Freewing MODEL

SebArt di Sebastiano Silvestri

★ Co-presented by SebArt and Freewing ★

90MM F-104 STARFIGHTER USER MANUAL

755mm Wingspan / 1720mm Length



Item No.: FJ310
www.sz-freewing.com
www.sebart.it

MADE IN CHINA

www.modellmarkt24.ch; www.modellmarkt24.de

Introduction

EN

The famous Lockheed F-104 Starfighter has been recreated in this amazing 90 mm EDF jet. Following up on their popular 70 mm variant, Freewing has answered the customer demands for a 90mm Super Scale version of this iconic jet fighter.

Co-presented by SebArt and Freewing, the F-104 Starfighter 90 mm EDF jet is constructed with EPO foam, with a wingspan of 755mm and a length of 1720mm and is available in two different color schemes. The silver color scheme of the George Air Force Base's 479th Tactical Fighter Wing FG-907, and the yellow/black Italian Air Force 82th anniversary paint scheme .

Other than some small adjustments in main wing and horizontal stabilizer shape, to increase its flight stability, we have replicated the original shape of the F-104 as well as using a scale afterburner, warning lights and landing lights to make the airplane more realistic looking during flight. The aluminum shock absorbing landing gear incorporates an electric worm controller to effectively reduce the impact on landing . Fiberglass material is incorporated to make the nose and main landing gear doors lighter to reduce weight as well as reduce its wind resistance during flight. A specially designed air-brake will allow more airflow during flight, and help reduce landing speed. All this In addition to the many scale details such as the scale pilot, instrumentation sticker, pitot tube…etc.

The main wing, horizontal stabilizer, vertical stabilizer all can be easily removed for transport. In order to enhance the overall strength, several carbon tubes are located in the main wing, horizontal and vertical stabilizers as well as 2x16g metal gear servos, 7x17g metal servos and 3x9g metal servos all using ball link connectors to increase flight stability. The pre-installed 90mm 12-blade ducted fan with 3748-1550KV brushless motor and Hobbywing 130A (8A UBEC) ESC gives it a great sound combined with powerful thrust and the use of a control board creates a less cluttered battery compartment .

The 90mm F104S “Starfighter” comes with a Freewing 3-axis Gyro (E51) pre-installed to further increase its flight stability. During flight, its excellent speed and climb performance can easily emulate conventional tactical flight maneuvers. With the F104's special aerodynamic shape, a long glide path with the air speed brakes and about 30 degrees elevation angle is needed to decelerate for landing.

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:

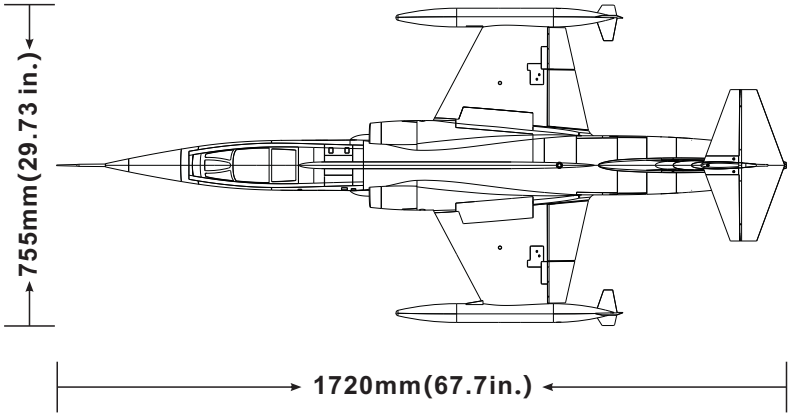
1. This is not a toy! Operators should have some basic experience. Beginners should operate only under the guidance of a professional instructor.
2. Before beginning assembly, please read through the instructions and carefully follow them throughout the build.
3. Freewing and it's vendors will not be 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 or during landing. Wait for the airplane to come to a complete stop before handling.

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Product Basic Information



Specifications

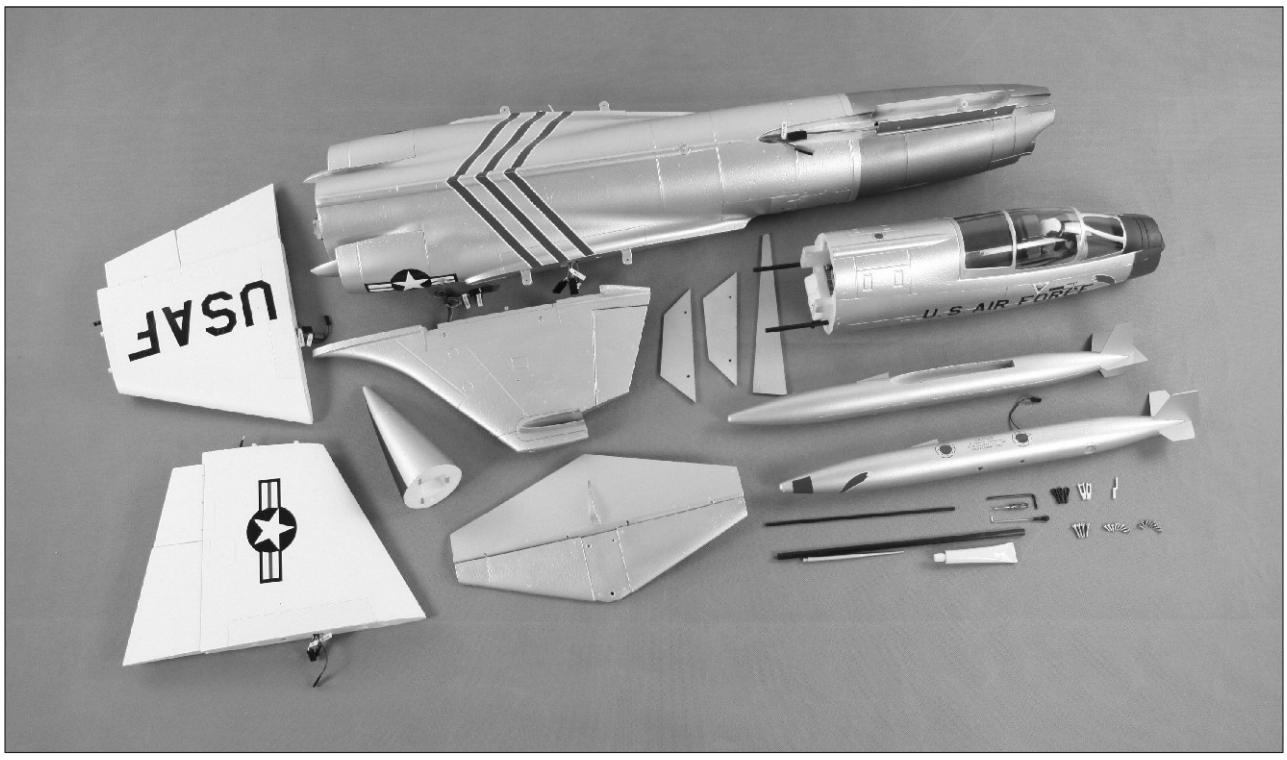
- Take-off weight: 2800g (99 oz.) w/o battery
- Thrust:3150g (112 oz)
- Ducted Fans:12-Bladed 90mm EDF
- Motor:3748-1550KV Brushless out-runner motor
- ESC:130A ESC With UBEC 8A
- Servo:9g*3pcs,16g*2pcs,17g*7pcs

Required to Complete

- 7-channel Transmitter and Receiver (minimum)
- 6 Cell 5000mAh-6000mAh Li-po battery Lipo battery charger

⚠ 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.

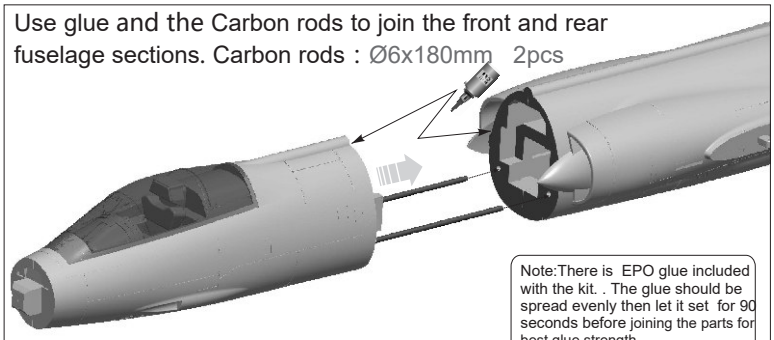
NO.	Part Name	PNP	KIT Plus	Airframe
1	Fuselage	√	√	√
2	Main wing	√	√	√
3	Tail wing set	√	√	√
4	Rudder	√	√	√
5	Nose cone	√	√	√

NO.	Part Name	PNP	KIT Plus	Airframe
6	Fuel tank	√	√	√
7	Hardware	√	√	√
8	Carbon rods	√	√	√
9	Glue/Decals	√	√	√
10	Manual	√	√	√

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Front/Rear Fuselage Assembly

Use glue and the Carbon rods to join the front and rear fuselage sections. Carbon rods：Ø6x180mm 2pcs

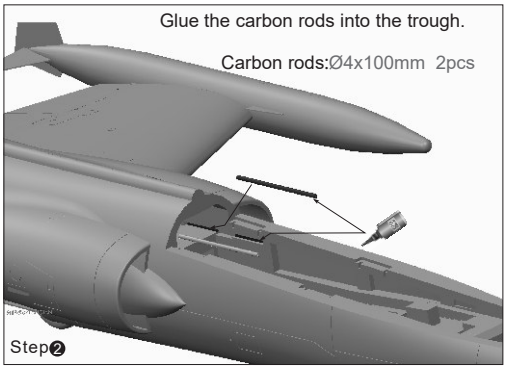


Note:There is EPO glue included with the kit. . The glue should be spread evenly then let it set for 90 seconds before joining the parts for best glue strength.

Step❶

Glue the carbon rods into the trough.

Carbon rods:Ø4x100mm 2pcs



Step❷

Main Wing

Main Wing Servo Installation

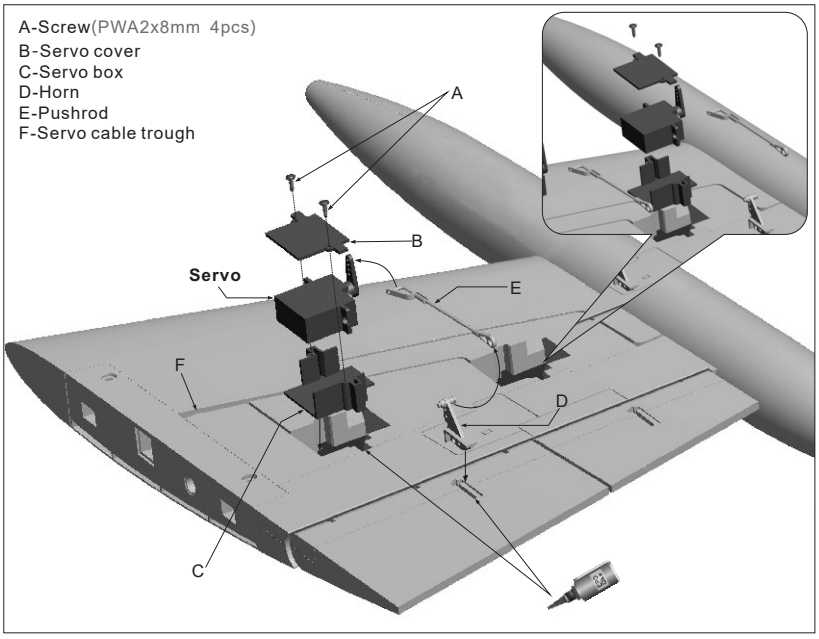
1.Use a servo tester or radio to center the servo arm.

2. Use glue to anchor the 17g servo box (C) and control horn(D)to the main wing.

3. Place the 17g servo into the servo box(C),and press the servo cable into the servo cable trough (F), position the 17g servo cover(B) and use 2 screws(A), to secure the servo cover.

4. Connect pushrod (E) to the Servo Arm and adjust its length so the control surface is in the neutral position. Then lock the clevis over the ball link on the control horn (D)

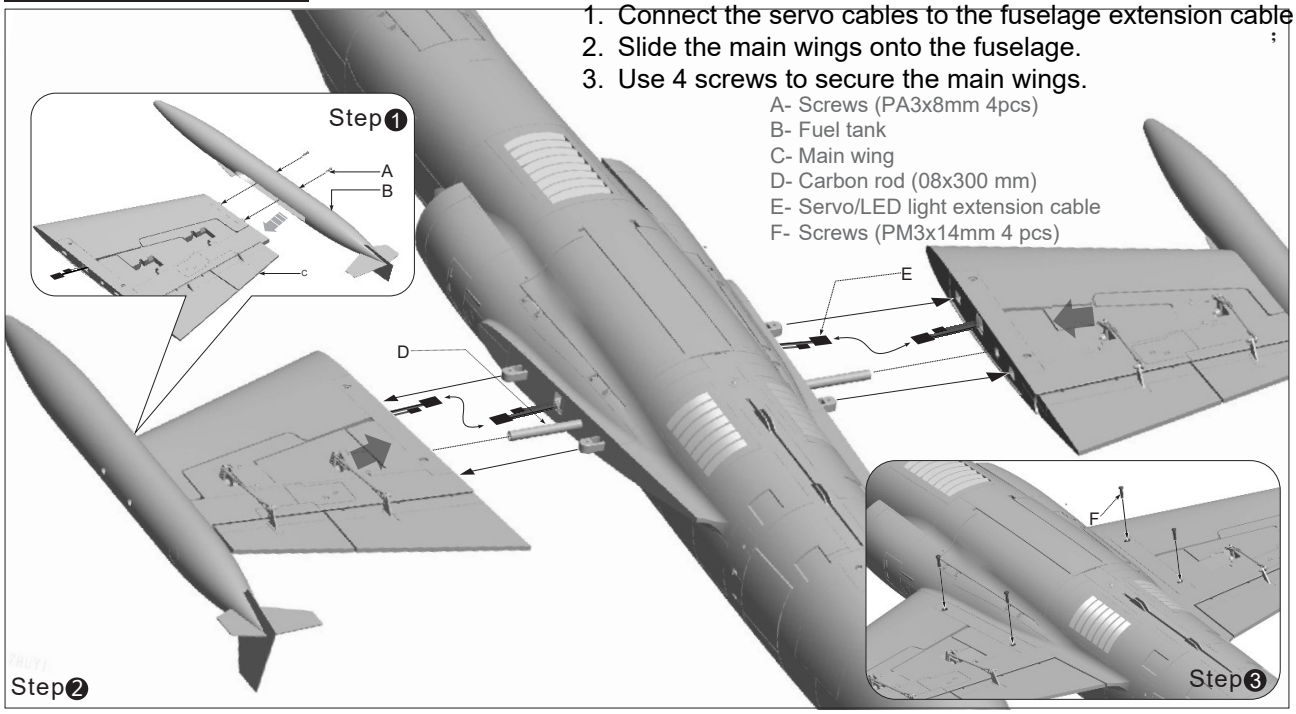
A-Screw(PWA2x8mm 4pcs)
B-Servo cover
C-Servo box
D-Horn
E-Pushrod
F-Servo cable trough



Main Wing Installation

1. Connect the servo cables to the fuselage extension cable.
2. Slide the main wings onto the fuselage.
3. Use 4 screws to secure the main wings.

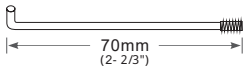
A- Screws (PA3x8mm 4pcs)
B- Fuel tank
C- Main wing
D- Carbon rod (08x300 mm)
E- Servo/LED light extension cable
F- Screws (PM3x14mm 4 pcs)



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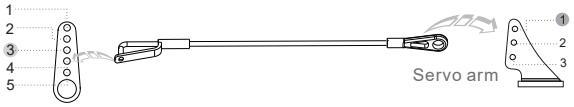
Pushrods

Aileron pushrod size

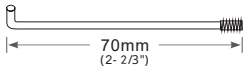


Pushrod diameter: Ø1.5mm

Aileron pushrod mounting hole

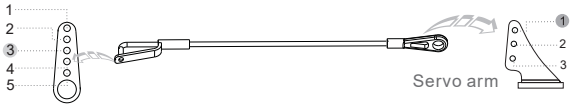


Flap pushrod size



Pushrod diameter: Ø1.5mm

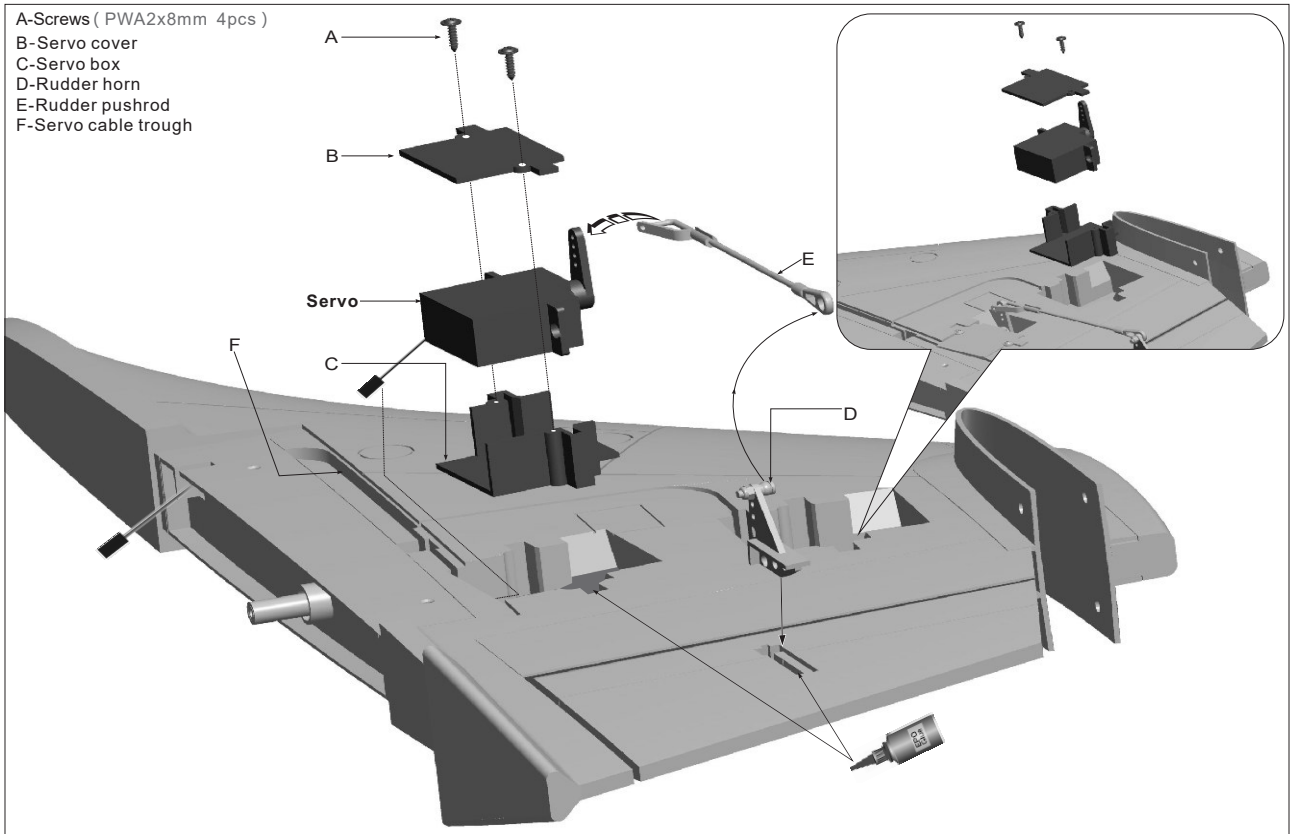
Flap pushrod mounting hole



Elevator and rudder

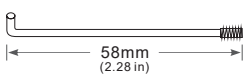
Elevator and Rudder Servo Installation

A-Screws (PWA2x8mm 4pcs)
B-Servo cover
C-Servo box
D-Rudder horn
E-Rudder pushrod
F-Servo cable trough



1. Use a servo tester or radio to center the servo arm.
2. Use glue to attach the 17g servo box(C) and control arm(D)to the elevator and rudder. ;
3. Place the servo into the 17g servo box(C),and press the servo cable into the cable trough (F).
4. Place the 17g servo cover(B) over the servo and use 2 screws(A)to secure it.
5. Connect pushrod (E)to the servo arm and adjust its length so the control surface is in the neutral position then snap it over the ball link on the rudder control horn(D).

Elevator pushrod size

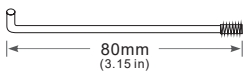


Pushrod diameter: Ø1.5mm

Elevator pushrod mounting hole



Rudder pushrod size



Pushrod diameter: Ø1.5mm

Rudder pushrod mounting hole

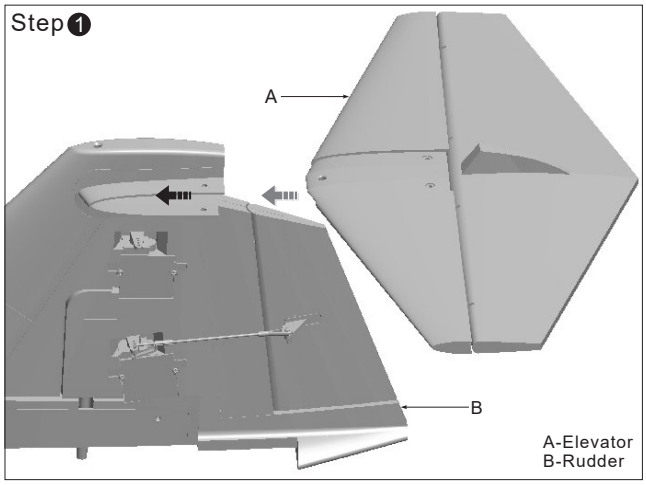


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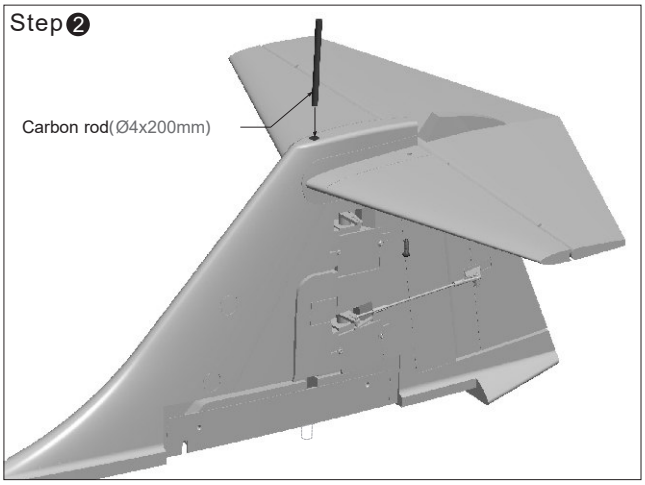
Horizontal Stabilizer Installation

Please refer to the following photos to install the Horizontal Stabilizer.

