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Flying Robot, Cybird

Electric R/C Ornithopter

Instruction Manual

READ THIS BEFORE ASSEMBLING YOUR CYBIRD !!!

Skytech International Co., Ltd. warrants this product to be free from original manufacturing defects upon purchase by the consumer. Skytech makes no express or implied claims regarding this product once it has been assembled and flown. This warranty does not cover damage from intentional misuse, abuse, fire, flood, or other damage unrelated to the use of this product for the purpose of which such products are normally intended. This warranty does not cover damage from products used with this item that are not approved for use with this product. The purchaser of this product acknowledges and understands that they alone assume all risk and liability for personal or property damage and/or injury resulting from the buyer's use of this product. Under no circumstances shall Skytech' limits of liability from use of this product exceed the original purchaser's cost of the item. The express warranties contained above are in lieu of all other warranties, expressed or implied, including but not limited to the warranty of merchantability and/or fitness for a particular purpose, nor shall Neuros, its divisions or assigns be liable for any incidental or consequential damages, costs or expenses incurred by the purchaser of this product.

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FOR SAFETY

Pay special attention to the safety at the parts of this manual that are indicated by the following marks.

Mark	Meaning
⚠ WARNING	Procedures which may lead to a dangerous condition or cause death or serious injury to the user if not carried out properly, or procedures where the probability of superficial injury or physical damage is high.
⚠ CAUTION	Procedures where the possibility of serious injury to the user is small, but there is a danger of injury, or physical damage, if not carried out properly.
	Prohibited Mandatory

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PRECAUTION DURING THE FLIGHT

⚠ WARNING!

Do not fly simultaneously on the same frequency.

Interference may cause a crash. Use of the same frequency will cause interference even if the modulation method (AM, FM, PCM) is different.

Do not fly on rainy days.

Water will penetrate into the electronic part and cause faulty operation, or loss of control, and cause a crash.

Do not fly in the following places:

- Near other radio control flying field
- Near people or cars on the ground, or objects in the air
- Near homes, schools, apartment complex or other places where there is a lot of people
- Near high tension lines, or communication facilities
- Near high buildings and/or trees where there is air turbulence

Extend the antenna to its full length.

If the antenna is too short, the effective range of the radio waves will become shorter.

Always check whether the transmitter and receiver works properly.

Before flying Cybird, check that the direction of operation of each servo matches the operation of its control stick. If the servo does not move in the proper direction, or operation is abnormal, do not fly the bird and resolve the problem first!

⚠ WARNING!

You alone are responsible for your safety and the safety of other people when flying your Cybird. Follow these safety guidelines at all times!

1. Fly only in calm wind conditions. Any wind over 5 ~7 MPH may make it difficult to control your bird. Avoid gusty conditions since it has a kite like wing and it can be caught by the wind!
2. Make certain that you have adequate room to safely fly the bird.
3. Be sure that the transmitter and receiver are both turned off and the battery pack is disconnected when not flying.
4. If you are flying Cybird at a place where other people are flying R/C planes, never turn on your transmitter before checking with other pilots about the frequencies (radio channels) in use.

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Cybird Specs :

Aircraft type	Radio Control (R/C) Ornithopter
Wingspan	~ 29 in.
Body length	~ 15 in.
Weigh	~ 7.1 oz.
Motor	Speed 300 class DC motor
Battery	2-cell, 800mAh, Li-Polymer, nominal: 7.4V, fully charged: 8.4V (※ Optional : 1,200mAh Li-Polymer battery)
Flight duration	8~10 minutes depending on power use and flying skill (※ up to 20 minutes when optional 1200mAh battery is used)
Transmitter	Button type, FM radio control Power : 9.0 V (6 Alkaline batteries required)

※ In winter or cold days, it is normal that the power of the battery and motor is dropped.

※ The specifications may be changed for the purpose of performance improvement.

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PART CONTENTS

After opening the box, first check if the following items are provided.

⚠ Caution : When you handle Cybird, be careful not to break the gear inside the servo by moving or rotating the tail wing with excessive force.

