



ANGEL 300

Remote control helicopter

Operating manual



ART-TECH[®].COM
R/C HOBBY

CATALOG

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Thank you for purchasing our latest product--Angle 300 electric R/C helicopter. This helicopter is a typical coaxial dual rotor helicopter and it's our latest product. The frame is made of the high-strength plastic and configured with scale flashers for night flight. This helicopter is super stable, easy to control and it has a great maneuverability and accuracy. Moreover, this product has a vivid flying gesture and it is crash-resistant. The flying time of each charge is more than 10min and it is an optimal model for the beginners. For the safety operation of this helicopter, please make sure to read this manual carefully and follow all of the safety notes strictly.



※This picture only for reference.

SPECIFICATIONS:

- ★ Rotor diameter : 350mm
- ★ Length: 430mm
- ★ Height: 190mm
- ★ Weight: 260g

CONFIGURATION:

- ★ 4 channel 2.4GHz radio system
- ★ 180 class brushed motor
- ★ Li-Poly battery: 7.4V 1000mAh
- ★ 2 pcs 8g servo
- ★ 4 pcs blades

- ★ Optimal helicopter for the beginner
- ★ Flying condition: indoor without wind
- ★ Coaxial counter-rotating structure
- ★ Easy control and stable flight
- ★ 4 channel 2.4GHz radio system
- ★ Balance charger
- ★ Flying time: 10 mins

PRODUCT CHARACTER	
Accomplishment	100%
Difficulty of assembly	★☆☆☆☆
Difficulty of maintain	★★★★☆☆
Difficulty of control	★★★☆☆☆
Anti-shatter	★★★★☆



WARNING:

This product is for the ones that are above 14 years old.
Children should be supervised prior to starting or flying this helicopter.
Don't touch the propellers after the product turned on.



※Specifications may change without notice, please refer to the real one for configuration. 2009.06



CAUTION

R/C modeling is a hobby with high technology and should not be considered as a toy. There is risk involved during the operation of this product and the user should take all precautions seriously or serious body injury may occur, it is only suitable for the person above 14 years old.

Improper disassembly, improper adjustments or setup may lead to unsatisfactory or unsafe operation. If you have any questions regarding the use, maintenance, or safe operation of this model, please contact your local retailer.



NOTE

As with any R/C product there are risks involved when flying this model. A beginner should seek the help of a skilled R/C pilot to ensure that the model is airworthy and capable of safe operation. Any damage, neglect, or unfamiliar use of this product can cause unexpected accidents or injury. Please make sure the flying is safe and we are not responsible for any accident.

TIPS FOR SAFETY

1. Locate an appropriate place to fly your helicopter:

R/C helicopters are capable of flying at high speeds, thus posing a certain degree of potential danger to both the flyer and bystanders, so it is important to choose a right site for flying. First, the space of flying site should be big enough (at least 4*4*4m). Second, the flying site should be open enough, and clear of obstacles. Do not fly your helicopter during the strong counter-flow weather to avoid the unnecessary damage.

This RC helicopter, angel 300, have the best performance in terms of control capability and scalability without wind. it may not fly properly outside due to the fluency of airflow so that it is not recommended to fly outdoor.

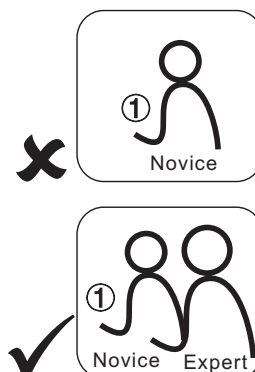


Without wind

TIPS FOR SAFETY

2. Obtain the assistance of an experienced pilot.

The help of an experienced pilot will ensure that you will have a well trimmed, correctly functioning helicopter for the first flight. It is strongly advised that you first practice on the simulator prior to making a flight with your new helicopter.



3. Always be away from the running parts

During the operation of your helicopter the rotor will be spinning at a high rate of speed. Don't touch any running parts and please keep a proper distance with them. Be conscious of your actions and be careful to keep your hands, face, eyes, and loose clothing away from the blades and gears to avoid being hurt or any damage to the model.



4. Keep your helicopter away from humidity.

Your new Angle 300 helicopter is a hi-tech electronic device, so try to keep the model away from the humidity condition which may result in the operation errors or some other unrespectable faults to the model.

Never subject your model to severe weather, such as raining, thunder.



5. Operate your helicopter gently

The helicopter will give a prompt response to the controlling action, so try to operate the helicopter gently. Try to avoid the excessive operation as this may lead to the helicopter to be out of control.

