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

Freewing MODEL
www.sz-freewing.com

T-45 Goshawk

User Manual

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

EN 1 ~ 15
中 16 ~ 30

MADE IN CHINA

Introduction

EN

Congratulations on your purchase of the **T-45 "Goshawk"** 90mm EDF jet!

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

With the**T-45 "Goshawk"** 90mm EDF jet, we spend a great amount of attention to detail as well as attention to structural excellence and flight performance. This new design raises this foam jet to a new level of quality in both visual and flight performance.

New features

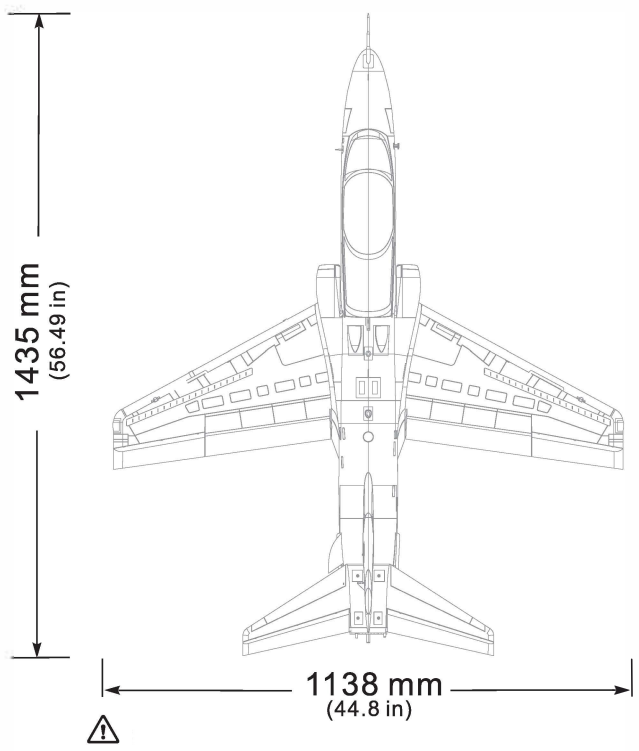
- Exquisite appearance
- High quality workmanship
- Excellent design
- Our first jet to incorporate slats (using 4 worm drives to control the slats safely and reliably.)
- Retracts with scale shock absorbing landing gear
- 7 LED high-light lights
- New T-45 integrated circuit module. (We included the main wing electronic integrated circuit module for better convenience when transporting and assembling based on the F16 integrated circuit module.)
- Magnetically attached nose cone and flexible pitot tube.
- All landing gear doors are sequential, giving the retracts a very scale appearance
- Functional flaps
- A huge battery compartment for larger batteries.
- Lots of cockpit space for those DYI folks who wish add more realism.
- A top flight speed of 165 KM/H with the standard power system
- 3.65 KG Take-off weight (Includes a 6S 5000 35C lipo battery)
- Removable main wings for transport.
- Air-brakes

⚠ **NOTE:** This is not a toy. It is not intended for children under 14 years. Pilots 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! Operators should have some basic experience. Beginners should operate only under the guidance of a professional instructor.
2. Before beginning assembly, please read through the instructions and carefully follow them throughout the build.
3. Freewing and it's vendors will not be held responsible for any losses due to improper assembly and operation.
4. Model airplane operators must be at least 14 years of age.
5. This airplane is made of EPO foam material, covered with surface spray paint. Don't use chemicals to clean as it may cause damage.
6. You should avoid flying in areas such as public places, areas with high voltage power lines, nearby highways, airports or in other areas where laws and regulations clearly prohibit flight.
7. Do not fly in bad weather conditions, including thunderstorms, snow, etc...
8. Lipo batteries should be properly stored in a fire proof container and be kept at a minimum of 2M distance away from flammable or explosive materials.
9. Damaged or scrap batteries must be properly discharged before disposal or recycling to avoid spontaneous combustion and fire.
10. At the Flying Field, properly dispose of any waste you have created, don't leave or burn your waste.. Ensure that your throttle is in the low position and that your radio is turned on before connecting the Lipo battery.
11. Ensure that the throttle is in the lowest position and transmitter is turned on, before connecting a Lipo Battery to the ESC of the aircraft.
12. Do not try to catch the airplane while in flight or during landing. Wait for the airplane to come to a complete stop before handling.

Basic Product Information



Standard Version

- Battery
  6S 22.2V 5000mAh 35C
- Servo
  9g Metal Gear Servos (7pcs)
  17g Metal Gear Servos (7pcs)
- ESC
  130AESC UBEC 8A
- Motor
  3748-1550KV Brushless outrunner motor
- Thrust
  3700g (130.5 oz.)
- Take-off weight
  3650g (128.8 oz.) (6S 22.2V 5000mAh 35C)
- Ducted Fan
  12-Bladed 90mm EDF (#P0902)

Deluxe Version

- Battery
  6S 22.2V 5000mAh 35C
- Servo
  9g Metal Gear Servos (7pcs)
  17g Metal Gear Servos (7pcs)
- ESC
  130AESC UBEC 8A
- Motor
  4068-1680KV Brushless in-runner motor
- Thrust
  3770g (132.9 oz.)
- Take-off weight
  4300g (151.7 oz.) (6S 22.2V 5000mAh 35C)
- Ducted Fan
  12-Bladed 90mm EDF (#P0904)

Package Contents

Different types of kits will come with certain specific parts. Refer to the list of parts for your type of kit in the chart below.

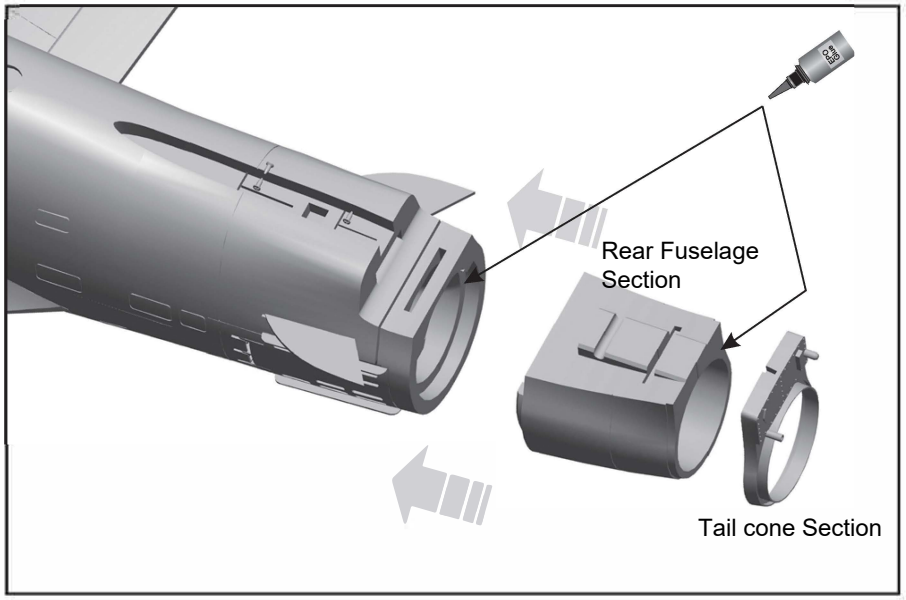
NO.	Parts Name	PNP	KIT Plus	KIT
1	Fuselage	Pre-installed all electronic parts	pre-installed servos	No electronic equipment
2	Main wing	Pre-installed all electronic parts	pre-installed servos	No electronic equipment
3	Tail wing	Pre-installed all electronic parts	pre-installed servos	No electronic equipment
4	Nose cone	✓	✓	✓
5	Carbon tube	✓	✓	✓
6	Glue	✓	✓	✓

NO.	Parts Name	PNP	KIT Plus	KIT
1	Manual	✓	✓	✓
2	Screws	✓	✓	✓
3	Main wing plastic hard point	✓	✓	✓
4	Connection cable, Xt150 connector	✓	✓	
5	Pushrod , clevises			✓
6	Other parts			✓

Fuselage Assembly

Refer to the photo on the right

1. Apply glue to the indicated areas and allow the glue to set for approximately one minute.
2. Attach the Rear Fuselage Section to the Main Fuselage by joining and pulling it back off a few times so the the glue forms 'strings'.
3. Position the part to form the complete fuselage.
4. Attach the Tail Cone Section using the same method as described in Step 2.



Main Wing Assembly

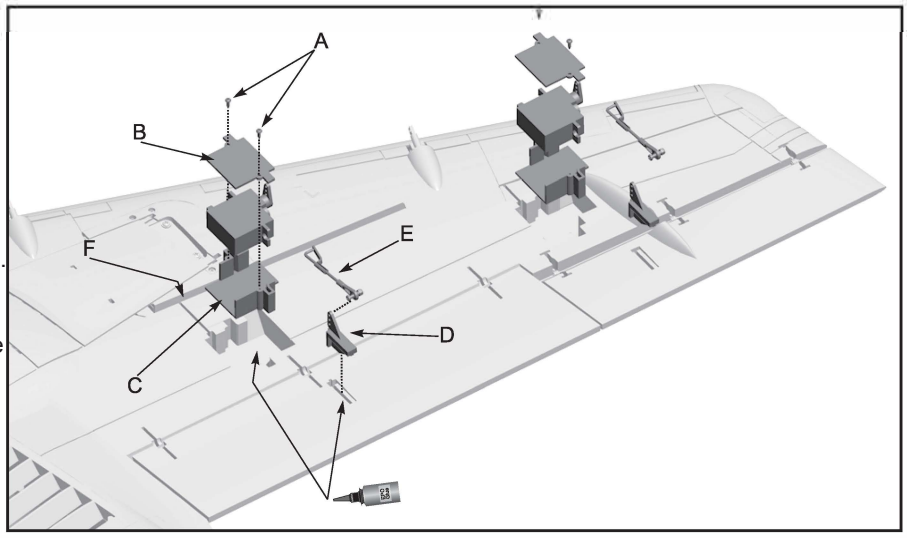
A- Screws(PWA1 .7x5mm 2pcs)
B - 17g servo cover
C - 17g servo box
D -Aileron control horn
E -Aileron pushrod
F - Servo trough

1.Use a servo tester or radio to center the servo.

2.Use glue to attach the "17g servo box (C)" and "Aileron horn (D)" to the aileron.

3.Place the servo into the "17g servo box(C)", and feed the servo cable into the "Servo trough(F)", then position the "17g servo cover(B)" and use 2 "Screws (A)" to secure it.

4.Use the aileron pushrod to connect the servo arm to the "Aileron horn(D)".



Main Wing Installation

A- Carbon fiber tubes
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 fiber tubes(A)" into one side of the main wing.

2.Slide the other main wing onto the Carbon Fiber Tubes.

3.Thread "Screw(B)"into the plastic bolt to complete the main wing assembly.

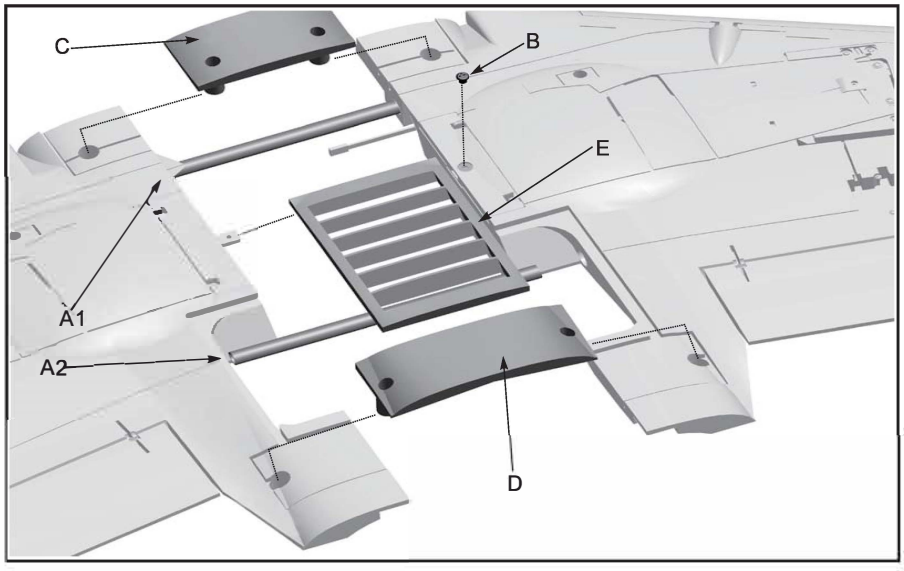
4.Insert the "Main wing plastic joiner F1(C)" and "Main wing plastic joiner B(D)"into the main wing.

5.Use glue to attach the "Air intake cover (E)"to the main wing.

Carbon fiber tube size

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

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

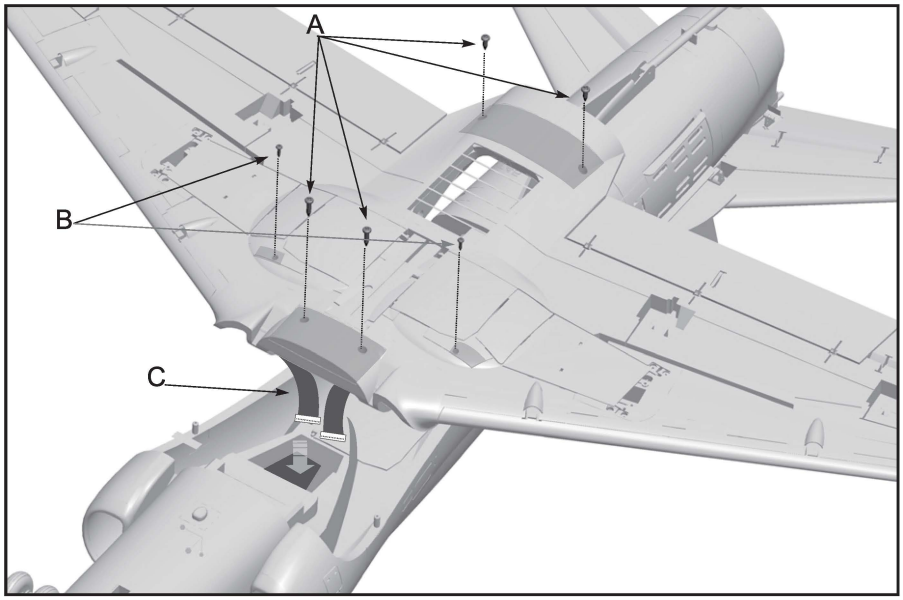


Main Wing Installation

A- Screws (PA4x10mm 4pcs)
B - Screws (PA2.6x10mm 2pcs)
C - Main wing ribbon cables.

Refer to the photo on the right

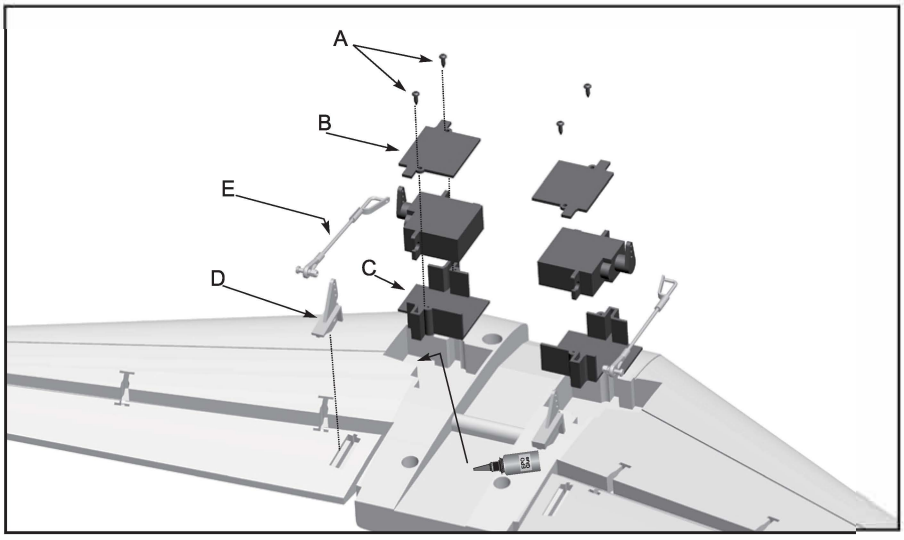
1. Insert the "Main wing ribbon cables (C)" into the fuselage battery compartment.
2. Use the "Screws(A)"and "Screws(B)" to secure the main wing to the fuselage.
3. Plug the "Main wing ribbon cables(C)"into the integrated circuit module in the battery compartment.



