Freewing MODEL

MiG-21 FISHBED

USER MANUAL

1/9 SCALE 80MM EDF JET
LENGTH:1730mm
WINGSPAN:800mm

www.sz-freewing.com MADE IN CHINA

Introduction

Brief History

First designed in 1953, the MiG-21 is widely renowned as a classic Cold War era brute and holds the distinction of being the most produced supersonic jet fighter in the world. More than 11,000 MiG-21s of different variations have flown for over 60 countries over a period of more than 60 years. In fact, the unmistakable outline of the MiG-21 can still be seen today in the skies of over 15 countries that still operate this historic warplane. The MiG-21 has earned its place in aviation history as a versatile workhorse and venerable foe.

Overview

Dominate the skies with Freewing's 1/9 scale MiG-21! Its impressive 1730mm length makes this MiG-21 one of Freewing's longest model aircraft. Its removable wings, horizontal stabilizer, and vertical stabilizer make transport very easy. Even the nose cone and pitot tube are removable! Freewing has recreated many scale details of the MiG-21 "MF" variant, and the aircraft is powered by an 80mm 12-blade EDF and an all-new 3530-1800KV out-runner motor and 100A ESC. Newly designed metal gear digital servos control the ailerons, flaps, elevators, and rudder, and an integrated circuit board simplifies wiring in the large battery bay. Magnetic fuel tanks and the iconic "blisters" throughout the fuselage help complete the look and feel of the menacing MiG-21. Although an 80mm class aircraft, the Freewing MiG-21 features the retractable landing gear of a 90mm class aircraft. Durable aluminum trailing link struts and tall wheels allow operation on short grass fields.

Flight Features

The Freewing MiG-21 is suitable for intermediate and advanced pilots with EDF flying experience. The model's strong thrust and flaps shortens the takeoff distance to 30 meters. Optimized design allows the Freewing MiG-21 to fly stably at both fast and slow speeds. In fact, the aircraft can maintain a slow "high alpha" attitude of up to 40 degrees without stalling. The delta wing and swept tail give the aircraft crisp responsiveness but gentle handling.

Also, the battery bay was designed to accommodate an optional Freewing Gyro E51, sold separately, to further supplement the stable flying characteristics of the Freewing MiG-21. Experience the thrill of a 40 degree pass with ease!

Color Scheme Introduction

Freewing presents its MiG-21 in two color schemes. The classic "Soviet Silver" scheme includes decals from four countries inside the box to allow pilots to customize their model aircraft. A "High Vis" scheme is also available that features the blue/white/grey color scheme of the MiG-21-93 variant for increased visibility in the sky.

⚠ **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! 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. Wait for the airplane to come to a complete stop before handling.**

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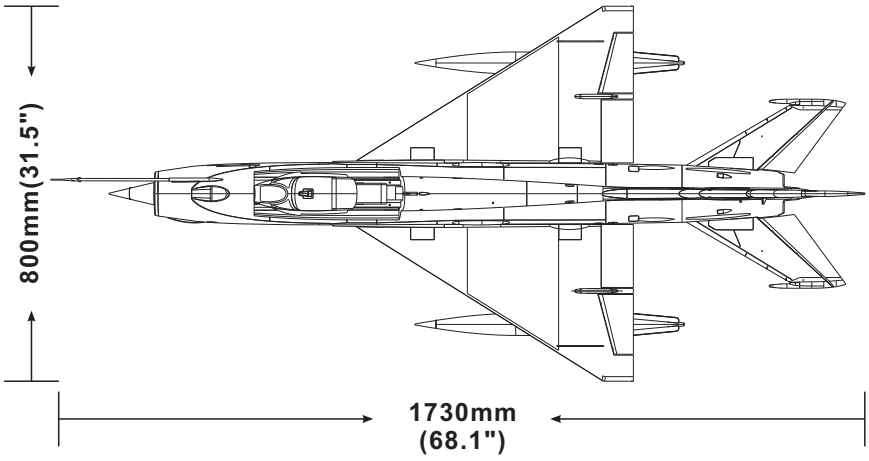
Product basic information



Standard Version

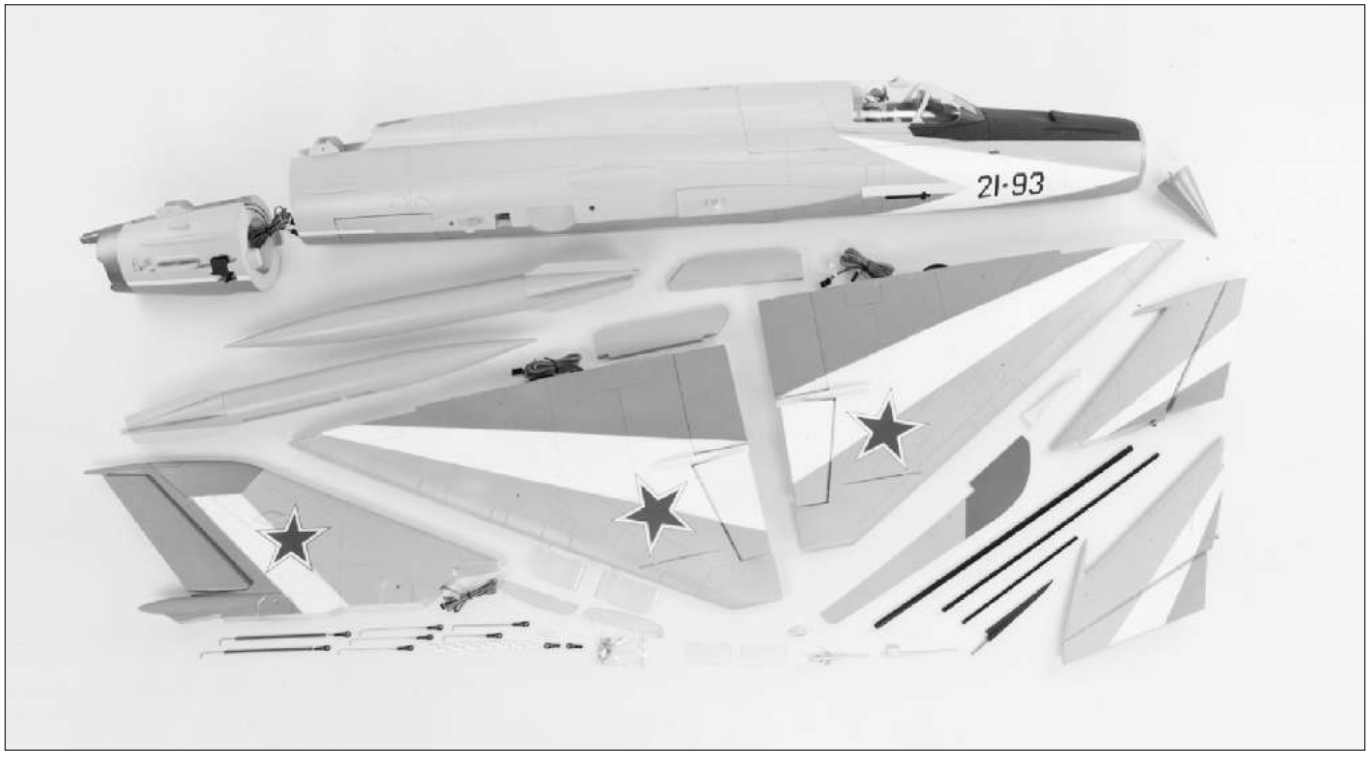
Wingloading : 123g/dm²
Motor : 3530-1800KV outrunner motor
Fan : 80mm 12-Blade fans
ESC : 100A UBEC 5A
Servos : 9g Digital MG(8pcs)
Weight : 2180g (W/O battery)
Thrust : 3000g

Upgrade Version

Wingloading : 125g/dm²
Motor : 3658-1820KV inrunner motor
Fan : 80mm 12-Blade fans
ESC : 100A UBEC 5A
Servos : 9g Digital MG (8pcs)
Weight : 2215g (W/O battery)
Thrust : 3200g

⚠ Note: The parameters stated here are derived from test results using our accessories. If you use other accessories, the test results will differ. We cannot provide technical support if you have a problem when using other accessories.

Package list



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.	Spare part name	PNP	ARF Plus	ARF
1	Nose\Rear fuselage	Pre-installed all electronic parts	Pre-installed servo	No electronic equipment
2	Mainwing	Pre-installed all electronic parts	Pre-installed servo	No electronic equipment
3	Horizontal tail	Pre-installed all electronic parts	Pre-installed servo	No electronic equipment
4	Vertical tail	✓	✓	✓
5	Oil-tank&pylons	✓	✓	✓

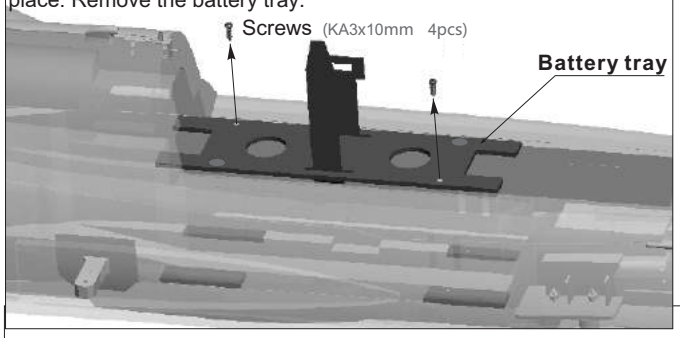
No.	Spare part name	PNP	ARF Plus	ARF
6	Carbon fiber	✓	✓	✓
7	Pilot tube/Antenna	✓	✓	✓
8	Ventral Fins	✓	✓	✓
9	Pushrod/Screws	✓	✓	✓
10	Manual/Decals	✓	✓	✓

Steel wire use instructions

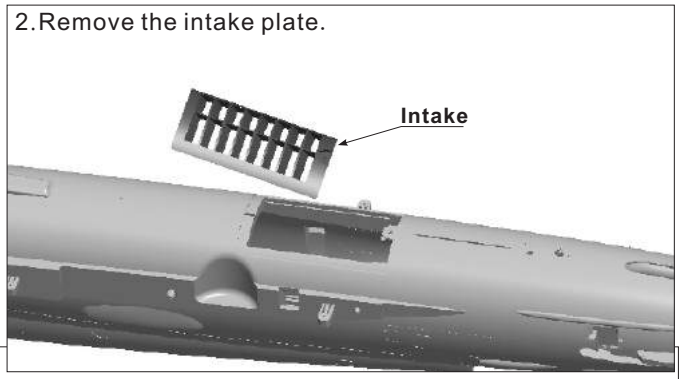
Our tests show that excessively long servo extension lines increase the risk of poor connections that can lead to servo brown outs or failure, causing accidents during flight. Instead, this kit contains a steel wire that can be used to pull the main wing/elevator and rudder servo wires through the airplane to the battery compartment, eliminating the need for extension wires.

Pre- Installation Preparation

1.Open the hatch and loosen the screws which hold the battery tray in place. Remove the battery tray.

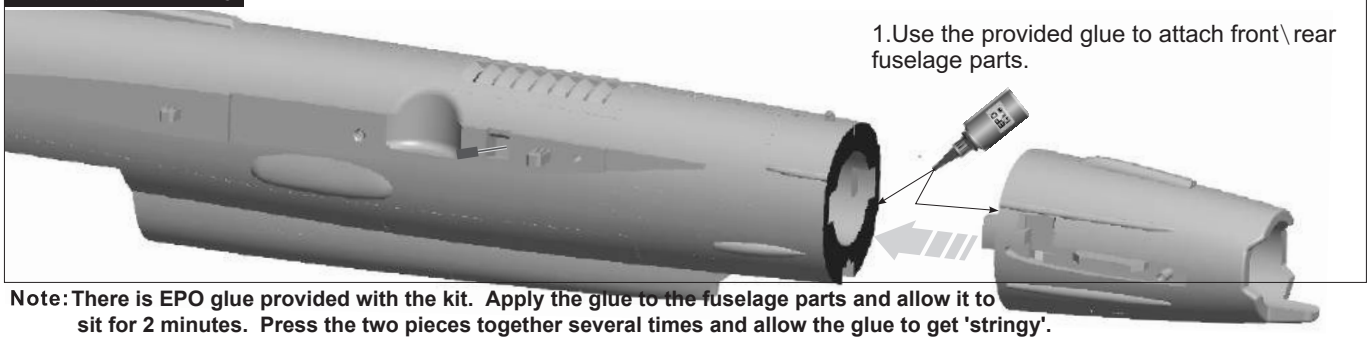


2.Remove the intake plate.



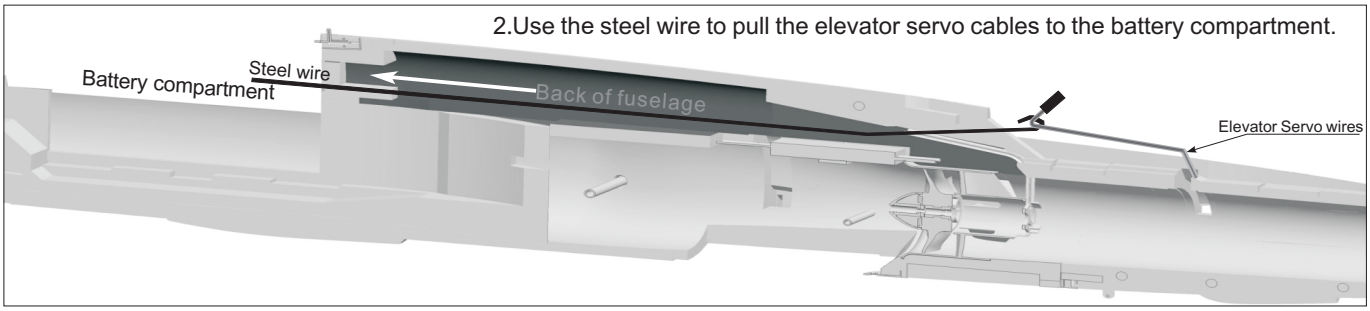
Fuselage Assembly

1.Use the provided glue to attach front\rear fuselage parts.



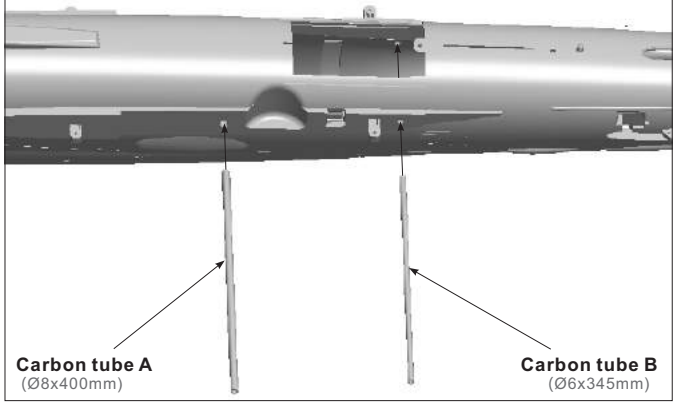
Note: There is EPO glue provided with the kit. Apply the glue to the fuselage parts and allow it to sit for 2 minutes. Press the two pieces together several times and allow the glue to get 'stringy'. Push the two parts together a final time and allow the glue to set.

2.Use the steel wire to pull the elevator servo cables to the battery compartment.

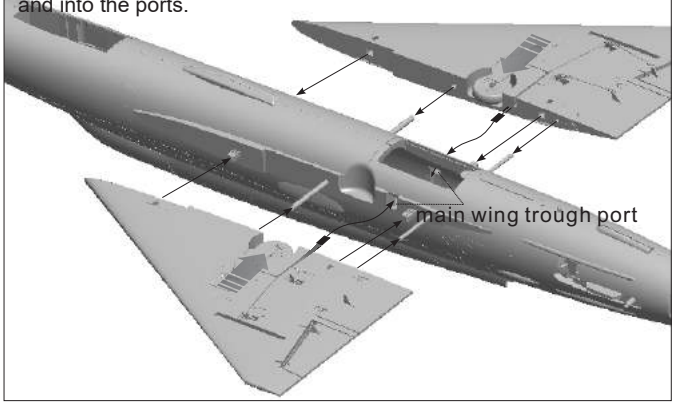


Main Wing Installation

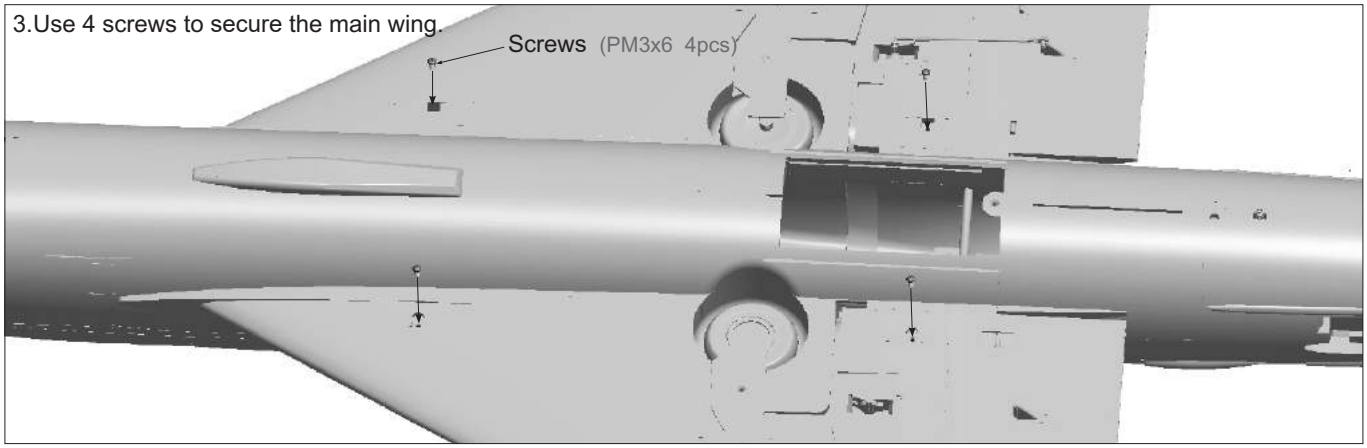
1.Insert the carbon tube A and B into fuselage.



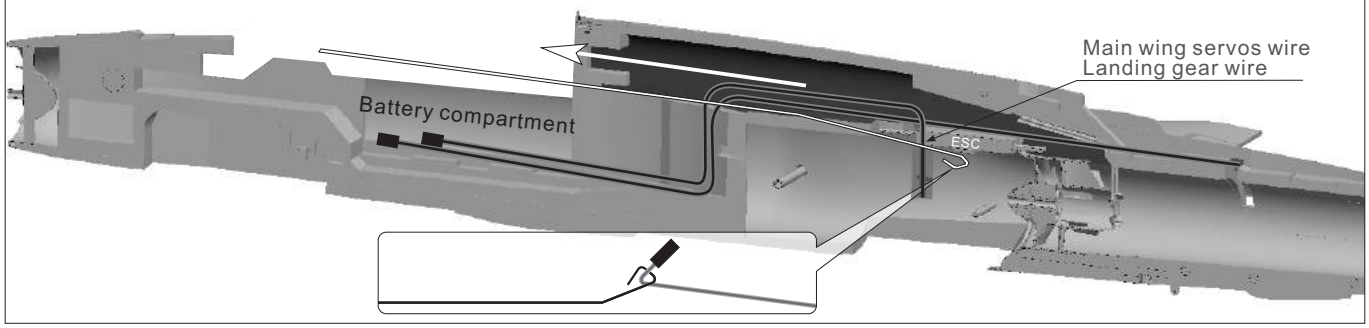
2.insert the main wing servo cables into the fuselage wire trough and into the ports.



