Item No.:FW3011

SCALE
ENGINE SOUND
SYSTEM

P-51D Mustang

USER MANUAL

Wingspan : 1410mm (55.51 in)

Freewing MODEL®

Version No.:FW3011-V01

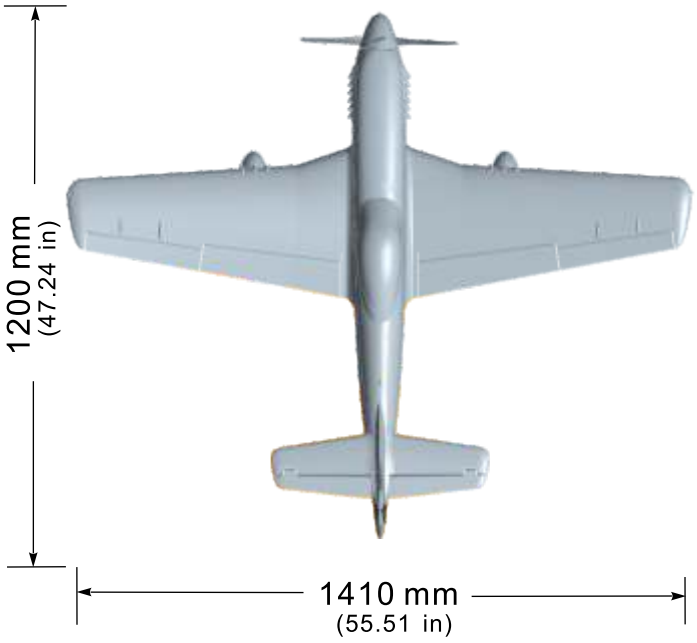
MADE IN CHINA

Note:

⚠ **NOTE:** This is not a toy. Not for children under 14 years. Young people under the age of 14 should only be permitted to operate this model under the instruction and supervision of an adult. Please keep these instructions for further reference after completing model assembly.

1. This is not a toy! Operater should have a certain experience, beginners should operate under the guidance of professional players.
2. Before install, please read through the instructions carefully and operate strictly under instructions.
3. Cause of wrong operation,Freewing and its vendors will not be held responsible for any losses.
4. Model planes' players must be on the age of 14 years old.
5. This plane used the EPO material with surface spray paint, don't use chemical to clean, otherwise it will damage.
6. You should be careful to avoid flying in areas such as public places,high-voltage-intensive areas,near the highway, near the airport or any other place where laws and regulation clearly prohibit.
7. You cannot fly in bad weather conditions such as thunderstorms,snows....
8. Model plane's battery, don't allowed to put in everywhere. Storage must ensure that there is no inflammable and explosive materials in the round of 2M range.
9. Damaged or scrap battery should be properly recycled, it can't discard to avoid spontaneous combustion and fire.
10. In flying field, the waste after flying should be properly handled,it can't be abandoned or burned.
11. In any case, you must ensure that the throttle is in the low position and transmitter switch on, then it can connect the lipo-battery in aircraft.
12. Do not try to take planes by hand when flying or slow landing process. You must wait for landing stop, then carry it.

Product basic information



⚠ Note: The parameters in here are derived from test result using our accessories. If use other accessories, the test result will be different. Any problem since of using other accessories, we are not able to provide technical support.

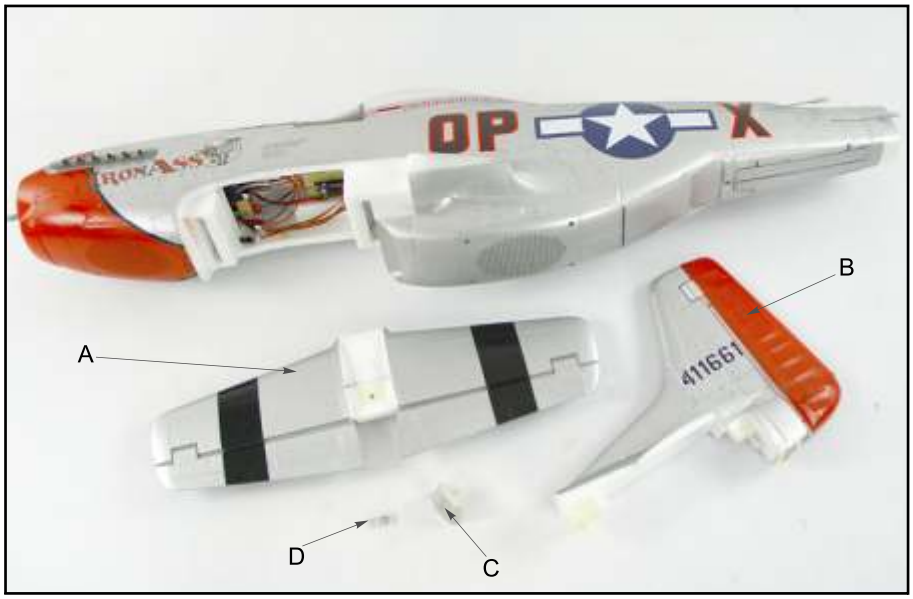
- **Wingspan**
  1410mm (55.51 in)
- **Fuselage Length**
  1200mm (47.24 in)
- **Flying weight**
  2600g (91.7 oz.)
- **Thrust**
  3500g (123.5 oz.)
- **Wing Loading**
  86g/dm
- **Servo**
  17g MG servo (6 pcs)
  9g servo (3 pcs)
- **ESC**
  65A brushless ESC
- **Motor**
  4250-580KV
- **Battery**
  4S 2200mAh 35C
  3S 1000mAh 25C (Use for scale engine sound system)

- V3 LED light controller.
- 3W LED taxi light.
- Cabin door sequencer.
- Scale engine sound system.
- Supper light high decibel speaker.
- Key control surface use metal ball to operate more precise and safety.
- Drop tank can repeat to assemble / disassemble, don't damage in shipment.
- New control surface design.
- Retracts with full metal damping landing gear.

Installing tail wing set

Firstly, we need to remove these accessories from package:

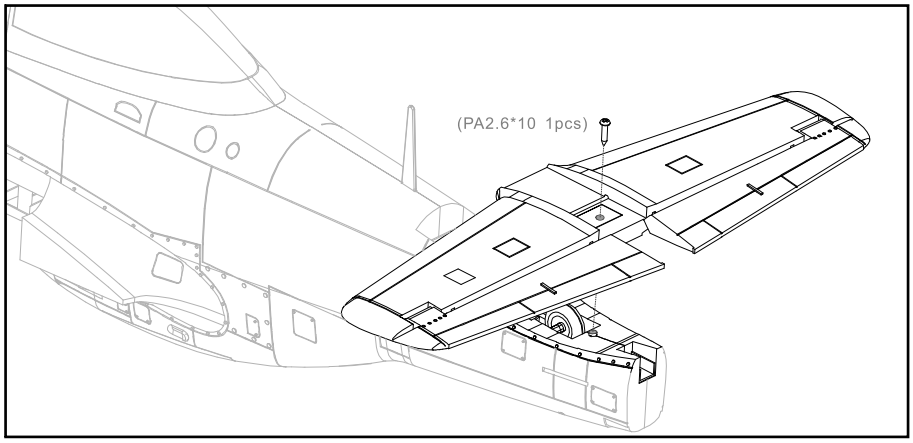
A - Elevator
B - Rudder
C - Rudder fixed plastic part
D - Screw (PA2.6*10 4pcs)

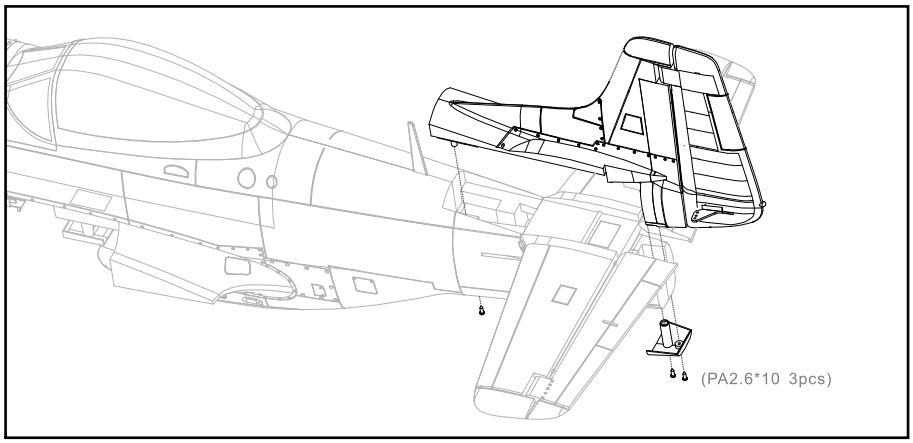


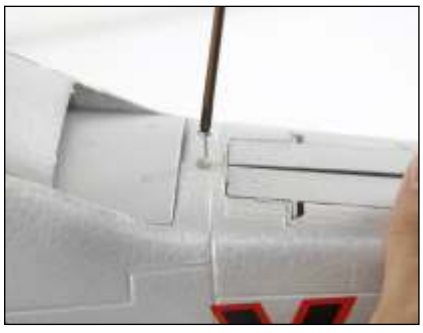
1.Use screw (D) to fix the elevator (A) on the rear of fuselage.

2.Insert the rudder (B) to the rear of fuselage, and turn over the fuselage.

