PHOENIX MODEL®

Instruction Manual

Diamond

ELECTRIC GLIDER ARF

SPECIFICATION

- **Wingspan:** 2020mm (79.5 in)
- **Length:** 1237mm (48.7 in)
- **Flying weight:** 1500-1600gr
- **Wing area:** 36 dm2
- **Wing loading:** 40-45 g/dm2
- **Wing type:** RG airfoils
- **Covering type:** Genuine ORACOVER®
- **Radio:** 6 channel – 6 mini servo: 2 aileron; 2 flap; 2 elevator (not included)
- **Propeller:** suit with your engine
- **Motor:** brushless outrunner 400-500W, 920 KV
- **Gravity CG:** 75-80 mm (3,1 in) Back from the leading edge of the wing, at the fuselage
- **Control throw aileron:** Low: 6mm right/left, 15% expo; High: 8mm right/left, 15% expo
- **Control throw Elevators:** Low: 6mm up/down, 12% expo; High: 8mm up/down, 12% expo
- **Experience level:** Intermediate
- **Plane type:** Sailplane

RECOMMENDED MOTOR AND BATTERY SET UP

- **Motor:** OS OMA-3810-1050 Or Xpower C3520/12 (not included)
- **Propeller:** 12x8 foilding (not included)
- **Lipo cell:** 3 cells / 2000 – 2400mAh (not included)
- **Esc:** 40-60A (not included)

TOOLS AND SUPPLIES NEEDED.

- Medium C/A glue.
- 30 minute epoxy.
- 6 minute epoxy.
- Hand or electric drill.
- Assorted drill bits.
- Modeling knife.
- Straight edge ruler.
- 2 bender plier.
- Wire cutters.
- Masking tape.
- Thread lock.
- Paper towels.
- Rubbing alcohol

SUGGESTION

To avoid scratching your new airplane, do not unwrap the pieces until they are needed for assembly. Cover your workbench with an old towel or brown paper, both to protect the aircraft and to protect the table. Keep a couple of jars or bowls handy to hold the small parts after you open the bag.

NOTE:

Please trial fit all the parts. Make sure you have the correct parts and that they fit and are aligned properly before gluing! This will assure proper assembly. The DIAMOND ELECTRIC GLIDER ARF is hand made from natural materials, every plane is unique and minor adjustments may have to be made. However, you should find the fit superior and assembly simple.

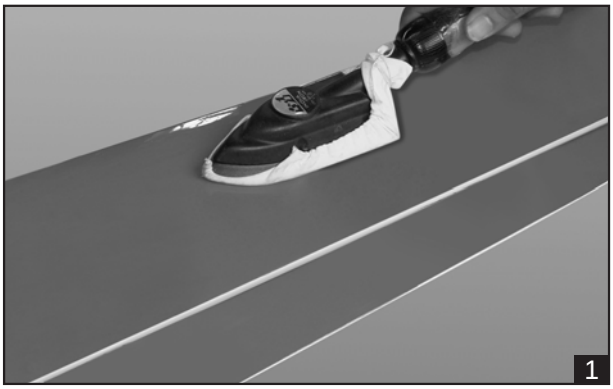
The painted and plastic parts used in this kit are fuel proof. However, they are not tolerant of many harsh chemicals including the following: paint thinner, C/A glue accelerator, C/A glue debonder and acetone. Do not let these chemicals come in contact with the colors on the covering and the plastic parts.

SAFETY PRECAUTION:

- This is not a toy
- Be sure that no other flyers are using your radio frequency.
- Do not smoke near fuel
- Store fuel in a cool, dry place, away from children and pets.
- Wear safety glasses.
- The glow plug clip must be securely attached to the glow plug.
- Do not flip the propeller with your fingers.
- Keep loose clothing and wires away from the propeller.
- Do not start the engine if people are near. Do not stand in line with the side of the propeller.
- Make engine adjustments from behind the propeller only. Do not reach around the spinning propeller.

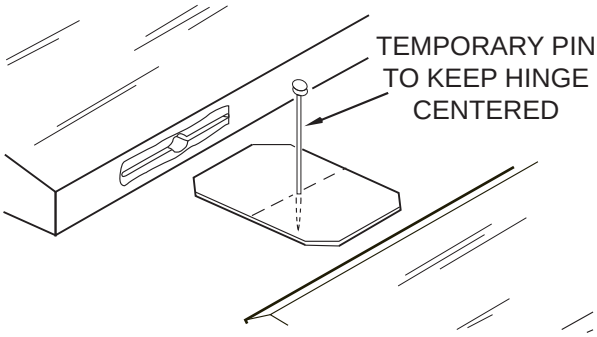
PREPARATIONS

Remove the tape and separate the ailerons from the wing and the elevators from the stab. Use a covering iron with a covering sock on high heat to tighten the covering if necessary. Apply pressure over sheeted areas to thoroughly bond the covering to the wood.

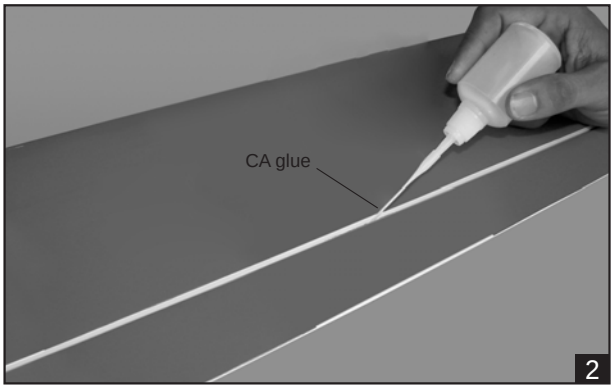

1

INSTALLING THE AILERONS

1. Test fit the ailerons to the wing with the hinges. If the hinges don't remain centered, stick a pin through the middle of the hinge to hold it in position.



