

Item No.:FJ307  
Version No.:FJ307-V01

**FreeWing**<sup>MODEL</sup>  
www.sz-freewing.com

# T-45 oshawk

## User Manual

Wingspan: 1138mm (44.8 in)  
Fuselage length: 1435mm (56.49 in)



EN	1 ~ 15
中	16 ~ 30



   
MADE IN CHINA

Thanks for purchasing **T-45 "Goshawk"** 90mm EDF jet. **T-45 "Goshawk"** is used by the United States Navy as an aircraft carrier-capable trainer, is a highly modified version of the BAE Hawk land-based training jet aircraft. Because of its excellent performance, became the only carrier dedicated trainer in the US Navy aircraft carrier force.

**T-45 "Goshawk"** 90mm EDF jet, we refer to the real jet details very carefully, its very detail appearance, excellent structure and flight performance design, promote this foam jet to a new level, give you a new visual enjoyment and flight experience!

## New feature

- Exquisite appearance
- High quality workmanship
- Excellent design
- First time to use slat equipment (The first time to use 4pcs worm drive to control the slat, safe and reliable.)
- Retracts with scale shock absorber landing gear
- 7pcs LED high-light light
- New T-45 integrated circuit module. ( We increased the main wing electronic equipment intergrated circuit module for convenience to carry and assemble in flight space on the base of F16 intergrated circuit module.)
- Magnetic absorption nose cone, flexible pitot tube.
- All closed cabin door, in second control, open the landing gear, closed half cabin door automatically.
- Flat function
- A huge battery compartment, it can be compatible with more power system.
- Reserve the DIY cockpit space for improvement.
- 165KM/H speed in standard power system
- 3.65 KG Take-off weight (Fullymax 6S 5000 35C lipo battery)
- Removable main wing structure.
- Air-brake

**⚠ 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.

## Note

1. This is not a toy! Operator 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.

1435 mm  
(56.49 in)

1138 mm  
(44.8 in)

⚠ 注意：此处各项参数，均使用本公司配件测试得出，如果使用副厂配件，会有所差异。使用副厂配件时所产生的问题，我们将无法给予技术支持！

Standard Version	<ul style="list-style-type: none"> <li>● Battery 6S 22.2V 5000mAh 35C</li> <li>● Servo 9g Metal Gear Servos (7pcs) 17g Metal Gear Servos (7pcs)</li> <li>● ESC 130A ESC UBEC 8A</li> <li>● Motor 3748-1550KV Brushless outrunner motor</li> <li>● Thrust 3700g (130.5 oz.)</li> <li>● Take-off weight 3650g (128.8 oz.) (6S 22.2V 5000mAh 35C)</li> <li>● Ducted Fans 12-Bladed 90mm EDF (#P0902)</li> </ul>
Deluxe Version	<ul style="list-style-type: none"> <li>● Battery 6S 22.2V 5000mAh 35C</li> <li>● Servo 9g Metal Gear Servos (7pcs) 17g Metal Gear Servos (7pcs)</li> <li>● ESC 130A ESC UBEC 8A</li> <li>● Motor 4068-1680KV Brushless in-runner motor</li> <li>● Thrust 3770g (132.9 oz.)</li> <li>● Take-off weight 4300g (151.7 oz.) (6S 22.2V 5000mAh 35C)</li> <li>● Ducted Fans 12-Bladed 90mm EDF (#P0904)</li> </ul>

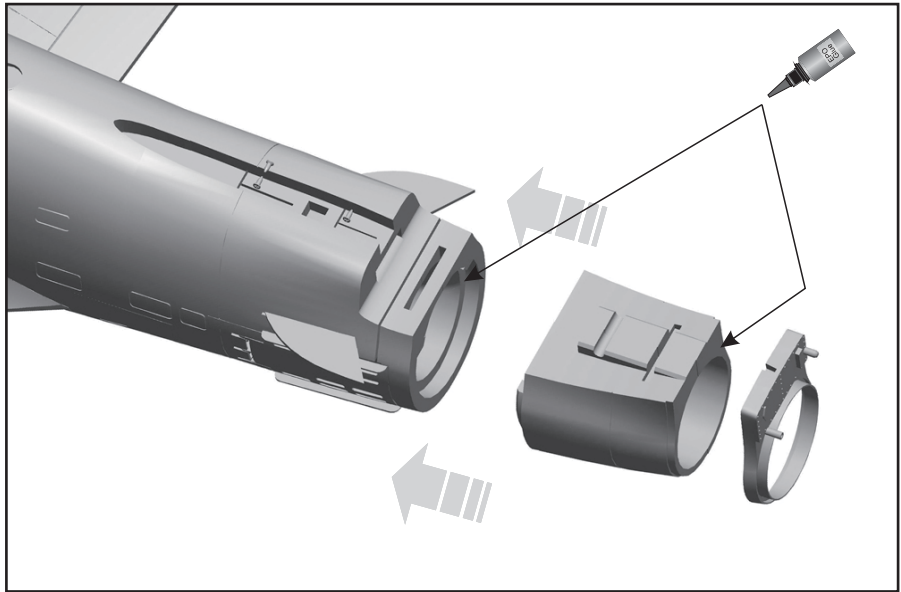
## Package list



Open package and check the package list. (Different version include different contents)

NO.	Parts Name	PNP	KIT Plus	KIT	NO.	Parts Name	PNP	KIT Plus	KIT
1	Fuselage	Pre-installed all electronic parts	pre-installed servo	No electronic equipment	1	Manual	✓	✓	✓
2	Main wing	Pre-installed all electronic parts	pre-installed servo	No electronic equipment	2	Screw	✓	✓	✓
3	Tail wing	Pre-installed all electronic parts	pre-installed servo	No electronic equipment	3	Main wing fixed plastic part	✓	✓	✓
4	Nose cone	✓	✓	✓	4	Connection cable, Xt150 connector	✓	✓	
5	Carbon tube	✓	✓	✓	5	Pushrod, clevises			✓
6	Glue	✓	✓	✓	6	Other parts			✓

First, remove the glue from package and prepare to install.

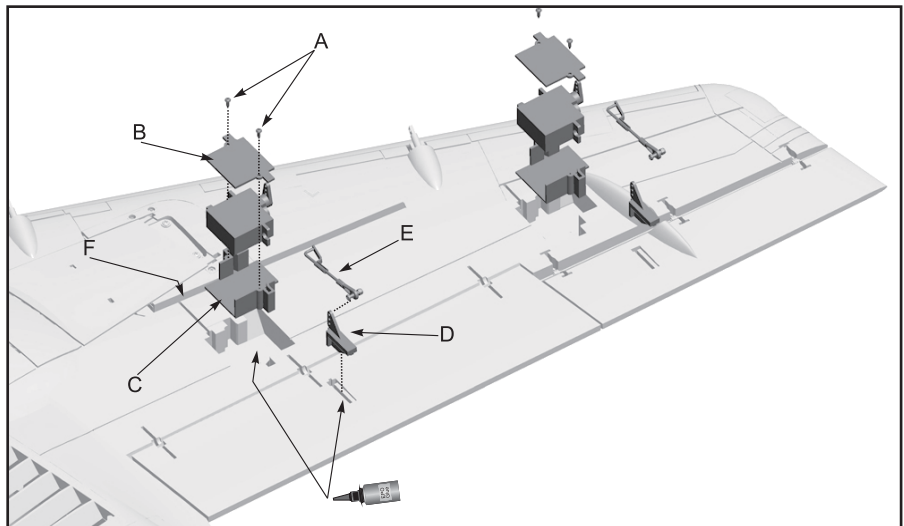


## Install Main Wing

- A - Screw (PWA1.7×5mm 2pcs)
- B - 17g servo cover
- C - 17g servo box
- D - Aileron horn
- E - Aileron pushrod
- F - Servo trough

1. Use servo tester or radio to center the servo arm.
2. Use glue to attach the "17g servo box (C)" and "aileron horn (D)" on the aileron.
3. Install the servo in the "17g servo box(C)", and press the servo cable in the "servo trough(F)", then cover the "17g servo cover(B)" and use 2pcs "screw (A)" to fix.
4. Use aileron pushrod to connect the servo arm and "aileron horn (D)".

Through adjust the length of pushrod to center the rudder.



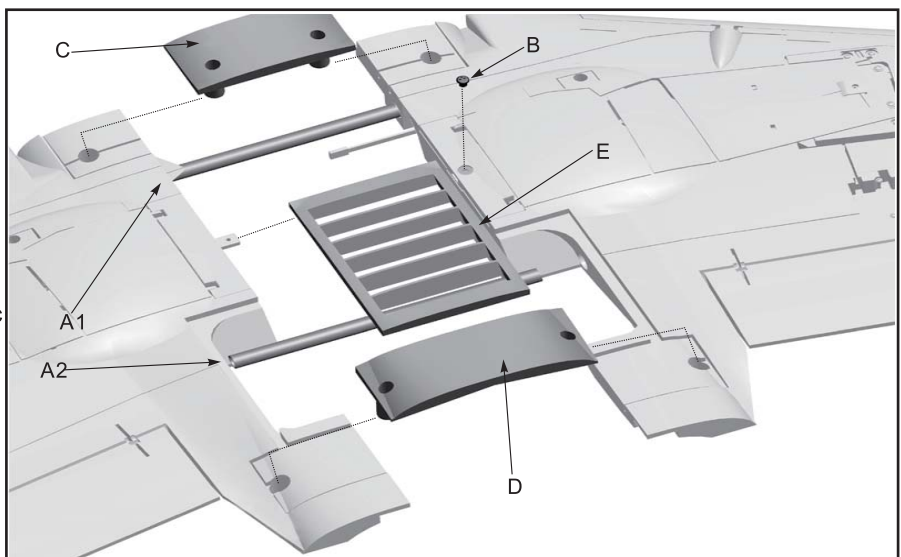
## Installing main wing

- A - Carbon tube
- B - Screw (PWA3×8mm)
- C - Main wing fixed plastic part F1
- D - Main wing fixed plastic part B
- E - Air intake cover

1. Insert the carbon tube to the main wing.
2. Close the main wing.
3. Use screw B to fix the plastic bolt.
4. Install the Main wing fixed plastic part F1 and Main wing fixed plastic part B on the main wing.
5. Use glue to attach the Air intake cover E on the main wing.

### Carbon tube size

- (A1) Ø 10×200mm, Wall Thickness: 1.0mm
- (A2) Ø 10×280mm, Wall Thickness: 1.0mm



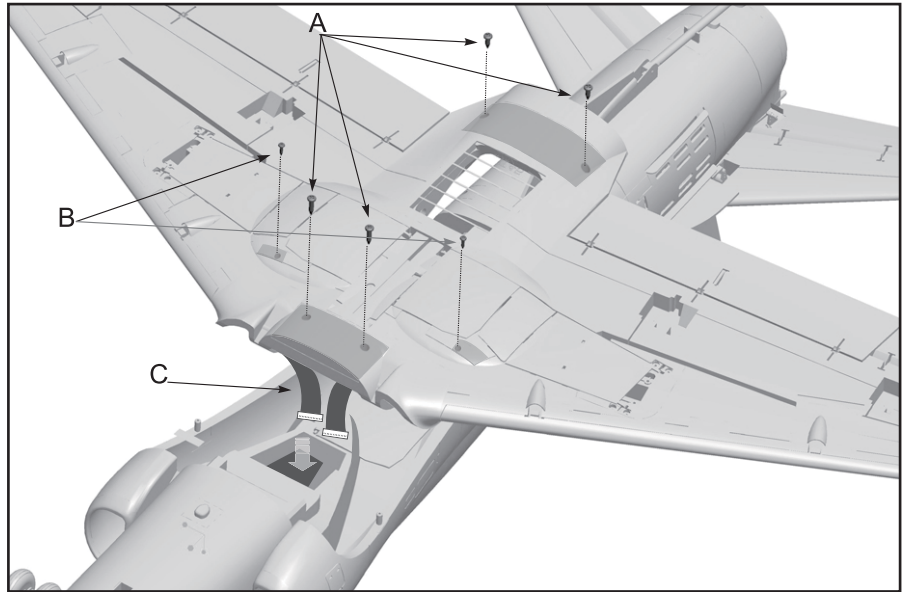


## Install Main wing

EN

1. Use the screw A, B to fix the main wing on the fuselage.
2. As the right photo shown, insert the main wing connection cable into the battery compartment of fuselage.
3. After installed main wing, insert the main wing connection cable C into the Inter-grated circuit module of battery compartment.

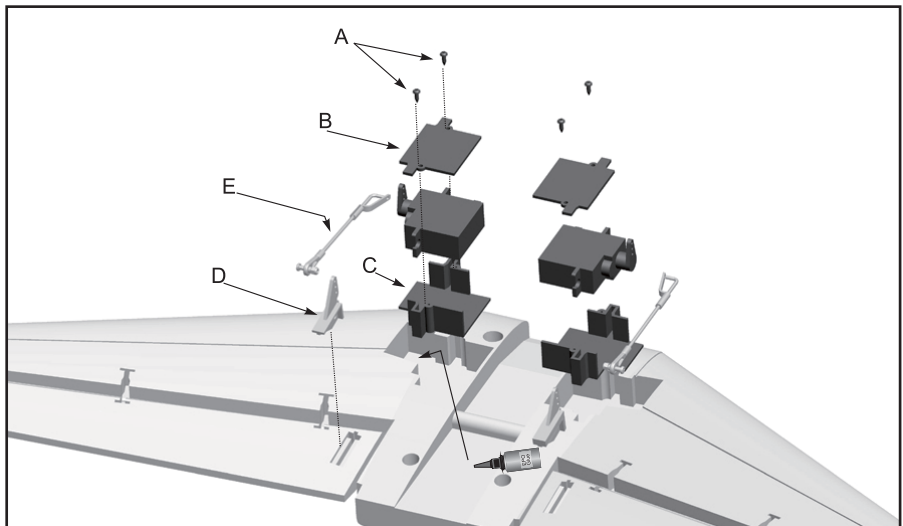
- A - Screw (PA4×10mm 4pcs)  
B - Screw (PA2.6×10mm 2pcs)  
C - Main wing connection cable.



## Elevator Assemble

- A - Screw (PWA1.7×5mm 2pcs)  
B - 17g servo cover  
C - 17g servo box  
D - Elevator horn  
E - Elevator pushrod

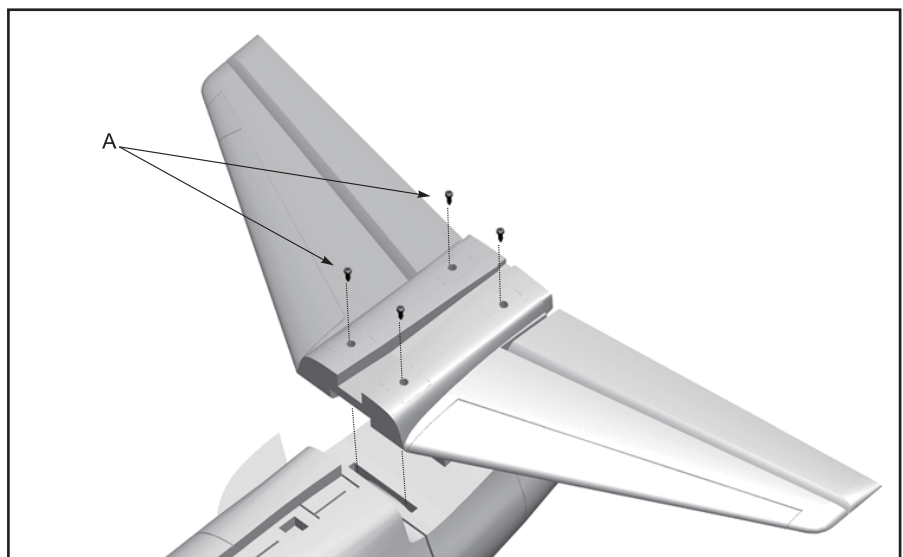
1. Through servo tester or radio, center the servo arm.
2. Use glue to attach the 17g servo box (C) and elevator horn (D) on the elevator.
3. Install the servo in the 17g servo box (C), then cover the 17g servo cover, and use 2pcs screw (A) to fix.
4. Use pushrod to connect the servo arm and elevator horn (D).