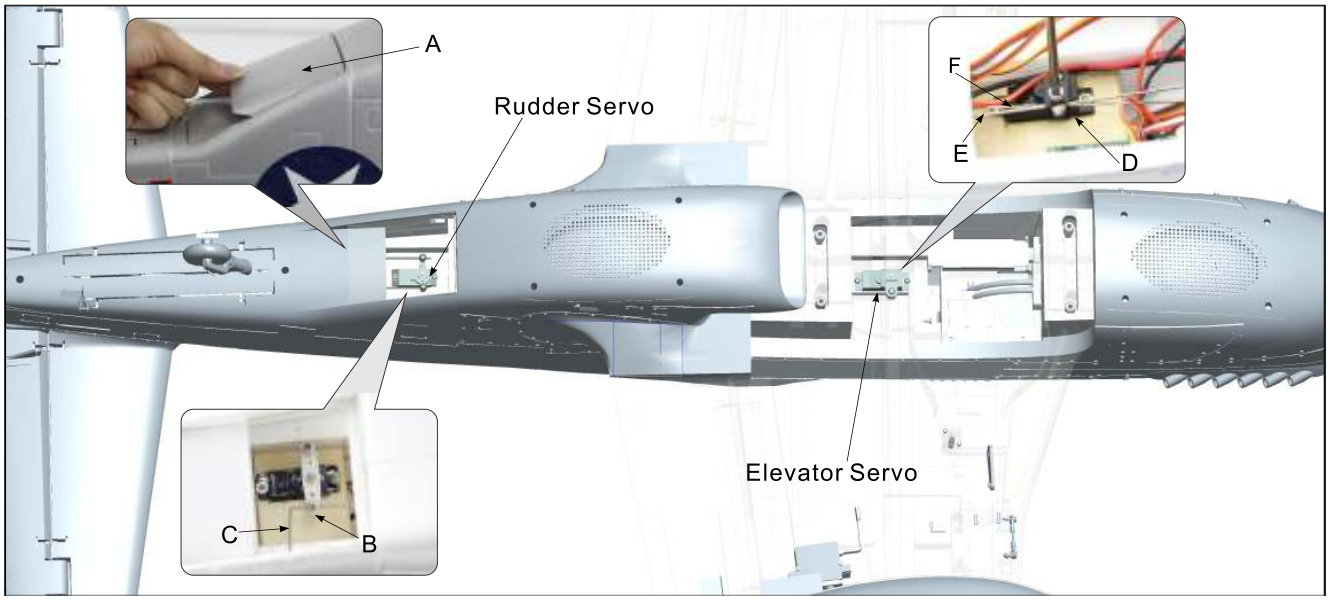
3.Use rudder fixed plastic part (C) and screw (D) to fix the rudder.







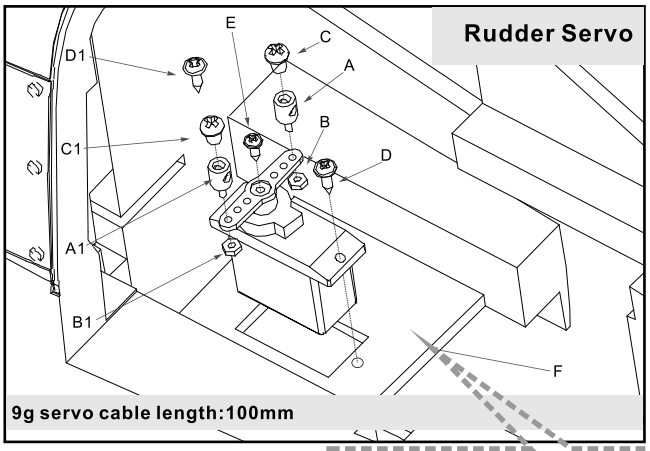
Installing tail wing set

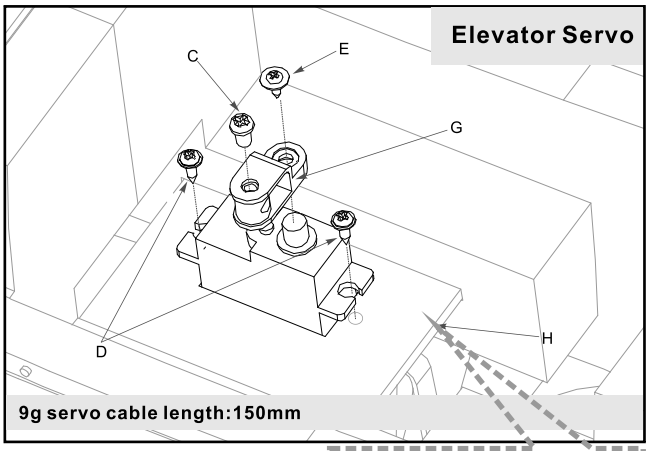


Finish to install the rudder and elevator, we need to center the control surface of rudder and elevator firstly, then begin to do the next step. Since after finish to install main wing, it will cover the elevator and rudder, not easy to operate.

1. Remove the plastic (A). Before removing, pull the plastic part up firstly, and press the side of plastic part (A), let the buckle out, then remove the plastic parts.
2. Next, we need to use servo tester or radio, to center the arm of elevator servo and rudder servo (as the upper photo shown.)
3. In the rear of fuselage, buckle the plastic clevis of rudder pushrod and elevator pushrod into the control surface horn.
4. When adjust the rudder control surface, loosen the screw (B) of "rudder servo" firstly, and move the rudder pushrod (C) front or back to center the rudder, then fix it by screw (B).
5. When adjust the elevator control surface, loosen the screw of "elevator servo" firstly, and move the elevator pushrod (E、F) front or back to center the elevator, then fixed it by screw (D).

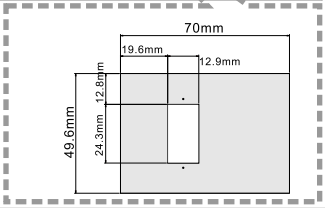
Elevator / Rudder Servo Installation

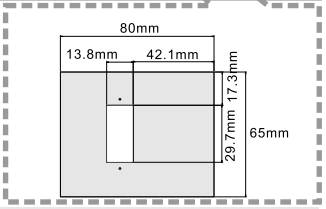




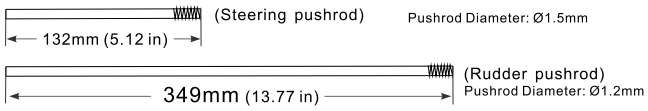
Accessories List

A-Pushrod fixed bolt
B-Nut
C-Screw (PM3*6)
D-Screw (PA2.0*8)
E-Screw (PA1.7*4)
F-Wood piece for rudder servo installation
G-U shape servo arm
H-wood piece for elevator servo installation