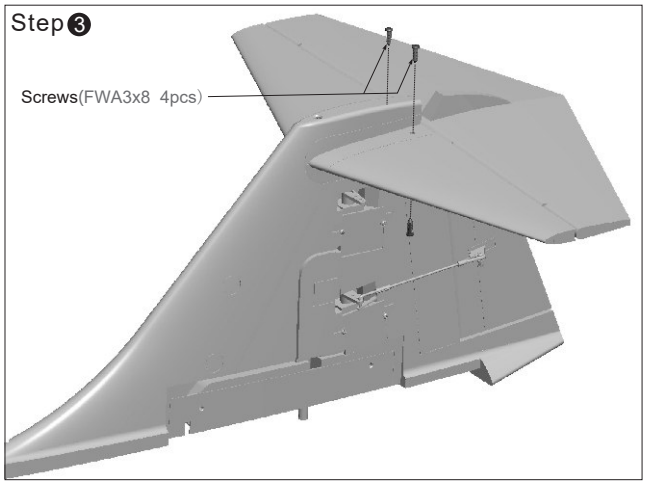
Step ❶



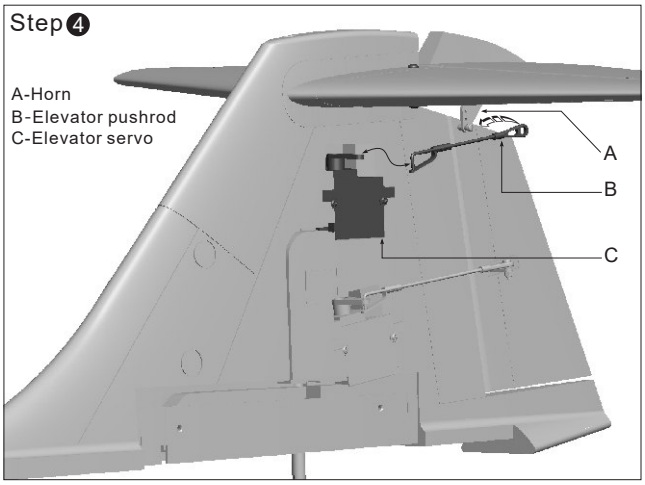
Step ❷



Step ❸

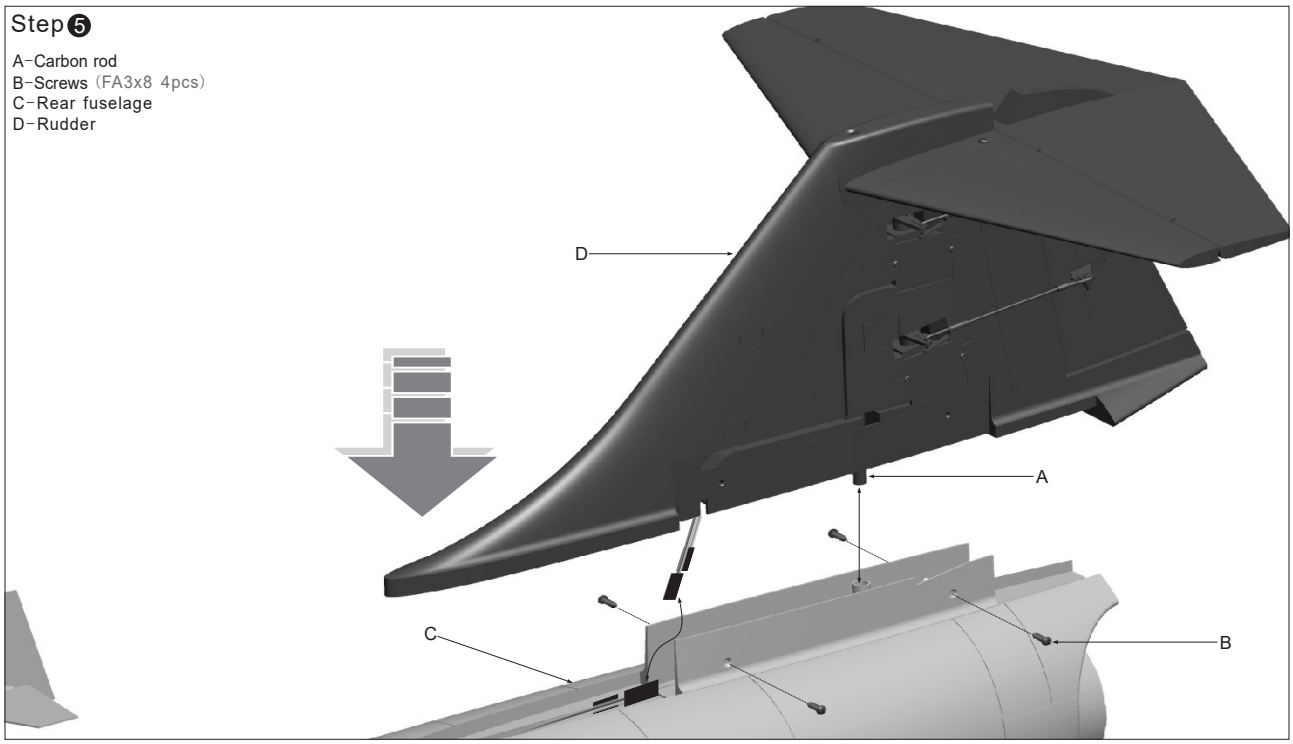


Step ❹



Step ❺

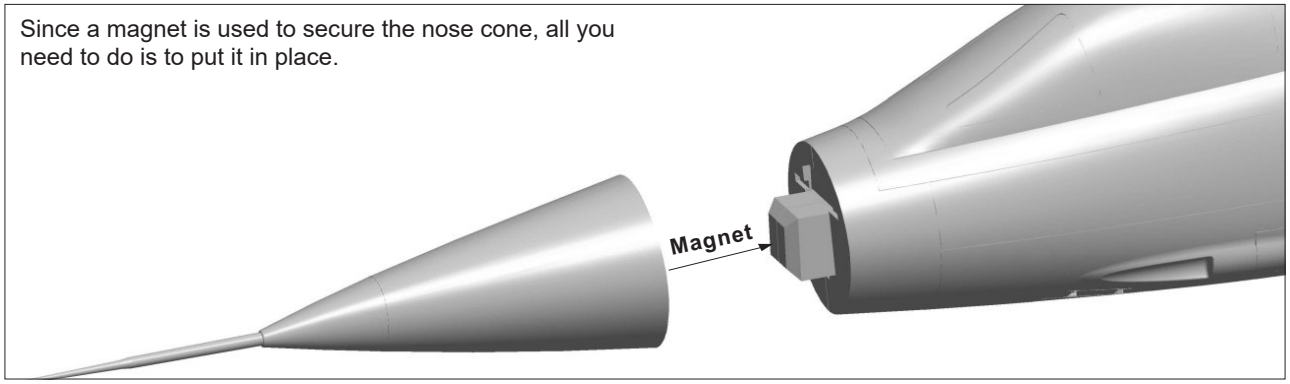
A-Carbon rod
B-Screws (FA3x8 4pcs)
C-Rear fuselage
D-Rudder



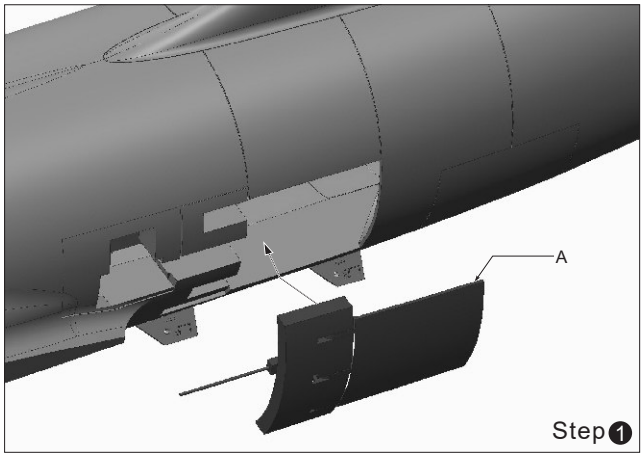
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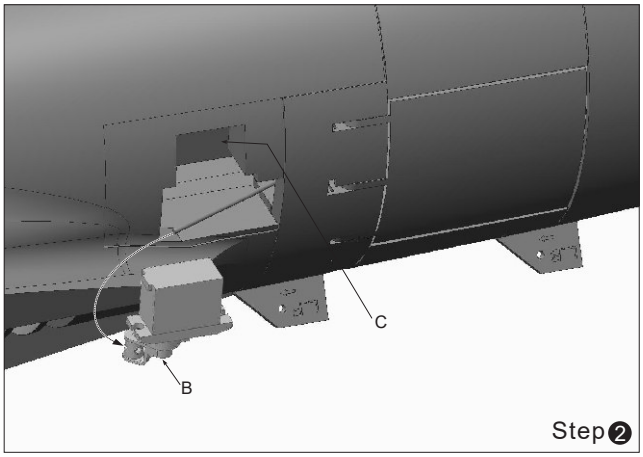
Nose Cone Installation

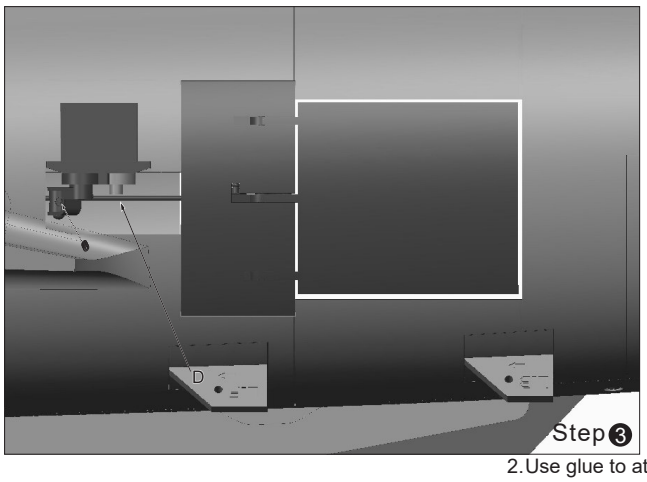
Since a magnet is used to secure the nose cone, all you need to do is to put it in place.

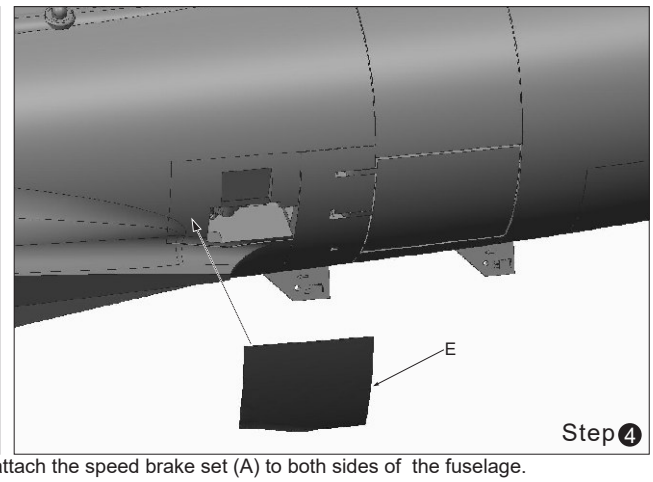


Air-Brake Installation



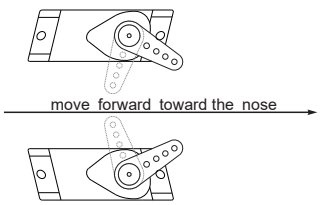






A-Air-brake set
B-16g Servo
C-Servo hard point.
D-Pushrod
E-Servo cover

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



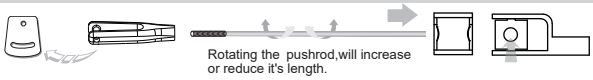
2. Use glue to attach the speed brake set (A) to both sides of the fuselage.
3. Use glue to attach servo(B) to the servo mount(C).
   When installing, please note:
4. Ensure the servo and fuselage extension cables are properly attached and secure.
5. Insert the pushrod into the bolt of servo arm.
4. Keep the air brakes in the closed position, and tighten the screw of the bolt.
5. Test the system to make sure it is operating properly. Use glue to attach the servo box cover in order to protect servo.

Air- brake pushrod size



Pushrod diameter: Ø1.5mm

Air- brake pushrod mounting hole



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Landing gear Installation

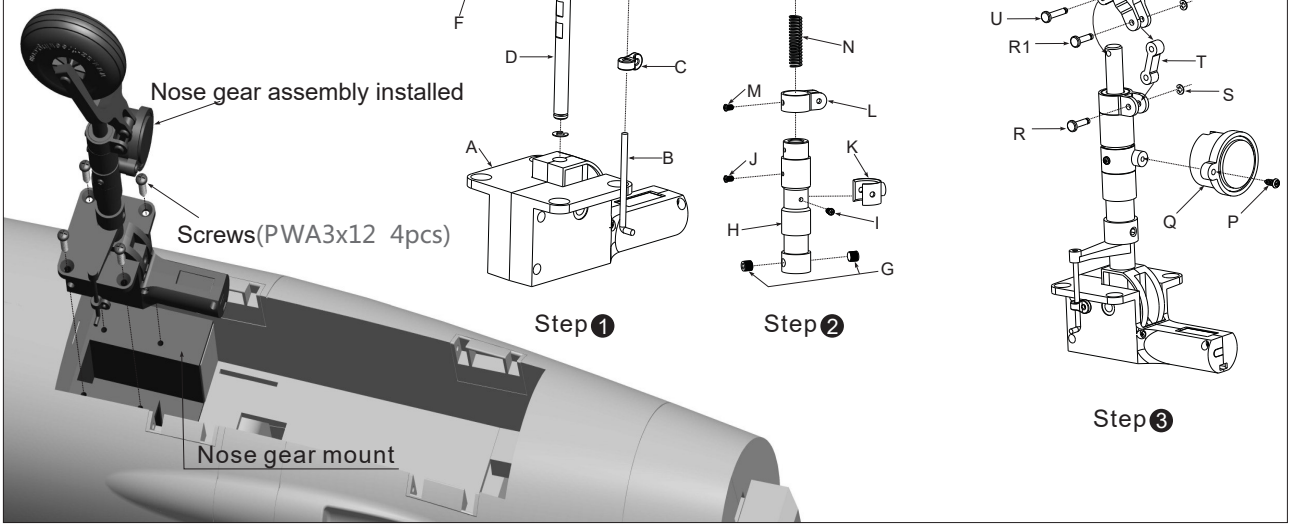
EN

Nose Gear Assembly

Please assemble and disassemble the nose gear by referring to the following photo.

Accessories name and specification

A- electric retract
B- Nose gear steering pushrod
C- Nose gear steering control ring
D- Nose gear metal shaft
E- L-shape arm
F-Grub screw(M3×3mm 1pc)
G-Grub screws (M4×4mm 2pcs)
H-Nose landing gear main strut
I-Screw (PM2×3mm 1pc)
J-Screw(PM2x4mm) K-LED light attachment arm
L-U-shape damping arm.
M-Screw(PM2x3mm)
N-Spring
O-Damping lever
P-Screw(PA2×8mm)
Q-LED light
R-Pin(Ø3.5x9.2mm)
S- E-clip (Ø1.5mm)
T- 8-shape connecting arm
U- Pin(Ø3.5x11.3mm)
V- U-shape slant supporting rod
W- Wheel shaft(Ø5x25.5mm)
X- E-clip (Ø2mm)
AB- Wheel(Ø45x16mm)



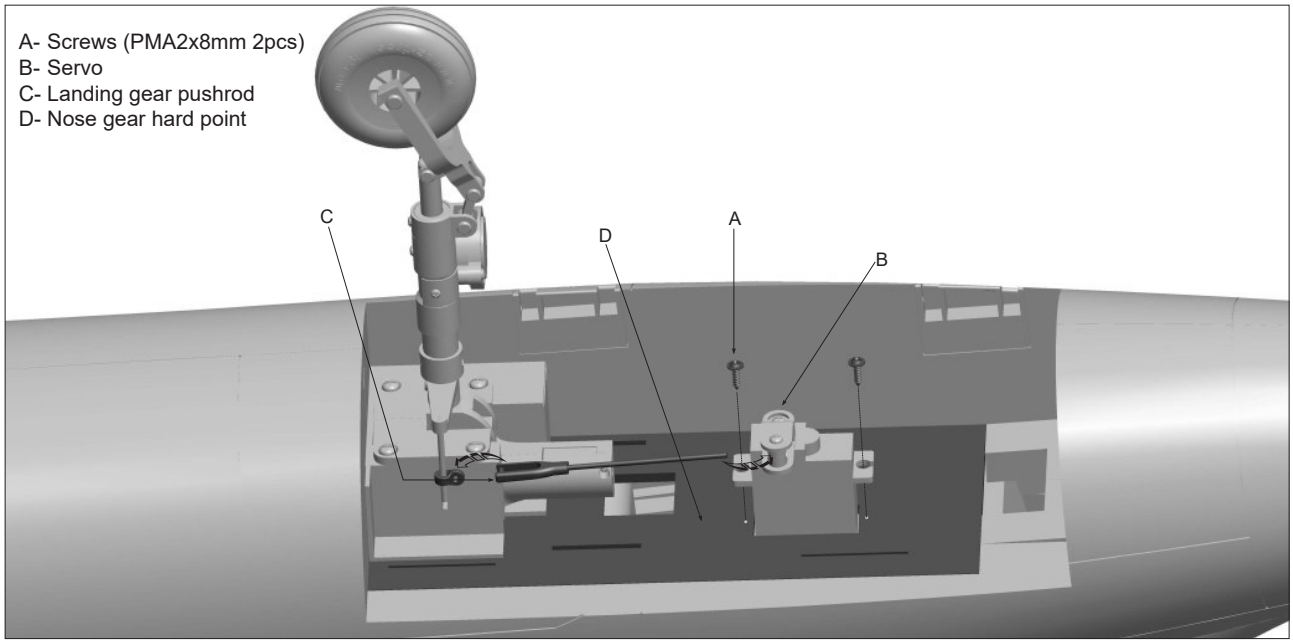
Step❶

Step❷

Step❸

Nose gear servo Installation

A- Screws (PMA2x8mm 2pcs)
B- Servo
C- Landing gear pushrod
D- Nose gear hard point

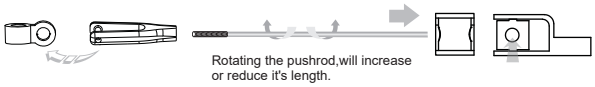


Nose steering pushrod size



Pushrod diameter: Ø1.5mm

Servo pushrod installing hole



Rotating the pushrod,will increase or reduce it's length.

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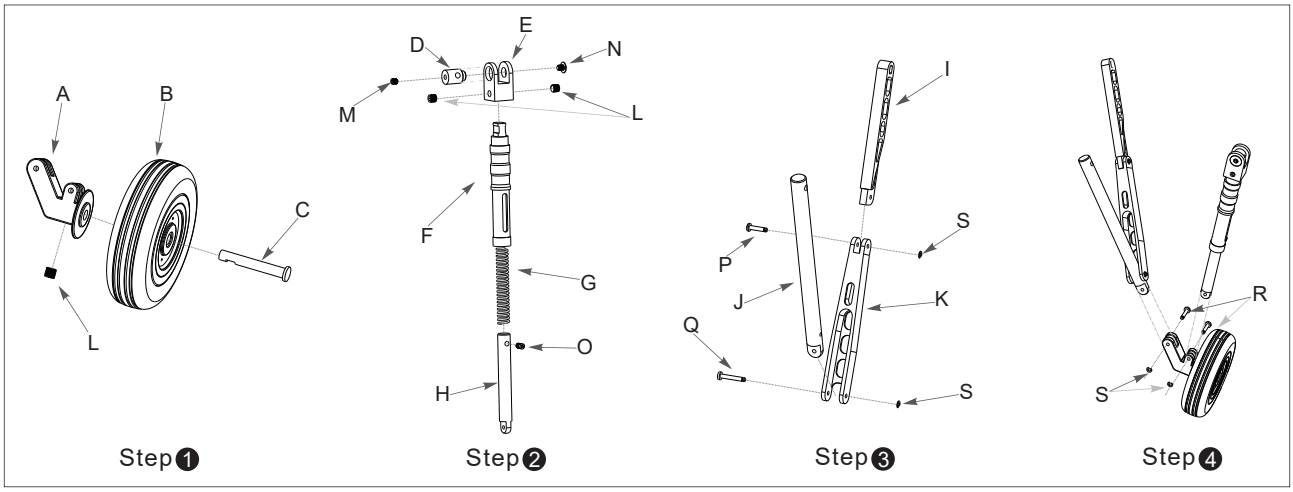
Landing gear Assembly

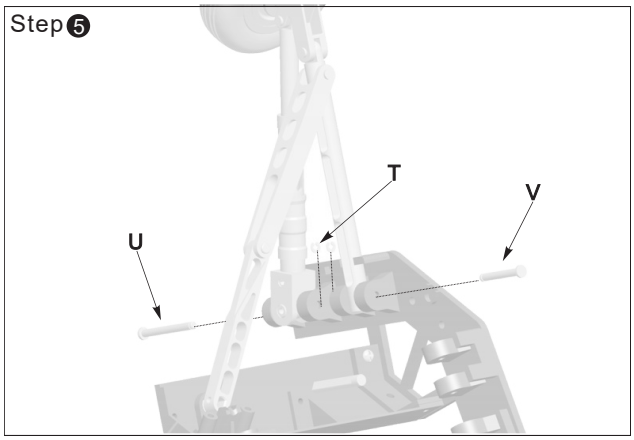
Rear Landing Gear Assembly

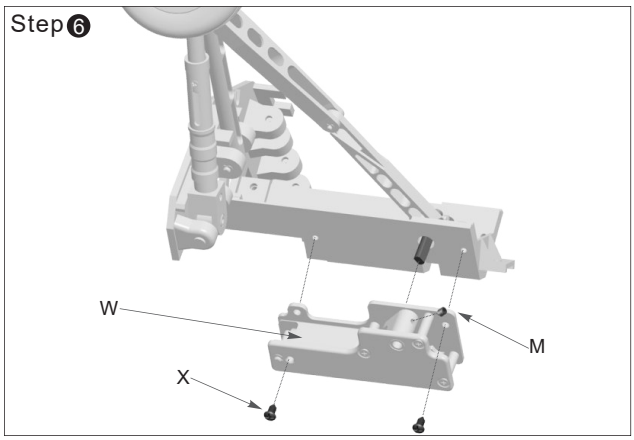
Please assemble and disassemble the rear landing gear by referring to the following photos.