CHARGE MODE AND WARNING

Li-Po battery(balance changer)

ATI-0910 Li-poly battery balance charger using instruction

Specifications :

Input voltage: DC 10V~15V

Output voltage: DC 7.4V&11.1V (To 2 or 3 cell Li-poly battery)

Charge current: 0.3A~1.0A (Can be continuously adjusted)

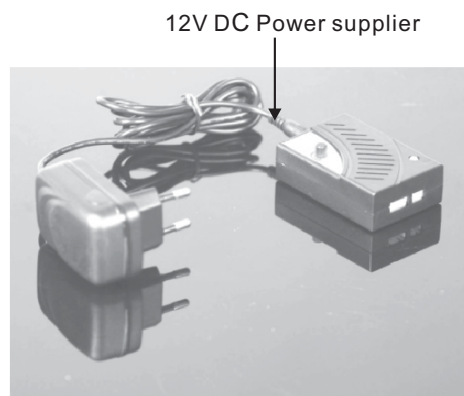
Indicator state:

Green: Charge complete or no battery

Red: Charging

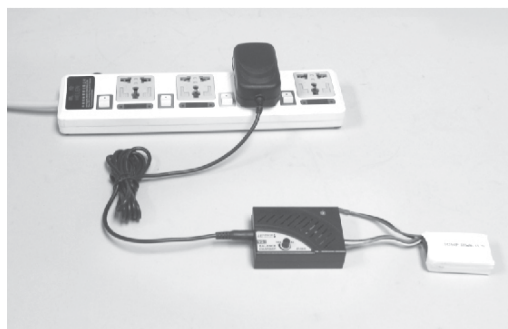
Flash: Drip current charging

Separated battery detection: The voltage of any battery reaches 4.2V, the charge of it will cease automatically.



Using method:

1. Connect the cigarette with charger per above image
2. Then plug cigarette into its socket in car (Adapter should be connected if charge at home: connect the adapter to home power socket, then plug the adapter's DC end to charger). The LED will turn green indicating it is ready for charging.
3. Connect the battery to the charger per its interface mark. The LED becomes red, which means the battery is on the way.
4. Adjust the charge current. In order to prolong battery's life-span, we recommend charging them under low current if you have enough time.
5. When the LED flashing, the charger will enter the stage of drip current charging. The LED turns green when fully charged, and the battery will be used at any time.



Notice

1. Do not insert any conductive into the cooling hole when power is on, or damage will be caused to the charger.
2. While charging is in process, please do not place it near flammable materials.
3. It is not allowed to charge two-cell and three-cell Li poly battery at the same time.
4. Expect Li poly battery, this charger is not allowed for other kinds of battery.
5. While charging, please keep it out of the reach of Children.
6. When this charger is in use, please do not go away and leave it unwatched, if any abnormality occurs (such as the power indicator is off, the temperature of the battery rise rapidly, etc.) stop charging immediately.
7. Please do not use power with output voltage higher than 15V.
8. Please do not disassemble the charger or its accessories.
9. When the battery is not cool down, please do not urge to charge it.



SAFETY INSTRUCTIONS FOR LI-POLY BATTERIES

01. Do not disassemble or reconstruct the battery.
02. Do not short-circuit the battery.
03. Do not use or leave the battery nearby the fire, stove or heated place.
04. Do not immerse the battery in water or sea water, do not get it wet.
05. Do not charge the battery nearby the fire or under the blazing sunlight.
06. Do not drive a nail into the battery, strike it by hammer or tread on it.
07. Do not impact or throw the battery.
08. Do not use the battery with conspicuous damage or deformation.
09. Do not make the direct soldering on the battery.
10. Do not reverse charge or over discharge the battery.
11. Do not reverse charge or reverse connect.
12. Do not connect the battery to the ordinary charger socket or car cigarette jack.
13. Do not use the battery for unspecified equipment.
14. Do not touch the leaking battery directly, please wash your skin or clothes with water if they are bedewed by liquid leaking from the battery.
15. Do not mix the Li-Poly battery with other un-chargeable battery .
16. Do not continue charging the battery over the prescribed time.
17. Do not put the battery into the microwave oven or high-pressure container.
18. Do not use the abnormal battery.
19. Do not use or keep the battery under the sunlight.
20. Do not use the battery nearby the place where generates static electricity (over 64V).
21. Do not charge the battery when the environmental temperature is under 0°C or over 45°C.
22. If you find the battery leaking, smelling or abnormal, stop using it .
23. Keep the battery away from the children.
24. Use the specified charger and observe charging requirement (under 1A).
25. When using by minors, parents should show them the correct way to charge.



CAUTION

1. Use the original charger. Never charge the battery at more than 1 amp.
2. Never discharge the battery at more than 5C. Do not discharge too long as this will damage the battery.
3. For full flight time to be achieved please cycle the cells through three flights.
4. Never charge the battery on a carpet floor, this can cause a fire!

PARTS LIST

The helicopter includes the following parts, please check to make sure that all of the parts are included in your kit. If there is anything missing please contact your local dealer.



Fuselage



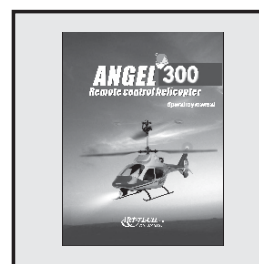
Transmitter



Balance Charger



Li-po battery



Operating manual

OPERATION MANUAL METHOD

 Please follow the following process before starting, Otherwise, it may lead to the helicopter not to work.

