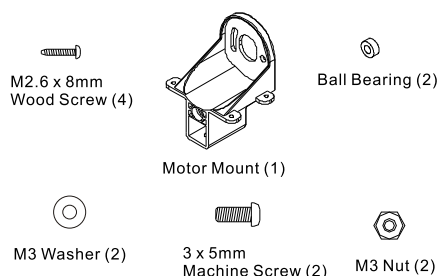


Wheel (2)

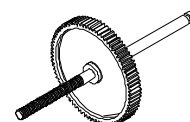
AS6377 Tail Gear



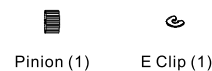
AS6379 Motor Mount



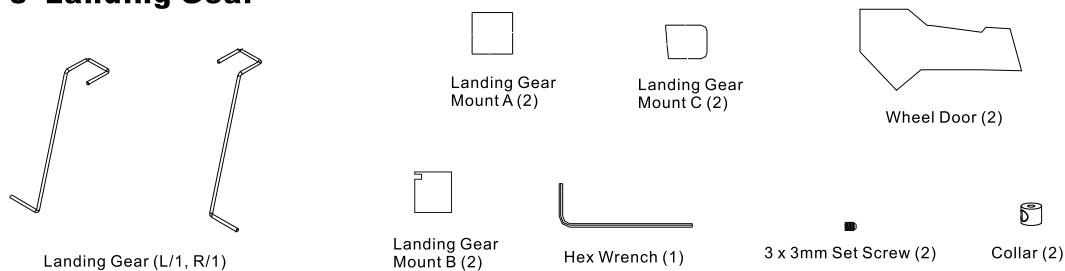
AS6372 Drive Shaft



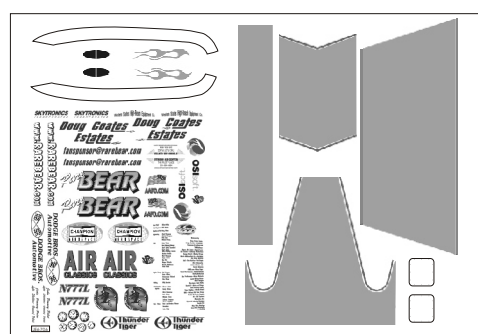
Spur Gear / Drive Shaft (1)



AS6378 Landing Gear



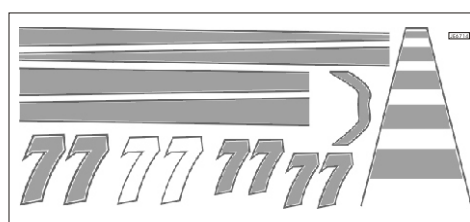
AS6381 Decal



Decal A (1)



Decal C (2)

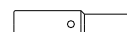


Decal B (1)

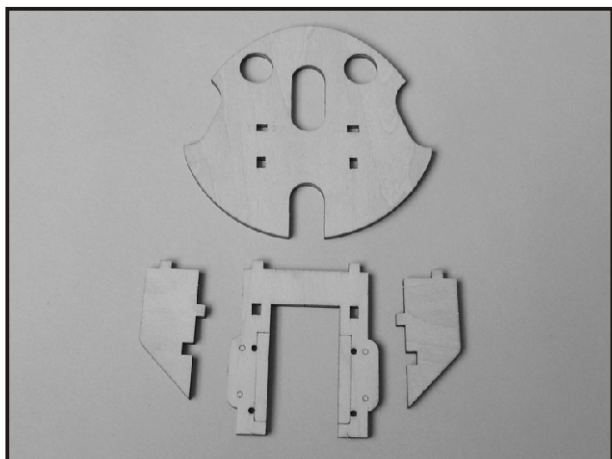
AS6382 Spinner Adaptor



3 x 15mm Sink Screw (1)



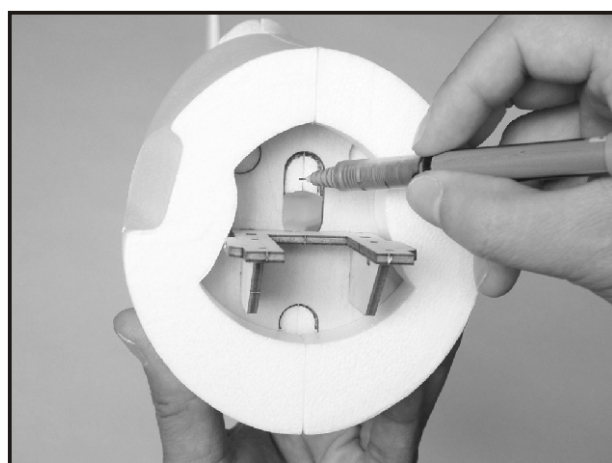
Spinner Adaptor (1)



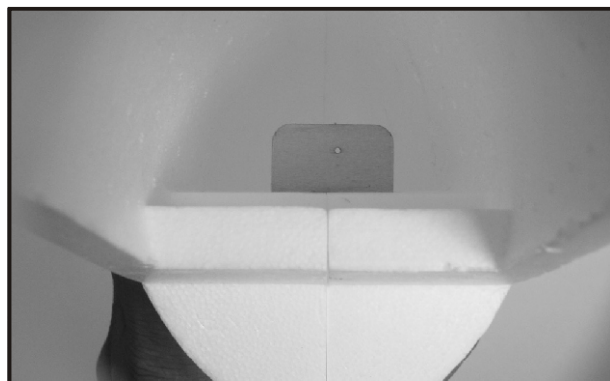
1. Locate firewall, motor mount and mount supports.