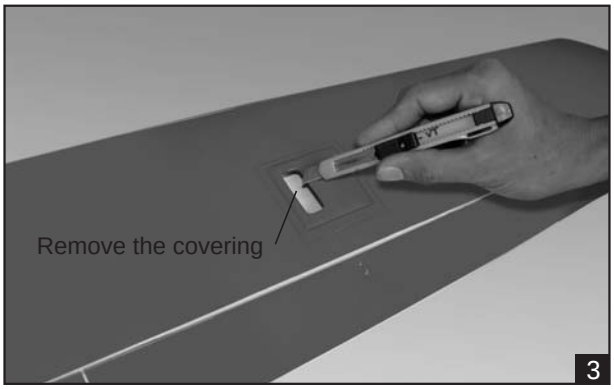
5. Apply six drops of thin CA to the top and bottom of each hinge. Do not use CA accelerator. After the CA has fully hardened, test the hinges by pulling on the aileron.

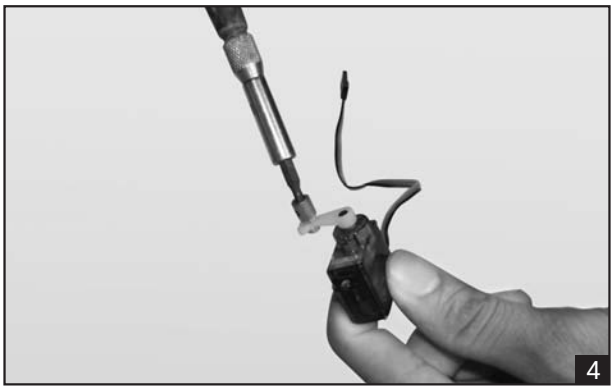


2

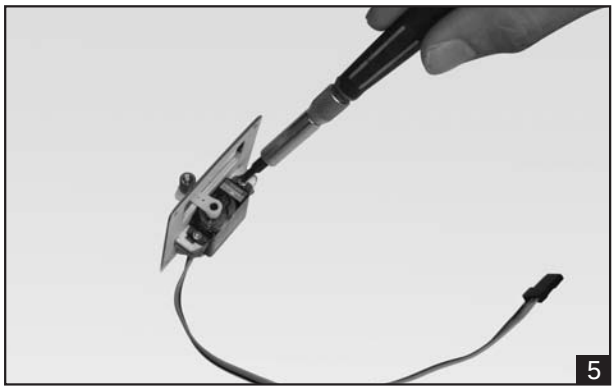
INSTALLING THE AILERON SERVOS

1. Install the rubber grommets and brass eyelets onto the aileron servo.
2. Install the metal connector to the servo arm.
3. Using a modeling knife, remove the covering from over the pre-cut servo arm exit hole on the aileron servo tray / hatch. This hole will allow the servo arm to pass through when installing the aileron pushrods.

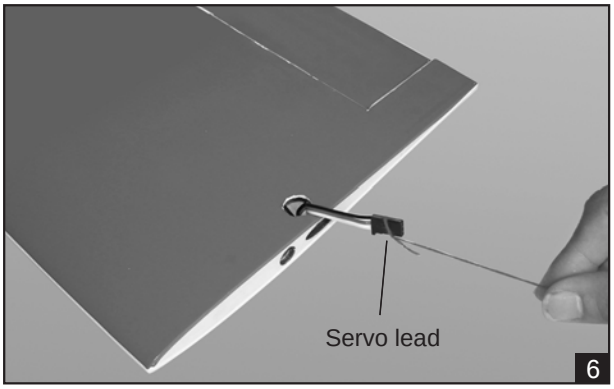




4. Install the servo to the servo box.

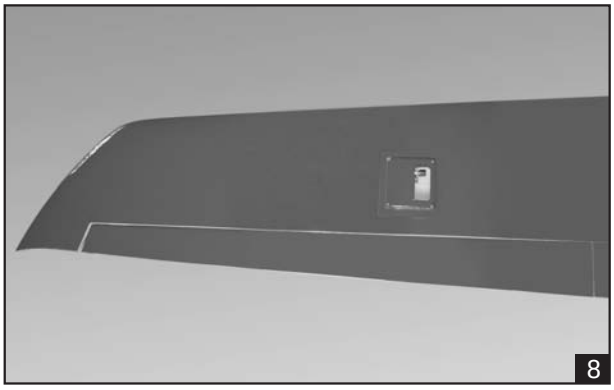


5. Using the thread as a guide and using masking tape, tape the servo lead to the end of the thread: carefully pull the thread out. When you have pulled the servo lead out, remove the masking tape and the servo lead from the thread.



6. Secure the servo box into the wing.

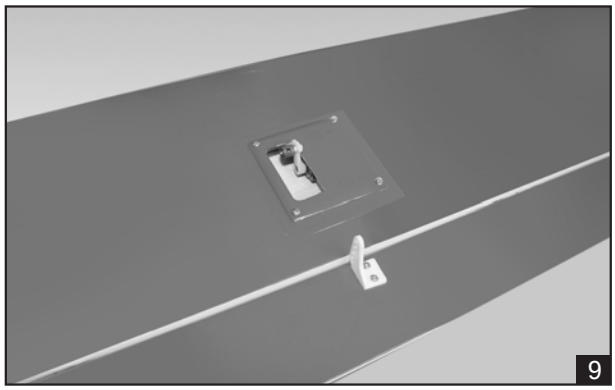
7. Make the same way to install the second aileron servo.

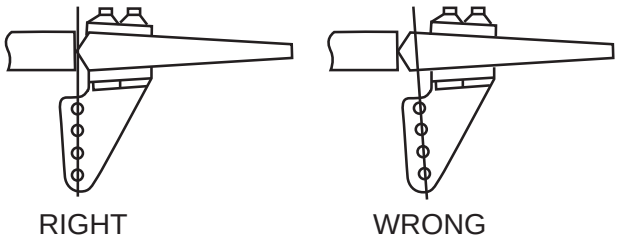


INSTALLING THE CONTROL HORNS

1. One aileron control horn in positioned on each aileron. Using a ruler and a pen, locate and mark the location of the control horn. It should be mounted on the bottom side of the aileron at the leading edge, in line with the aileron pushrod.