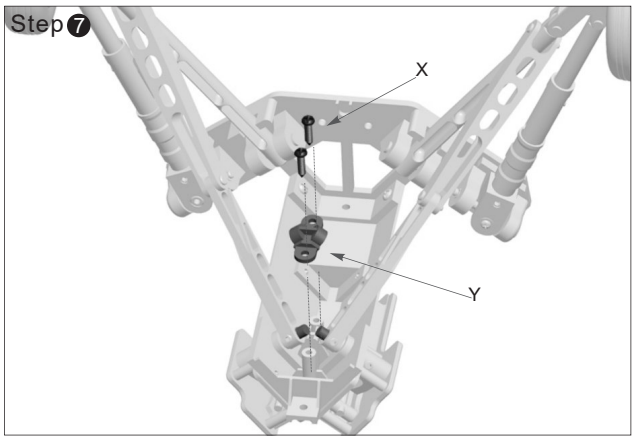
Accessories name and specification

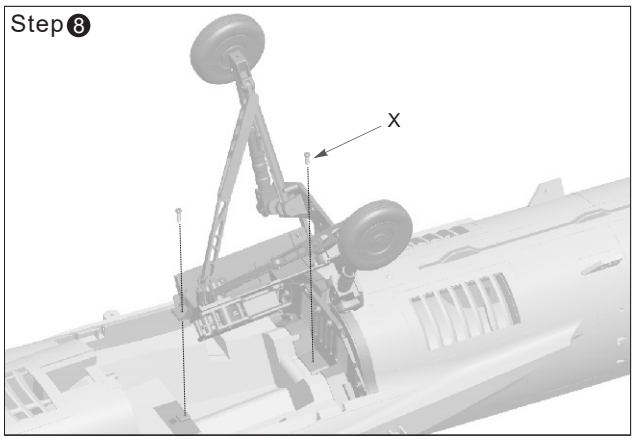
A - Rear gear shock absorber connecting arm
B - Wheel (Ø60x16mm)
C - Rear gear axle (Ø6.5x24mm)
D - Rotating shaft
E - Rotating sleeve
F - Rear gear main supporting rod
G - Springs (2pcs)
H - Rear landing gear damping lever Rear
I - gear folding strut 1
J - Rear gear strut 3
K - Rear gear folding strut 2
L - Grub screws (M4×3mm 6pcs)
M - Grub screws (M3×3mm 4pcs)
N - Screws (PWA3×4mm 2pcs)
O - Grub screws (M3×5mm 2pcs)
P - Pins (2pcs)
Q - Pins (2pcs)
R - Pins (4pcs)
S - E-clips (Ø1. 5mm 8pcs)
T - E-clips (Ø2. 0mm 4pcs)
U - Pins (2pcs)
V - Pins (2pcs)
W - Electric retract
X - Screws (PWA3×12mm 2pcs)
Y - Rear gear drive rod cover











⚠ Note: When installing, check that the flat position of the part is aligned with the Grub screw hole. The flat position must face the hole in order for the Grub screw to lock the part in place and ensure it does not come loose.

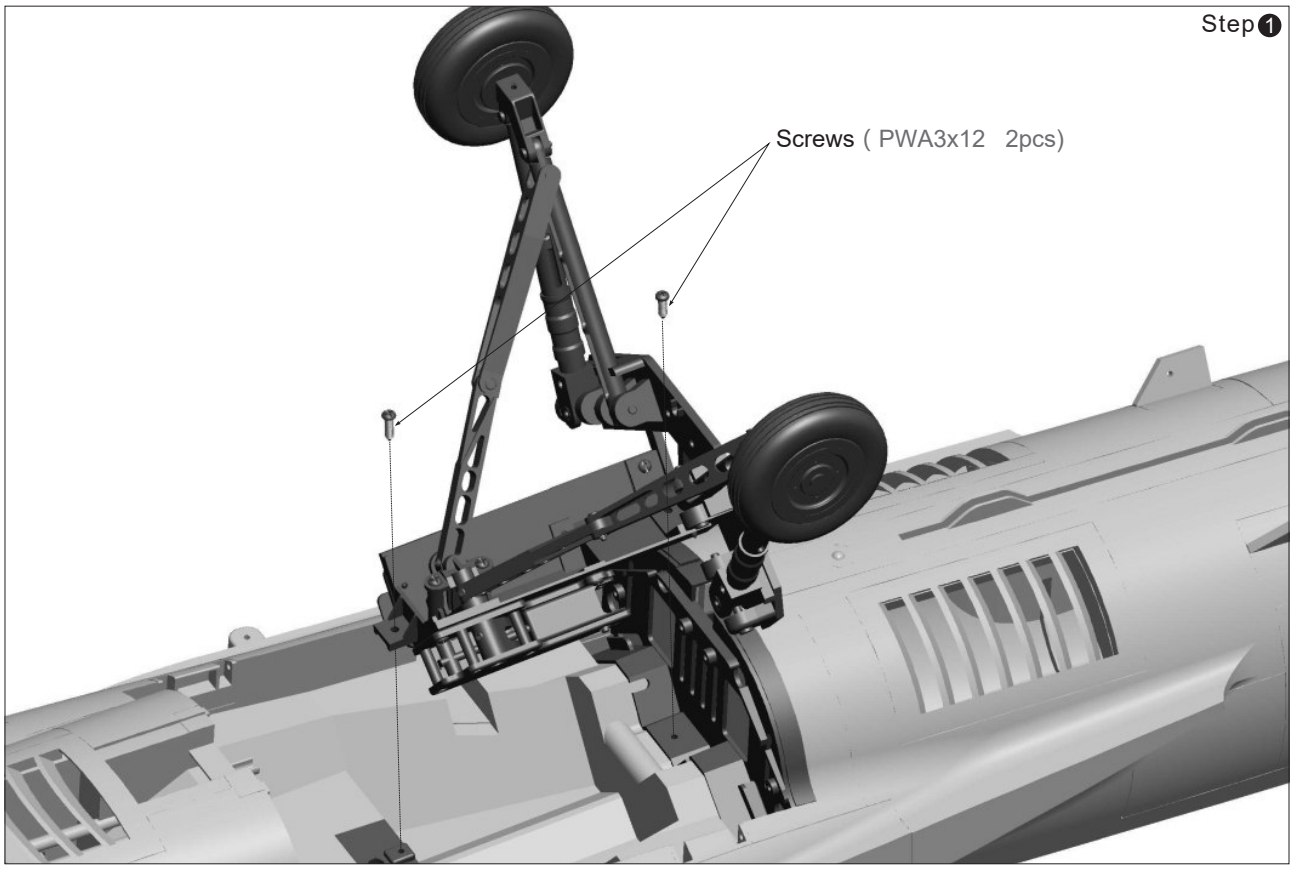
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Landing gear Installation

Main Landing Gear Assembly

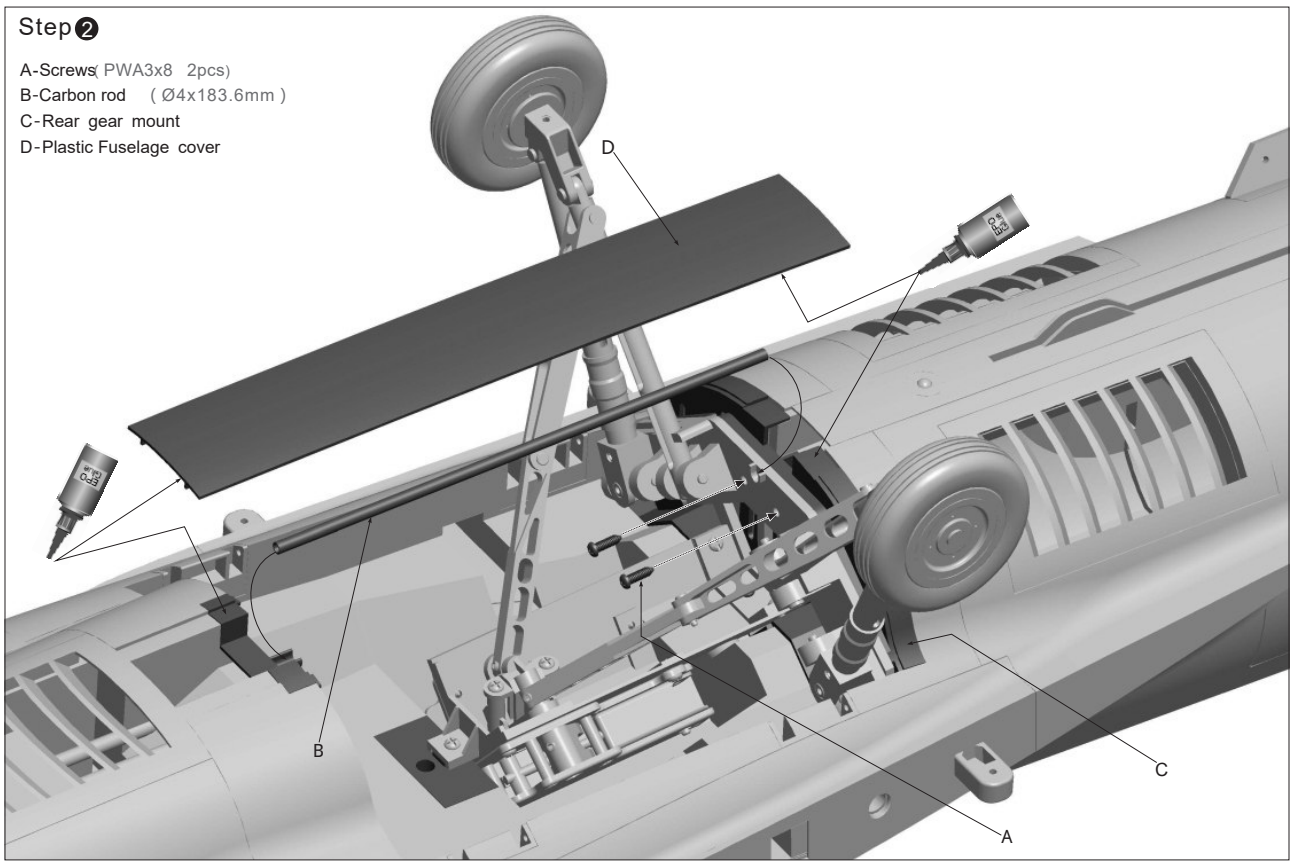
Please assemble and disassemble the rear landing gear by referring to the following photos.

Step❶



Step❷

A-Screws(PWA3x8 2pcs)
B-Carbon rod (Ø4x183.6mm)
C-Rear gear mount
D-Plastic Fuselage cover



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Gear Door Installation

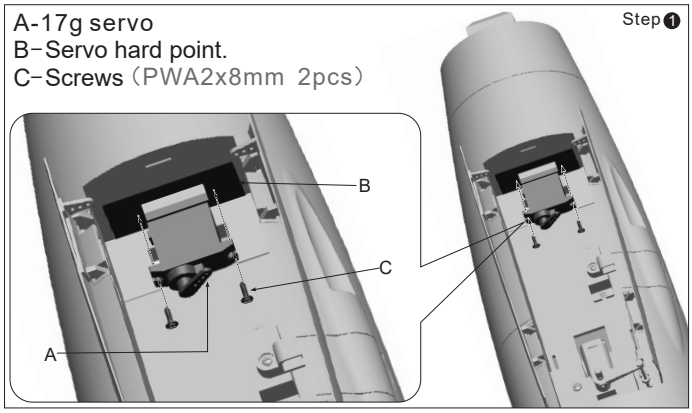
Nose and main gear door Installation

Assemble, disassemble and replace the nose/rear landing gear doors by referring to the following photos.

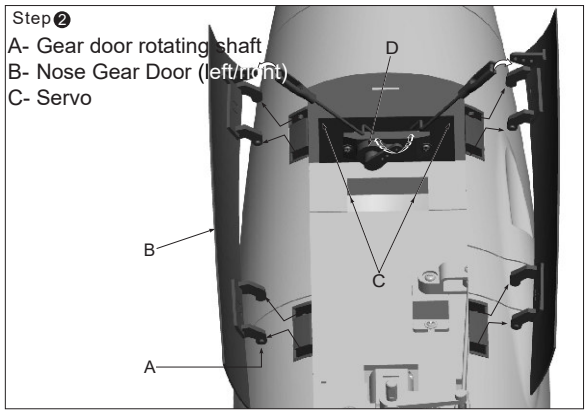
Nose Gear Door Installation

A-17g servo
B-Servo hard point.
C-Screws（PWA2x8mm 2pcs）

Step❶



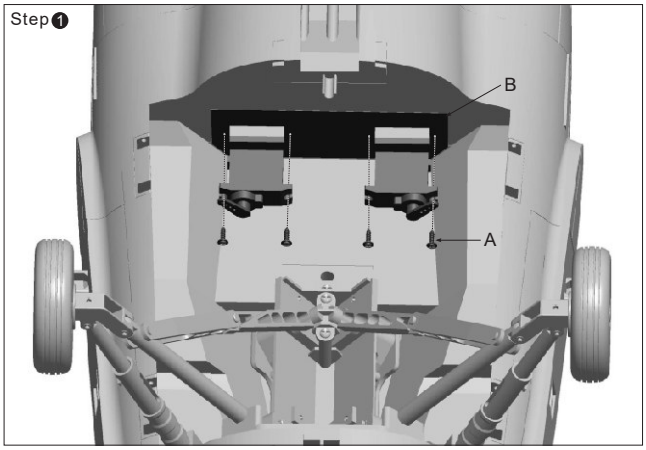
Step❷
A- Gear door rotating shaft
B- Nose Gear Door (left/right)
C- Servo



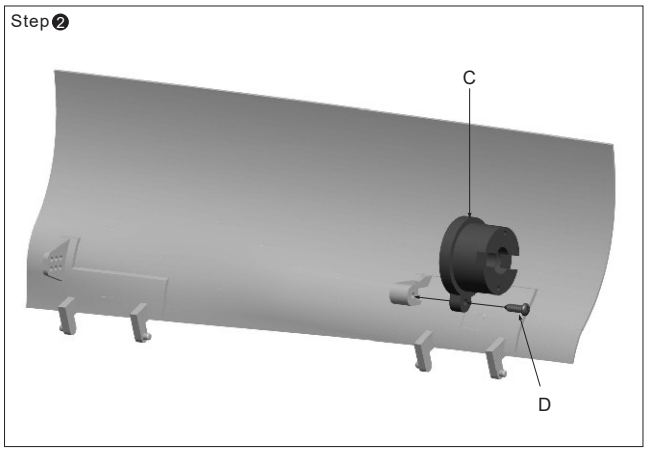
Main Gear Doors

A-Screws (PWA2x8mm 2pcs)
B-Servo hard point.
C-LED light
D-Screw (PA2x8mm 1pc)
E-Gear Door rotating shaft
F- Rear Gear Door (left/right)
G- Gear Door pushrod
H-Servo

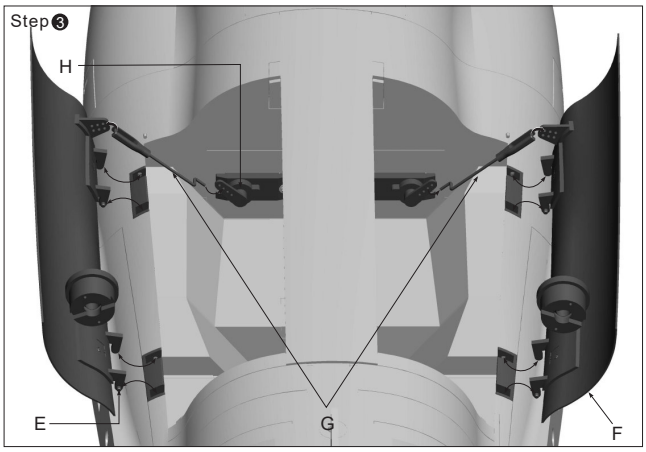
Step❶



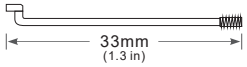
Step❷



Step❸

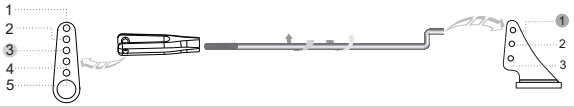


Nose cabin door pushrod size

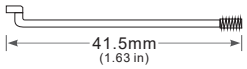


Pushrod diameter: Ø1.2mm

Servo pushrod installing hole

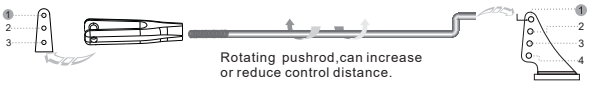


Rear cabin door pushrod size(2pcs)



Pushrod diameter: Ø1.2mm

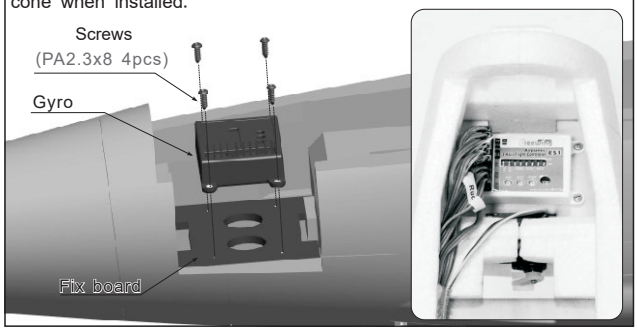
Servo pushrod installing hole(2pcs)



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3-Axis Gyro use introduction

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

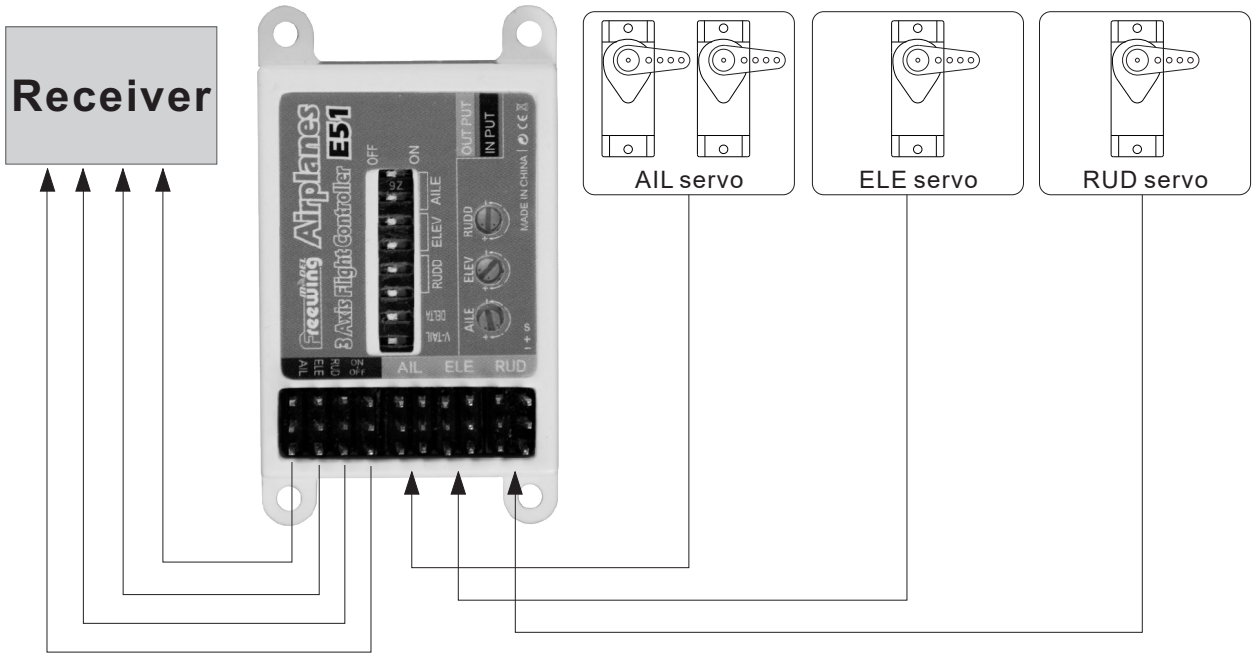


This gyro was set up at the factory to default sensitivity. You can make small adjustments according to flight conditions. If you need to restore the gyro to the factory default settings, refer to this photo for directions.



Gyro connection diagram

1.Ensure the gyro is installed correctly.
2.Connect the servo cables of the elevator, rudder and ailerons to the Gyro output port.
3.Use 3 connection wires to connect the gyro input port to the corresponding channels of the receiver.
4.If your receiver has enough channels, you can use another connection wire to connect gyro and receiver and assign an off/on gyro switch.。
5.For the Gyro use introduction, please refer to the Gyro user manual.

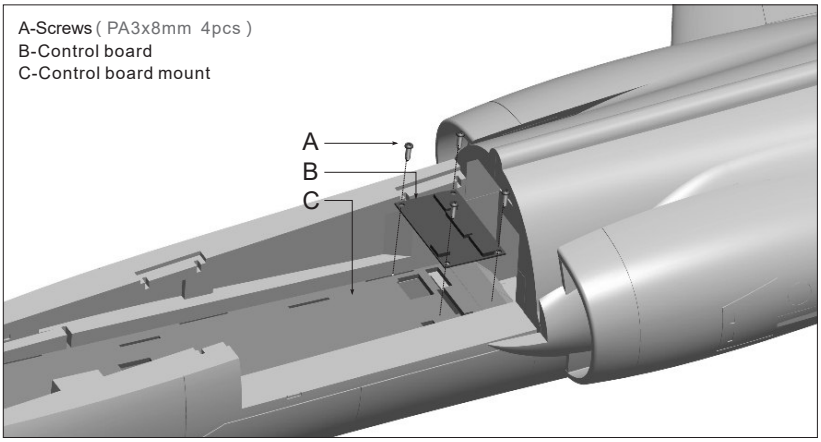


Control Board Introduction and Use

Refer to the channel assignments on the Control Board. Connect the servo cables to the Control Board with the exception of the aileron, elevator and rudder which are connected to the output of the gyro. After all the connections are made and tested, use the 4 screws to attach the control board to the fuselage .