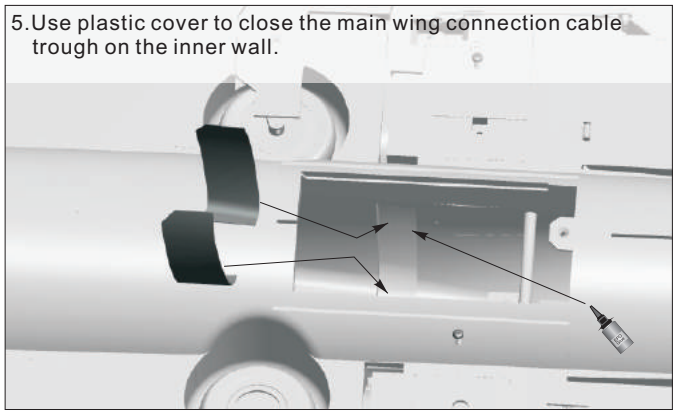
3.Use 4 screws to secure the main wing.



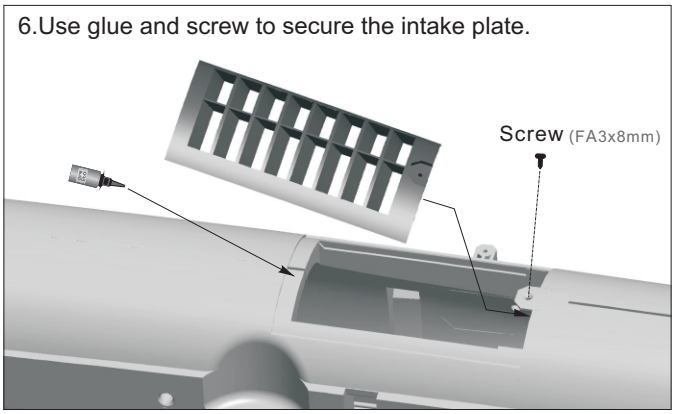
4.Use the steel wire to pull the left and right wing connection wires to the battery compartment.



5.Use plastic cover to close the main wing connection cable trough on the inner wall.



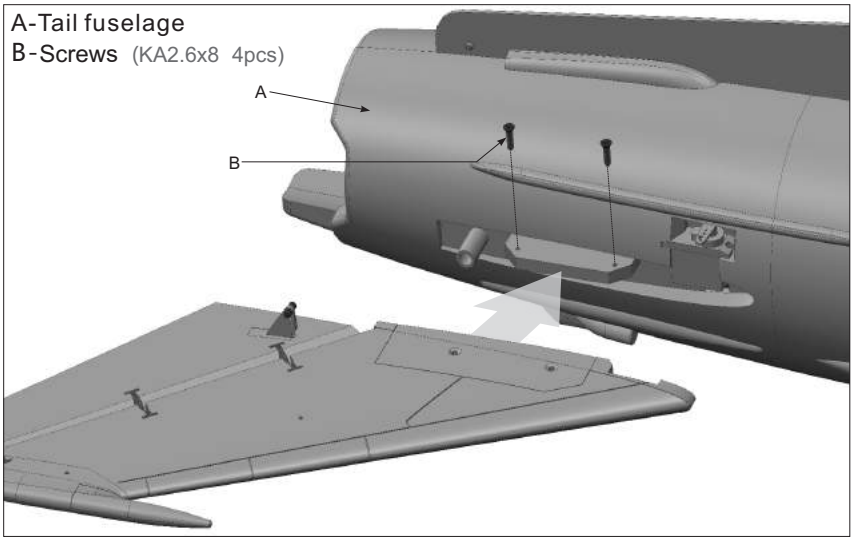
6.Use glue and screw to secure the intake plate.



Elevator and Rudder Installation

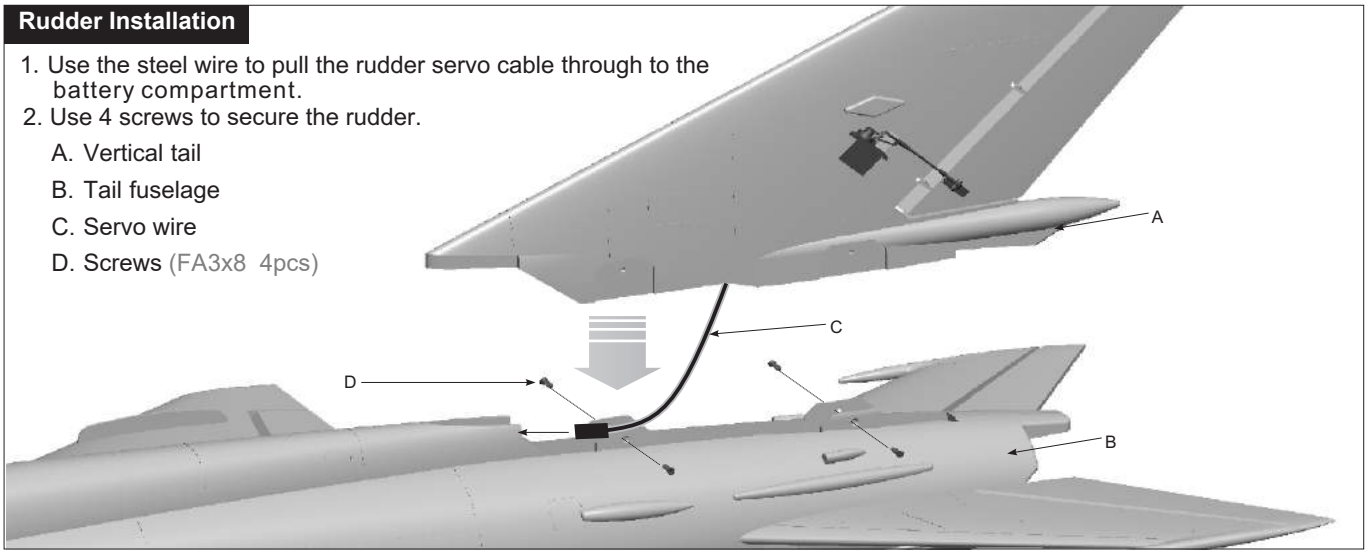
Elevator Installation

1. Place the elevator onto the tail of the fuselage
2. Use 2 screws to secure the elevator
3. Repeat the above steps to install the other elevator.



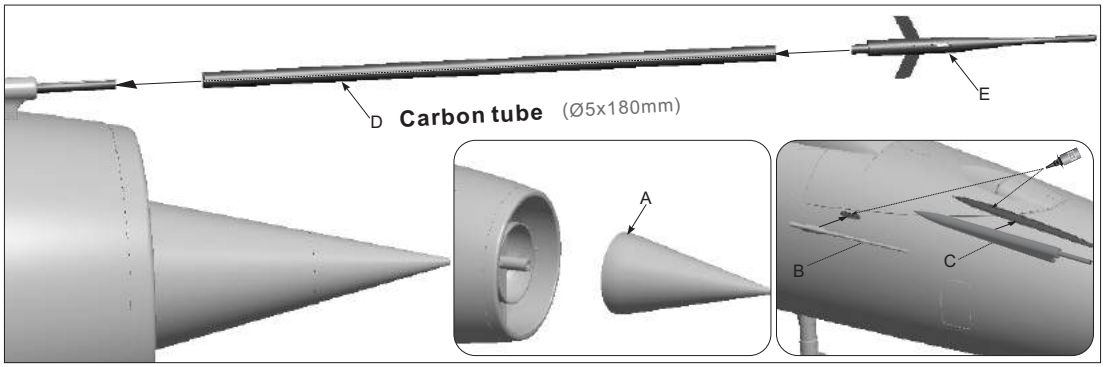
Rudder Installation

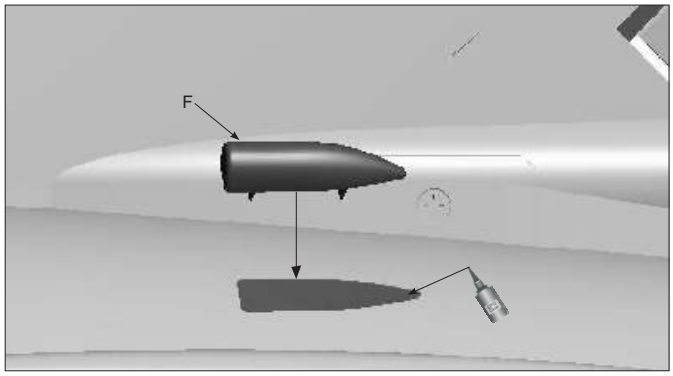
1. Use the steel wire to pull the rudder servo cable through to the battery compartment.
2. Use 4 screws to secure the rudder.
   - A. Vertical tail
   - B. Tail fuselage
   - C. Servo wire
   - D. Screws (FA3x8 4pcs)

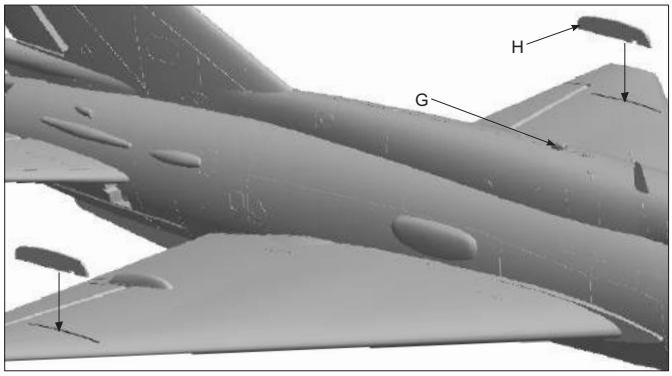


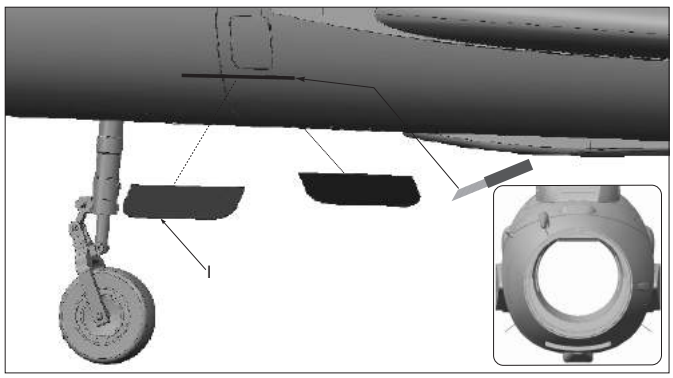
Nose cone, pitot tube, wing fence and drop tank pylons Installation

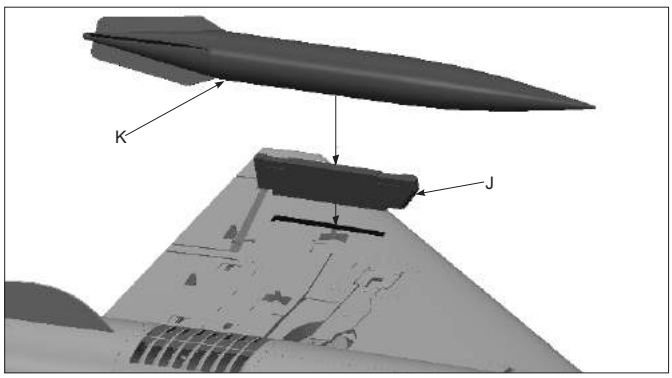
A - Nose cone
B - Antenna
C - Pitot tube part 1
D - Carbon tube
E - Pitot tube part 2
F - Plastic part 1 (left/right)
G - Plastic part 2
H - Wing fence
I - Fin
J - Pylon
K - Drop tank











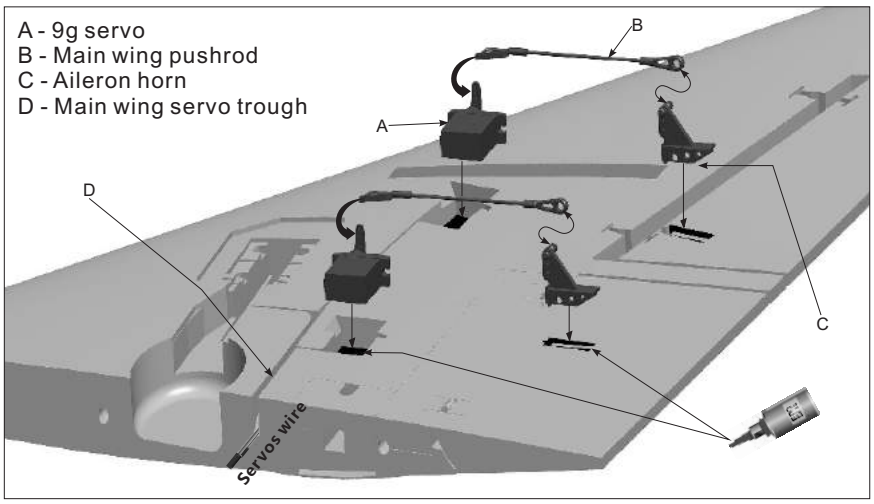
Note:

1. After finishing the above steps, depending on the model of the control board, insert all servo cables to the control board.
2. Finally use 4 screws to secure the battery tray . (all servo cables run under the battery tray)

Servo Installation Instructions

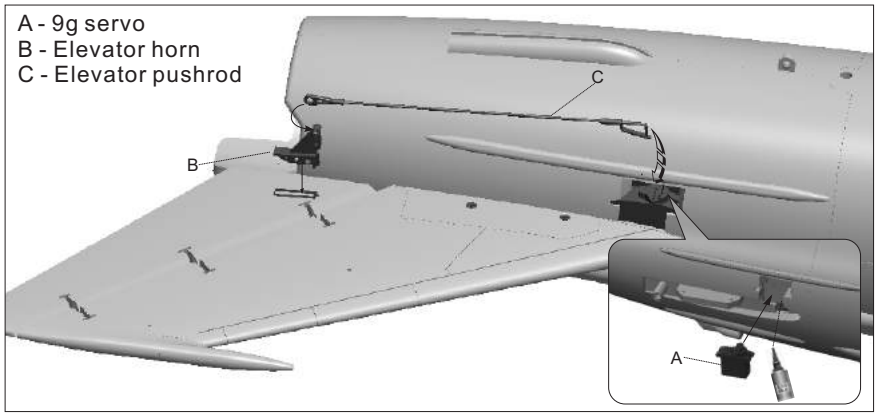
Flap and Aileron Servo Installation

1. Use a servo tester or radio to center the servo.
2. Use glue to install the servos and control horns to the main wing.
3. Feed the servo cables through the trough, after all the cables are in place, apply the decal over the trough.
4. Feed one end of the pushrod into the aileron servo arm and adjust its length. Snap the clevis to the aileron control horn's ball link.
5. Feed one end of the pushrod into the flap servo arm and adjust its length. Snap the clevis to the flap control horn's ball link.
6. Repeat the above four steps for the other aileron and flap servo.



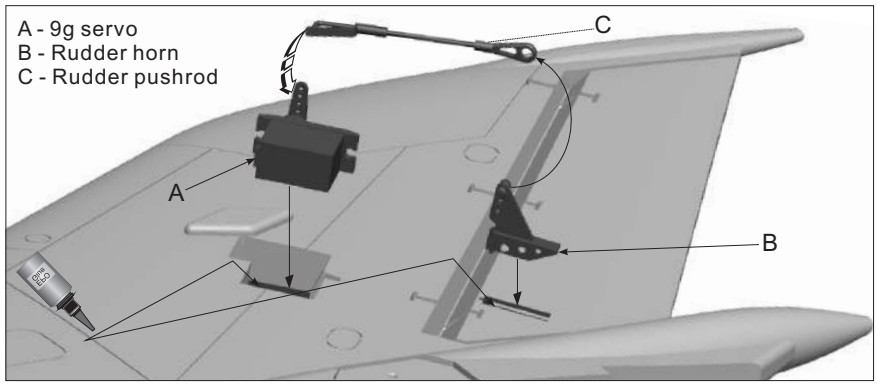
Elevator Servo Installation

1. Use a servo tester or radio to center the servo arm.
2. Use glue to intall the servos on the elevator servo mounts.
3. Feed one end of the pushrod into the servo arm and adjust its length. Snap the clevis to the elevator control horn's ball link.
4. Repeat the above steps to install the servo on the opposite side.

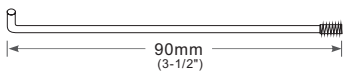


Rudder Servo Installation

1. Use a servo tester or radio to center the servo arm.
2. Use glue to install the servo to the Horizontal Stabilizer and the control horn to the rudder.
3. Feed the servo cables into the trough.
4. Feed one end of the pushrod into the servo arm and adjust its length. Snap the clevis to the rudder control horn's ball link.

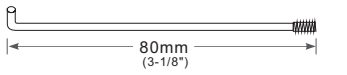


Aileron pushrod size



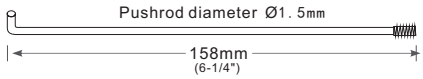
Aileron pushrod mounting hole

Flap pushrod size



Flap pushrod mounting hole

Elevator pushrod size



Elevator pushrod mounting hole

Rudder pushrod size

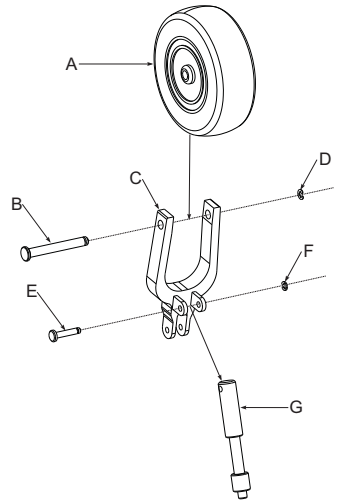
Rudder pushrod mounting hole

Landing Gear

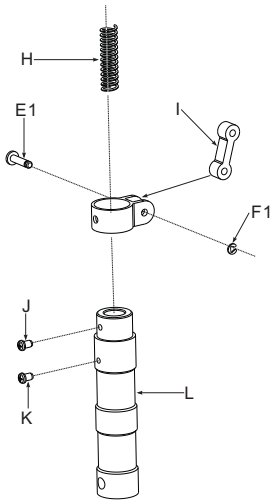
Nose Landing Gear Assembly

Assemble and disassemble the nose landing gear according to the following photos.

