

Item No.:FJ1181

# F-22 Raptor **Instruction Manual**

***WINGSPAN : 690MM (27.17 IN)***



Version No.:FJ1181-V01



**MADE IN CHINA**

Thanks for your purchasing our Freewing F-22 jet. It used EPO material with very scale appearance, and its excellent control performance and flight performance, is suitable for the jet beginner players. This F-22, all the control surface we used the modular design, it can be very convenient for installation and carry in outside.

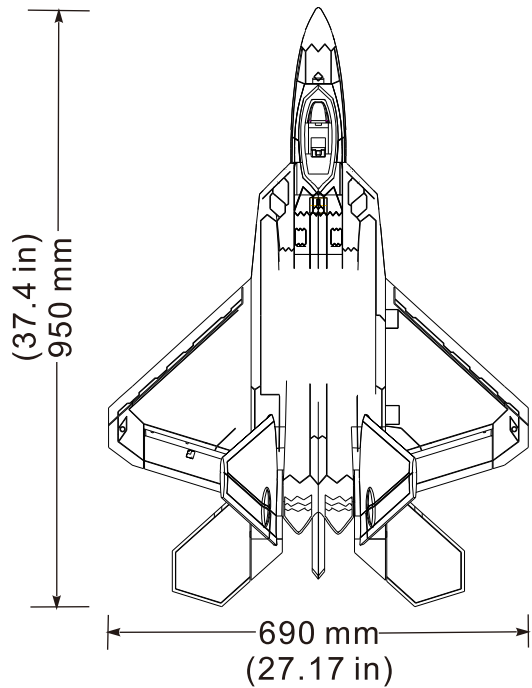
**⚠ NOTE:** This is not a toy. Not for children under 14 years. Young people under the age of 14 should only be permitted to operate this model under the instruction and supervision of an adult. Please keep these instructions for further reference after completing model assembly.

## Note

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

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- Motor  
2840-2850KV
- ESC  
40A Brushless ESC
- Servo  
9g Digital plastic servo (5pcs)
- Battery  
4S 14.8V 2200mAh 35C
- Ducted fans  
64mm EDF
- Take-off weight  
820g (without battery)
- Thrust  
1350g

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

Landing Gear	Aileron	Flaps	Elevator	Rudder	Throttle
Yes	Yes	No	Yes	Yes	Yes

## Package List



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

No.	Accessories Name	RTF	PNP	KIT
1	Fuselage set	Yes	Yes	Yes
2	Main wing set	Yes	Yes	Yes
3	Elevator	Yes	Yes	Yes
4	Rudder	Yes	Yes	Yes
5	Landing gear	Yes	Yes	Yes

No.	Accessories Name	RTF	PNP	KIT
6	Plastic accessories	Yes	Yes	Yes
7	Radio	Yes	No	No
8	Battery	Yes	No	No
9	Charger	Yes	No	No
10	Screwdriver & screw accessories	Yes	Yes	Yes

## Installing rear landing gear

EN

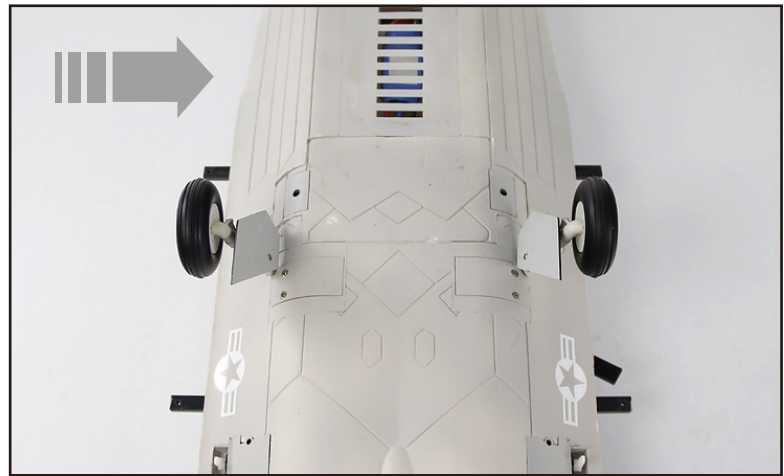
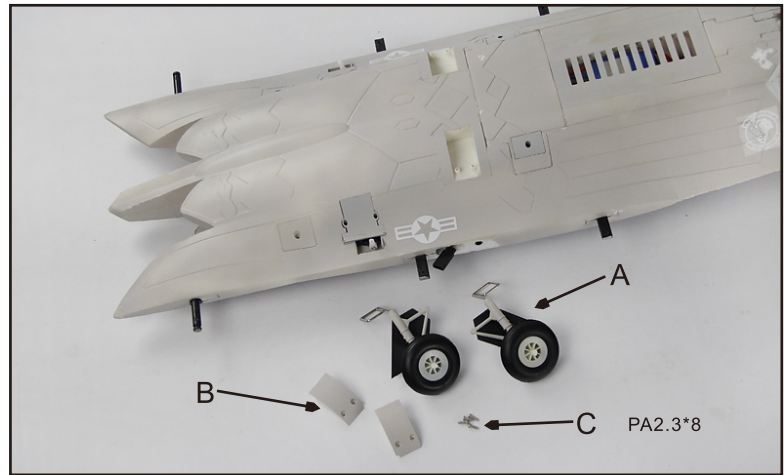
Remove these accessories

- A- Left / Right landing gear
- B- rear landing gear fixed part
- C- screw (PA2.3\*8 4pcs)

1. Install left / right landing gear (A) on the indicated position of fuselage.
2. Cover rear landing gear fixed part(B).