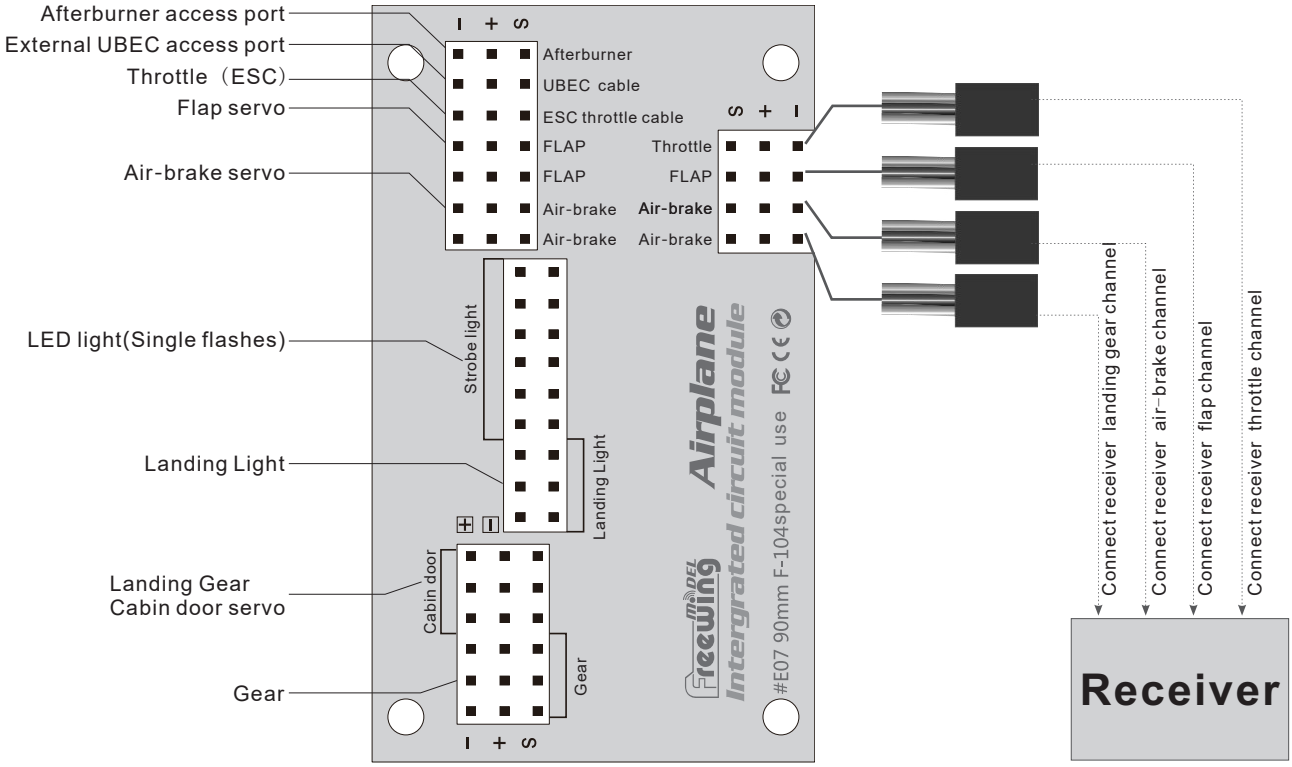
The F104 control board has two functions:
1.Control the function of the LED lights and gear doors .
2.Reduce cable clutter in battery compartment.

A-Screws (PA3x8mm 4pcs)
B-Control board
C-Control board mount



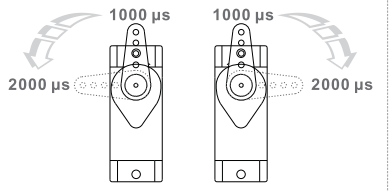
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Control Board Introduction and Use



According to the noted, connect the servo cable or LED light cable to the correct access port.

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.

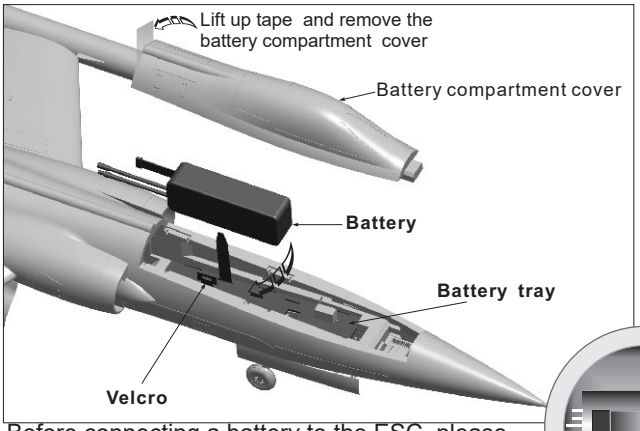
If you choose to purchase another brand of servo,please refer to the following list to ensure that it is the correct size and type.

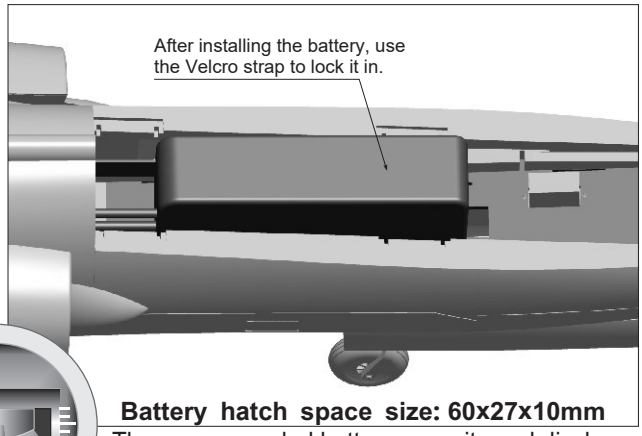
Installing position	No.	Specification	Pos./Rev.	Servo cable length
Nose gear door	1	9g-MG	**Reverse**	400mm
Nose gear steering	2	17g-MG	Positive	150mm
Aileron(L)	3	17g-MG	Positive	180mm
Aileron(R)	4	17g-MG	Positive	180mm
Flap(L)	5	17g-MG	Positive	120mm
Flap(R)	6	17g-MG	**Reverse**	120mm

Installing position	No.	Specification	Pos./Rev.	Servo cable length
Air-brake(L)	7	16g-MG	**Reverse**	650mm
Air-brake(R)	8	16g-MG	Positive	650mm
Rear gear door(L)	9	9g-MG	Positive	250mm
Rear gear door(R)	10	9g-MG	**Reverse**	250mm
Elevator	11	17g-MG	Positive	400mm
Rudder	12	17g-MG	Positive	360mm

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Battery Installation





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

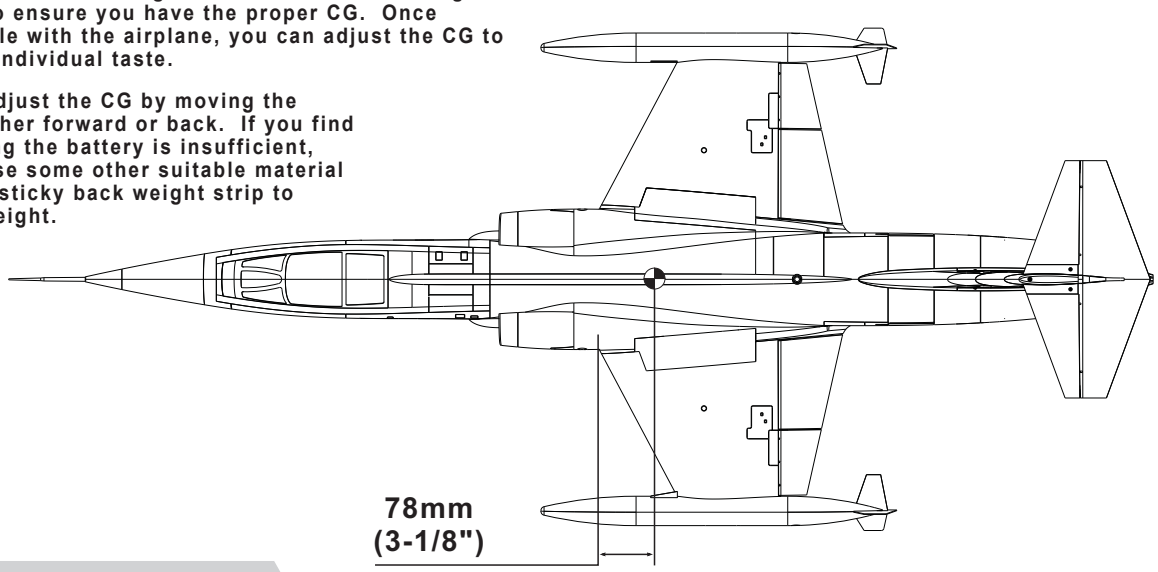
Battery hatch space size: 60x27x10mm

The recommended battery capacity and discharge rate is:
6S 22.2V 5000mAh ~ 6S 22.2V 5500mAh
Discharge rate of C ⩾ 35C

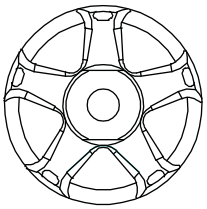
Center of Gravity

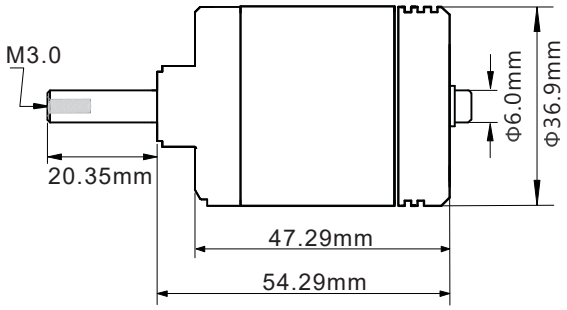
The correct Center of Gravity is directly related to the success of the initial flights. Refer to the following diagram to ensure you have the proper CG. Once comfortable with the airplane, you can adjust the CG to suit your individual taste.

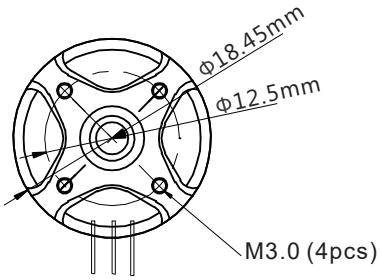
You can adjust the CG by moving the battery either forward or back. If you find that moving the battery is insufficient, you can use some other suitable material such as a sticky back weight strip to counter weight.



Motor parameters







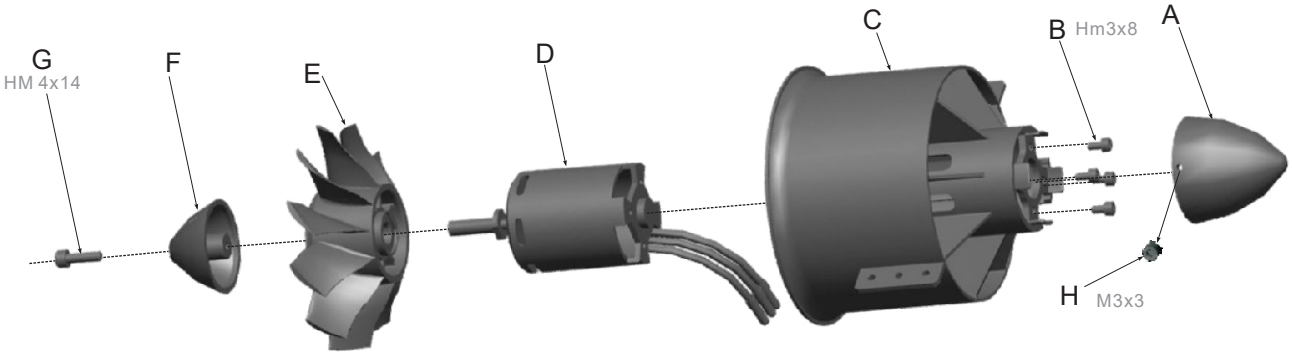
⚠ **NOTE**: This motor is a special product for use only with the Freewing 90mm 12-blade ducted fan P0902. Conversely, the 90mm 12-blade ducted fan P0902 is not for use with any other motors!

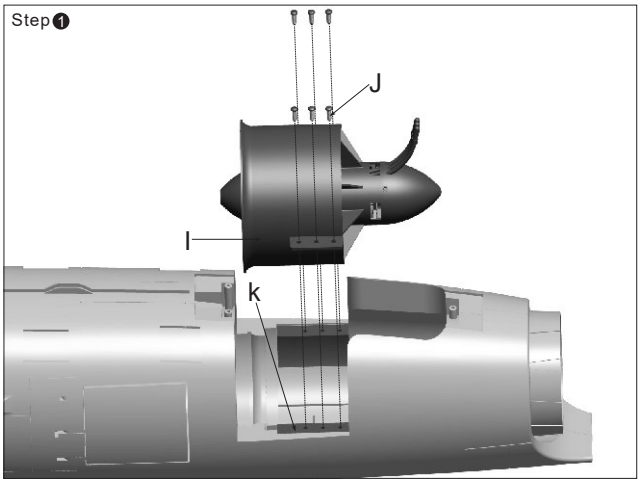
Item No.	KV Value	Volate (V)	Current (A)	Pull (g)	Motor Resistance	Weight (g)	No Load Current	Propeller	ESC
MO 03748	1550RPM/V	22.2	95	3600	0.02 Ω	195	2.7A/10V	90mm Ducted Fan	⩾95A

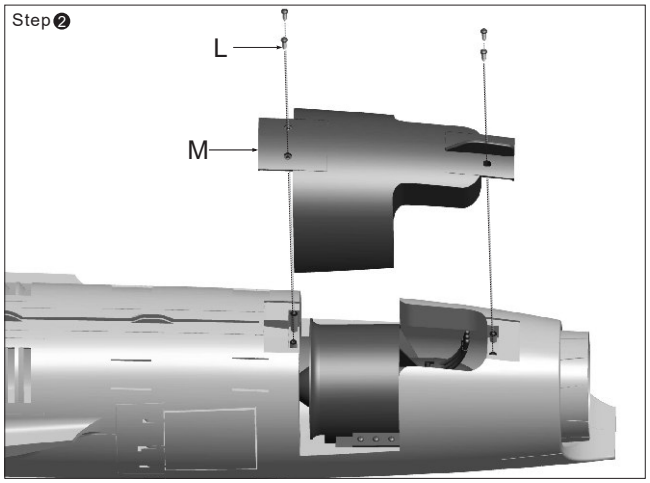
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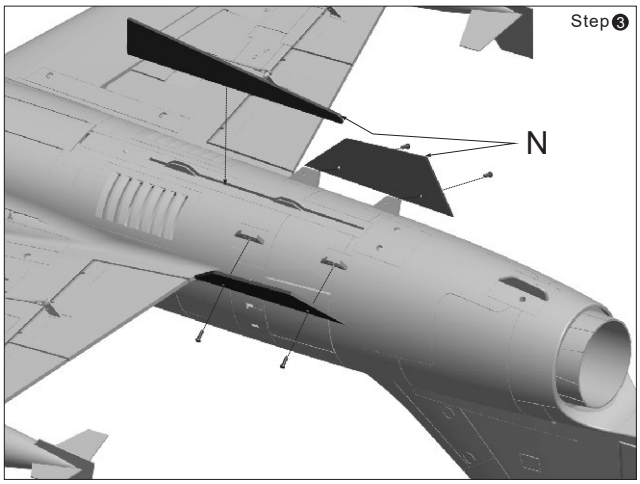
Power System Installation

1. Place the“motor(D)”into the“ducted fan housing(C) ”.
2. Attach the motor with 4“cup head screws(B)”.
3. Put the“rotor(E)”in the motor shaft.
   (During this process,please note the hardware platform of rotor should be aligned with the motor shaft platform)
4. Use“spinner(F)”to cover the rotor,and lock it in place with “cup-head-screw(G)”.
5. Attach the“tail fan cowl(A)”to the bottom of “ducted fan housing(C)” and lock it in place with 2 “Grub screws(H)”.









Accessories name and specification

I - EDF power system
J - Screws (PWA3x12mm 6pcs)
K - Fuselage
L - Screws (PA3x8mm 4pcs)
M - Fan cover
N - Fin
O - Screws (PA3x8mm 4pcs)

⚠ **Note:** When ESC and battery connected, do not touch them by hand to avoid accidental injury. When testing EDF, please use a safety test stand and again, do not touch the unit!

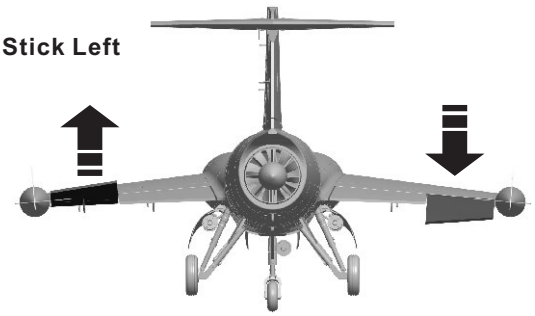
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Control direction test

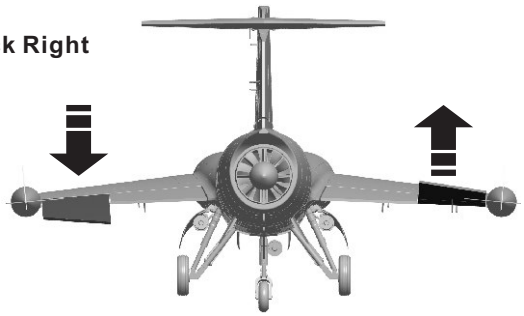
After the build is complete, power up the radio and connect a fully charged battery to the ESC. Use the radio to ensure correct control direction.

Ailerons

Stick Left

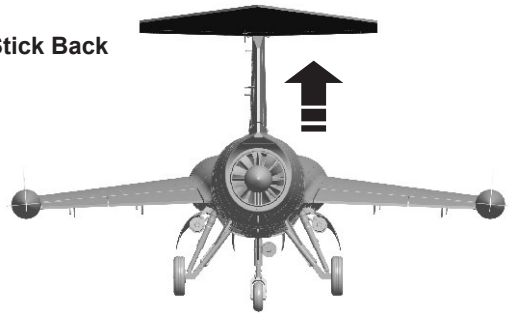


Stick Right

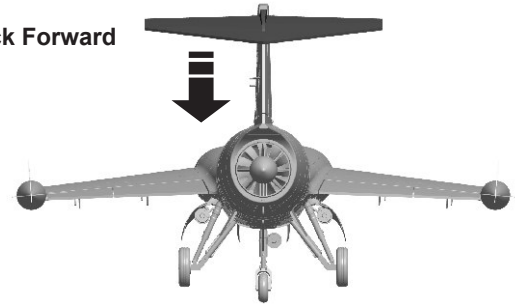


Elevator

Stick Back

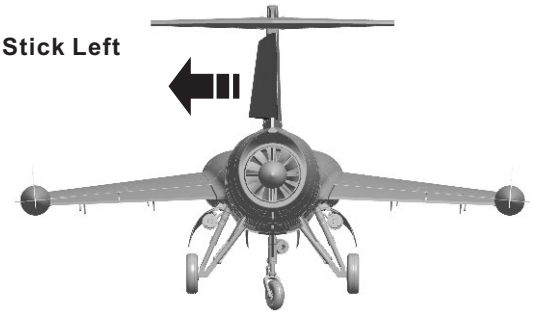


Stick Forward

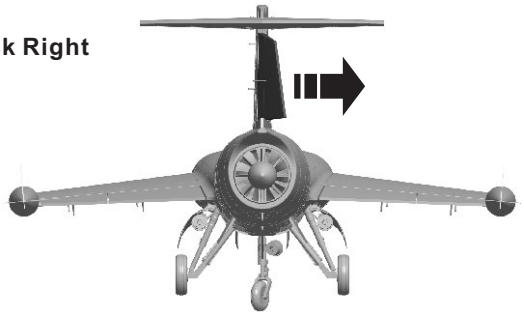


Rudder

Stick Left

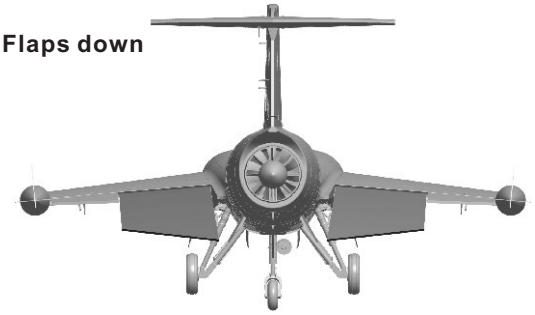


Stick Right



Flaps

Flaps down

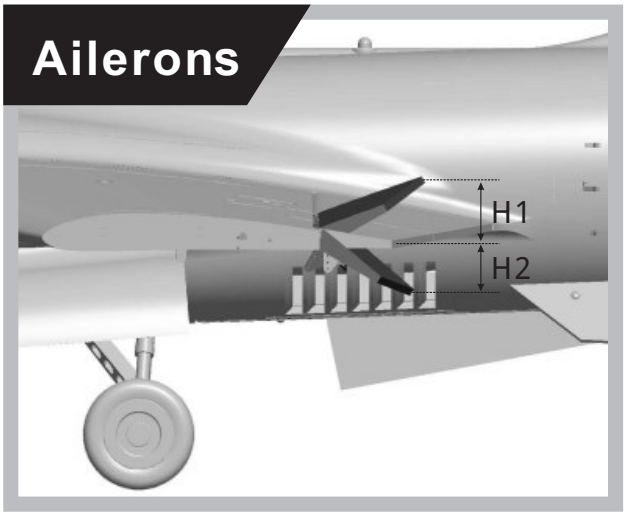


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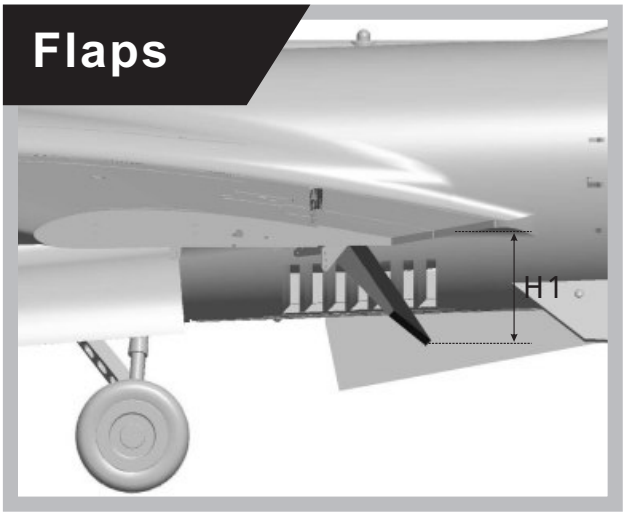
Dual Rates

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.

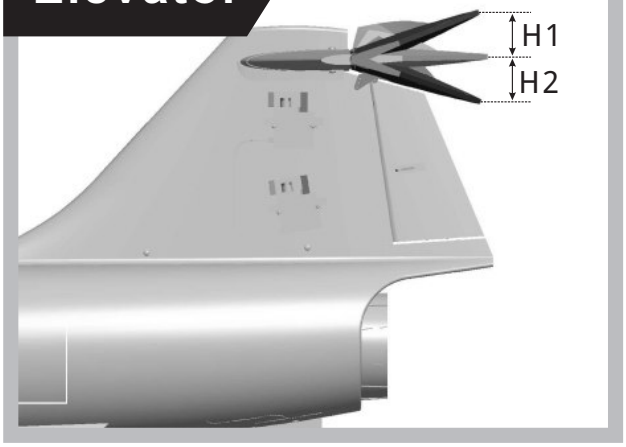
Ailerons



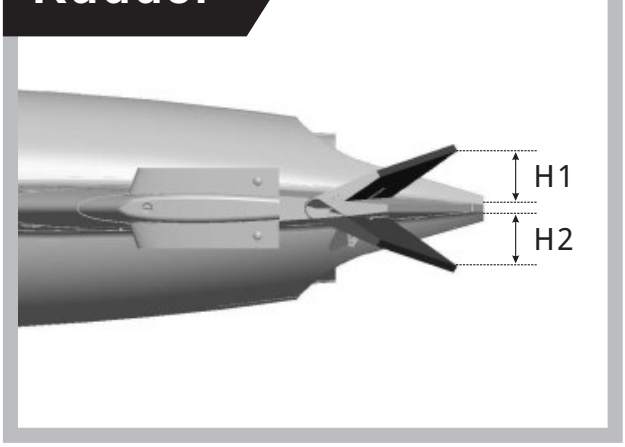
Flaps



Elevator



Rudder



	Ailerons	Elevator	Rudder	Flaps
Low Rate	H1/H2 20mm/20mm D/R Rate : 80%	H1/H2 35mm/35mm D/R Rate : 80%	H1/H2 22mm/22mm D/R Rate : 75%	H1 27mm
High Rate	H1/H2 25mm/25mm D/R Rate : 100%	H1/H2 43mm/43mm D/R Rate : 100%	H1/H2 27mm/27mm D/R Rate : 100%	H1 41mm

⚠ Flight note:when flaps are deployed, the nose will drop, to counter this, set up 6% elevator mix to balance the airplane in half flap rate. Set a 12% elevator up mix to balance when in full flap rate.