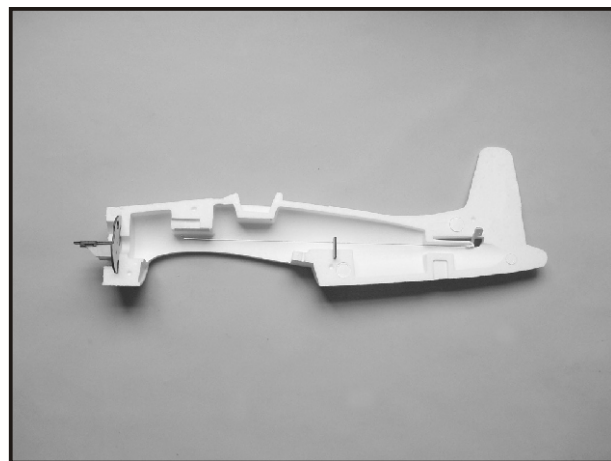
2. Epoxy the motor mount and supports on firewall.



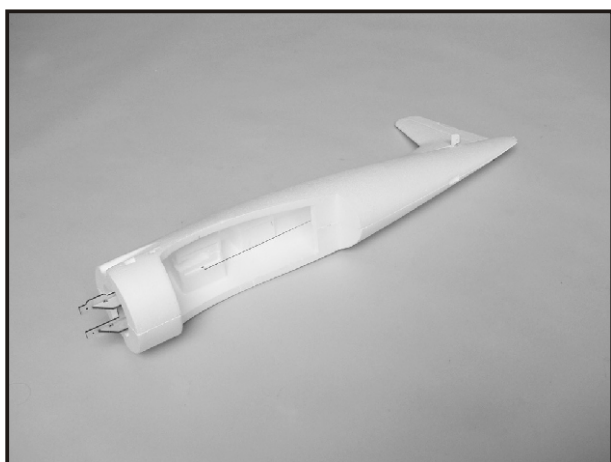
3. You may need to remove the foam flashing from fuselage and wing. Trial fit the firewall assembly in fuselage. Mark guide lines on fuselage which will help you to position the firewall assembly in place correctly later.



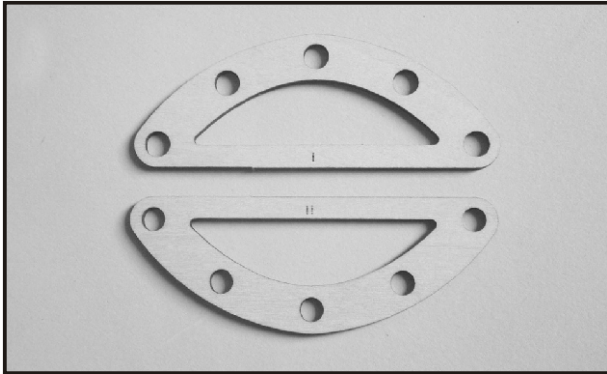
4. Next fit the pushrod support in fuselage. Note the orientation of the hole as it is not in the center.



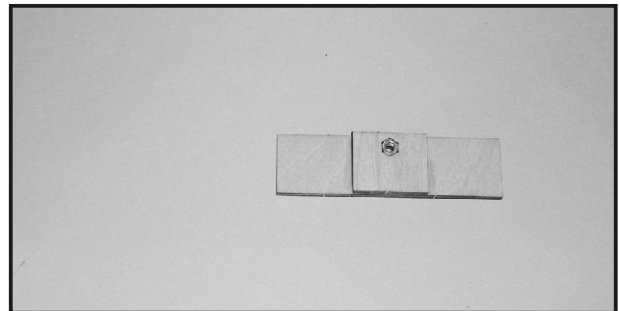
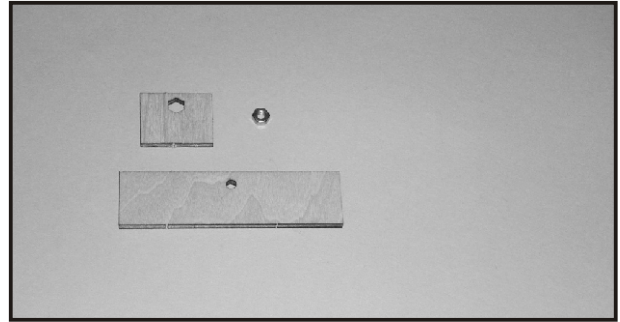
5. Insert pushrod through the push rod support then thread the small clevis then snap on the elevator joiner. Epoxy the fire wall assembly and pushrod support in place of right fuselage.



6. Next lightly epoxy the two fuselage halves together. The enclosed Epoxy will be cured in five minute sand working time is only 3 minutes. You will have to apply epoxy quickly or change to 12- minute Epoxy for longer working time.



7. There is a mark on wing dowel plate, the mark I is going to install on Fuselage and mark II is going to install on the wing.



8. Glue the wing dowel plate on fuselage and front center wing.

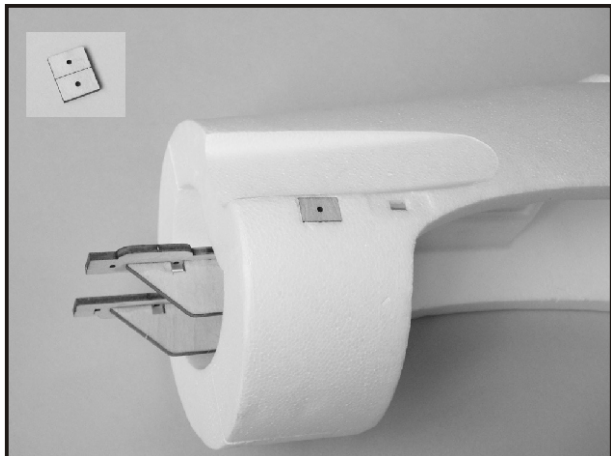
10. Locate the wing mount, nut retainer and M3 nut. Glue the retainer on wing mount then press M3 nut in place. Make sure the M3 nut is centered and secured. Apply CA may be necessary but be careful not on thread.