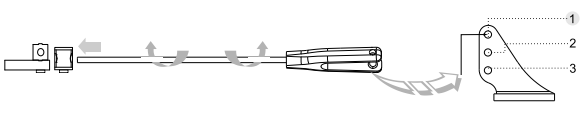




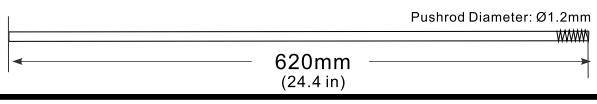
Rudder / Steering pushrod size



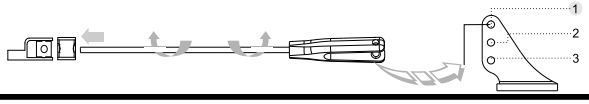
Rudder pushrod mounting hole



Elevator pushrod size



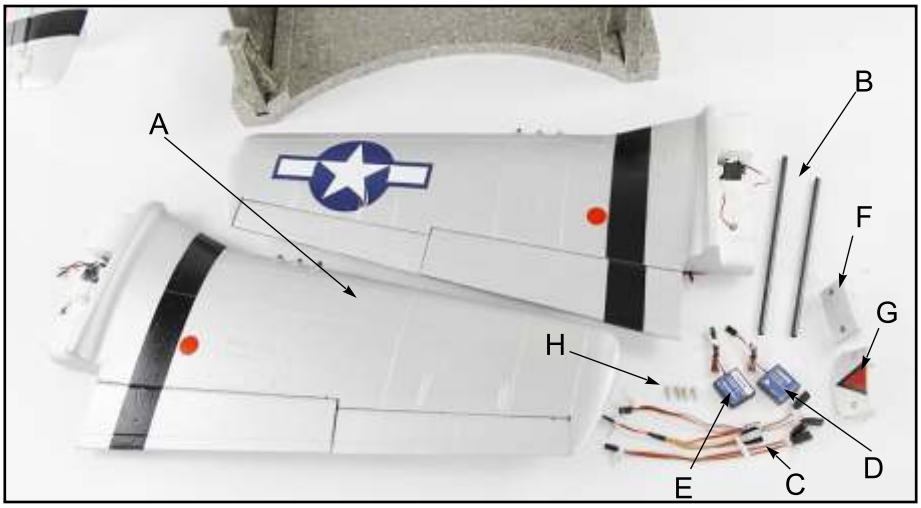
Elevator pushrod mounting hole



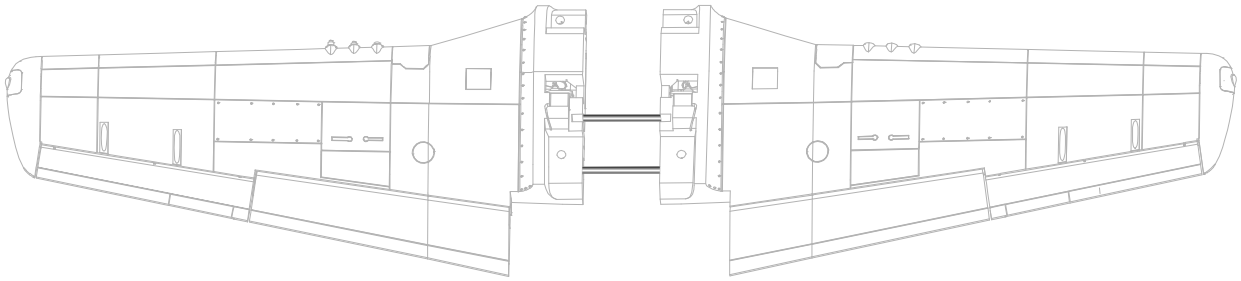
Installing Main Wing Set

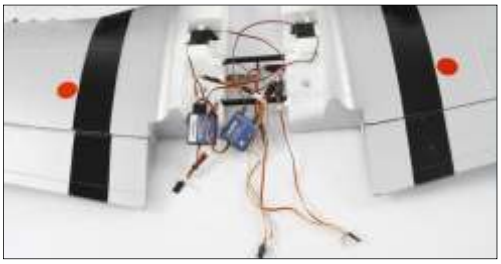
Please refer to the following to install main wing. Prepare these accessories list:

A-left/right wing
B-carbon tube
C-Y- wire
D-LED light controller
E-Landing gear cabin sequencer
F-main wing fixed plastic piece 1
G-main wing fixed plastic piece 2
H-screw

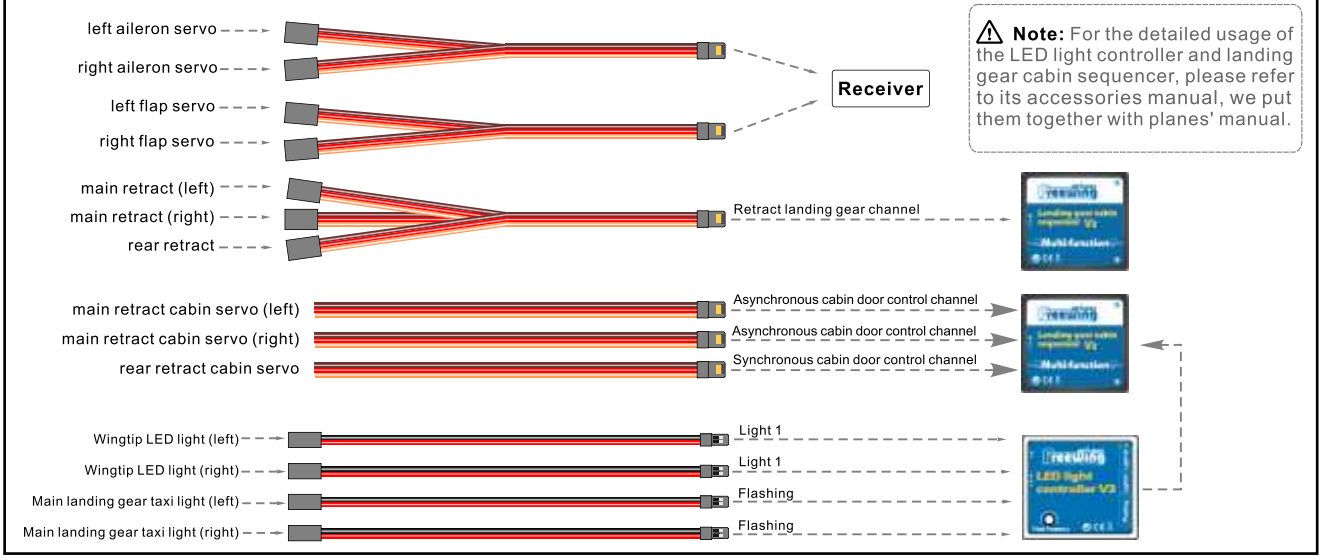


1.Connect left/right wing (A) by carbin tube (B)
2.Before close left/right wing, please refer to " servo/LED light/ retracts connection diagram", connect the Y wire (C), LED light controller (D), Landing gear cabin sequencer (E).
3.Close the left/right wing.



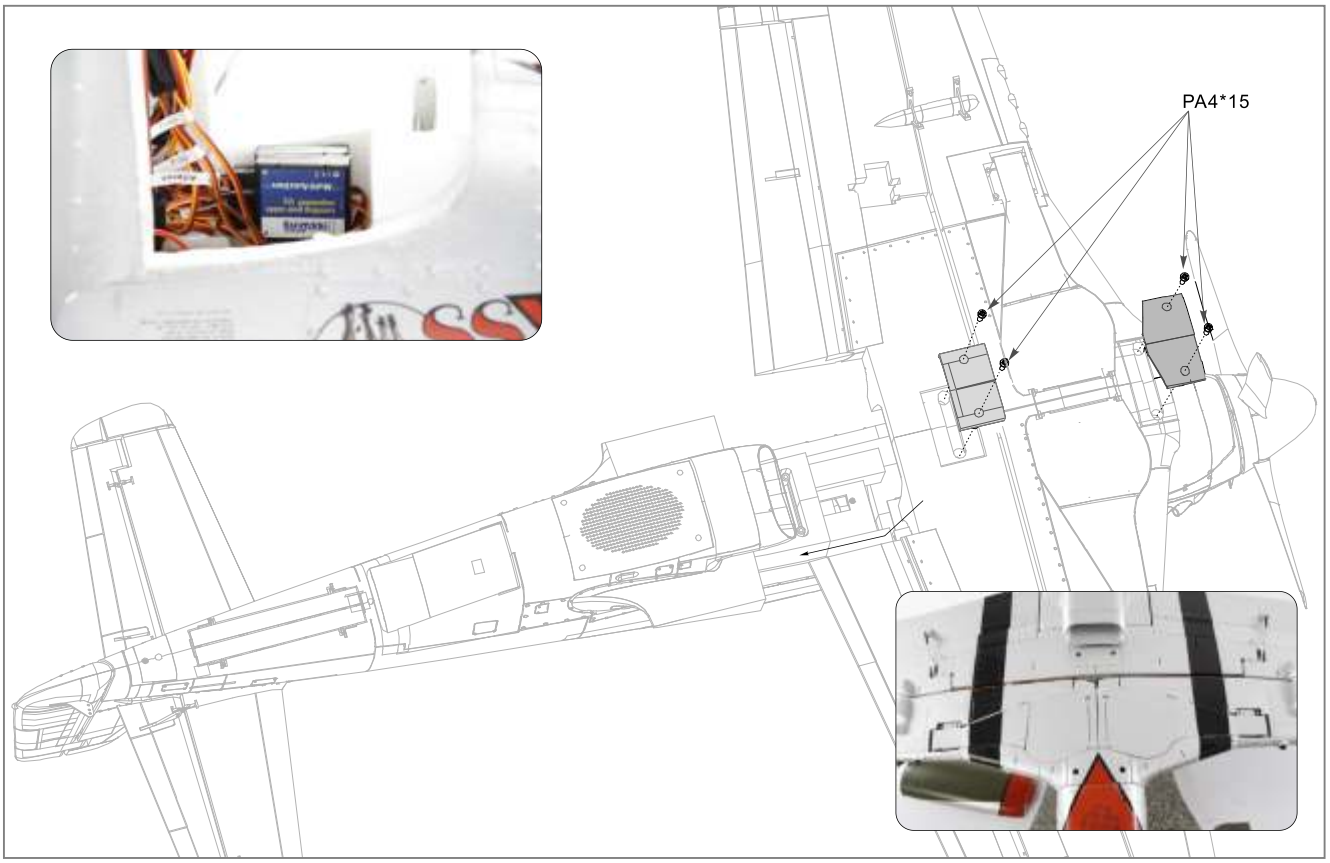


Servo、LED light、 Retracts connection diagram



Note: For the detailed usage of the LED light controller and landing gear cabin sequencer, please refer to its accessories manual, we put them together with planes' manual.

Installing main wing set

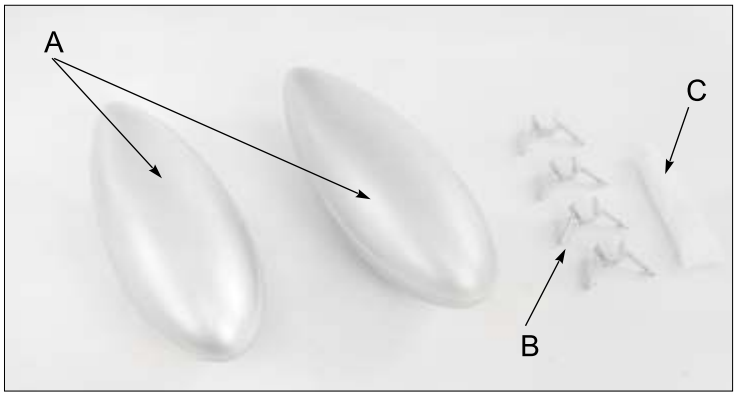


4.Turn over the fuselage, put the main wing near the fuselage, then insert the cable of " rear retract and rear retract cabin" into "landing gear cabin sequencer".
5.Finish to connect all the cable, adhesive the LED light controller (D) and landing gear cabin sequencer (E) to the cabin wall.
6.At last, buckle the main wing into fuselage, use main wing fixed plastic piece 1 (F) and main wing fixed plastic piece 2 (G) and 4pcs screws (H) to fix the main wing.