● **Body**

● **Main Wing**

● **Transmitter**

(6 Alkaline batteries required)

● **Charger**

● Instruction Manual, Neck strap, Instruction CD-ROM

● Extra parts : Velcro tape, bolts, some plastic parts, plastic pins for body shell installation

▦ If the set contents are incomplete, or if you have any questions, please contact the dealer.

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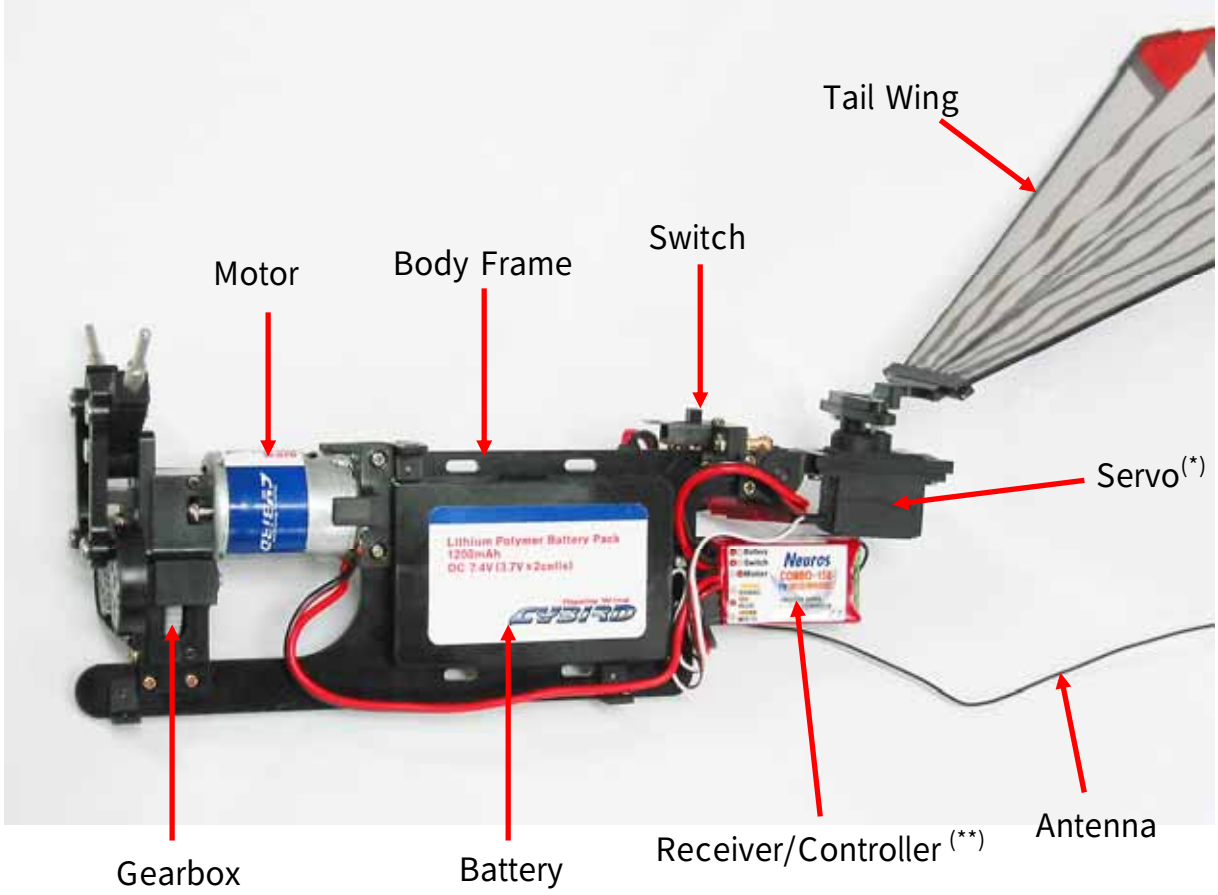
MAIN BODY