9. Glue the dowels on the wing dowel plate of the wing. You may sharpen the dowel and insert it to the foam, only leave about 1/4 " (6mm) exposed.



11. Drill through the mounting hole of fuselage so the wing bolt could go through. Note the orientation of the wing mount then epoxy the wing mount assembly in fuselage as shown.



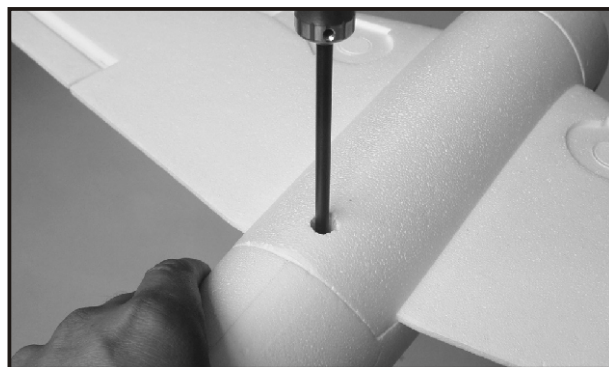
12. Locate the cowling mounts then epoxy the mount in place.



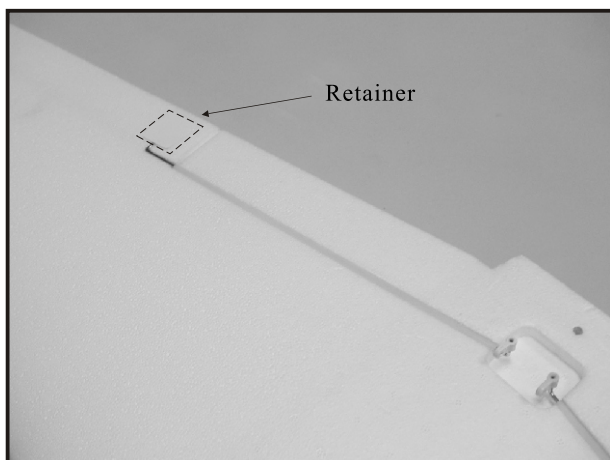
15. Apply tape (at least 3/4" wide) on hinge line. Next cut two ends of aileron then flapping it and make sure it move freely but will not come off . Note: do not cut the hinge line.



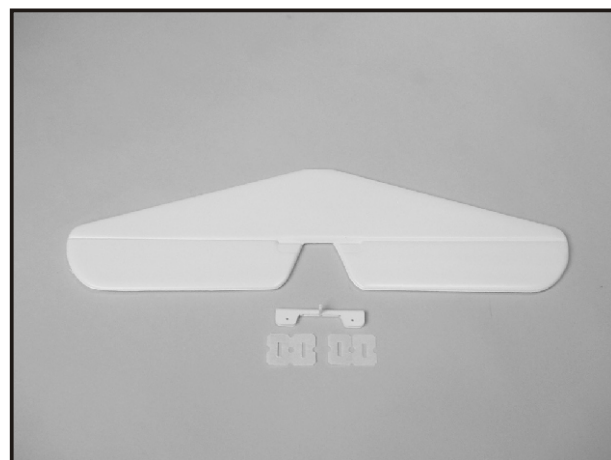
13. Epoxy elevator servo tray in place. Note the orientation of the servo tray.



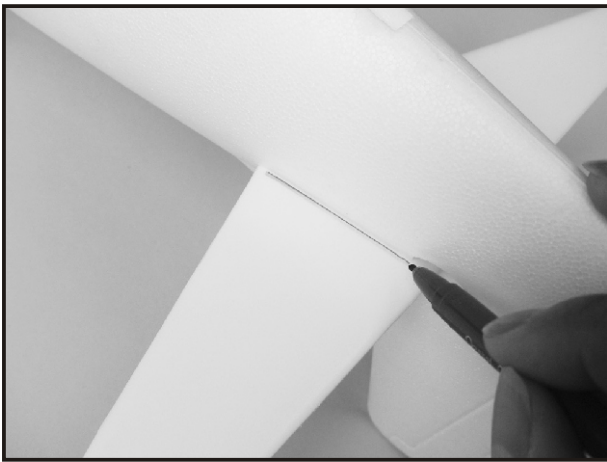
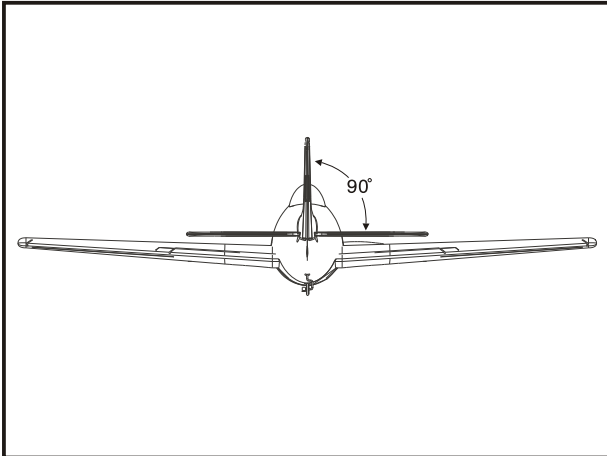
16. Trail fit main wing on fuselage then temporally secure with M4 washer and wing bolt.