## Install Elevator

- A - Screw (PA2.6×10mm 4pcs)

1. Use 4pcs screw (A) to fix the elevator.

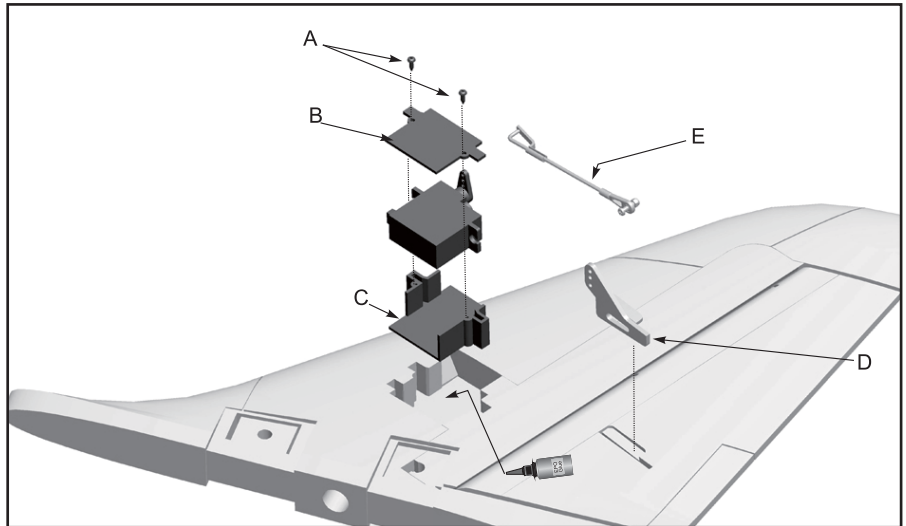


## Install Elevator

EN

- A - Screw (PWA1.7×5mm 2pcs)
- B - 17g servo cover
- C - 17g servo box
- D - Rudder horn
- E - Rudder pushrod

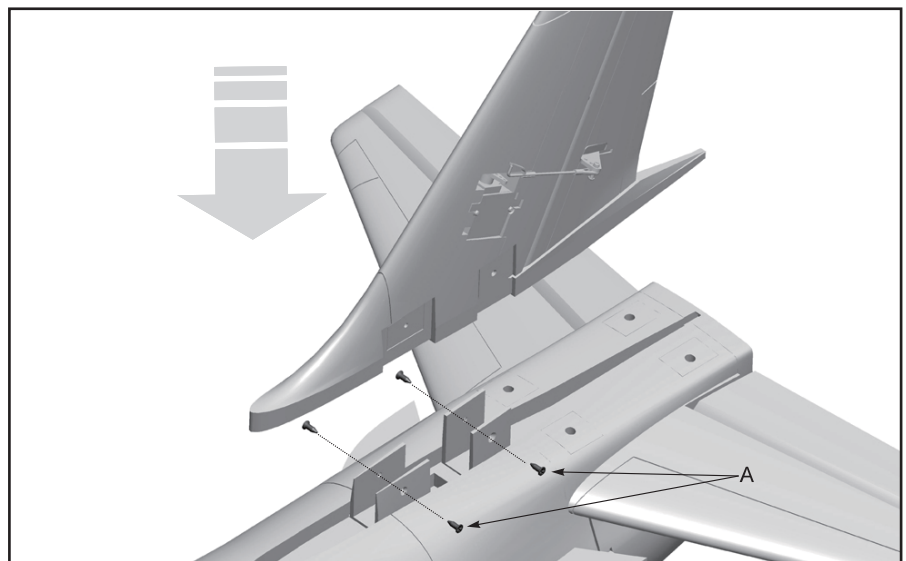
1. Through servo tester or radio, center the servo arm.
2. Use glue to attach the 17g servo box (C) and rudder horn (D) on the rudder.
3. Install the servo in the 17g servo box (C), then cover the 17g servo cover, and use 2pcs screw (A) to fix.
4. Use pushrod to connect the servo arm and rudder horn (D).



## Install Rudder

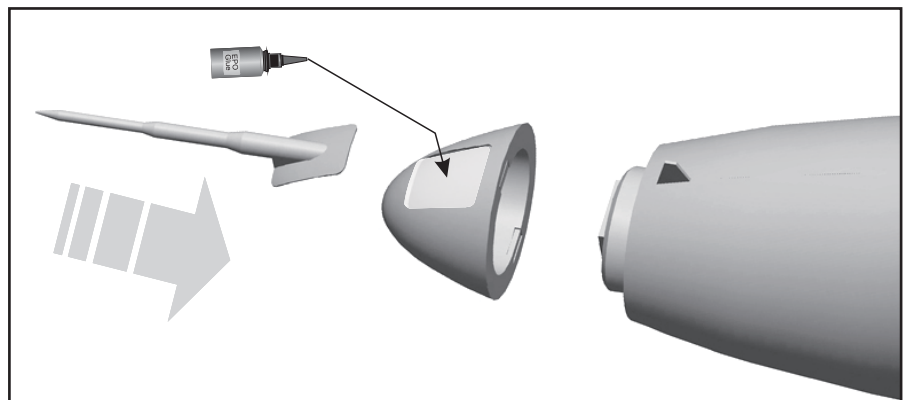
- A - Screw (FA3×6mm 4pcs)

1. Use 4pcs screw (A) to fix the rudder.



## Install Nose Cone

1. As the right photo shown, use glue to attach the pitot tube on the nose cone.
2. Nose cone and fuselage connected by magnets.



**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.

- 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).
- 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.
- 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.

Control Surface	Pushrod Size	Pushrod Diameter	Mounting Hole
Flap	40 mm	Ø 1.5 mm	Flap pushrod mounting hole
Aileron	44 mm	Ø 1.5 mm	Aileron pushrod mounting hole
Elevator	66 mm	Ø 1.5 mm	Elevator pushrod mounting hole
Rudder	63 mm	Ø 1.5 mm	Rudder pushrod mounting hole

## Install Air-brake

**Accessories name**

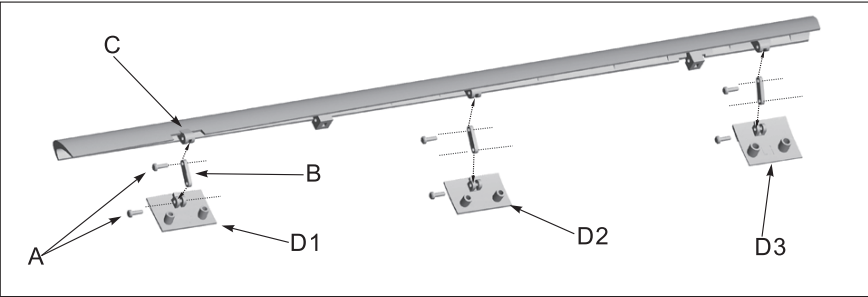
- A - Air-brake mount
- B - Air-brake pin
- C - E-buckle (Ø1.5mm)
- D - Air-brake
- E - Servo (9g-MG)

- Follow the Step 1 to assemble the air-brake.
- Use glue to attach the servo.
- Use glue to fix the air-brake on the fuselage.
- Use pushrod to connect the air-brake and servo arm, through adjust the pushrod length to set up the open angle of airbrake.  
(After set-up, please attention, when air-brake close, servo don't happen any abnormal sound since of force. If close the air-brake, servo have the abnormal sound, it should increase the open angle.)

**Air-brake pushrod size**

Pushrod diameter : Ø 1.2mm

**Air-brake pushrod installing hole**

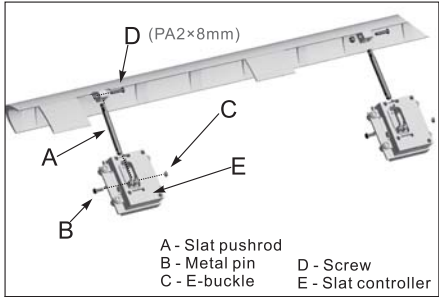


- A - Plastic pin
- B - Slat connection part
- C - Slat
- D - Slat fixed part

⚠ Attention: Slat fixed part have 6 pieces. Please refer to the word in the plastic to distinguish: Word L/R means left/right main wing, Figures 1-3 means the direction from wing root to wingtip.

1. Use Slat connection part (B) to connect Slat (C) And Slat fixed part (D).
2. At last use plastic pin (A) to fix.

**Attention:** After inserted the plastic pin, the other side of plastic pin, it can fix by high-temperature hot melt iron tip.



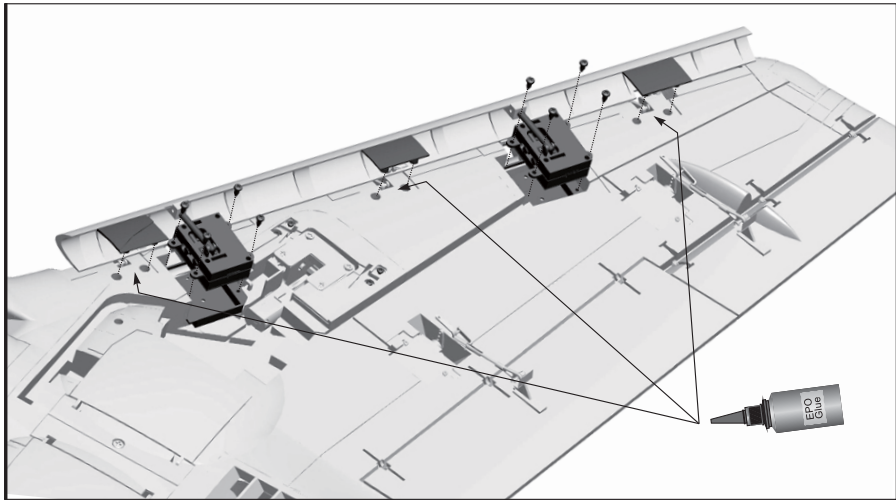
- A - Slat pushrod
- B - Metal pin
- C - E-buckle
- D - Screw
- E - Slat controller

1. Use pin and E-buckle to fix one side slat pushrod on the slat controller, use screw to fix the other side on the plastic slat.

**Attention:** Slat controller have left and right, please distinguish.

1. As the right photo show, use screw and glue to fix the slat set.
2. Use glue to attach the blister cover, keep the surface clean.

**Screw** PB2. 6×6mm 16pcs

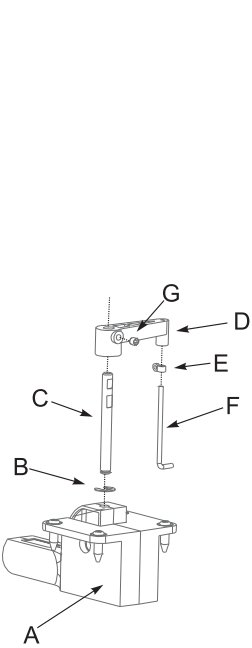


## Nose Landing Gear Assemble

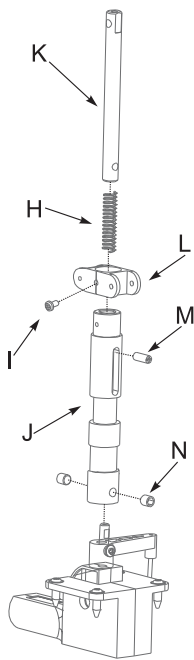
Please assemble/disassemble the nose landing gear according to the following photo.

### Accessories name and specification

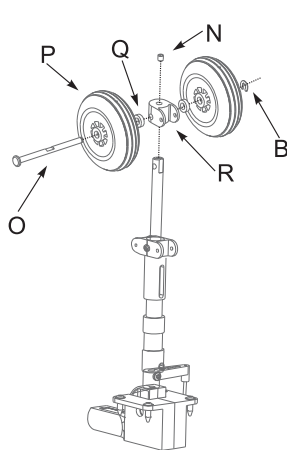
- |                            |                               |                                     |
|----------------------------|-------------------------------|-------------------------------------|
| A - Retractable controller | K - Shock absorber active rod | U - Plastic fixed hook              |
| B - E-buckle (Ø2.0mm)      | L - U-shape connect arm2      | V - Shock absorber supporting rod 2 |
| C - Main metal rod         | M - Screw (M3×5.2mm)          | W - Shock absorber supporting rod 1 |
| D - L-shape rotating arm   | N - Jimi screw (M4×4mm)       | X - Pin                             |
| E - O-shape ring           | O - Nose wheel axle           | Y - Pin                             |
| F - Pushrod                | P - Wheel (Ø45/15mm)          | Z - Pin                             |
| G - Screw (M3×3mm)         | Q - Washer                    | AA - Pin                            |
| H - Spring                 | R - U-shape connect arm2      | AB - Plastic U-shape connect arm    |
| I - Screw (PM2×4mm)        | S - Screw (PA2×8mm)           | AC - Landing gear LED light         |
| J - Main supporting rod    | T - Plastic slant rod         |                                     |



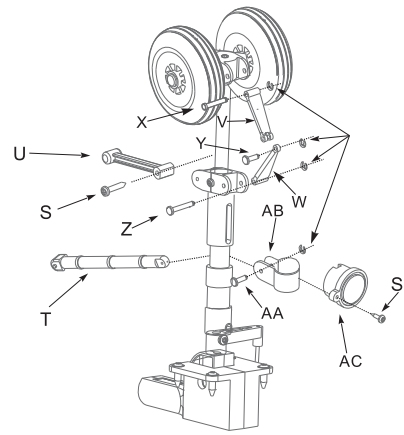
Step 1



Step 2



Step 3

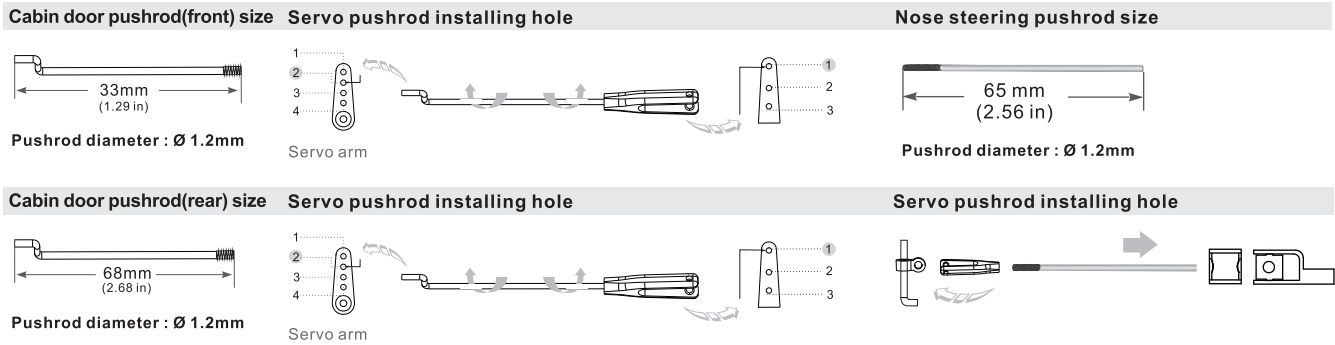
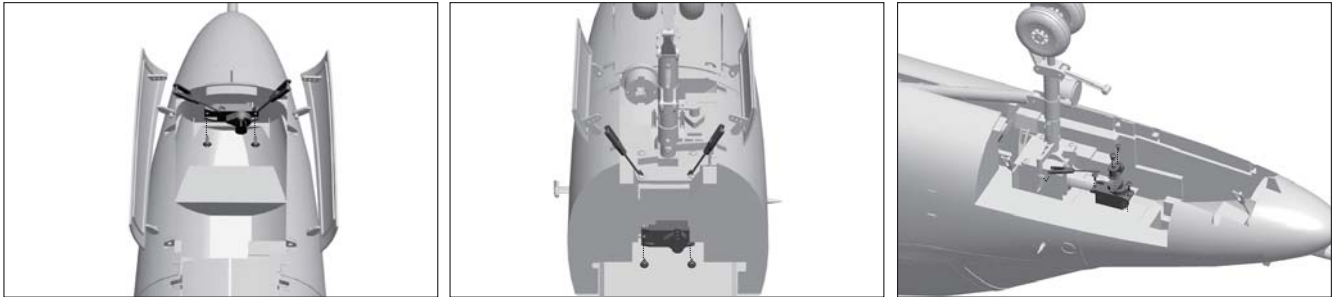


Step 4



# Nose Cabin Door Assemble

Follow the following photo to assemble/disassemble nose cabin door.