**!** Note: please check the plastic part "L" "R" mark. Plastic part should distinguish left/right to check its install position.

- 3.Fixed the landing gear by screws (C).
- 4.Finish to install as the right photo shown.



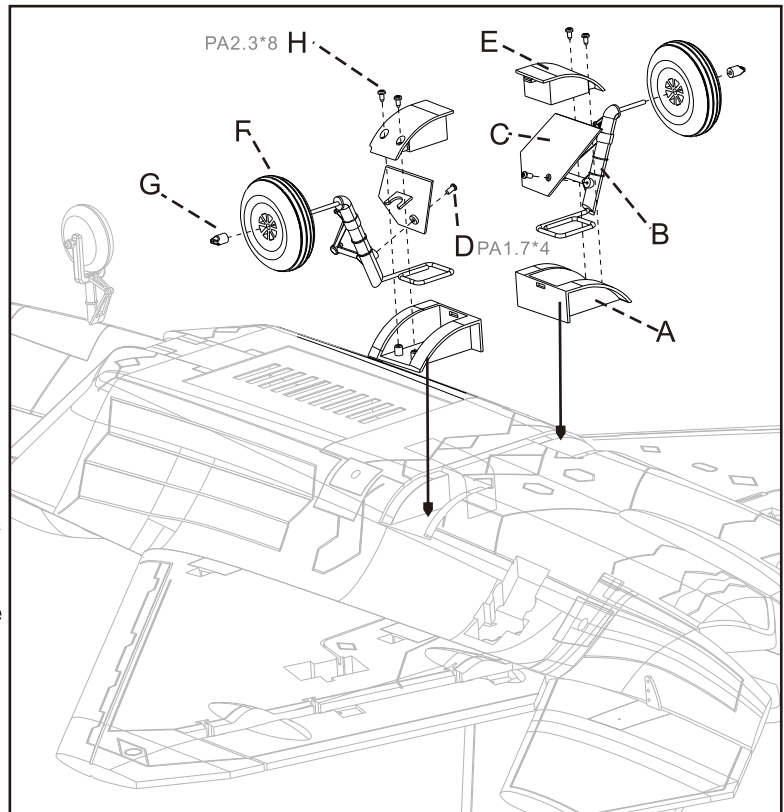
## Rear landing gear structure

When you need to repair landing gear, please refer to the following structure to disassemble/assemble properly.

### Rear landing gear accessories list

- A-Platic part that is attached on the fuselage.
- B-landing gear wire
- C-landing gear cabin door (decorated part)
- D-screw (PA1.7\*4 2pcs)
- E-rear landing gear fixed part
- F-wheel
- G-wheel shock
- H-screw (PA2.3\*8 4pcs)

- 1.Attached the plastic part(A) on the indicated position of fuselage.
- 2.Install landing gear wire (B) on the plastic part (A).
- 3.Insert rear landing gear fixed part (E) into plastic part (A) and fixed landing gear wire (B) by screws (H).
- 4.Fixed the landing gear cabin door(C) on the landing gear wire(B) by screws(D).
- 5.Put the wheels (F) on the wires.
- 6.Fixed it by wheel shock (G).



## Installing nose landing gear

When you need to disassemble/assemble the nose landing gear, please refer to the following structure.