(*) Some metal gears are used inside the servo to make it more durable

(**) Combined receiver and electric speed controller

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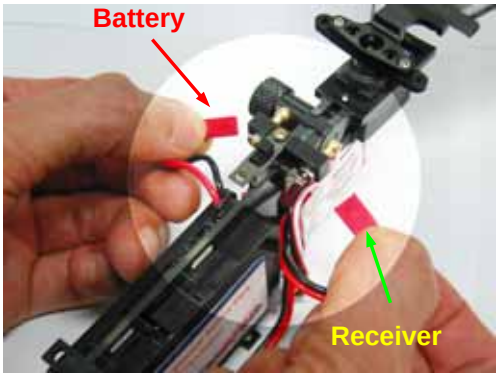
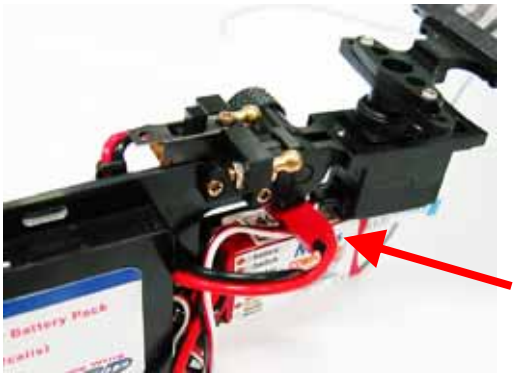
ASSEMBLY

BATTERY PACK

Be sure to install the battery pack as follows;

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td>Insert and press the battery pack from the RIGHT side of the fuselage.</td><td>Make sure that both extruded parts marked in the picture firmly fix the battery pack onto the fuselage.</td></tr>
<tr><td> 
</td><td>  </td></tr>
<tr><td>Connect the battery cable to the receiver/controller as indicated in the above picture.</td><td>Let the electric cable be laid UNDER the body so that the cable may not be protruded out of the body shell.</td></tr>
</table>

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BATTERY CHARGING

⚠ Warning!

1. Never charge the enclosed Li-Polymer battery pack with any other type of chargers other than the special charger included with the Cybird. Attempting to charge with any other type of chargers may cause FIRE or EXPLOSION!

2. The battery charger included with the Cybird is designed specifically for the battery pack in the Cybird, and will not charge any other type of battery pack! Attempting to charge a battery pack other than the type included with the Cybird will result in damage to both the charger and the battery.

3. Always keep the followings in order to prevent FIRE, inflation of battery pack or leakage of electrolyte!
   - Do not drop or apply strong shock to battery pack.
   - Do not short the battery connector terminals.
   - Do not heat the battery pack.
   - Do not immerse the battery pack in water.

4. Always keep the followings for safety
   - Do not leave the battery pack within the reach of small children.
   - Do not lick the battery pack.
   - Do not disassemble the battery pack.

- The battery charger consists of charger circuit board which is combined in wall adaptor. The charger operates from 110~220VAC source.
- When you charge the battery pack, plug the wall adaptor(charger) into 110V/220V wall outlet. Attach the battery pack to the charger and the charger will automatically enter the charge mode, indicated by the red LED. When the battery is fully charged, the LED turns green. It takes about an hour to fully charge the battery pack. In general, it takes thirty more minutes for a battery pack to be fully charged after the lamp is turned green.
- Always fly Cybird with fully charged battery pack.

⚠ CAUTION : For longer life of motor and battery, we recommend that you do not let the accumulated flight time exceed 10 minutes per each charge. If the power of Cybird is noticeably dropped, it is desirable to land Cybird and recharge the battery before next flight.

❗ In case, the battery pack inflates or the electric power is abnormally low, do not use or disassemble the battery pack, but discard it in a proper way.

- The battery protection circuit is installed in the battery pack to keep the battery from the damage by excessive charge or discharge.

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ASSEMBLY

RECEIVER / ESC (electric speed controller)

⚠ Caution: The crystal (X'tal) determines the radio frequency on which Cybird is controlled. The crystal included in the Cybird may not be compatible with other products.