2. Drill two 1.6mm holes through the aileron using the control horn as a guide and screw the control horn in place.


9



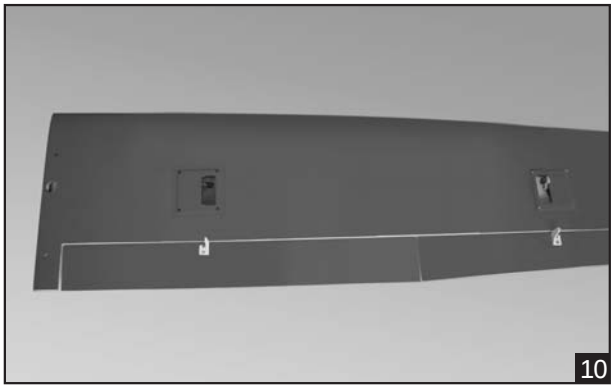
3. Repeat step # 1 - # 2 to install the control horn on the opposite aileron.

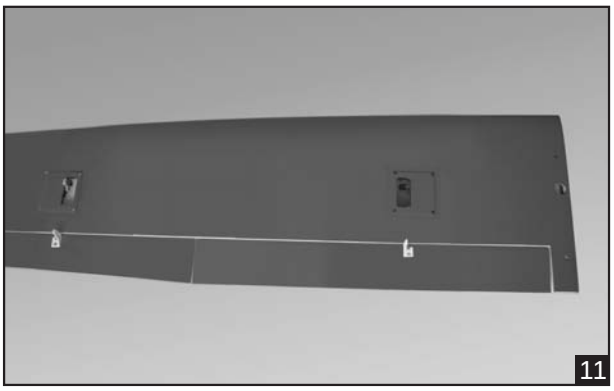
INSTALLING THE FLAP SERVO

- Repeat step #1 - #7 from installing the aileron servo to install the flap servo.

INSTALLING THE FLAP CONTROL HORN

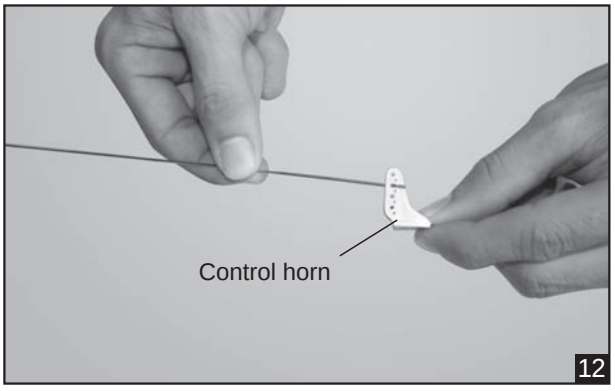
- Repeat step #1 - #3 from installing the control horn aileron to install the control horn flap.


10


11

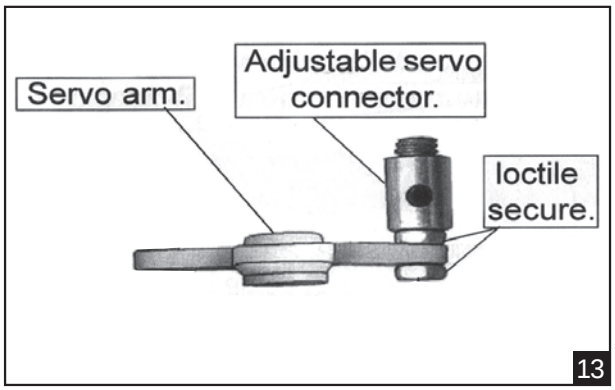
INSTALLING THE AILERON LINKAGES

1. Locate the long piece of wire used for the aileron pushrod. One end of the wire has been pre-bend into a "Z " bend at factory. This "Z" bend should be inserted into the control horn for aileron.



12

2. Install the metal connector to the servo arm of the aileron servo.



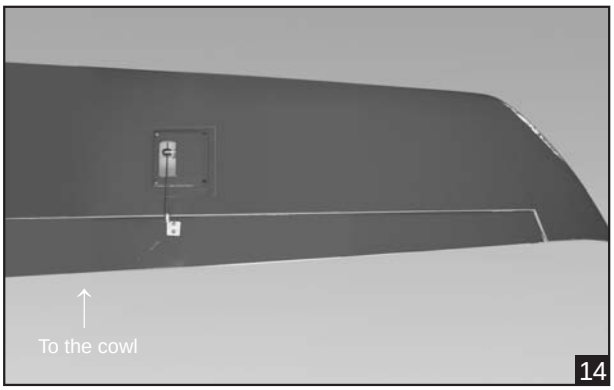
13

3. Plug the aileron servo into the receiver and center the servo. Install the servo arm onto the servo.

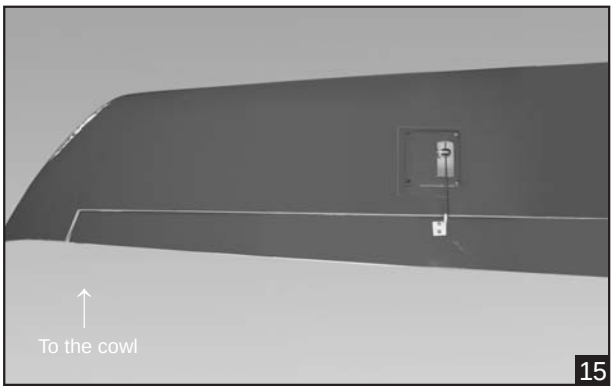
4. Slide the aileron pushrod through the metal connector.

5. Center the aileron and hold it in place using a piece of masking tape.

6. With the aileron and the aileron servo center. Secure the screw on the metal connector.

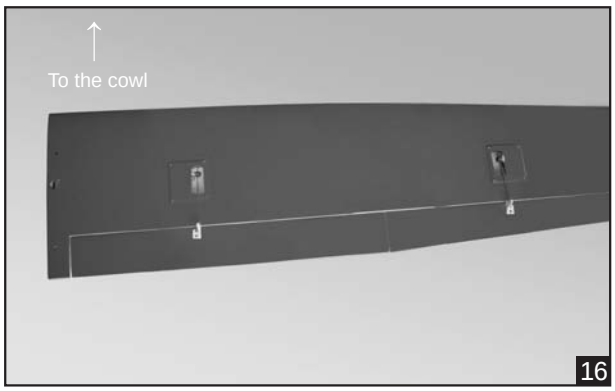


7. Repeat step # 1 - # 6 to install the second aileron linkage. After both linkages are completed, connect both of the aileron servo leads using a Y-harness you have purchased separately.