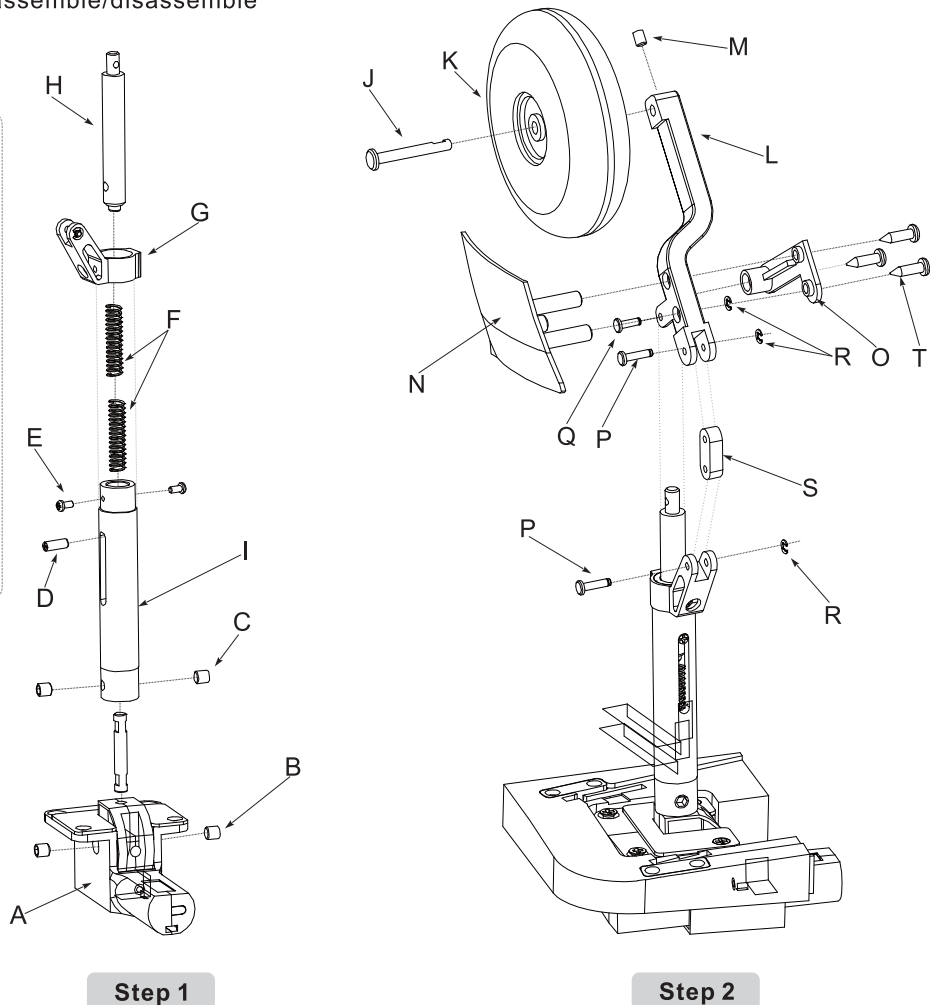


# Rear landing gear assemble

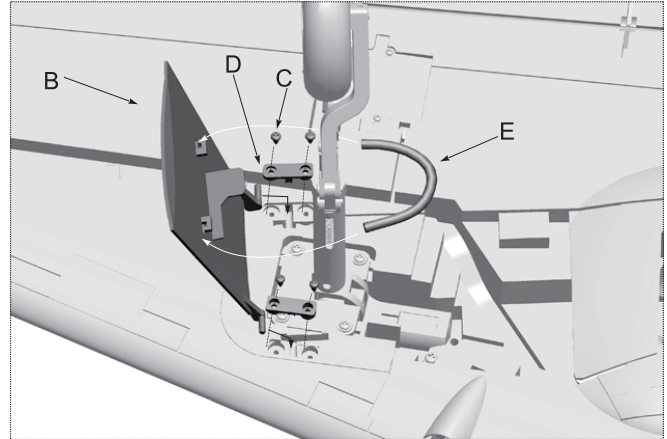
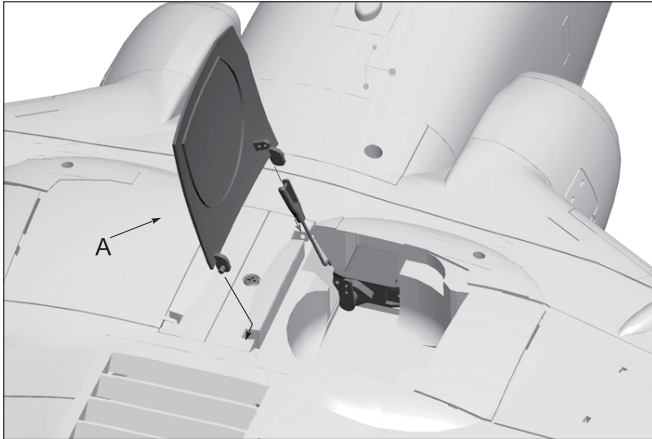
Follow the following photo to assemble/disassemble rear landing gear.

**Accessories name**

- A -Rear gear retractable controller
- B -Jimi screw (M3×5mm)
- C -Jimi screw (M4×4mm)
- D -Screw (M3×5.2mm)
- E -Screw (PA2×4mm)
- F -Spring
- G -T-shape connect arm.
- H -Rear gear shock absorber active rod
- I -Rear gear main supporting rod
- J -Rear wheel axle
- K -Wheel (Ø60/16mm)
- L -Rear gear slant rod
- M -Jimi screw (M3×3mm)
- N -Rear cabin door
- O -Rear cabin door fixed part
- P -Pin
- Q -Pin
- R -E-buckle (Ø1.5mm)
- S -8-shape connect arm
- T -Screw (PA2.6×10mm)

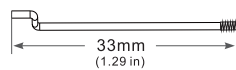


Follow the following photo to assemble/disassemble rear cabin door.



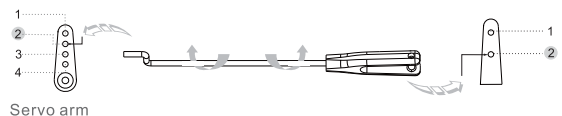
- A - Rear cabin door 1
- B - Rear cabin door 3
- C - Screw (PT2.3×6mm)
- D - Rear cabin door fixed part
- E - Spring

Rear cabin door pushrod size



Pushrod diameter : Ø 1.2mm

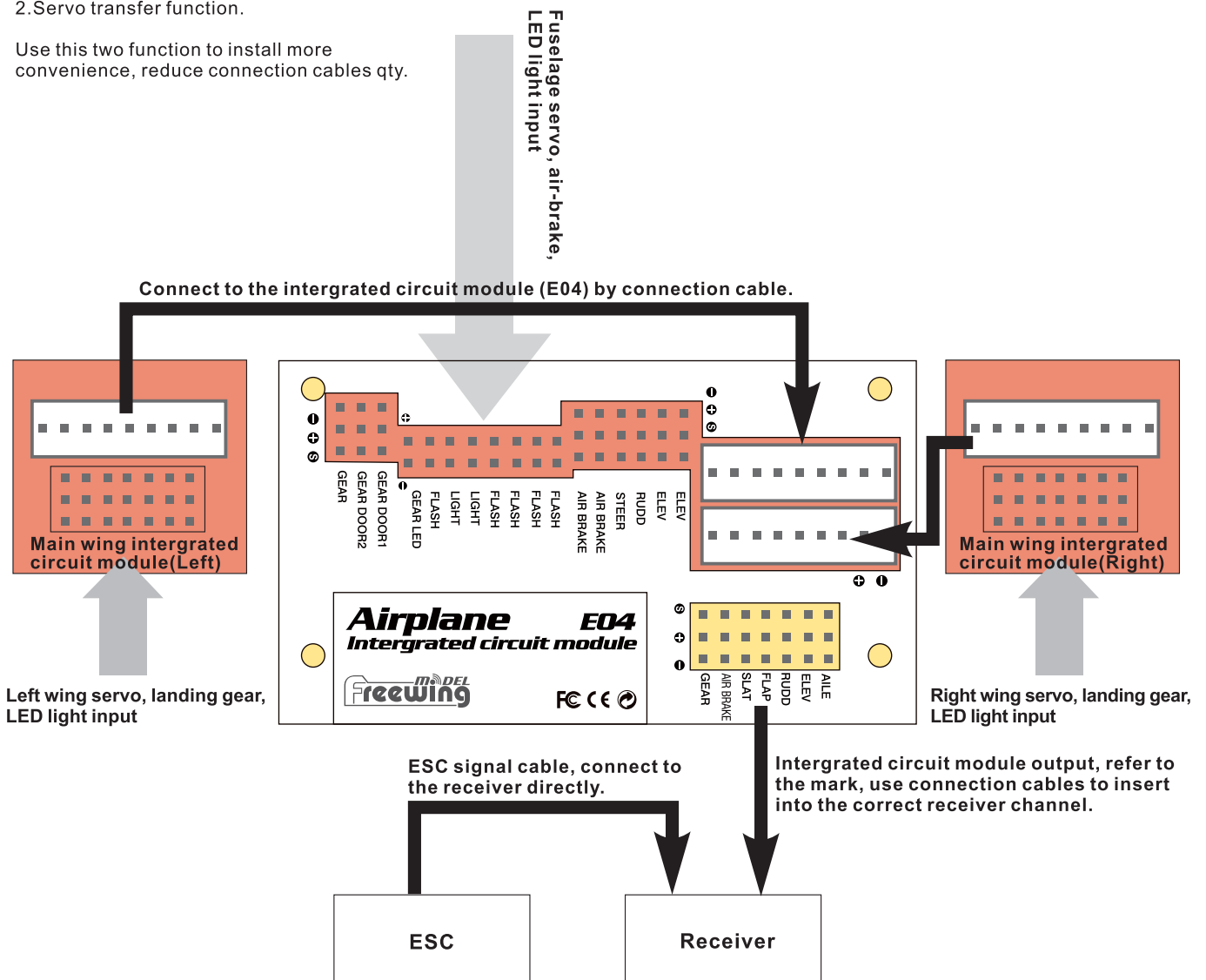
Servo pushrod installing hole

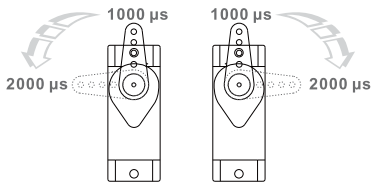


### Intergrated circuit module connection diagram

Intergrated circuit module have two functions:  
 1. Control LED light/landing gear/cabin door.  
 2. Servo transfer function.

Use this two function to install more convenience, reduce connection cables qty.

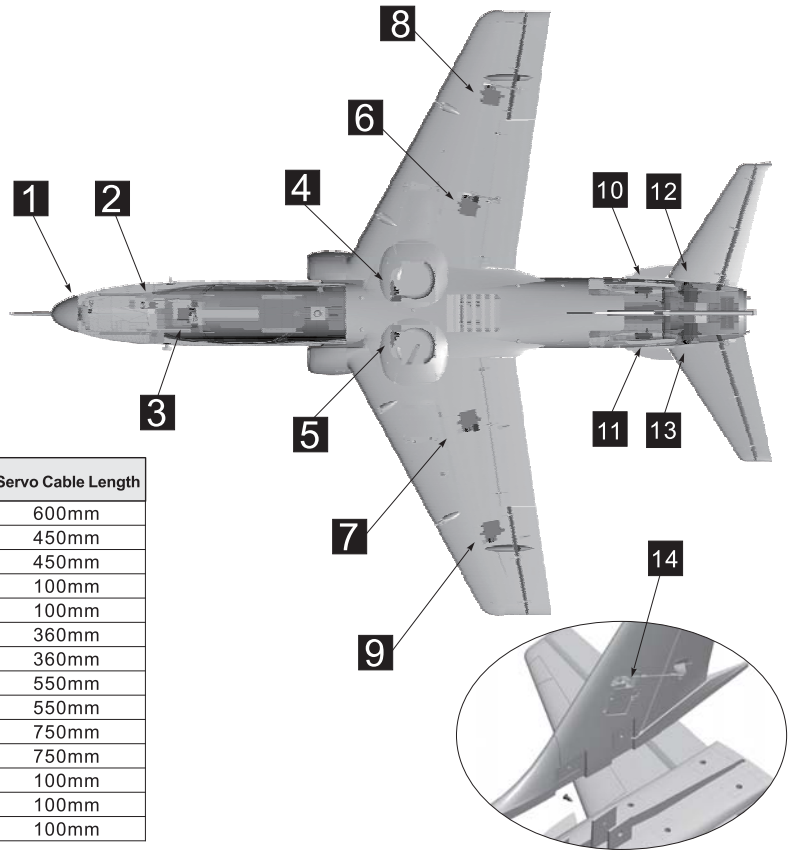




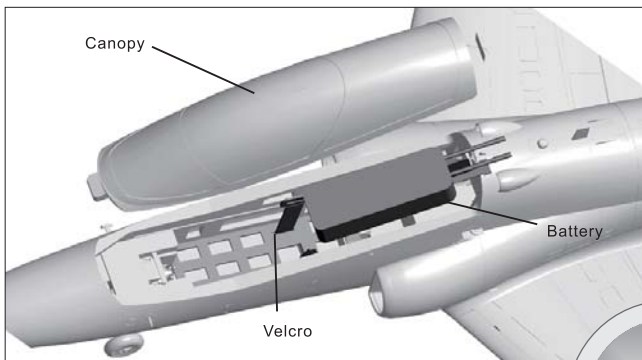
The servo positive or reverse rotation is defined as follows:  
 When servo input signal change from 1000μs to 2000μs,  
 The servo arm is **rotated clockwise**, its **positive servo**.  
 The servo arm is **rotated counterclockwise**, its **reverse servo**.

If you need to purchase other brand servo, please refer to the following list to choose correct size servo.

Installing position	No.	Servo Size	Pos./Rev.	Servo Cable Length
Front cabin door servo(F)	1	9g-Metal	Positive	600mm
Front cabin door servo(R)	2	9g-Metal	Positive	450mm
Nose gear steering servo	3	9g-Metal	Positive	450mm
Rear cabin door servo	4	9g-Metal	<b>Reverse</b>	100mm
Rear cabin door servo	5	9g-Metal	Positive	100mm
Flap	6	17g-Metal	Positive	360mm
Flap	7	17g-Metal	<b>Reverse</b>	360mm
Aileron	8	17g-Metal	Positive	550mm
Aileron	9	17g-Metal	Positive	550mm
Air-brake	10	9g-Metal	Positive	750mm
Air-brake	11	9g-Metal	<b>Reverse</b>	750mm
Elevator	12	17g-Metal	Positive	100mm
Elevator	13	17g-Metal	<b>Reverse</b>	100mm
Rudder	14	17g-Metal	Positive	100mm

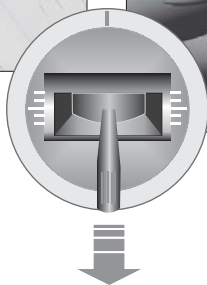


## Install on battery



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 battery is: **6S 22.2V 5000mAh 35C**  
 You can choose the battery refer to the battery cabin size:

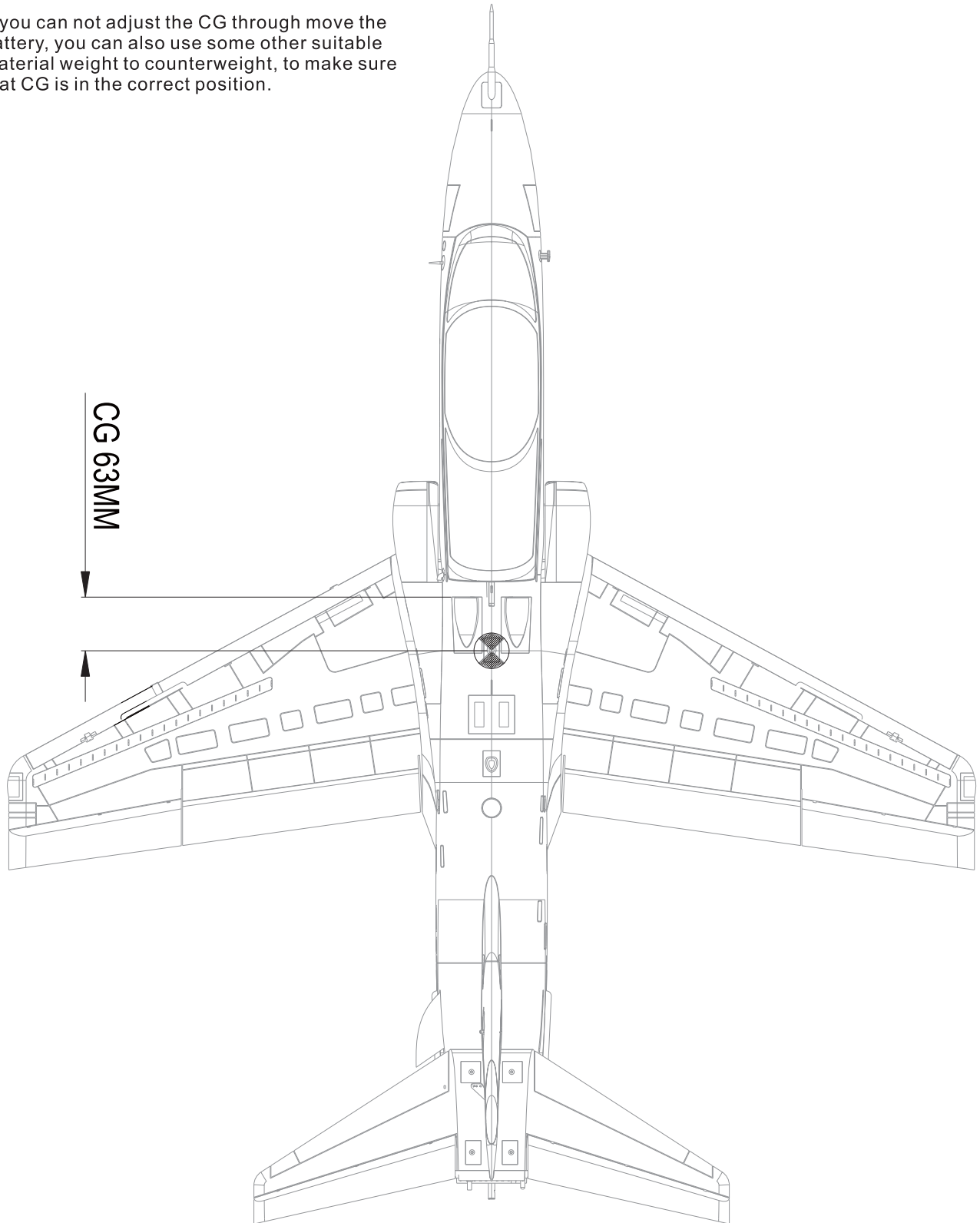
**L=264mm; W=84mm; H=61mm**

**6S 22.2V 5000mAh ~ 6S 22.2V 6000mAh**  
**Discharge rate of C ≥ 35C**

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

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.