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前　言

F-104“Starfighter”是美国洛克希德.马丁公司研制的超音速轻型战斗机。1951年开始设计，1958年开始装备部队。各种型号共计生产了2,578架，使用国家/地区达15个，成为60年代和米格-21、幻影III 齐名的世界三大标准战斗机之一。该机也是第一种实用的M2 一级战斗机，还是第一种曾经同时保持世界高度和速度纪录的飞机。

由Sebart与Freewing联合制作的90mm F-104S“Starfighter”电动EPO材料模型，翼展和机长分别为755mm/1720mm，采用了二种不同风格的涂装，分别是隶属于乔治空军基地的第479战术战斗机联队的FG-907银色涂装和黄、黑相间的意大利空军82周年纪念涂装。

这款90mm F-104S“Starfighter”电动模型的整体外形，在尽可能符合真实飞机的前提下，我们对主翼、平尾的形状和面积做了一些细微调整，让产品的飞行品质变得更加稳定一些。尾喷火焰灯、机体警示灯、着陆灯的运用，使得模型在飞行过程中，更加逼真。电动涡杆控制的铝合金减震起落架，能够有效吸引降落时的冲击力。由玻璃钢材料制作的前、后舱门，在减轻重量的同时，减少了飞行过程中的阻力。特殊设计的空气减速板，一方面，能够在高速飞行时，给电动涵道动力组带来更多的进气量；另外一方面，在降落时展开，使降落速度更慢一些。除此之外，我们为这款模型设计了飞行员、仪表贴纸、皮托管等丰富细节。

这款模型采用了螺丝固定的可拆卸结构设计，主翼、平尾、垂尾均可以快速拆装。其中，主翼、平尾和垂尾内部，均嵌入了大量的碳纤管进行加强。除此之外，通过特殊的加固方式，保证了T型尾翼的工作可靠性。PNP配置预装了2颗16g金属数字舵机、7颗17g金属舵机和3颗9g金属舵机，使用球头连接。内置12叶涵道风扇组和3748-1550KV无刷外转马达，配合HOBBYWING订制的130A（8A UBEC）电调，带来优秀的气流声效和强大的推力。通过集线板功能，使电池舱更加整洁。

90mm F-104S“Starfighter”电动模型内置了Freewing的E51陀螺仪，进一步强化飞行稳定性。模型在飞行过程中，拥有出色的速度和爬升性能，能够轻松应对常规的仿真战术飞行动作。由于F104的特殊气动外形，我们需要较长的下滑道，配合空气减速板，以大约30度左右的仰角减速降落。

⚠ **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

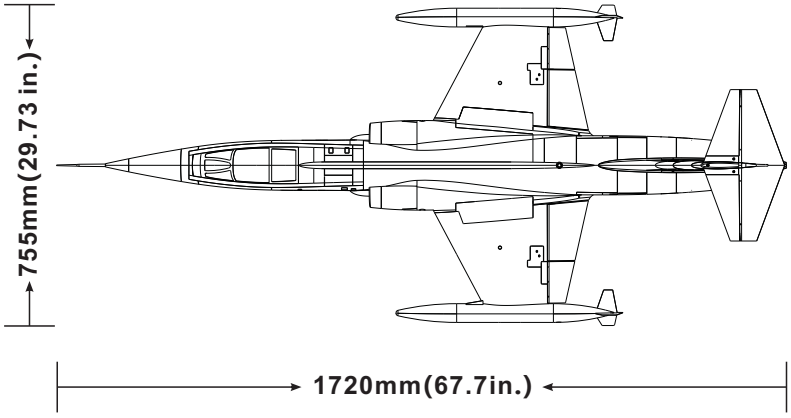
1.模型飞机不是玩具,操作者需要具备一定的经验;没有经验的初学者,必须在有丰富经验的专业人士指引下,逐步学习!
2.在组装之前,必须认真阅读产品说明书,严格按照说明书指示操作。
3.飞翼模型及其销售商，对于违反说明书的要求操作而造成的损失、将不负任何法律责任！
4.模型飞机的使用年龄必须是14岁以上的儿童或者成人。
5.此模型产品使用EPO材料制成，表面喷涂油漆，不可随意使用化学制剂擦拭，否则会损坏模型产品。
6.不可以在公共场合、高压线密集区、高速公路附近、机场附近或者其它法律法规明确禁止飞行的场合飞行。
7.不可以在雷雨、大风、大雪或者其它恶劣气象环境下飞行。
8.模型飞机的电池产品，不可以随意乱扔，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！

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产品基本参数



产品基本参数

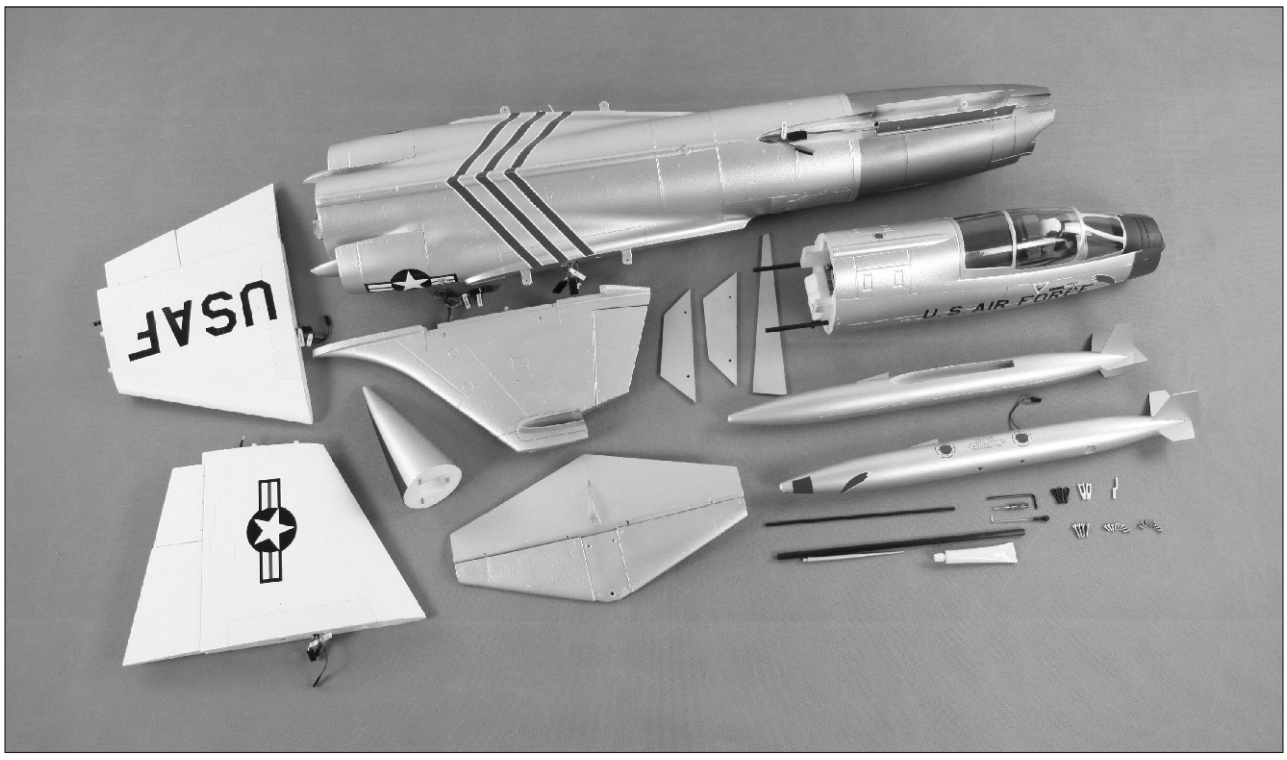
起飞重量:2800g (不含电池)
推力:3150g
涵道:12叶 90mm涵道
电机:3748-1550KV无刷外转电机
电调:130A 电调 带8A UBEC
舵机:9克舵机x3,16克舵机x2,17克舵机x7

飞行所需其他配件

7通发射机和接收机
6S 5000mAh-6000mAh 锂电池
锂电池充电器

⚠ **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）

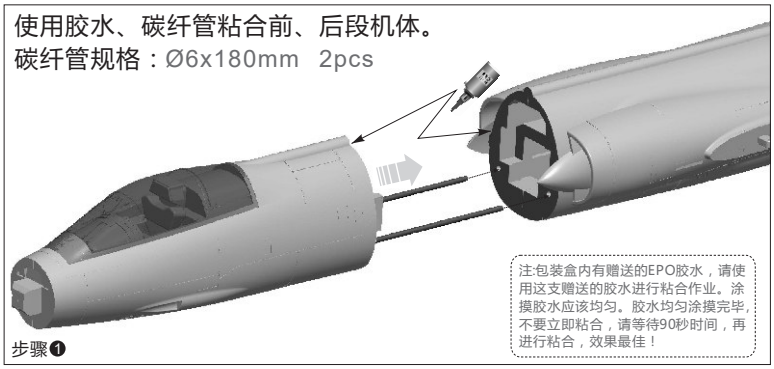
序号	配件名称	PNP	KIT Plus	Airframe
1	机身套件	√	√	√
2	主翼套件	√	√	√
3	平尾套件	√	√	√
4	垂尾套件	√	√	√
5	机头	√	√	√

序号	配件名称	PNP	KIT Plus	Airframe
6	副油箱	√	√	√
7	五金配件	√	√	√
8	碳纤管	√	√	√
9	胶水/贴纸	√	√	√
10	说明书	√	√	√

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机 身 组 装

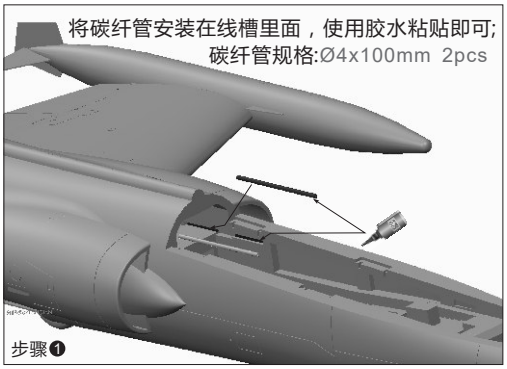
使用胶水、碳纤管粘合前、后段机体。
碳纤管规格：Ø6x180mm 2pcs



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！

步骤❶

将碳纤管安装在线槽里面，使用胶水粘贴即可;
碳纤管规格:Ø4x100mm 2pcs



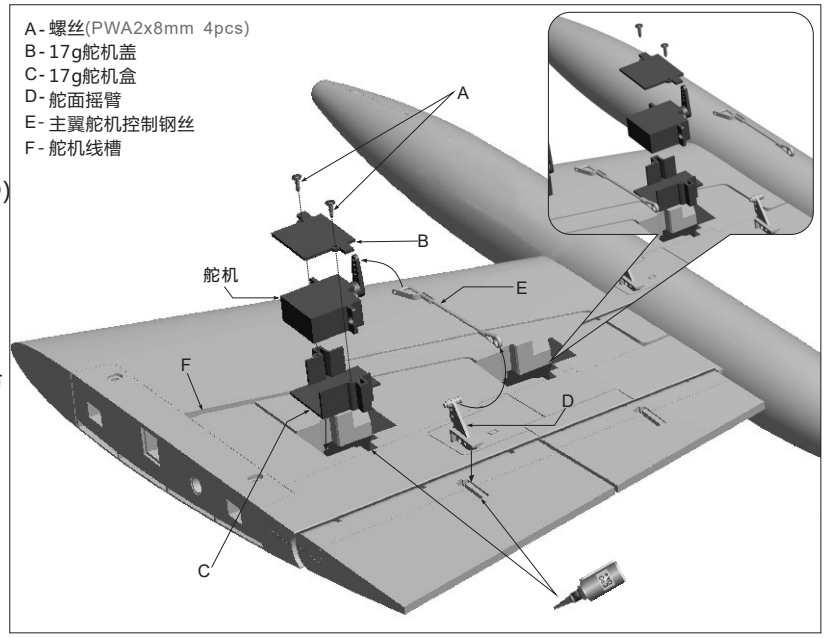
步骤❶

主翼

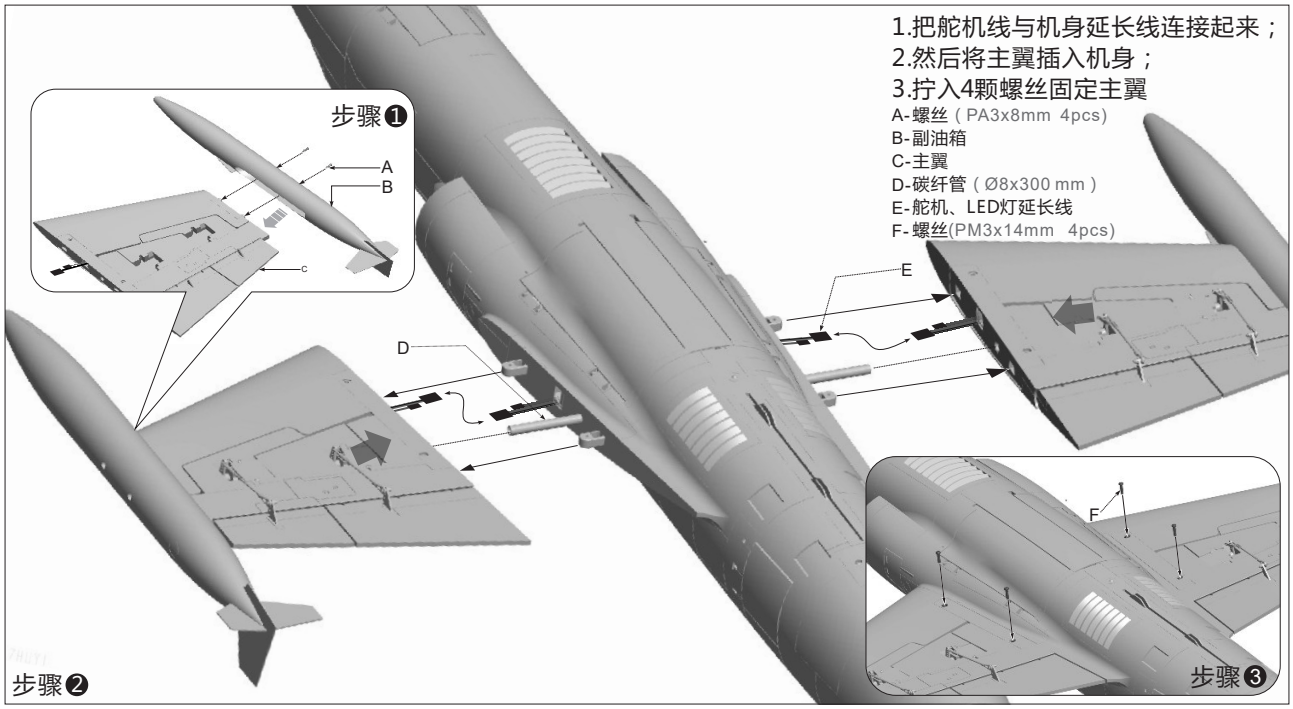
主翼舵机安装

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.用胶水把17g舵机盒(C)和舵机面摇臂(D)粘在主翼上;
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(B)，最后用2颗螺丝(A)锁紧固定舵机；
4.用舵机传动控制钢丝(E)连接舵机摇臂与舵面摇臂(D)。

A-螺丝(PWA2x8mm 4pcs)
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



主 翼 安 装

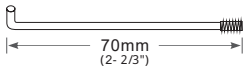


1.把舵机线与机身延长线连接起来；
2.然后将主翼插入机身；
3.拧入4颗螺丝固定主翼
A-螺丝（PA3x8mm 4pcs)
B-副油箱
C-主翼
D-碳纤管（Ø8x300 mm）
E-舵机、LED灯延长线
F-螺丝(PM3x14mm 4pcs)

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机 体 安 装

副翼控制钢丝尺寸

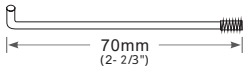


钢丝直径 Ø1.5mm

副翼舵机钢丝安装孔位

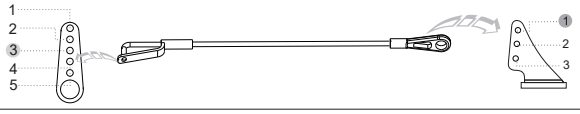


襟翼控制钢丝尺寸



钢丝直径 Ø1.5mm

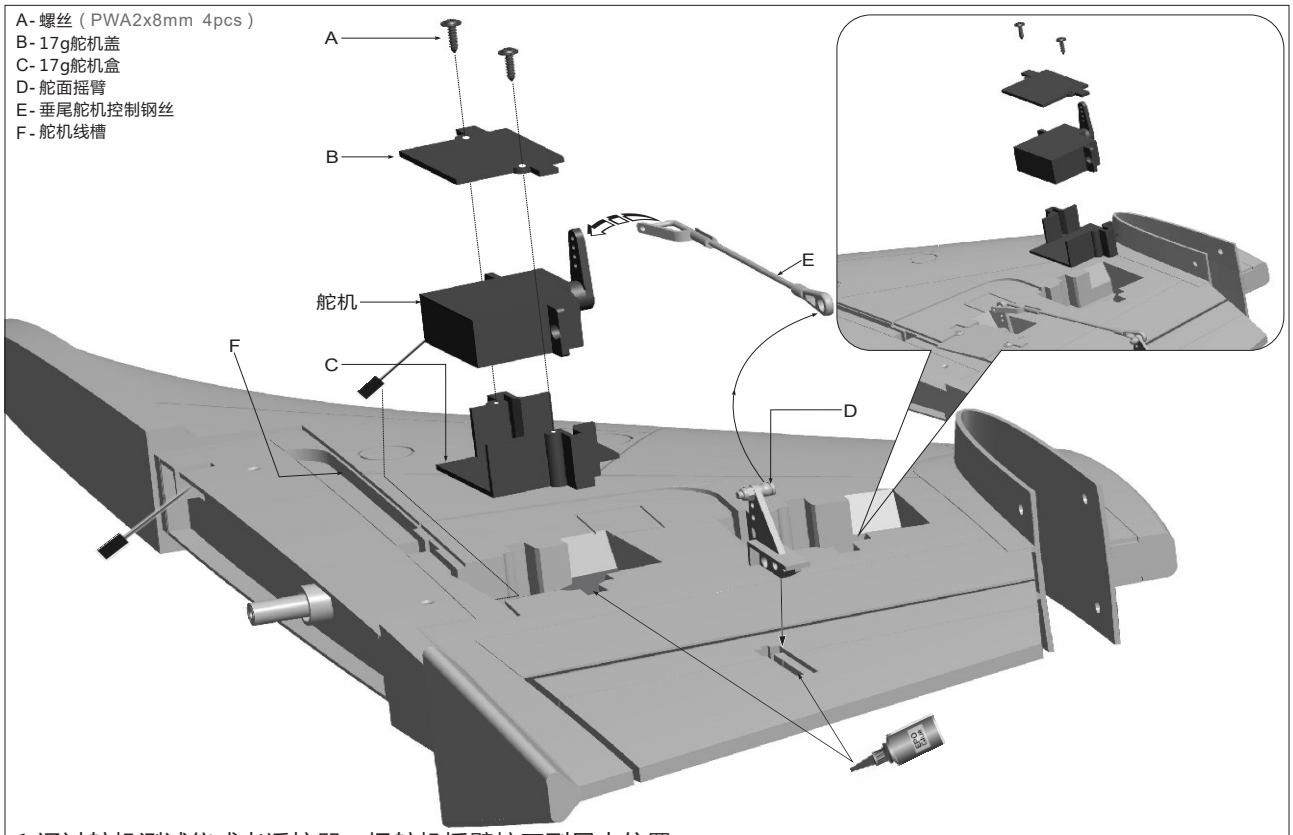
襟翼舵机钢丝安装孔位



平尾、垂尾

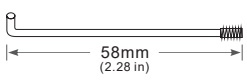
平尾、垂尾舵机安装

A- 螺丝 (PWA2x8mm 4pcs)
B- 17g舵机盖
C- 17g舵机盒
D- 舵面摇臂
E- 垂尾舵机控制钢丝
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)和舵机面摇臂(D)粘在平尾、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(B)，最后用2颗螺丝(A)锁紧固定舵机；
4.用舵机传动控制钢丝(E)连接舵机摇臂与舵面摇臂(D)。

平尾控制钢丝尺寸

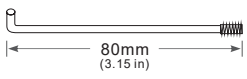


钢丝直径 Ø1.5mm

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

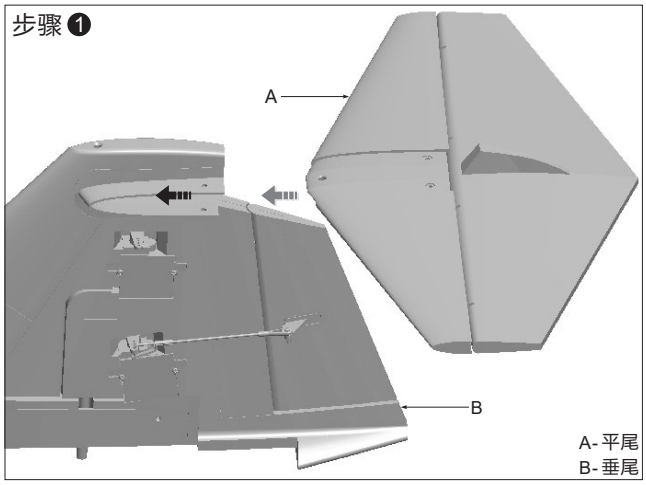


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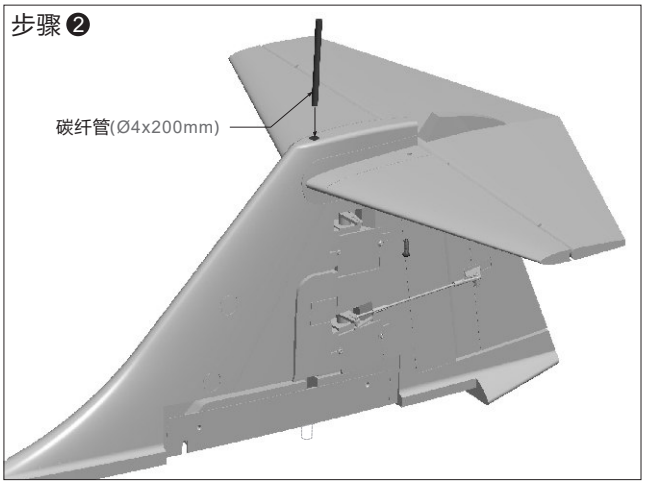
尾 翼 安 装