1. Put the helicopter on the flat ground and put the transmitter one meter away from the helicopter.
2. You can find that the indicator light of controlling board will flash by the transparent window in the right side of fuselage after connecting the power.
3. Turn on the switch of transmitter, the indicator light of transmitter start to flash in red light and green light in turn.
4. If the indicator light of the controlling board will turn to solid red and the indicator light of the transmitters turn to solid green after 7 seconds and you can hear Crunch of the servo's movement(the servo will move to the center), it means the helicopter is ready for flying. After self-inspection, you can start to fly. Otherwise, cut down the power for the helicopter and transmitter, then repeat the step from 1 to 4.

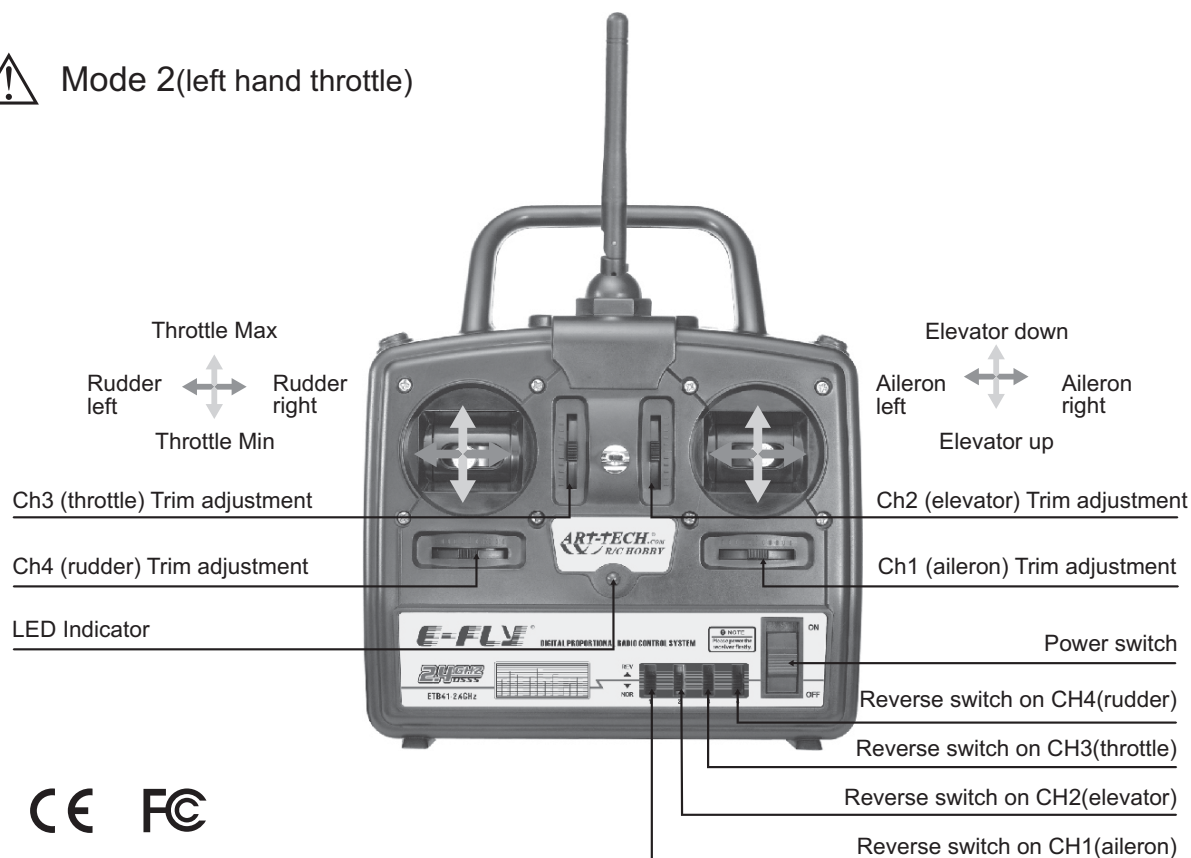
Caution!

1. Do not move or shack helicopter during the process of starting up, which may lead to abnormal flight.
2. Before starting the operation, it should be confirmed that there are no RC aircraft doing the same operation inside 30 meters, otherwise, the helicopter may lose control.