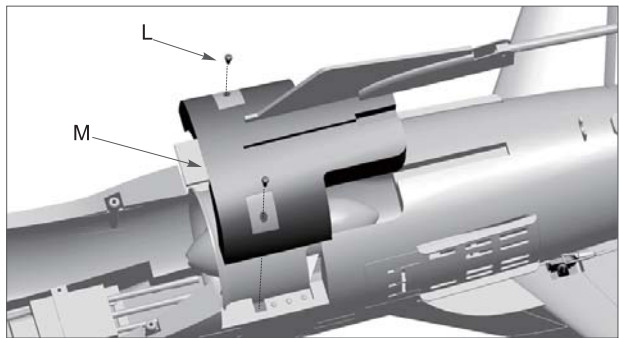
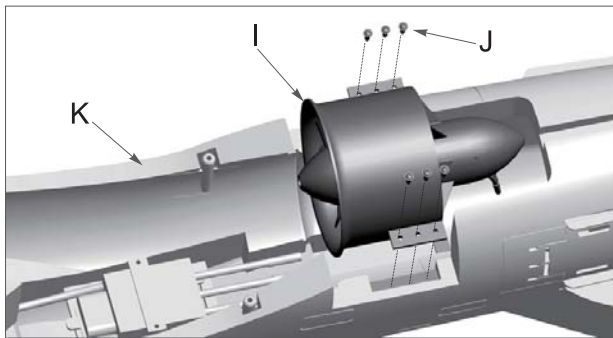
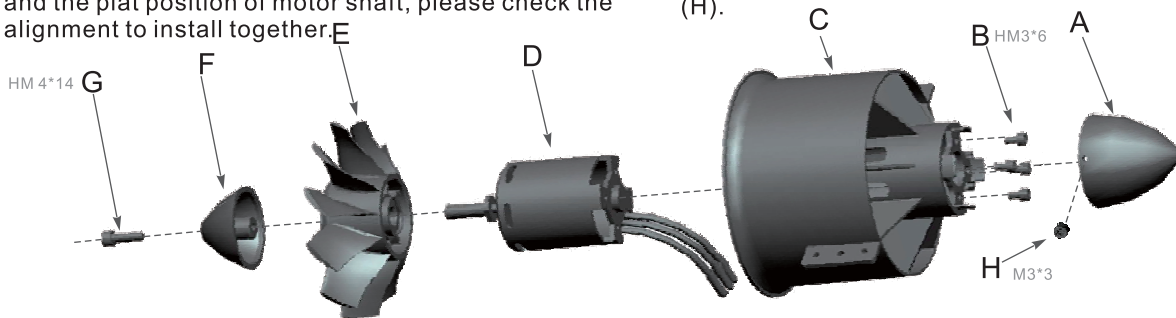
- You can move the battery forward or backward to adjust the center of gravity.
- If you can not adjust the CG through move the battery, you can also use some other suitable material weight to counterweight, to make sure that CG is in the correct position.





1. Installed the motor (D) in the ducted fan cover (C).
2. Fixed it with 4pcs cup head screws (B).
3. Put the fan (E) into motor shaft. ( please note the plat position of hardware which installed in the fan, and the plat position of motor shaft, please check the alignment to install together.E

4. Use the spinner (F) cover the fan, and use the cup head screw (G) to fix the spinner (F).
5. Finally install the fan cowl (A) on the bottom of ducted fan cover (C) and fix it with 2 pcs jimis screws (H).

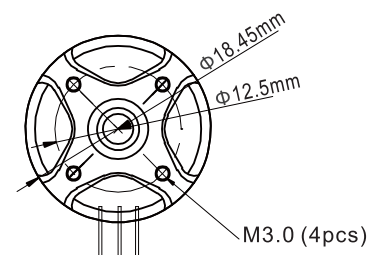
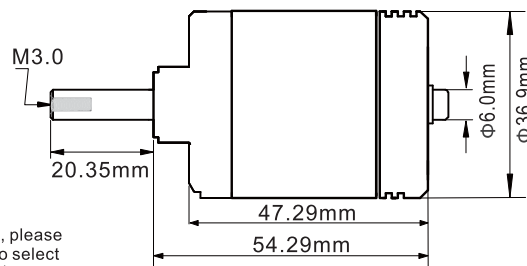
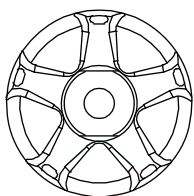


### Accessories name and specification

- I - EDF power system
- J - Screw (PWA3×12mm 6pcs)
- K - Fuselage
- L - Screw (PA3×10mm 2pcs)
- M - EDF fixed cover

**Note:** When ESC and battery connected, prohibit to touch them by hand to avoid accidental injury. When test EDF, please use safety test stand for testing, prohibit to touch by hand for testing.

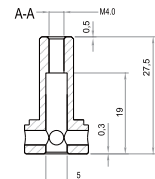
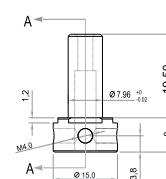
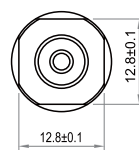
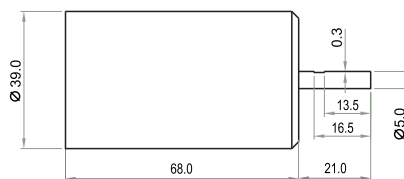
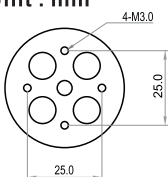
# Motor parameters



**Note:** If you need other motor to use, please refer to the dimension shown on the left to select your motor, to make sure that the motor you purchased can install successfully.

Item No.	KV Value	Volate (V)	Current (A)	Pull (g)	Motor Resistance	Weight (g)	No Load Current	Ducted Fan	ESC
MO037482	1550RPM/V	22.2	95	3600	0.02 Ω	195	2.7A/10V	#P0902	≥110A

Unit : mm

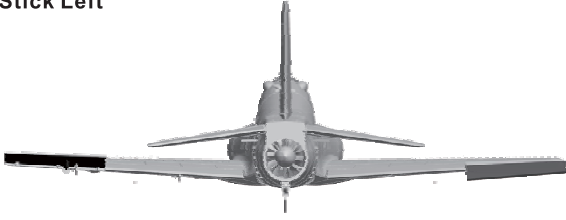


Item No.	KV Value	Volate (V)	Current (A)	Pull (g)	Motor Resistance	Weight (g)	No Load Current	Ducted Fan	ESC
MI040681	1680RPM/V	22.2	115	4300	0.01 Ω	300	2.2A / 8V	#P0904	≥130A

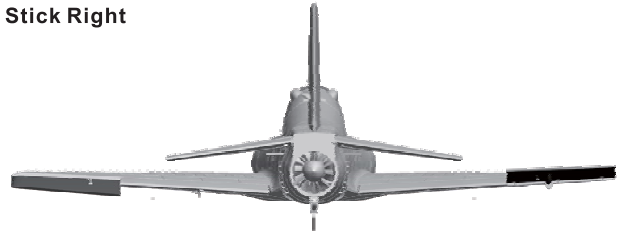
After installed the plane, before flying, we need a fully charged battery and connect to the ESC, then use radio to test and check that every control surface work properly.

## Aileron

Stick Left

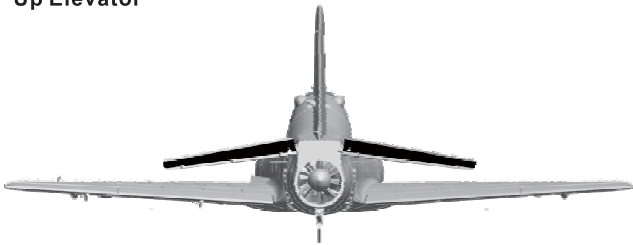


Stick Right

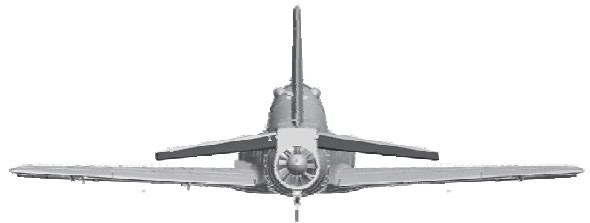


## Elevator

Up Elevator



Down Elevator



## Rudder

Stick Left



Stick Right

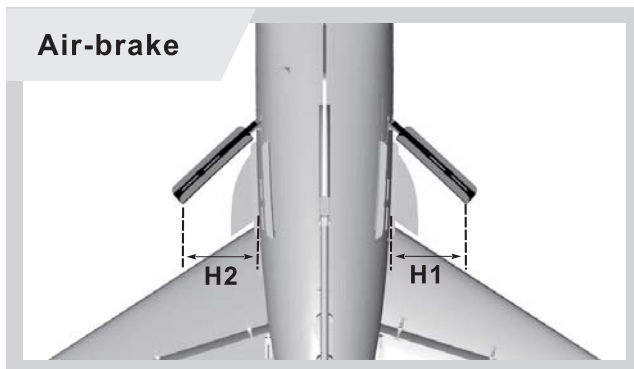
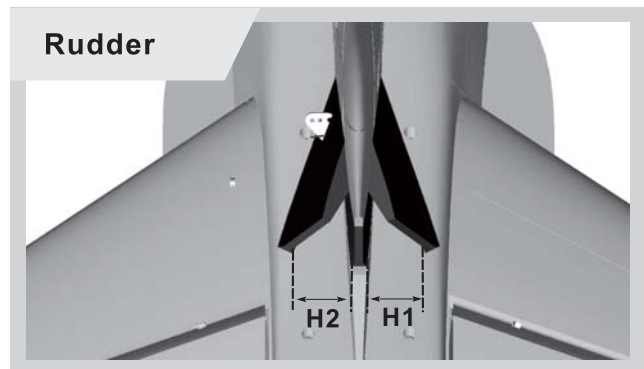
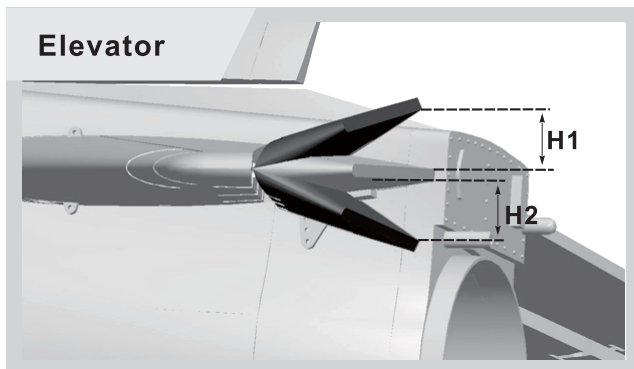
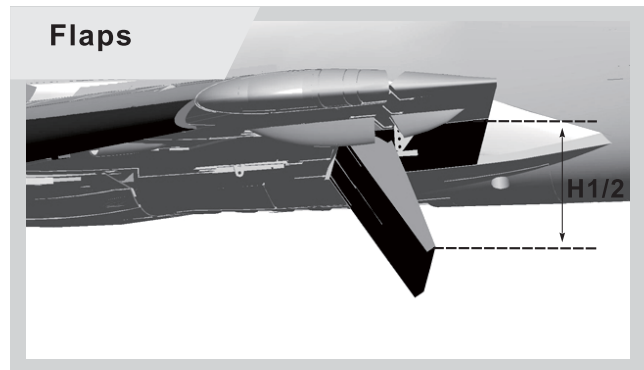
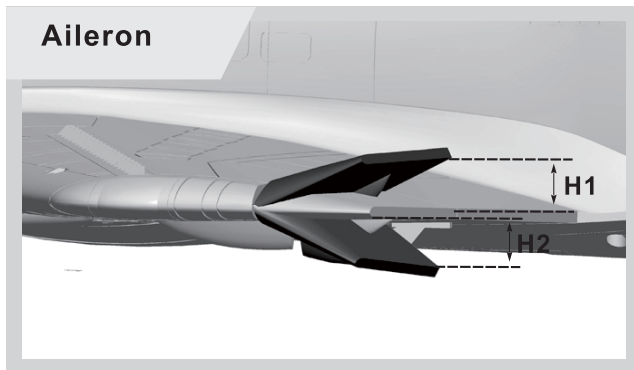


## Optional Flaps

Flaps down



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.



	Low Rate	High Rate
<b>Aileron</b>	H1/H2 15mm	H1/H2 24mm
<b>Flaps</b>	H1/H2 24mm	H1/H2 40mm
<b>Elevator</b>	H1/H2 18/14mm	H1/H2 28mm
<b>Rudder</b>	H1/H2 25mm	H1/H2 38mm
<b>Air-brake</b>	H1/H2 50mm	H1/H2 85mm

## Attention before flight



- 1.Elevator installing angle, it need have 2-3mm elevator-down. Please refer to the left photo to adjust.
- 2.Except the horizontal flight, the other flight action must stop to open slat.
- 3.Center of gravity must follow the position of manual.

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



非常感谢您购买T-45“苍鹰”90级电动涵道飞机。T-45“苍鹰”是美国现役的海军舰载高级教练机，这款飞机是在英国著名的“鹰”式教练机的基础上，改进而来。由于其优秀的性能，成为了美国海军舰载机部队中，唯一的专用舰载高级教机！

T-45“苍鹰”90级电动涵道飞机，认真参考真实飞机的细节资料，极其逼真的外观造型，优秀的结构和飞行特性设计，将泡沫涵道模型产品提升到一个崭新的境界，让您拥有非凡的视觉和动作体验！

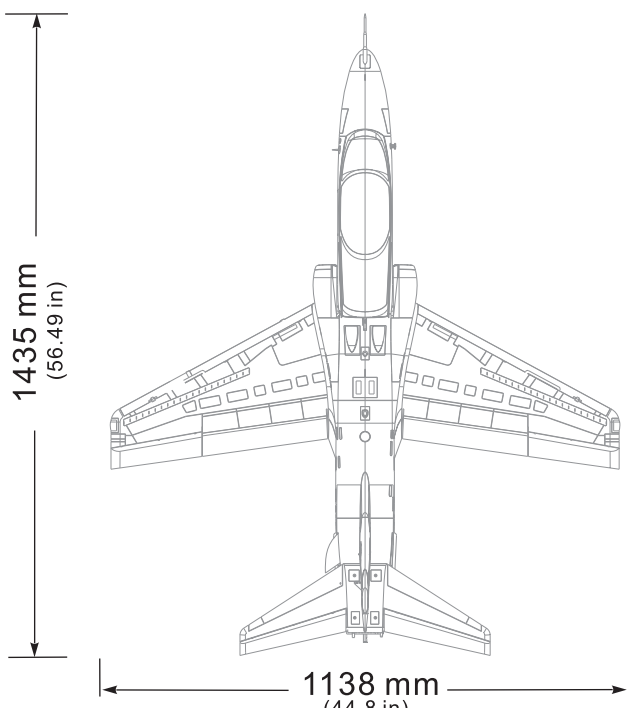
新特性：

- \* 精美的外观；
- \* 优质的做工水平；
- \* 优秀的结构设计；
- \* 第一次使用前缘襟翼设备（在飞翼所有产品中，第一次使用4个涡杆进行控制的前襟翼，绝对安全可靠）
- \* 二段--跪式减震主起落架；
- \* 7颗高亮LED灯；
- \* 全新的T-45集线板（在F-16集线功能上，增加了主翼电子设备集线功能，便于装车和飞场现场组装）
- \* 可吸附机鼻，软胶材料空速管；
- \* 全封闭式舱门，二段控制，放下起落架时，自动闭合一半舱门；
- \* 后襟翼功能；
- \* 巨大的电池舱空间，可以兼容更多型号的电池；
- \* 预留座舱“平显”DIY改进空间；
- \* 常规动力下，165KM/H的时速；
- \* 3.65KG的起飞重量（富力6S 5000 35C电池为标准）
- \* 可拆翼面结构；
- \* 减速板；

**△ 注意：**模型产品是具有一定危险性的产品，请禁止14岁以下的儿童玩耍，14岁以上的儿童，请在有飞行经验的成人指导下使用，无飞行经验的购买者，应当在具有一定电动涵道飞机飞行经验的成人指导下使用！组装模型前，请仔细阅读说明书，按照说明书的要求进行安装、进行调试和飞行时，请根据说明书指示的参数进行调整。

## 重要提示

1. 模型飞机不是玩具，操作者需要具备一定的经验；没有经验的初学者，必须在有丰富经验的专业人士指引下，逐步学习！
2. 在组装之前，必须认真阅读产品说明书，严格按照说明书指示操作。
3. 飞翼模型及其销售商，对于违反说明书的要求操作而造成的损失、将不负任何法律责任！
4. 模型飞机的使用年龄必须是14岁以上的儿童或者成人。
5. 此模型产品使用EPO材料制成，表面喷涂油漆，不可随意使用化学制剂擦拭，否则会损坏模型产品。
6. 不能在公共场合、高压线密集区、高速公路附近、机场附近或者其它法律法规明确禁止飞行的场合飞行。
7. 不能在雷雨、大风、大雪或者其它恶劣气象环境下飞行。
8. 模型飞机的电池产品，不可以随意乱扔，乱放。存放时，必须保证周边2M范围内，无易燃、易爆物体。
9. 损坏或者报废处理的模型飞机电池，应妥善回收处理，不准随意抛弃，避免自燃而引发火灾。
10. 在飞场飞行时，应做到妥善处理飞行后所产生的垃圾，不可随意抛弃、焚毁模型及其配件。
11. 在任何情况下，都必须保证油门杆处于起始位、发射机处于打开状态时，才能连接模型飞机内部的动力电池。
12. 无论是模型飞机是在正常飞行过程中，或者是在缓慢降落过程中，都不要尝试用手去回收模型。必须等模型降落停稳以下，再进行回收！