Finish to install main wing, next, we need to install the drop tanks, please prepare the following accessories.

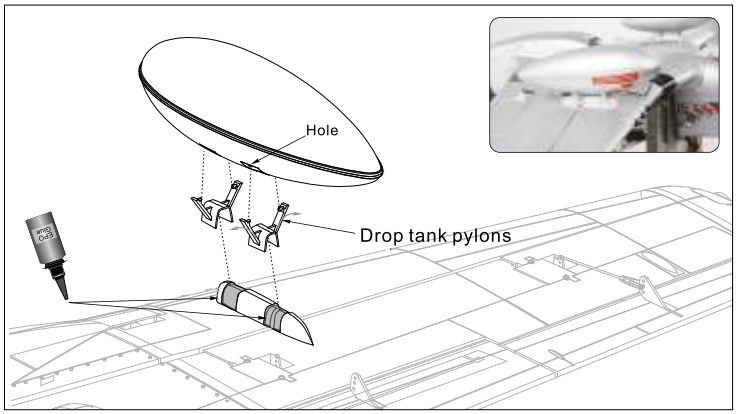
A-drop tank
B-drop tank pylons
C-EPO glue

⚠**Note:** when install, we need to distinguish the install position of "drop tank pylons B". we have note the LF、LB、RF、RB in the plastic inside. L means left wing, R means right wing, F means front/nose fuselage, B means back/rear fuselage. Please according to the note, install them correctly.



1.As the right photo shown, apply the EPO glue to the indicated place, adhesive the drop tank pylons (B) to these place.
2.Then install the drop tank (A) on the drop tank pylons (B).

⚠**Note:** when install the drop tank (A),firstly we need to curve out one of supporting rod of drop tank pylons (B), then buckle it to the hole of drop tank (A). During this step, we must control the use of force, the rod may break since of too much effort.



Installing the servo of main wing set

1.As the right photo shown, apply the glue to the indicated place, and adhesive the 17g servo box (B) and control surface horn (A) to the main wing.

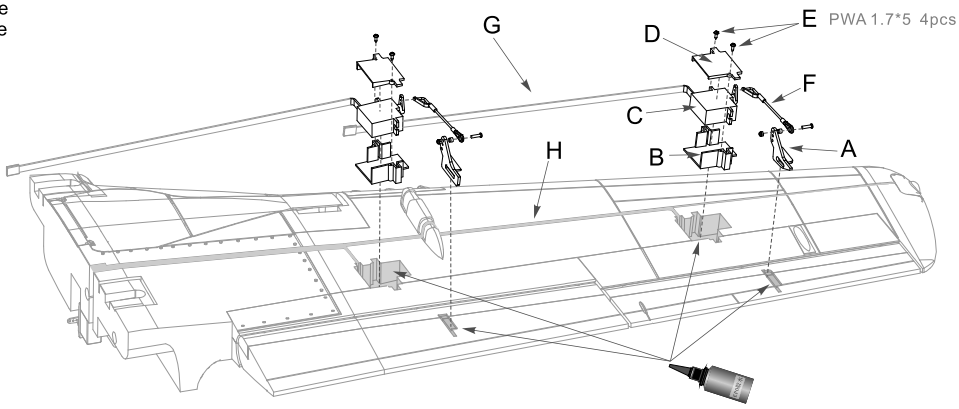
2.Press the 17g servo in the servo box, also press the servo cable (G) into the trough (H).

3.Put the servo cover on the servo box (B), and fix it by 2 pcs screws (E).

4.Connect the servo arm and control surface horn by pushrod.

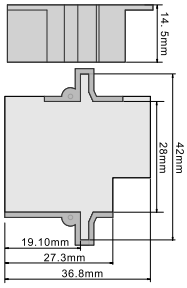
5.Adjust the aileron to be centered.

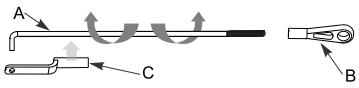
6.According to the above steps, install flap servo.



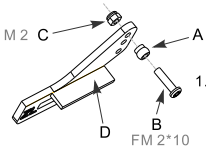
Note: The servo cable length we advised, please refer to the following:
Flap servo cable length：300mm
Aileron servo cable length：550mm

Note: we have installed all the servo box in aircraft, when players disassemble the servo, it will not damage the foam surface. If need to replace servo, please purchase Freewing servo ,or refer to the following drawing, choose the correct size servo.



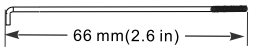


1.Screwed one screw thread side of pushrod (A) into the ball head buckle (B), we can screw left, right to increase/reduce the length of pushrod.
2.Connect the bending side of pushrod and servo arm. Then buckle the second part of plastic buckle (C) to pushrod (A) and buckle the hole side of plastic buckle (C) to the pushrod to fix it.



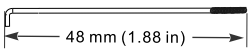
1.Put the ball head(A) into the screw (B), then insert the screw (B) into the hole of control surface horn(D) , and fix it by screw (C).

Aileron pushrod size



Pushrod diameter : Ø 1.5mm

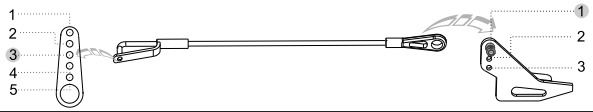
Flap pushrod size



Pushrod diameter : Ø 1.5mm

Aileron pushrod mounting hole

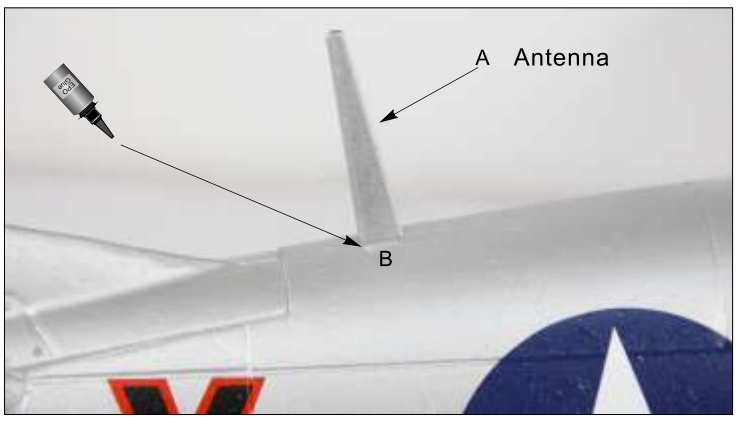
Flap pushrod mounting hole



Installing the Antenna

The indicated place (B) as the right arrow showed, inject some glue in it, then insert the antenna (A) in the indicated place.

Hold the antenna two or three minutes and after the glue solidification, we finished its installation.

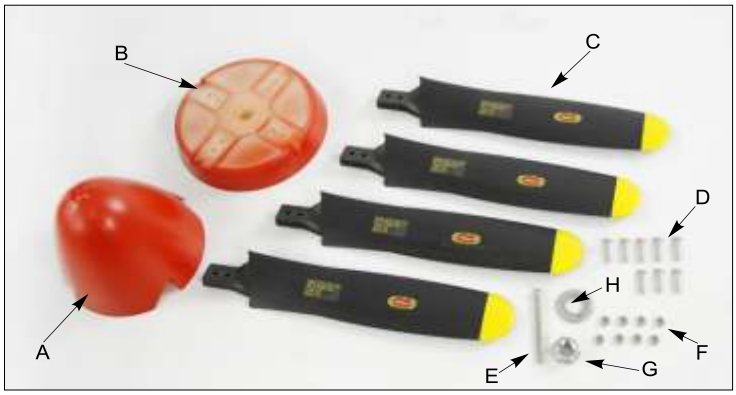


Installing Propeller

Before install propeller, we need to install the 4pcs blades together.

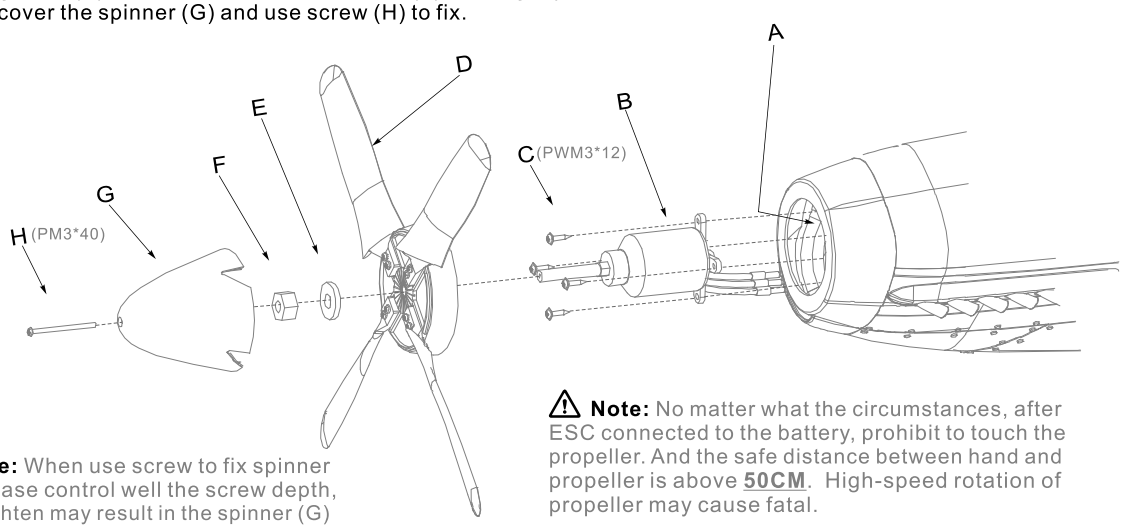
A-Spinner
B-Propeller fixed disk
C-Blade
D-Screw (PWM3*12 8pcs)
E-Screw (PM3*40 1pcs)
F-Nut (M3 8pcs)
G-Nut (M8 1pcs)
H-Gasket

1.At first, put the nut (F) on the back of hexagonal hole of propeller fixed disk (B).
2.Then install the blade (C) on the propeller fixed disk (B) and fix it by screw (D).
3.Repeat 1,2 two steps, to finish all the blades installation.