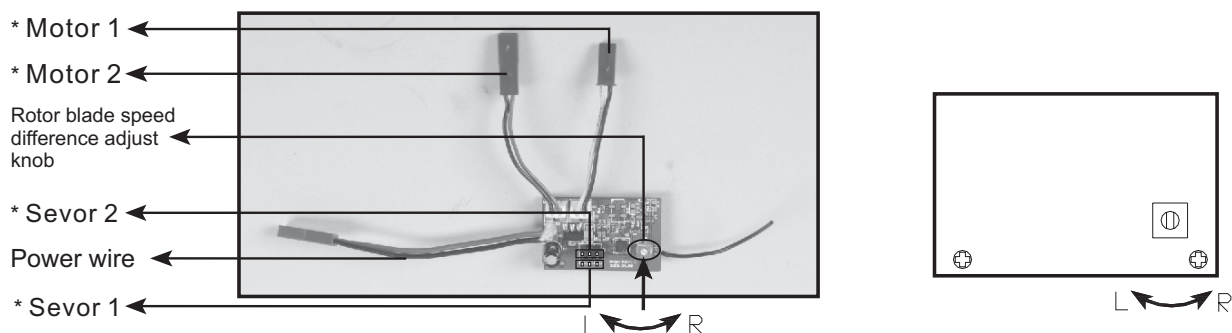
FUNCTIONS FOR CONTROL SET



Mode 2(left hand throttle)



ADJUST THE SPEED OF THE ROTOR BLADES BY THE PCB BOARD



* Please refer to the page 13 for the position of servos and motor

1. Function of knob: adjust the gesture of the helicopter by adjusting the speed of upper and lower rotor blades.

(1) If you turn the knob clockwise, the speed of the downward rotor blade will increase and helicopter will turn right.

(2) If you turn the knob counterclockwise, the speed of the upper rotor blade will increase and helicopter will turn left.

2. PCB is well adjusted before shipment, so the end-customer need not adjust it.

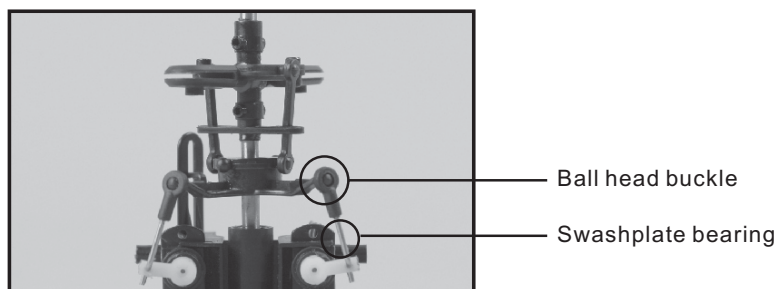
SWASHPLATE ADJUSTMENT

1. Swashplate check. Pull down the throttle joystick and throttle trim to the lowest position, and push the elevator trim and aileron inching switch to the neutral position, and check whether the swashplate is in a horizontal level.

2. Swashplate adjustment:

If the swashplate is not in a horizontal level, adjust via the following steps:

First, loosen the swashplate pull rod (Disconnect the ball buckle with the swashplate). Second, turn the ball buckle clockwise or anticlockwise to adjust the length of the pull rod so as to make the swashplate reach level. Third, connect the ball buckle.



MAIN ROTOR BLADE ADJUSTMENT

1. Main rotor blade inspection.

(1) Inspect whether the fixed screws of the main rotor blades are too tight or loose. Extreme tightness or loosening of the blades will result in unstable flight.

(2) Inspect whether the blade tracking phenomenon will happen. Blade tracking problem will lead to unstable flight.

2. Adjustment for the main rotor blade

(1) Keep the fixed screw of the main rotor blades not too tight or too loose.

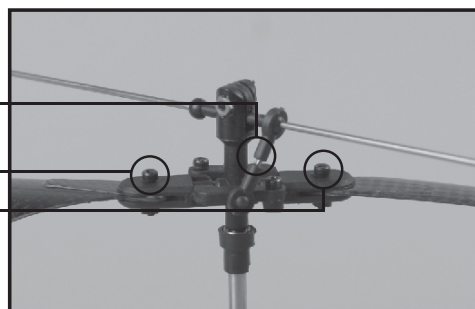
(2) Lengthen or shorten the ball linkage rod if the blade tracking problem is existed.



The trims of the transmitter may be displaced caused during the transportation and flying. Please adjust the trim properly before you fly the model. The position of transmitter trim may changed slightly due to transportation. Please check the state of trim and adjust knot according the flying.

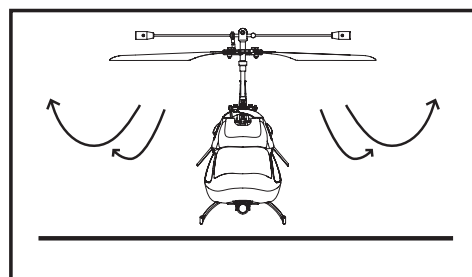
ball connector rod

fixed screw for
main blades

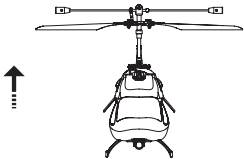

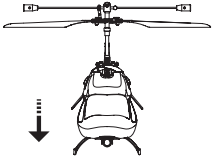

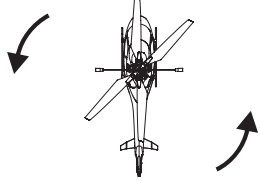

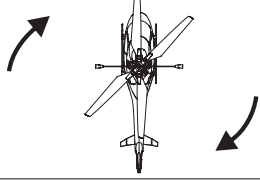



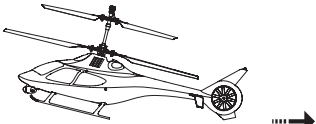

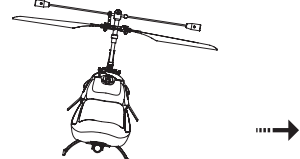






GROUND EFFECT

Airplane will be influenced by the airflow when airplane is flying 30 centimeters above ground, which is called 'ground effect'. This effect can increase the lift and also make the helicopter difficult to control in the situation. It will be difficult for the helicopter to take off and land in this situation. The best way to reduce the 'ground effect' is to increase the flight altitude.