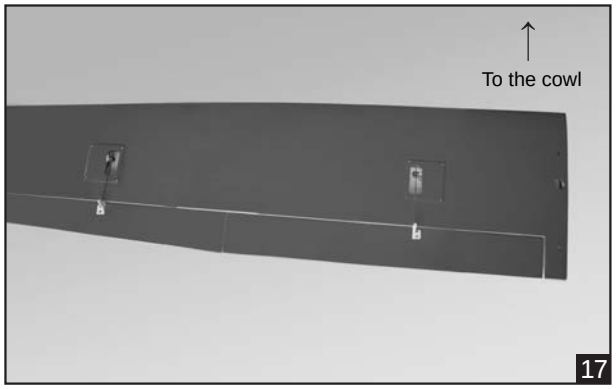


INSTALLING THE FLAP LINKAGES

1. Repeat #1 - #6 from installing the aileron linkage to install the flap linkage.

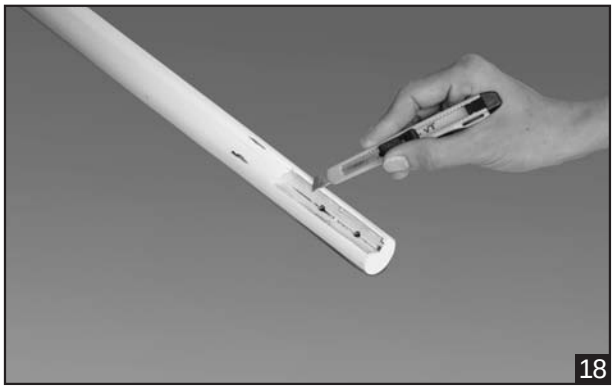


2. Repeat #1 - #6 from installing the aileron linkage to install the second flap linkage. After both linkages are completed, connect both of the aileron servo leads using a Y-harness you have purchased separately.



INSTALLING THE HORIZONTAL STABILIZER

1. Using a modeling knife, cut away the covering from the fuselage for the stabilizer and remove it.

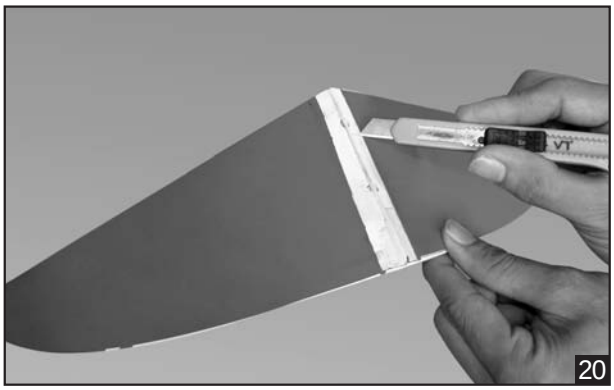


2. Check the fit of the horizontal stabilizer in its slot. Make sure the horizontal stabilizer is square and centered to the fuselage by taking measurements, but don't glue anything yet.

3. With the horizontal stabilizer correctly aligned, mark the shape of the fuselage onto the bottom of the horizontal stabilizer using a water soluble/ non-permanent felt-tip pen.

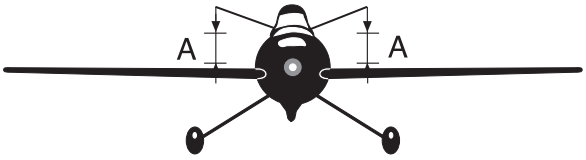
4. Remove the stabilizer. Using the lines you just drew as a guide, carefully remove the covering from between them using a modeling knife.

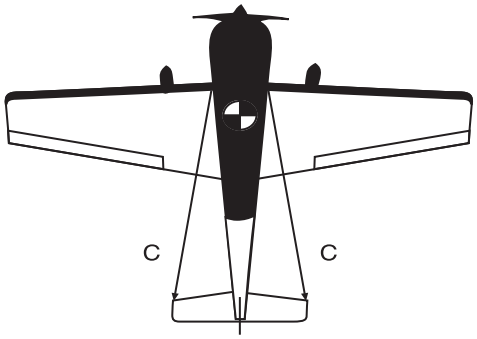
When cutting through the covering to remove it, cut with only enough pressure to only cut through the covering it's self. Cutting into the balsa structure may weaken it. This could lead to possible failure during flight.



5. Attach the wing to the fuselage as picture.

6. Test the position of the elevator and adjust it as shown.

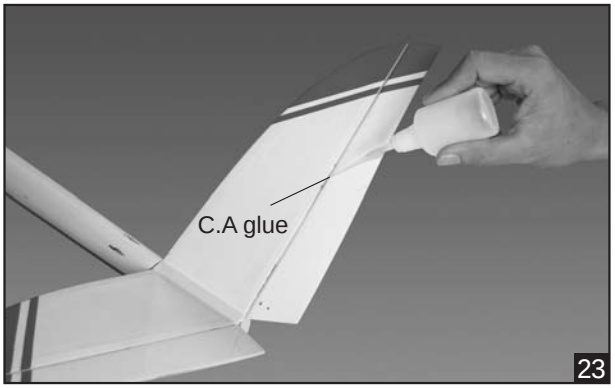




7. When you are sure that everything is aligned correctly, mix up a generous amount of 30 minute epoxy. Apply a thin layer to the bottom of the stabilizer mounting area and to the stabilizer mounting platform sides in the fuselage. Insert the stabilizer in place and re-align. Double check all of your measurements one more time before the epoxy cures. Remove any excess epoxy using a paper towel and rubbing alcohol and hold the stabilizer in place with T-pins or masking tape.

8. After the epoxy has fully cured, remove the masking tape or T-pins used to hold the stabilizer in place and carefully inspect the glue joints. Use more epoxy to fill in any gaps that were not filled previously and clean up the excess using a paper towel and rubbing alcohol.