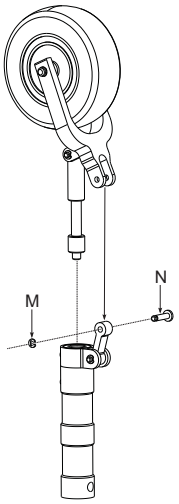
A - Nose wheel
B - Nose gear axle
C - U-shape slant supporting rod
D - E-clip (Ø2.0pcs)
E - Pin (Ø3.5X9.2mm 2pcs)
F - E-Clip (Ø1.5mm 2pcs)
G - Nose gear shock absorber active rod
H - Spring
I - 8-shape connecting arm
J - Screw (PM2x3 1pc)
K - Screw (PM2x4 1pc)
L - Nose gear main supporting rod
M - E-clip (Ø1.5mm)
N - Pin (Ø3.5x9.2mm)
O - Nose gear steering arm
P - Screw (M3x3mm)
Q - Nose gear main rod
R - Nose gear steering control ring
S - Nose gear steering rod
T - E-clip (Ø2mm)
U - Retract controller
V - Nose landing gear set
W - Screws (FA3x8 4pcs)
X - Nose landing gear mount
AB - Nose steering pushrod
AC - 9g servo
AD - Screws (PWA2x8mm 2pcs)
AE - Nose landing gear cover



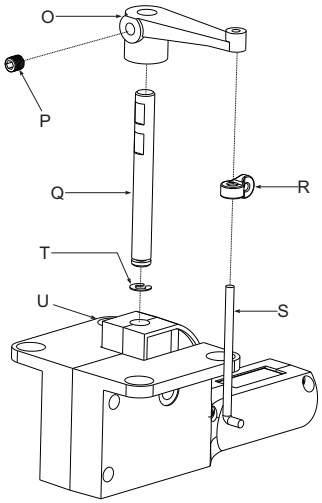
Step 1



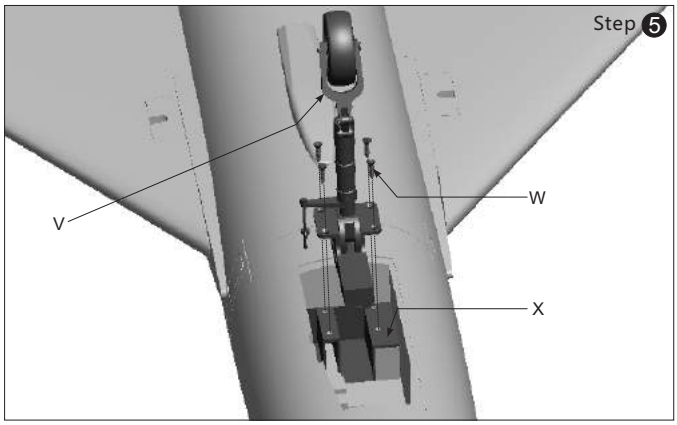
Step 2



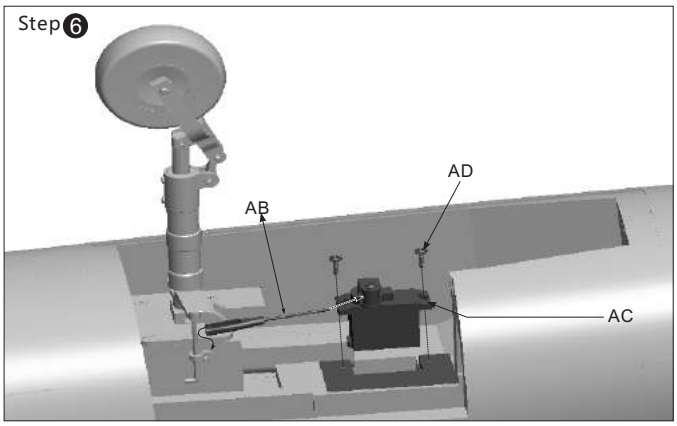
Step 3



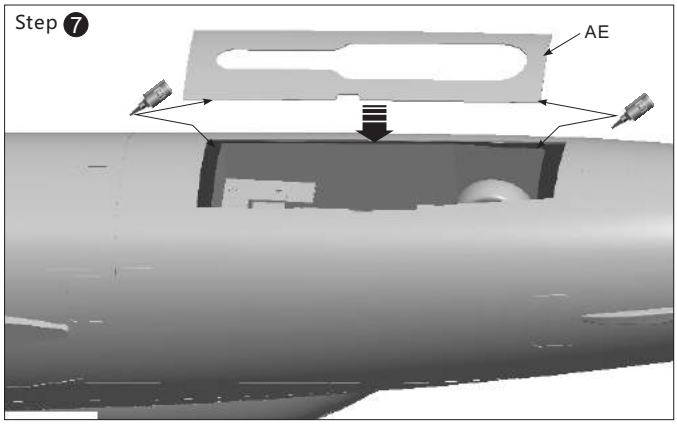
Step 4



Step 5

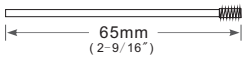


Step 6



Step 7

Nose steering pushrod size



Pushrod diameter : Ø1.2mm

Servo pushrod installing hole

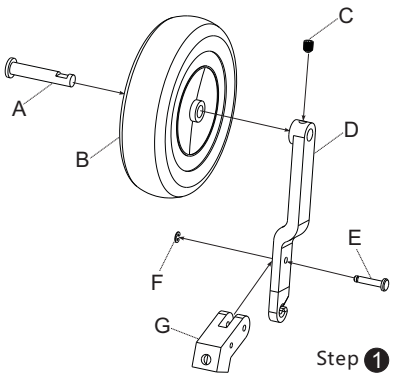
Landing Gear Installation

Rear Landing Gear Assembly

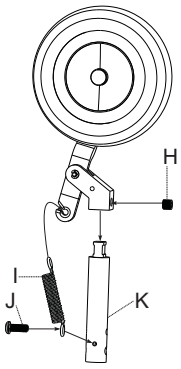
Assemble and disassemble the rear landing gear according to the following photo.

A - Main gear axle
B - Main wheel
C - Screw (M3x3mm)
D - Rear gear slant supporting rod
E - Pin(Ø3.5X9.2mm 1pc)
F - E clip (Ø1.5mm 1pc)
G - Main gear trunion A
H - Screw (M4x3mm)
I - Spring
J - Screw (PM3x4 1pc)
K - Main gear main supporting rod B
L - Main gear main rod
M - Grub screws (M4x4mm)
N - Retract controller
O - Nose gear door
R - Screws (PM2x5 2pcs)

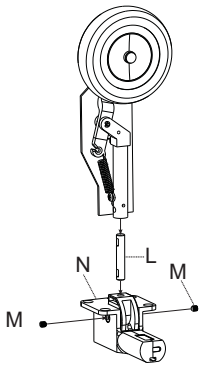
S - Main landing gear set
T - Screws (FA3x8 4pcs)
U - Main landing gear mount



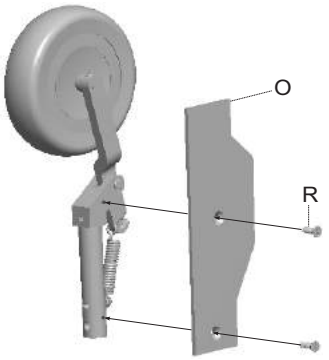
Step 1



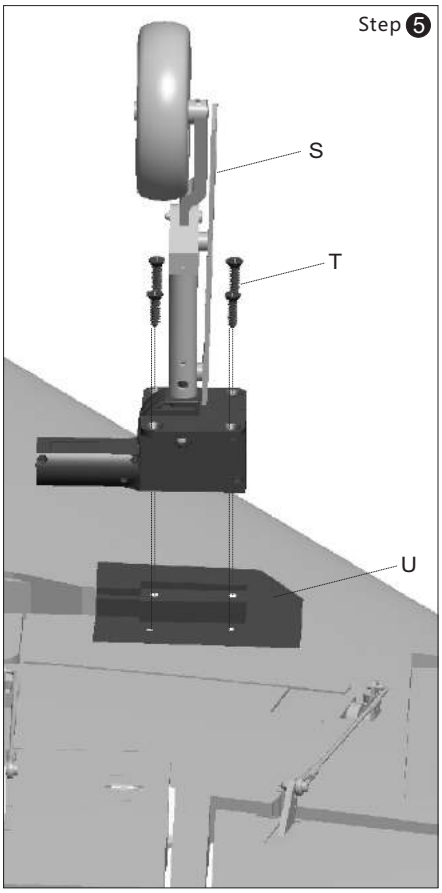
Step 2



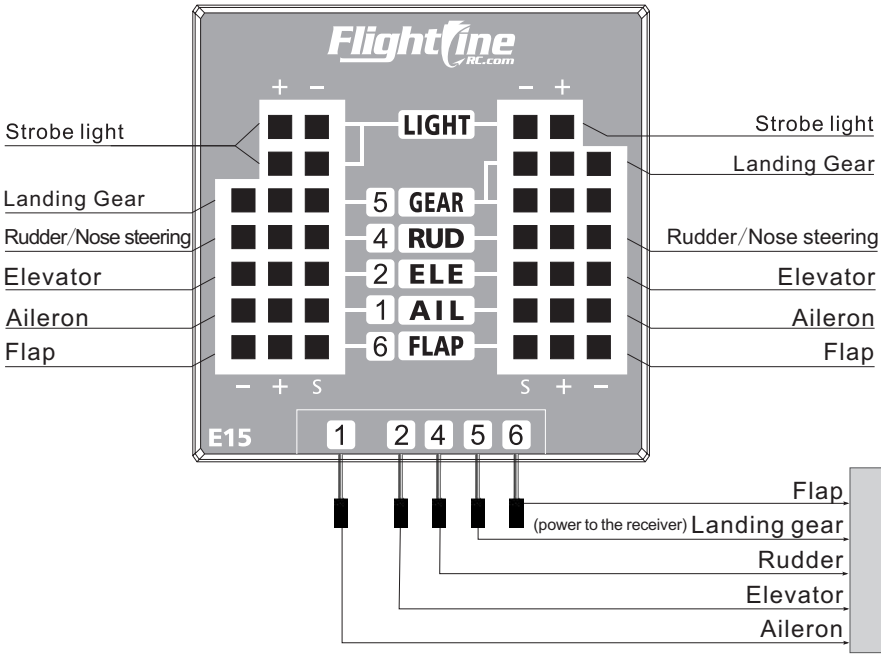
Step 3

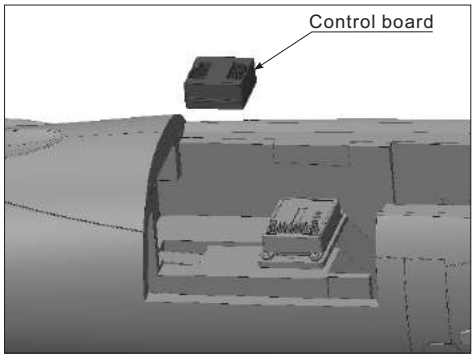


Step 4



Control Board Introduction and Use



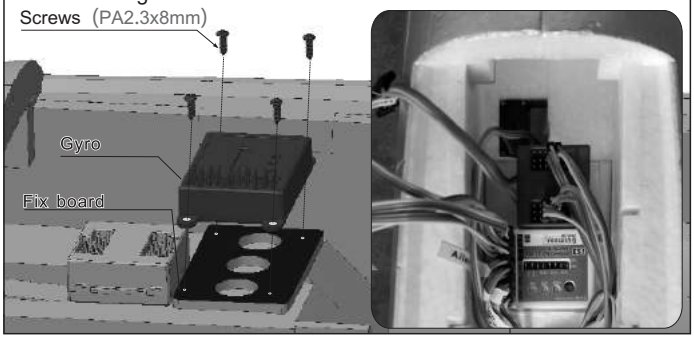


Refer to the model of the control board, insert all the connection cables to the control board.
(Not including throttle, the throttle cable goes directly to the receiver .)

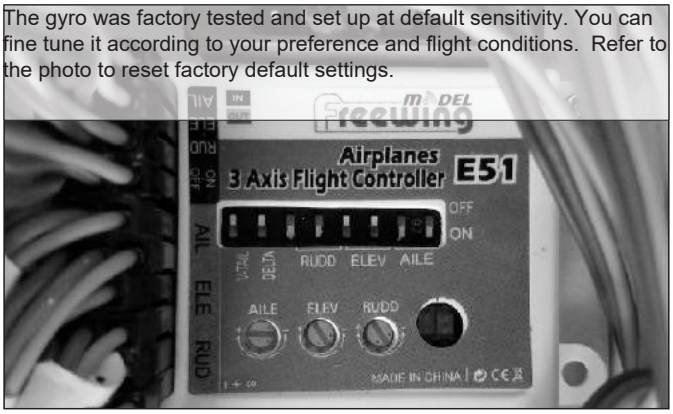
When you use a gyro,
Elevator \ Aileron \ Rudder channels from the Control Board connect directly to the gyro outputs, then from the gyro inputs to the receiver. All the other channels will connect directly to the receiver from the Control Board.

3-Axis Gyro Introduction and Use

Use 4 screws to secure the gyro onto the board at the front of the battery compartment. Make sure the gyro decal is facing the nose cone when installing.

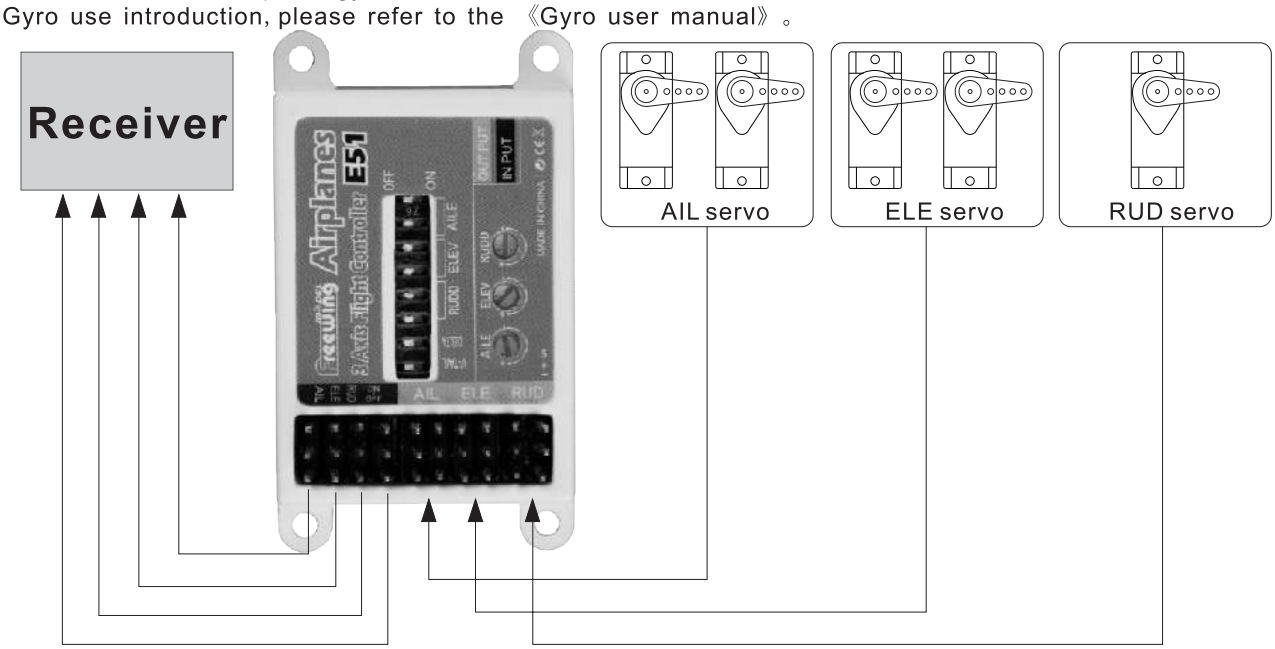


The gyro was factory tested and set up at default sensitivity. You can fine tune it according to your preference and flight conditions. Refer to the photo to reset factory default settings.

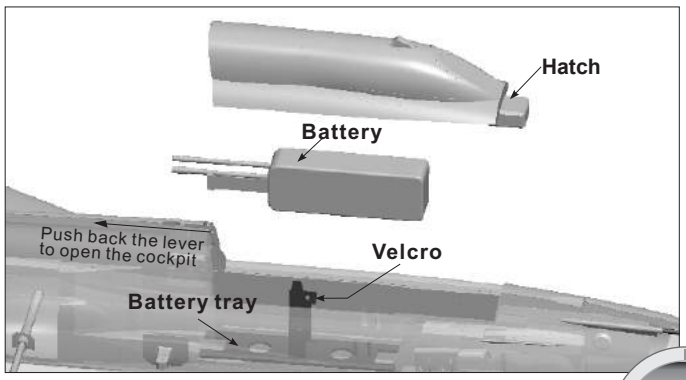


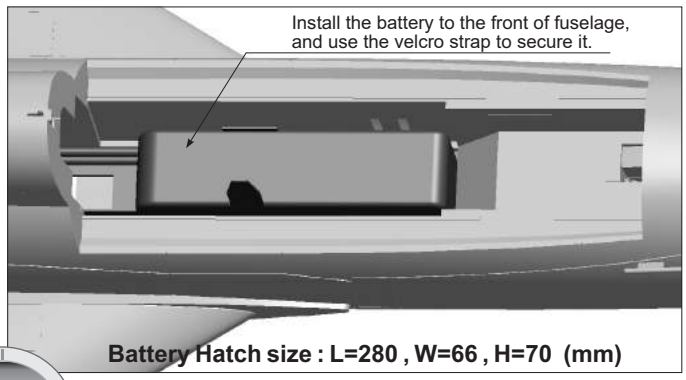
Gyro connection diagram

1.Please install gyro correctly;
2.Insert the elevator/rudder/aileron cables to the Gyro output port;
3.Use three connection wires to connect gyro input port and receiver corresponding channels;
4.If your receiver has enough channels, you can use another connection wire to connect gyro and receiver, use to set up the gyro switch.。
5.Gyro use introduction, please refer to the 《Gyro user manual》。

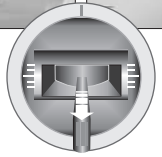


Battery Installation





Before connecting the battery to the ESC, please switch on the transmitter power and make sure the throttle stick is in the lowest position. Engage the kill switch if you have one assigned.

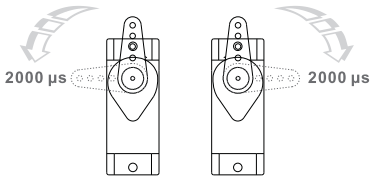


The recommended battery size and discharge rate is:

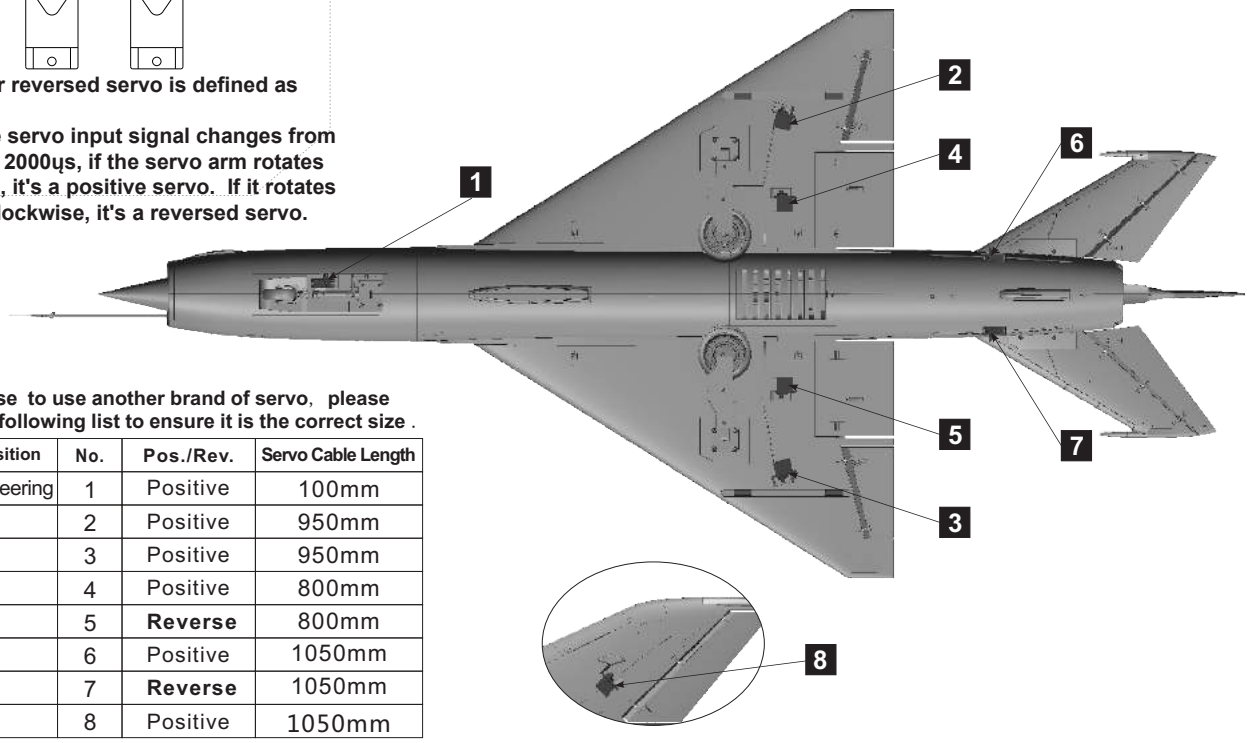
6S 22.2V 4000mAh~6S 22.2 5500mAh

Discharge rate of C ⩾35C

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.



If you choose to use another brand of servo, please refer to the following list to ensure it is the correct size .