Elevator Assembly

A-Screws (PWA1.7x5mm 2pcs)
B - 17g servo cover
C - 17g servo box
D - Elevator control horn
E - Elevator pushrod

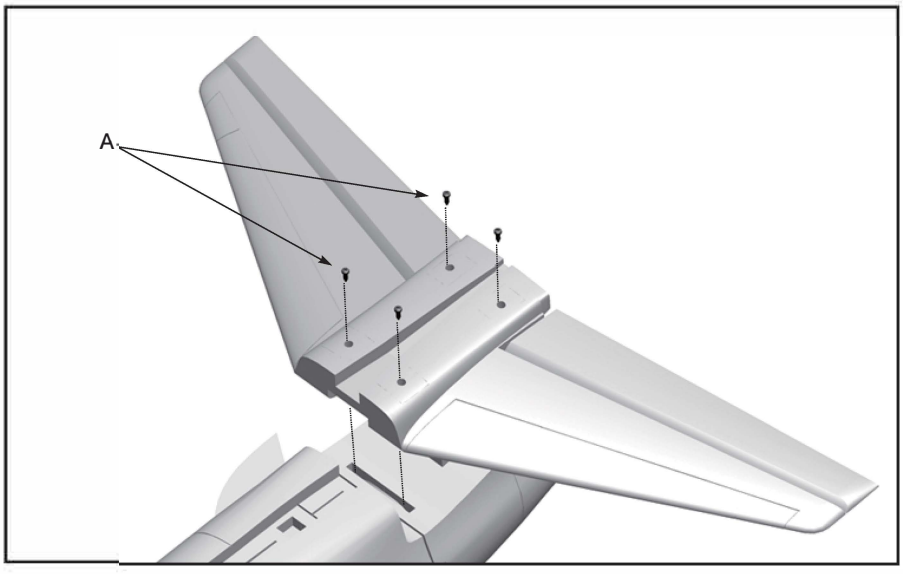
1. Use a servo tester or radio to center the servo.
2. Use glue to attach the "17g servo box(C)" to the horizontal stabilizer and the "Elevator control horn(D)" to the elevator.
3. Place the servo into the "17g servo box(C)", then put the "17g servo cover(B)" in place and secure it using "Screws(A)".
4. Feed the open end of the pushrod into the servo arm and lock it into place with the provided lock.
5. Snap the clevis onto the ball link in the "Elevator control horn(D)



Elevator Installation

A-Screws (PA2.6x1Qmm 4pcs)

1.Use 4 "Screws (A)" to attach the elevator to the fuselage.

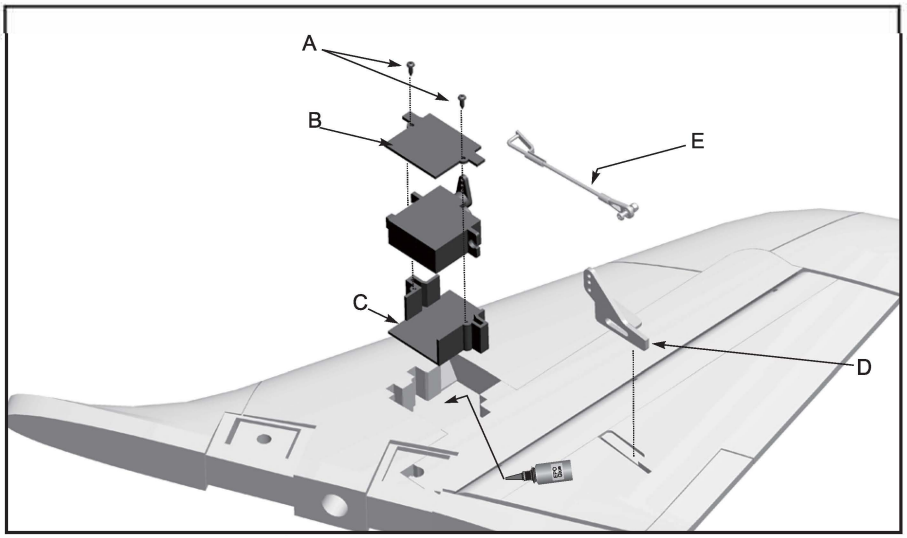


Elevator Installation

A-Screws (PWA1.7x5mm 2pcs)
B - 17g servo cover
C - 17g servo box
D - Rudder control horn
E - Rudder pushrod

Refer to the photo on the right

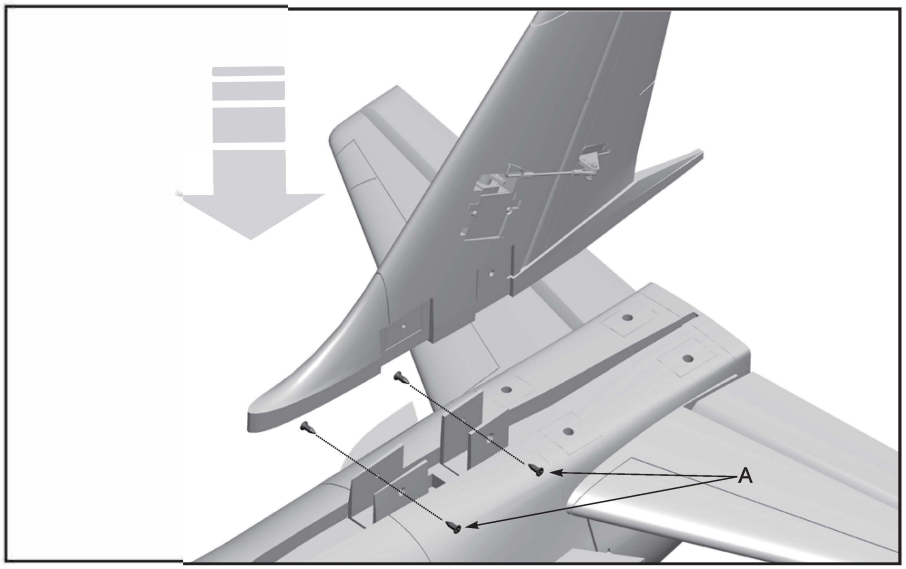
1. Use a servo tester or radio to center the servo.
2. Use glue to attach the "17g servo box(C)" to the Vertical stabilizer and the "Rudder horn(D)"to the rudder.
3. Place the 17g servo in the "17g servo box(C)", then put the "17g servo cover(B)"in place and secure it using 2 "Screws(A)".
4. Feed the open end of the pushrod into the servo arm and lock it into place with the provided lock.
5. Snap the clevis onto the ball link in the "Rudder control horn(D)".



Rudder Installation

A- Screws (FA3x6mm 4pcs)

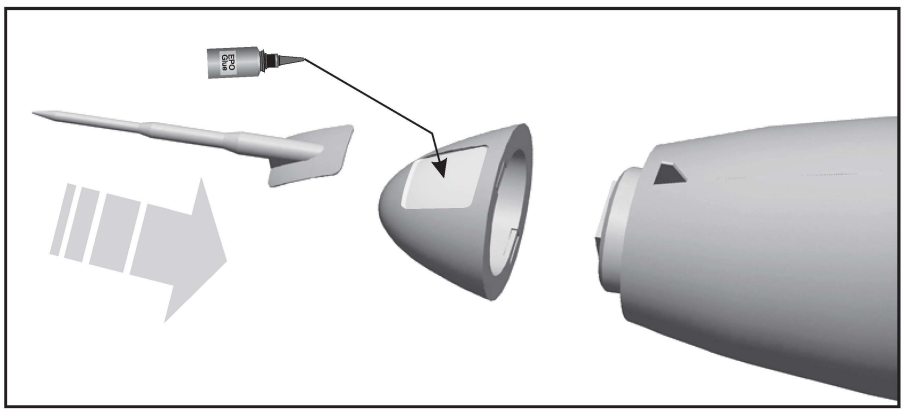
1.Use the 4 "Screws(A)" to attach the rudder.



Nose Cone Installation

Refer to the photo on the right

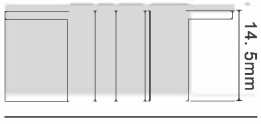
1. Use glue to attach the pitot tube to the nose cone.
2. Nose cone and fuselage are connected with magnets.

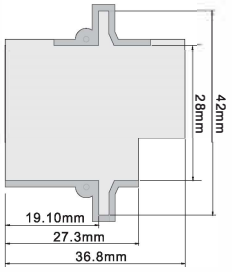


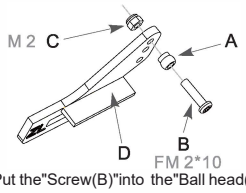
Airplane Pushrod Size

⚠ 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.



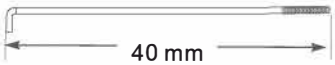




1.Put the"Screw(B)"into the"Ball head(A)", then insert "Screw(B)"into the hole of the "Control horn(D)" and lock it into place using "Nut(C)"

1.Thread the "Ball head clevis (B)"onto the threaded end of "Pushrod (A)". Twist left or right to increase or reduce the length of the pushrod.
2.Feed the angled side of the pushrod into the servo arm. Then place the second part of "Plastic lock(C)" over the "Pushrod (A)" and snap the "Plastic lock(C)" to the pushrod to lock the pushrod in place.

Flap pushrod size



Pushrod diameter : Ø 1.5 mm

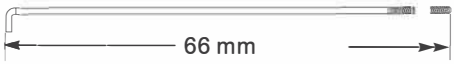
Flap pushrod mounting hole

Aileron pushrod size

Pushrod diameter : Ø 1.5 mm

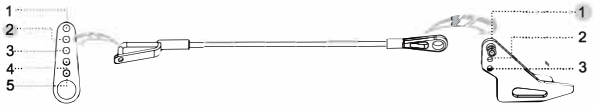
Aileron pushrod mounting hole

Elevator pushrod size



Pushrod diameter : Ø 1.5 mm

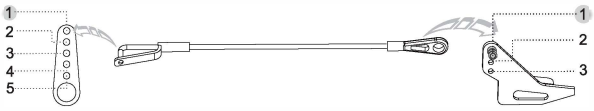
Elevator pushrod mounting hole



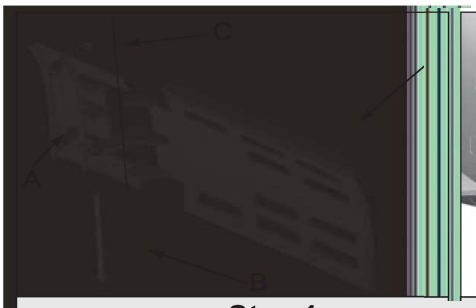
Rudder pushrod size

Pushrod diameter : Ø 1.5 mm

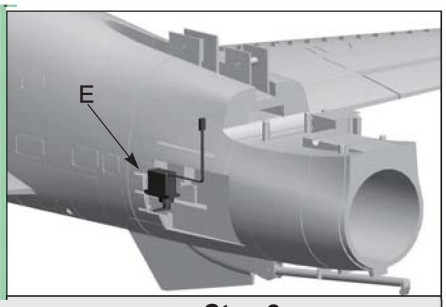
Rudder pushrod mounting hole



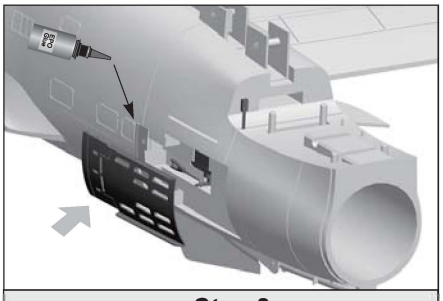
Air-brake Installation



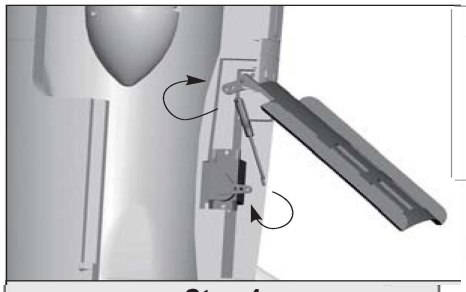
Step 1



Step 2



Step 3



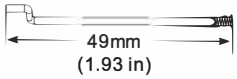
Step 4

Accessories

A -Air-brake mount
B -Air-brake pin
C - E-clip (01.5mm)
D -Air-brake
E - Servo (9g-MG)

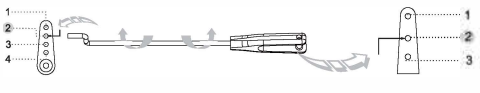
1.Follow Step 1 to assemble the air-brake.
2.Use glue to attach the servo.
3.Use glue to attach the air-brake to the fuselage.
4.Use the pushrod to connect the air-brake to the servo arm. Set up the open angle of the air brake by adjusting the pushrod length.
(After setup, pay attention when cycling the air-brake. If the servo makes a buzzing sound, increase the open angle until it cycles silently.)

Air-brake pushrod size

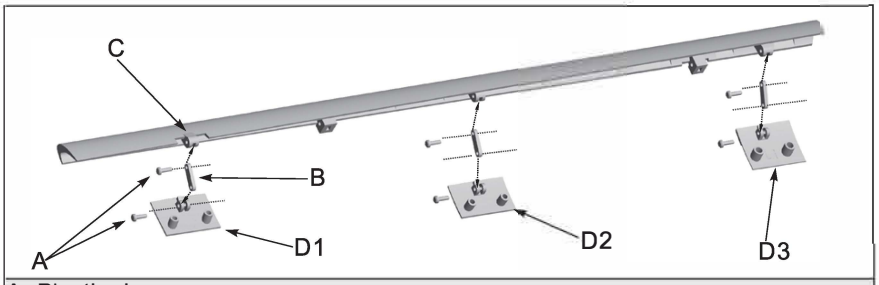


Pushrod diameter : Ø 1.2mm

Air-brake pushrod installation hole



Slat Assembly

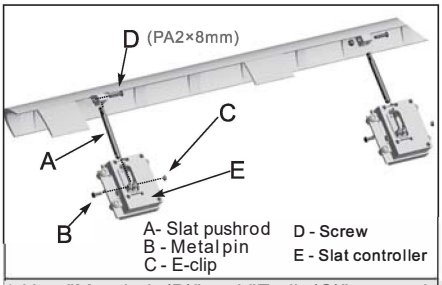


A - Plastic pins
B - Slat connection arm
C - Slat
D - Slat plastic hard point

⚠ Attention:Slat assembly has 6 pieces. Please refer to the letter in the plastic to distinguish: L and R refer to the Left and Right main wing, Figures 1-3 mean the direction from wing root to wingtip.

1.Use "Slat connection arm(B)" to connect "Slat (C)" to "Slat plastic hard point (D)".
2. Use "Plastic pins(A)" to attach all parts.

Attention: After inserting the plastic pin, melt the other side using a hot tip such as a soldering iron.



1.Use "Metal pin(B)" and "E-clip(C)" to attach one side of the slat pushrod to the slat controller, use "Screw(D)" to attach the other side to the plastic slat.

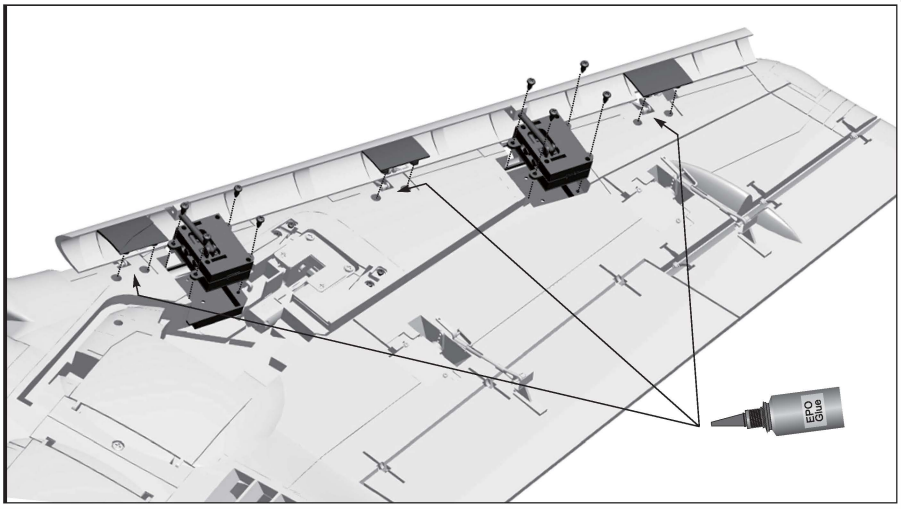
Attention: The slat controller has a left and right side, please distinguish between the two

Screws (PB2. 6x6mm 16pcs)

Refer to the photo on the right

1.Use the screws and glue to attach the assembled slat sets.

2.Use glue to attach the blister cover to keep the surface clean.