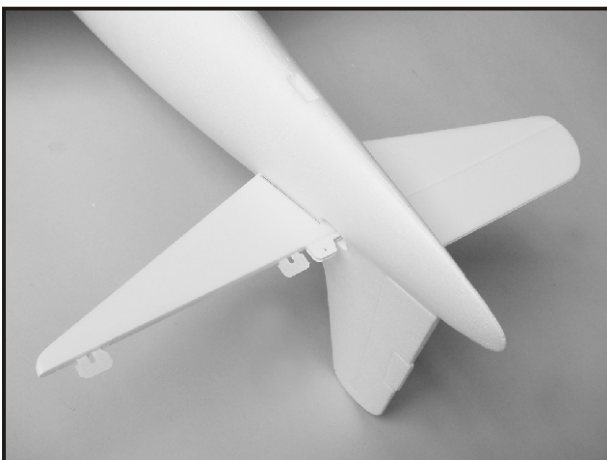
14. Locate aileron torque rod and torque rod connector, thread connect or on torque rod next epoxy the torque rod and torque rod retainer in place . Same procedure on the other one.



17. Locate horizontal tail and hinges as shown. Carefully cut off the two elevators from horizontal tail.



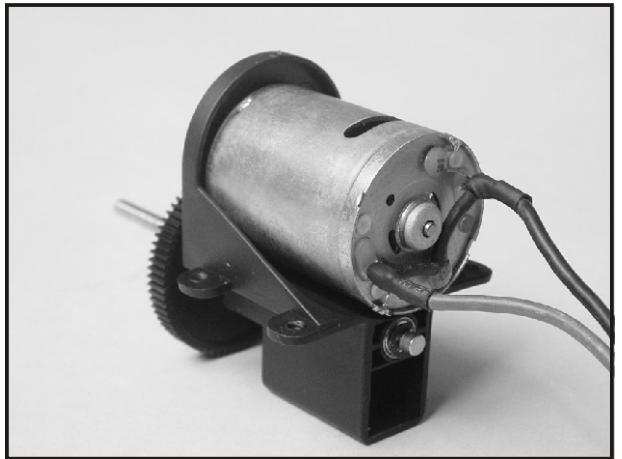
18. Trail fit the tail on fuselage. Center the tail and make marks then epoxy the tail in place. Check the alignment of main wing, horizontal tail and vertical fin, adjust it if necessary. Glue the tail in place when satisfied.



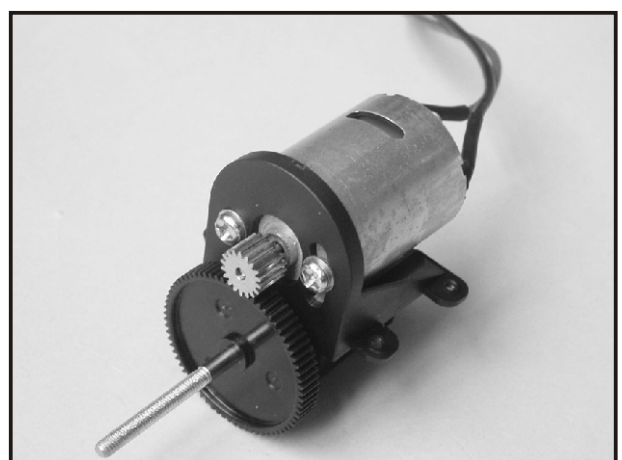
19. Make four hinge slots both at horizontal tail and elevators. Lightly epoxy the hinges on horizontal tail first. Next epoxy the joiner on one elevator then attach the elevator to the horizontal tail. After it cured, epoxy the other elevator.



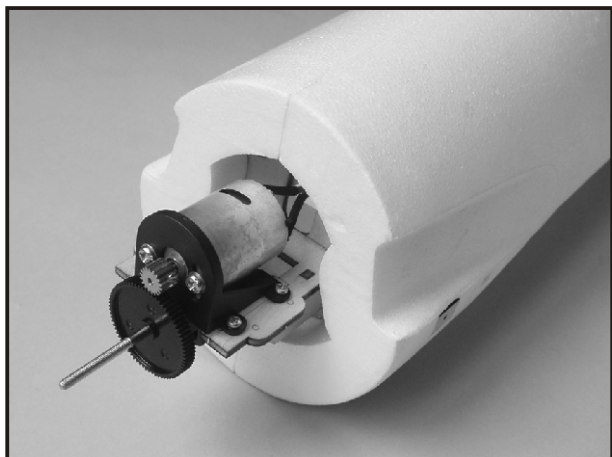
20. Locate the motor, gear motor mount, drive shaft, bearing and e clip, 3x5mm screws and M3 washers.



21. Press the bearings all the way in then insert the drive shaft. Snap on the e clip and make sure the e clip is well positioned and drive shaft will not come off.



22. To get good gear mesh, use a piece of thin paper and set between the pinion and spur gear. Secure the motor tightly with 3x5mm machine screws and washers. Remove the paper by rotating the gear.