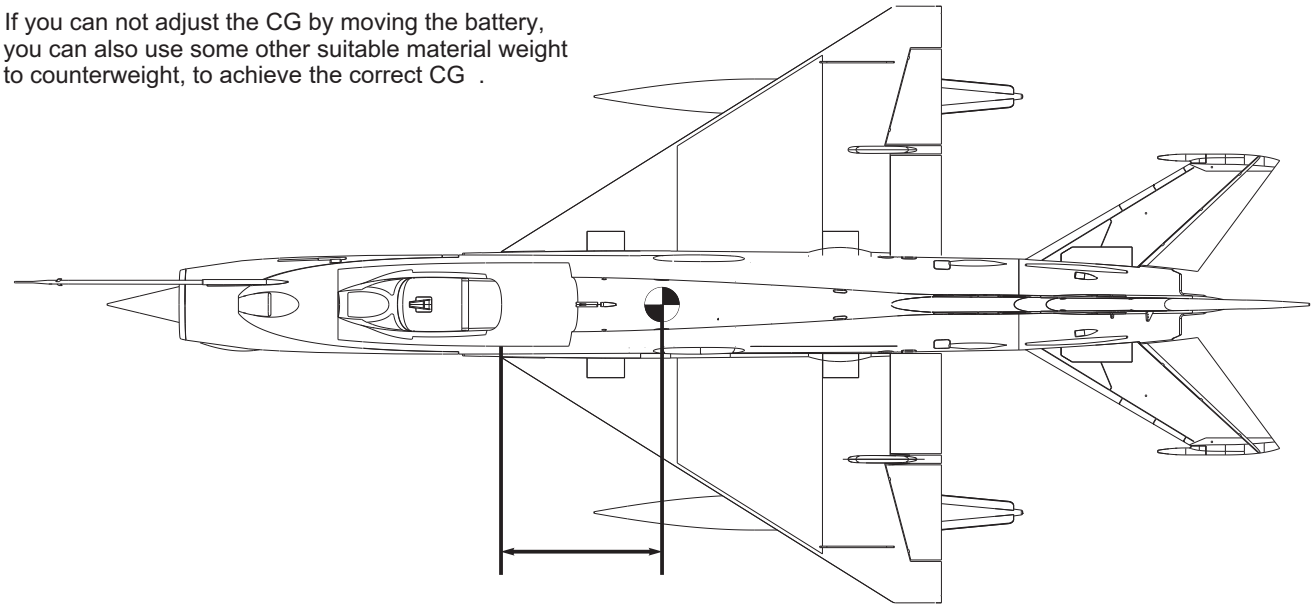
Installing position	No.	Pos./Rev.	Servo Cable Length
Nose gear steering	1	Positive	100mm
Aileron(L)	2	Positive	950mm
Aileron(R)	3	Positive	950mm
Flap(L)	4	Positive	800mm
Flap(R)	5	**Reverse**	800mm
Elevator(L)	6	Positive	1050mm
Elevator(R)	7	**Reverse**	1050mm
Rudder	8	Positive	1050mm

Center of Gravity

Correct center of gravity is directly related to the success of the initial flights. 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.

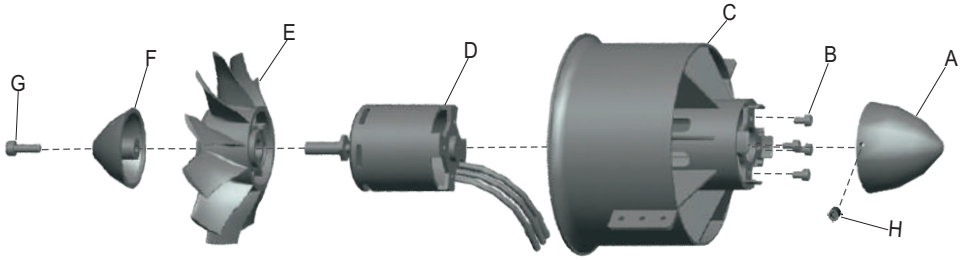
- If you can not adjust the CG by moving the battery, you can also use some other suitable material weight to counterweight, to achieve the correct CG .



265mm
(10-1/2")

Power System Assembly

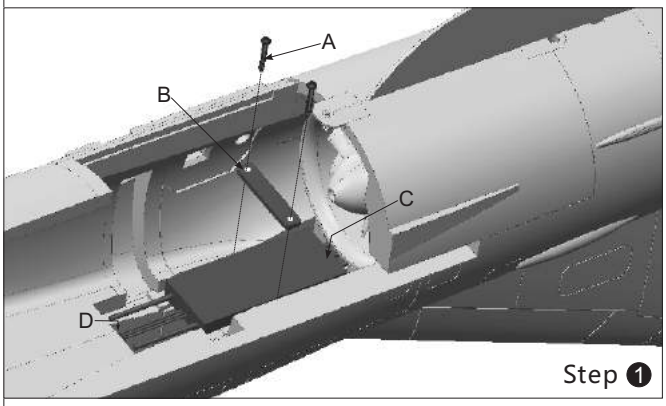
A-Motor spinner
B-Screws (PM3×6mm 4pcs)
C-80mm ducted fan metal frame for outrunner motor
D-3553-1800KV motor
E-90mm 12-blade ducted fan
F-Spinner
G-Screw (PM3×10mm 1pc)
H-Screws (M3×3mm 2pcs)

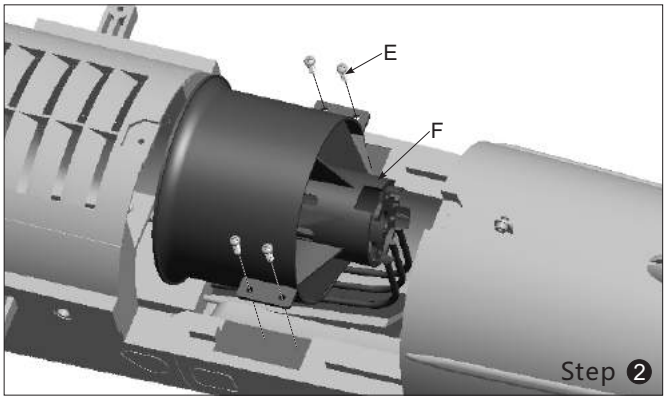


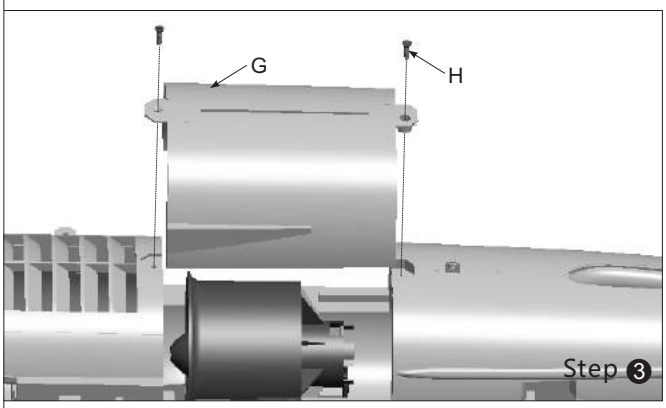
Refer to the following photo to install power system and ESC.

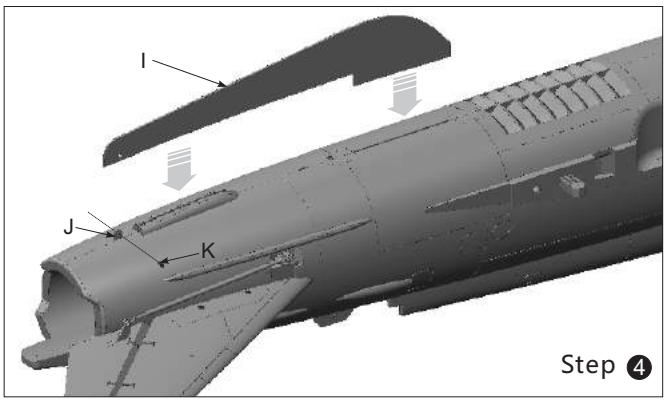
A- Screws (PM3x25mm 2pcs)
B- ESC fixed wood piece1
C- ESC
D- ESC fixed wood piece2
E- Screws (PWA3x8mm 4pcs)
F- 80mm EDF power system
G- Ducted fan cover
H- Screws (FA3x8mm 2pcs)
I - Ventral Fins
J - Ventral Fins mount
K- Screw(KA2.6x8mm 1pc)

⚠ **Note:** When you have a battery connected to the ESC , do not touch either by hand to avoid accidental injury. When testing EDF, use a safety test stand.



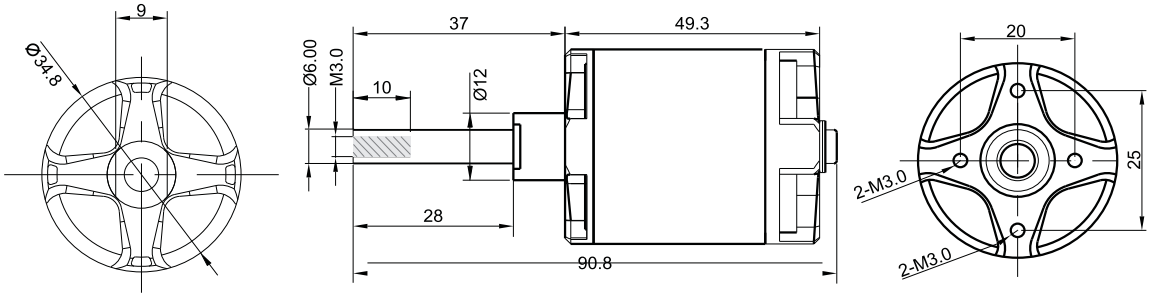






Motor parameters

MO035302
3530-1750KV



Unit: mm

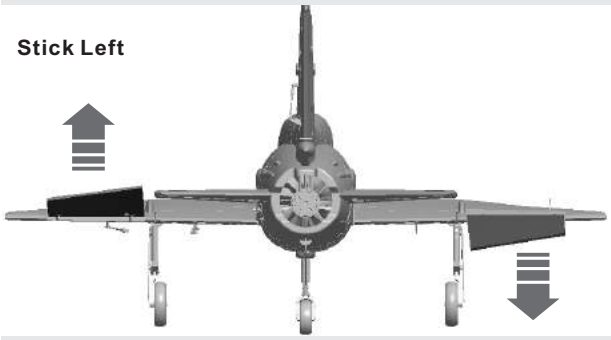
Item No.	KV Value	Volate (V)	Current (A)	Thrust (g)	Motor Resistance	Weight (g)	No Load Current	Propeller	ESC
MO035302	1800RPM/V	22.2	86	3000	0.0146Ω	150	4.6A/23V	12-Bladed 80mm Ducted Fan	⩾100A

Control direction test

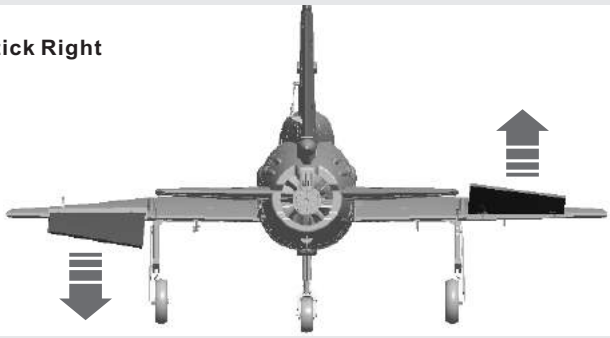
After the build is complete, power up the radio and connect a fully charged battery to the ESC. Use the radio to ensure correct control direction.

Aileron

Stick Left

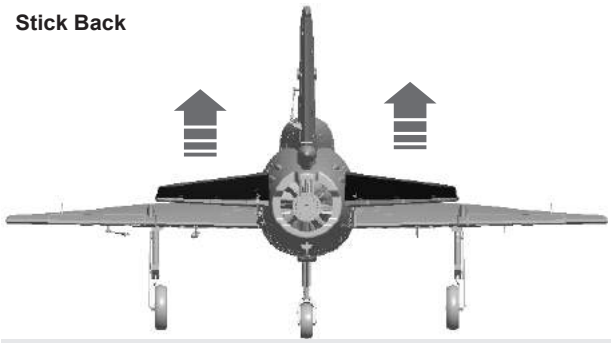


Stick Right

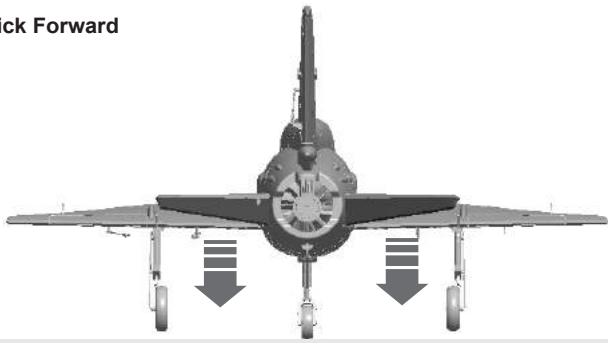


Elevator

Stick Back

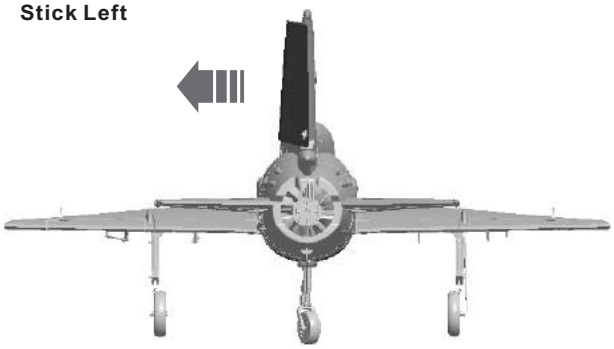


Stick Forward

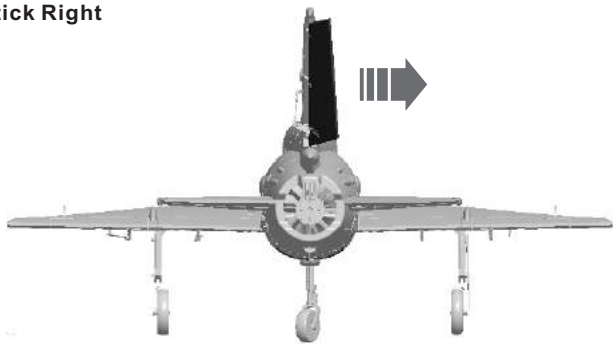


Rudder

Stick Left

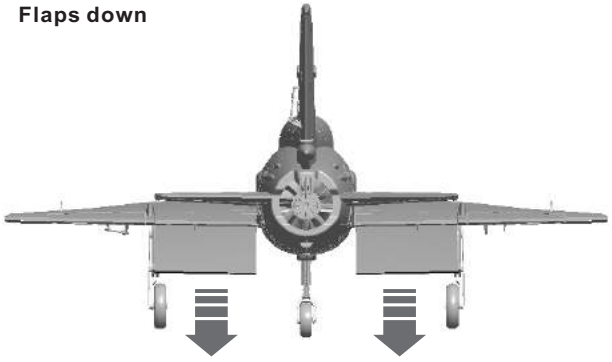


Stick Right



Optional Flaps

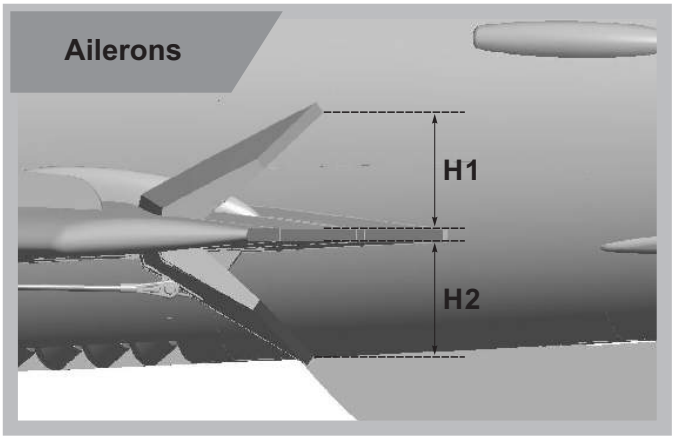
Flaps down



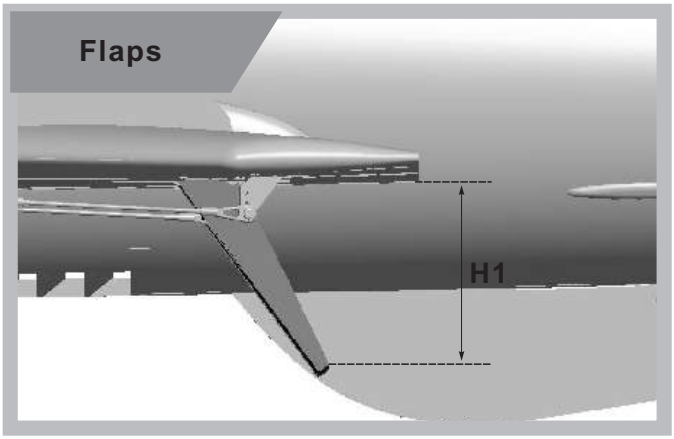
Dual Rates

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.