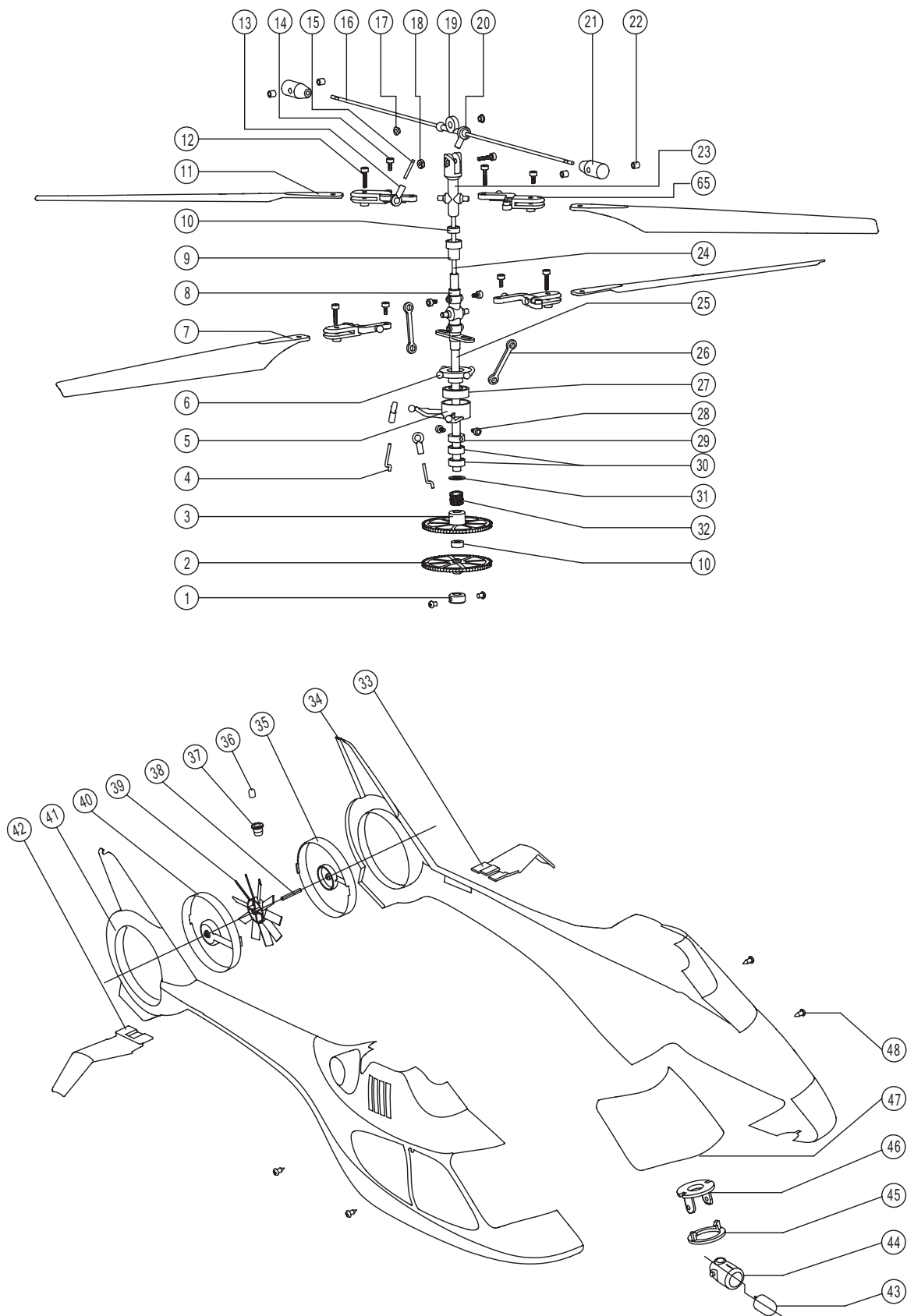


NORMAL FLIGHT

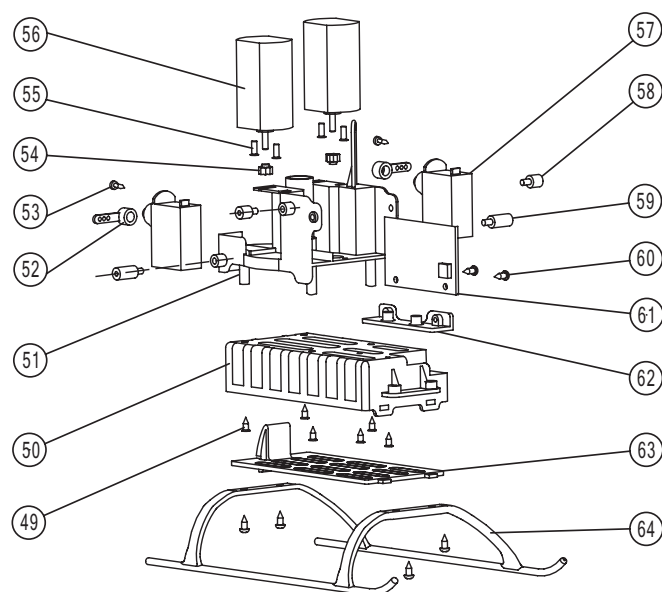
Ascending			Left stick pushing up
Descending			Left stick pulling down
Head turning left			Left stick moving left
Head turning right			Left stick moving right
Head forward			Right stick pushing up
Head backward			Right stick pushing down
Helicopter moving left			Right stick moving left
Helicopter moving right			Right stick moving right

 Chart for R/C mode 2(left hand throttle)

INSTALLATION



INSTALLATION

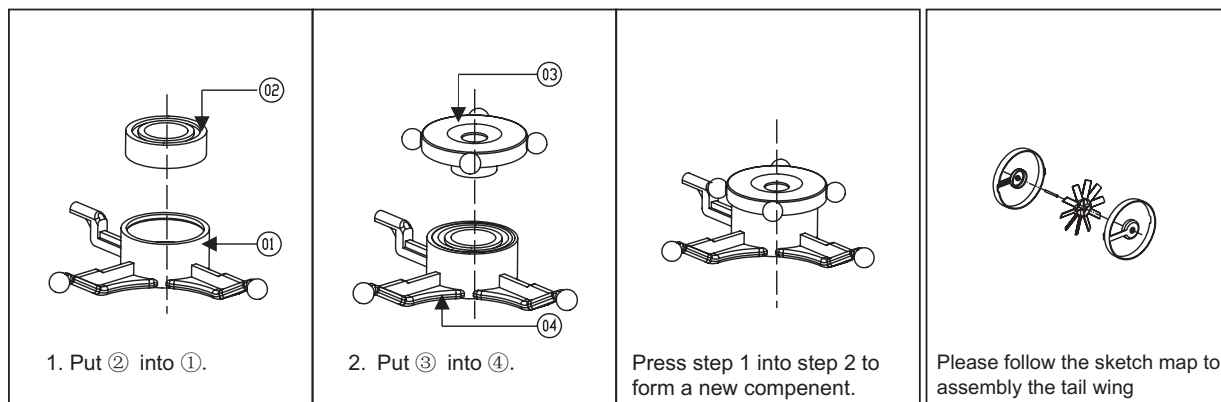


① The fixed sleeve for main shaft	⑱ Nut
② Upper main gear	⑲ Balance bar sleeve
③ Lower main gear	⑳ Balance bar ball buckle
④ Servo arm steel wire	㉑ Stabilizer
⑤ Inner inclined tray	㉒ Screw
⑥ Outer inclined tray	㉓ Rotor head
⑦ Right rotor blade	㉔ Inner main shaft