请参考以下图示，安装尾翼！

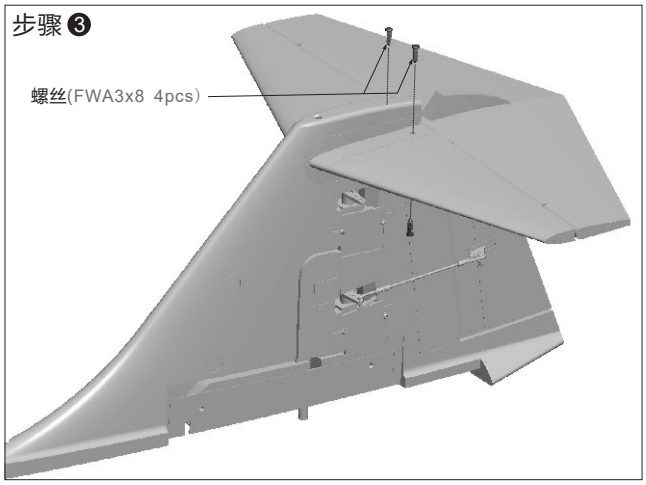
步骤❶



步骤❷

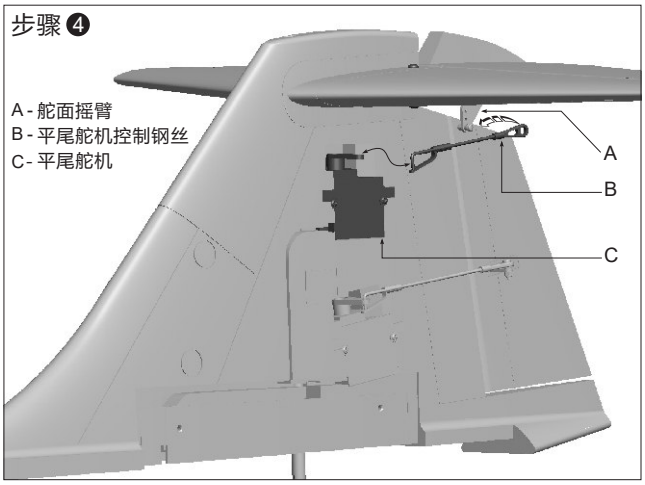


步骤❸



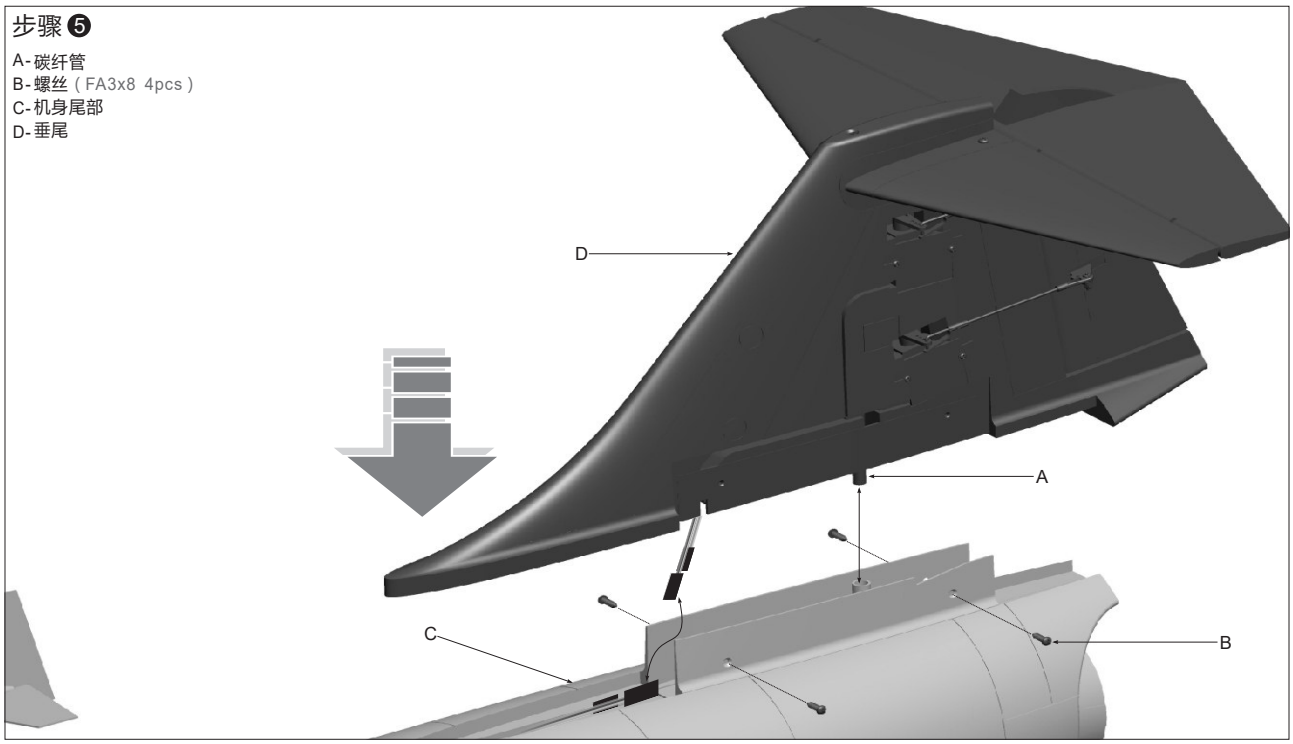
步骤❹

A-舵面摇臂
B-平尾舵机控制钢丝
C-平尾舵机



步骤❺

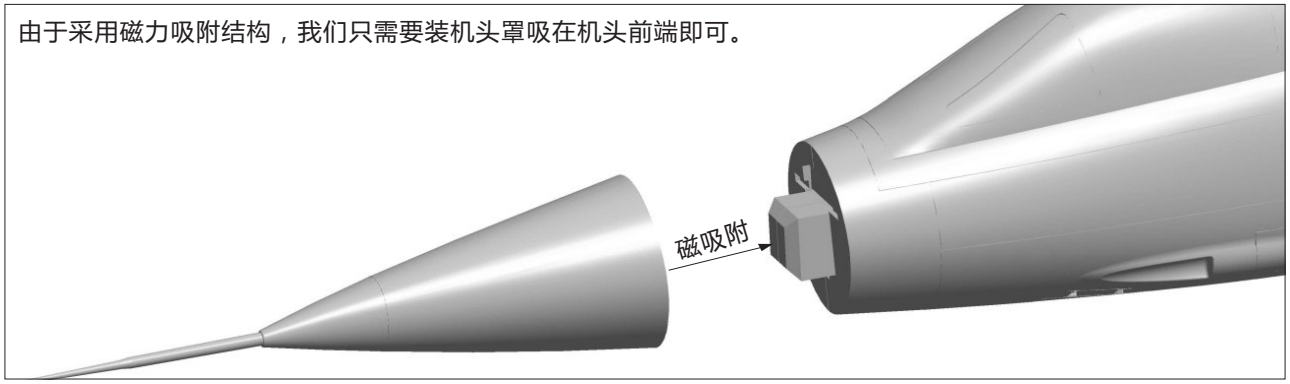
A-碳纤管
B-螺丝（FA3x8 4pcs）
C-机身尾部
D-垂尾



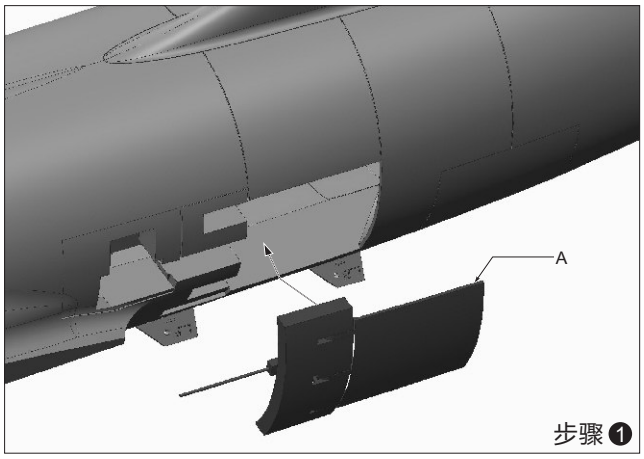
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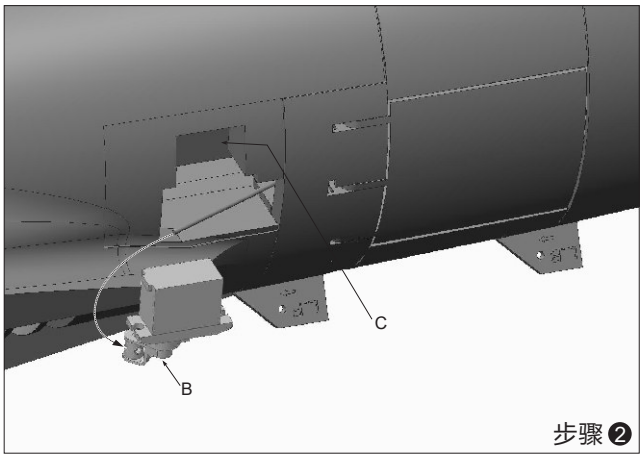
机 头 组 装

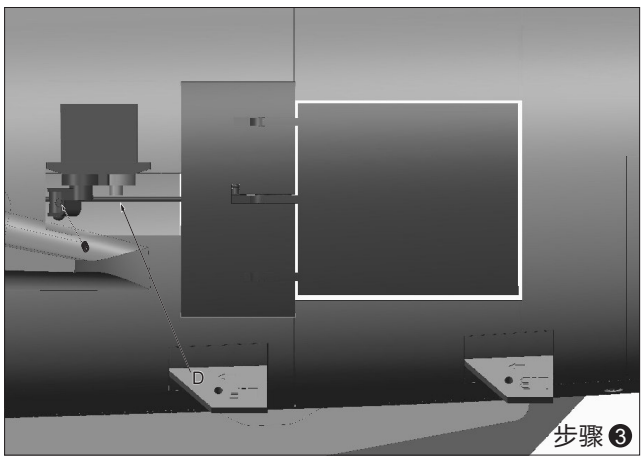
由于采用磁力吸附结构，我们只需要装机头罩吸在机头前端即可。

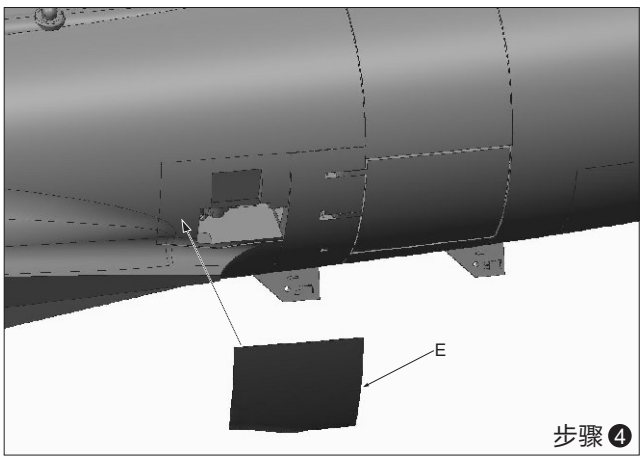


减 速 板 安 装



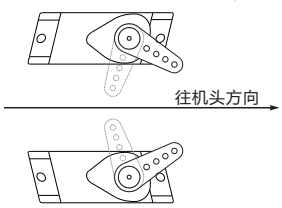






A-减速板套件　　D-舵机控制钢丝
B-16g舵机　　E-舵机盖
C-舵机安装座

1.通过舵机测试仪或者遥控器，把舵机摇臂校正到运动起始位置；



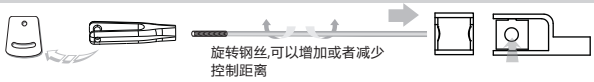
2.使用胶水将减速板套件（A）粘到机体二侧。
3.用胶水将舵机（B）粘到舵机安装座（C）处。安装时过程中，请注意：
-将舵机线与机身内置延长线连接并固定好
-将传动钢丝插入舵机摇臂上的固定栓内。
4.保持减速板处于正确的闭合位置时，锁紧固定栓上的螺丝。
5.测试功能正常后，用胶水粘合舵机盖，保护舵机！

减速板控制钢丝尺寸



钢丝直径 Ø1.5mm

减速板舵机钢丝安装孔位



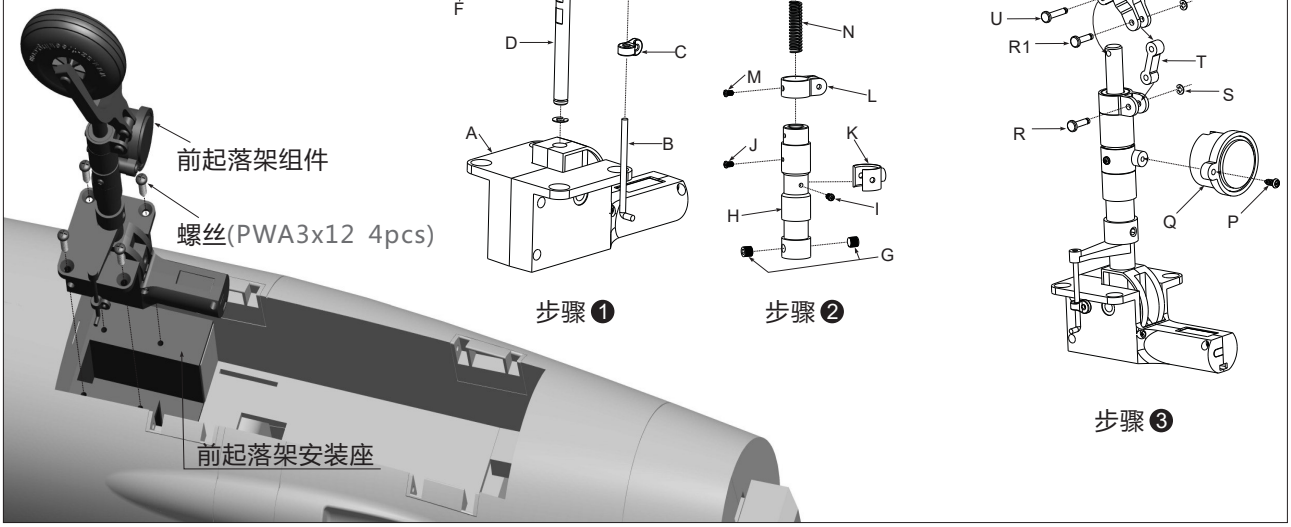
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前起落架组装

请参考以下图示，组装、更换、维修前起落架；

配件名称及规格参数

A - 起落架收放控制器
B - 前起落架转向钢丝
C - 前起落架转向控制环
D - 前起落架主钢丝
E - L型摇臂
F - 机米螺丝(M3×3mm 1pcs)
G - 机米螺丝(M4×4mm 2pcs)
H - 前起落架主撑杆
I - 螺丝 (PM2x3mm 1pcs)
J - 螺丝 (PM2x4mm)
K - LED灯安装臂
L - U型减震臂
M - 螺丝 (PM2x3mm)
N - 弹簧
O - 减震活动杆
P - 螺丝 (PA2x8mm)
Q - LED灯
R - 梢钉 (Ø3.5x9.2mm)
S - E型扣(内径Ø1.5mm)
T - 8字型减震转轴
U - 梢钉(Ø3.5x11.3mm)
V - U型斜撑杆
W - 轮轴 (Ø5x25.5mm)
X - E型扣 (内径Ø2mm)
AB - 机轮(Ø45x16mm)



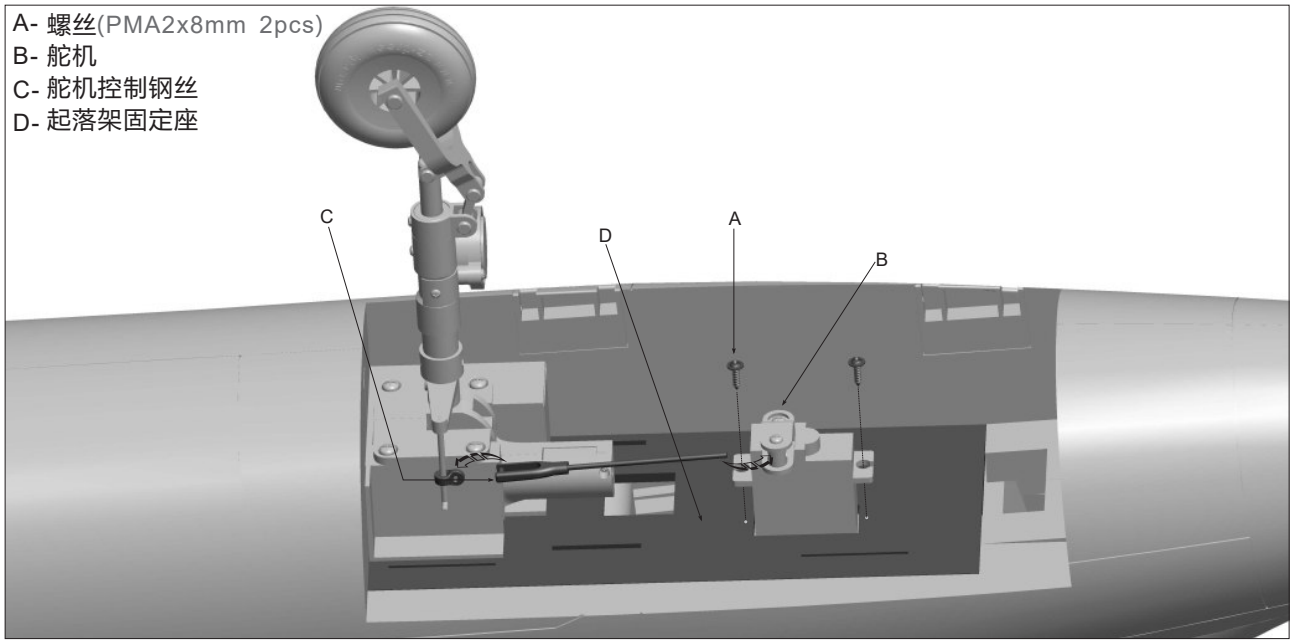
步骤❶

步骤❷

步骤❸

前起落架舵机安装

A- 螺丝(PMA2x8mm 2pcs)
B- 舵机
C- 舵机控制钢丝
D- 起落架固定座



起落架转向控制钢丝尺寸



钢丝直径 Ø1. 5mm

转向舵机钢丝安装孔位



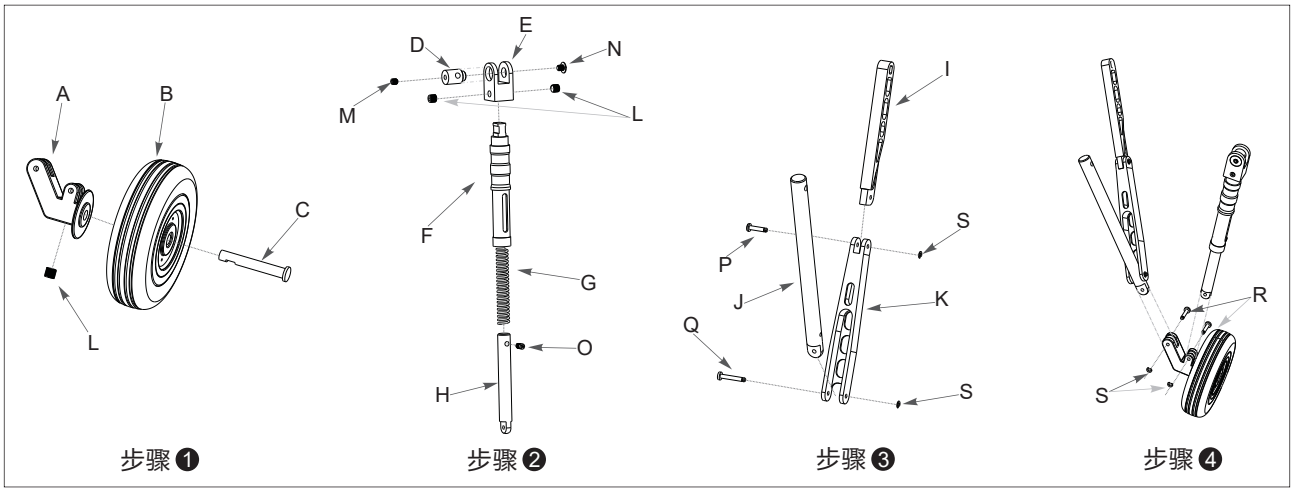
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后起落架组装

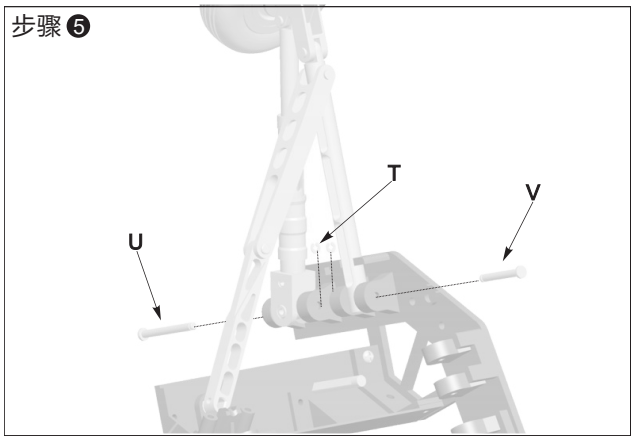
请参与以下图示，组装，更换、维修后起落架；

配件名称及规格参数

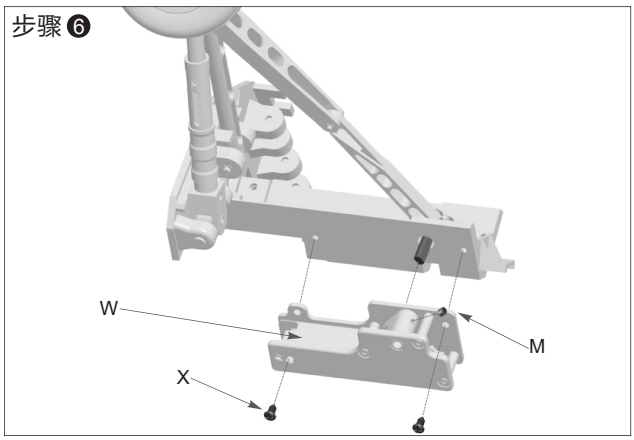
A - 后轮减震连接臂
B - 机轮
C - 后轮轮轴 (M3×3mm 3pcs)
D - 旋转轴
E - 旋转轴套
F - 后起落架主撑杆
G - 弹簧 (2pcs)
H - 后起落架减震活动杆
I - 后起落架折叠支撑杆1
J - 后起落架支撑杆3
K - 后起落架折叠支撑杆2
L - 机米螺丝 (M4×3mm 6pcs)
M - 机米螺丝 (M3×3mm 4pcs)
N - 螺丝 (PM3×4mm 2pcs)
O - 机米螺丝 (M3×5mm 2pcs)
P - 梢钉(2pcs)
Q - 梢钉(2pcs)
R - 梢钉(4pcs)
S - E型扣(Ø1.5mm 8pcs)
T - E型扣(Ø2.0mm 4pcs)
U - 梢钉(2pcs)
V - 梢钉(2pcs)
W - 起落架收放控制器
X - 螺丝 (PWA3×12mm 2pcs)
Y - 后起落架传动杆固定盖