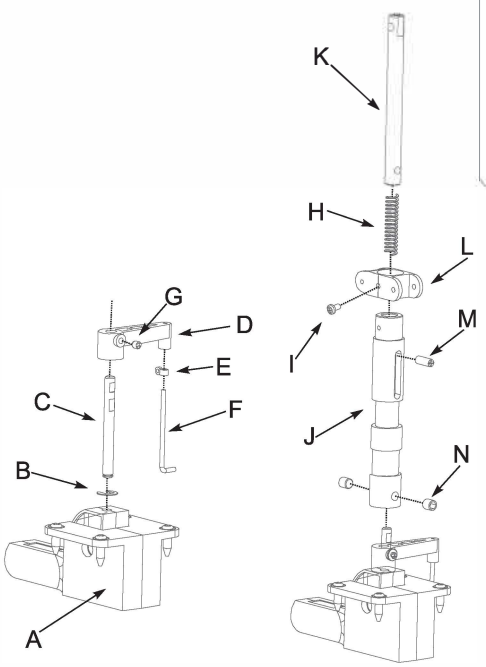


Nose Gear Assembly

Assemble/disassemble the nose gear by referring to the following diagrams.

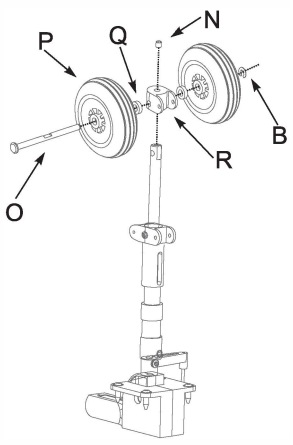
Accessories name and specifications

A - Electronic retract	K -Shock absorbing rod	U -Plastic launching hook
B - E-clip (02.0mm)	L - Connecting arm 1	V -Shock absorber supporting rod 2
C -Retract pin	M -Screw (M3x5.2mm)	W -Shock absorber supporting rod 1
D -Steering tiller arm	N -Grub screw(M4x4mm)	x -Pin
E -Steering rod ring	0 - Nose wheel axle	Y -Pin
F -Steering rod	P -Wheel (045115mm)	Z - Pin
G-Screw (M3x3mm)	Q -Washer	AA -Pin
H -Spring	R - Connecting arm 2	AB -Collar
I -Screw (PM2x4mm)	S -Screw (PA2x8mm)	AC -LED landing light
J -Main gear strut	T -Plastic retract rod	

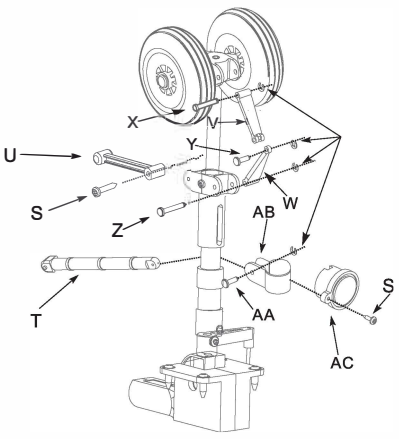


Step 1

Step 2



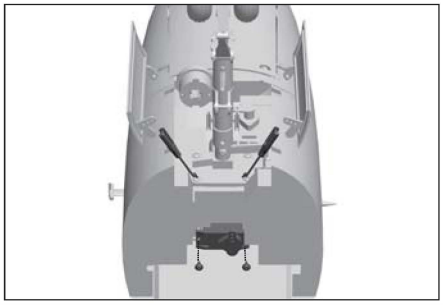
Step 3

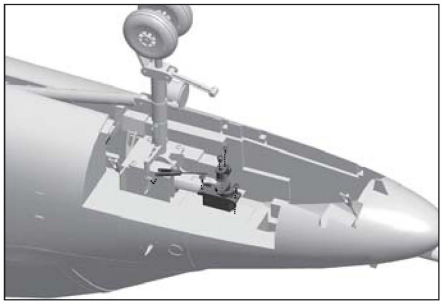


Step 4

Nose Gear Door Assembly

Refer to the following photos to assemble/disassemble gear doors.

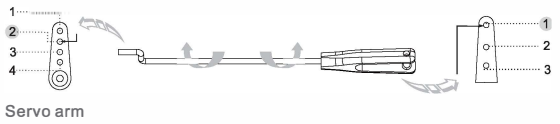




Nose gear door pushrod size (front)

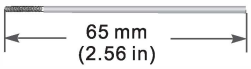
Pushrod diameter : Ø 1.2mm

Recommended servo pushrod installation hole



Servo arm

Nose steering pushrod size

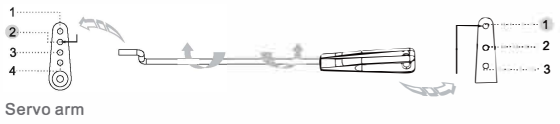


Pushrod diameter : Ø 1.2mm

Nose gear door pushrod size(rear)

Pushrod diameter : Ø 1.2mm

Recommended servo pushrod installation hole



Servo arm

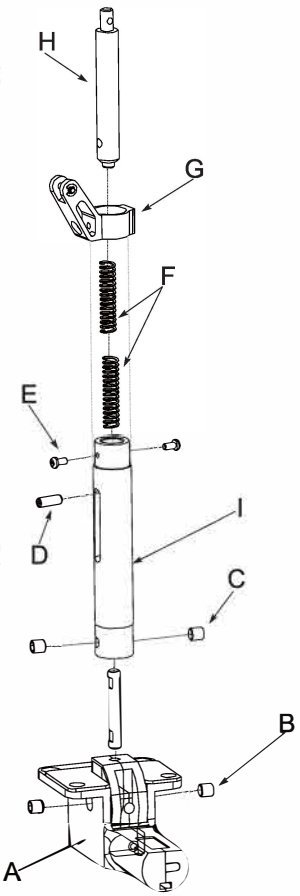
Recommended servo pushrod installation hole

Main Landing Gear Assembly

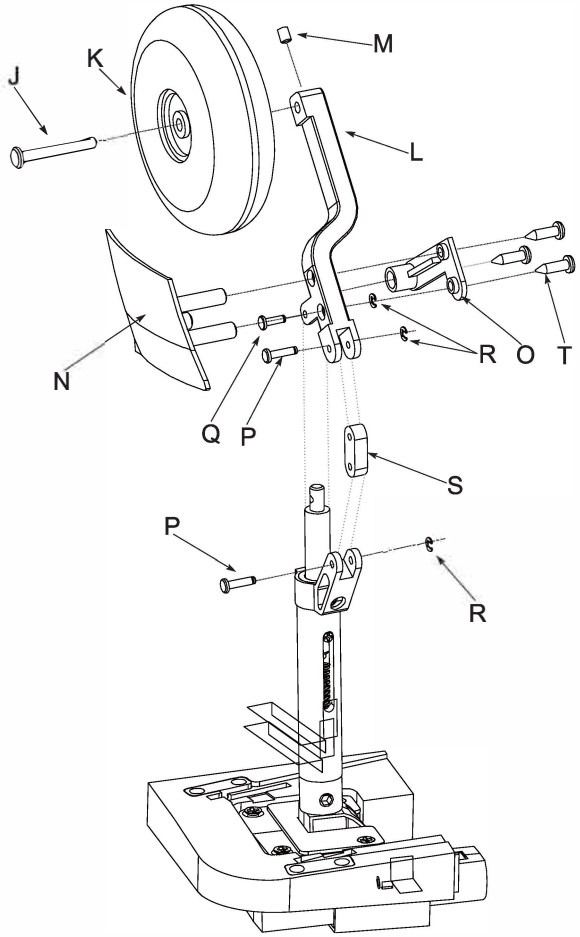
Assemble/disassemble rear landing gear by referring to the following diagrams.

Parts:

A. Electric retract
B. Grub Screw (M3x5mm)
C. Grub screw (M4x4mm)
D. Screw (m3x5.2mm)
E. Screw (PA2x4mm)
F. Spring
G. Upper connecting arm
H. Shock absorbing arm
I. Landing gear strut
J. Rear wheel axle
K. Wheel (060/16mm)
L. Lower gear strut
M. Grub screw (m3x3mm)
N. Main gear door
O. Door connector
P. Pin
Q. Pin
R. E clip
S. Connecting arm
T. Screw (PA2.6x10mm)



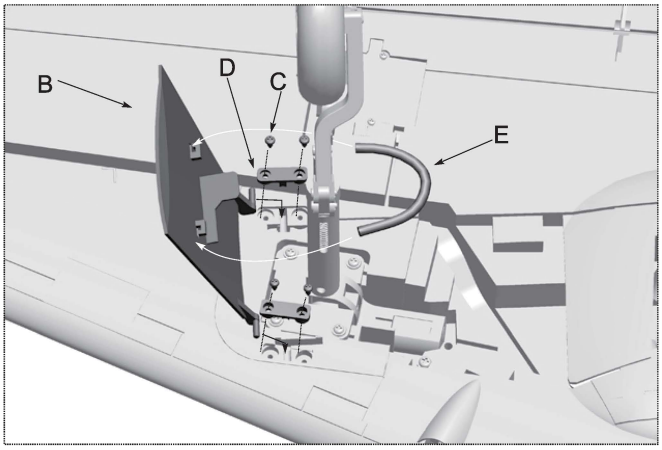
Step 1



Step 2

Main Gear Door Assembly

Refer to the following photos for assembling and disassembling main gear doors.

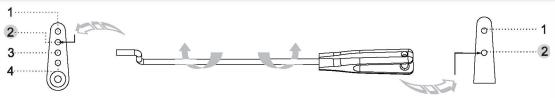


A. Main gear door L
B. Main gear door R
C. Screws (PT2.3x6mm)
D. Plastic retainer
E. Spring

Rear cabin door pushrod size

Pushrod diameter : Ø 1.2mm

Servo pushrod installation hole

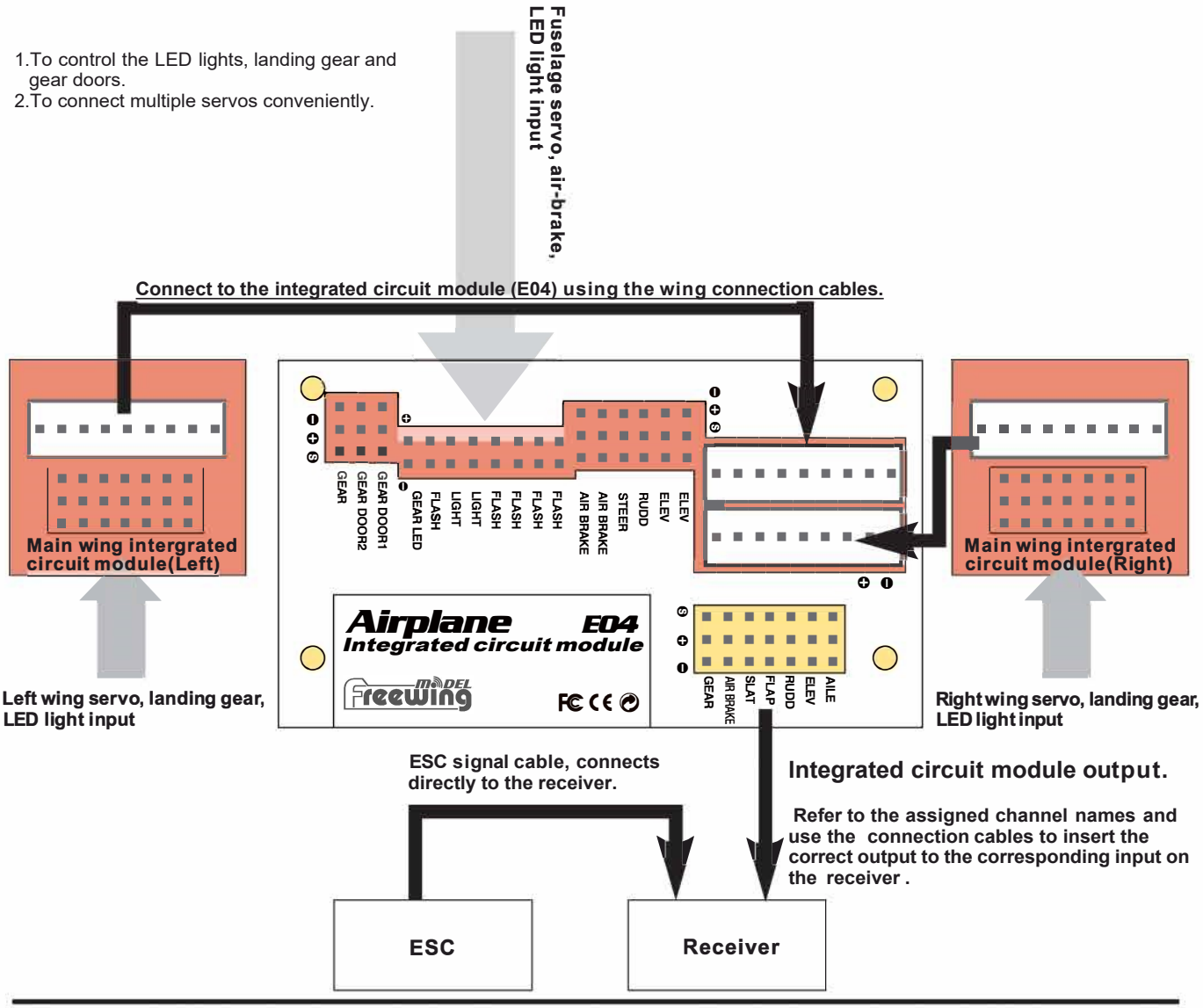


Servo arm

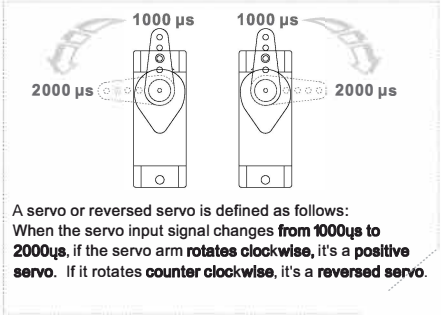
Integrated Circuit Module Connection Diagram

The integrated circuit module has two functions:

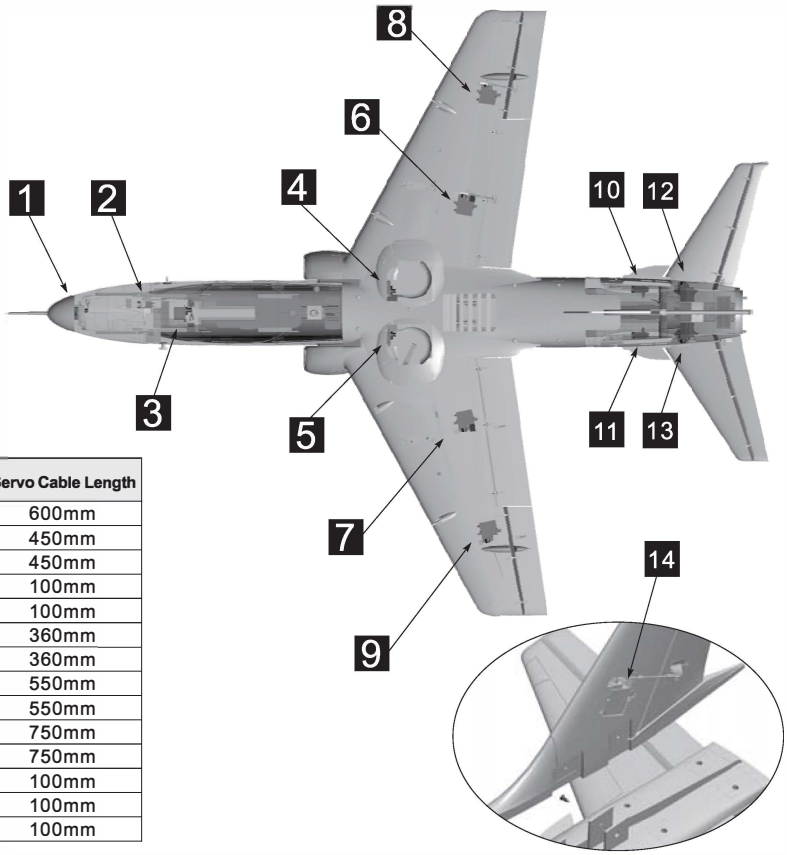
1.To control the LED lights, landing gear and gear doors.
2.To connect multiple servos conveniently.