⚠ Caution: When you are to connect the servo cable to the receiver, make sure that the cable be connected to the marked position. (Refer to the Upper Right picture)

⚠ Caution: When you connect the servo cable to the receiver, make sure that the colors of the cable matched as indicated on the receiver cover.. (Refer to the LEFT picture)

● In order to prevent a crash due to over discharge of the battery, a special function is programmed into the combined Receiver/ESC. If the output voltage of the battery is dropped down to certain level, the wing flapping speed is gradually slowed down automatically so that you can land Cybird safely.

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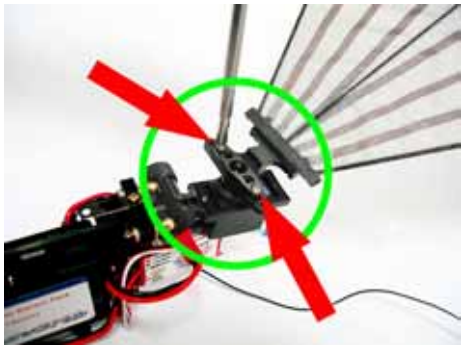
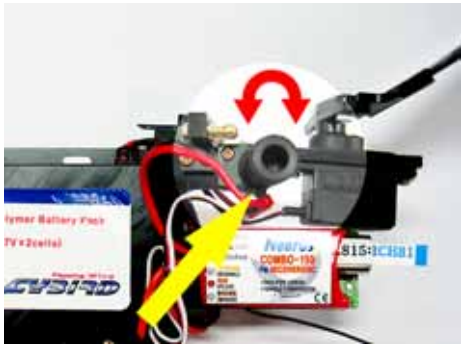
ASSEMBLY

TAIL WING

	By fastening and unfastening the two bolts (marked), you can assemble and disassemble the tail wing.

	You can adjust the tail angle after you turn the knob counter clockwise and loosen the joint. Flight characteristic is affected by the tail angle. (Refer to below) Make sure the joint is securely fastened after tail angle adjustment.

⚠ CAUTION

1. Tail angle **HIGH**: Good for beginners, since Cybird flies relatively slow and its climbing rate is relatively low with higher tail angle.
2. Tail angle **LOW**: Good for those who are good at flying Cybird, since Cybird flies relatively fast and its climbing rate is relatively high with lower tail angle.

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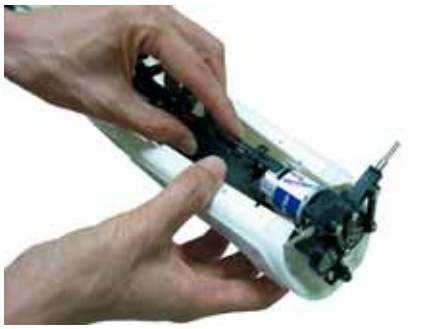
ASSEMBLY

BODY SHELL

Body shell installation procedure:
(You can remove the body shell in the reverse order)

⚠ Caution : The body shell plays the role of absorbing and minimizing shock from crash or hard landing. We strongly recommend that you fly Cybird with the body shell installed. If you fly the bird without body shell, the body frame and other parts, such as servo or gearbox, may be damaged by crash or hard landing. Also, when the body shell is installed in place properly, the body shell will minimize the possibility of serious injury to people by the crash.



① Insert the body into the body shell

② Fix the body shell with plastic pins

③ Fix the body shell with plastic pins

④ Insert the tail cap
(Pay attention to the antenna wire)

⑤ Fix the tail cap with plastic bolt & nut

⑥ Head cover is fixed

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ASSEMBLY

MAIN WING

	For easy wing installation, move the metallic shoulder stems to the top position looks like “V”.
	Insert the metallic shoulder stems into the carbon tubes (leading edge) of the main wing one by one. (※ Make sure that carbon rods are on lower surface of main wing.)
	Fix the main wing by inserting and pressing ball joints to the ball socket on the rear part of the main wing.
	Main wing is successfully installed.

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DISASSEMBLY (If required)

MAIN WING

	1) For easy disassembling, move the main wing to the top position looks like “V”. 2) Pull the carbon tubes (leading edges) of the main wing out of the shoulder stems one by one. 3) Push the main wing as directed in the left picture and you can easily remove the main wing.