 <p>1435 mm (56.49 in)</p> <p>1138 mm (44.8 in)</p> <p>⚠ 注意：此处各项参数，均使用本公司配件测试得出，如果使用副厂配件，会有所差异。使用副厂配件时所产生的问题，我们将无法给予技术支持！</p>	<p><b>标准版</b></p> <ul style="list-style-type: none"> <li>● 电机 3748-1550KV外转无刷电机</li> <li>● 电调 130A 无刷电调 (UBEC 8A)</li> <li>● 舵机 17g 全金属舵机 (7pcs) 9g 全金属舵机 (7pcs)</li> <li>● 电池 6S 22.2V 5000mAh 35C</li> <li>● 涵道风扇 90mm 12叶涵道 (P0902)</li> <li>● 起飞重量 3650g (称重时，使用工厂标准配置)</li> <li>● 推力 3700g</li> </ul>
	<p><b>豪华版</b></p> <ul style="list-style-type: none"> <li>● 电机 4068-1680KV内转无刷电机</li> <li>● 电调 130A 无刷电调 (UBEC 8A)</li> <li>● 舵机 17g 全金属舵机 (7pcs) 9g 全金属舵机 (7pcs)</li> <li>● 电池 6S 22.2V 5000mAh 35C</li> <li>● 涵道风扇 90mm 12叶涵道 (P0904)</li> <li>● 起飞重量 3770g (称重时，使用工厂标准配置)</li> <li>● 推力 4300g</li> </ul>

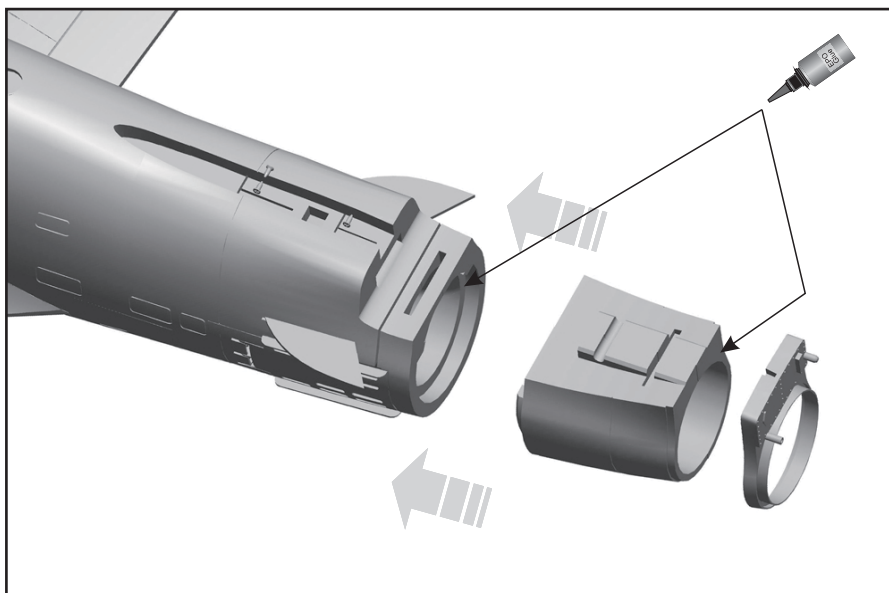
产品包装清单



打开产品包装，核对包装清单。（不同配置的版本，包含内容不同！）

序号	配件名称	PNP	KIT Plus	KIT	序号	配件名称	PNP	KIT Plus	KIT
1	机身套件	预装所有电子设备	预装舵机	无电子设备	1	说明书	✓	✓	✓
2	主翼套件	预装所有电子设备	预装舵机	无电子设备	2	螺丝	✓	✓	✓
3	尾翼套件	预装所有电子设备	预装舵机	无电子设备	3	机翼固定塑料件	✓	✓	✓
4	机头罩	✓	✓	✓	4	排线、XT150插头	✓	✓	
5	碳纤维管	✓	✓	✓	5	钢丝、塑料夹头			✓
6	胶水	✓	✓	✓	6	其它功能件配件			✓

首先，我们从包装盒内取出机身及胶水，准备安装；



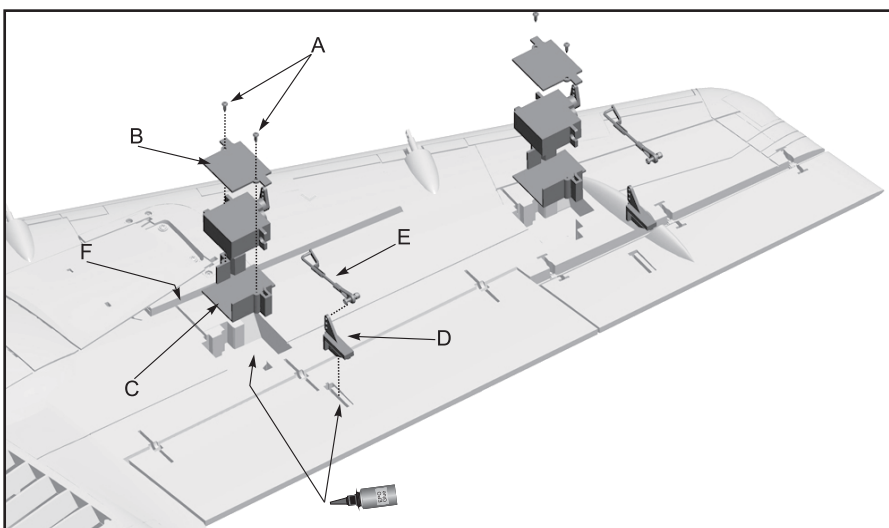
## 主翼组装

### 主翼舵机安装

- A- 螺丝 (PWA1.7×5mm 2pcs)
- B- 17g舵机盖
- C- 17g舵机盒
- D- 舵面摇臂
- E- 主翼舵机控制钢丝
- F- 舵机线槽

1. 通过舵机测试仪或者遥控器，把舵机摇臂校正到居中位置；
2. 用胶水把“17g舵机盒(C)”和“舵面摇臂(D)”粘在垂尾上；
3. 把舵机安装到“17g舵机盒(C)”内，同时把舵机线压入“舵机线槽(F)”，然后盖上“17g舵机盖”，最后用2颗“螺丝(A)”锁紧固定；
4. 用舵机传动控制钢丝连接舵机摇臂与“舵面摇臂(D)”。

通过调整钢丝长短距离，使主翼舵面处于居中位置！



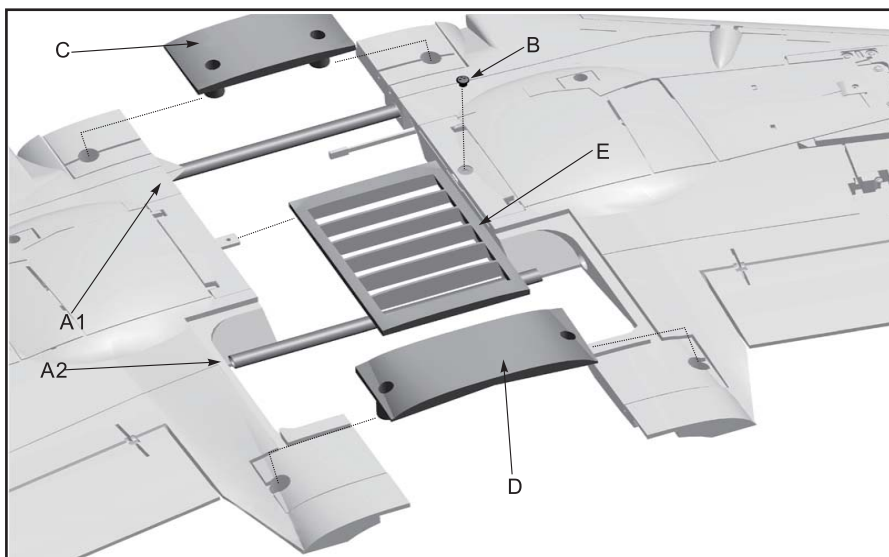
### 主翼安装

- A- 碳纤维管
- B- 螺丝 (PWA3×8mm)
- C- 主翼固定件F1
- D- 主翼固定件B
- E- 辅助进气口罩

1. 将碳纤维管插入主翼；
2. 合拢主翼；
3. 使用螺丝(B)固定塑料插销；
4. 把主翼固定件(F1)及主翼固定件(B)装在主翼上；
5. 使用胶水将辅助进气口罩(E)粘在主翼上；

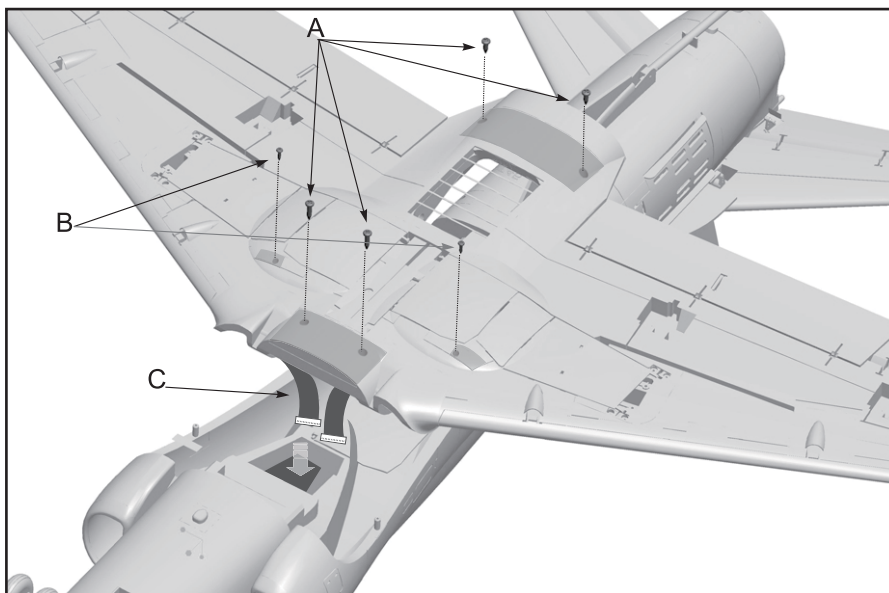
#### 碳纤维管尺寸

- (A1)  $\varnothing 10 \times 200\text{mm}$ , 臂厚: 1.0mm
- (A2)  $\varnothing 10 \times 280\text{mm}$ , 臂厚: 1.0mm



1. 使用螺丝(A,B)将主翼固定在机身上;
2. 主翼连接排线(C)按右图箭头所示, 穿入到机身电池舱内;
3. 安装好主翼后, 再将主翼连接排线(C)插入到电池舱内的集线板上;  
(参考P24页)

- A - 螺丝 (PA4×10mm 4pcs)  
 B - 螺丝 (PA2.6×10mm 2pcs)  
 C - 主翼连接排线



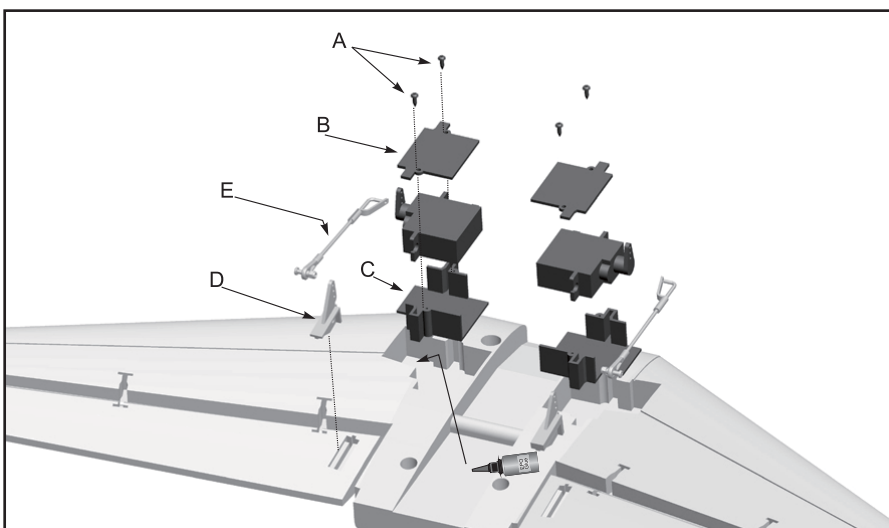
## 平尾组装

## 平尾舵机安装

- A - 螺丝 (PWA1.7×5mm 2pcs)  
 B - 17g舵机盖  
 C - 17g舵机盒  
 D - 舵面摇臂  
 E - 平尾舵机控制钢丝

1. 通过舵机测试仪或者遥控器, 把舵机摇臂校正到居中位置;
2. 用胶水把“17g舵机盒(C)”和“舵面摇臂(D)”粘在平尾上;
3. 把舵机安装到“17g舵机盒(C)”内, 然后盖上“17g舵机盖”, 最后用2颗“螺丝(A)”锁紧固定;
4. 用舵机传动控制钢丝连接舵机摇臂与“舵面摇臂(D)”。

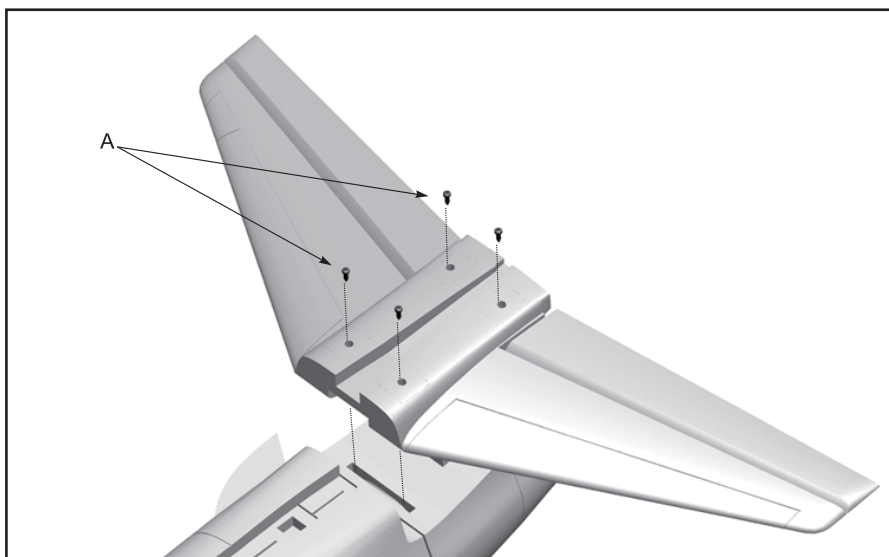
通过调整钢丝长短距离, 使平尾舵面处于居中位置!



## 平尾安装

- A - 螺丝 (PA2.6×10mm 4pcs)

1. 用4颗螺丝(A)固定平尾;



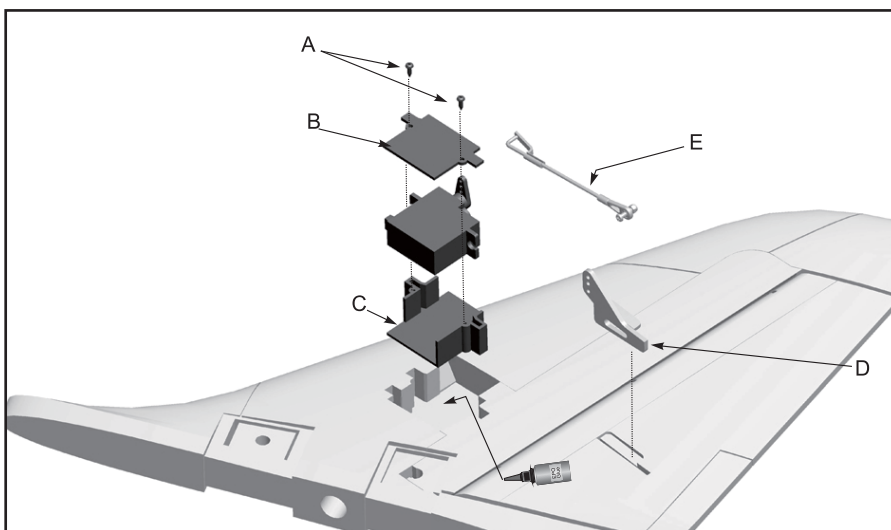


## 垂尾舵机安装

- A - 螺丝 (PWA1.7×5mm 2pcs)
- B - 17g舵机盖
- C - 17g舵机盒
- D - 舵面摇臂
- E - 垂尾舵机控制钢丝

1. 通过舵机测试仪或者遥控器，把舵机摇臂校正到居中位置；
2. 用胶水把“17g舵机盒(C)”和“舵面摇臂(D)”粘在垂尾上；
3. 把舵机安装到“17g舵机盒(C)”内，然后盖上“17g舵机盖”，最后用2颗“螺丝(A)”锁紧固定；
4. 用舵机传动控制钢丝连接舵机摇臂与“舵面摇臂(D)”。