Servo Introduction



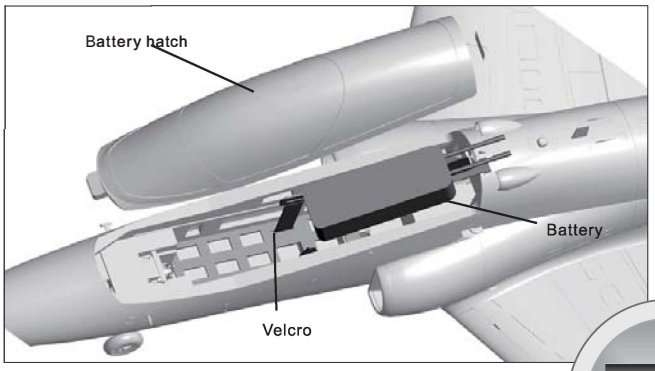
A servo or reversed servo is defined as follows:
When the servo input signal changes **from 1000µs to 2000µs**, if the servo arm **rotates clockwise,** it's a **positive servo**. If it rotates **counter clockwise**, it's a **reversed servo**.

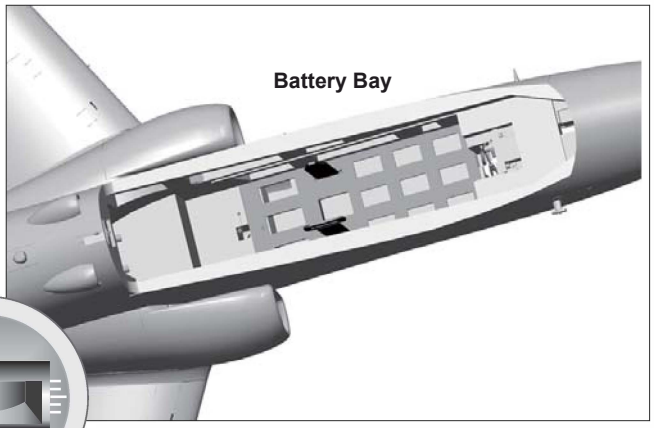


Note: If you choose not to use the factory servo, the servo you choose may be larger. Refer to the following list to ensure that the servo you chose will fit.

Installing position	No.	Servo Size	Pos./Rev.	Servo Cable Length
Nose gear door servo(F)	1	9g-Metal	Positive	600mm
Nose gear door servo(R)	2	9g-Metal	Positive	450mm
Nose gear steering servo	3	9g-Metal	Positive	450mm
Main gear door servo	4	9g-Metal	**Reversed**	100mm
Rear cabin door servo	5	9g-Metal	Positive	100mm
Flap	6	17g-Metal	Positive	360mm
Flap	7	17g-Metal	**Reversed**	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	**Reversed**	750mm
Elevator	12	17g-Metal	Positive	100mm
Elevator	13	17g-Metal	**Reversed**	100mm
Rudder	14	17g-Metal	Positive	100mm

Battery Installation





Before proceeding, turn on the radio and ensure that the throttle is in the lowest position. Engage the kill switch if one is assigned

Remove the battery hatch by pulling the tab up.
Insert a fully charged battery onto the hatch deck.
Secure it by wrapping the Velcro strap around it.

The recommended battery is: **6S 22.2V 5000mAh 35C** You can choose a different battery but keep the hatch dimensions in mind

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

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

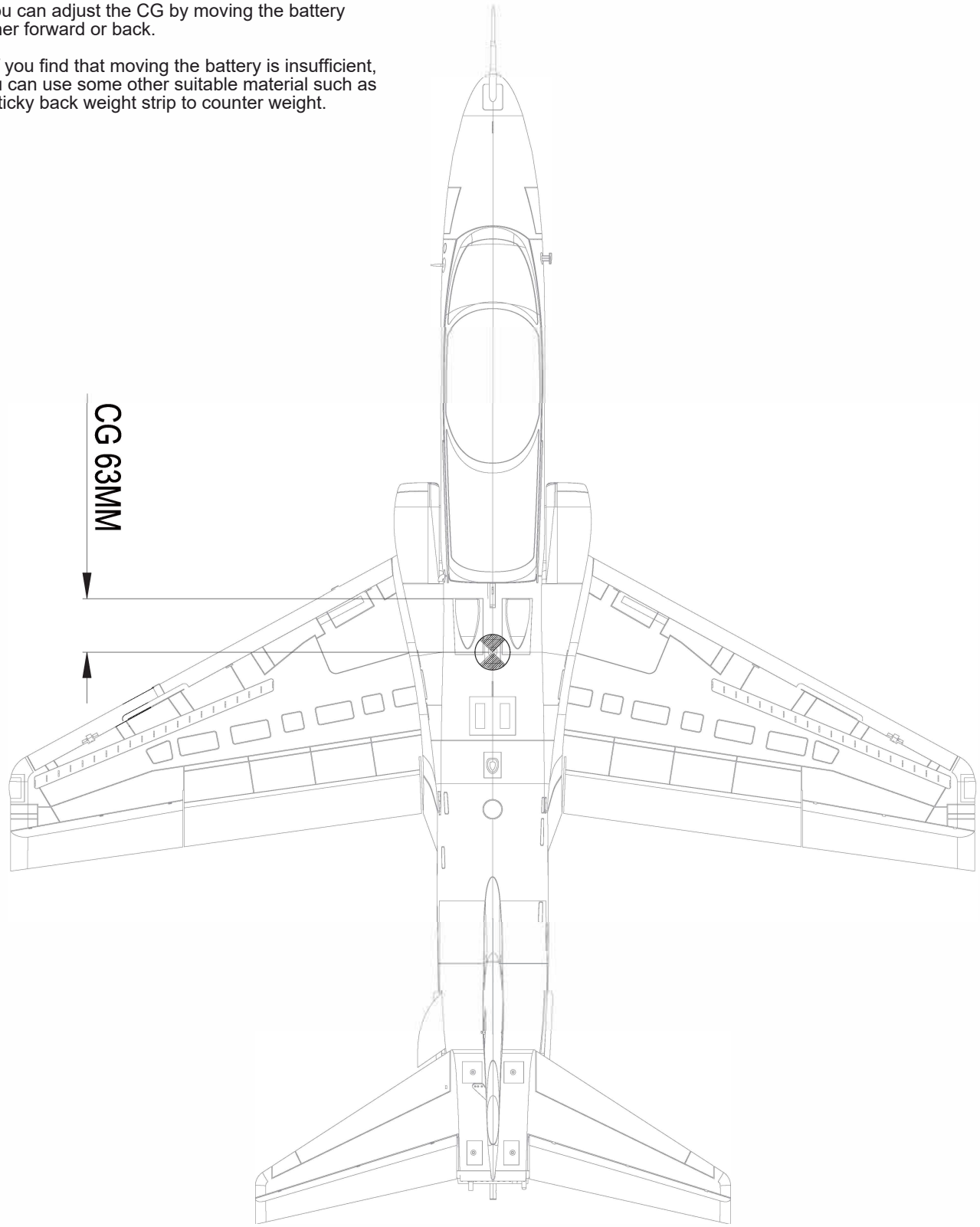
A variation in battery weights will affect the CG. If you are trying a different size of battery, recheck your CG to ensure you have the battery in the correct position.

Center of Gravity

The correct Center of Gravity is directly related to the success of the initial flights. Refer to the following diagram to ensure you have the proper CG. Once comfortable with the airplane, you can adjust the CG to suit your individual taste.

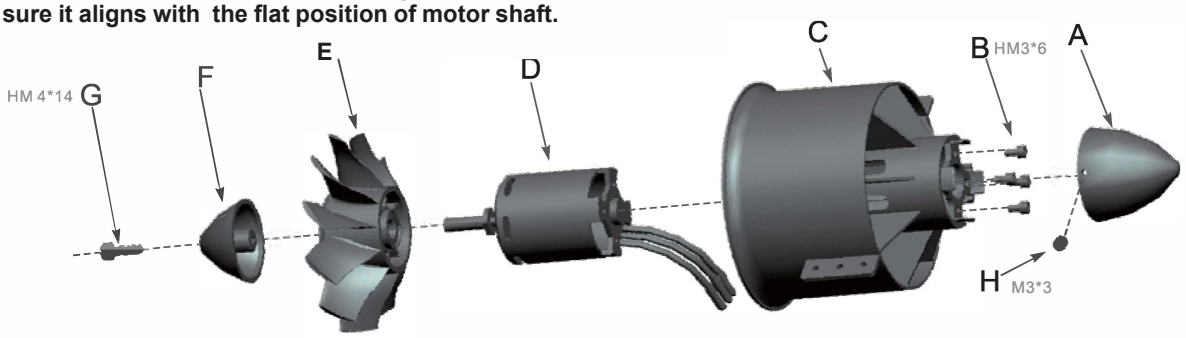
-You can adjust the CG by moving the battery either forward or back.

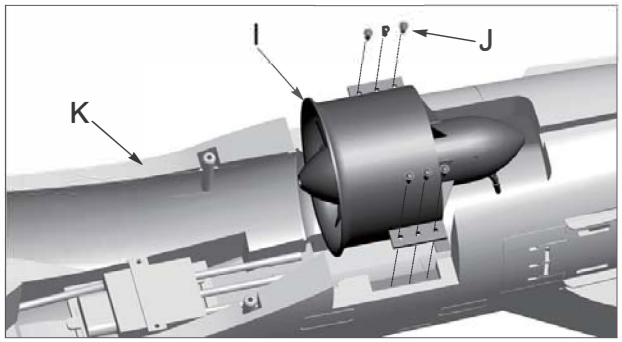
- If you find that moving the battery is insufficient, you can use some other suitable material such as a sticky back weight strip to counter weight.

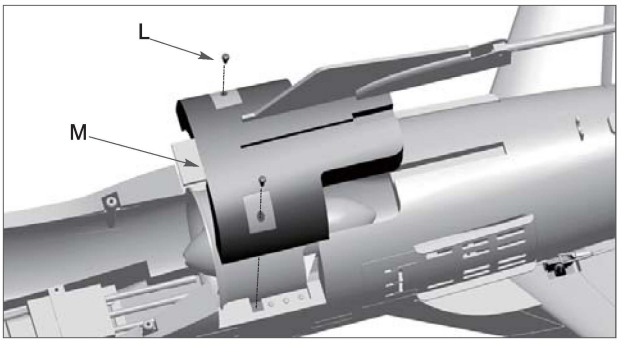


Power System Installation

1.Slide the motor (D) into the ducted fan cover (C).
2.Secure it with 4 cup head screws (B).
3.Put the fan (E) onto the motor shaft. (note the flat position of hardware when installing the fan, make sure it aligns with the flat position of motor shaft.
4.Use spinner (F) to cover the fan, and use the cup head screw (G) to secure the spinner (F).
5.Finally install the fan cowl (A) to the bottom of the ducted fan cover (C) and secure it with 2 grub screws (H).





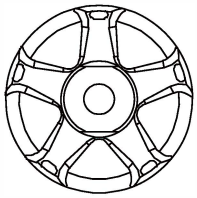


Accessories name and specifications

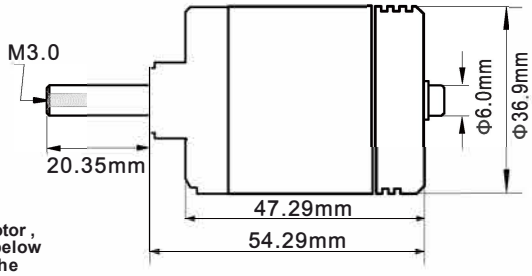
I -EDF power system
J -Screws（PWA3×12mm 6pcs）
K -Fuselage
L -Screws（PA3×10mm 2pcs）
M -EDF cover

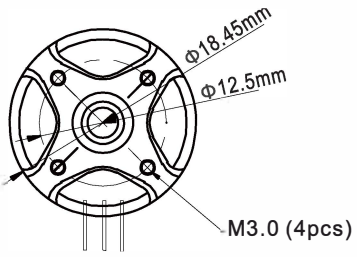
⚠ **Note: When ESC and battery are connected, do not touch them with your hands to avoid accidental injury. When testing the EDF, please use a safety test stand, do not touch the unit with your hands while testing.**

Motor parameters



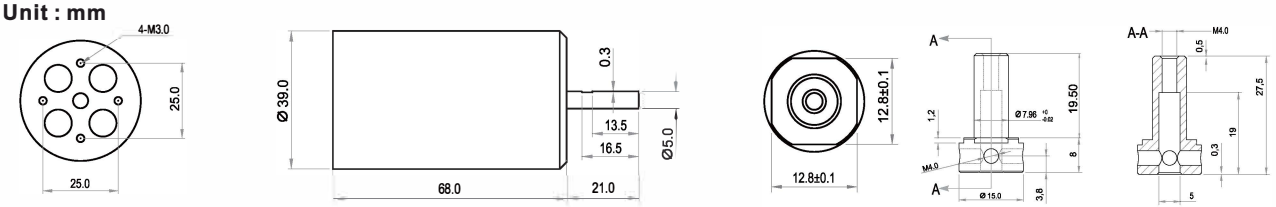
⚠**Note: If you need to use another motor , please refer to the dimensions shown below when purchasing, to make sure that the motor you purchased will fit properly.**





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	0.02Ω	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	0.01Ω	300	2.2A / 8V	#P0904	⩾130A

Directional Control

After the Airplane is assembled, but before first flight, switch on the radio and ensure the throttle is in the lowest position. Engage the kill switch if one is assigned. Install a fully charged battery and connect it to the ESC. Using the radio, ensure that all control surfaces move in the correct direction.

Ailerons

Stick Left

Stick Right

Elevator

Stick Back

Stick Forward

Rudder

Stick Left

Stick Right

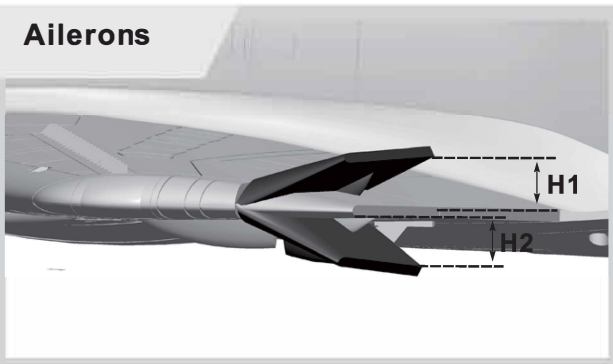
Optional Flaps

Flaps down

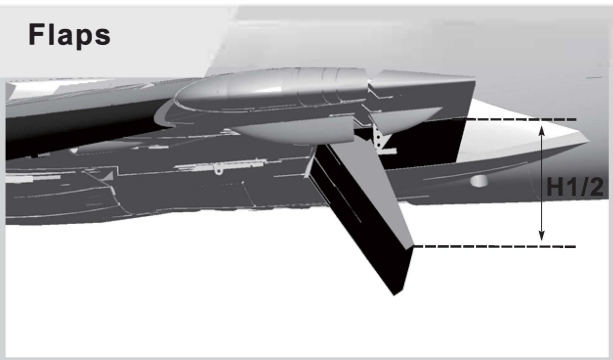
Dual Rates

According to our test results, the following rates proved to be a good starting point. Low rates are good for initial flights or less experienced pilots. High Rates will be more sensitive to control inputs After initial flights, adjust the rates to suit your own style.