BATTERY PACK

	1) Disconnect the battery pack from the speed controller.
	2) Disassemble the battery pack out of the body by pressing the stop-holders on top and bottom of the battery pack.

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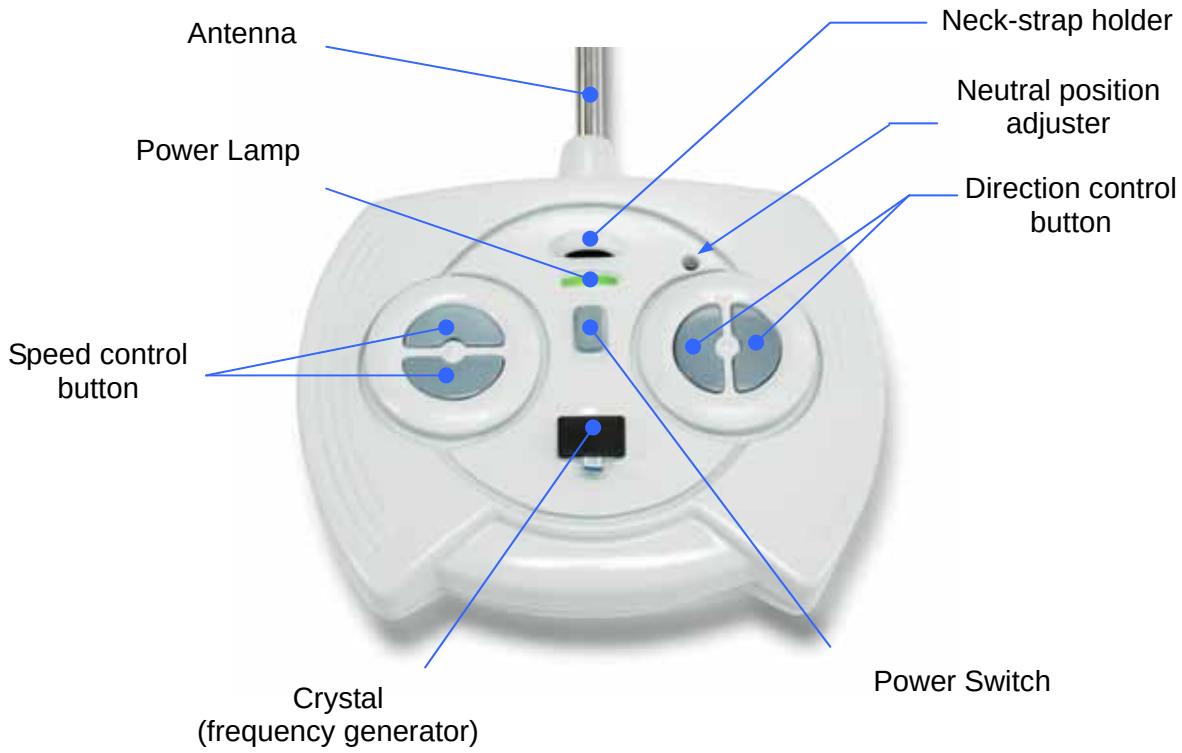
TRANSMITTER



⚠ CAUTION

- Do not pull out the antenna with excessive force, or antenna may be damaged.
- If the antenna is broken, the effective range of the radio waves will become shorter.
- If the color of the power lamp turns red, replace the batteries.

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How to Match Controls on Cybird and Transmitter

DIRECTION CONTROL

Push the left button

Tail wing moves to the left

Push the right button

Tail wing moves to the right

FLAPPING SPEED CONTROL

Push the UP button : Speed increases

Push the DOWN button : Speed decreases

- You can adjust the flapping speed gradually if you push the speed control button for a very short time. (less than a second)
- If you push the UP button for one second, Cybird will flap its wings at maximum speed.
- If you push the DOWN button for one second, Cybird will stop flapping instantly.

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FLYING INSTRUCTION

⚠ Warning!