⑧ Rotor head sheath	㉕ Outer main shaft
⑨ Connecting sleeve	㉖ Linkage rod
⑩ Bearing	㉗ Bearing
⑪ Left rotor blade	㉘ Screw
⑫ Screw	㉙ Main shaft fixed sleeve 2
⑬ Main rotor ball buckle	⑳ Bearing
⑭ Screw	㉑ Main gearing copper sheet
⑮ Pull rod	㉒ Copper sleeve
⑯ Balance bar	㉓ Left stabilizer
⑰ Copper sleeve for balance bar	㉔ Left body

㉕ Left tail blade cover	㉖ Servo arm
㉗ LED light	㉘ Screw
㉙ LED light seat	㉑ Copper gear
㉒ Tail blade shaft	㉓ Screw
㉔ Tail blade	㉕ Motor
㉖ Right tail blade cover	㉗ Servo
㉘ Right body	㉙ Link bar 1
㉚ Right stabilizer	㉛ Link bar 2
㉜ Searchlight	㉝ Screw
㉞ Searchlight cover	㉟ Controlling board
㊱ Searchlight sleeve holder	㊲ Controlling board seat
㊳ Searchlight seat	㊴ Battery cover
㊵ Canopy window	㊶ Undercarriage
㊷ Screw	㊸ Rotor holder
㊹ Screw	
㊺ Battery box	
㊻ Frame	