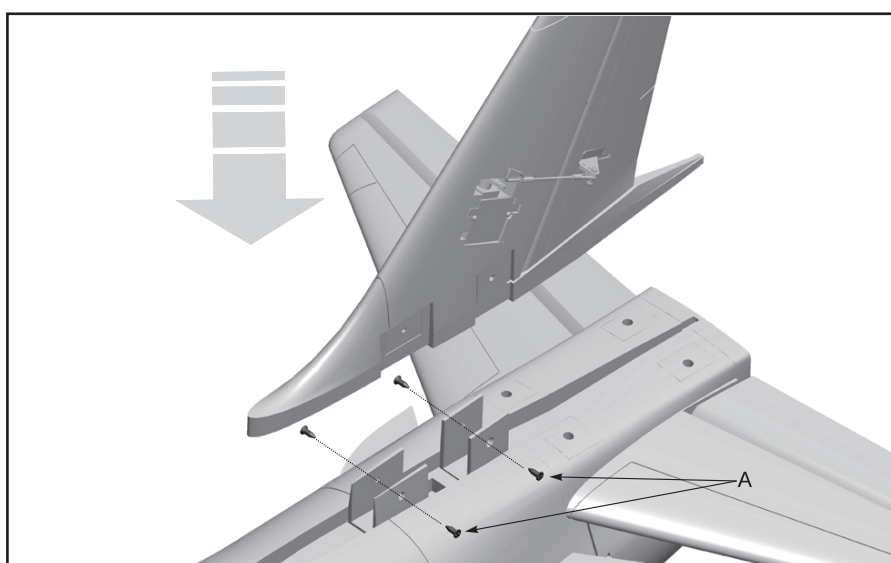
通过调整钢丝长短距离，使垂尾舵面处于居中位置！



## 垂尾安装

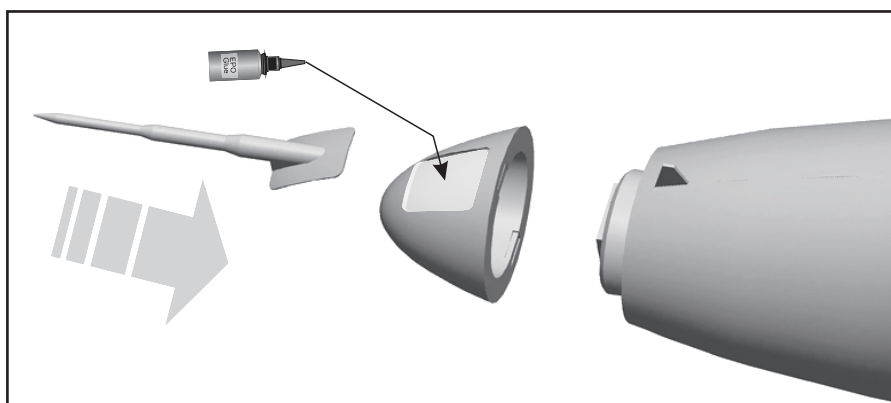
- A - 螺丝 (FA3×6mm 4pcs)

1. 用4颗螺丝(A)固定平尾；

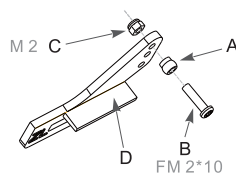
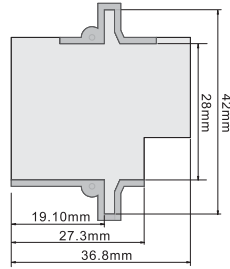


## 机鼻安装

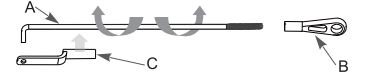
1. 如右图所示：用胶水将空速管粘到机鼻部位；
2. 机鼻与机身使用磁石吸附连接；



**注意：**模型所有舵机安装位置已经安装好舵机盒，使玩家在拆卸舵机时，不会损伤机身表面。如果需要更换舵机，请购买原厂舵机或者参考下列图纸，选择尺寸相符的舵机！

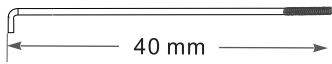


1. 将球头“A”套入螺丝“B”内，然后再把螺丝“B”穿入舵面摇臂“D”圆孔内，最后用螺母“C”拧紧；



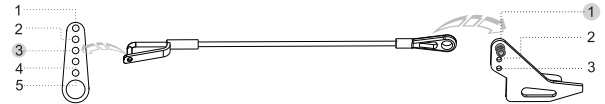
1. 将钢丝“A”有螺纹一端拧到球头扣“B”内，做成一根舵面控制钢丝。我们可以通过向左、向右扭转钢丝，来增加或者减少舵面控制钢丝的总长；  
2. 钢丝折角一端，穿入舵机摇臂内，然后将塑料扣“C”下半端扣到钢丝“A”上，上半端圆孔扣进钢丝内，达到固定的效果！

### 襟翼控制钢丝尺寸

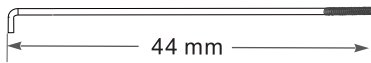


钢丝直径 Ø1.5mm

### 襟翼舵机钢丝安装孔位



### 副翼控制钢丝尺寸

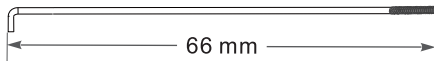


钢丝直径 Ø1.5mm

### 副翼舵机钢丝安装孔位



### 平尾控制钢丝尺寸

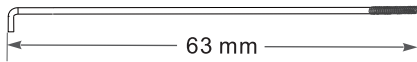


钢丝直径 Ø1.5mm

### 平尾舵机钢丝安装孔位

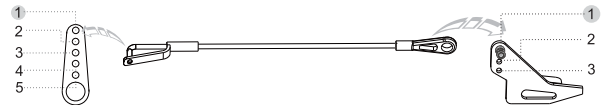


### 垂尾控制钢丝尺寸

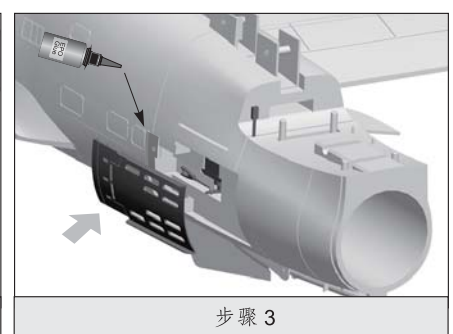
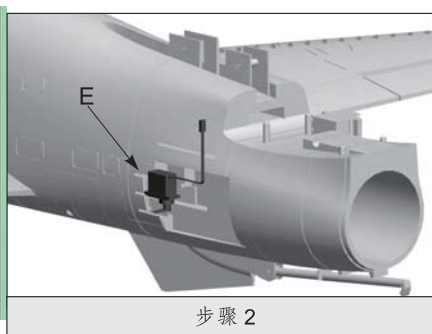
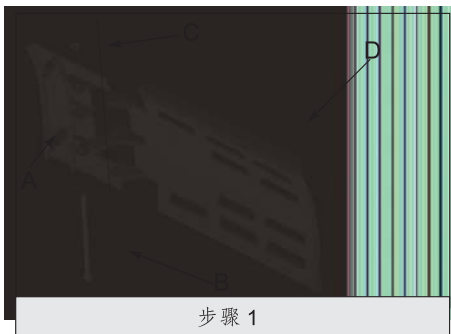


钢丝直径 Ø1.5mm

### 垂尾舵机钢丝安装孔位



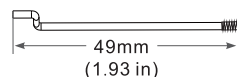
# 减速板组装



- 配件名称及规格参数**
- A - 减速板固定座
  - B - 减速板梢钉
  - C - E型扣 (Ø1.5mm)
  - D - 减速板
  - E - 舵机 (9g-MG)

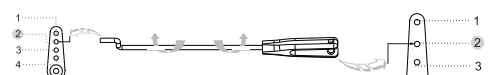
1. 按步骤1拼装好减速板装置；
2. 用胶水粘好舵机；
3. 用胶水把减速板装置固定在机身上；
4. 使用钢丝连接减速板和舵机摇臂，通过调整钢丝长度，设定好减速板的打开角度；  
(设定好后，请注意当减速板闭合时，舵机不会因为受力而产生异响；如果减速板闭合后，舵机有异响情况，可以少量增加减速板打开角度；)

### 减速板控制钢丝尺寸



钢丝直径 Ø1.2mm

### 减速板舵机钢丝安装孔位



A- 塑料梢钉  
B- 前缘襟翼连接件  
C- 前缘襟翼  
D- 前缘襟翼固定件

△注意：前缘襟翼固定件有6种规格，请参考此塑料件背面的刻字进行区分；字母L\R分别代表左、右主翼，数字1-3代表从翼根到翼尖方向的顺序。

1. 用前缘襟翼连接件(B)连接前缘襟翼(C)和前缘襟翼固定件(D);
2. 最后使用塑料梢钉(A)固定；

注意：穿好塑料梢钉后，塑料梢钉的另一端，可以通过高温烙铁烫熔梢钉末端，来达到固定的目的。

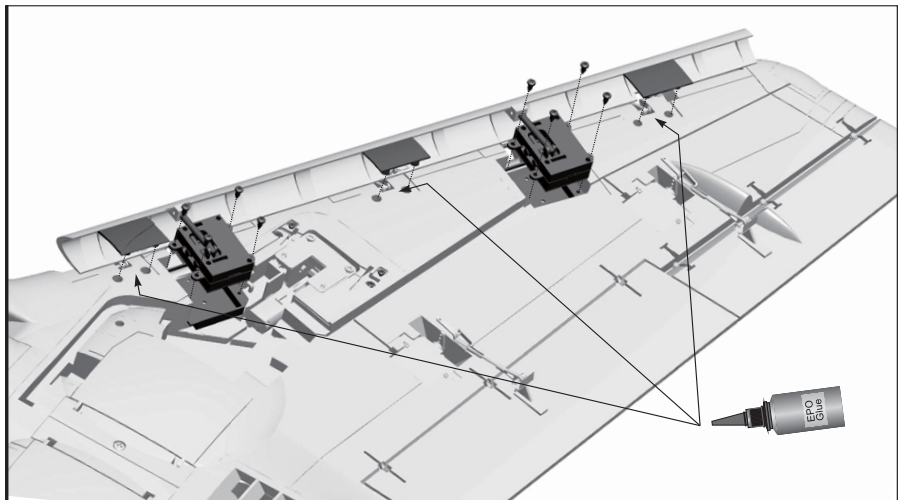
A- 前缘襟翼推动杆  
B- 金属梢钉  
C- E型扣  
D- 螺丝  
E- 前缘襟翼控制器

1. 将前缘襟翼推动杆一端用梢钉和E型扣固定在前缘襟翼控制器上；另一端使用螺丝固定在塑料襟翼上；

注意：前缘襟翼控制器区别左、右，请区分；

1. 如右图所示，使用螺丝和胶水固定好前缘襟翼套件；
2. 最后用胶水粘好吸塑盖，保持表面的整洁；

螺丝：PB2. 6×6mm 16pcs

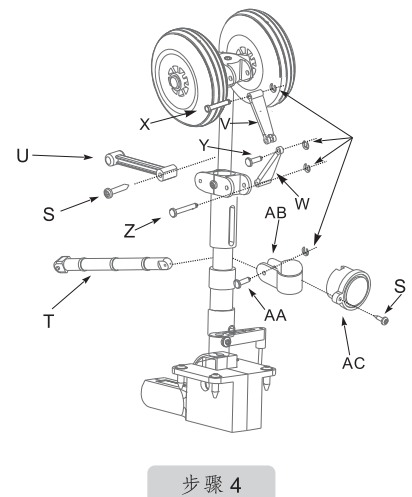
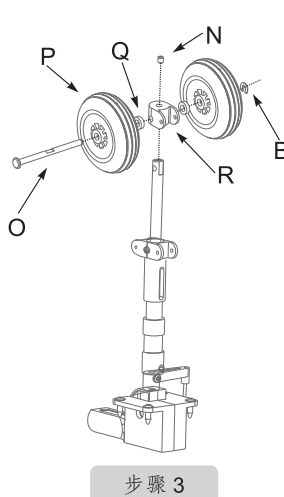
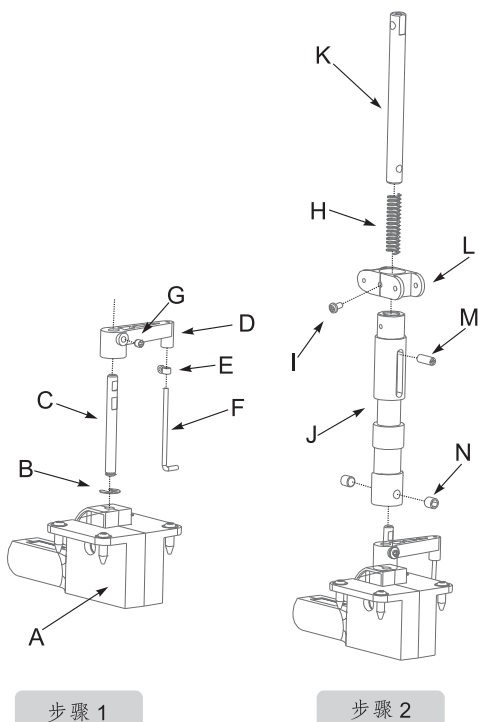


# 前起落架组装

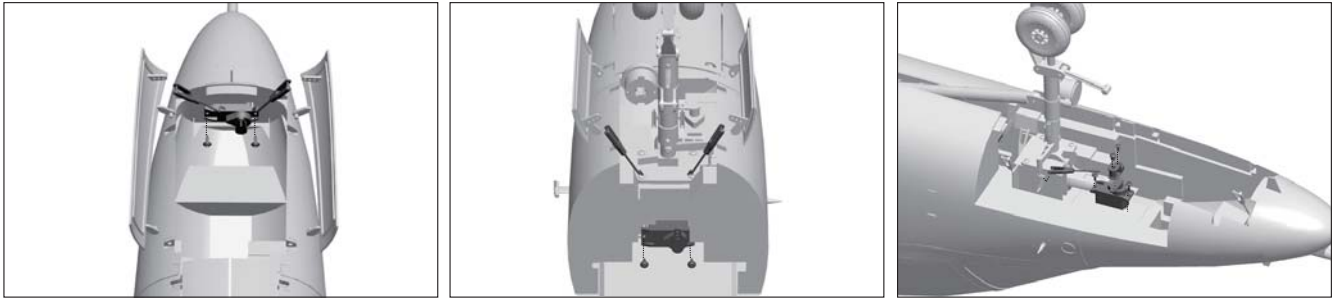
请根据以下图示，组装，拆解，更换前起落架配件。

## 配件名称及规格参数

- |                 |                  |               |
|-----------------|------------------|---------------|
| A- 前起落架电动控制器    | K- 前起落架减震活动杆     | U- 塑料固定钩      |
| B- E型扣 (Ø2.0mm) | L- U型连接臂2        | V- 前起落架减震支撑杆2 |
| C- 前起落架主钢丝      | M- 螺丝 (M3×5.2mm) | W- 前起落架减震支撑杆1 |
| D- L型旋转摇臂       | N- 机米螺丝 (M4×4mm) | X- 梢钉         |
| E- O型圈          | O- 前轮轴轴          | Y- 梢钉         |
| F- 钢丝           | P- 机轮 (Ø45/15mm) | Z- 梢钉         |
| G- 螺丝 (M3×3mm)  | Q- 垫圈            | AA- 梢钉        |
| H- 弹簧           | R- U型连接臂2        | AB- 塑料U型连接臂   |
| I- 螺丝 (PM2×4mm) | S- 螺丝 (PA2×8mm)  | AC- 起落架LED灯   |
| J- 前起落架主撑杆      | T- 前起落架塑料斜撑杆     |               |



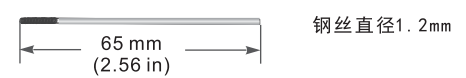
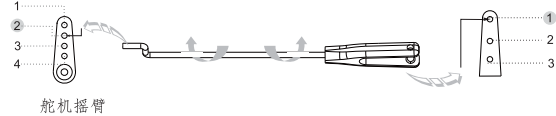
请根据以下图示，组装，拆解，更换前起落架舱门配件。