The moving part of the gearbox on this bird can be dangerous! Use extreme care when testing your bird. Do not allow your hands, fingers or any article of clothing to get near the gearbox.

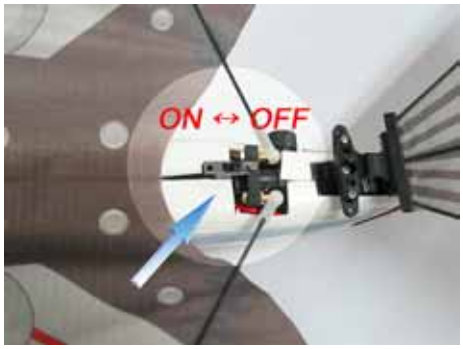
Power on, Adjustments, and Check Points

1. Turn on the transmitter.

   ⚠ CAUTION: Before you turn on the transmitter, please make sure that Cybird is off.

2. Turn on the switch on the Cybird body and you will hear a BEEP sound. Press the UP button and Cybird will BEEP two times. Finally, press the DOWN button and the tail wing will move to neutral position. Now setting procedure is completed.

   ⚠ CAUTION: Before setting procedure is completed, Cybird will not respond to transmitter button controls.



3. In case, the tail wing is not aligned correctly after setting procedure, adjust the tail wing position by rotating neutral position adjuster with screw driver. (Refer to the right picture)

   ⚠ CAUTION: If the tail wing is not aligned correctly Cybird cannot fly normally.

4. Firmly grasp the Cybird body and slowly move the throttle up to full power position to make certain the wings are flapping properly. Move the throttle to the maximum and minimum power position few times to check how it works.

5. Push the LEFT and RIGHT button and check if the tail wing moves to the left and right correctly. When you push the RIGHT button, the tail wing should move to the right when looked at from behind the bird.

   ⚠ CAUTION: Always make sure before launching that the tail wing moves as you want.

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⚠ Warning!

This model is designed to fly well in calm conditions (wind speed of 5~7 MPH or less). If you fly your bird in windy day, Cybird may crash or go away beyond your sight!!!

LAUNCHING

1. Stand in the direction such that you face the wind, with Cybird on your left (or right) hand and the transmitter on the other hand. Always launch the bird into the wind.

   ⚠ CAUTION: If it is the first time you fly Cybird or you are not good at flying Cybird, we strongly recommend that the launch should be done by an assistant and you just concentrate on flying the bird!

2. Push the UP button and let Cybird flap at maximum speed. Check if everything is O.K.
3. Now launch your Cybird to the sky with its nose slightly upward and let the bird climb out up to sufficient altitude by flying the bird along a large circle.
4. Once the bird reaches to the sufficient altitude, you may decrease the wing flapping speed.

   ⚠ CAUTION: If Cybird does not fly straight, please refer to page 20. Just check the turn tendency and let Cybird land before you complete the tuning procedure.

   ⚠ CAUTION: If the motor speed is slowly decreased in flight beyond a certain point, the wing flapping becomes so slow that Cybird will become unstable and can even crash. If you sense the unstable motion (nose up & down) you can correct this in flight by increasing the wing flapping speed quickly.

TURNING

It is very important to maintain stable flight attitude when you fly Cybird. Especially, Cybird may crash when it is inclined to either side too much or its nose is inclined toward ground during turning. If you are not good at flying Cybird, you have to use extreme care when you make the bird change direction, since the flight characteristics of Cybird is different from those of airplanes or helicopters.

1. Push the RIGHT [LEFT] button and Cybird will turn to the RIGHT [LEFT].
2. If you push the direction control button and keep it pressed, Cybird may be inclined to either side too much and may crash. Push the RIGHT or LEFT button for a short time.

   ⚠ CAUTION: If Cybird tilts during turning to either side too much, its flight may become unstable and it may crash. In case, Cybird tilts to RIGHT [LEFT] too much, push LEFT [RIGHT] button so that Cybird recover stable flight attitude.

   ⚠ CAUTION: You should always keep in mind that Cybird reacts in flight less sensitively than other R/C aircraft. There is always a bit of delay between commands and the reaction of the bird.