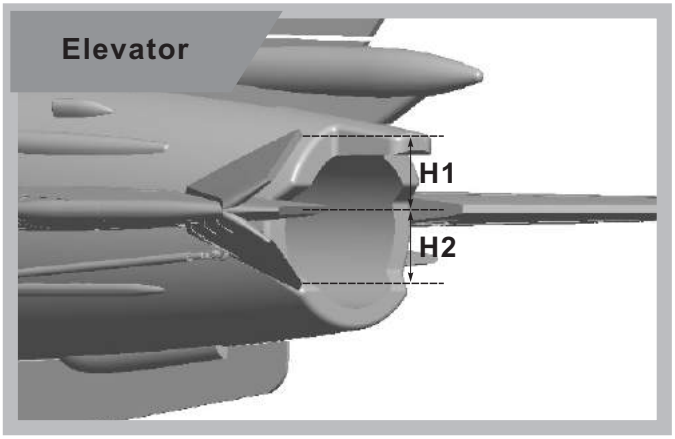
Ailerons



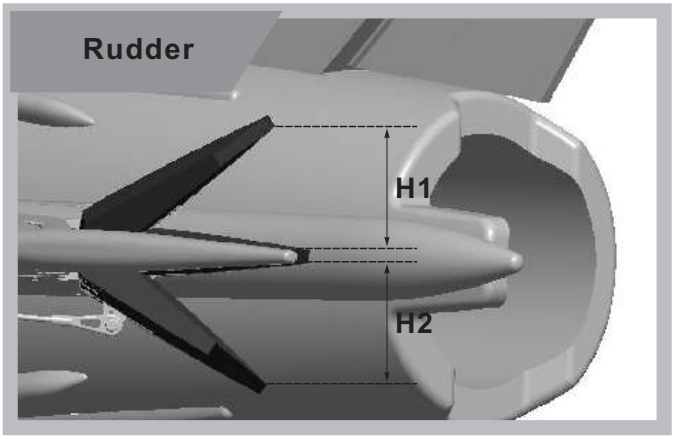
Flaps



Elevator



Rudder



	Ailerons	Elevator	Rudder	Flaps
Low Rate	H1/H2 16mm/16mm D/R Rate : 80%	H1/H2 30mm/30mm D/R Rate : 100%	H1/H2 20mm/20mm D/R Rate : 85%	H1 30mm
High Rate	H1/H2 20mm/20mm D/R Rate : 100%	H1/H2 30mm/30mm D/R Rate : 100%	H1/H2 24mm/24mm D/R Rate : 100%	H1 45mm

前　言

历史简介

1953年开始设计的MIG-21，是60年代前苏联空军主力制空战斗机。此机是第二次世界大战后，生产数量最多的超音速喷气式战斗机，总产量超过6000架（不包括中国引进改型的歼7系列战斗机），在全世界，约50个国家和地区使用过该款战斗机。

模型概述

飞翼1/9比例MIG-21MF，机长1730mm，翼展800mm，这款模型的外形线条及轮廓，完全依据真实飞机按比例缩小制作，细节的处理，使外形更加逼真。大量使用塑料零件，使我们可以快速、便捷安装主翼、平尾及垂尾。较长的空速管和机鼻，可重复拆解，防止运输过程造成损坏。MIG-21MF模型，采用12叶80mm金属外框涵道风扇，3553-1720外转无刷马达，100A ESC。全机采用了8个9g金属数字分别控制垂尾、方向舵、升降舵、副翼和襟翼，新型集线盒的使用，不仅使设备舱更加整洁，而且能够有效减少内置连接线，降低飞行时接触不良导致事故的风险。更大型号的涡杆控制器和全金属避震起落架，更加牢固、可靠。

新的80mm外转动力系统，在高性价比的基础上，给MIG-21MF模型带来强悍的动力，最高时速达到160kph/100mph。（注：搭配飞翼模型80mm内转动力组最高时速达到180kph/113mph，此动力组，可联系经销商选购！）虽然MIG-21的机体内部空间非常难以设计，但是经过优化的电池舱空间，在保证重心的前提下，可以使用6S 4000mAh ~ 6S 5200mAh电池，达到5分钟的最高飞行时长。

飞行特性

飞翼Mig-21MF电动涵道模型，非常适合中、高级涵道玩家，是一款非常富有操作乐趣的产品。强劲的动力，使得模型最少起飞距离缩短到30M。经过气动优化设计的MIG-21MF模型，在高速和低速二种飞行状态下，均能保持非常稳定的飞行，动作指令响应迅速，易于控制和保持。三角翼主翼及后掠水平尾翼设计，使得它具有非常优秀的爬升速度。低速大仰角动作易于实现、不易失速。降落时，开启襟翼后，减速明显，姿态不会出现过大的变化，机体呈18~45度仰角，配合油门，慢速、轻柔降落。

同样地，飞翼模型的E51三轴增稳陀螺仪，可以完美的使用于MIG-21MF，我们为这个电子配件预留了安装位置，您可以参考说明书，自行安装！MIG-21MF模型，在陀螺仪的帮助下，飞行将变得更加容易控制，可以更轻松的实现相关飞行动作！

涂装介绍

我们为这款产品准备了二个涂装：蓝白灰色和银色。其中，银色涂装的包装盒内，分别包含了四个国家的战斗涂装贴纸，可供选择。

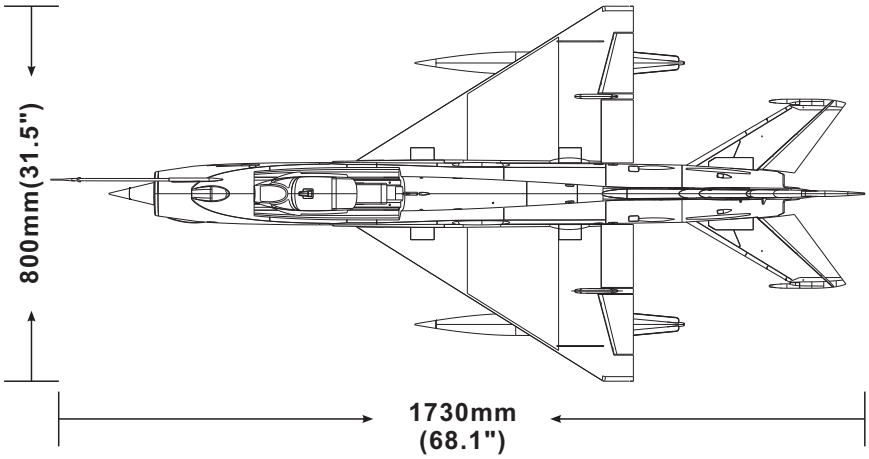
⚠ **注意：**模型产品是具一定危险性的产品，请禁止14岁以下的儿童玩耍，14 岁以上的儿童，请在有飞行经验的成人指导下使用，无飞行经验的购买者，应当在具有一定电动涵道飞机飞行经验的成人指导下使用！ 组装模型前，请仔细阅读说明书，按照说明书的要求进行安装. 进行调试和飞行时，请根据说明书指示的参数进行调整。

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后 ，再进行回收！

目　录

产品基本参数



标准版

翼载荷：123g/dm²
电机：3530-1800KV外转无刷电机
涵道风扇：80mm 12叶涵道
电调：100A无刷电调 UBEC 5A
舵机：9g数字金属舵机（8pcs）
重量：2180g (不含电池)
推力：3000g

升级版

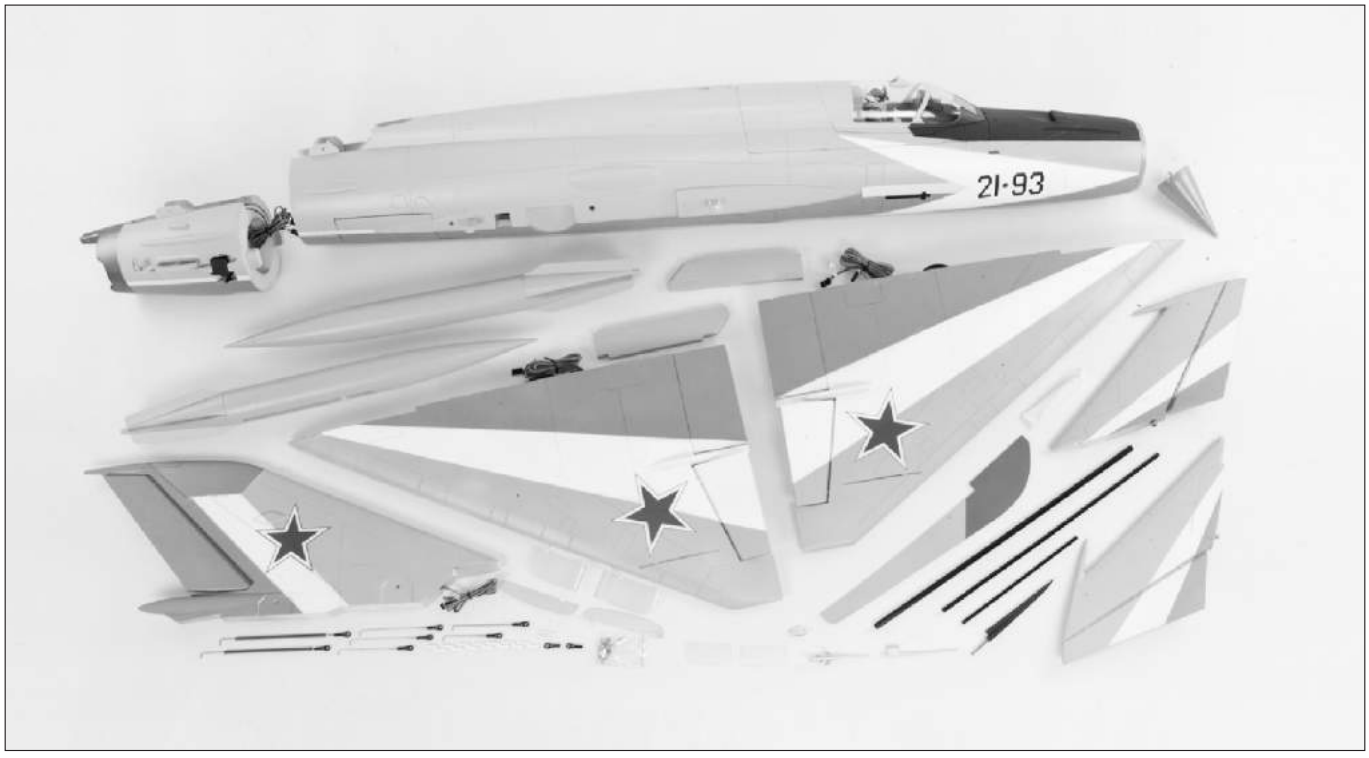
翼载荷：125g/dm²
电机：3658-1820KV内转无刷电机
涵道风扇：80mm 12叶涵道
电调：100A无刷电调 UBEC 5A
舵机：9g数字金属舵机（8pcs）
重量：2215g (不含电池)
推力：3200g

其它特性

-涡杆电动收放起落架
-新型铝合金减震起落架
-仿真座舱、飞行员
-磁吸附副油箱及挂架

⚠ **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！

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	Airframe
1	前\后机身	预装所有电子设备	预装舵机	无电子设备
2	主翼	预装所有电子设备	预装舵机	无电子设备
3	平尾	预装所有电子设备	预装舵机	无电子设备
4	垂尾	✓	✓	✓
5	副油箱\挂架	✓	✓	✓

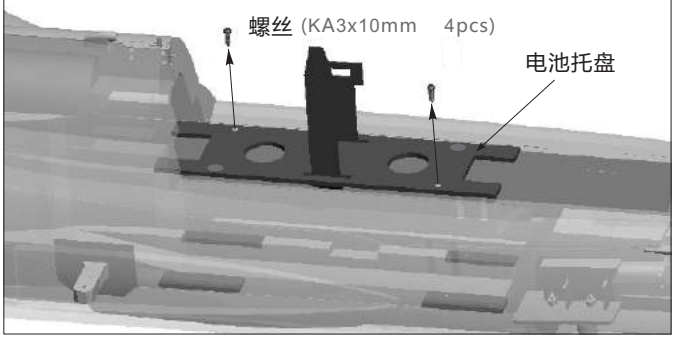
序号	配件名称	PNP	KIT Plus	Airframe
6	碳纤管	✓	✓	✓
7	空速管及天线配件	✓	✓	✓
8	吸塑片及腹鳍	✓	✓	✓
9	钢丝及螺丝包	✓	✓	✓
10	贴纸\说明书	✓	✓	✓

牵引钢丝使用说明

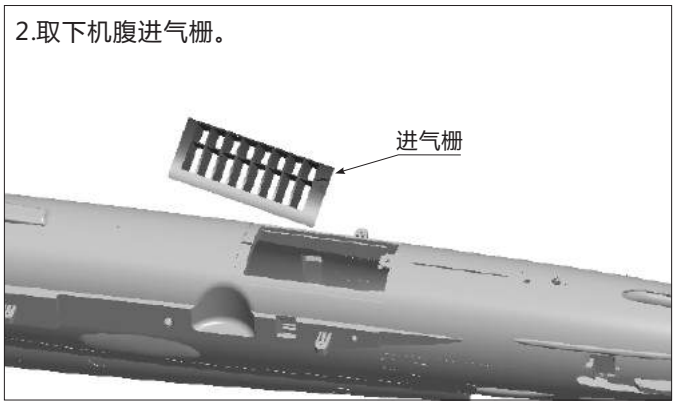
通过调查，过多的舵机延长线会加大连接处接触不良的风险，严重时，导致飞行过程，舵机断电而造成飞行事故。由于MIG-21内部线槽空间大且平直，故此模型的机体内，未使用舵机延长线。如下图所示，包装盒内包含一根牵引钢丝，PNP配置下，我们可以利用这根牵引钢丝，顺利的将主翼、平尾、垂尾舵机线布置到电池舱内。

组 装 前 准 备

1.打开座舱，松开固定电池托盘的二颗螺丝，取出电池托盘。

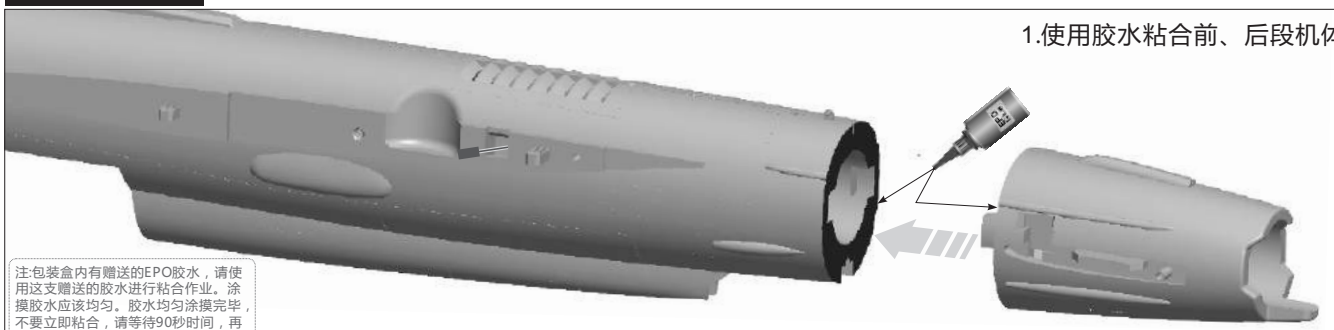


2.取下机腹进气栅。



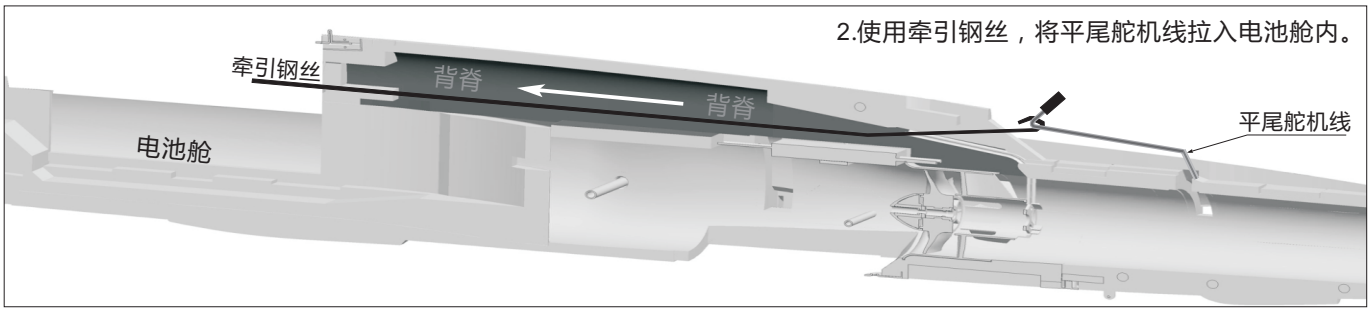
机 身 组 装

1.使用胶水粘合前、后段机体



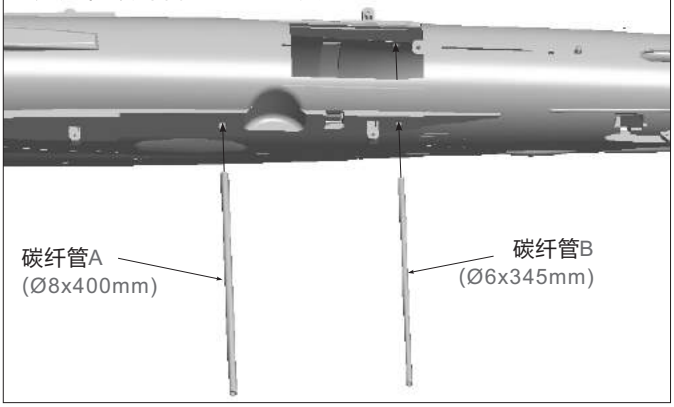
注:包装盒内有赠送的EPO胶水，请使用这支赠送的胶水进行粘合作业。涂摸胶水应该均匀。胶水均匀涂摸完毕，不要立即粘合，请等待90秒时间，再进行粘合，效果最佳！