Installing Propeller

1.Fix the motor (B) on the fire-proof plate (A) by 4 pcs screw (C).
2.Put the installed propeller on the motor shaft. The plastic hexagonal hole in the back of propeller fixed disk (B) and the hexagon step of motor shaft, they should sit in alignment. It's the correct installation
3.Put the gasket (E) to the motor shaft, use screw (F) to fix tightly.
4.At last, cover the spinner (G) and use screw (H) to fix.

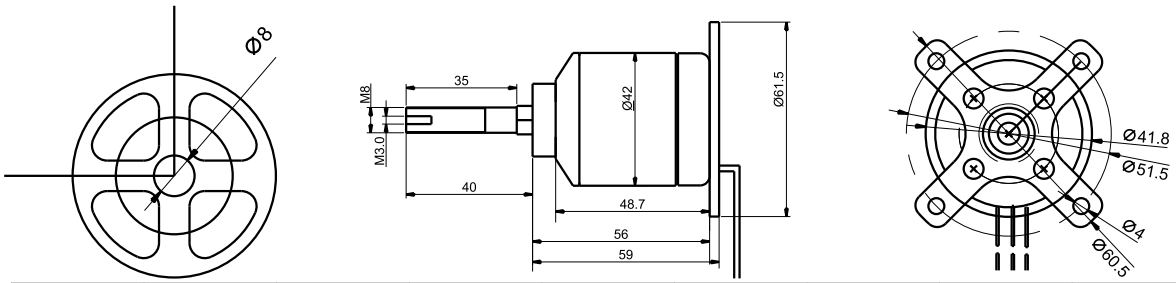


⚠**Note:** When use screw to fix spinner (G), please control well the screw depth, over-tighten may result in the spinner (G) break.

⚠ **Note:** No matter what the circumstances, after ESC connected to the battery, prohibit to touch the propeller. And the safe distance between hand and propeller is above **50CM**. High-speed rotation of propeller may cause fatal.

Motor parameters

Unit : mm



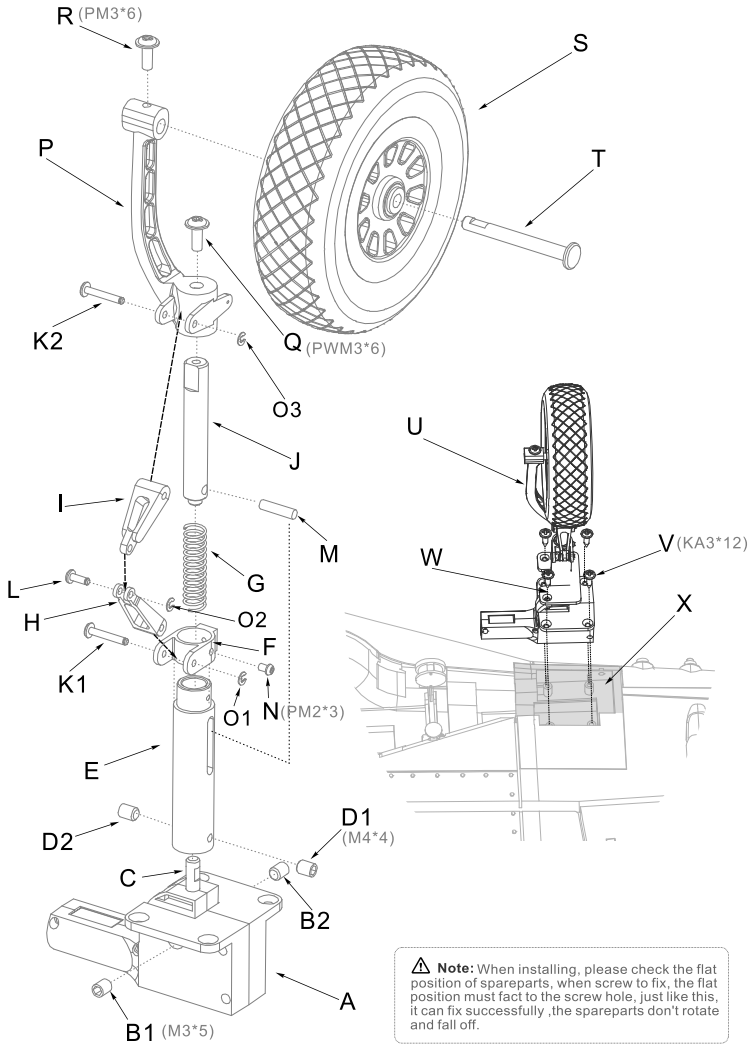
Item No.	KV(RPM/VOLT)	Volate(V)	Current(A)	Pull(g)	Motor Resistance (ohms)	Motor Weight (g)	No Load Current	Prop	ESC(A)
MO04211	580RPM/V	14.8	51	3000	0.02	235	1.4/10V	4-Bladed 14*8	65

Installing nose landing gear

In here, we introduce for you how to install the landing gear? If it happen any problem, you can refer to the following to revise. At the same time, you can choose correct spareparts to purchase from local distributor and replace it.

Nose landing gear accessories list

A-Landing gear electric base
B-Jimi screw (M3*5)
C-nose landing gear main metal wire
D-Jimi screw (M4*4)
E-nose landing gear main strut
F-U shape damping arm
G-Spring
H-nose landing gear damping strut down
I-nose landing gear damping strut up
J-nose landing gear damping active lever
K-Pin
L-Pin
M-Pin
N-screw (PM2*3)
O-E-buckle (Ø1.5mm)
P-Slant supporting rod
Q-screw (PWM3*6)
R-screw (PM3*6)
S-wheel
T-wheel shaft
U-Nose landing gear installed set
V-screw (KA3*12)
W-U shape reinforcement
X-Nose gear mount



1. At first, insert the “nose landing gear main metal wire (C)” into “Landing gear electric base (A)”, and fixed it by Jimi screws (B).
2. Put the “nose landing gear main strut(E)” into the “nose landing gear main metal wire (C)”, and fixed it by 2 pcs Jimi screws (D).
3. Put the “ U shape damping arm (F)” into “nose landing gear main strut (E)”, and fixed it by two screws (N).
4. Insert the “Spring (G)” and “nose landing gear damping active lever (J)” to “nose landing gear main strut (E)” in turn. Then use strong force to press “nose landing gear damping active lever (J)”. and see the U-shape trough, the side of “nose landing gear main strut (E)”, we should see the small hole of “nose landing gear damping active lever (J)”. Through the U-shape trough, press the “Pin (M)” to the small hole, it can ensure “nose landing gear damping active lever (J)” and “nose landing gear main strut (E)” don't separate.
5. Fixed “Slant supporting rod (P)” on the “nose landing gear damping active lever (J)” by screw (Q).
6. Use “Pin (L), Pin (K) and E-buckle “(C)” to install the “nose landing gear damping strut down (H)” and “nose landing gear damping strut up (I)” on the “U shape damping arm (F)” and “Slant supporting rod (P)”.
7. Put the “ wheel shaft (T)” through “wheel (S)”, then insert it to the “Slant supporting rod (P)”, and use 1pcs screw (R) to fix.
8. Install the “Nose landing gear installed set (U)” on the “Nose gear mount (X)”, then put the” U-shape reinforcement (W)” on the surface of “Landing gear electric base (A)”. and use 4 pcs screws (V) to fix tightly.

Note: When installing, please check the flat position of spareparts, when screw to fix, the flat position must fact to the screw hole, just like this, it can fix successfully ,the spareparts don't rotate and fall off.