   ⚠ CAUTION: A sudden turn may cause an unstable flight. If you are a novice, let Cybird turn gently along a large circle and try to get familiar with the flight characteristics of the bird.

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LANDING

1. For safe landing, always attempt landing against wind.
2. Fly Cybird gently down to the ground by slowly decreasing wing flapping speed.
3. Stop flapping just before Cybird touches the ground.
4. After flight, turn off the switch on the body first, then the transmitter.

⚠ CAUTION: Hard landing may damage the servos. Try to let the bird touch down as gently as possible. If you are not good at flying the bird, we recommend that you land the bird on the GRASS. You or your assistant may catch the bird in order to avoid the possible damage.

⚠ CAUTION: After flight, the motor may be hot. Be careful not to touch the motor. If the motor is hot, it is better to relax the bird for a few minutes before next flight for longer life of the motor and battery.

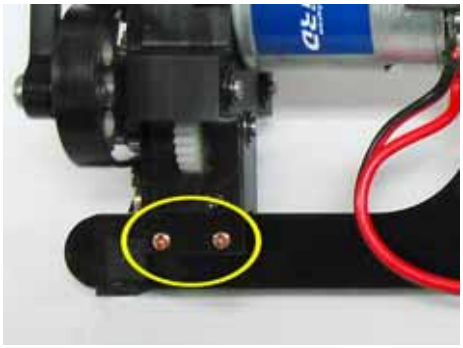
⚠ Warning!

In any case, you have to stop wing flapping before Cybird touches the ground in order to prevent from wing damage.

[TIP]

After hard crash, the motor supporting frame may be broken or the motor may be moved out of its supporting frame.

In this case, unfasten the bolts (marked in the picture), put the motor inside the supporting frame, and fasten the bolts again.



[TIP]

The metallic shoulder stems may be bent due to crash or other impact. If you fly Cybird with a bent shoulder, it will show a excessive turn tendency to either direction. Always check before flight whether both shoulder stems are straight.

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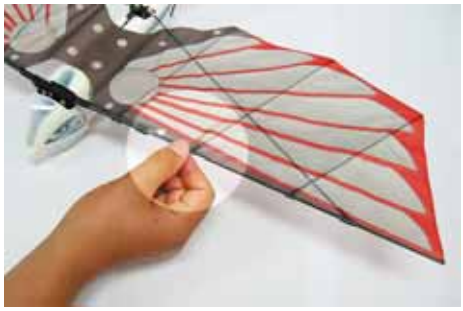
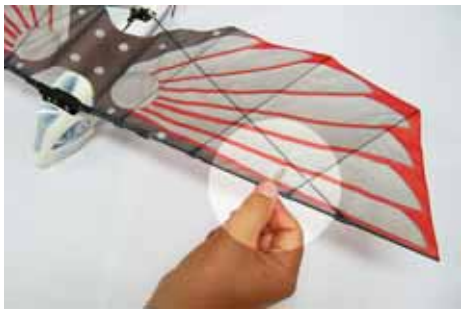
Useful Tips

■ Cybird may have a noticeable left or right turn tendency though its tail wing is in the neutral position. In this case, you can lessen the turn tendency by following instructions. You can obtain the best flight performance when you minimize the turn tendency.



① In case, Cybird has a RIGHT [LEFT] turn tendency, attach a clip on the middle of the leading edge of LEFT [RIGHT] wing and fly it again.



② In case, Cybird still shows RIGHT [LEFT] turn tendency move the clip outward. On the contrary, if Cybird shows LEFT [RIGHT] turn tendency move the clip inward and fly it again.

Battery Protection

A battery protection circuit is installed in the battery pack in order to prevent the over discharging. In case you fly Cybird for a very long time, Cybird may stop suddenly due to the battery protection circuit. Once the battery protection circuit works, Cybird will not operate at all until you recharge the battery pack. The battery pack will work normally after recharging.

Lubrication

For longer life of Cybird lubricate the gearbox with grease. Please check before flight if the gearbox is stained with dust or any other impurities in it.