2.使用牵引钢丝，将平尾舵机线拉入电池舱内。

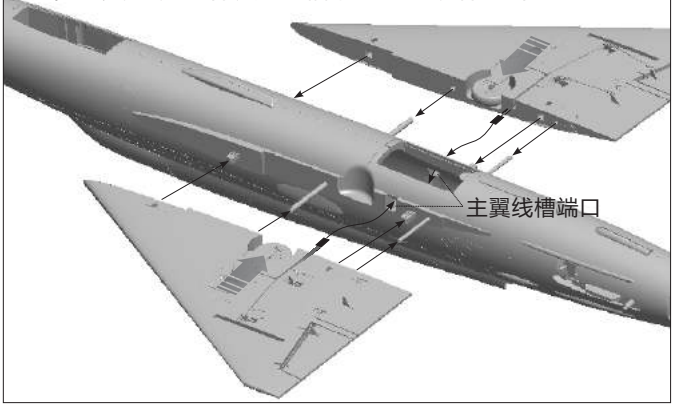


主 翼 组 装

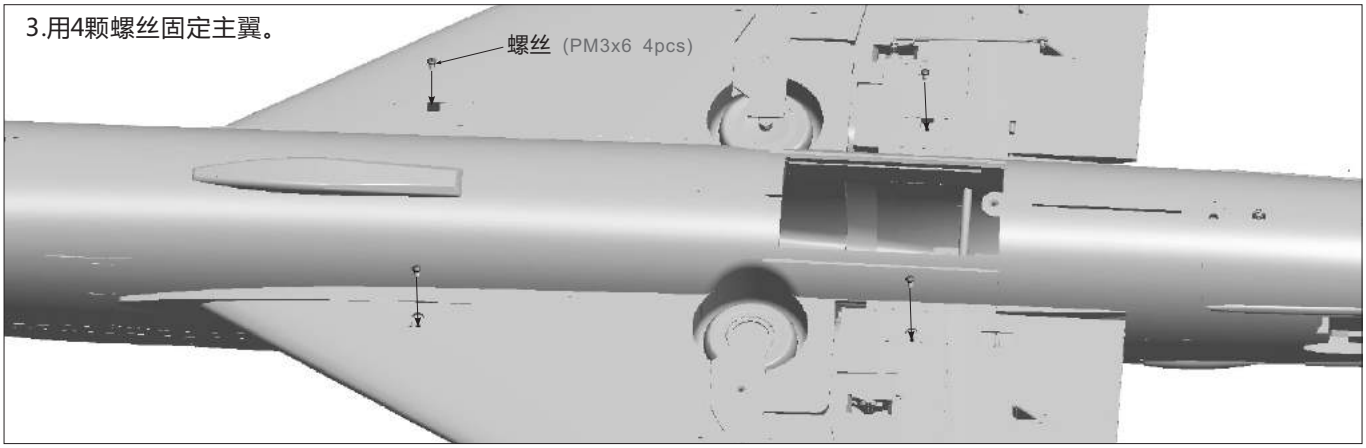
1.分别将碳纤管A、B穿入机身。



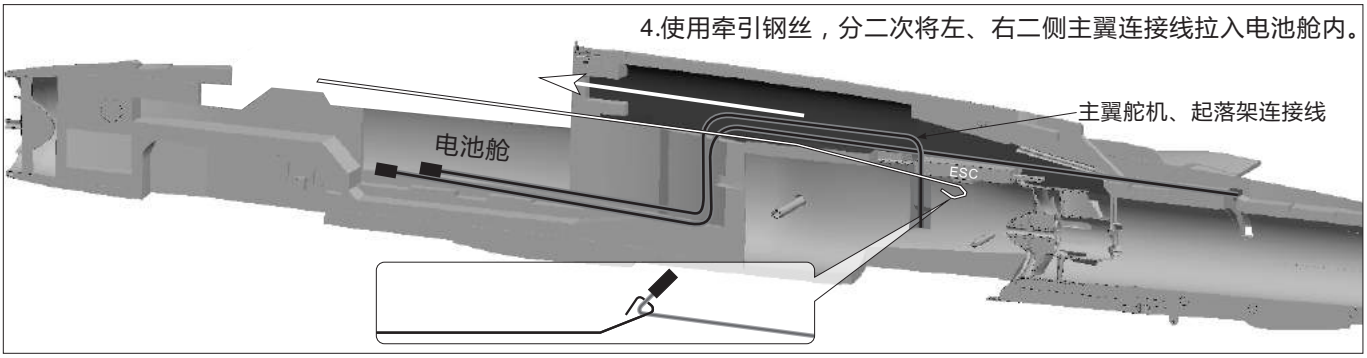
2.将主翼舵机线沿机身线槽端口穿入机体内部。



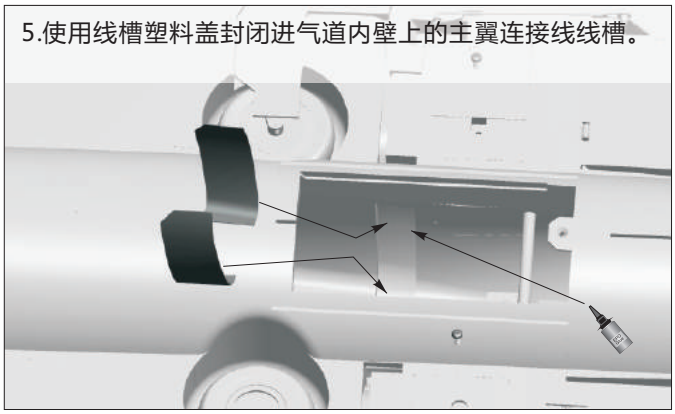
3.用4颗螺丝固定主翼。



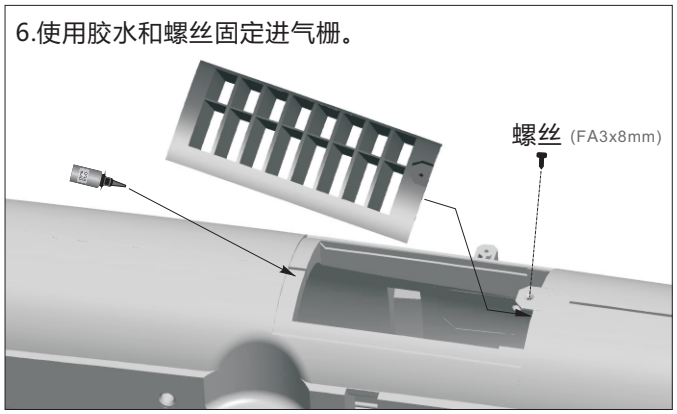
4.使用牵引钢丝，分二次将左、右二侧主翼连接线拉入电池舱内。



5.使用线槽塑料盖封闭进气道内壁上的主翼连接线线槽。



6.使用胶水和螺丝固定进气栅。

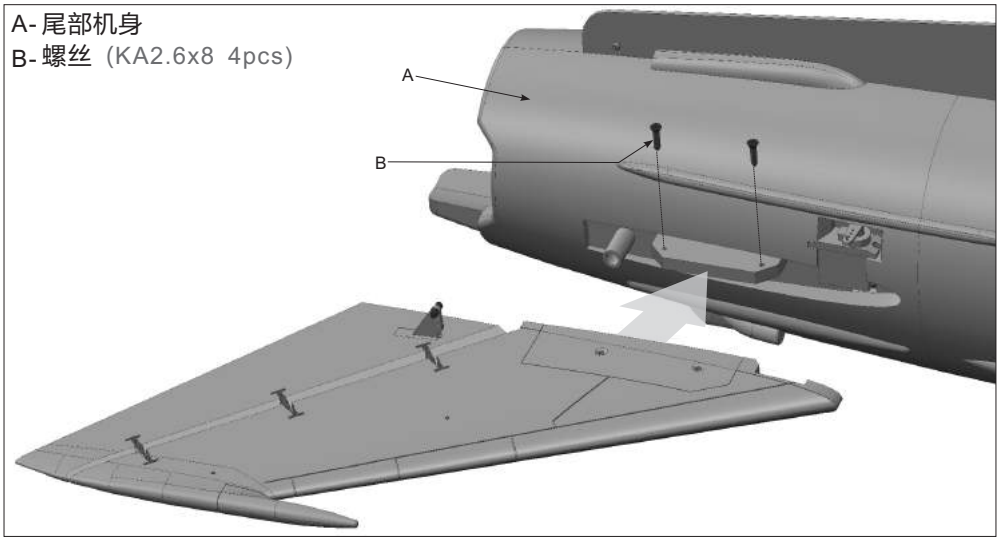


平尾、垂尾

平 尾 组 装

1.将平尾插入到机身尾部。
2.用2颗螺丝拧紧固定平尾。
3.重复以上步骤安装另一侧平尾。

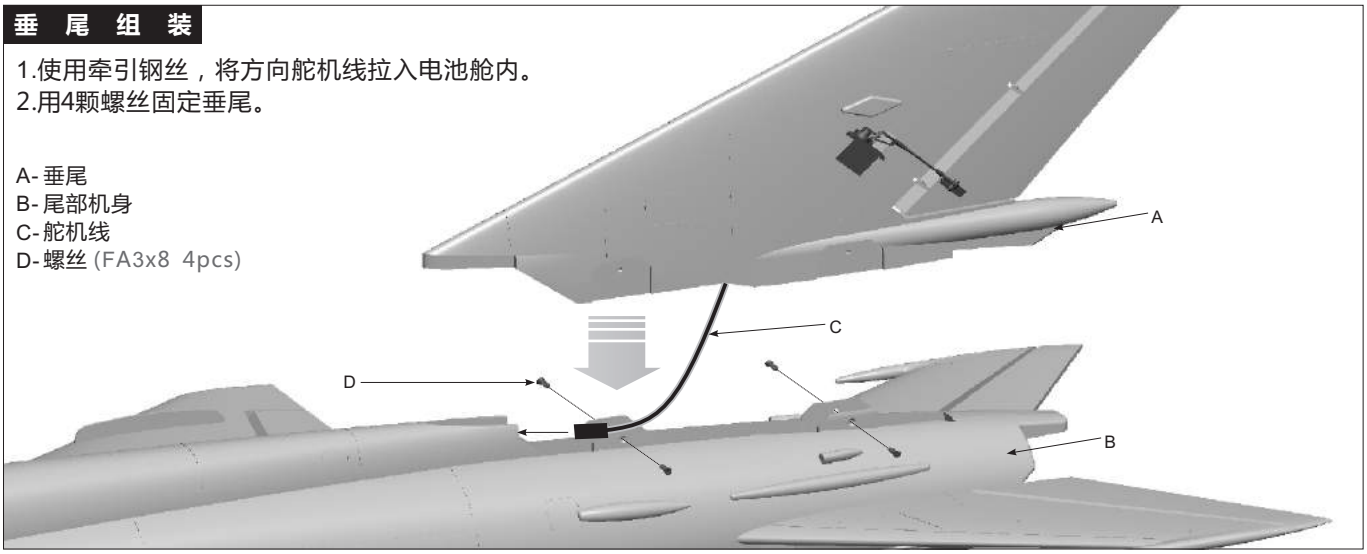
A- 尾部机身
B- 螺丝 (KA2.6x8 4pcs)



垂 尾 组 装

1.使用牵引钢丝，将方向舵机线拉入电池舱内。
2.用4颗螺丝固定垂尾。

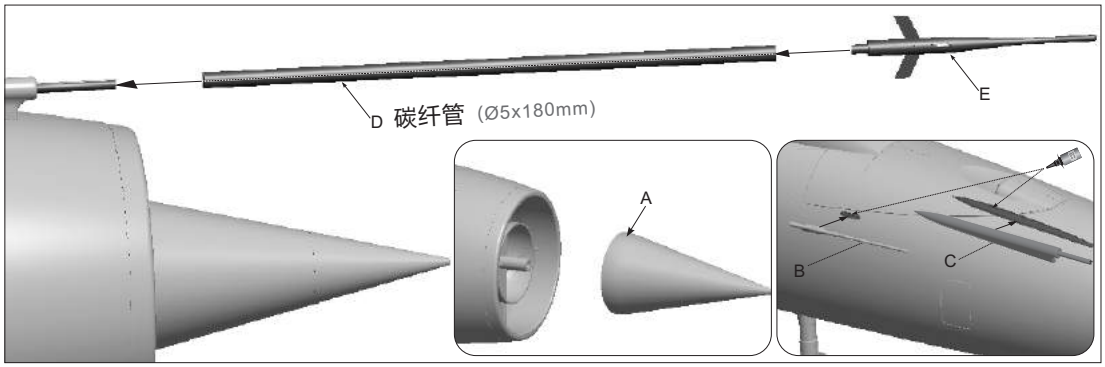
A- 垂尾
B- 尾部机身
C- 舵机线
D- 螺丝 (FA3x8 4pcs)

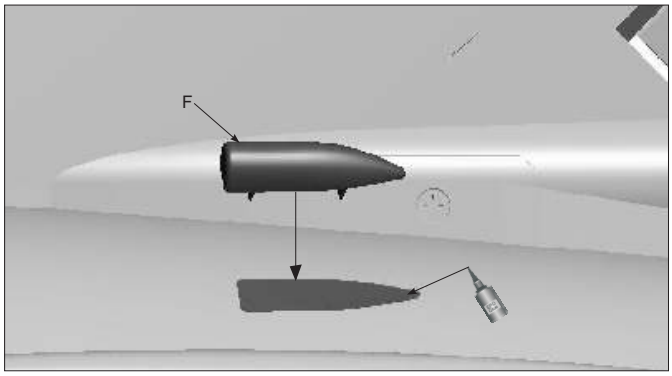


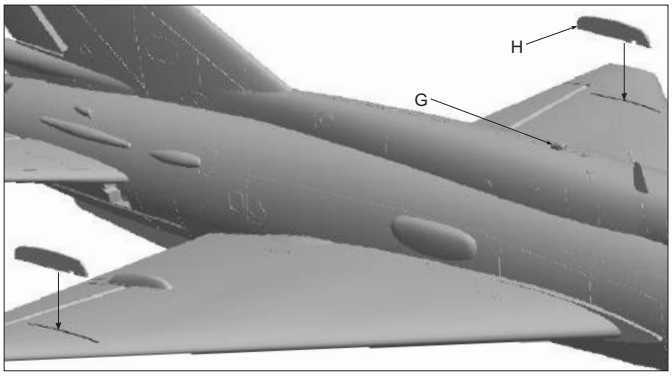
机鼻、空速管、翼刀及副油箱挂架组装

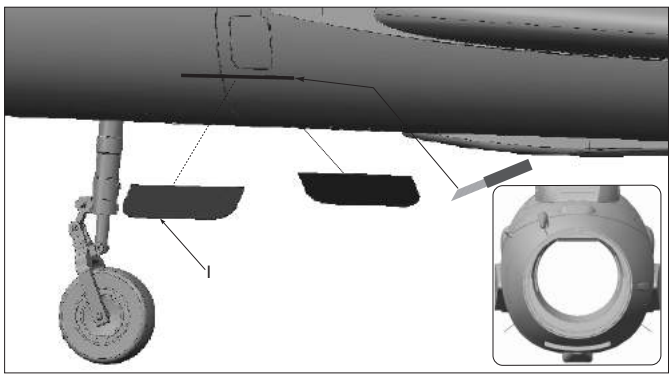
配件名称及规格参数

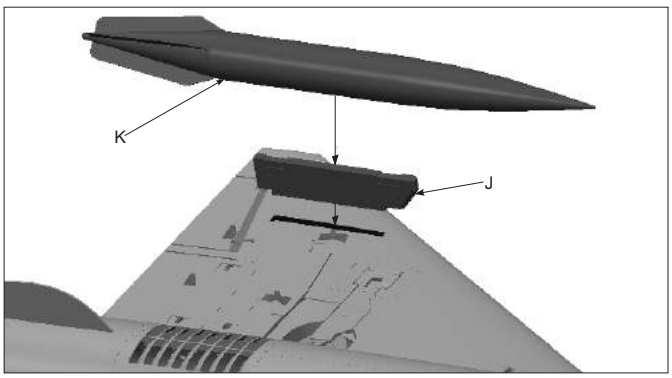
A- 机鼻
B- 天线
C- 空速管零件1
D- 碳纤管 (Ø5x180mm)
E- 空速管零件2
F- 塑料件1（左、右)
G- 塑料件2
H- 翼刀
I - 腹鳍
J - 挂架
K- 副油箱











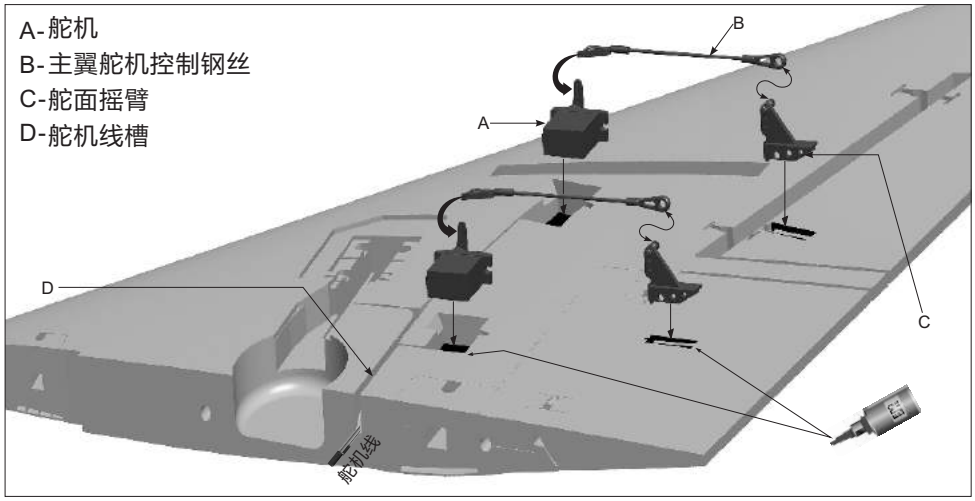
注意：1.完成以上步骤后，根据集线盒上的内容通道标识，将所有舵机插入到集线盒内。
2. 最后用4颗螺丝固定电池托盘（所有舵机线处于电池托盘下方）。

舵机安装说明

中文版

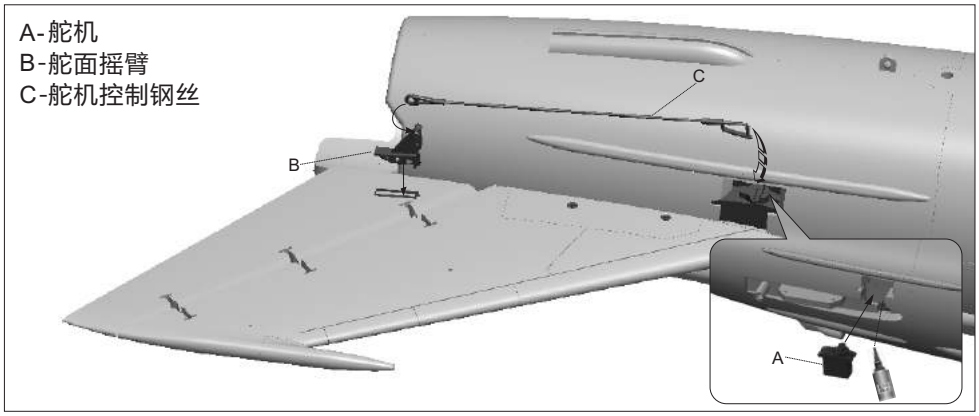
主翼舵机安装

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.用胶水分别把舵机和舵面摇臂粘到主翼;
3.将舵机线卡到舵机线槽内，待所有主翼舵机安装完成，贴上贴纸;
4.钢丝一端穿入到舵机摇臂后，调节钢丝长度，在保持舵面居中的情况下，将夹头扣入舵面摇臂内;
5.重复以上4个步骤，安装另外一侧主翼舵机。



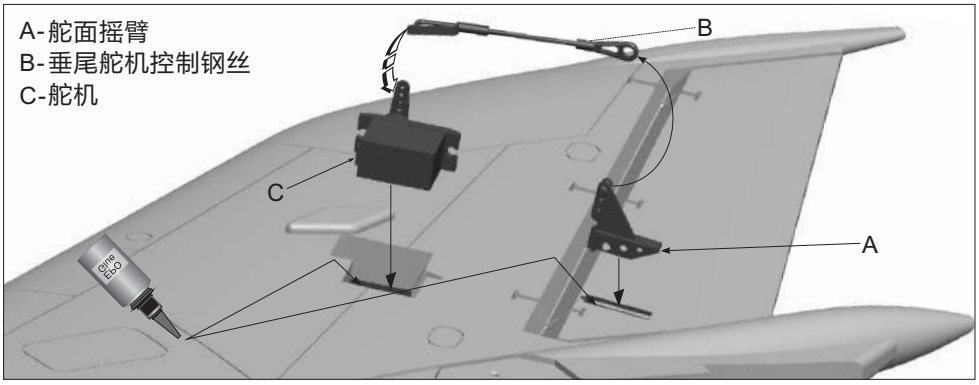
平尾舵机安装

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.如右图所示,使用胶水把舵机和舵面摇臂粘到平尾;
3.钢丝一端穿入到舵机摇臂后，调节钢丝长度，在保持舵面居中的情况下，将夹头扣入舵面摇臂内；
4.重复以上3个步骤，安装另外一侧平尾舵机。

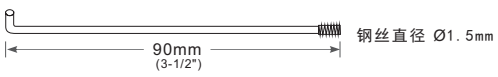


垂尾舵机安装

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.用胶水分别把舵机和舵面摇臂粘到垂尾上;
3.钢丝一端穿入到舵机摇臂后，调节钢丝长度，在保持舵面居中的情况下，将夹头扣入舵面摇臂内。