Installing cabin

Nose landing gear cabin door accessories list

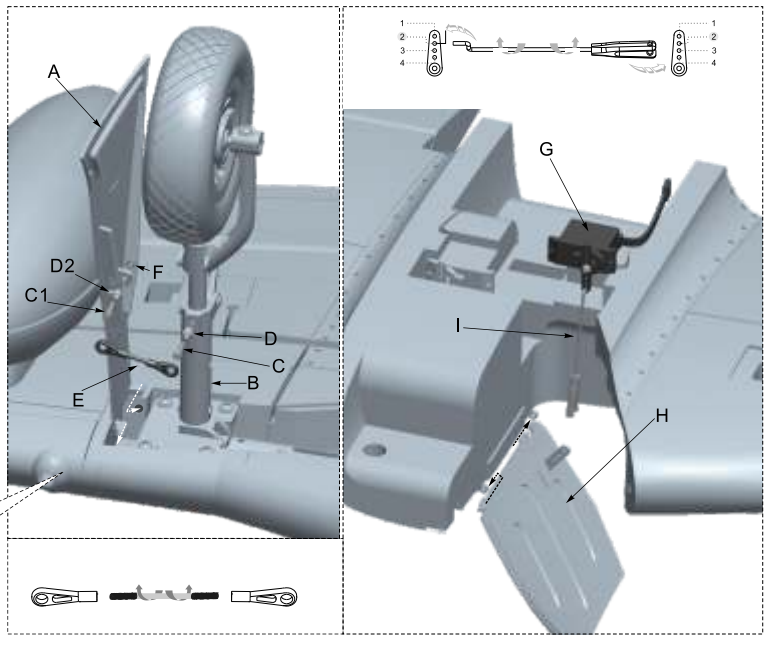
A-Nose landing gear cabin door-1
B-Nose landing gear main strut
C-screw (FM2*10)
D-metal ball
E-pushrod
F-nut (M2mm)
G-9g servo
H-Nose landing gear cabin door-2
I-Nose cabin door pushrod

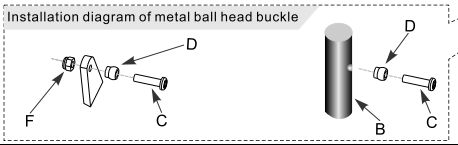
Note: The length of nose cabin door servo cable we advised is as following for your reference.One pcs 9g servo standard and one pcs 9g servo reverse to control the left/right cabin door.

9g servo cable length: 150mm

1. At first, use screw (C) and nut (F) to fix the metal ball (D) on the Nose landing gear cabin door-1 (A) and Nose landing gear main strut (B).
2. Install the Nose landing gear cabin door-1 (A) on the Nose gear mount.
3. Adjust the pushrod (E) a reasonable length, and connect the ball head buckles of the two place.
4. Install the Nose landing gear cabin door-2 on the indicated place.
5. Adjust the arm of servo (G) to the max travel, then use Nose cabin door pushrod (I) to connect cabin and servo arm.
6. Do the test of cabin door open/close. If found the door don't close tightly, we need to adjust the Nose cabin door pushrod (I) shorter. And if found the door close too tightly and also can hear the “zi-zi-zi” voice from servo, we need to adjust the Nose cabin door pushrod (I) longer.

Note: because the cabin door use the removable column design, when we install, we need some force to curve the cabin door, then buckle the rotating shaft of cabin door to the hole. Since of its plastic material, these columns is easy to break, we need to use correct way to assemble/ disassemble the cabin door.

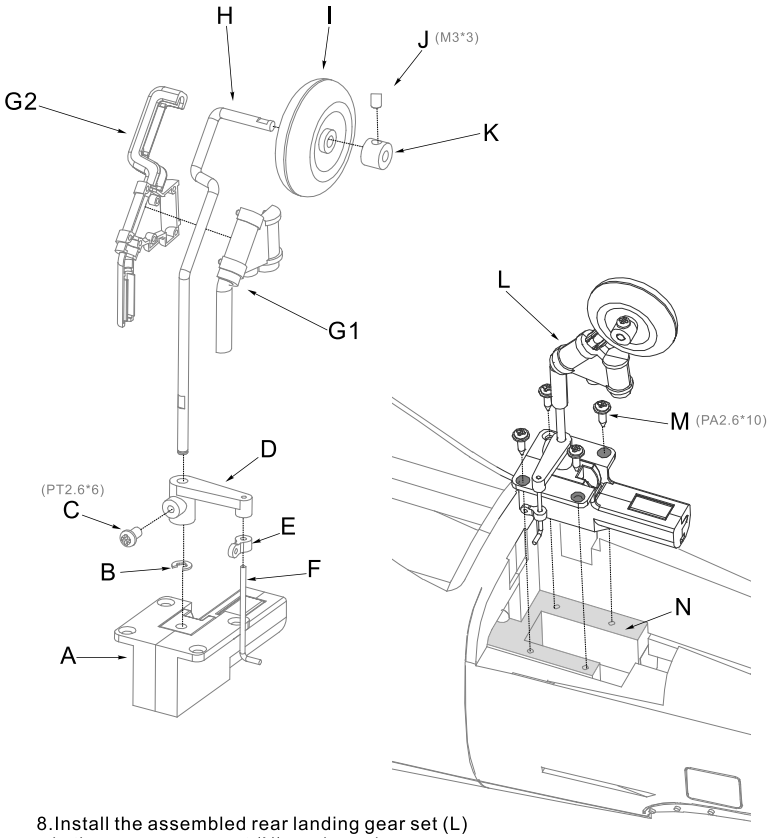




Rear landing gear accessories list:

A - Landing gear electric base
B - E-buckle (Ø2.0mm)
C - Screw (PT2.6*6)
D - L-shape steering arm
E - Rear landing gear steering control ring
F - Rear landing gear steering pushrod
G - Rear landing gear plastic decorated part
H - Rear landing gear main metal wire
I - Wheel
J - Screw (M3*3)
K - Wheel shock
L - Rear landing gear set
M - Screw (PA2.6*10)
N - Rear gear mount

1.At first, disassemble the Landing gear electric base (A), and remove the rear landing gear rotating arm.
2.Put the rear landing gear main metal wire (H) through L-shape steering arm (D), then insert the rear landing gear main metal wire (H) and L-shape steering arm (D) into rear landing gear rotating arm Use E-buckle (B) to stuck on the bottom trough of rear landing gear main metal wire (H). It can ensure the rear landing gear main metal wire (H) don't separate.
3.Next, re-install the rear landing gear rotating arm on the Landing gear electric base (A) , and re-install a whole.
4.Next, put down the L-shape steering arm (D), and close the rear landing gear rotating arm tightly, rotate the L-shape steering arm (D) horizontally, when the screw hole face to the platform of rear landing gear main metal wire (H), use screw (C) to fix tightly.
5.Put the rear landing gear steering control ring (E) into the rear landing gear steering pushrod (F), then screw the thread side of rear landing gear steering pushrod (F) to the L-shape steering arm (D), the depth is about 3~4mm;
6.Adhesive the rear landing gear plastic decorated part (G) to rear landing gear main metal wire (H) by glue. After solidify, we begin the next step.
7.Put the wheel (I) to the rear landing gear main metal wire (H), and put the wheel shock (K) again, then use screw (J) to fix the wheel shock (K).



8.Install the assembled rear landing gear set (L) in the rear gear mount (N), and use 4pcs screws (M) to fix.

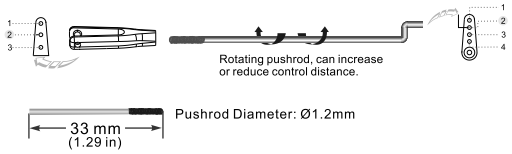
Installing cabin

Next, we introduce the rear cabin door and rear gear steering pushrod, please refer to the following step to revise/replace accessories.

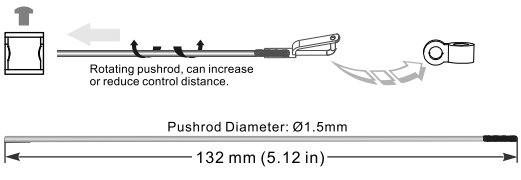
1.Press the rear cabin door (A) by hand and let it curved, then buckle the rotating shaft of rear cabin door (A) to the hole of rear cabin fixed part (B), when we loosen it, the plastic part will come back to the original. The rear cabin door (A) finished its installation.
2.Adjust the arm of servo (G) to the max travel, then use rear cabin door pushrod (D) to connect cabin and servo arm.
3.Do the test of cabin door open/close. If found the door don't close tightly, we need to adjust the rear cabin door pushrod (D) shorter. And if found the door close too tightly and also can hear the "zi-zi-zi" voice from servo, we need to adjust the rear cabin door pushrod (D) longer.
4.Next, power on the rudder servo and adjust the rudder servo arm to be centered.(as the right photo shown).
5.Loosen the screw (E) of metal wire fixed bolt (F), then buckle the plastic clevis of rear gear steering pushrod (H) to the "rear landing gear steering control ring (G), insert another side of rear gear steering pushrod (H) into metal wire fixed bolt (F). Then, adjust the rear wheel left or right to be centered, and use screw (E) to fix the rear gear steering pushrod (H).