Clean the gearbox and add some lubricating grease to the gearbox, if necessary.

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Trouble Shooting

The tail wing does not move at all when you turn on the switch of the body.

- Check if the battery pack is connected correctly
- Check if the servo cable is connected to receiver correctly
- Battery protection circuit may be out of order due to short circuit, etc.
  ☞ Call for dealer
- If the problem is not resolved after you check above things, it is probable that the electronic speed controller is out of order
  ☞ Call for dealer

When you turn on the switch of the body, the tail wing quickly moves to certain position but No BEEP sound and you cannot fulfill the setting procedure.

- Check if the transmitter is turned on
- Check if the batteries in the transmitter have enough power
- Check if the antenna is extended to its full length
- Check if the crystals are the same frequency band on both receiver and transmitter
- Check if both crystals are compatible to the receiver and transmitter
- Check if the motor and Receiver/ESC are connected correctly
- Check if the electric cable is securely welded to the motor back side
- If the problem is not resolved after you check above things, it is probable that the crystal in the receiver is damaged.

The wing flapping frequency is lower than normal.

- Check if the battery is fully charged (Fully charged : ~8.4V)
- Check if the gearbox is damaged or deformed due to crash or other impacts
- Check if you can rotate the gears smoothly with your hand
- Check if the gearbox is stained with dust or any other foreign objects

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Wing flapping stops irregularly during flight

- Check the connections of the electronic wires on the back of the motor
- Check if the antenna wire is connected to the receiver correctly

Although you do not move the aileron stick at all, Cybird shows turn tendency to either direction

- Adjust the turn tendency using paper clip (Refer to page 20)
- Check if the paper clip is moved from its original position
- Check if the metallic shoulder stem is bent (Refer to page 19)
- Check if the battery pack is fixed to the fuselage correctly (Refer to page 8)

Cybird stops suddenly and does not work at all although you turn on & off

- Check if the battery protection circuit is working (Refer to page 20)
  ☞ Recharge the battery pack
- Check the electric connections

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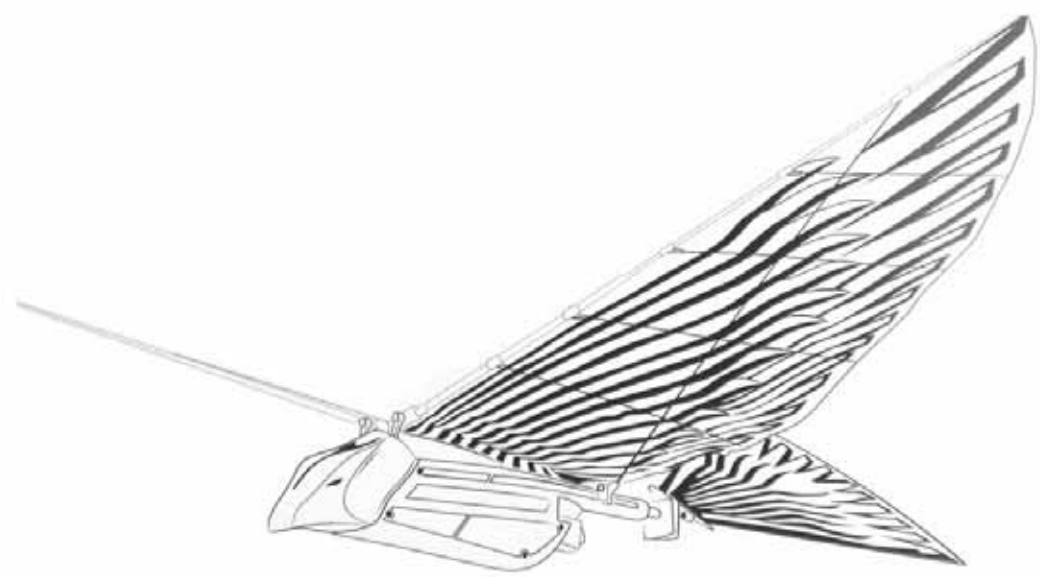

At last, the Robot Flies.

Unlimited Freedom, Fly with Cybird