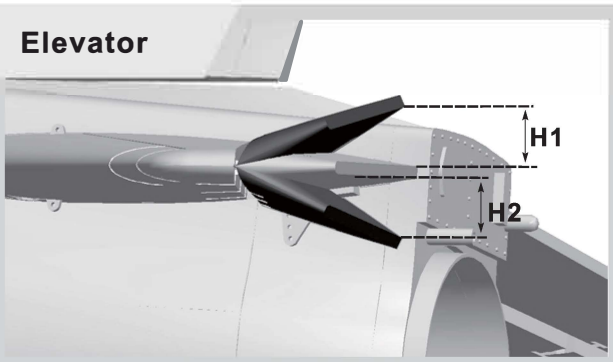
Ailerons



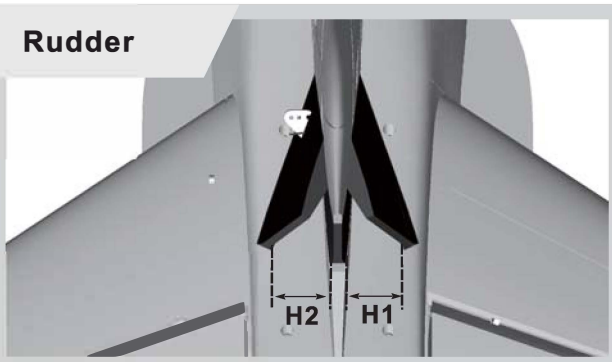
Flaps



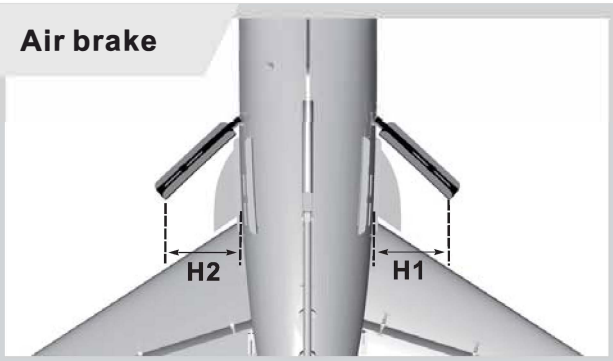
Elevator



Rudder

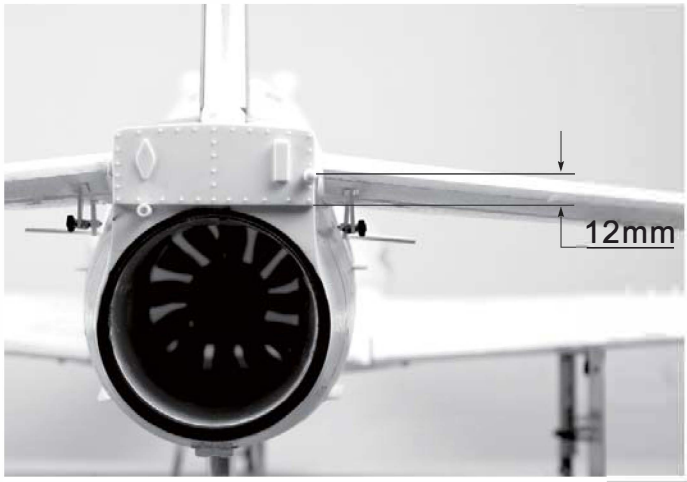


Air brake



	Low Rate	High Rate
Ailerons	H1/H2 15mm	H1/H2 24mm
Flaps	H1/H2 24mm	H1/H2 40mm
Elevator	H1/H2 18/14mm	H1/H2 28mm
Rudder	H1/H2 25mm	H1/H2 38mm
Air brake	H1/H2 50mm	H1/H2 85mm

Preflight Precautions



1. The neutral position of the elevator should be 2-3 mm down. (Refer to the photo on the left)
2. Do not open the slats unless you are in level flight
3. Use the recommended CG stated in the manual.

Troubleshooting Guide

Motor does not turn	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
Airplane 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 airplane flies nose heavy, always needs up elevator	A) CG is forward	A) Adjust CG backward refer to instruction
Airplane 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 sensitive, movement is not stable	A) CG is backward	A) Adjust CG forward refer to instruction
Airplane will not taxi straight	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
Airplane 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 surfaces move in the wrong direction	A) Servo direction is reversed	A) Adjust servo reversing function

前　言

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：

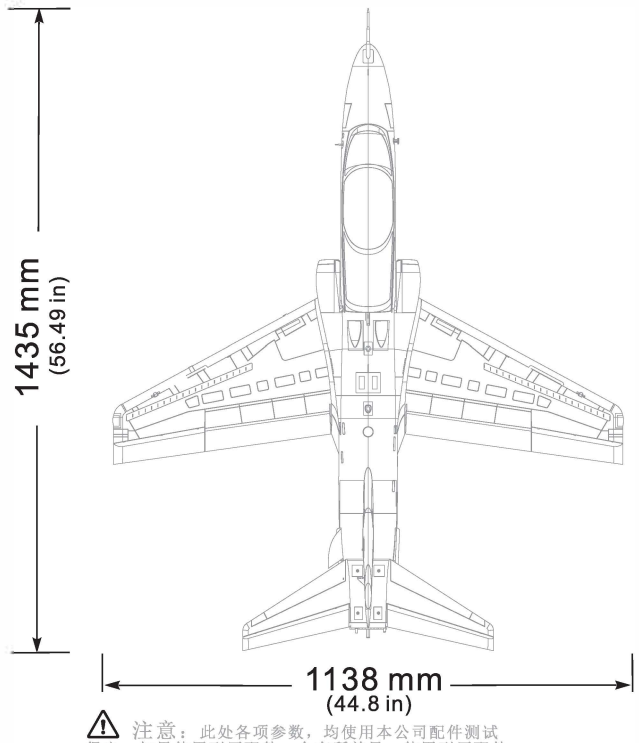
* 精美的外观；
* 优质的做工水平；
* 优秀的结构设计；
* 第一次使用前缘襟翼设备（在飞翼所有产品中，第一次使用4个涡杆进行控制的前襟翼，绝对安全可靠）
* 二段--跪式减震主起落架；
* 7颗高亮LED灯；
* 全新的T-45集线板（在F-16集线功能上，增加了主翼电子设备集线功能，便于装车和飞场现场组装）
* 可吸附机鼻，软胶材料空速管；
* 全封闭式舱门，二段控制，放下起落架时，自动闭合一半舱门；
* 后襟翼功能；
* 巨大的电池舱空间，可以兼容更多型号的电池；
* 预留座舱“平显”DIY改进空间；
* 常规动力下，165KM/H的时速；
* 3.65KG的起飞重量（富力6S 5000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

产品基本参数



⚠ 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！

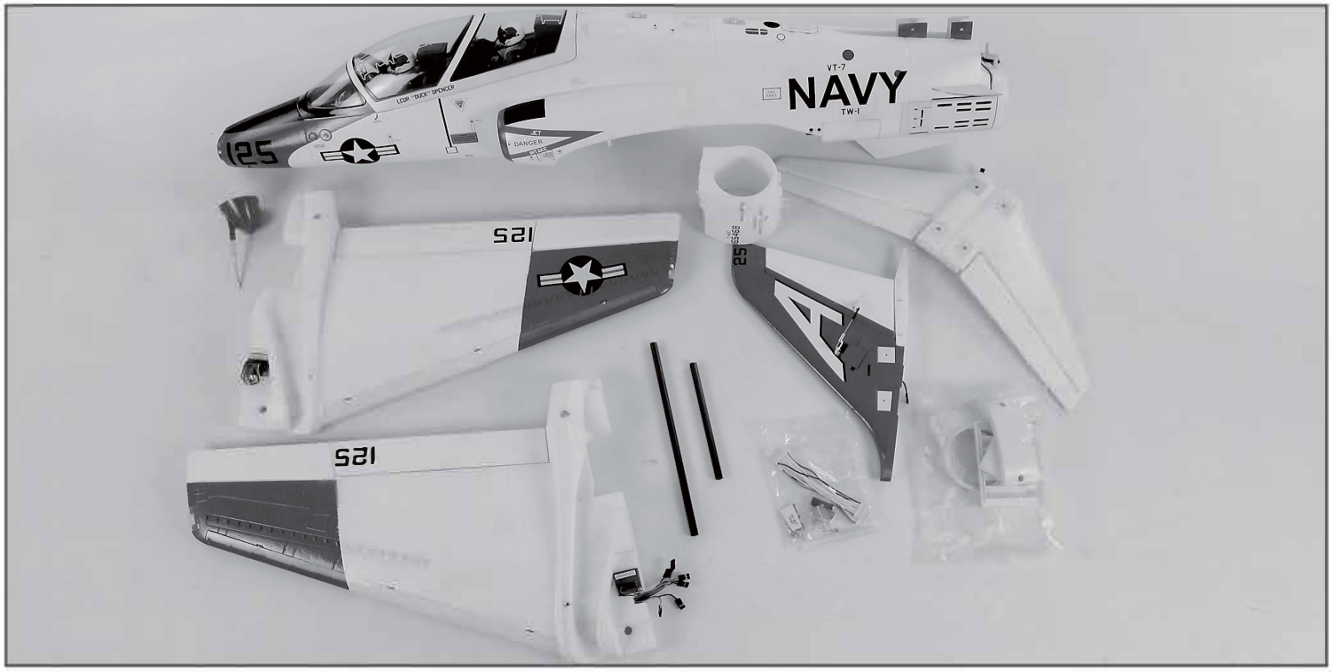
标准版

- 电机
  3748-1550KV外转无刷电机
- 电调
  130A 无刷电调 （UBEC 8A）
- 舵机
  17g 全金属舵机 （7pcs）
  9g 全金属舵机 （7pcs）
- 电池
  6S 22.2V 5000mAh 35C
- 涵道风扇
  90mm 12叶涵道（P0902）
- 起飞重量
  3650g （称重时，使用工厂标准配置）
- 推力
  3700g

豪华版

- 电机
  4068-1680KV内转无刷电机
- 电调
  130A 无刷电调 （UBEC 8A）
- 舵机
  17g 全金属舵机 （7pcs）
  9g 全金属舵机 （7pcs）
- 电池
  6S 22.2V 5000mAh 35C
- 涵道风扇
  90mm 12叶涵道（P0904）
- 起飞重量
  3770g （称重时，使用工厂标准配置）
- 推力
  4300g

产品包装清单



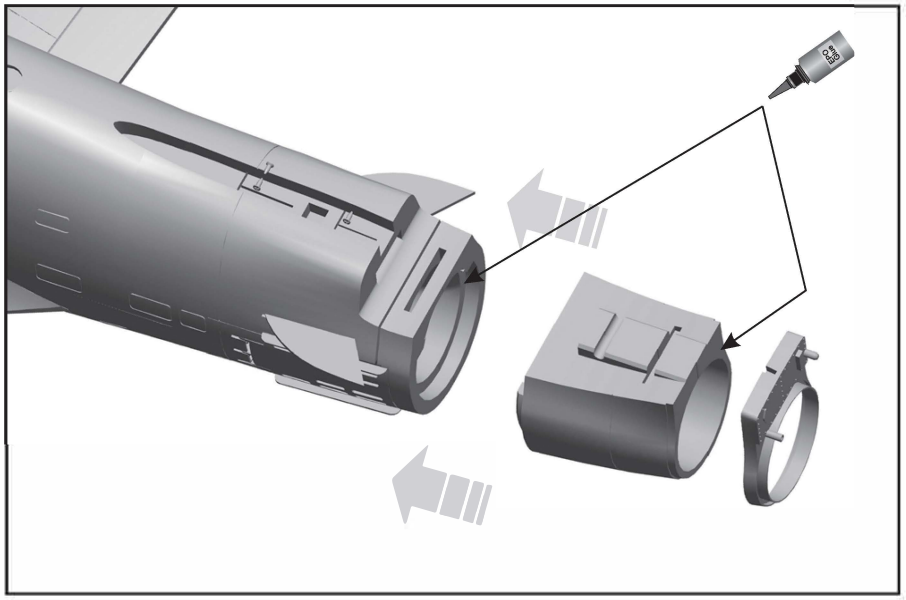
打开产品包装，核对包装清单。（不同配置的版本，包含内容不同！）

序号	配件名称	PNP	KIT Plus	KIT
1	机身套件	预装所有电子设备	预装舵机	无电子设备
2	主翼套件	预装所有电子设备	预装舵机	无电子设备
3	尾翼套件	预装所有电子设备	预装舵机	无电子设备
4	机头罩	✓	✓	✓
5	碳纤管	✓	✓	✓
6	胶水	✓	✓	✓

序号	配件名称	PNP	KIT Plus	KIT
1	说明书	✓	✓	✓
2	螺丝	✓	✓	✓
3	机翼固定塑料件	✓	✓	✓
4	排线、XT150插头	✓	✓	
5	钢丝、塑料夹头			✓
6	其它功能件配件			✓

机身安装

首先，我们从包装盒内取出机身及胶水，准备安装；



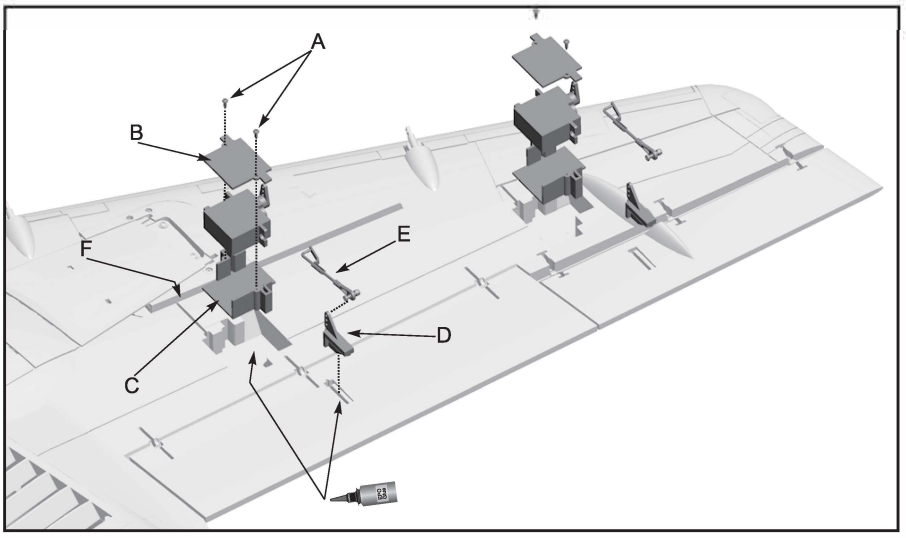
主翼组装

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！



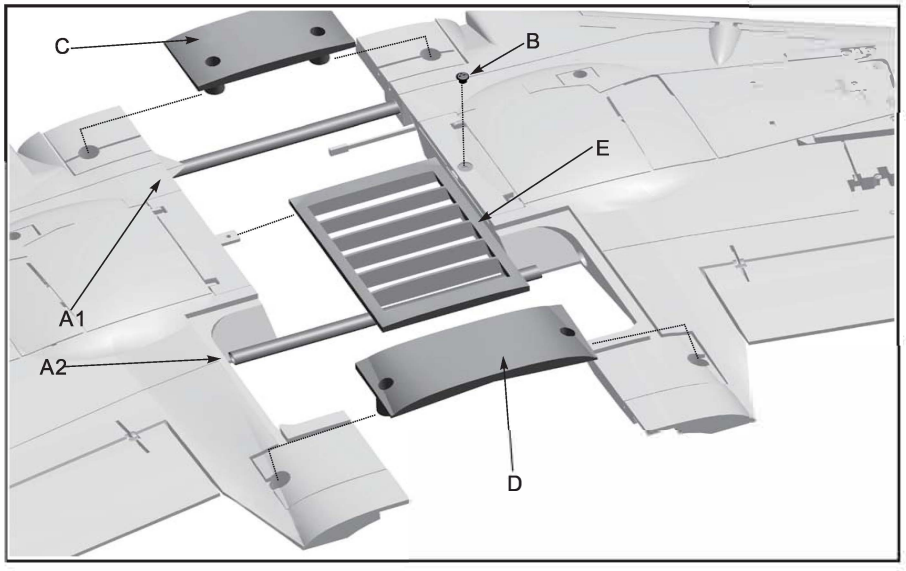
主翼安装

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；

碳纤管尺寸

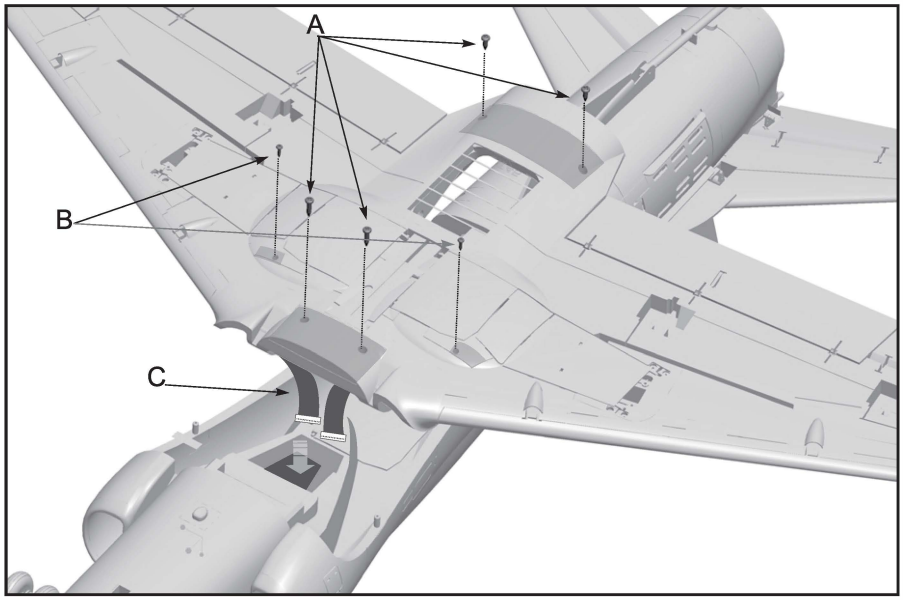
(A1) Ø 10×200mm, 臂厚：1.0mm
(A2) Ø 10×280mm, 臂厚：1.0mm