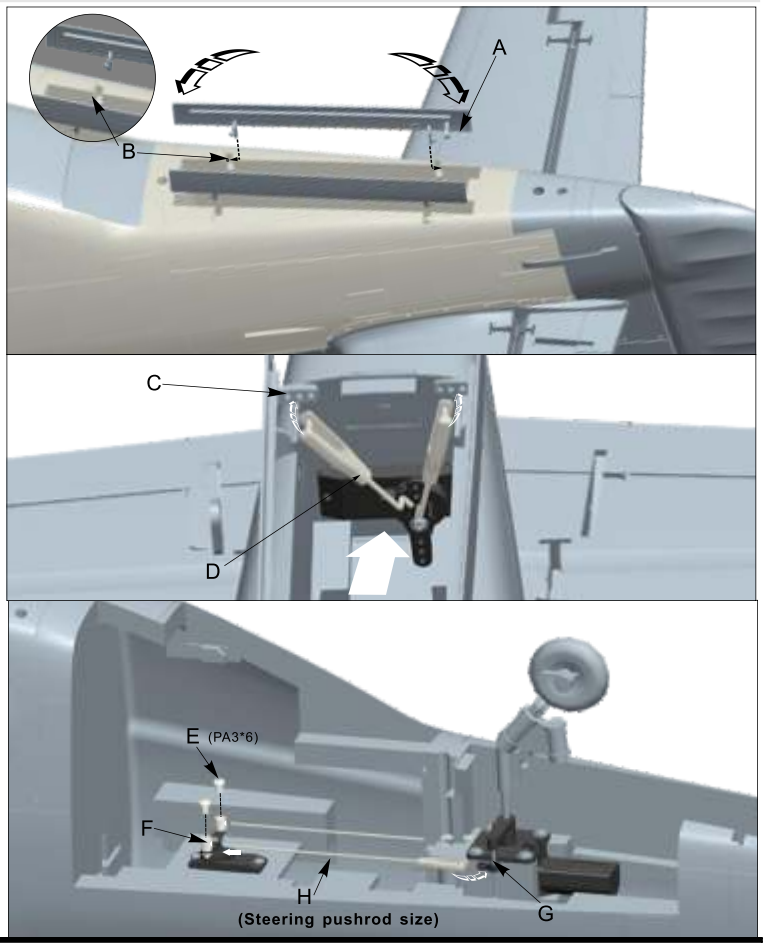
Note: because the cabin door use the removable column design, when we install, we need some force to curve the cabin door, then buckle the rotating shaft of cabin door to the hole. Since of its plastic material, these columns is easy to break, we need to use correct way to assemble/disassemble the cabin door.

The pushrod size of cabin door

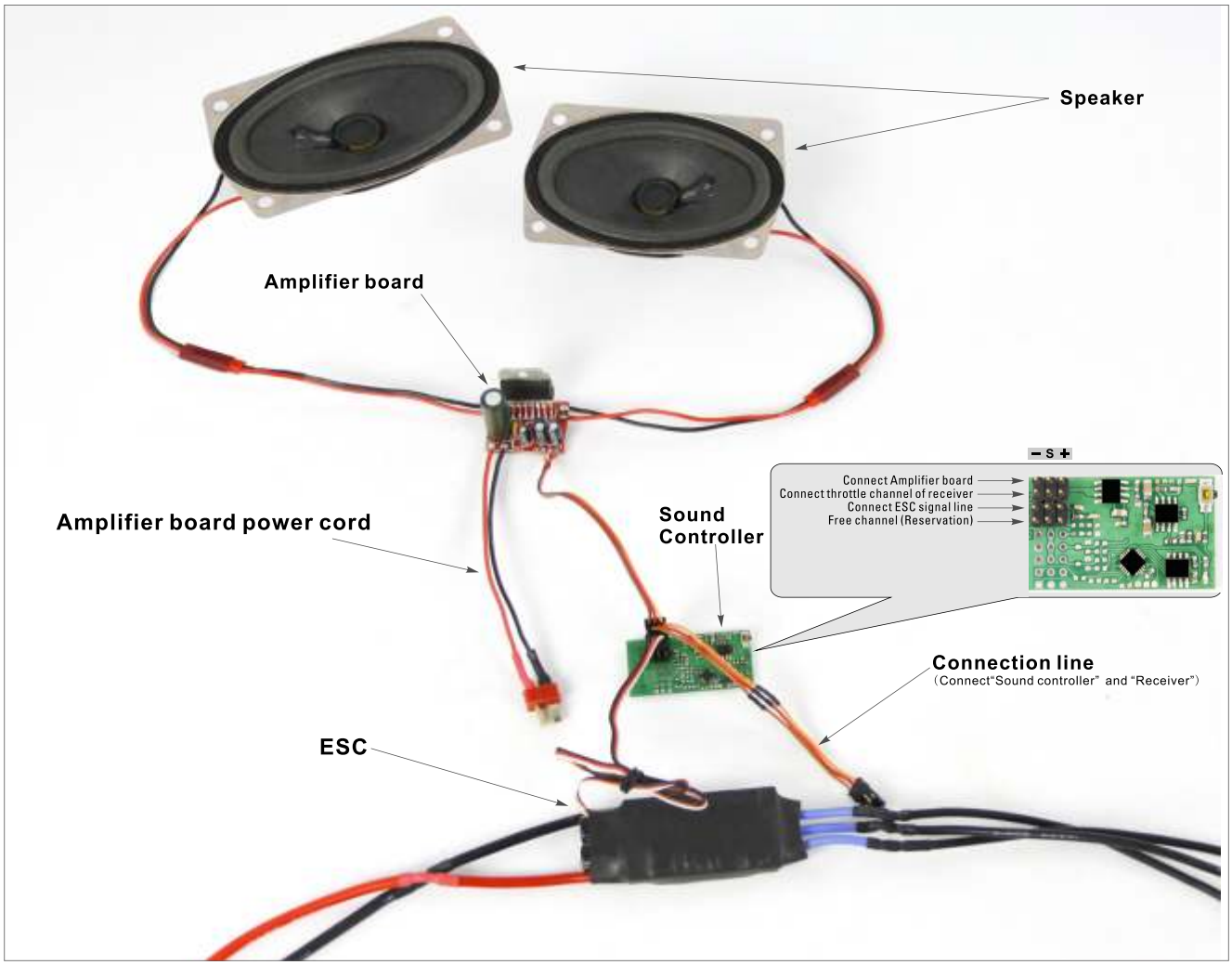


Steering pushrod size

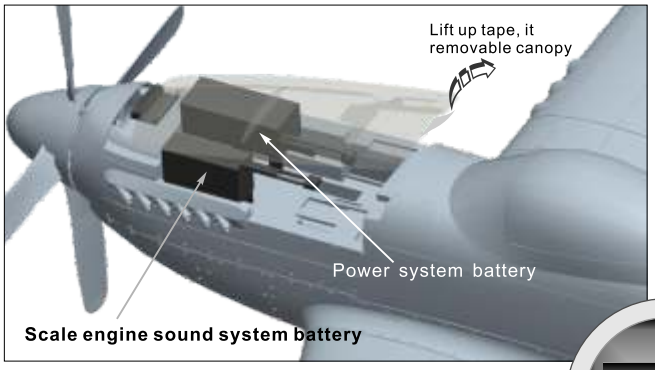


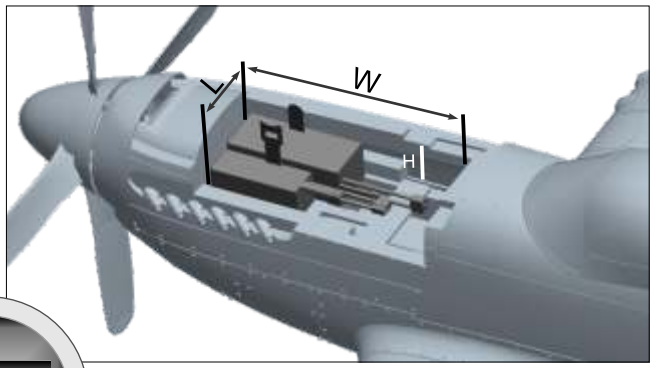


Connection diagram of scale engine sound system



Install on battery





Lift up tape,it removable canopy, then bundled battery with Velcro.

Before connect battery and receiver, please switch on the transmitter and check that the throttle is in the low position.