前舱门控制钢丝(前)尺寸

舵机钢丝安装孔位

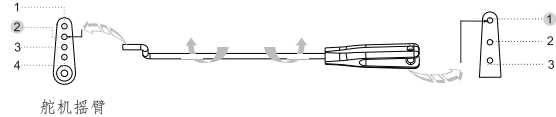
前轮转向控制钢丝尺寸



前舱门控制钢丝(后)尺寸

舵机钢丝安装孔位

舵机钢丝安装孔位

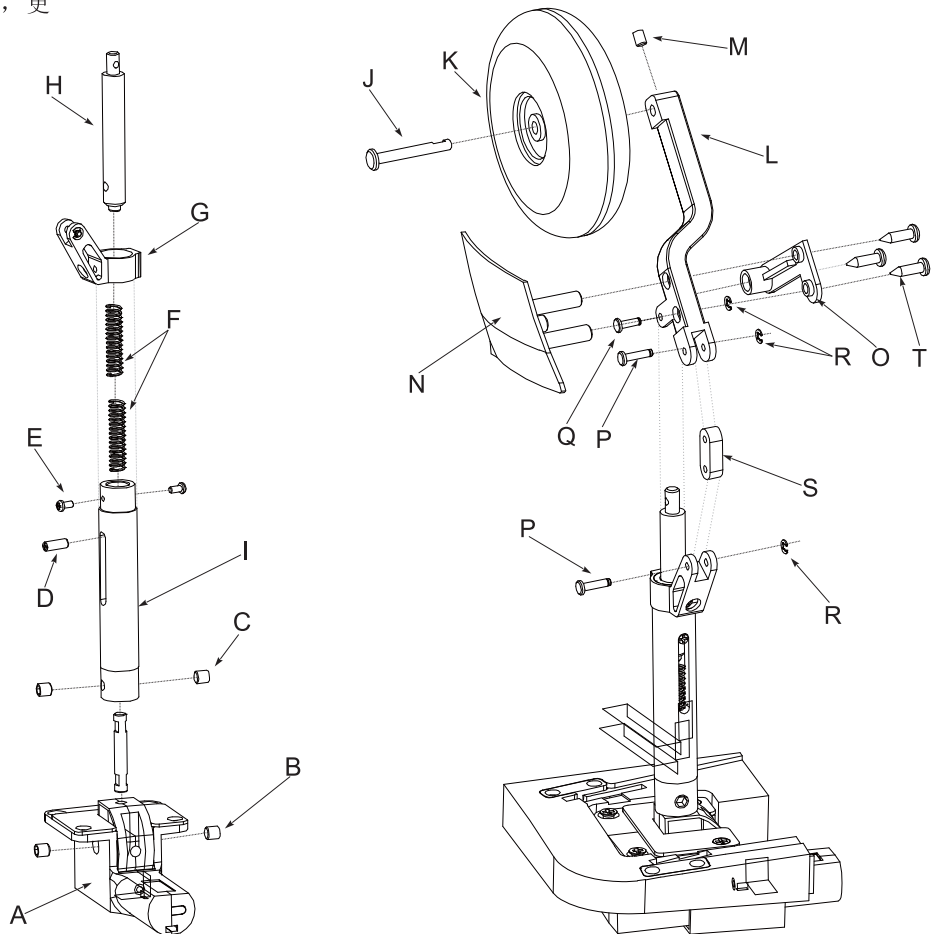


## 后起落架组装

请根据以下图示，组装，拆解，更换前起落架配件。

### 配件名称及规格参数

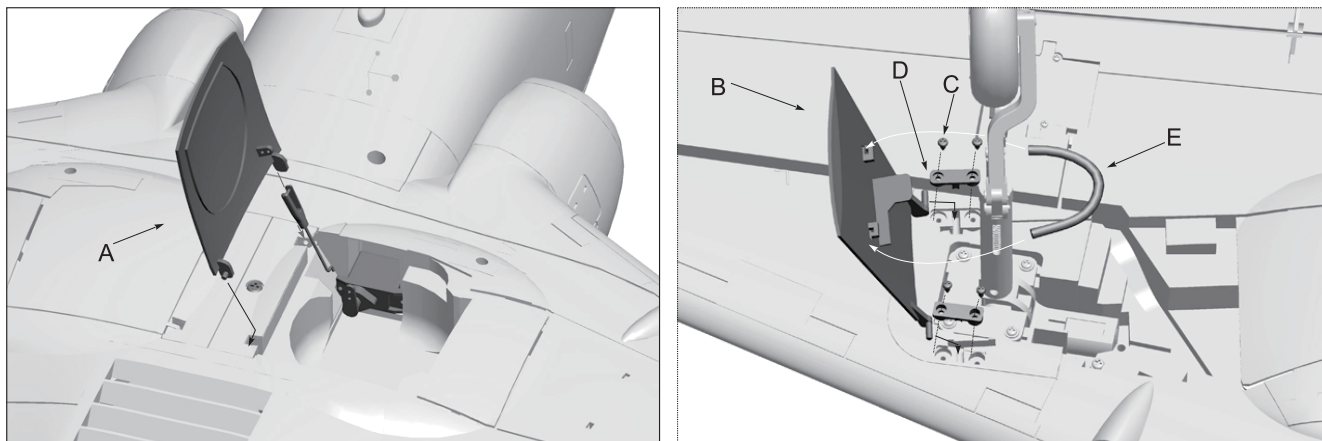
- A - 后起落架电动控制器
- B - 机米螺丝 (M3×5mm)
- C - 机米螺丝 (M4×4mm)
- D - 螺丝 (M3×5.2mm)
- E - 螺丝 (PA2×4mm)
- F - 弹簧
- G - T型连接臂
- H - 后起落架减震活动杆
- I - 后起落架主撑杆
- J - 后轮轮轴
- K - 机轮 (Ø60/16mm)
- L - 后轮倾斜支撑杆
- M - 机米螺丝 (M3×3mm)
- N - 后起落架舱门
- O - 后起落架舱门固定件
- P - 梢钉
- Q - 梢钉
- R - E型扣 (Ø1.5mm)
- S - 8字型连接臂
- T - 螺丝 (PA2.6×10mm)



步骤 1

步骤 2

请根据以下图示，组装，拆解，更换后起落架舱门配件。



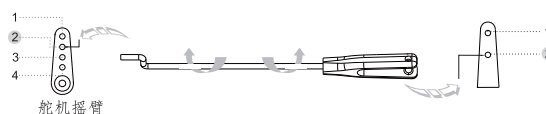
- A- 后起落架舱门1
- B- 后起落架舱门3
- C- 螺丝 (PT2.3×6mm)
- D- 后起落架舱门固定件
- E- 弹簧

后舱门控制钢丝尺寸



钢丝直径  $\varnothing 1.2\text{mm}$

舵机钢丝安装孔位



舵机摇臂

## 集线板连接示意图

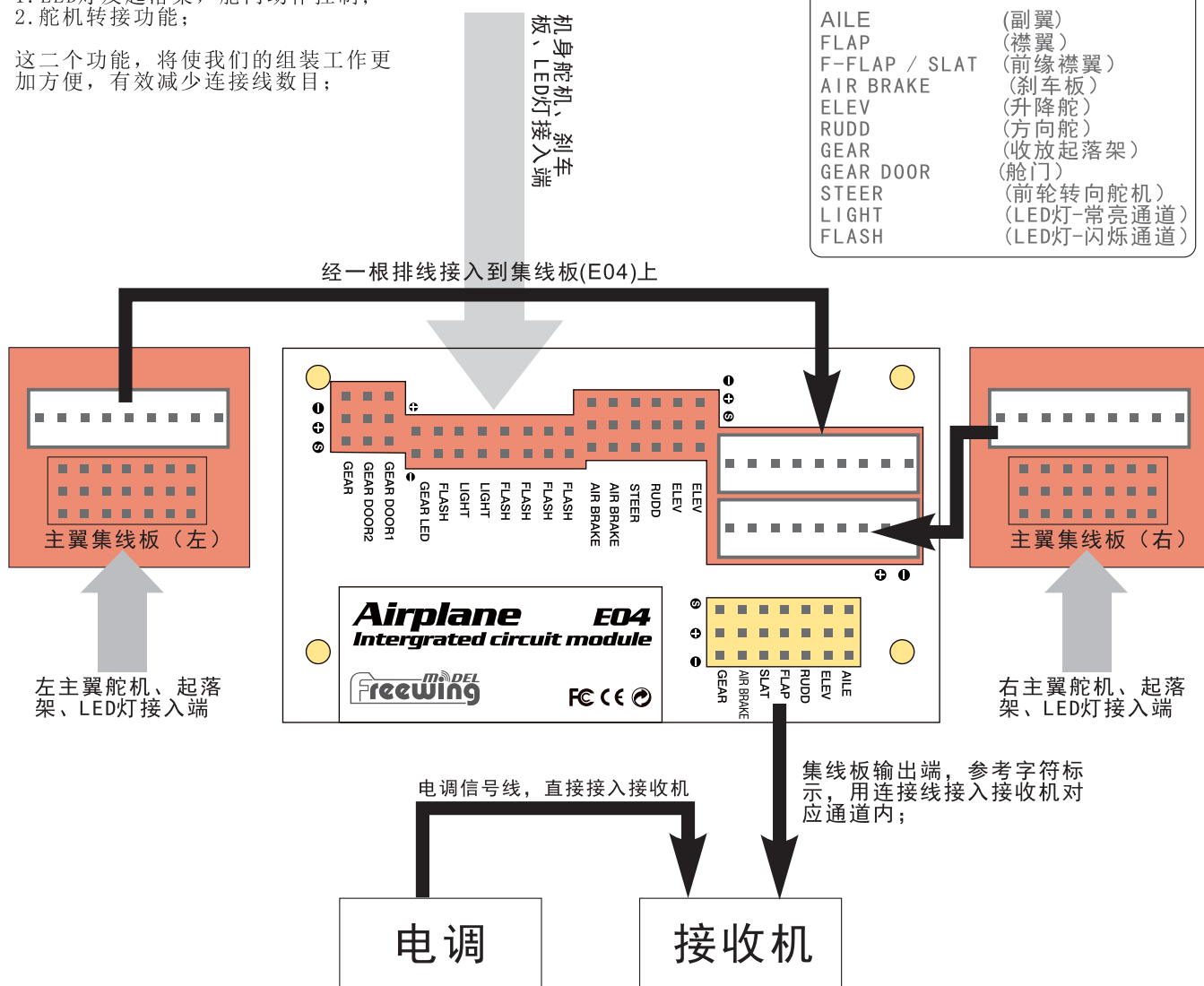
集线电路板有二个功能：

1. LED灯及起落架，舱门动作控制；
2. 舵机转接功能；

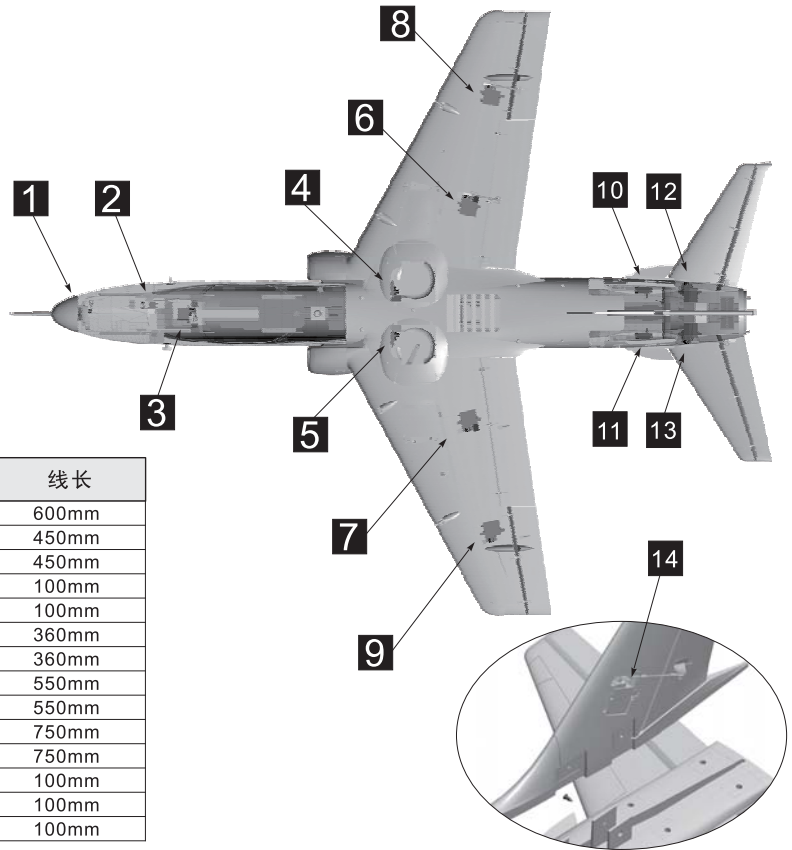
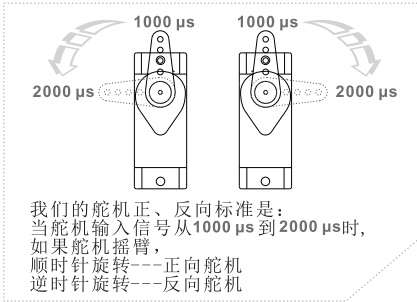
这二个功能，将使我们的组装工作更方便，有效减少连接线数目；

### 集线板标识注释：

AILE	(副翼)
FLAP	(襟翼)
F-FLAP / SLAT	(前缘襟翼)
AIR BRAKE	(刹车板)
ELEV	(升降舵)
RUDD	(方向舵)
GEAR	(收放起落架)
GEAR DOOR	(舱门)
STEER	(前轮转向舵机)
LIGHT	(LED灯-常亮通道)
FLASH	(LED灯-闪烁通道)



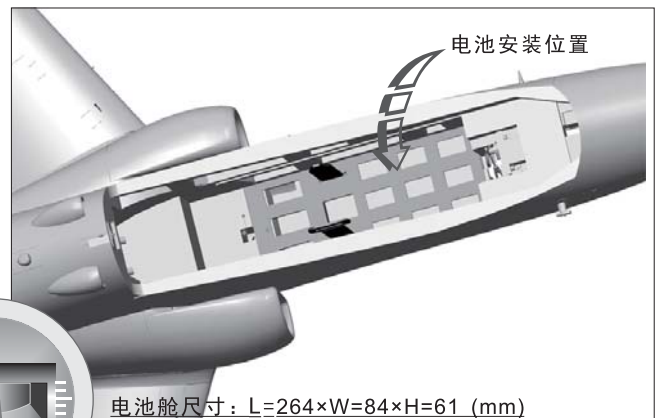
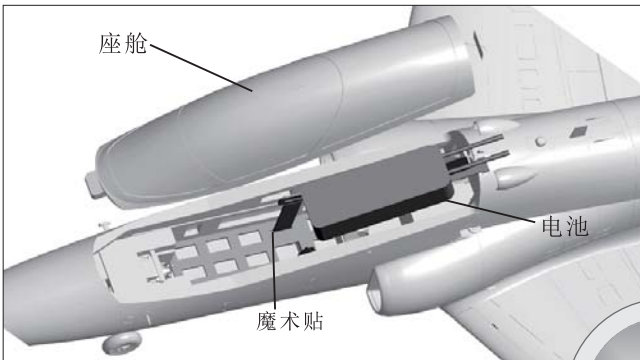




如果您需要选购其它品牌的舵机进行安装，请参考下面的表格选择正确的舵机

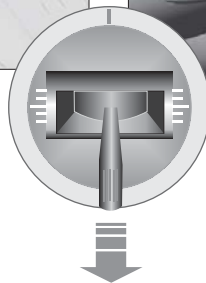
舵机使用位置	序号	规格	正、反向	线长
前舱门舵机(前)	1	9g-金属	正向	600mm
前舱门舵机(后)	2	9g-金属	正向	450mm
前轮转向舵机	3	9g-金属	正向	450mm
后舱门舵机(左)	4	9g-金属	反向	100mm
后舱门舵机(右)	5	9g-金属	正向	100mm
后襟翼(左)	6	17g-金属	正向	360mm
后襟翼(右)	7	17g-金属	反向	360mm
副翼(左)	8	17g-金属	正向	550mm
副翼(右)	9	17g-金属	正向	550mm
减速板(左)	10	9g-金属	正向	750mm
减速板(右)	11	9g-金属	反向	750mm
平尾(左)	12	17g-金属	正向	100mm
平尾(右)	13	17g-金属	反向	100mm
垂尾	14	17g-金属	正向	100mm

## 电池安装说明



向上拉粘在座舱上的胶纸，取下座舱盖，然后用魔术贴捆绑电池。

将电池与接收机连接前，请先请打开发射机电源，确认油门杆处于低位。



我们出厂时配备的电池为：

**6S 22.2V 5000mAh 35C**

我们建议使用的电池容量和放电倍率如下：

**6S 22.2V 5000mAh ~ 6S 22.2V 5500mAh**

**8S 29.6V 4500mAh ~ 8S 29.6V 5000mAh**

(请根据您的配置，选择正确的电池电压！)