副翼控制钢丝尺寸



副翼舵机钢丝安装孔位

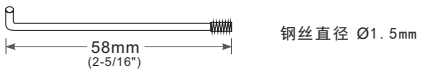
襟翼控制钢丝尺寸

襟翼舵机钢丝安装孔位

平尾控制钢丝尺寸

平尾舵机钢丝安装孔位

垂尾控制钢丝尺寸



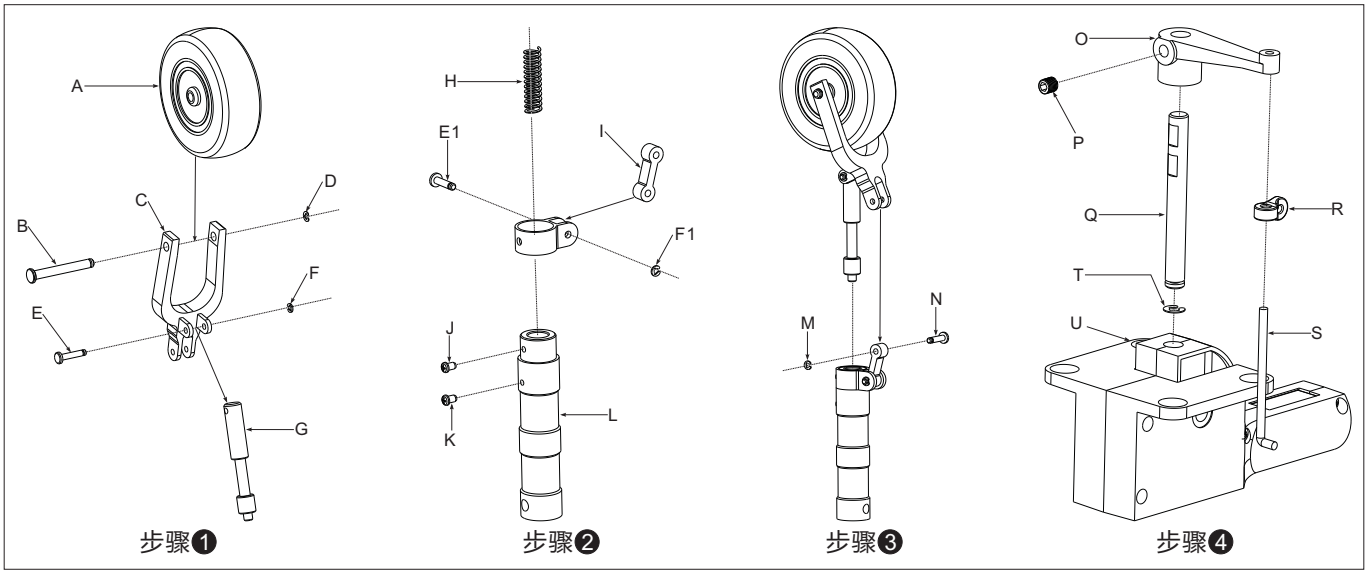
垂尾舵机钢丝安装孔位

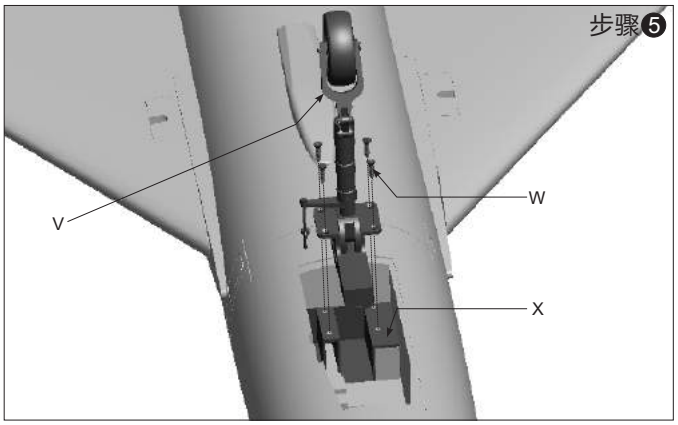
起落架组装介绍

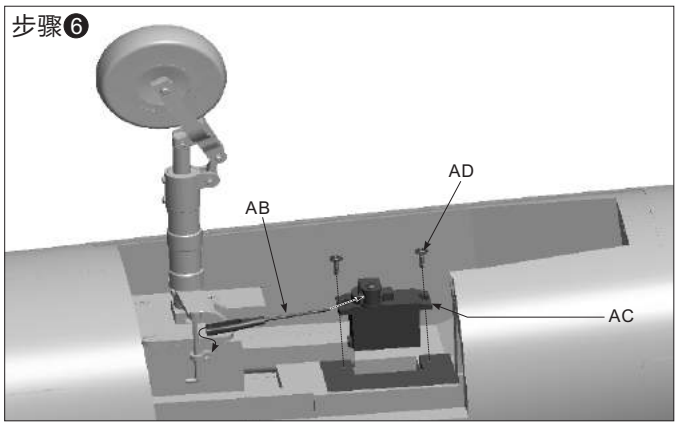
前起落架组装

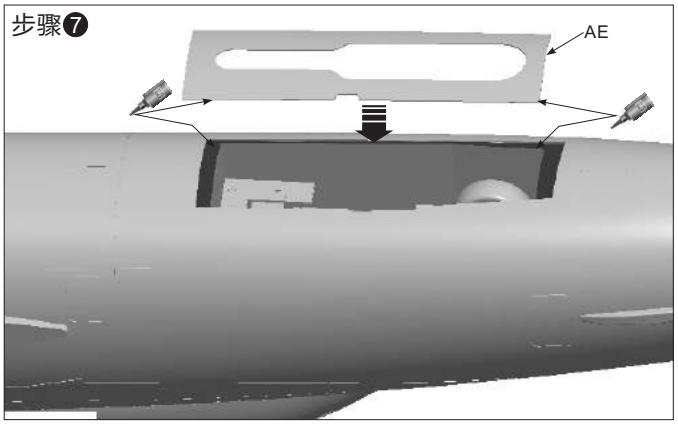
请参考以下图示，组装、更换、维修前起落架

A- 前机轮
B- 前轮轮轴
C- U型斜撑杆
D- E型扣 (Ø2.0pcs)
E- 梢钉 (Ø3.5X9.2mm 2pcs)
F- E型扣 (Ø1.5mm 2pcs)
G- 减震活动杆
H- 弹簧
I - 8字型减震转轴
J - 螺丝 (PM2x3 1pcs)
K- 螺丝 (PM2x4 1pcs)
L - 前起落架主撑杆
M- E型扣 (Ø1.5mm)
N- 梢钉 (Ø3.5x9.2mm)
O- L型摇臂
P- 机米螺丝 (M3x3mm)
Q- 前起落架主钢丝
R- 前起落架转向控制环
S- 前起落架转向钢丝
T- E型扣 (Ø2mm)
U- 前起落架收放控制器
V- 前起落架组件
W- 螺丝 (PA3x8 4pcs)
X- 前起落架固定座
AB- 前起落架舵机控制钢丝
AC- 前起落架舵机
AD- 螺丝 (PWA2x8mm 2pcs)
AE- 前舱门盖

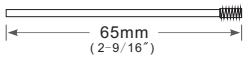








起落架转向控制钢丝尺寸



钢丝直径 Ø1.2mm

转向舵机钢丝安装孔位

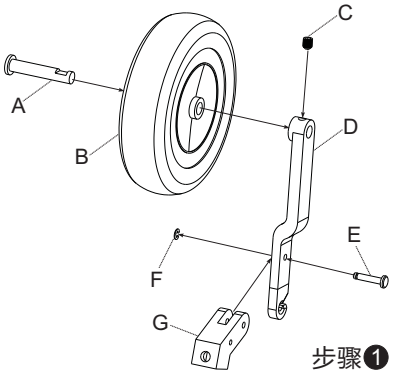
⚠**注意：**在整个起落架组装过程中，所有带扁口的零件，在用螺丝固定时，扁口面必须面向螺丝孔，只有这样，螺丝的固定才是有效的，零件才能不会转动和脱落。

起落架组装介绍

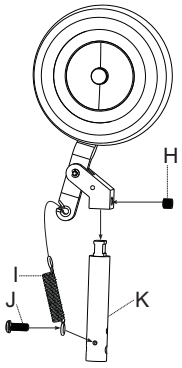
后起落架组装

请参考以下图示，组装、更换、维修后起落架

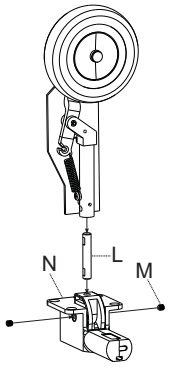
A - 轮轴
B - 机轮
C - 机米螺丝 (M3x3mm)
D - 后起落架斜撑杆
E - 梢钉 (Ø3.5X9.2mm 1pcs)
F - E型扣 (Ø1.5mm 1pcs)
G - 后起落架主撑杆A
H - 机米螺丝 (M4x3mm)
I - 弹簧
J - 螺丝 (PM3x4 1pcs)
K - 后起落架主撑杆B
L - 后起落架钢丝
M - 机米螺丝 (M4x4mm)
N - 电动起落架收放控制器
O - 后起落架随动舱门
R - 螺丝 (PM2x5 2pcs)
S - 后起落架组件
T - 螺丝 (FA3x8 4pcs)
U - 后起落架固定座



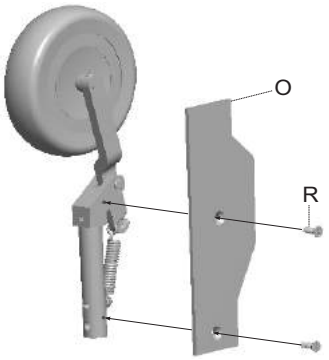
步骤❶



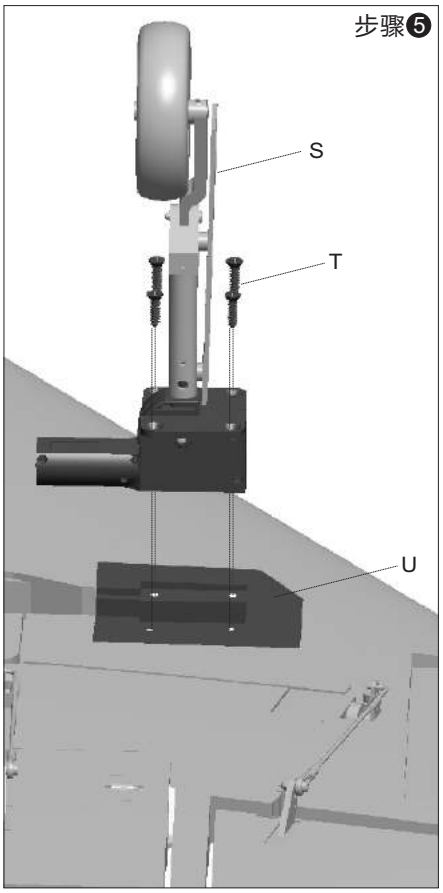
步骤❷



步骤❸

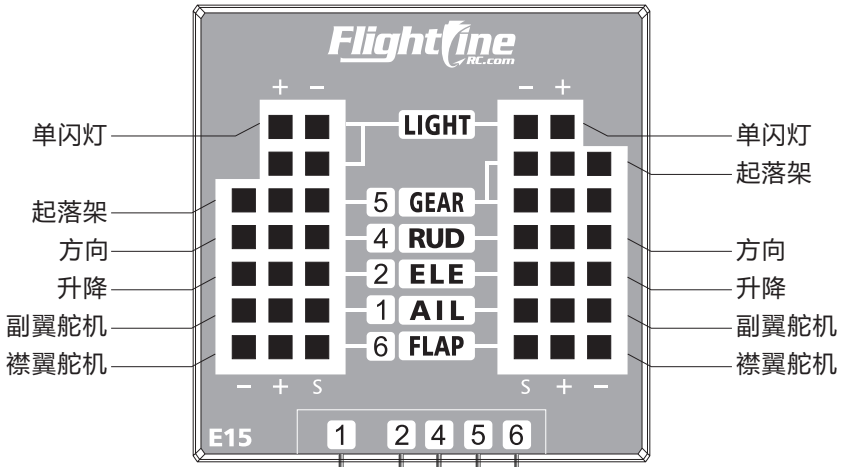


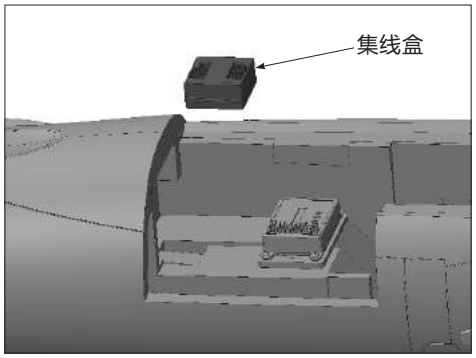
步骤❹

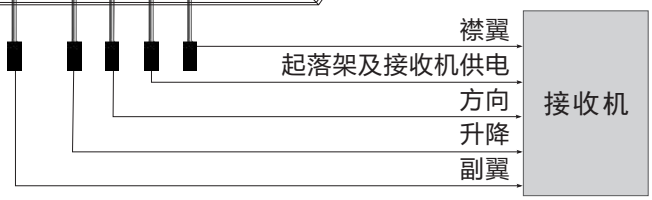


步骤❺

集线盒使用说明







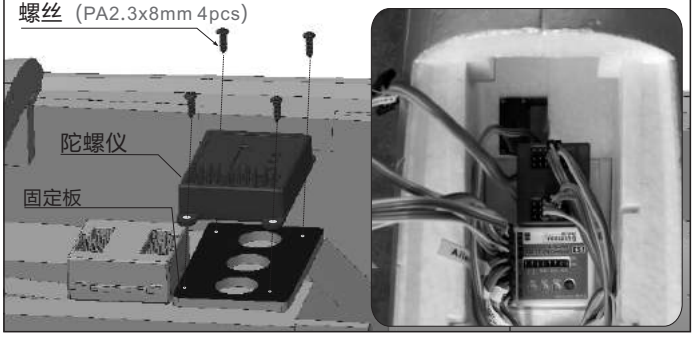
参考集线盒上的通道标识，将所有电池舱内的连接线插入集线盒。
（不包含油门，此通道直接接入陀螺仪）

当您使用陀螺仪时，升降、副翼、方向舵三个通道经由陀螺仪连接到接收机上。此处应该取消这三个通道与接收机的连接，其它通道连接不变。

陀螺仪使用说明

用四颗螺丝将陀螺仪固定在电池舱最前端的固定板上。安装时，确定陀螺仪贴纸上的LOGO朝机头方向！

螺丝（PA2.3x8mm 4pcs）

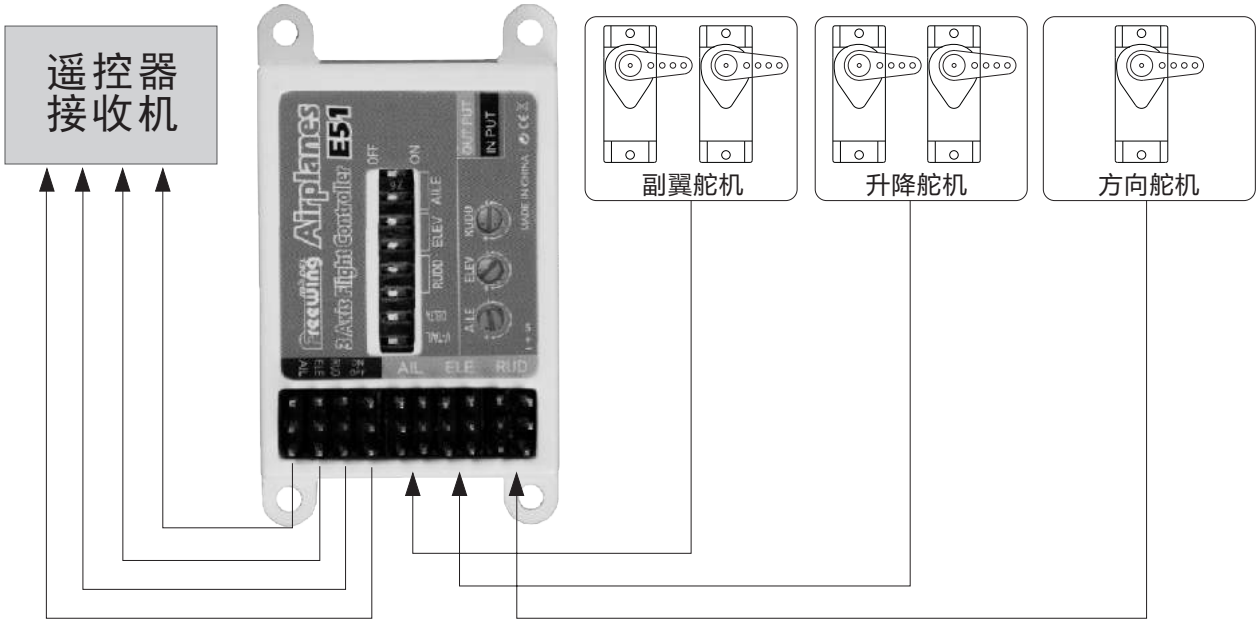


出厂时，陀螺仪已经通过测试，并设置好默认感度值，您可以根据实际情况，进行小幅度调整。

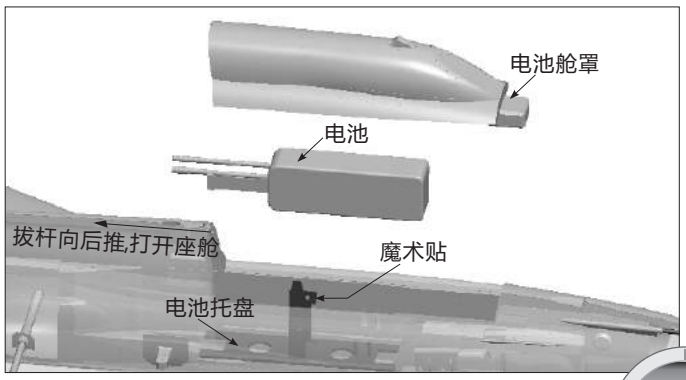
MIG-21使用E51陀螺仪建议感度值，请参考此图。

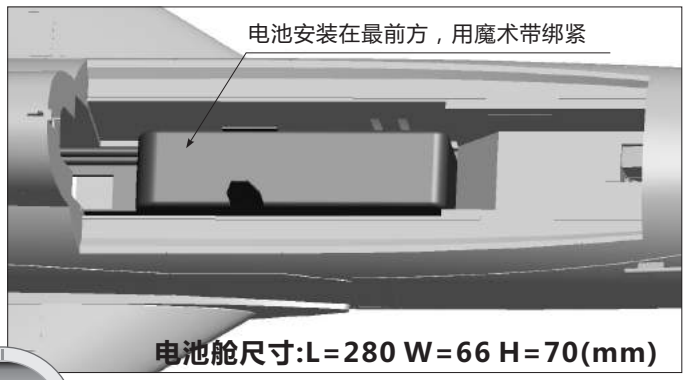
陀螺仪连接示意图

1.请正确安放陀螺仪，
2.将平尾、方向及副翼舵机线分别接入陀螺仪输出端；
3.使用3根连接线，将陀螺仪输入端与接收机对应通道连接；
4.如果您的接收机通道数目允许，您可以再使用一根连接线连接陀螺仪与接收机，用来设置陀螺仪（开启/关闭）开关。
5.陀螺仪详细使用方法，请参考《陀螺仪使用说明书》。

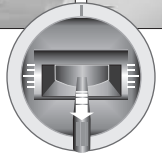


电池安装说明



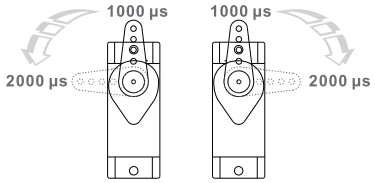


将电池与接收机连前，首先请打开发射机电源，确认油门杆处于低位。

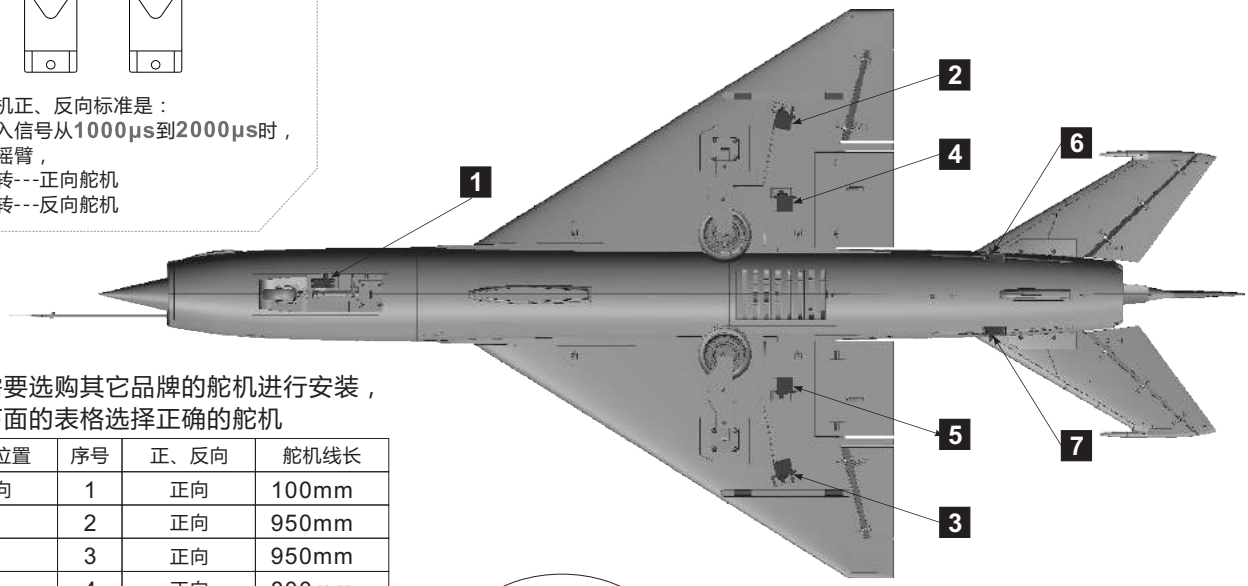


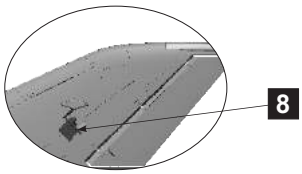
我们建议使用的电池容量和放电倍率如下:
6S 22.2V 4000mAh~6S 22.2 5500mAh
放电倍率≥35C　　电池型号：**4000ma/h 6s**