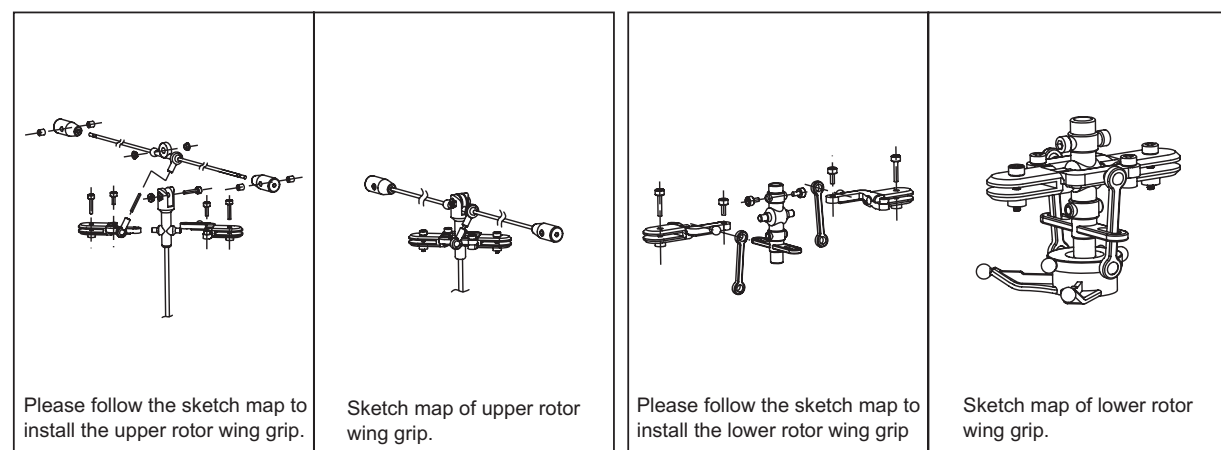
PARTS REPLACING

Swashplate assembly



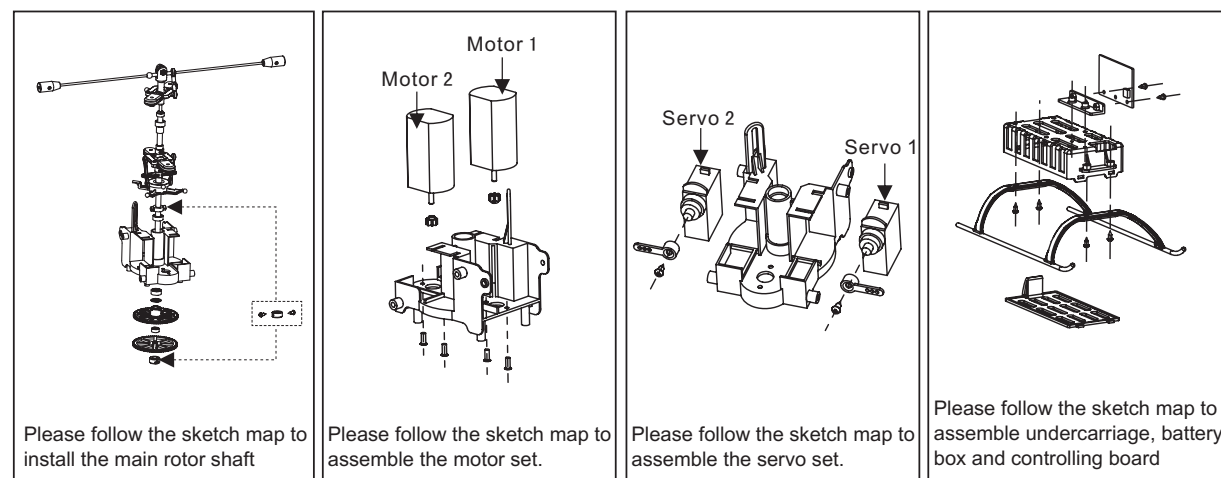
Tail wing assembly

Upper rotor wing grip installation



Lower rotor wing grip installation

Main rotor shaft and core shaft installation



Motor installation

Servo installation

Undercarriage and Battery box installation

THE POSSIBLE PROBLEMS AND SOLUTIONS

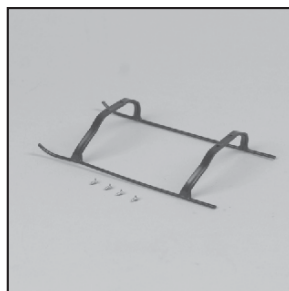
Problem	Cause	Reparation
The model does not move	Check the battery voltage of transmitter and receiver	Use completely charged batteries
	Check the wire connection inside the model	Contact the local dealer
	Throttle protecting function switched on	Minimize the right joystick of throttle (See page 8)
	Improper starting operation	Restart the model (See page 7)
The model is out of control or the flight is unstable	The model flies beyond the control distance	Control the flying distance
	The stabilizer of the balance bar is off	Install the stabilizer properly (See page 13)
	The ball connector buckle is off	Connect the buckle again (See page 9)
The model moves only forwards/ backward	The swash plate is not level	Correct the trim on the transmitter (CH 2) (See page 8)
		Balance the swash plate(See page 9)
The model slides left/right always	The swash plate is not level	Correct the trim on the transmitter (CH 1) (See page 8)
		Balance the swash plate(See page 9)
The model is spinning all the time	One or more blades are broken or deformed	Change the rotor blades *
	The upper and lower blades rotate with different speed	1.Slight spinning could be corrected by adjusting the trim of CH4 (rudder) 2. If the problem is serious, first neutral the trim slider and then adjust the knob of the PCB board. (see page 8) The two methods should be used together to solve the problem.
The model vibrates severely with much noise	There is too much friction between the gears	Apply some lubricating oil
	Rotor blades are twisted	Change the rotor blades *
	Check the rotor blades to see if there is any inconsistent phenomena during the rotation	Adjust the pull rod properly and adjust the blades to prevent tracking blade (see page 9)
	Check the connection of the body and the frame	Make the connection of the body and frame firm enough