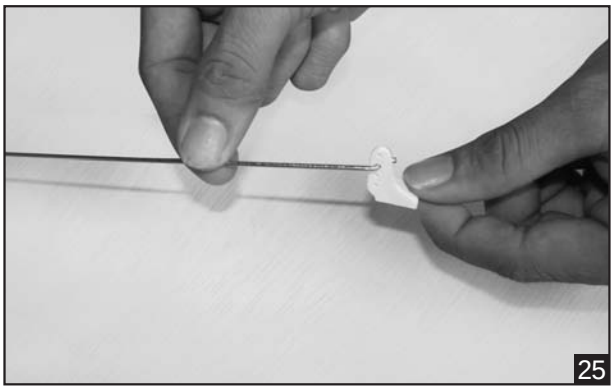
9. Repeat step #1 - #5 from install the aileron to install the elevator.



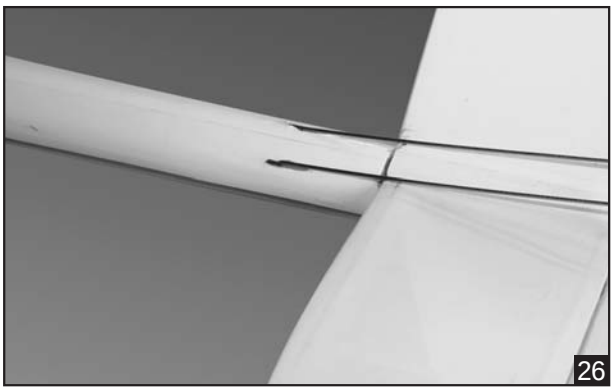
INSTALLING THE ELEVATOR, PUSHROD AND LINKAGES

1. Carefully cut away the covering material from the slot.

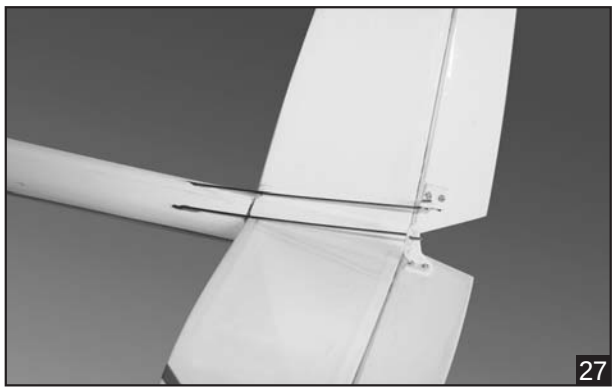
2. Locate the long piece of wire used for the elevator pushrod. One end of the wire has been pre-bend into a "Z " bend at factory. This "Z" bend should be inserted into the control horn for elevator.


25

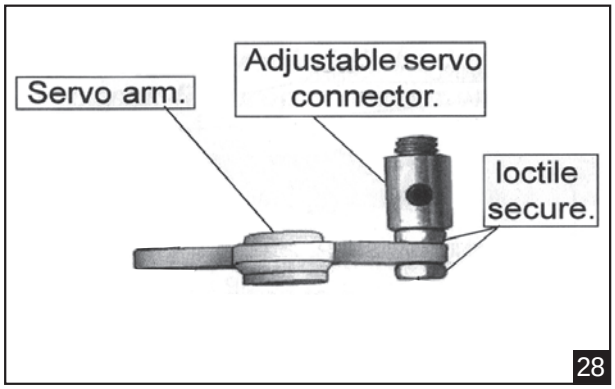
3. Slide the wire pushrod into the fuselage.


26

4. Place the control horn onto the elevator, and drill two 1.6mm holes through the elevator using the control horn as a guide and screw the control horn in place.


27

5. Install the metal connector to the servo arm of the elevator servo.



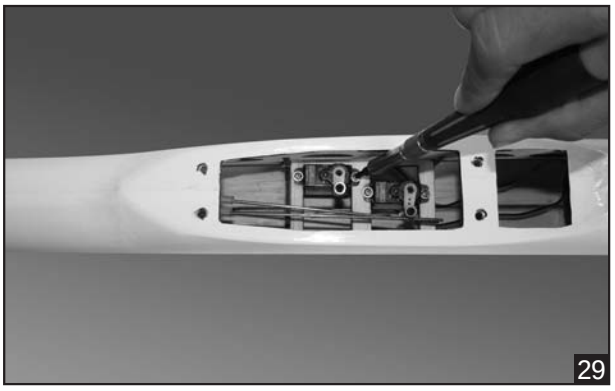
28

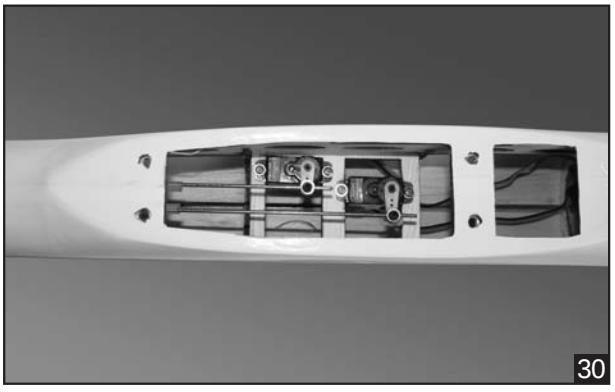
6. Plug the elevator servo into the receiver and center the servo. Install the servo arm onto the servo.

7. Slide the elevator pushrod through the metal connector.

8. Center the elevator and hold it in place using a piece of masking tape.

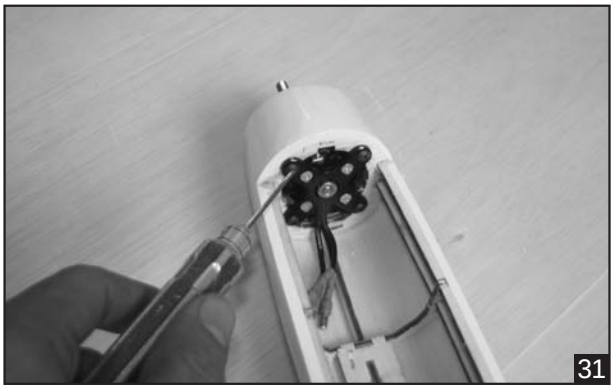
9. With the elevator and the elevator servo center. Secure the screw on the metal connector.