舵机使用介绍



我们的舵机正、反向标准是：
当舵机输入信号从1000μs到2000μs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





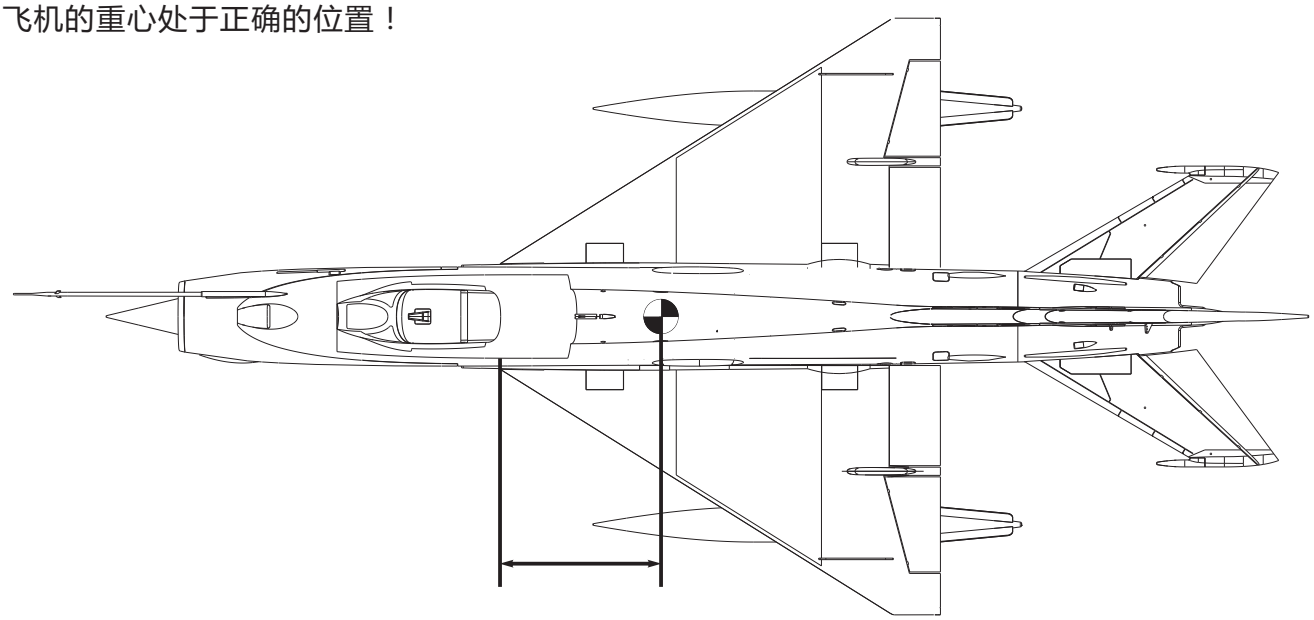
如果您需要选购其它品牌的舵机进行安装，
请参考下面的表格选择正确的舵机

舵机使用位置	序号	正、反向	舵机线长
前轮转向	1	正向	100mm
左副翼	2	正向	950mm
右副翼	3	正向	950mm
左襟翼	4	正向	800mm
右襟翼	5	反向	800mm
左平尾	6	正向	1050mm
右平尾	7	反向	1050mm
垂尾	8	正向	1050mm

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；
-如果通过电池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！

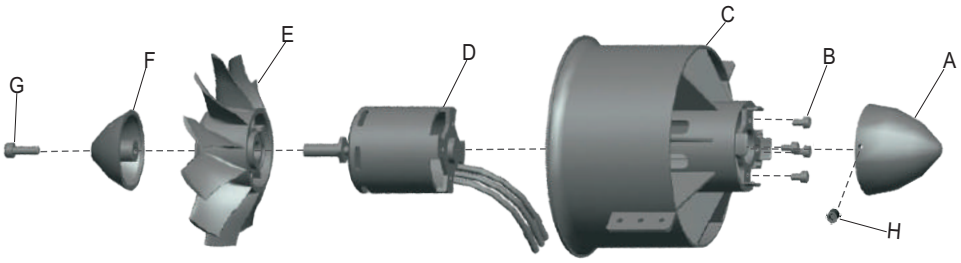


265mm
(10-1/2")

动力系统的安装

标准版

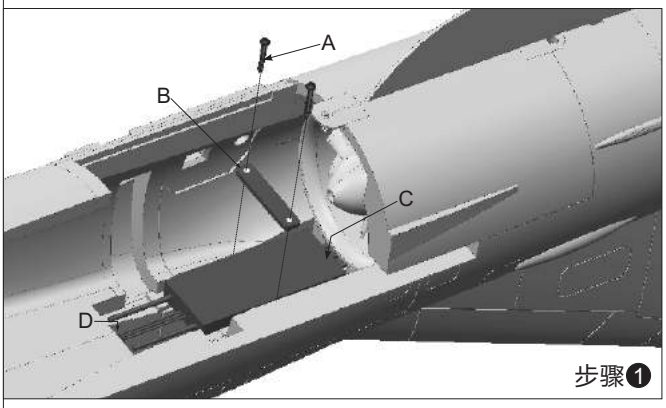
A-电机整流罩
B-螺丝（PM3x6mm）
C-80金属外转涵道框
D-3553-1800KV外转无刷马达
E-80mm 12叶风扇叶
F-整流罩
G-螺丝（PM3x10mm）
H-机米螺丝（M3x3mm）

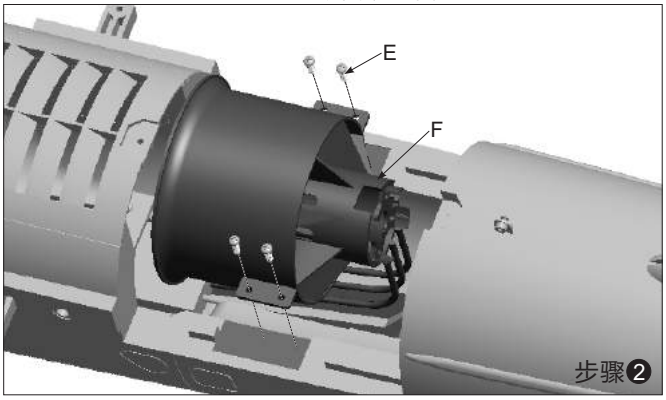


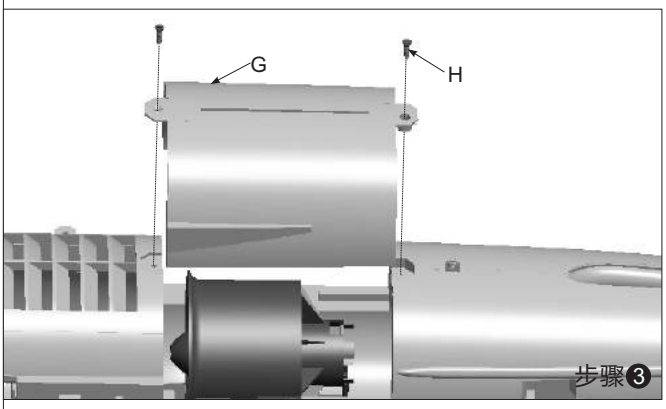
按以下图示安装动力组及电调:

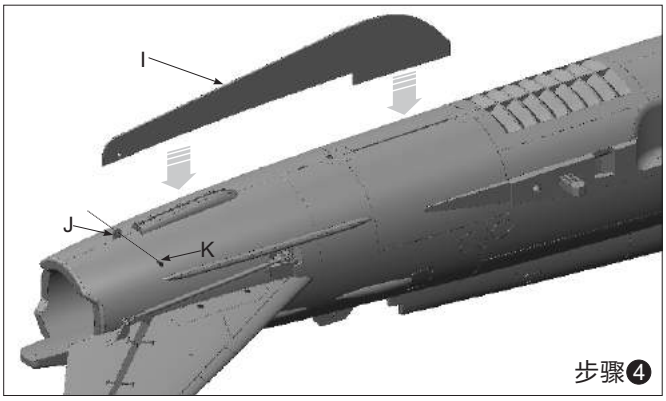
A-螺丝（PM3x25mm 2pcs）
B-电调固定木片1
C-电调
D-电调固定木片2
E-螺丝（PWA3x8mm 4pcs）
F-80mm涵道动力组
G-涵道底盖
H-螺丝（FA3x8mm 2pcs）
I -腹鳍
J -腹鳍固定座
K-螺丝（KA2.6x8mm 1pcs）

⚠**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行为。



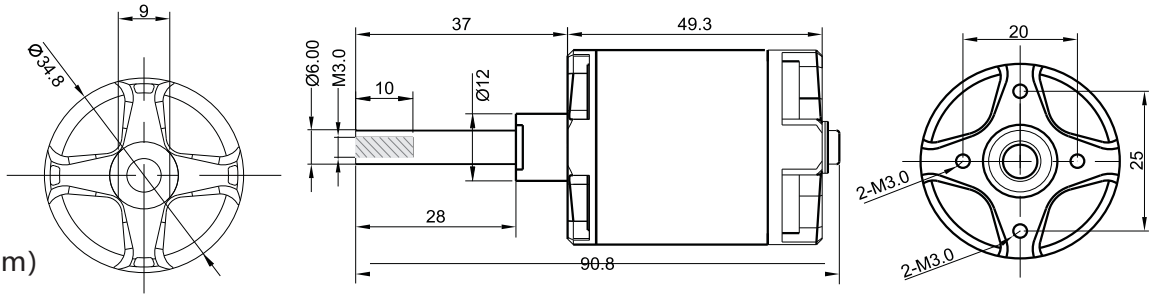






电机参数

MO035302
3530-1750KV



单位: 毫米(mm)

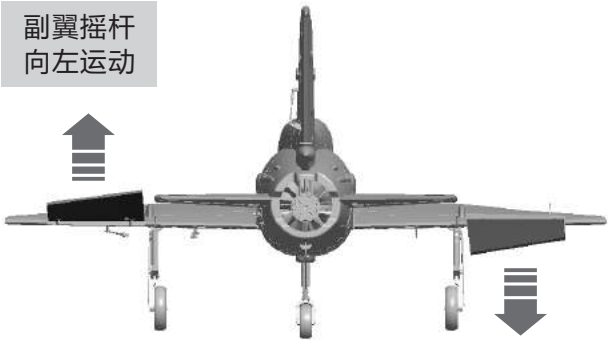
Item No.	KV Value	Volate (V)	Current (A)	Thrust (g)	Motor Resistance	Weight (g)	No Load Current	Propeller	ESC
MO035302	1800RPM/V	22.2	86	3000	0.0146Ω	150	4.6A/23V	12-Bladed 80mm Ducted Fan	⩾100A

舵 面 测 试

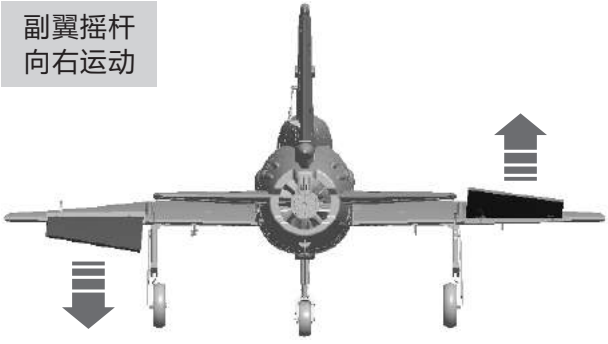
当您按前面的步骤组装好飞机后，在飞行前，我们需要用一块充饱电的电池，连接到电调。用遥控器测试每个舵面的工作情况，检查是否正常！

副 翼

副翼摇杆
向左运动

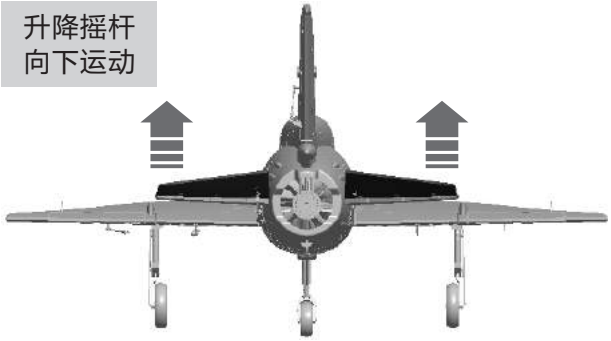


副翼摇杆
向右运动

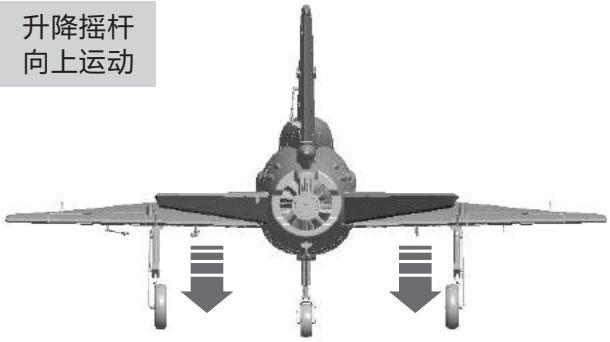


升降舵

升降摇杆
向下运动

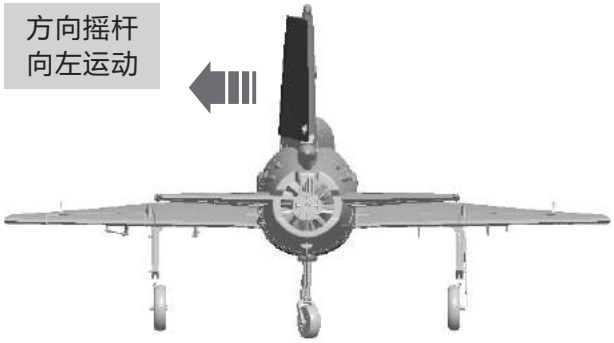


升降摇杆
向上运动

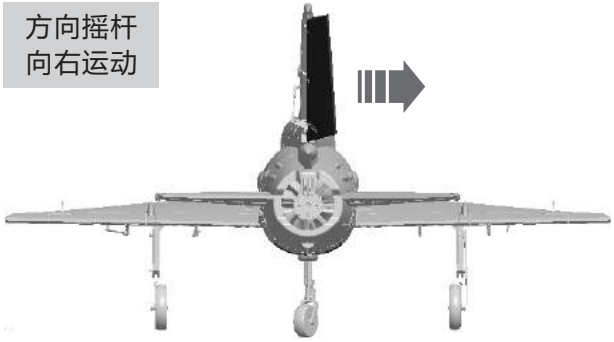


方向舵

方向摇杆
向左运动

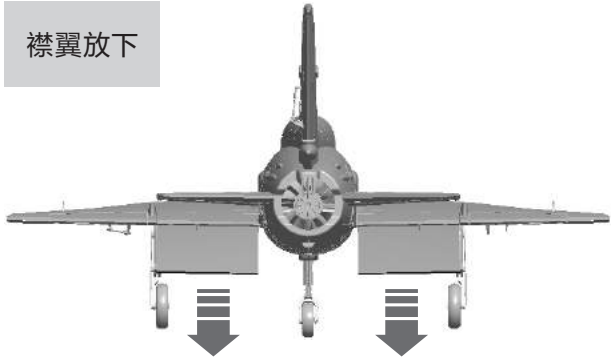


方向摇杆
向右运动



襟 翼

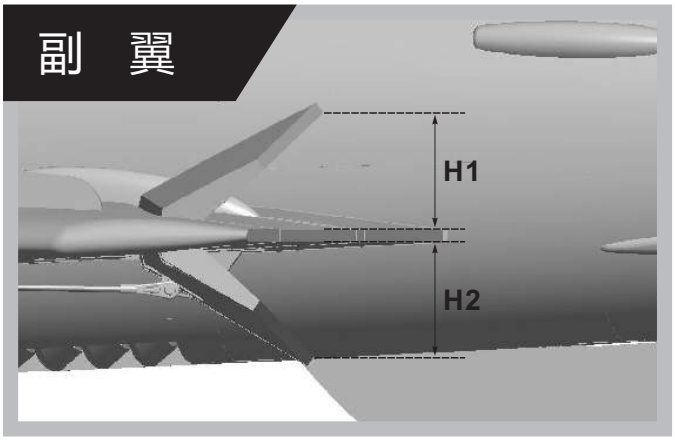
襟翼放下



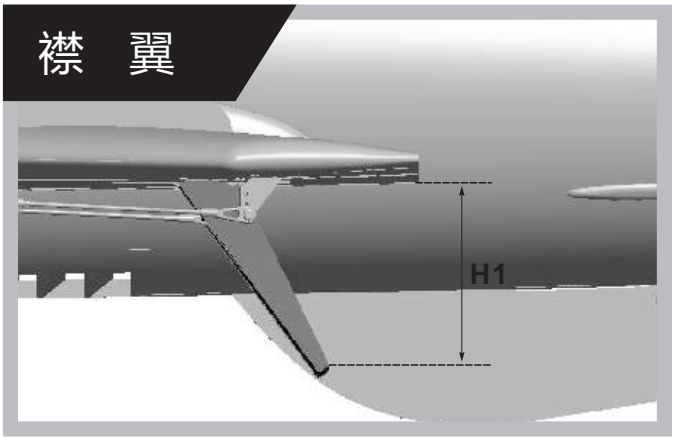
大、小舵参数

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！

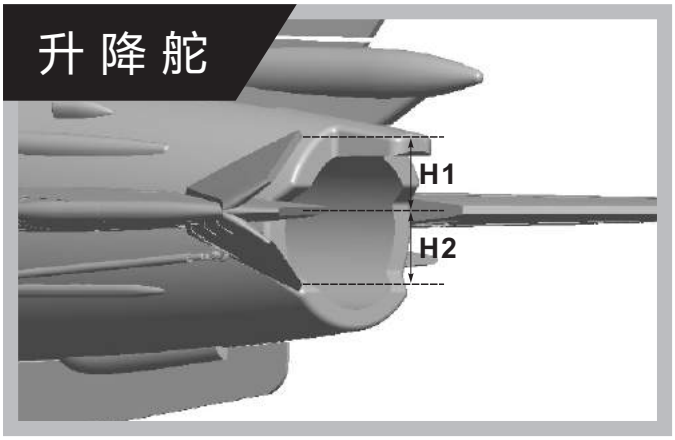
副　翼



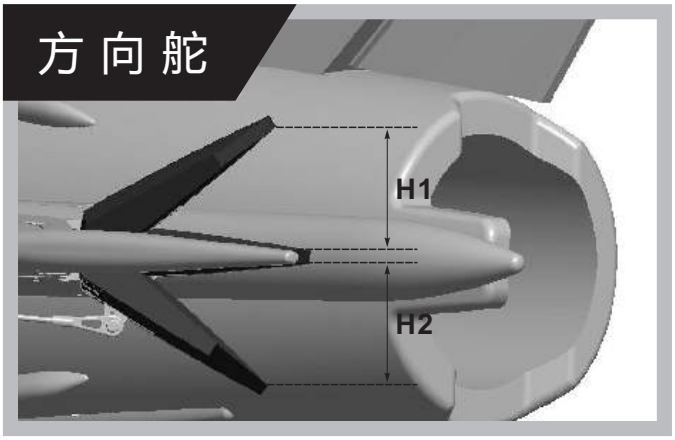
襟　翼



升 降 舵



方 向 舵



	副翼	升降舵	方向舵	襟翼
小舵量	H1/H2 16mm/16mm 舵量比率：80%	H1/H2 30mm/30mm 舵量比率：100%	H1/H2 20mm/20mm 舵量比率：85%	H1 30mm
大舵量	H1/H2 20mm/20mm 舵量比率：100%	H1/H2 30mm/30mm 舵量比率：100%	H1/H2 24mm/24mm 舵量比率：100%	H1 45mm

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