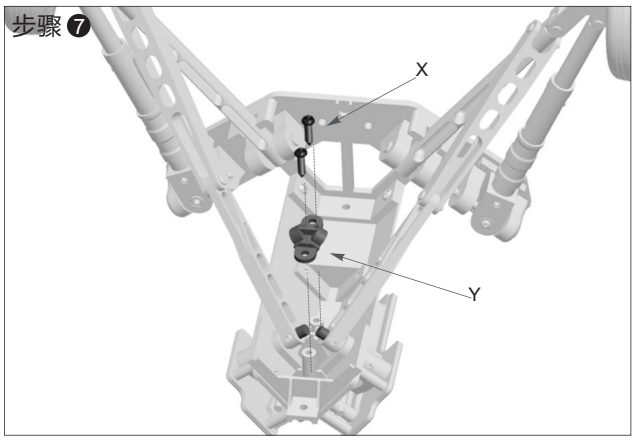
步骤❶ 步骤❷ 步骤❸ 步骤❹



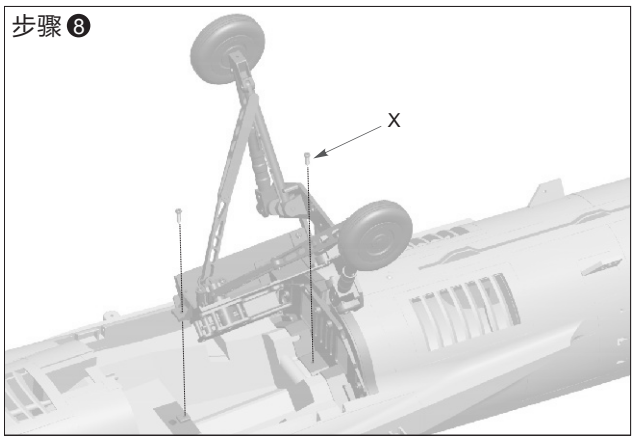
步骤❺



步骤❻



步骤❼



步骤❽

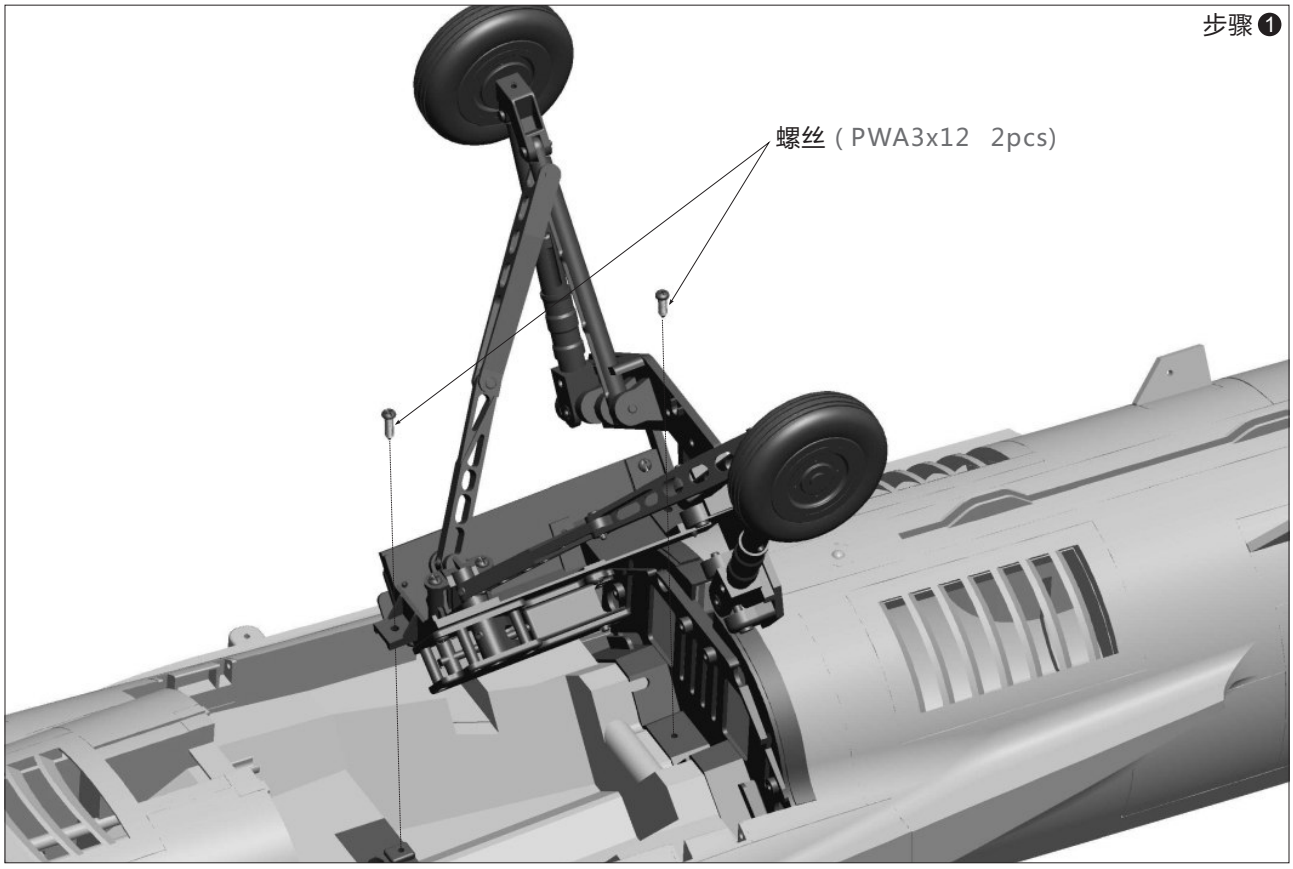
⚠ **注意：** 在整个起落架组装过程中，所有带扁口的零件，在用螺丝固定时，扁口面必须面向螺丝孔，只有这样，螺丝的固定才是有效的，零件才能不会转动和脱落。

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后起落架组装

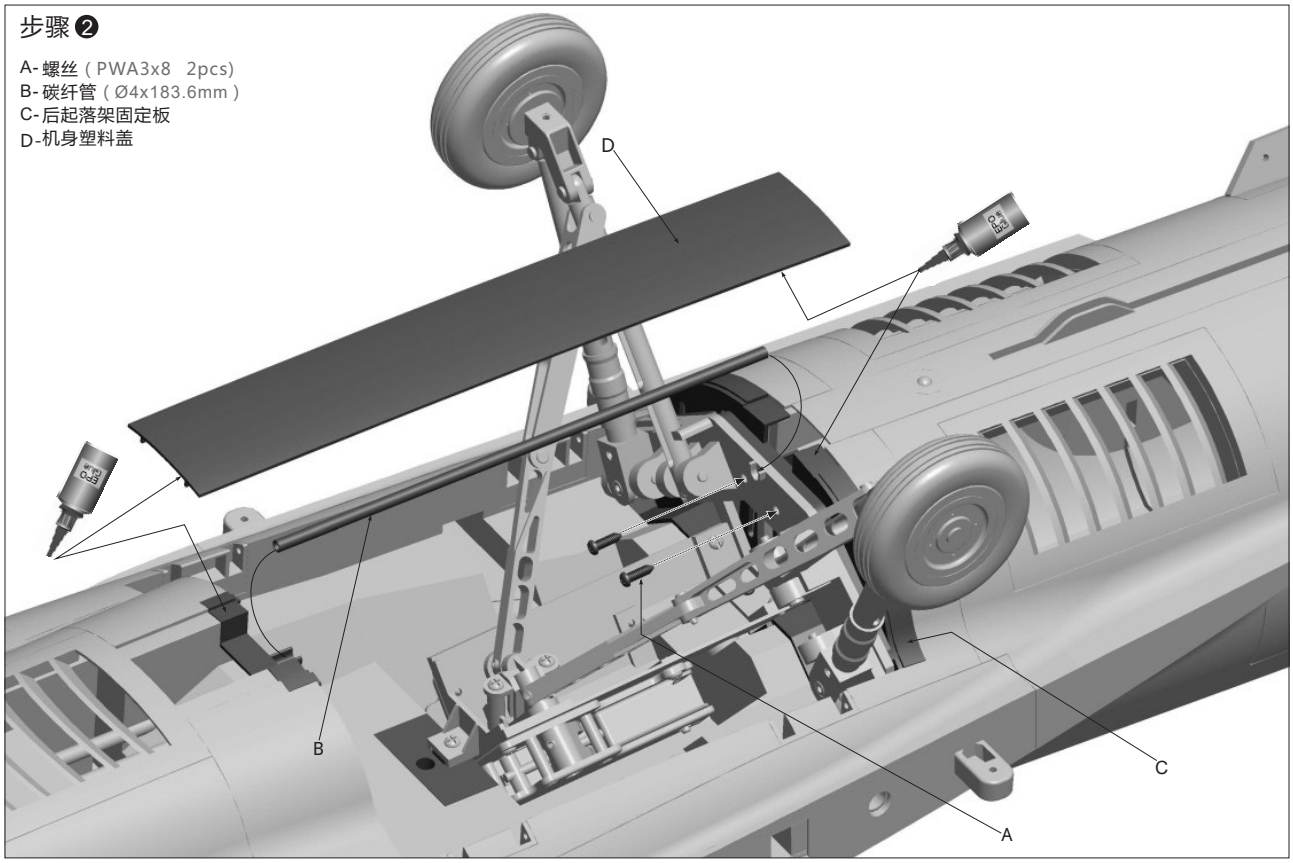
请参考以下图示，组装、更换、维修后起落架；

步骤❶



步骤❷

A-螺丝（PWA3x8 2pcs）
B-碳纤管（Ø4x183.6mm）
C-后起落架固定板
D-机身塑料盖



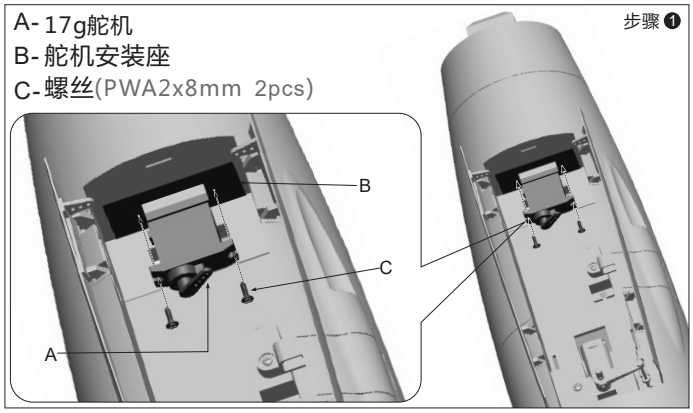
www.modellmarkt24.ch; www.modellmarkt24.de

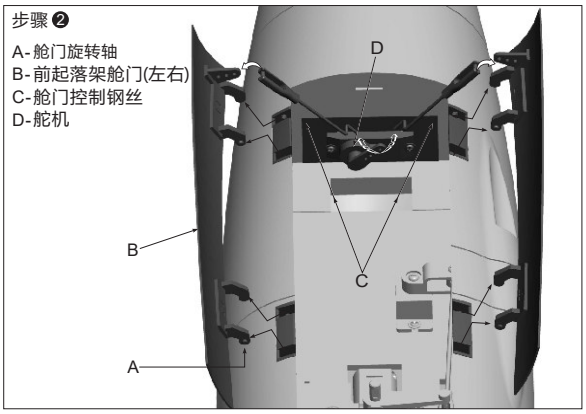
前、后舱门安装

请根据以下图示组装、拆解、更换前、后起落架舱门配件；

前舱门舵机安装

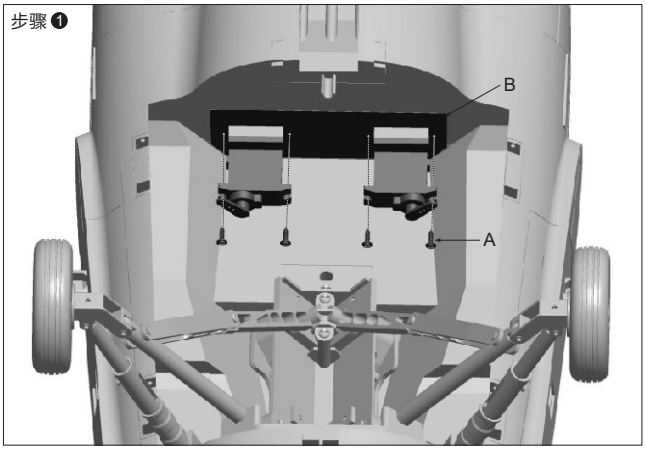
A- 17g舵机
B- 舵机安装座
C- 螺丝(PWA2x8mm 2pcs)

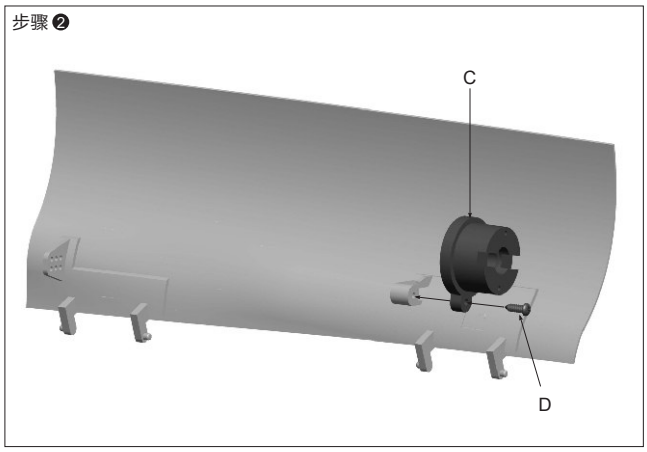


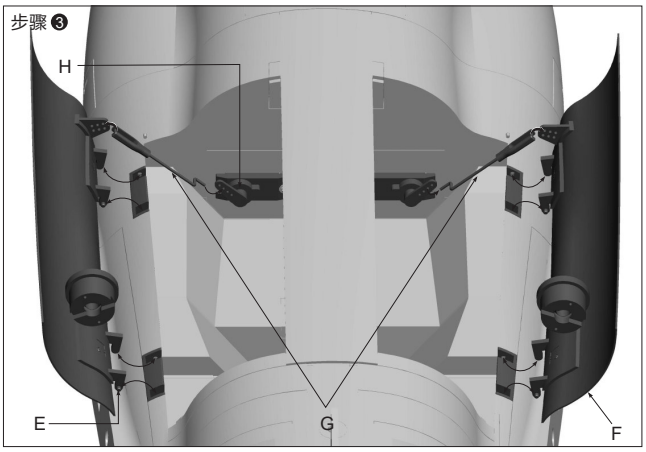


后舱门舵机安装

A - 螺丝 (PWA2x8mm 2pcs)
B - 舵机安装座
C - LED灯
D - 螺丝 (PA2x8mm 1pcs)
E - 舱门旋转轴
F - 后起落架舱门 (左右)
G - 舱门控制钢丝
H - 舵机







前舱门控制钢丝尺寸

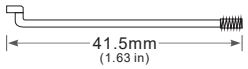


钢丝直径 Ø1.2mm

前舱门舵机钢丝安装孔位

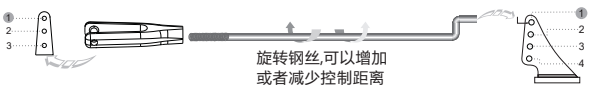


后舱门控制钢丝尺寸(2pcs)



钢丝直径 Ø1.2mm

后舱门舵机钢丝安装孔位(2pcs)

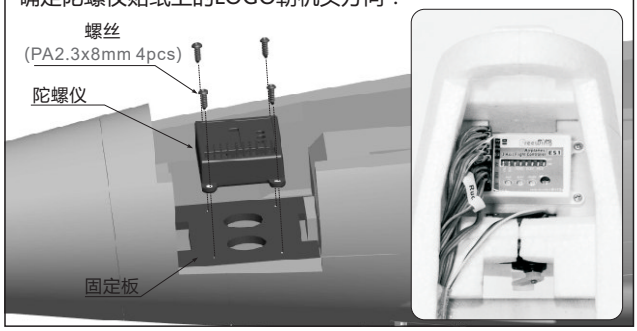


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陀螺仪使用说明

中文版

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！

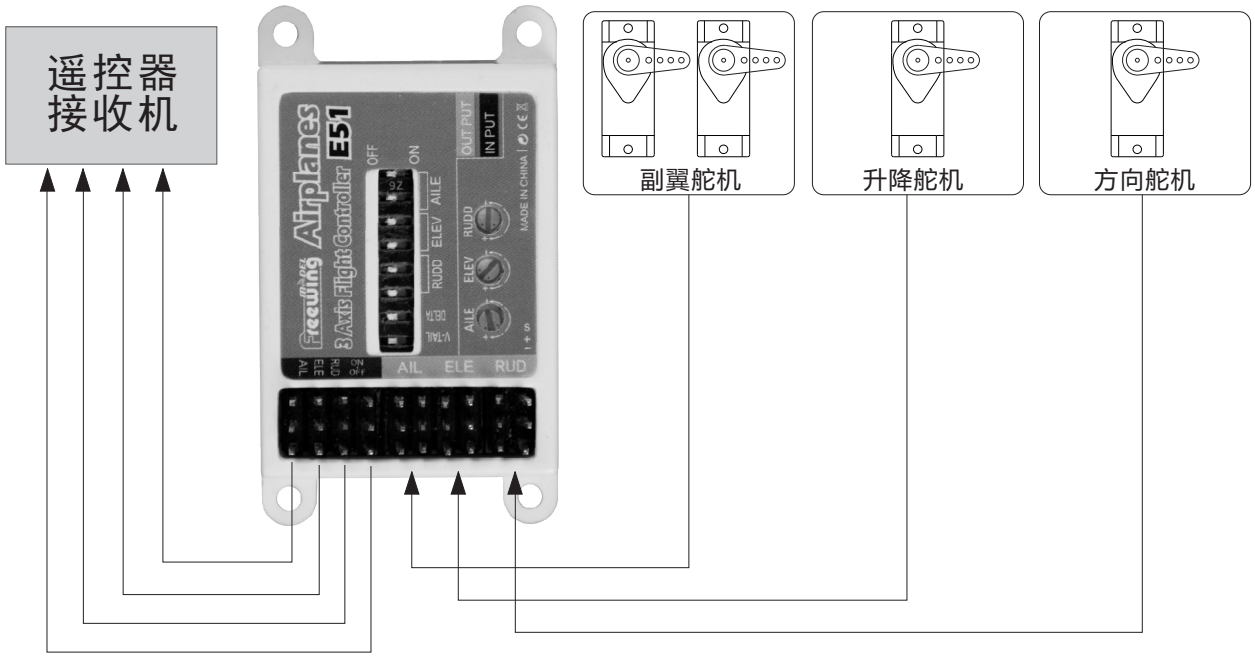


出厂时，陀螺仪已经通过测试，并设置好默认感度值，您可以根据实际情况，进行小幅度调整。
如果您需要恢复到出厂默认感度值，请参考此图。



陀螺仪连接示意图

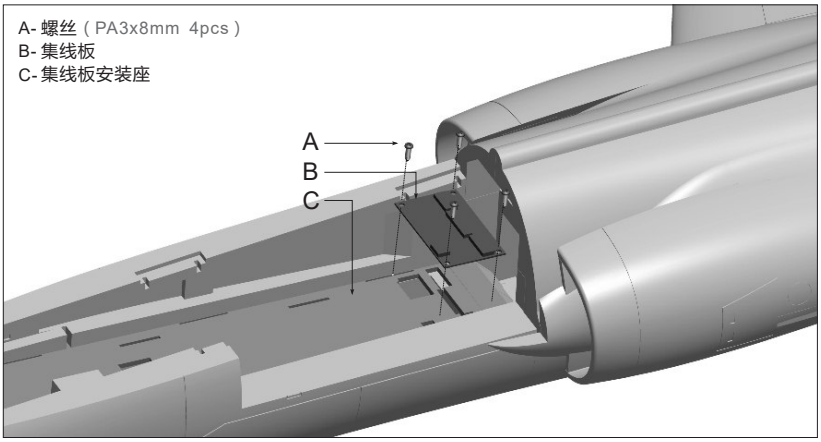
1.请正确安放陀螺仪，
2.将平尾、方向及副翼舵机线分别接入陀螺仪输入端；
3.使用3根连接线，将陀螺仪输出端与接收机对应通道连接；
4.如果您的接收机通道数目充许，您可以再使用一根连接线连接陀螺仪与接收机，用来设置陀螺仪开关。
5.陀螺仪详细使用方法，请参考包装盒内的《陀螺仪使用说明书》。



集线板使用说明

参考集线板上的通道标识，将所有电池舱内的连接线插入集线板。（不包含副翼、升降舵、方向舵，此三个通道直接接入陀螺仪）
接线工作完成后，使用螺丝固定集线板，防止松动。