Short control distance	The battery of transmitter is not sufficient	Change the battery
The model moves forwards/ backward and sidewise, but does not hover	Check whether the helicopter is exposed to a draught, e.g. by an opened window or an air conditioner. Hover flight is not possible when there is a draught	Close the window / door, switch off the air conditioner or select a more suitable place

* Note: If one rotor blade is changed, please change the other blade simultaneously also to make sure the two blades are with the same weight.

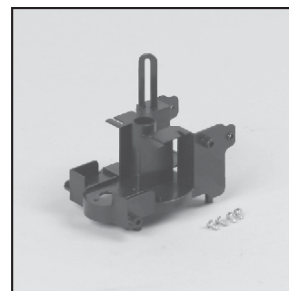
SPARE PARTS LIST



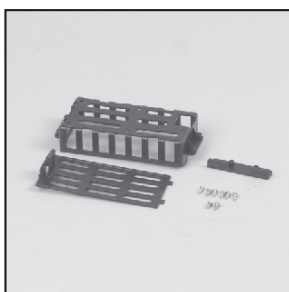
No:4R011
Body



No:4R021
Undercarriage



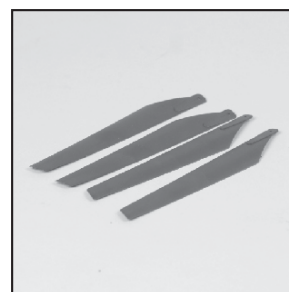
No:4R031
Frame



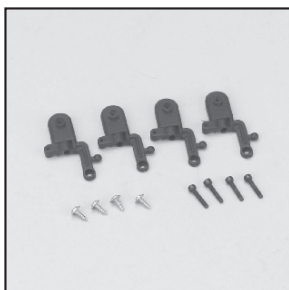
No:4R041
Battery box set



No:4R051
Swash plate



No:4R061
Main blades



No:4D101
Main rotor wing grip



No:4R071
Main gear set



No:4R081
Core shaft



No:4R141
Stabilizer

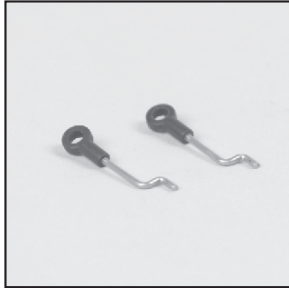


No:4R091
Bearing set

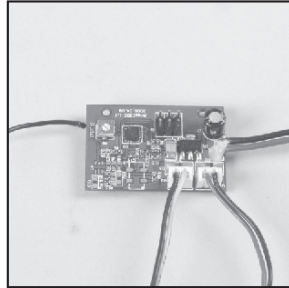


No:4R101
Rotor head set

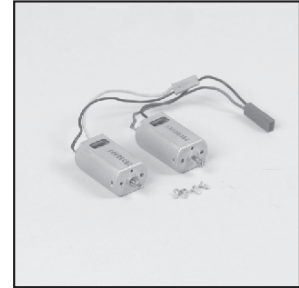
SPARE PARTS LIST



No:4R111
Arm set



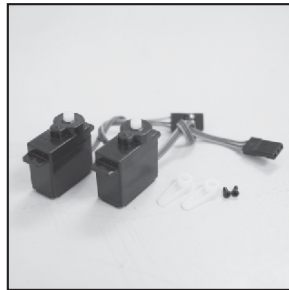
No:3R021
Controlling board (PCB)



No:4R131
Motor set



No:4D051
Li-poly battery



No:35051
Servo



No:4J011
Upgraded carbon blades



No:4R121
Searchlight

FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference

to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example- use only shielded interface cables when connecting to computer or peripheral devices).

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment and it also complies with Part 15 of FCC RF Rules. Operation is subject to the following two conditions:

- 1) This device may not cause interference and
- 2) This device must accept any interference, including interference that may cause undesired operation of the device.

Caution!

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user authority to operate the equipment.

Declaration of Conformity

Hereby, ShenZhen ART-TECH R/C Hobby Co., Ltd. declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

We also declared that the medium access protocol has been implemented.