29

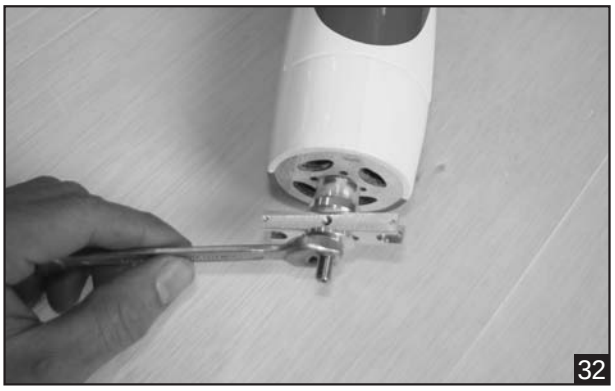

30

INSTALLING THE ENGINE

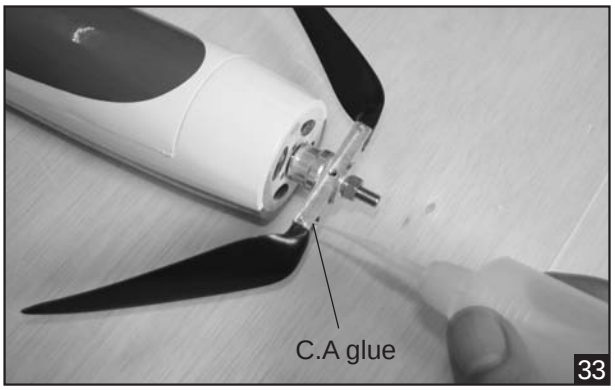
1. Secure the motor.



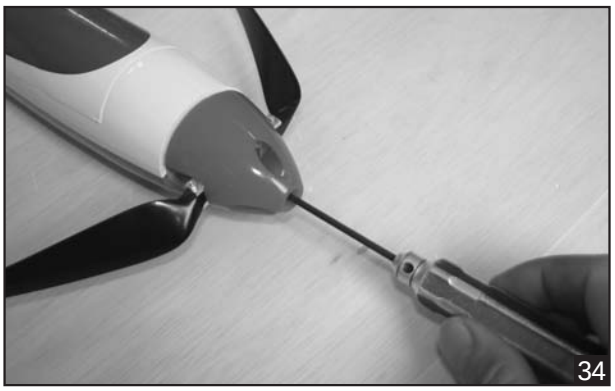
2. Secure the aluminum hub to the adafter.



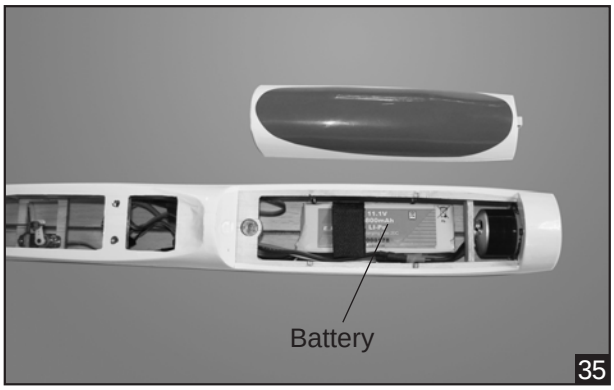
3. Screw the nut and secure it by C.A glue.



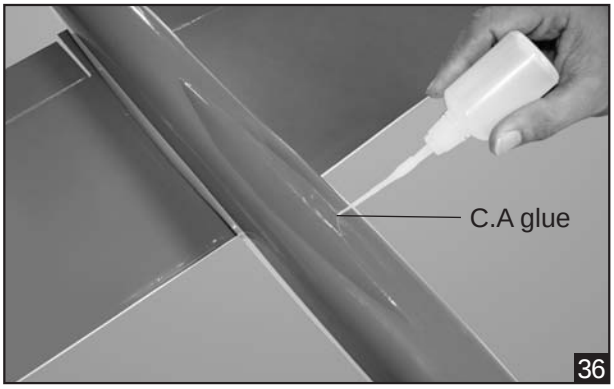
4. Secure the spinner.

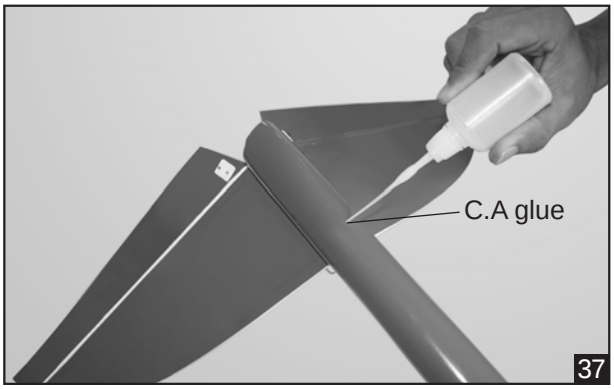


INSTALLING THE BATTERY AND RECEIVER



GLUE THE PLASTIC COVER





BALANCING

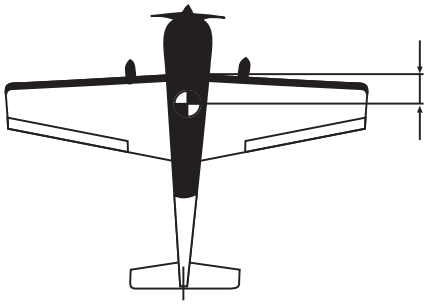
1. It is critical that your airplane be balanced correctly. Improper balance will cause your plane to lose control and crash.

   THE CENTER OF GRAVITY IS LOCATED 75-80mm BACK FROM THE LEADING EDGE OF THE WING, AT THE FUSELAGE. This location is recommended for initial test flying and trimming. BALANCE A PLANE UPSIDE DOWN WITH THE FUEL TANK EMPTY.