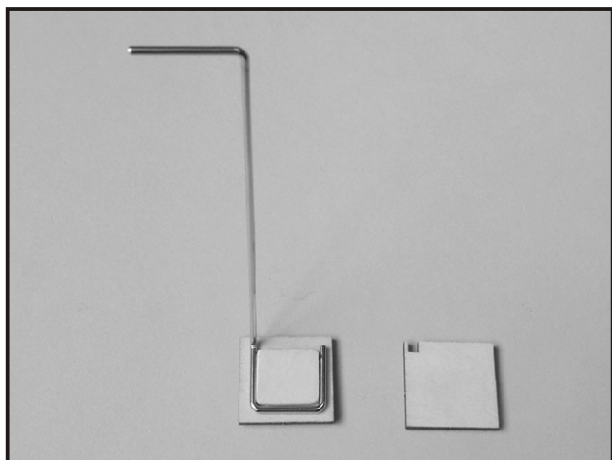


23. Secure the power unit with the furnished four 2.6 x 8mm wood screws.

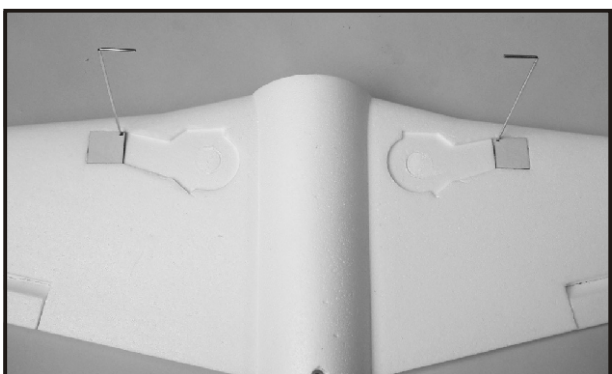
Landing Gear

Before assembling the landing gear you will have to decide to install the fix gear or dummy retract gear for less drag.

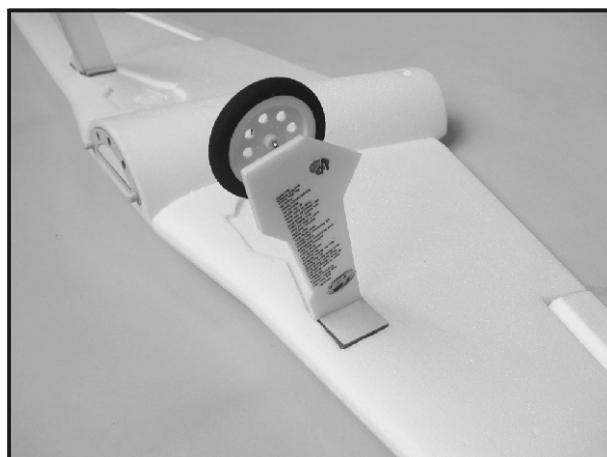
<Fix Gear>



24. Locate landing gear mount and sandwich the mounts with the wire as shown. Note the orientation of the mount. Trail fit the mount to the wing before you sandwich these mounts.

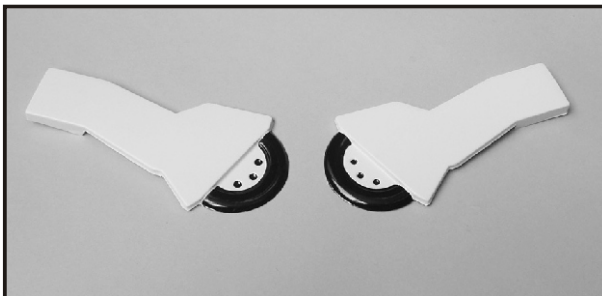


25. Epoxy the landing gear on the bottom wing at landing gear well.

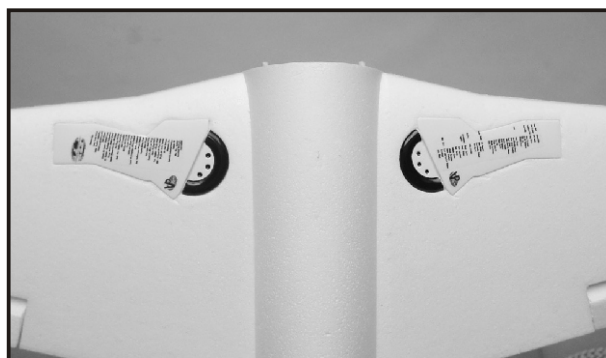


26. Locate the wheel door and apply decal on it. Next epoxy the wheel door at the landing gear mount also apply a piece of tape to fix the wheel door on the wire. Install light wheel and secure the collar with set screw.

<Dummy Retract Gear>

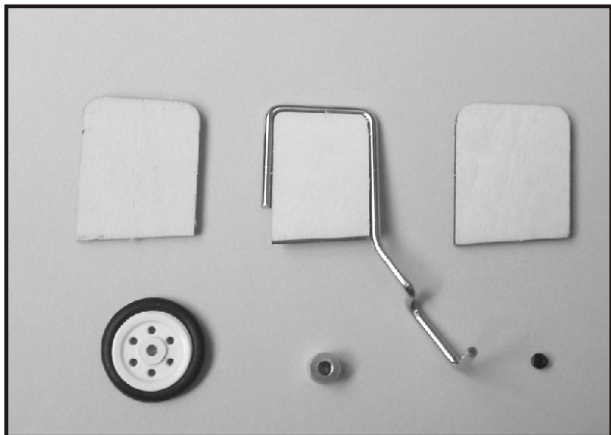


27. For less drag or user desired speed flight, the dummy retract gear is a good choice. Trim the vacuum formed dummy retract gear and paint the tires in black as shown.