主翼安装

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



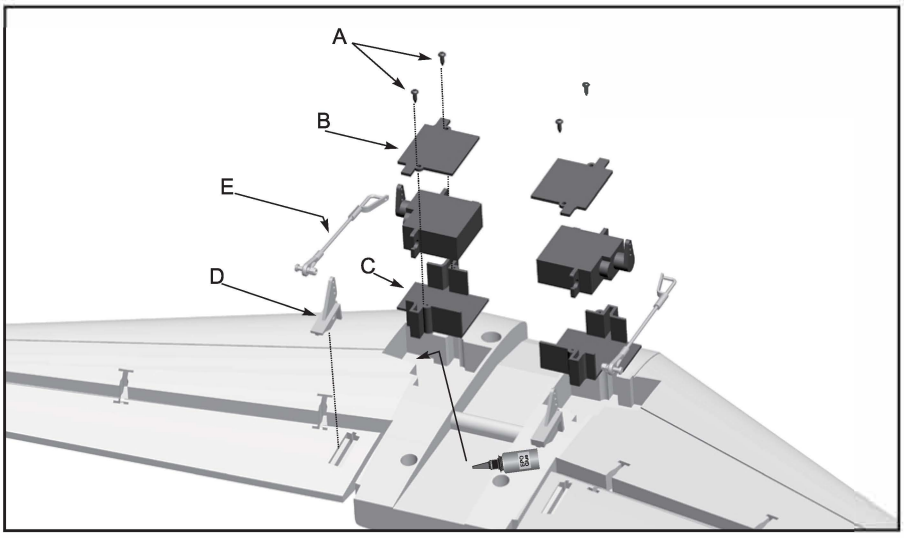
平尾组装

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)”。

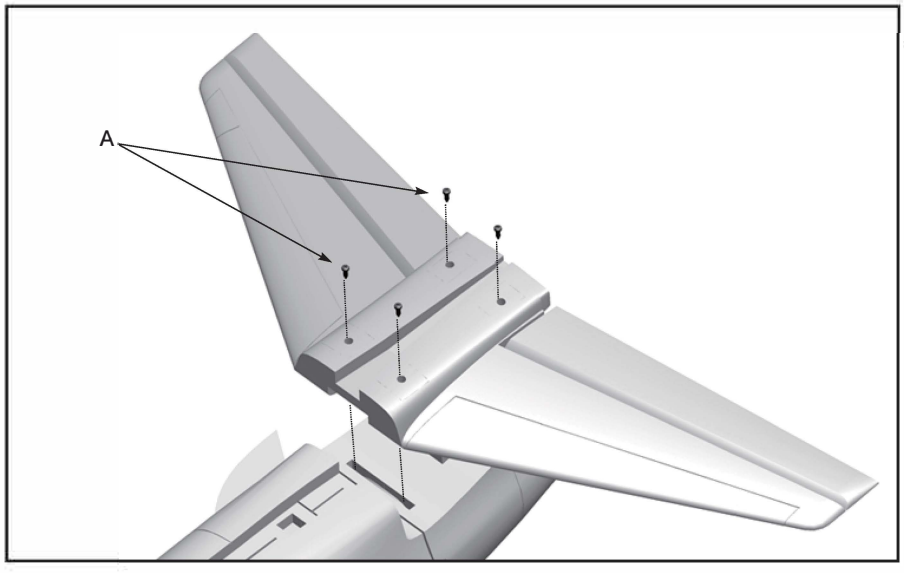
通过调整钢丝长短距离，使平尾舵面处于居中位置！



平尾安装

A - 螺丝 (PA2.6×10mm 4pcs)

1. 用4颗螺丝(A)固定平尾；



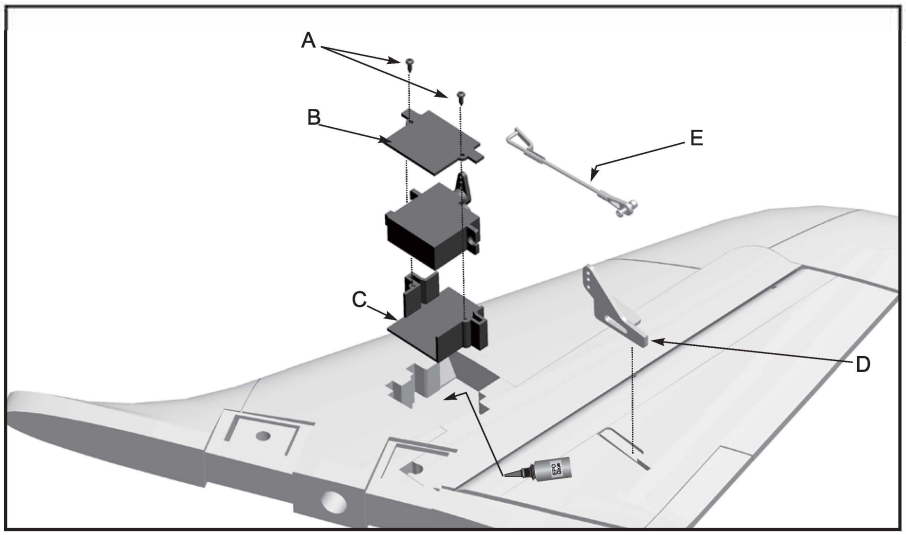
垂尾安装

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)”。

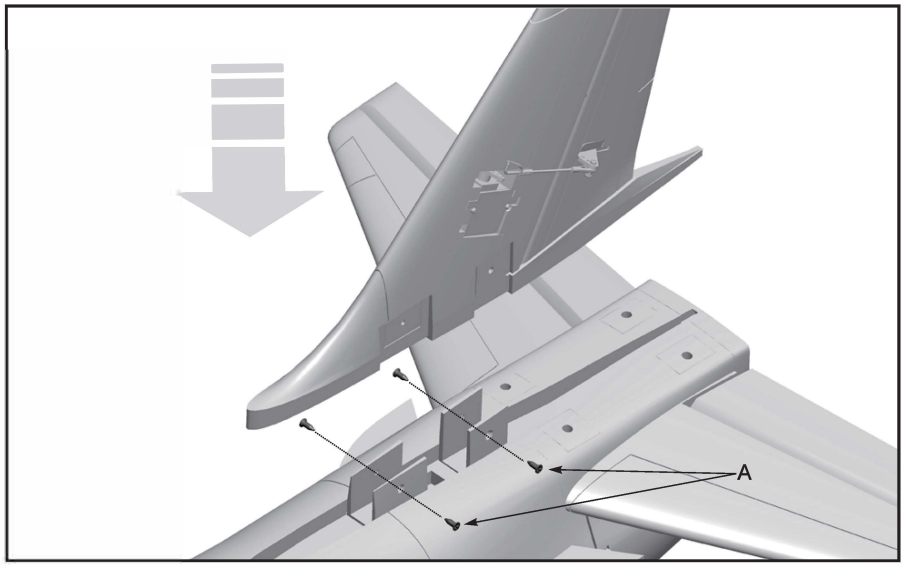
   通过调整钢丝长短距离，使垂尾舵面处于居中位置！



垂尾安装

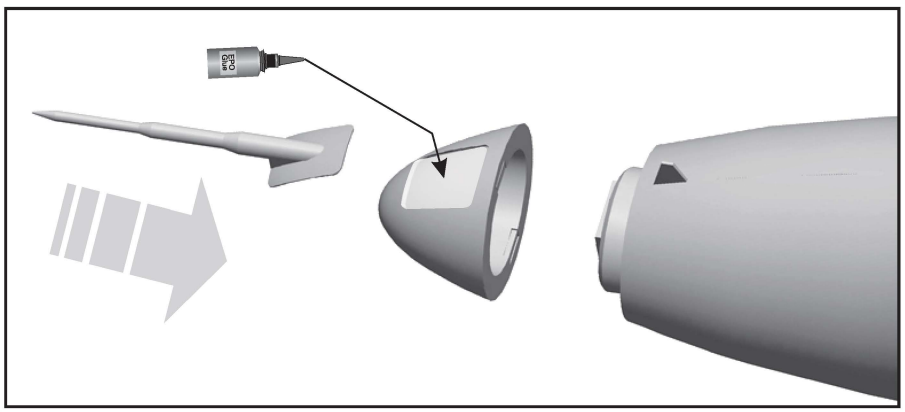
A - 螺丝 (FA3×6mm 4pcs)

1. 用4颗螺丝(A)固定平尾；



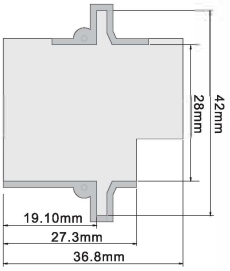
机鼻安装

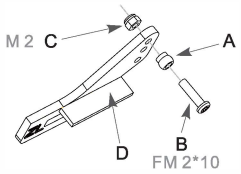
1. 如右图所示：用胶水将空速管粘到机鼻部位；
2. 机鼻与机身使用磁石吸附连接；



舵面钢丝尺寸

⚠ 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！

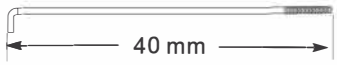




1. 将球头“A”套入螺丝“B”内，然后再把螺丝“B”穿入舵面摇臂“D”圆孔内，最后用螺母“C”拧紧；

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



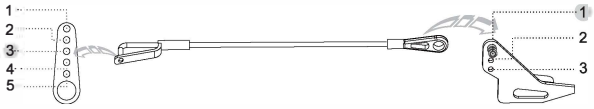
钢丝直径 Ø1.5mm

襟翼舵机钢丝安装孔位

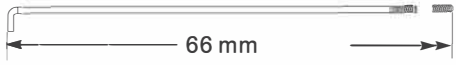
副翼控制钢丝尺寸

钢丝直径 Ø1.5mm

副翼舵机钢丝安装孔位

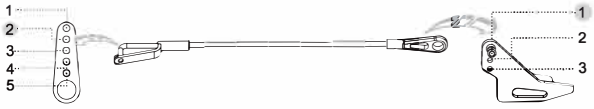


平尾控制钢丝尺寸



钢丝直径 Ø1.5mm

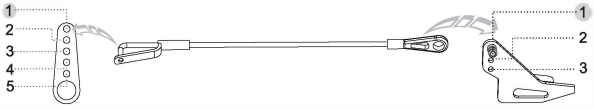
平尾舵机钢丝安装孔位



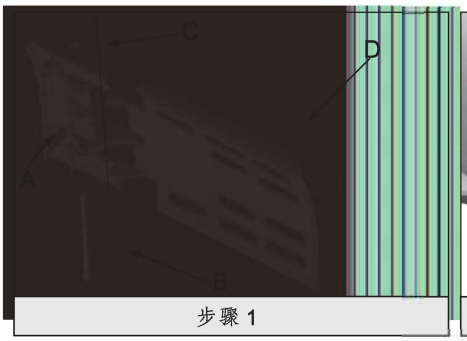
垂尾控制钢丝尺寸

钢丝直径 Ø1.5mm

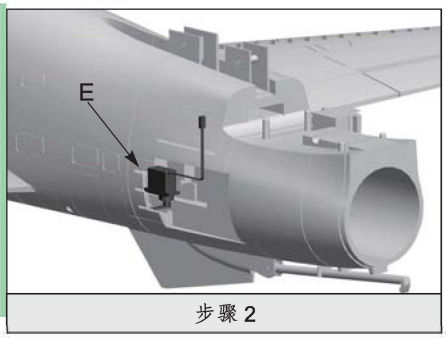
垂尾舵机钢丝安装孔位



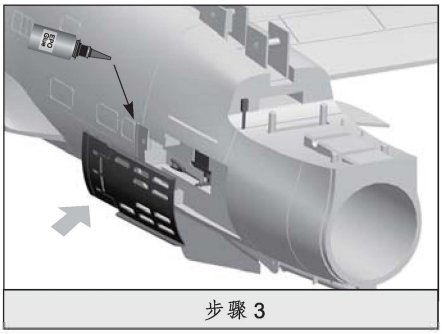
减速板组装



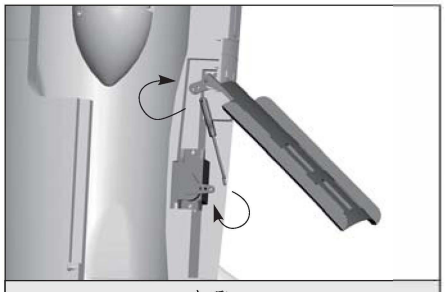
步骤 1



步骤 2



步骤 3



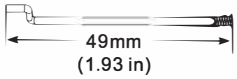
步骤 4

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)

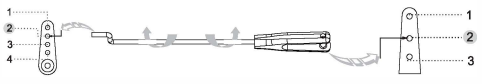
1. 按步骤1拼装好减速板装置；
2. 用粘水粘好舵机；
3. 用粘水把减速板装置固定在机身上；
4. 使用钢丝连接减速板和舵机摇臂，通过调整钢丝长度，设定好减速板的打开角度；
   （设定好后，请注意当减速板闭合时，舵机不会因为受力而产生异响；如果减速板闭合后，舵机有异响情况，可以少量增加减速板打开角度；）

减速板控制钢丝尺寸

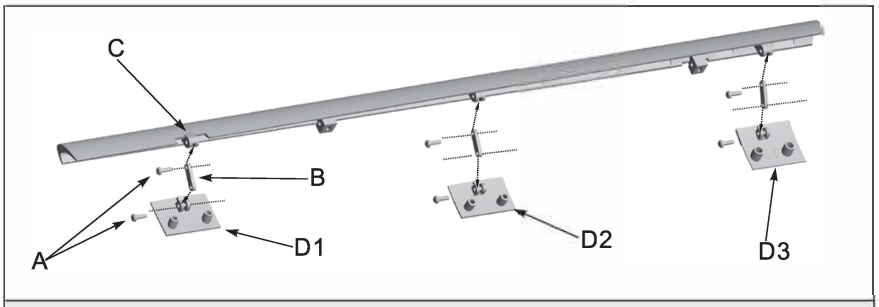


钢丝直径 Ø1.2mm

减速板舵机钢丝安装孔位



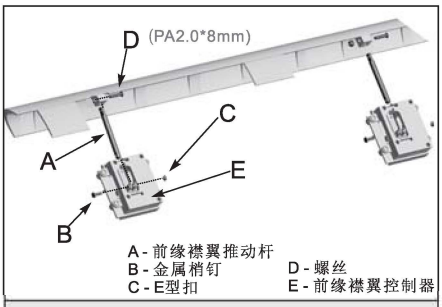
前缘襟翼组装



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，塑料梢钉的另外一端，可以通过高温烙铁烫熔梢钉末端，来达到固定的目的。



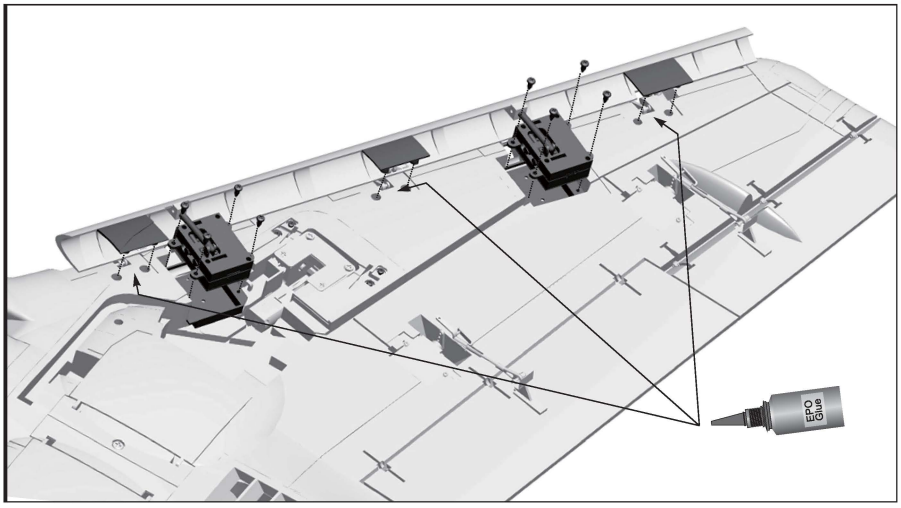
A - 前缘襟翼推动杆
B - 金属梢钉
C - E型扣
D - 螺丝
E - 前缘襟翼控制器

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；另外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