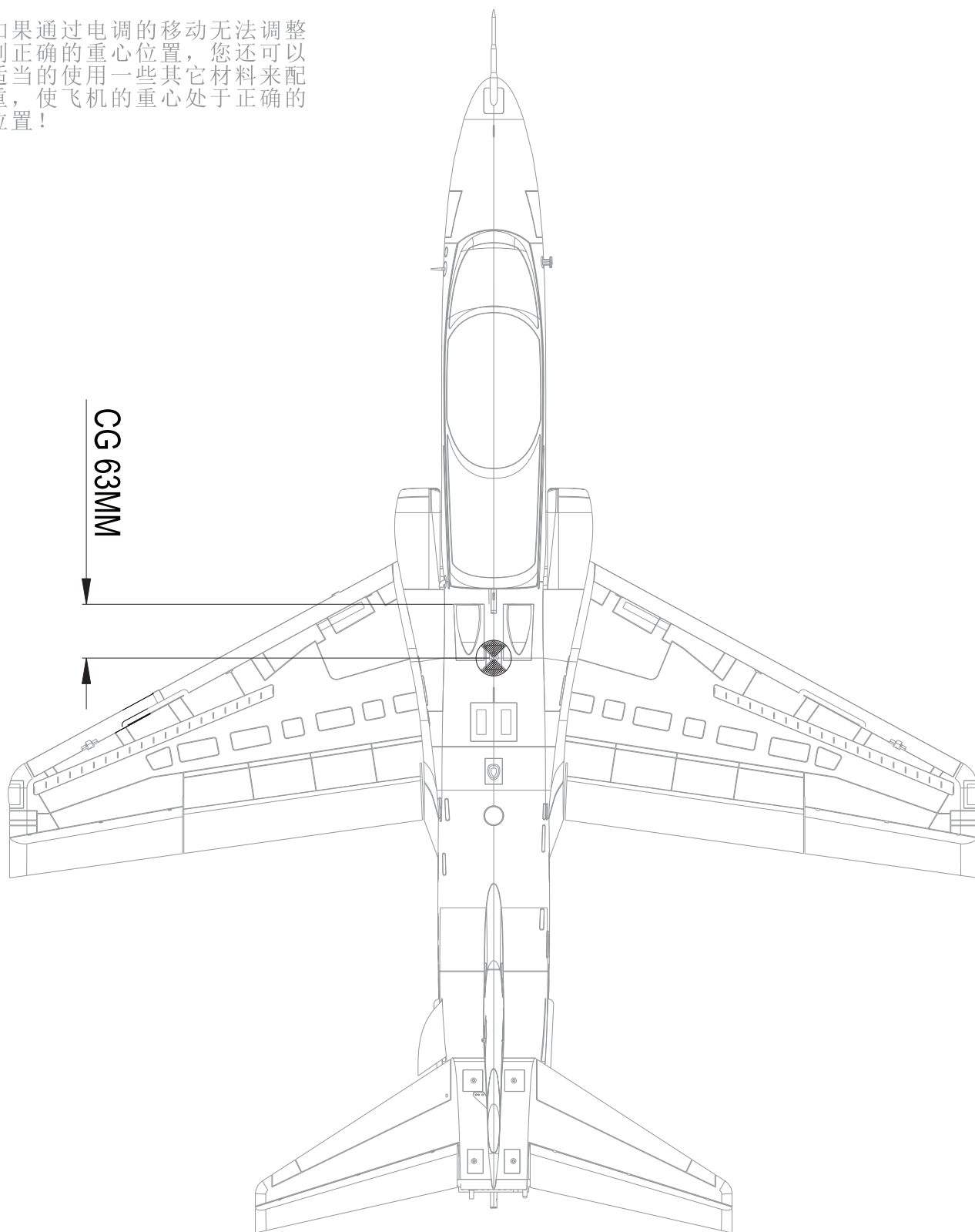
放电倍率 **≥ 35C**

不同重量的电池，会影响重心！请注意飞机的重心在说明书指示的正确范围内！

正确的重心，直接关系到飞行的成功与否，请参考下面的重心标示图，来调整飞机的重心。

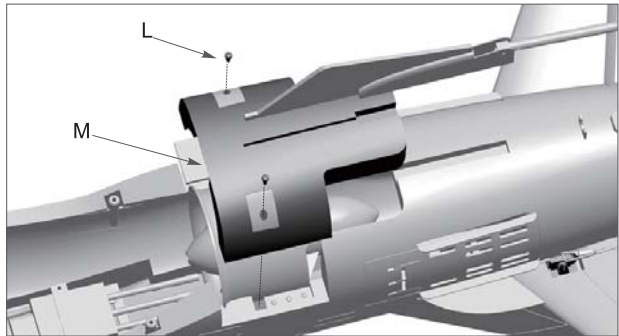
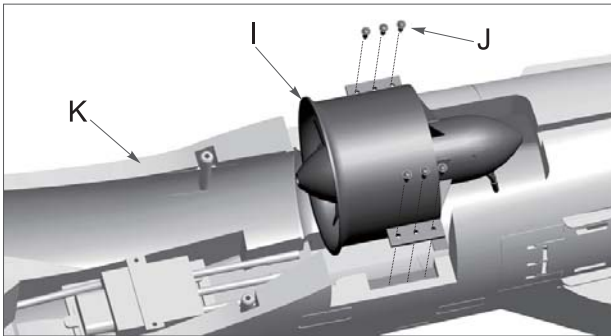
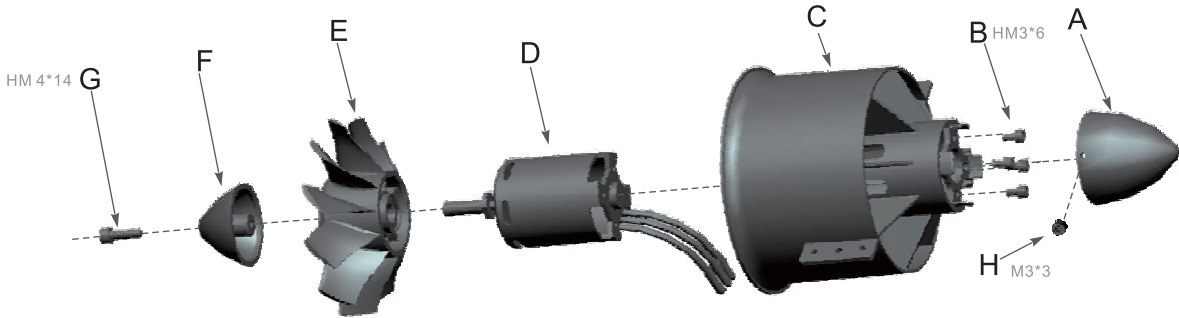
-您可以将电池向前，或者向后移动，来调整飞机的重心；

-如果通过电调的移动无法调整到正确的重心位置，您还可以适当的使用一些其它材料来配重，使飞机的重心处于正确的位置！



1. 将电机“D”装入涵道框“C”内；
2. 用4颗杯头螺丝“B”固定马达；
3. 把涵道风扇“E”套入到电机轴上；  
(在此过程中，请注意风扇叶内嵌五金件的扁口与马达轴的扁口部位对齐装入)

4. 用整流罩“F”盖住风扇叶，最后用杯头螺丝“G”固定整流罩“F”。
5. 最后把尾部导流罩“A”安装到涵道框“C”底部，并用2颗机米螺丝“H”固定。

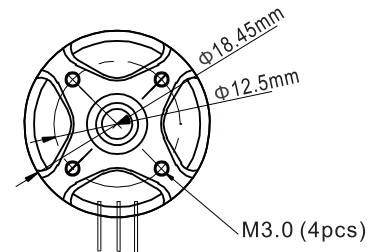
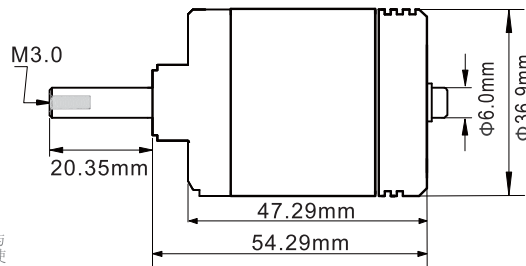
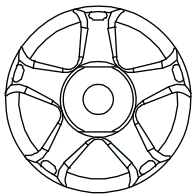


### 配件名称及规格参数

- I - 涵道动力组
- J - 螺丝 (PWA3×12mm 6pcs)
- K - 机体
- L - 螺丝 (PA3×10mm 2pcs)
- M - 涵道固定盖

**⚠注意：**当电调与电池连接后，禁止用手触摸电调和涵道，防止意外伤害！测试涵道时，请使用安全的测试架进行测试，禁止用手抓住涵道的进行行为！

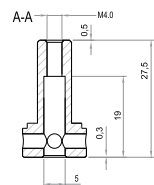
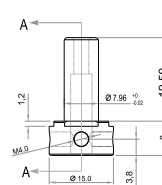
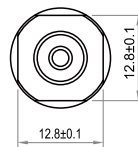
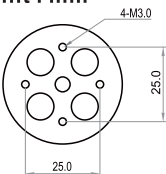
# 电机参数



**⚠注意：**此电机为专用产品，仅适合与飞翼公司型号为P0902涵道风扇进行配套使用，同时，型号为P0902的涵道风扇也无法安装其它电机！

Item No.	KV Value	Volate (V)	Current (A)	Pull (g)	Motor Resistance	Weight (g)	No Load Current	Ducted Fan	ESC
MO037482	1550RPM/V	22.2	95	3600	0.02 Ω	195	2.7A/10V	#P0902	≥110A

Unit : mm

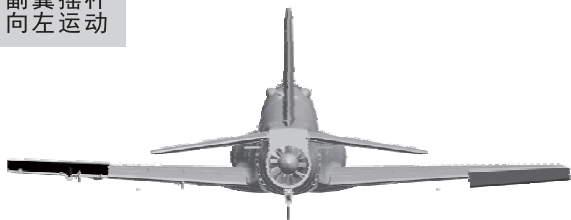


Item No.	KV Value	Volate (V)	Current (A)	Pull (g)	Motor Resistance	Weight (g)	No Load Current	Ducted Fan	ESC
MI040681	1680RPM/V	22.2	115	4300	0.01 Ω	300	2.2A / 8V	#P0904	≥130A

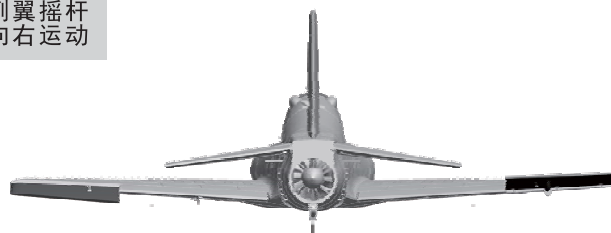
当您按前面的步骤组装好飞机后，在飞行前，我们需要用一块充电的电池，连接到电调。用遥控器测试每个舵面的工作情况，检查是否正常！

## 副翼

副翼摇杆  
向左运动

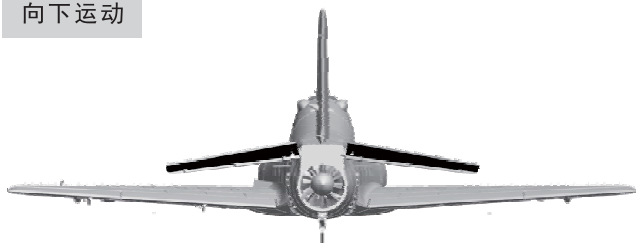


副翼摇杆  
向右运动

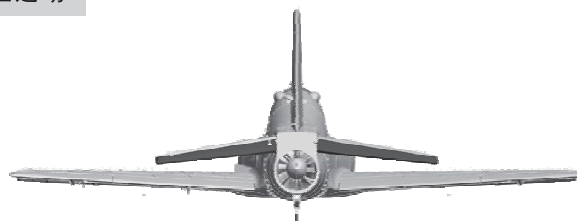


## 升降舵

升降摇杆  
向下运动



副翼摇杆  
向上运动



## 方向舵

方向摇杆  
向左运动



方向摇杆  
向右运动

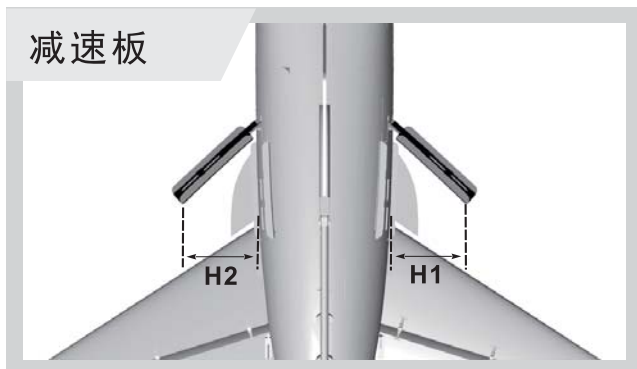
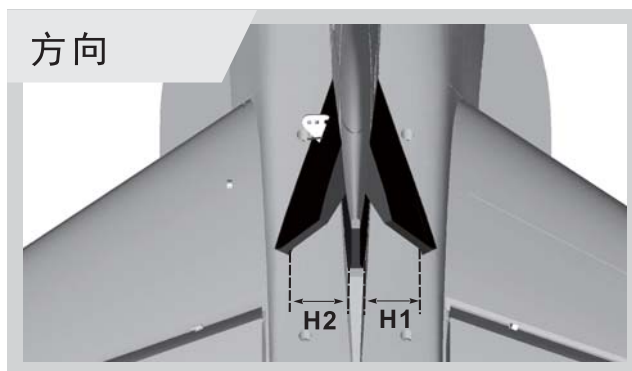
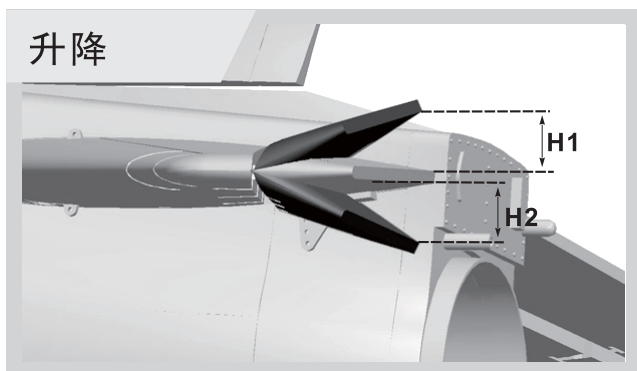
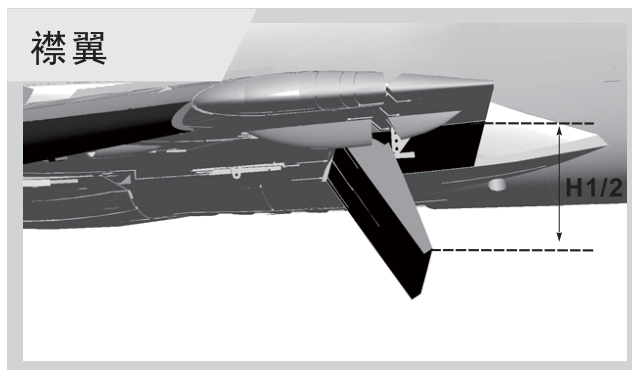
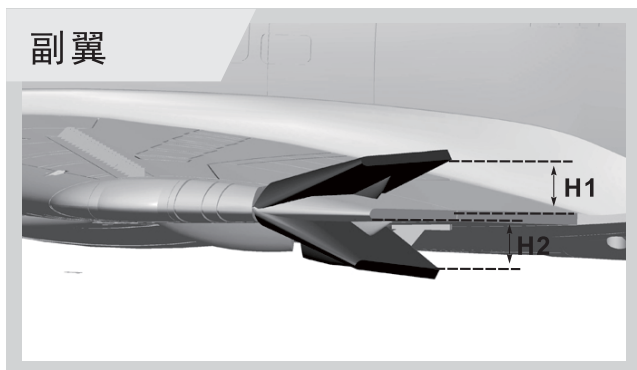


## 襟翼

襟翼放下



根据我们的测试经验，我们认为，按以下参数来设置副翼和升降舵的大、小舵，将有助于飞行。在小舵角的情况下，飞机的可控性能会好一些，适合初次飞行或者不太熟练的玩家飞行。而大舵角的设置，可以提高动作灵敏度，使用经验丰富的玩家。您可以根据自身的情况，来选择其中一种舵量进行飞行！



	小舵角	大舵角
副翼	H1/H2 15mm	H1/H2 24mm
襟翼	H1/H2 24mm	H1/H2 40mm
升降舵	H1/H2 18/14mm	H1/H2 28mm
方向舵	H1/H2 25mm	H1/H2 38mm
减速板	H1/H2 50mm	H1/H2 85mm

## 飞行前注意事项



- 升降舵安装角度，需要有2-3mm降舵，具体位置见左图所示调整；
- 除水平飞行外，在进行其它飞行动作时，禁止开启前缘襟翼；
- 重心必需在说明书要求的位置上。



电机不工作	A) 电池电量耗尽	A) 充电
	B) 发射机电量耗尽	B) 更换或者充电
	C) 发射机开关没开	C) 打开发射机开关
	D) 电池没有连接好	D) 检查并连接好电池
	E) 电机连接错误	E) 检查并正确连接电机
	F) 因为摔机等原因损坏	F) 更换
	G) 其它或者ESC故障	G) 检查ESC或者经销商
飞机难以控制	A) 飞行中遇到强风或者乱流	A) 无风的时候起飞
	B) 电池电量耗尽	B) 需要充电
	C) 发射机电量耗尽	C) 更换电池或者给电池充电
	D) 发射机天线没有完全展开	D) 展开发射机天线
	E) 舵面的控制过量	E) 使用小舵量进行飞行
飞行时机头一直向下，需要补偿升舵	A) 重心靠前	A) 参考说明书，向后调整重心
在没有控制发射机时，飞机总是向上、向下；或者飞机总是向左、向右倾斜	A) 没有对升降舵、副翼进行微调	A) 适当调节一些微调
	B) 飞行时遇到太大的自然风力	B) 先降落，选择无风天气飞行
飞行时升降舵异常灵敏，俯、仰不安定	A) 重心靠后	A) 参考说明书，向前调整重心
地面滑跑时方向会偏	A) 前轮没有居中	A) 居中前轮
	B) 方向舵没有居中	B) 居中方向舵
起飞困难	A) 油门没有推到最大	A) 油门推到最大
	B) 滑跑助飞距离不够	B) 尽可能滑跑得更远些
	C) 升舵舵量不够	C) 使用更大的舵量
飞机爬升困难	A) 电池电量不足	A) 需要重新充电
	B) 涵道风扇损坏	B) 确认并重新更换
	C) 电机损坏	C) 确认并重新更换
	D) 电调过热保护，功率降低	D) 先降落，确认并选择更大功率的电调
电流充电后发热	A) 电池充电时，会产生热量，这是正常的	A) 电流充电后，会发热，但用手触摸不烫
电机震动	A) 涵道风扇损坏	A) 确认并更换
	B) 马达损坏	B) 确认并更换
	C) 涵道需要调节动平衡	C) 调节动平衡
	D) 高速运转时，可能产生轻微震动	D) 轻微震动是正常的，可以使用
控制面向错误的方向运动	A) 舵机方向装反	A) 重新安装舵机



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