28. Glue the dummy retract gear at bottom wing then apply decal on wheel door.

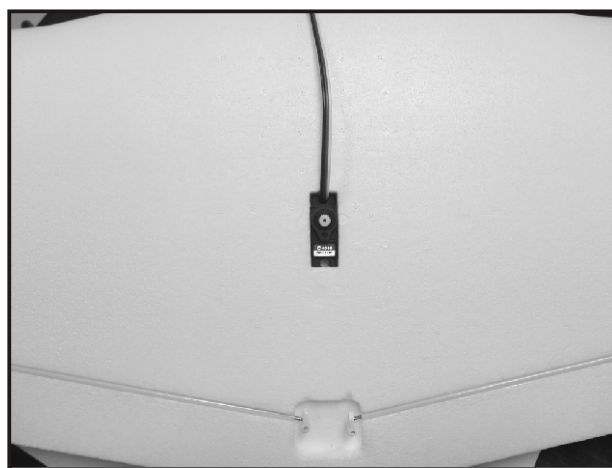
<Tail Gear>



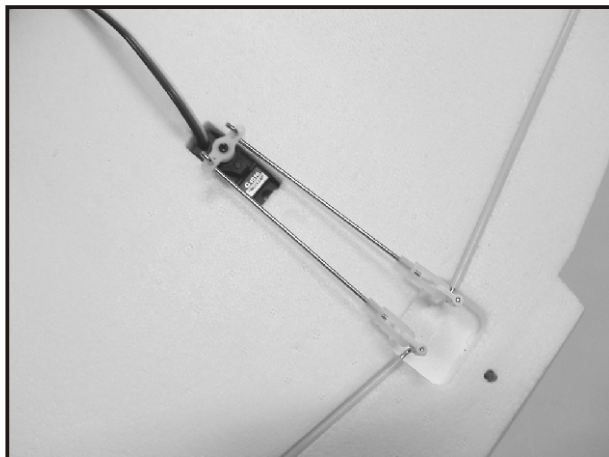
29. Locate tail gear mounts, tail gear, collar, set screw and tail wheel. Epoxy the tail gear ply plates together to make a complete tail assembly. You may disregard this step if you do not want to install the tail gear for less drag.



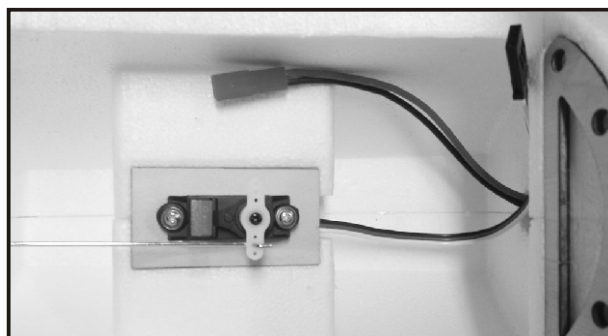
30. Install the tail gear with epoxy in the aft section of the fuselage.



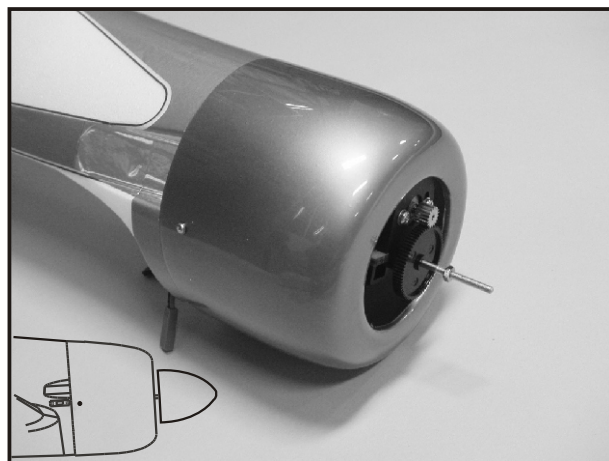
31. Apply double side tape at the bottom of servo then insert servo at the aileron servo well.



32. Locate aileron pushrods and clevises, thread clevis on the pushrod. Connect the Z-bend end of pushrod to the servo horn and snap the clevis on the connector. The second hole of servo horn is preferred.



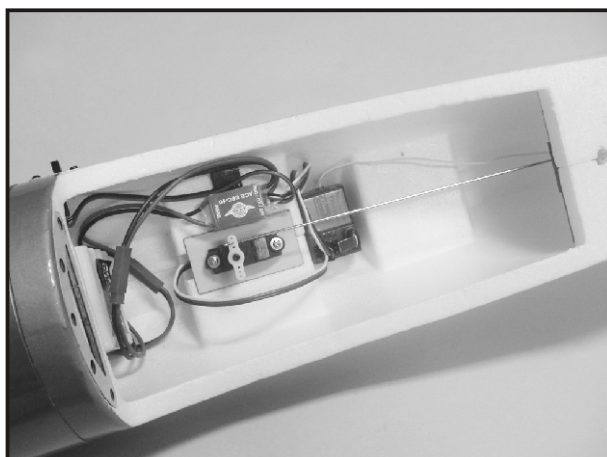
33. Install elevator servo in place, remember install the eyelet and rubber grommets and secure the servo with the wood screws which come with the servo. Adjust elevator pushrod rod and attach to the elevator servo when in neutral position.



34. Refer to the photo on box top and apply fuselage decal. Trim cowling along with the molded line. Note the orientation of the cowling. Secure the cowling with two 2x8mm washer screws at the molded point.



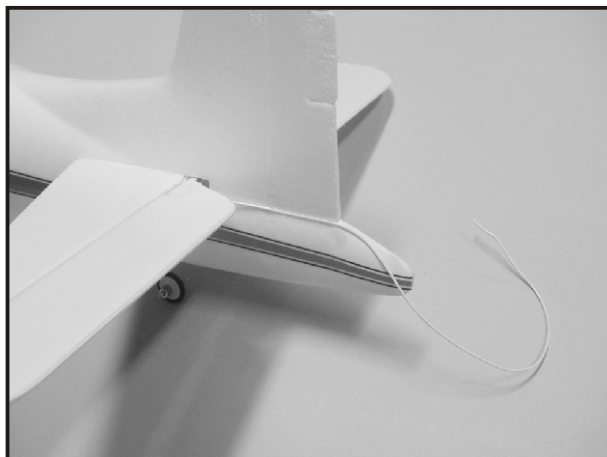
35. Locate 3- blade propeller set, spinner adaptor, M3 nut and a clear round plate. Install 3-blade propeller as shown.