2. Mount the wing to the fuselage. Using a couple of pieces of masking tape, place them on the top side of the wing 75-80mm back from the leading edge, at the fuselage sides.

3. Turn the airplane upside down. Place your fingers on the masking tape and carefully lift the plane .

4. If the nose of the plane falls, the plane is nose heavy. To correct this first move the battery pack further back in the fuselage. If this is not possible or does not correct it, stick small amounts of lead weight on the fuselage under the horizontal stabilizer. If the tail of the plane falls, the plane is tail heavy. To correct this, move the battery and receiver forward or if this is not possible, stick weight into the firewall. When balanced correctly, the airplane should sit level or slightly nose down when you lift it up with your fingers.



LATERAL BALANCE

After you have balanced a plane on the C.G. You should laterally balance it. Doing this will help the airplane track straighter.

5. Turn the airplane upside down. Attach one loop of heavy string to the engine crankshaft and one to the tail wheel wire. With the wings level, carefully lift the airplane by the string. This may require two people to make it easier.

6. If one side of the wing fall, that side is heavier than the opposite. Add small amounts of lead weight to the bottom side of the lighter wing half's wing tip. Follow this procedure until the wing stays level when you lift the airplane.

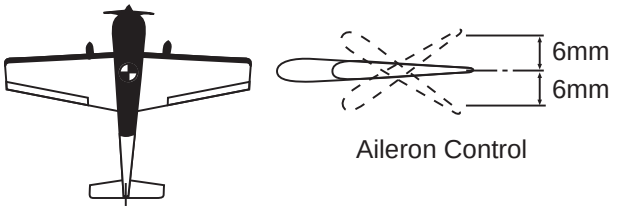
CONTROL THROWS

1. We highly recommend setting up a plane using the control throws listed.

2. The control throws should be measured at the widest point of each control surface.

3. Check to be sure the control surfaces move in the correct directions.

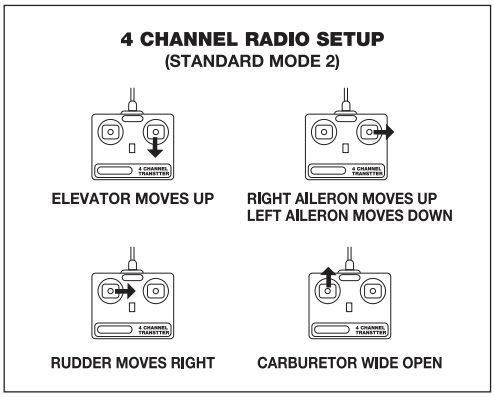
Aileron	: 6 mm right	6 mm left
Flap	: 10 mm down	
Elevator	: 6mm up	6mm down



Aileron Control

Flap Control

Elevator Control



FLIGHT PREPARATION

PRE FLIGHT CHECK

1. Completely charge your transmitter and receiver batteries before your first day of flying.

2. Check every bolt and every glue joint in your plane to ensure that everything is tight and well bonded.

3. Double check the balance of the airplane.

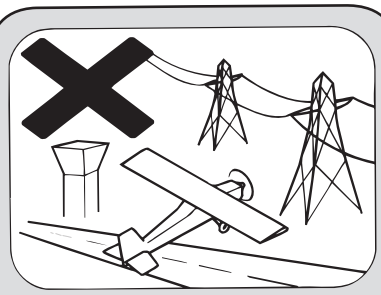
4. Check the control surface.

5. Check the receiver antenna. It should be fully extended and not coiled up inside the fuselage.

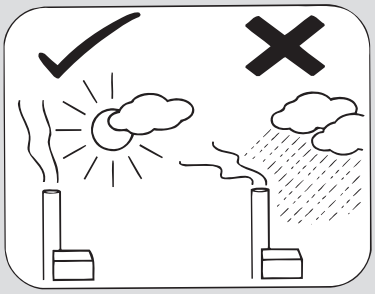
6. Properly balance the propeller.

I/C FLIGHT WARNINGS

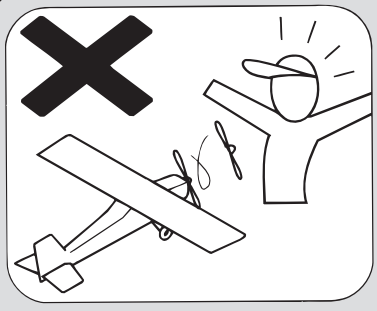
Always operate in open areas, away from factories, hospitals, schools, buildings and houses etc. **NEVER** fly your aircraft close to people or built up areas.



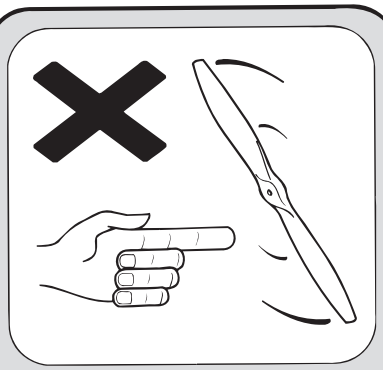
NEVER fly near power lines, aerials or other dangerous areas including airports, motorways etc.



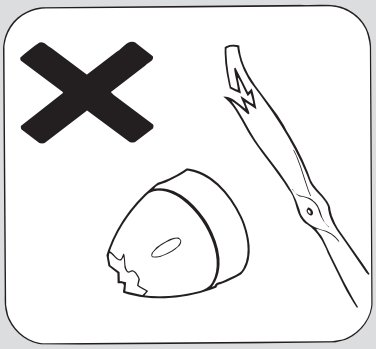
NEVER fly in wet conditions or on windy or stormy days.



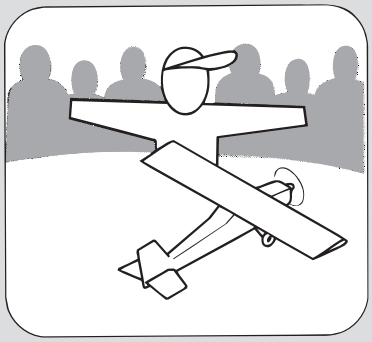
ALWAYS adjust the engine from behind the propeller, and do not allow any part of your body to be in line with the propeller.