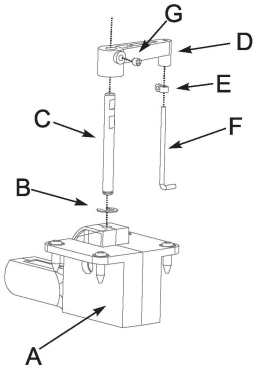


前起落架组装

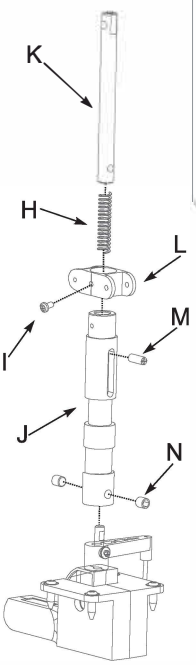
请根据以下图示，组装，拆解，更换前起落架配件。

配件名称及规格参数

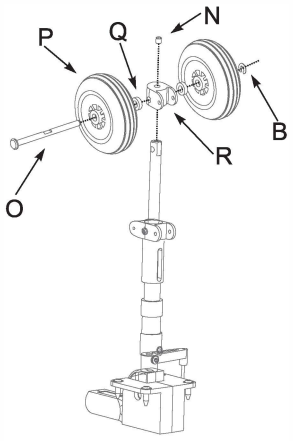
A - 前起落架电动控制器	K - 前起落架减震活动杆	U - 塑料固定钩
B - E型扣 (Ø2.0mm)	L - U型连接臂2	V - 前起落架减震支撑杆2
C - 前起落架主钢丝	M - 螺丝 (M3×5.2mm)	W - 前起落架减震支撑杆1
D - L型旋转摇臂	N - 机米螺丝 (M4×4mm)	X - 梢钉
E - O型圈	O - 前轮轮轴	Y - 梢钉
F - 钢丝	P - 机轮 (Ø45/15mm)	Z - 梢钉
G - 螺丝 (M3×3mm)	Q - 垫圈	AA - 梢钉
H - 弹簧	R - U型连接臂2	AB - 塑料U型连接臂
I - 螺丝 (PM2×4mm)	S -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



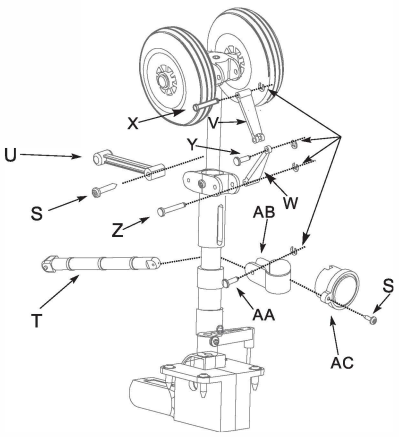
步骤 1



步骤 2



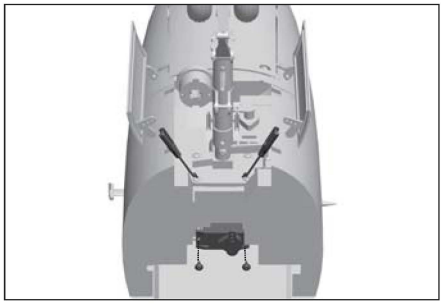
步骤 3

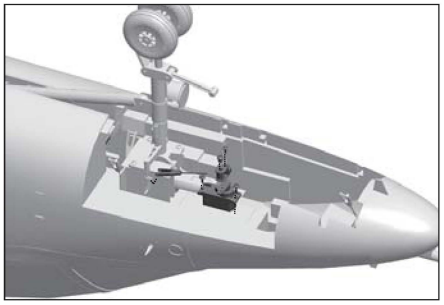


步骤 4

前起落架舱门组装

请根据以下图示，组装，拆解，更换前起落架舱门配件。

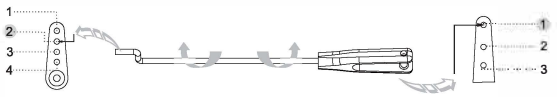




前舱门控制钢丝(前)尺寸

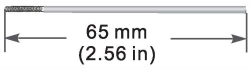
钢丝直径 Ø1. 2mm

舵机钢丝安装孔位



舵机摇臂

前轮转向控制钢丝尺寸

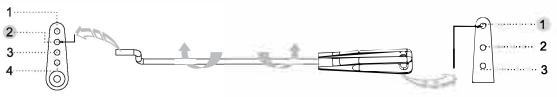


钢丝直径1. 2mm

前舱门控制钢丝(后)尺寸

钢丝直径 Ø1. 2mm

舵机钢丝安装孔位



舵机摇臂

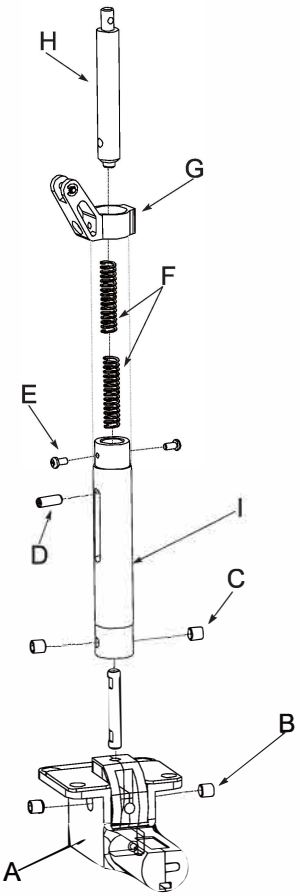
舵机钢丝安装孔位

后起落架组装

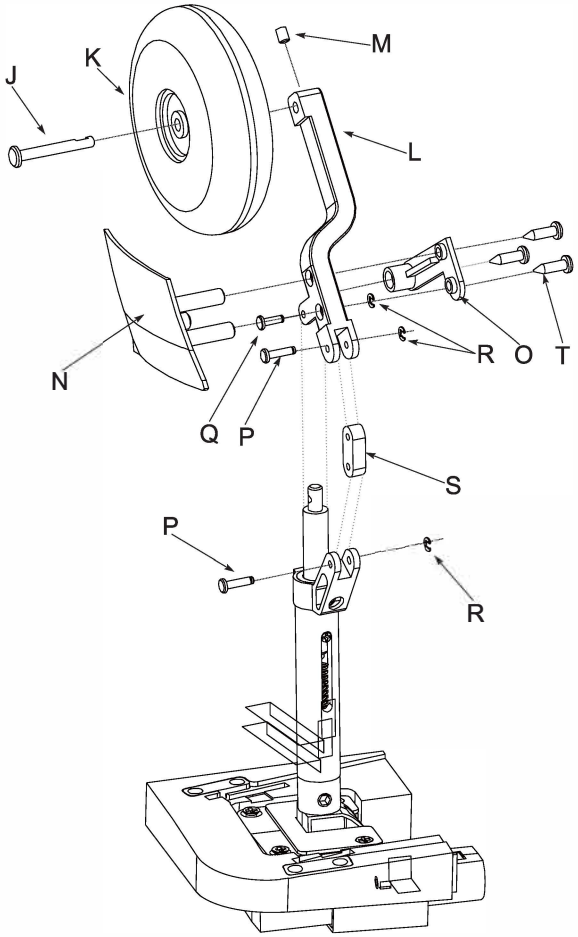
请根据以下图示，组装，拆解，更换前起落架配件。

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字型连连接臂
T- 螺丝 (PA2.6×10mm)



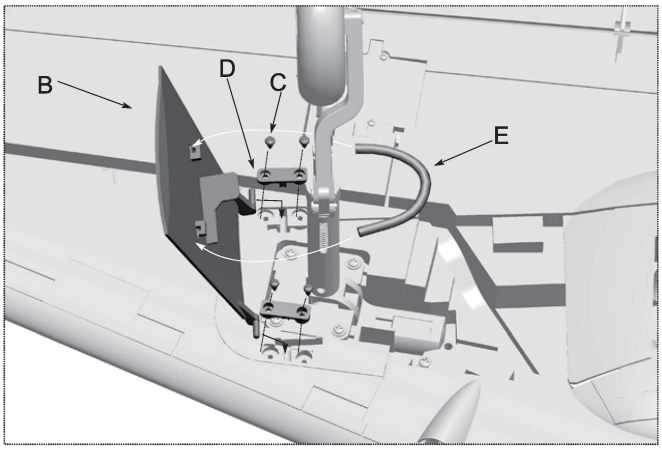
步骤 1



步骤 2

后起落架舱门组装

请根据以下图示，组装，拆解，更换后起落架舱门配件。

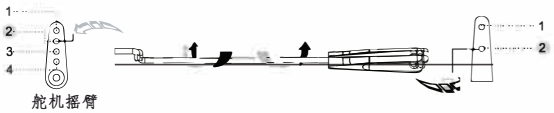


A - 后起落架舱门1
B - 后起落架舱门3
C - 螺丝 (PT2.3×6mm)
D - 后起落架舱门固定件
E - 弹簧

后舱门控制钢丝尺寸

钢丝直径 Ø1. 2mm

舵机钢丝安装孔位



舵机摇臂

集线板连接示意图

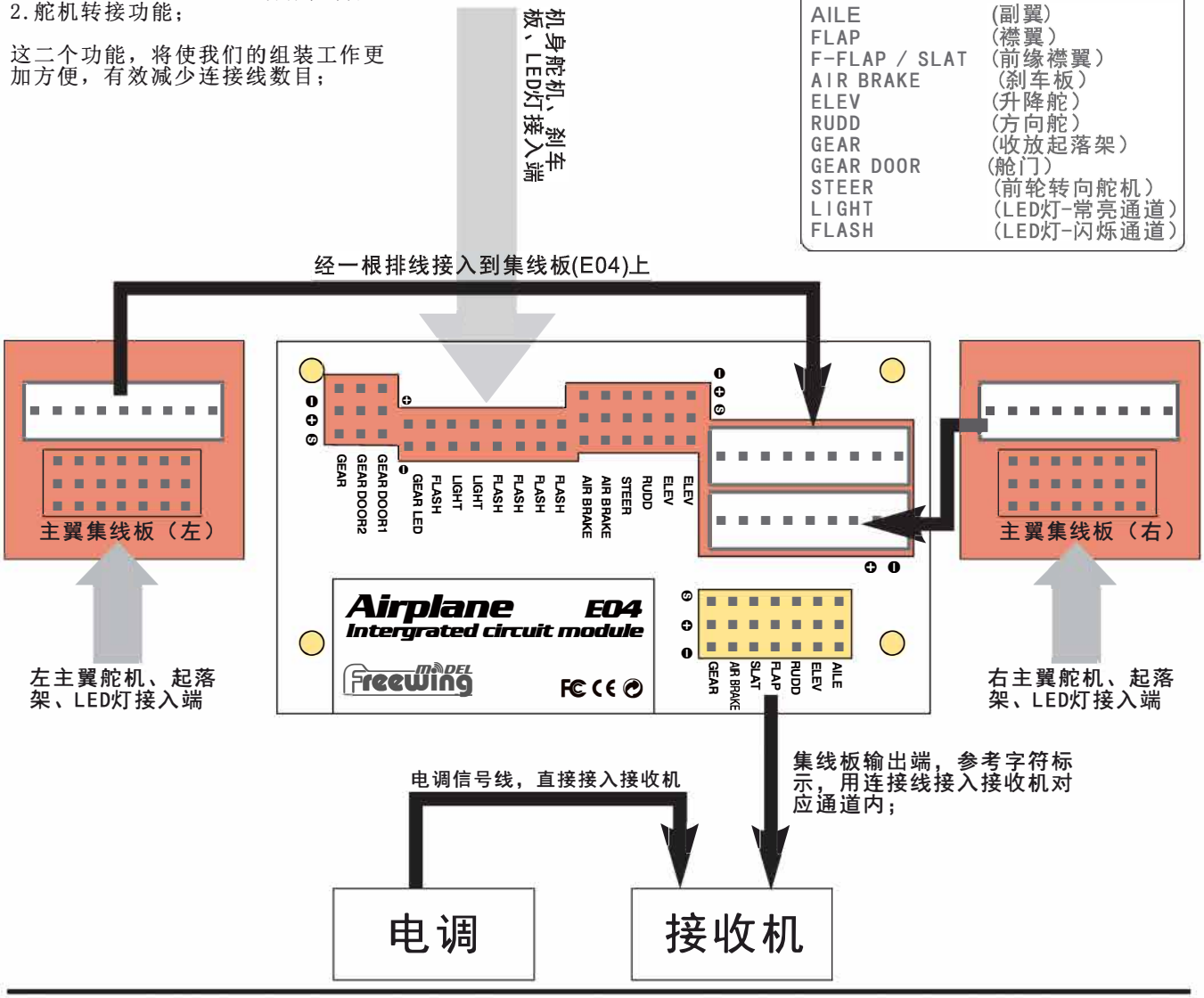
集线电路板有二个功能：

1. LED灯及起落架，舱门动作控制；
2. 舵机转接功能；

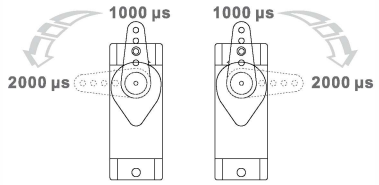
这二个功能，将使我们的组装工作更加方便，有效减少连接线数目；

集线板标识注释：

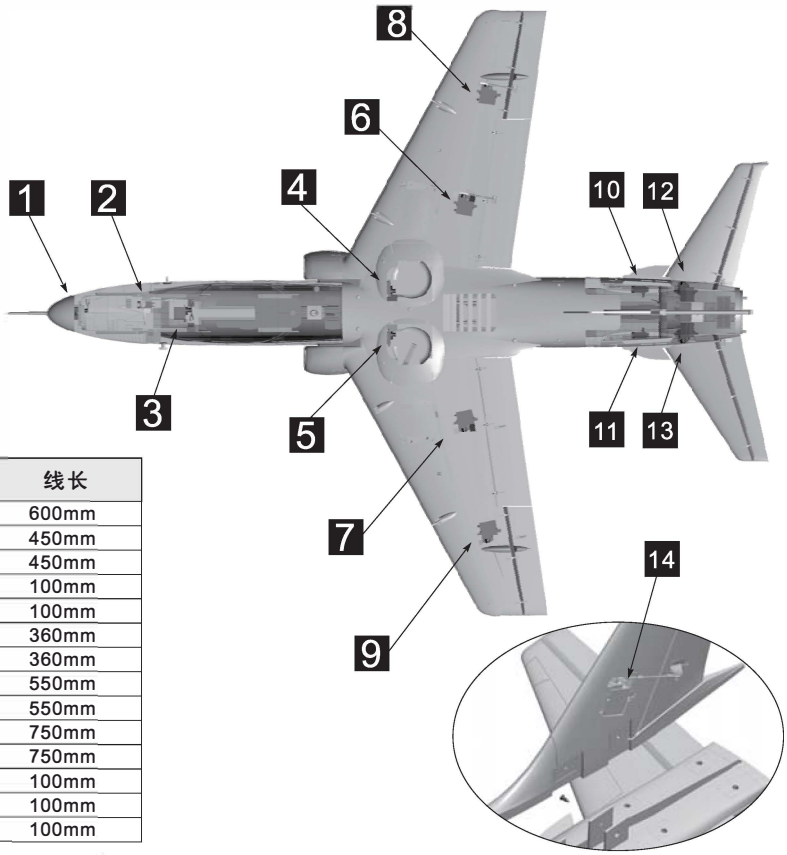
AILE	(副翼)
FLAP	(襟翼)
F-FLAP / SLAT	(前缘襟翼)
AIR BRAKE	(刹车板)
ELEV	(升降舵)
RUDD	(方向舵)
GEAR	(收放起落架)
GEAR DOOR	(舱门)
STEER	(前轮转向舵机)
LIGHT	(LED灯-常亮通道)
FLASH	(LED灯-闪烁通道)



舵机规格介绍



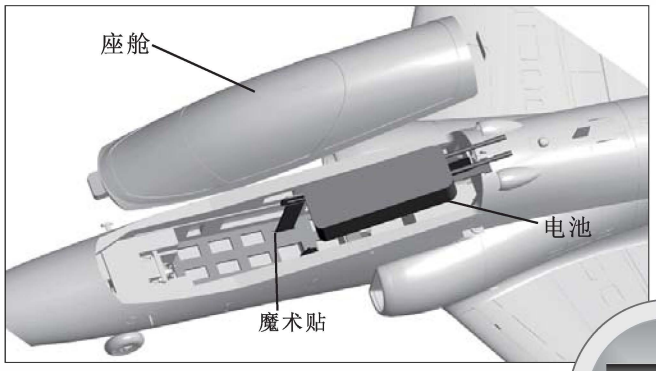
我们的舵机正、反向标准是：
当舵机输入信号从1000 μs到2000 μs时，
如果舵机摇臂，
顺时针旋转---正向舵机
逆时针旋转---反向舵机