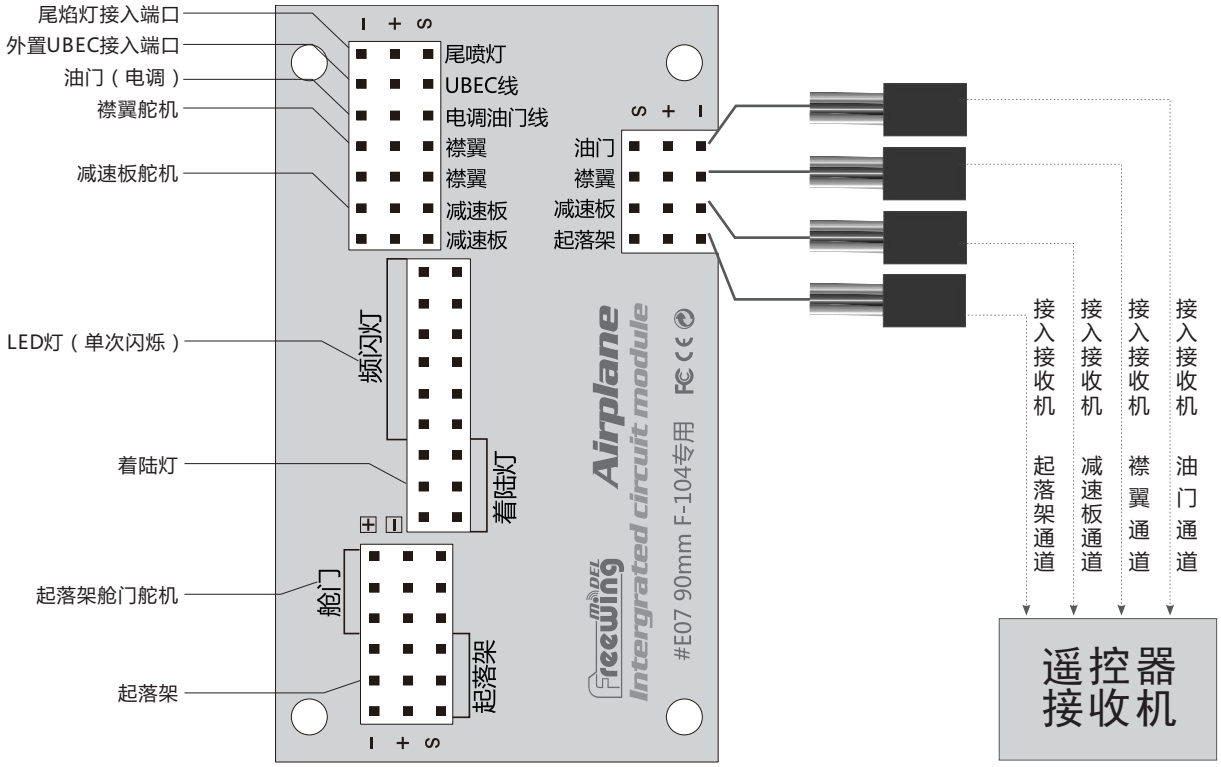
F-104 集线电路板有二个功能：
1.控制LED灯及舱门的正常工作。
2.减少电池舱内的线材数量。



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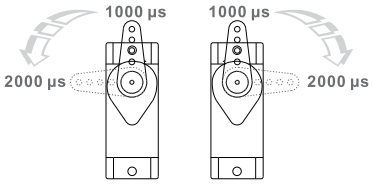
集线板使用说明

中文版



根据注明,将舵机线或者LED灯线插入正确接口上

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

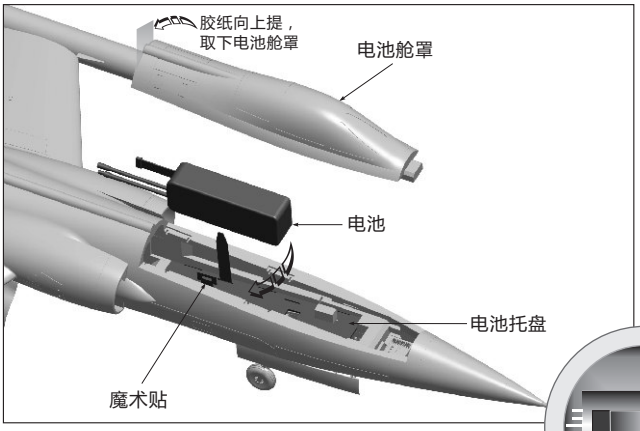
如果您需要选购其它品牌的舵机进行安装，请参考下面的表格选择正确的舵机

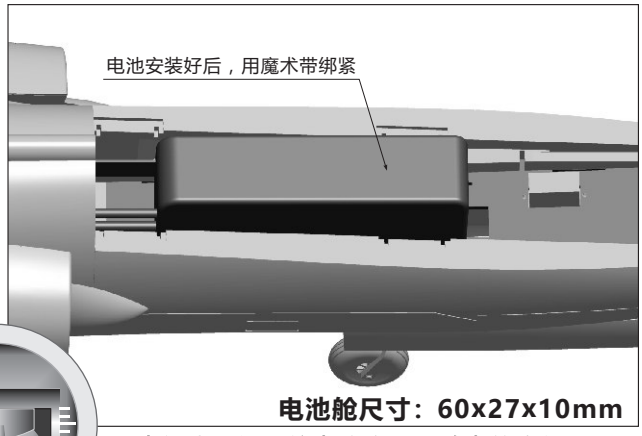
舵机使用位置	序号	规格	正、反向	舵机线长
前起落架舱门	1	9g-金属	反向	400mm
前轮转向	2	17g-金属	正向	150mm
左副翼	3	17g-金属	正向	180mm
右副翼	4	17g-金属	正向	180mm
左襟翼	5	17g-金属	正向	120mm
右襟翼	6	17g-金属	反向	120mm

舵机使用位置	序号	规格	正、反向	舵机线长
左减速板	7	16g-金属	反向	650mm
右减速板	8	16g-金属	正向	650mm
后起落架舱门(左)	9	9g-金属	正向	250mm
后起落架舱门(右)	10	9g-金属	反向	250mm
平尾	11	17g-金属	正向	400mm
垂尾	12	17g-金属	正向	360mm

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电池安装说明





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。

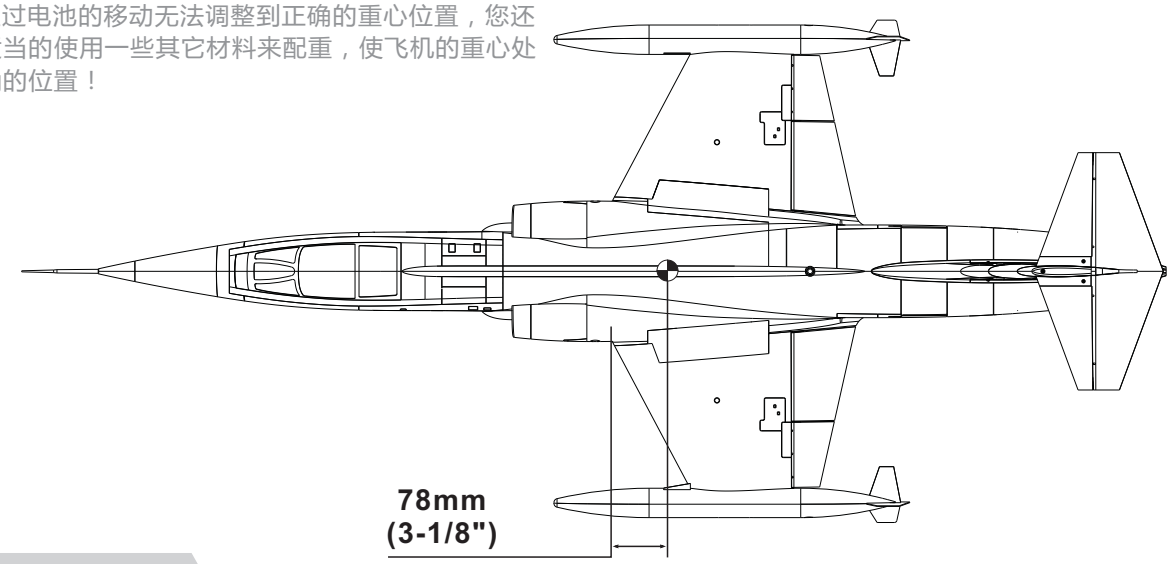
我们建议使用的电池容量和放电倍率如下：
6S 22.2V 5000mAh ~ 6S 22.2V 5500mAh
放电倍率 ⩾ 35C

重 心 示 意 图

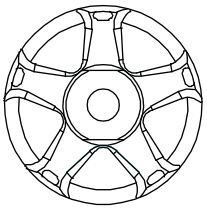
正确的重心，直接关系到飞行的成功与否，请参考下面的重心标示图，来调整飞机的重心。

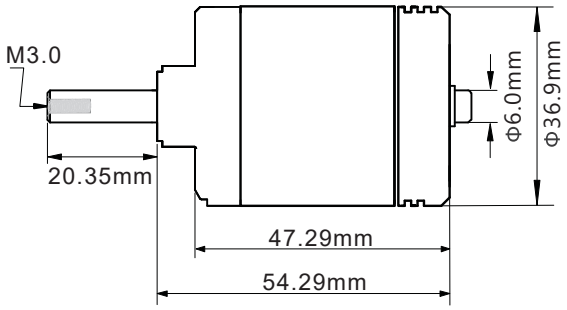
—您可以将电池向前，或者向后移动，来调整飞机的重心；

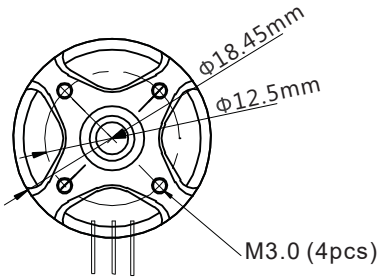
—如果通过电池的移动无法调整到正确的重心位置，您还可以适当的使用一些其它材料来配重，使飞机的重心处于正确的位置！



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！

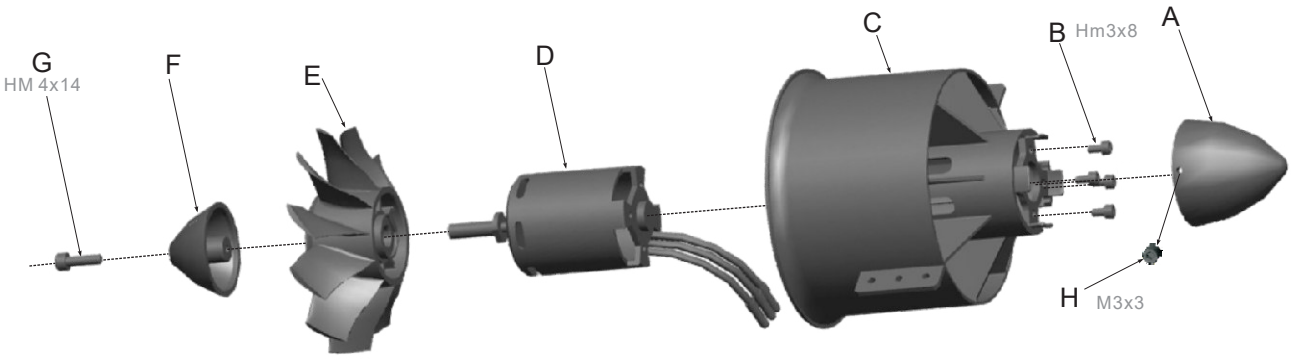
Item No.	KV Value	Volate (V)	Current (A)	Pull (g)	Motor Resistance	Weight (g)	No Load Current	Propeller	ESC
MO 03748	1550RPM/V	22.2	95	3600	0.02 Ω	195	2.7A/10V	90mm Ducted Fan	⩾95A

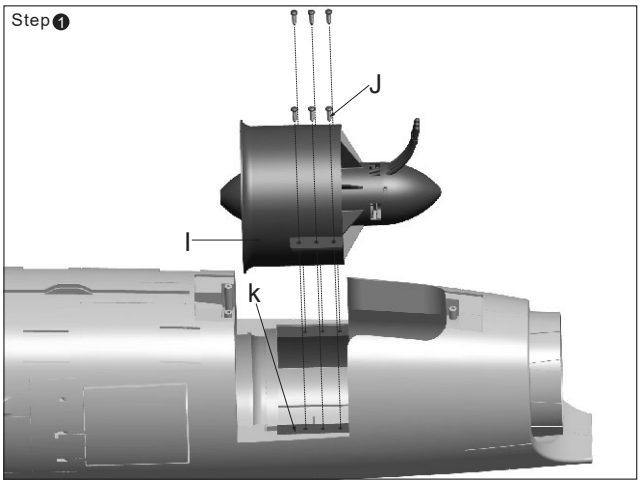
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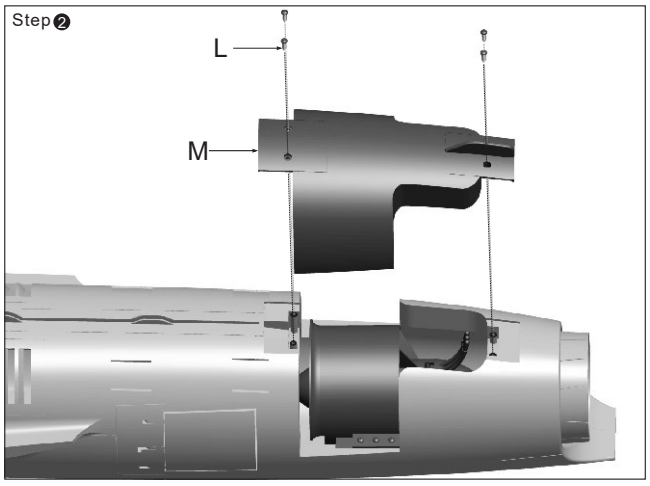
动力系统的安装

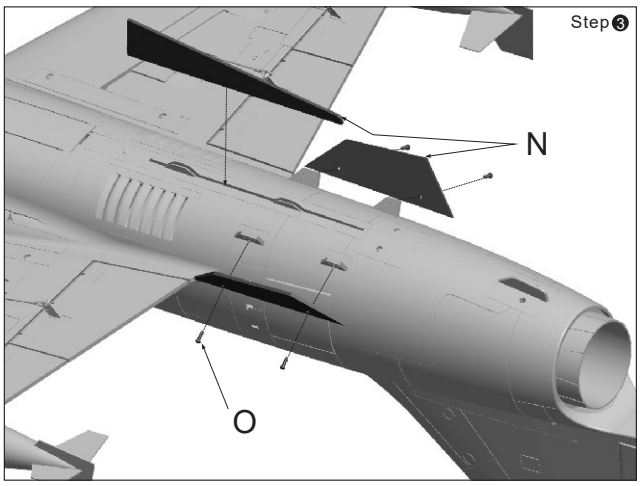
1.将电机“D”装入涵道框“C”内；
2.用4颗杯头螺丝“B”固定马达；
3.把涵道风扇“E”套入到电机轴上；
（在此过程中，请注意风扇叶内嵌五金件的扁口与马达轴的扁口部位对齐装入）

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（PWA3x12mm 6pcs）
K - 机体
L - 螺丝（PWA3x8mm 4pcs）
M- 涵道底盖
N- 腹鳍
O- 螺丝（PA3x8mm 4pcs）

⚠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！

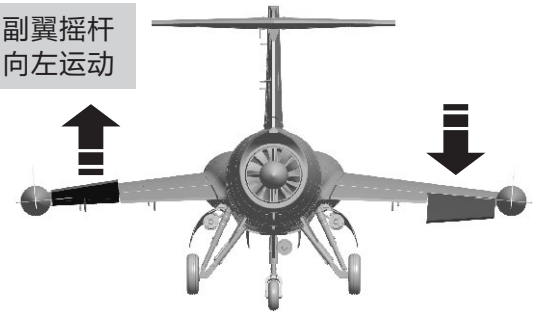
www.modellmarkt24.ch; www.modellmarkt24.de

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

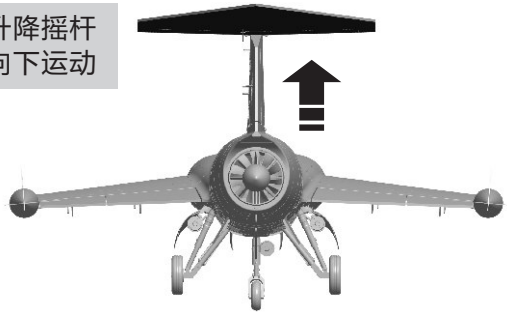


副翼摇杆
向右运动

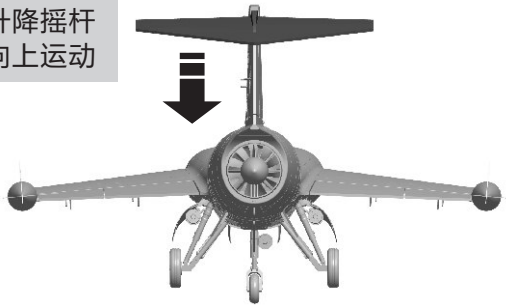


升降舵

升降摇杆
向下运动

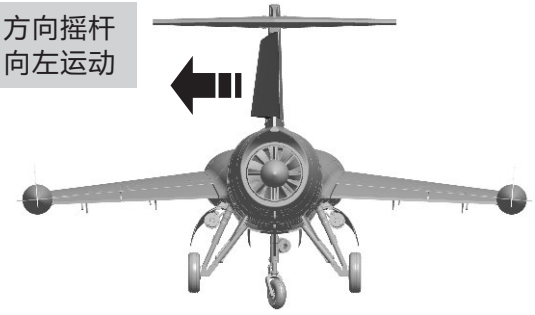


升降摇杆
向上运动

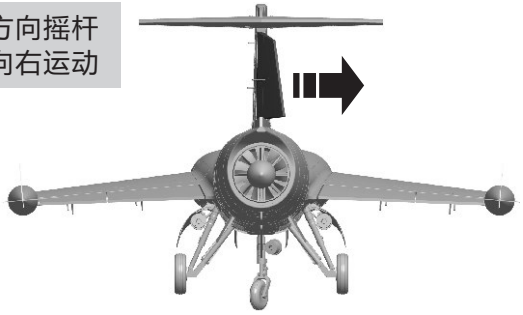


方向舵

方向摇杆
向左运动

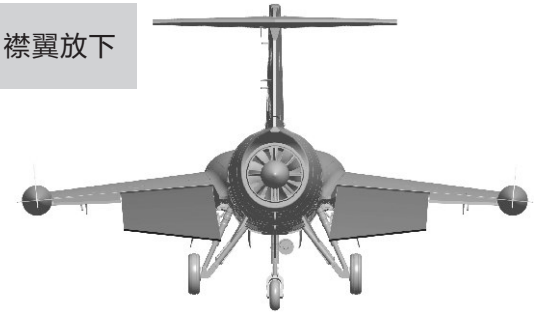


方向摇杆
向右运动



襟　翼

襟翼放下

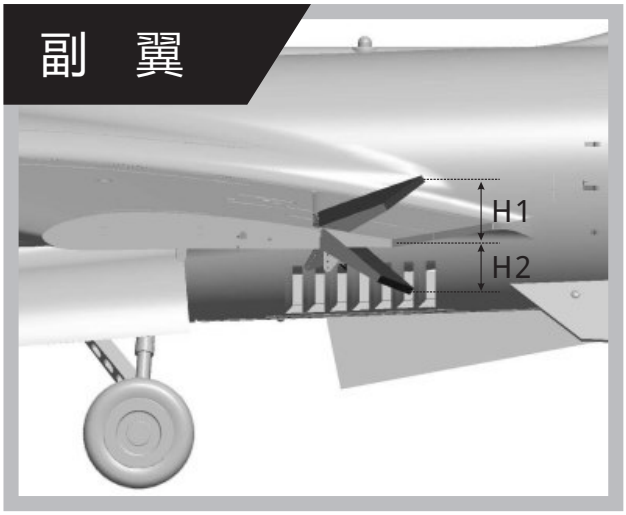


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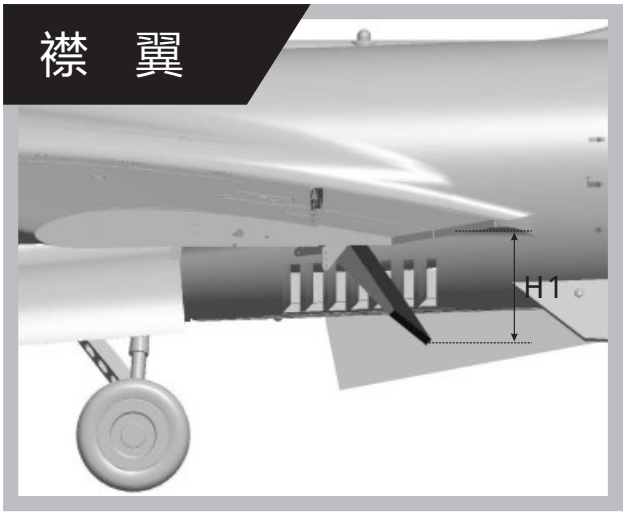
大、小舵参数

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！

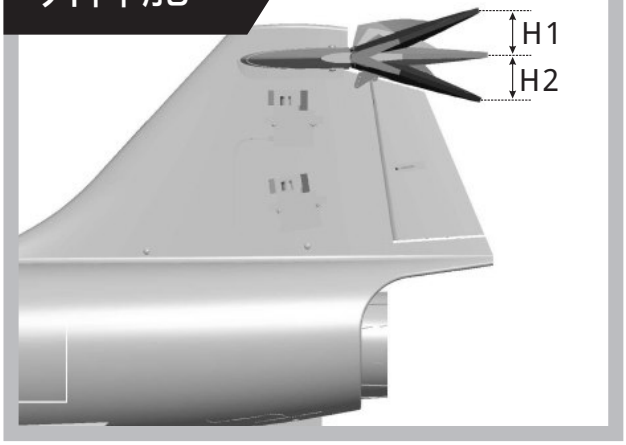
副　翼



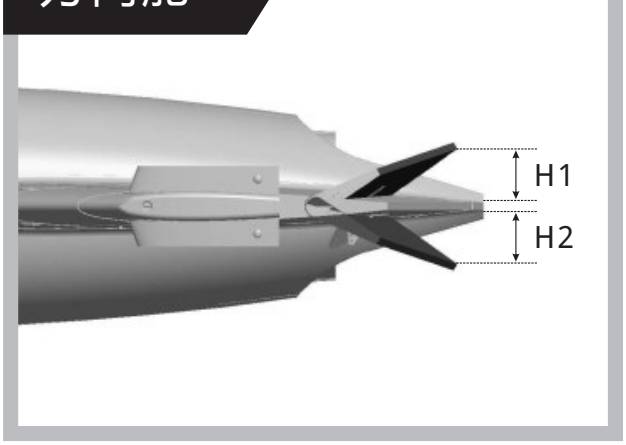
襟　翼



升降舵



方向舵



	副　翼	升降舵	方向舵	襟　翼
小舵角	H1/H2 20mm/20mm 舵量比率：80%	H1/H2 35mm/35mm 舵量比率：80%	H1/H2 22mm/22mm 舵量比率：75%	H1 27mm
大舵角	H1/H2 25mm/25mm 舵量比率：100%	H1/H2 43mm/43mm 舵量比率：100%	H1/H2 27mm/27mm 舵量比率：100%	H1 41mm

⚠ **飞行注意事项：**打开襟翼飞行会有轻微低头，建议打开小舵角襟翼时设置6%的升舵配平，打开大舵角襟翼时设置12%的升舵配平。

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