38. Secure Battery behind firewall with Velcro, connect all servo wires to receiver and secure the receiver with Velcro in the fuselage.



36. Trim spinner along the molded line, drill 3mm hole at the nose point then secure the spinner with 3x15mm sink screw.



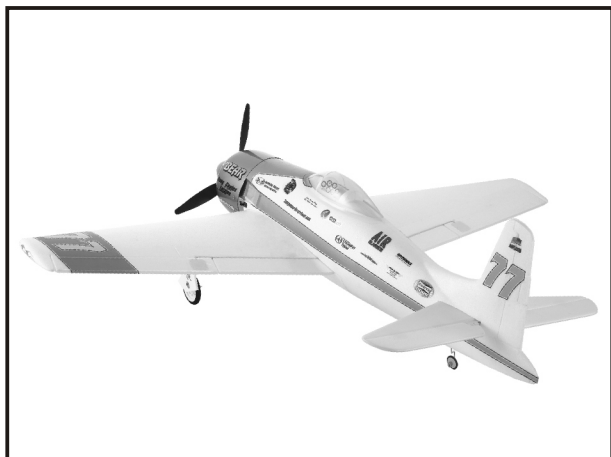
39. Route antenna wire to the tail and tape it on fuselage.



37. Install Speed Controller, what we use here is Ace ESC-10 which is ideal for this park flyer. Secure the switch on fuselage then fix ESC inside fuselage with Velcro.



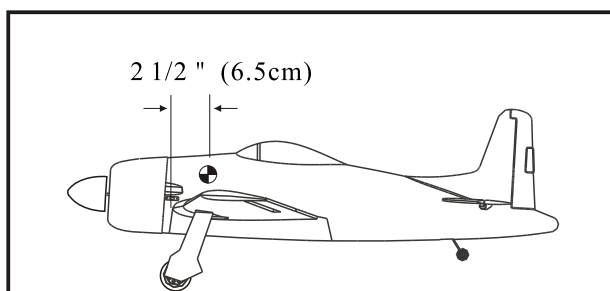
40. Apply instrument panel decal first next trim canopy then secure the canopy in place with furnished decal.



41. Refer to box photo and apply all decals.

Congratulations! You're done, now your Rare Bear is almost ready to fly. Please do the operation check of all devices as well as the control throw and balance before you go to fly. All Thunder Tiger staff hope you enjoy flying your new Rare Bear.

BALANCE



It is important to balance the plane to the correct C.G. before you fly. The Balance point is 2 1/2 " (6.5cm) from the leading edge at the wing root.

Operation Check

1. Install eight AA batteries in the transmitter, refer to the instruction manual of radio system.
2. Review the illustration to become familiar with your radio components. Following are descriptions of these components.

- **ESC:** This device controls power to the motor unit. It will cut-off the battery's voltage when it starts to drop.
- **Receiver:** Receives the radio commands from the transmitter and sends them the servos which convert the command to motion which, in turn, moves the rudder or elevator.
- **NiMH Battery:** Rechargeable battery pack that provides power to the motor unit and radio system.
- **Motor Unit:** Contains a DC electric motor, a gear drive, and a propeller that provides the thrust for the airplane.

3. Turn the transmitter on and then the receiver and refer to illustrations (Always turn transmitter on first then the receiver and turn receiver off first then the transmitter).

The following check is based on Single Stick Radio, see Page 15 for the illustration.

- Move the stick to right and make sure right aileron moves up and left aileron moves down.
- Move the stick to left and make sure right aileron moves down and left aileron moves up.
- Move the stick upward and make sure the elevator moves down.
- Move the stick downward and make sure the elevator moves up.

Check for the proper amount of throw and make sure the aileron and elevator are in neutral position when stick and trim levers are in the center.

4. Hang the airplane and throttle up the stick. The motor unit should come on. Make sure the propeller is trying to pull the airplane forward. Throttle down or turn off the switch to stop the motor.

After you check the movement and balance then you are now ready to go flying!

Flying

This plane is not for beginner, if you are not familiar with the flying then you should have flight instructor to teach you how to fly this model. If you are an experienced pilot we strongly recommend you do the following check before each flight.

Pre-Flight Checklist

Choose a calm day for your first flight. Never fly in winds over 10mph. Also choose an open field with no obstacles or people.

- Full charge the receiver battery.
- Make sure there are no other pilots operating on the same channel (frequency) as you have. If you turn your radio on while the guy is flying with the same frequency then you will cause him to crash.
- Do range check (50 ft. with the antenna collapsed).

Take-off

- A proper hand-launch of airplane is necessary for flight. It must be launched into the wind with a firm toss. The airplane must be tossed level. It should never be thrown upward or it will stall and crash.

Flight

- Let the airplane climb out gradually and gently until it reaches a comfortable cruise altitude at full flight speed. Always keep the airplane upwind of

yourself and within a reasonable distance so you can see what it is doing. Remember, when the plane is coming toward to you, when you move the stick to the right, the airplane will roll to left from your point of view. This is the hardest thing to learn. Initially, you can keep your body pointed in the same direction as the airplane and look over your shoulder. That helps.

■ Usually, only small stick movements are required. Try to keep your flying smooth. Use elevator to keep the airplane at the desired altitude. You can turn the plane by bumping small amount of aileron and then return to neutral. After a while, coordinate your turns with the elevator. Feed in some up elevator to maintain the turn at the same altitude. When airplane turn back, small amount of aileron at the opposite direction to keep it level.