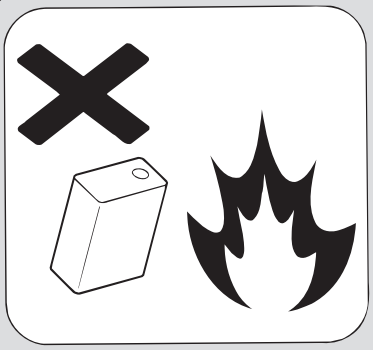
THE PROPELLER IS DANGEROUS
Keep fingers, clothing (ties, shirt sleeves, scarves) or any other loose objects that could be caught or drawn in, away from the propeller. Take care at **ALL** times.



NEVER use damaged or deformed propellers or spinners.

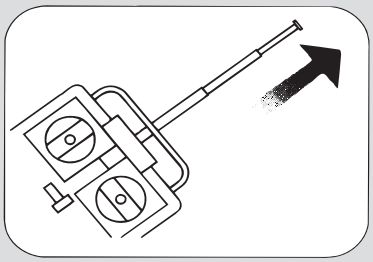


Keep all onlookers (especially small children and animals) well back from the area of operation. This is a flying aircraft, which will cause serious injury in case of impact with a person or animal.

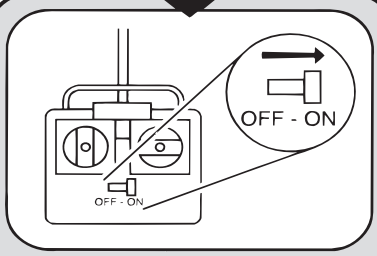


DO NOT dispose of empty fuel containers on a fire, this can lead to an explosion.

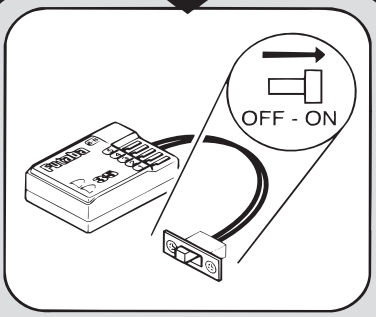
I/C FLIGHT GUIDELINES



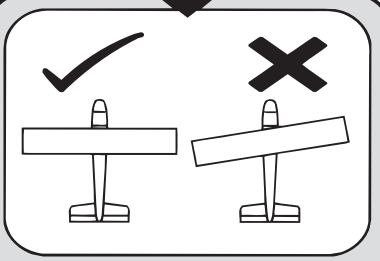
When ready to fly, first extend the transmitter aerial.



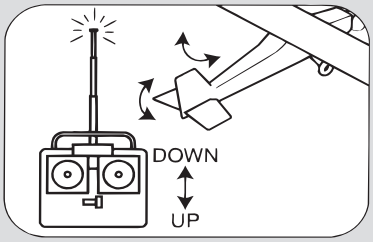
Switch on the transmitter.



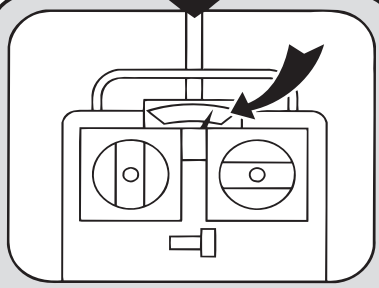
Switch on the receiver.



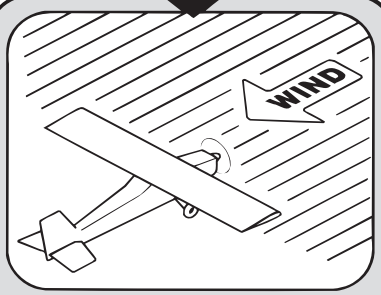
Check that the wings are correctly fitted to the fuselage.



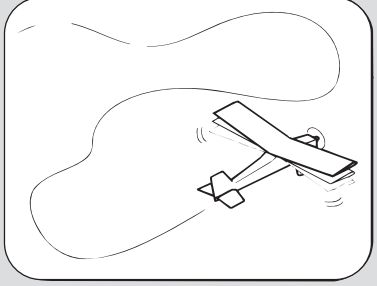
Operate the control sticks on the transmitter and check that the control surfaces move freely and in the CORRECT directions.



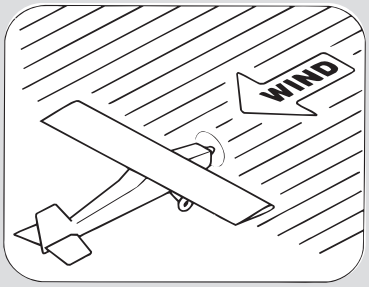
Check that the transmitter batteries have adequate power.



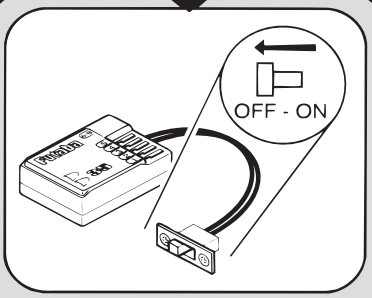
ALWAYS take off into the wind.



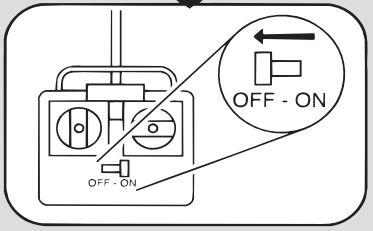
If the model does not respond correctly to the controls, land it as soon as possible and correct the fault.



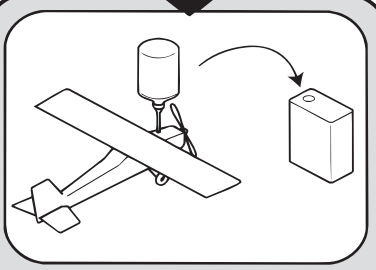
ALWAYS land the model INTO the wind, this ensures that the model lands at the slowest possible speed.



Switch off the receiver.



Switch off the transmitter.



Empty the fuel tank after flying, fuel left in the tank can cause corrosion and lead to engine problems.

Made in Vietnam