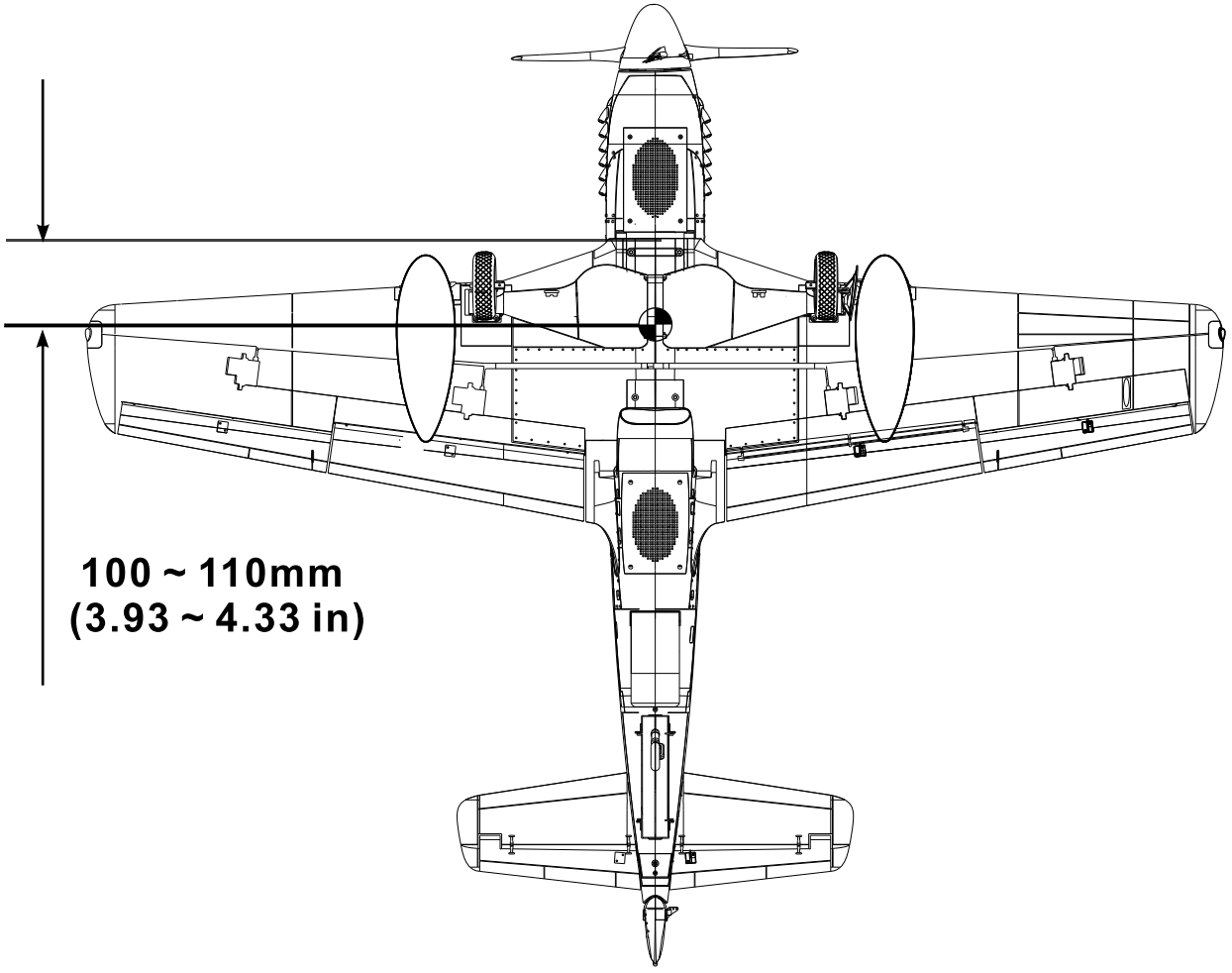
Our standard **power system** battery is :
4S 14.8V 2200mAh 35C
Our standard **Scale engine sound system battery** is :
3S 11.1V 1000mAh 25C
You can choose the battery refer to the battery cabin size.
L=190mm W=53mm H=40mm
The battery capacity and discharge rate we advise is in the following:
4S 14.8V 2200mAh ~ 4S 14.8V 3000mAh
Discharge rate⩾ 35C

Different weight battery may affect its CG, please the correct range of CG indication.

Center of Gravity

Correct center of gravity is directly related to the success of the flight, please refer to the following CG diagram to adjust your plane's center of gravity.

- You can move the battery forward or backward to adjust the center of gravity.
- If you can not adjust the CG through move the battery, you can also use some other suitable material weight to counterweight, to make sure that CG is in the correct position.



Control surface direction and set up

After installed the plane, before flying, we need a fully charged battery and connect to the ESC, then use radio to test and check that every control surface work properly.

Aileron

Stick Left

Stick Right

Elevator

Up Elevator

Down Elevator

Rudder

Stick Left

Stick Right

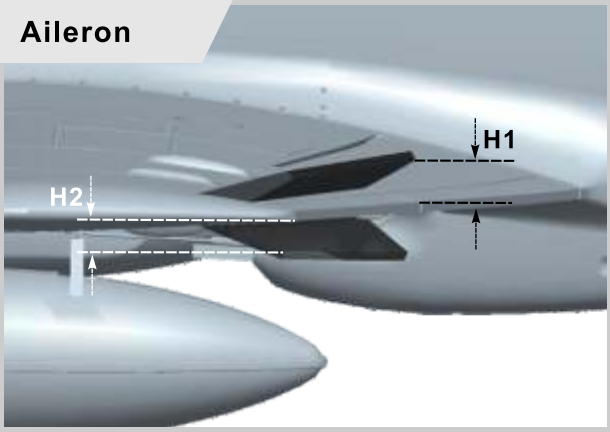
Flap

Flap Down

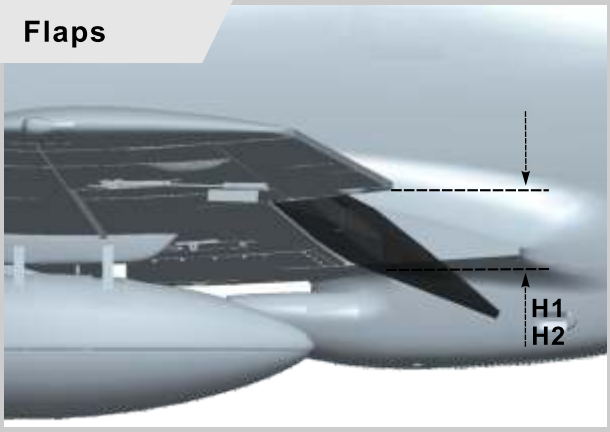
Dual Rates

According to our testing experience, according to the following parameters to set the aileron/elevator rate, it will be useful for flight. In low rate, its good for flight control and its suitable for the initial flight or less skilled players. According to your own circumstance, choose one rate in flight.

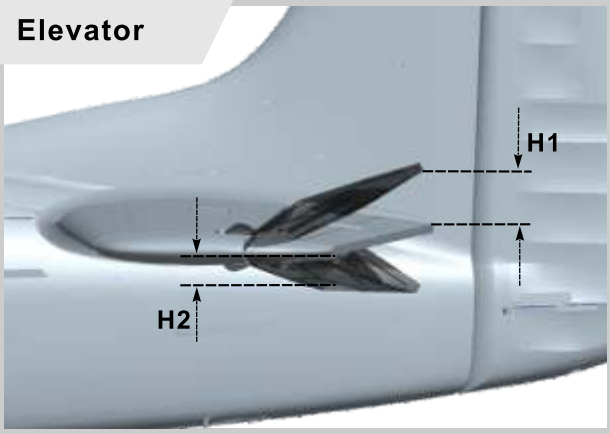
Aileron



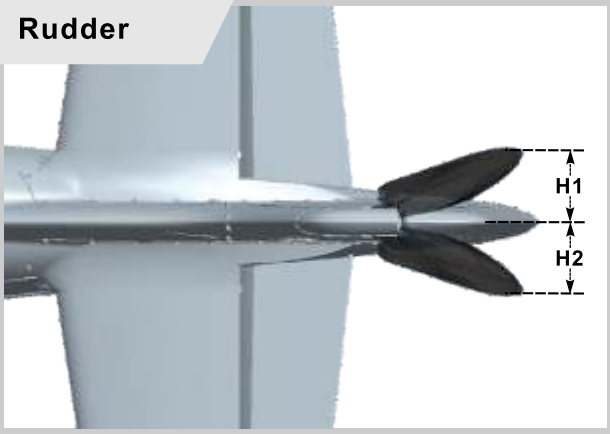
Flaps



Elevator



Rudder



	Aileron	Flaps	Elevator	Rudder
Low Rate	H1/H2 8mm/8mm	H1 14mm	H1/H2 4mm/4mm	H1/H2 5mm/5mm
High Rate	H1/H2 14mm/14mm	H2 21mm	H1/H2 8mm/8mm	H1/H2 9mm/9mm

Troubleshooting Guide

Motor does not turn on	A) Li-Po battery depleted	A) Recharge Li-Po battery
	B) Transmitter batteries depleted	B) Replace or recharge batteries
	C) Transmitter not turned on	C) Turn on transmitter
	D) Li-Po battery not plugged in	D) Plug in Li-Po battery
	E) Motor not armed	E) Arm motor
	F) A crash has damaged an internal component	F) Replace
	G) ESC or other damaged	G) Check ESC or contact local distributor
Cub is difficult to control	A) You are flying in too much wind	A) Fly when there is no wind
	B) Li-Po battery depleted	B) Recharge Li-Po battery
	C) Transmitter batteries depleted	C) Replace or recharge batteries
	D) Transmitter antenna not extended completely	D) Extend transmitter antenna completely
	E) Surface control rate is too high	E) Use low rate to fly
The nose always move down when fly, always need to up elevator	A) CG is forward	A) Adjust CG backward refer to instruction
Cub constantly climbs or descends, or turns right or left without control input	A) The aircraft is out of trim adjustment	A) Adjust the transmitter trim tabs
	B) You are flying in too much wind	B) Fly when there is no wind
Elevator is too flexible, up and down is not stable	A) CG is backward	A) Adjust CG forward refer to instruction
Plane will be slant when taxi on the runway	A) Nose gear is not center.	A) Center nose gear
	B) Rudder is not center.	B) Center rudder
Take off is difficult	A) Thrust is not on the high position	A) Thrust is on the high position
	B) Taxi distance is not enough	B) Long taxi distance
	C) Elevator rate is not enough high	C) Use high rate of elevator
Cub will not climb	A) Li-Po battery is depleted	A) Recharge Li-Po battery
	B) Ducted fan is damaged	B) Check and replace ducted fan
	C) Motor is damaged	C) Check and replace motor
	D) ESC overheat protection,power reduction.	D) Landing firstly, check and select a more powerful ESC
Li-Po battery is slightly warm after charging	A) This is normal	A) The Li-Po battery may be slightly warm when fully charged. It should not be hot to the touch.
Motor vibrates excessively	A) Ducted fan is damaged	A) Check and replace ducted fan
	B) Motor is damaged	B) Check and replace motor
	C) Ducted fan is not balance	C) Adjust the ducted fan balance
	D) High speed will happen slightly vibrate	D) Its normal to use
Control surface move the wrong direction	A) Servo direction is reversed	A) Adjust servo reversing function

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