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

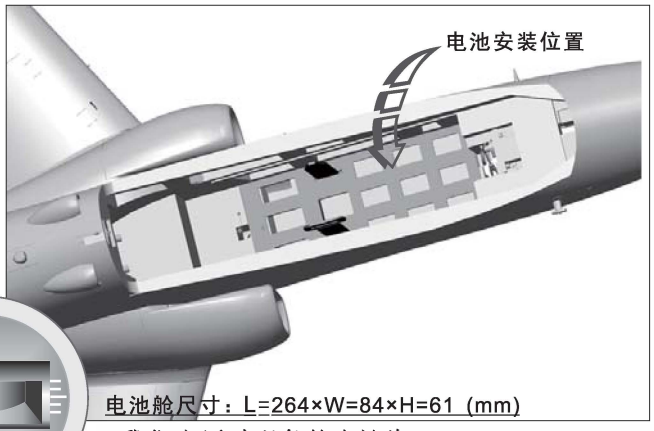
舵机使用位置	序号	规格	正、反向	线长
前舵门舵机(前)	1	9g-金属	正向	600mm
前舱门舵机(后)	2	9g-金属	正向	450mm
前轮转向舵机	3	9g-金属	正向	450mm
后舱门舵机(左)	4	9g-金属	反向	100mm
后舵门舵机(右)	5	9g-金属	正向	100mm
后襟翼(左)	6	17g-金属	正向	360mm
后襟翼(右)	7	17g-金属	反向	360mm
副翼(左)	8	17g-金属	正向	550mm
副翼(右)	9	17g-金属	正向	550mm
减速板(左)	10	9g-金属	正向	750mm
减速板(右)	11	9g-金属	反向	750mm
平尾(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，首先请打开发射机电源，确认油门杆处于低位。



电池舱尺寸：L=264×W=84×H=61 (mm)

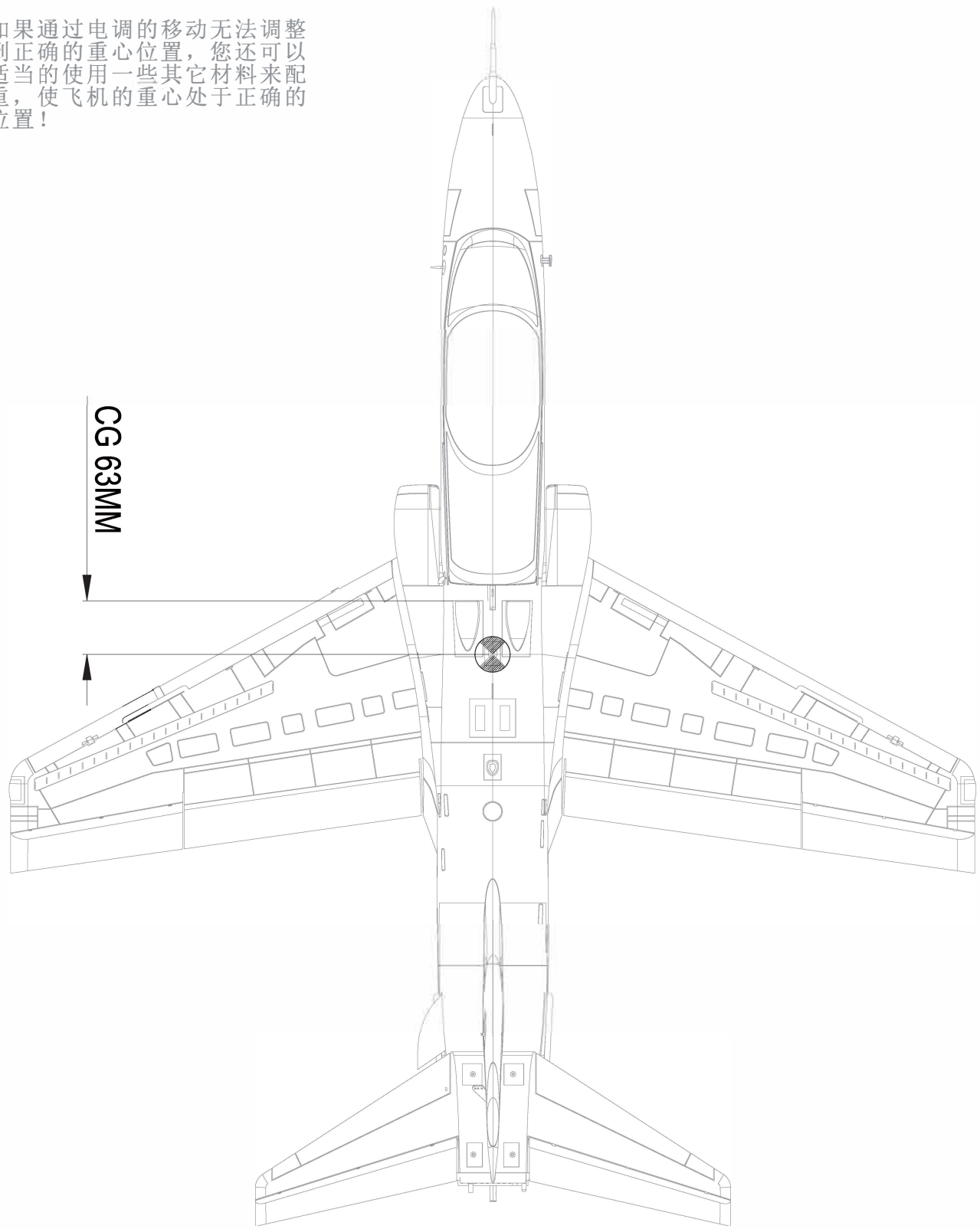
我们出厂时配备的电池为：
6S 22.2V 5000mAh 35C
我们建议使用的电池容量和放电倍率如下：
6S 22.2V 5000mAh ~ 6S 22.2V 5500mAh
8S 29.6V 4500mAh ~ 8S 29.6V 5000mAh
(请根据您的配置，选择正确的电池电压！)
放电倍率 **≥ 35C**
不同重量的电池,会影响重心！请注意飞机的重心在说明书指示的正确范内！

重心示意图

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。

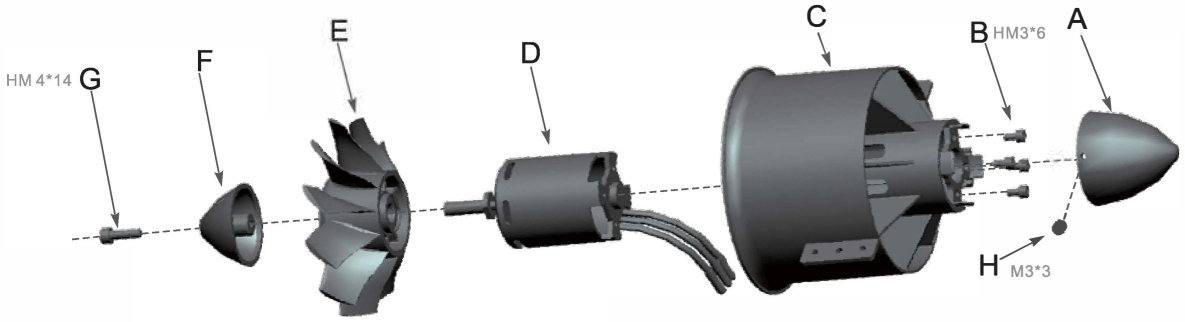
-您可以将电池向前，或者向后移动，来调整飞机的重心;

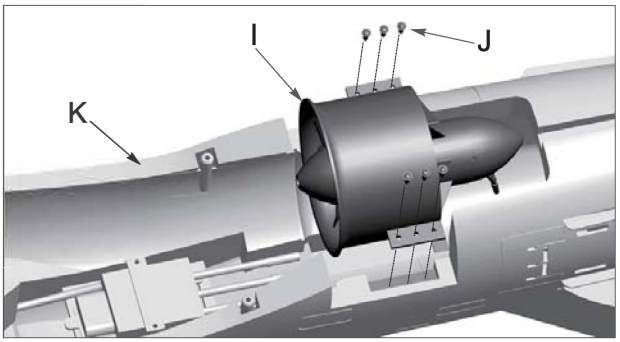
-如果通过电调的移动无法调整到正确的重心位置，您还可以适当的使用一些其它材料来配重，使飞机的重心处于正确的位置！

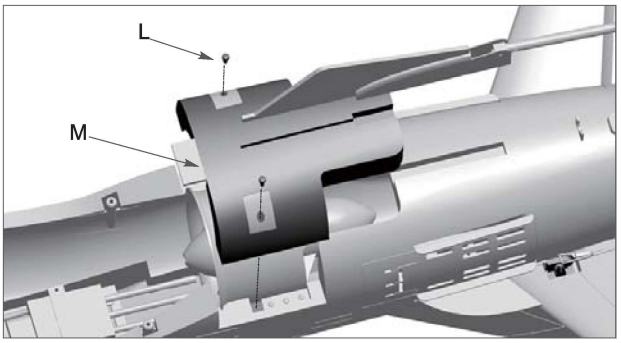


动力系统的安装

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。



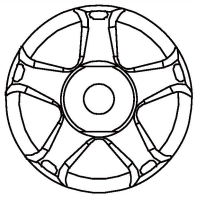




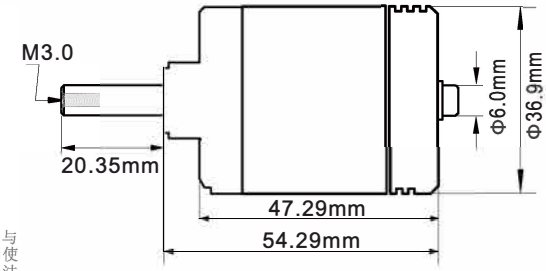
配件名称及规格参数
I - 涵道动力组
J - 螺丝 （PWA3×12mm 6pcs）
K - 机体
L - 螺丝 （PA3×10mm 2pcs）
M - 涵道固定盖

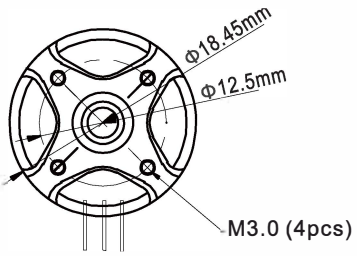
⚠注意：当电调与电池连接后，禁止用手触摸电调和涵道，防止意外伤害！测试涵道时，请使用安全的测试架进行测试，禁止用手抓住涵道的进行行为！

电机参数



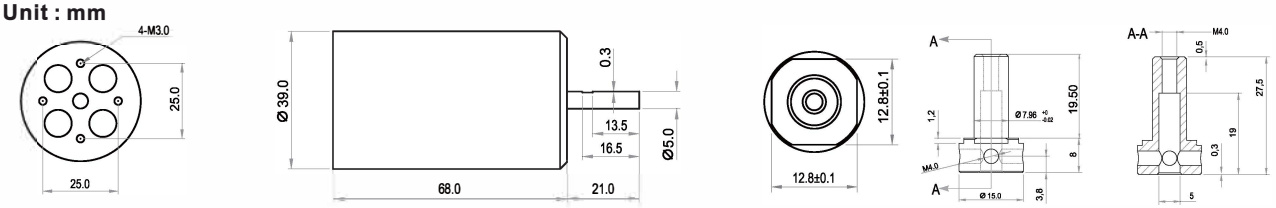
⚠ 注意：此电机为专用产品，仅适合与飞翼公司型号为P0902涵道风扇进行配套使用，同时，型号为P0902的涵道风扇也无法安装其它电机！





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	0.02Ω	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

舵面测试

当您按前面的步骤组装好飞机后，在飞行前，我们需要用一块充饱电的电池，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

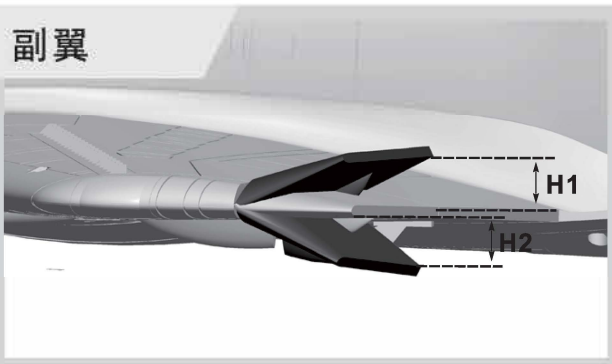
襟翼

襟翼放下

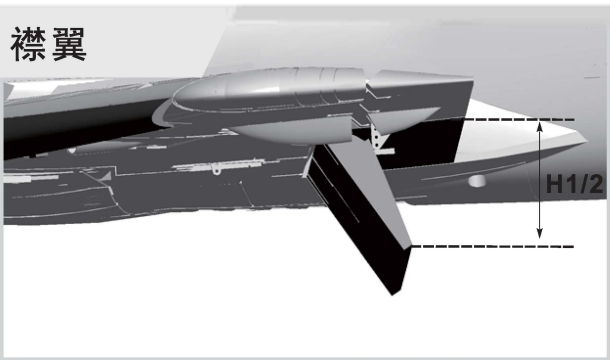
大、小舵参数

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,飞机的可操控性能会好一些,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！

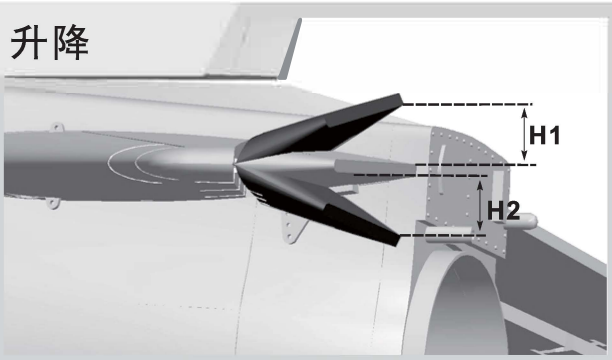
副翼



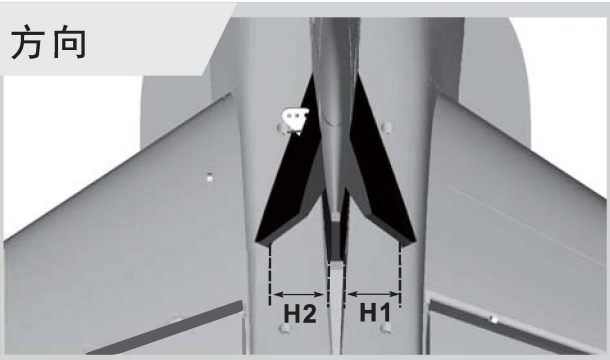
襟翼



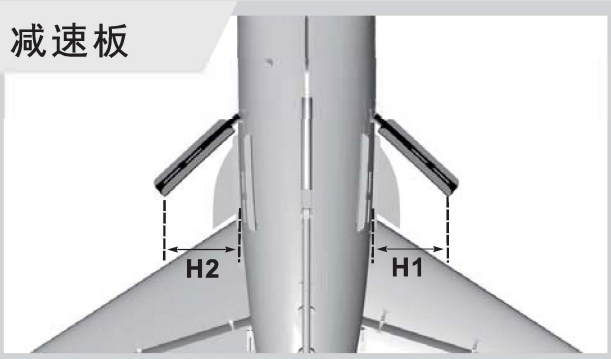
升降



方向

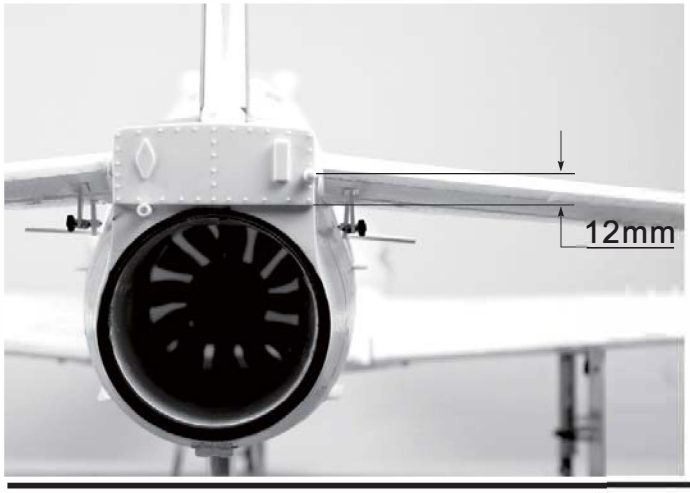


减速板



	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



1. 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；
2. 除水平飞行外，在进行其它飞行动作时，禁止开启前缘襟翼；
3. 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）发射机电池电量耗尽	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）电流充饱电后,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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