■ If the plane tends to roll one way or the other use the trim lever on the control stick to neutralize the flight. Same thing applies if the plane wants to climb or dive.

■ You can expect 3-4 minutes of “power-on” flight. As Rare Bear can not glide, it will be wisely to set up the landing approach and familiar the low pass so you could have a safe landing before ESC auto cut off the power. The recommended 600mAh battery is only for about 4~5 minute full power flight. If user choose Lipo battery then it will last longer up to 8 minutes.

Landing

■ You will have to set up the landing approach before motor cuts-off. Always try to land into the wind. Do not feed in too much up elevator as the plane will stall and may crash.

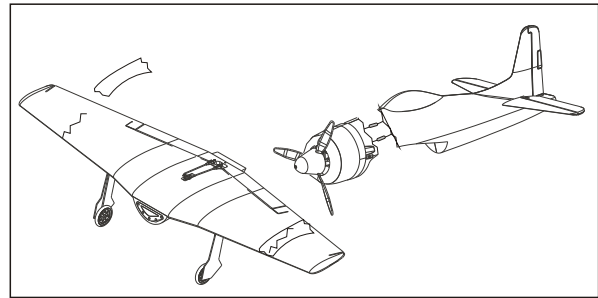
■ Just before touchdown, “flare” the plane by adding up elevator. The plane should slow down even more and come in for gentle landing. Don't add too much elevator too soon!

■ Walk over to the plane and turn off the ESC switch on the plane, then the transmitter switch.

■ Remove the batteries and let them cool off before charging up again.

■ Check over the plane to make sure nothing loosened.

REPAIR



Crash damage is not covered under the warranty!

If damage occurs, use small amount of furnished 5-min Epoxy to repair broken foam. Clear packing tape will hold the parts together; leave it on patch for added strength. Re-balance the plane after you repaired.

IN CASE OF TROUBLE

- 1.If motor does not run when Throttle Stick is up
 - a.Make sure all the wires are well connected.
 - b.Check and follow the manufactures' manual of controller.
- 2.If the radio is erratic(glitches)
 - a.Check that the transmitter and receiver antennas are extended to their full length.
 - b.Make sure the transmitter batteries are fresh.
 - c.Make sure no one else is operation on your channel (frequency) in the immediate vicinity.
- 3.If the plane does not fly properly
 - a.Make sure you are being gentle with the control inputs.
 - b.Make sure the plane is balanced properly.
 - c.Make sure all the wing and tail surfaces are flat, true, and properly attached and aligned.

If your trouble persists, call authorized dealer for technical help.

CONCLUSION

To defeat the laws of gravity and take to the wing is both challenging and thrilling. We hope you enjoy the R/C flight and make it your hobby for a lifetime. Please let Thunder Tiger be your chosen brand, no matter what direction you progress.

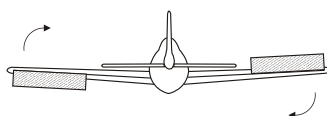


THE DIRECTION OF MOVEMENT (AILERON AND ELEVATOR)

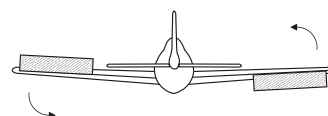
NEUTRAL



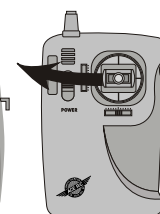
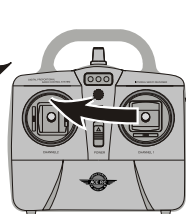
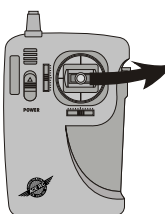
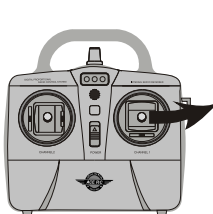
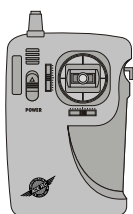
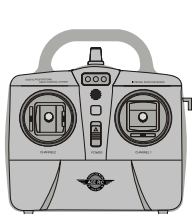
RIGHT ROLL



LEFT ROLL



Check the position of aileron and elevator (if these are in neutral).

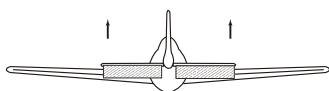


Set the trim in neutral position.
Set the sticks in neutral position

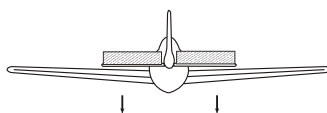
Move the stick to the right.

Move the stick to the left.

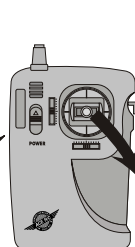
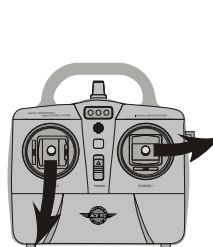
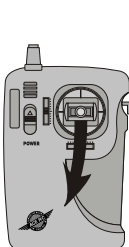
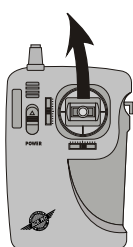
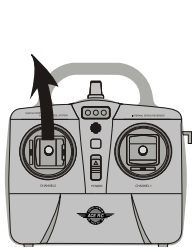
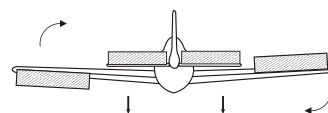
DOWN



UP



RIGHT ROLL AND UP



Move the stick up.

Move the stick down.

Move the stick down and right.

Control Throws

Please set up the control throws as indicated drawing for the starting point. After you familiar with its flying characteristics then these control throw can be tailored to fit your flying style.