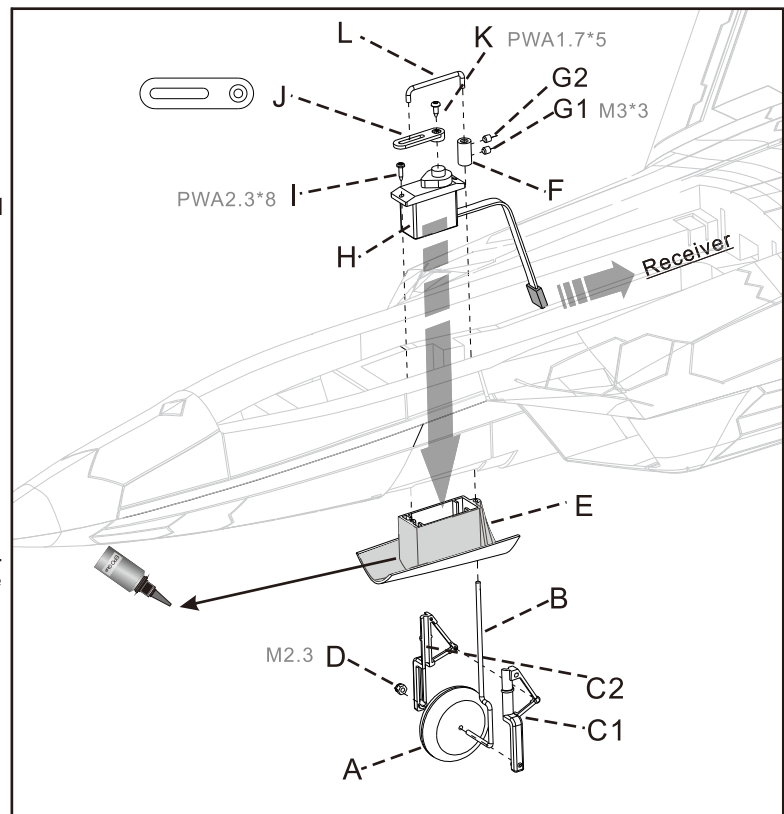
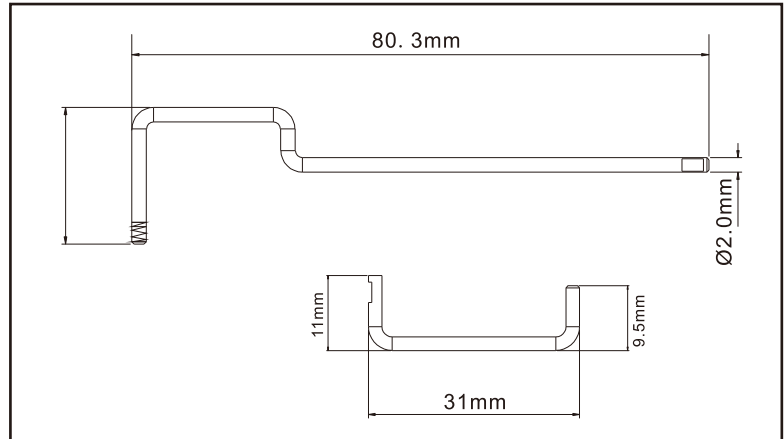
### Accessories list & name

- A- wheel
- B- "L" nose landing gear wire
- C-nose landing gear decorated part
- D-locknut (M2.3 1pcs)
- E-nose landing gear mount
- F-nose landing gear wire connecting post
- G- jimi screw (M3\*3 2pcs)
- H-servo
- I-screw (PWA2.3\*8 1pcs)
- J-arm of servo steering
- K-servo screw (PWA1.7\*5 1pcs)
- L- "U" nose landing gear wire.

1. Insert wheel(A) into "L" nose landing gear wire(B).
2. Install the nose landing gear decorated part (C2) on the "L" nose landing gear wire(B). then use the locknut (D) to fix wheel(A) and nose landing gear decorated part (C2).
3. Attached nose landing gear decorated part (C1) on the "L" nose landing gear wire(B) and fixed by screw.
4. Insert the "L" nose landing gear wire(B) into nose landing gear mount (E), then insert into nose landing gear wire connecting post (F), and use jimmy screw(G) to fix "L" nose landing gear wire(B).
5. Install the servo(H) and fix it by screw(I).
6. Install the arm of servo steering (J) and fix it by screw (K)
7. Insert the flap head of "U" nose landing gear wire (L) into nose landing gear wire connecting post (F), another head insert into the arm of servo steering (J) and use jimmy screw(G2) to fix.
8. At last, attached the indicated position of nose landing gear mount(E) on the fuselage.

**Note:** When fixing "L" nose landing gear wire(B), please check the flat position of wire head must face to screw hole, just like this, it can fix the wire effectively.

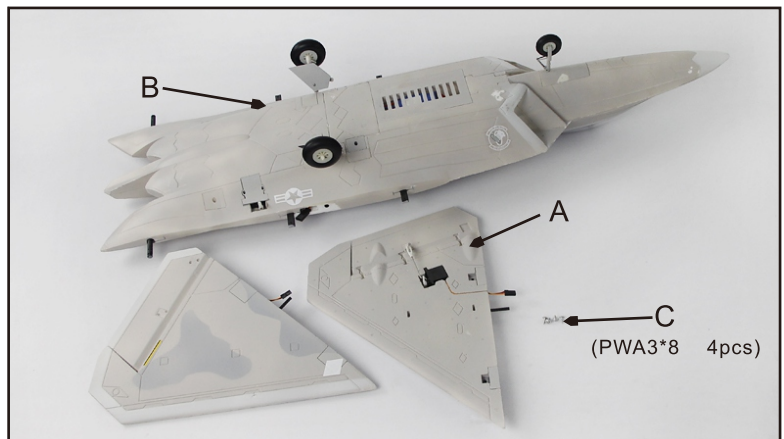
**Note:** The arm of servo steering (J) is special arm, it can not be in common use. If damage or loss, please contact with distributor and purchase again.



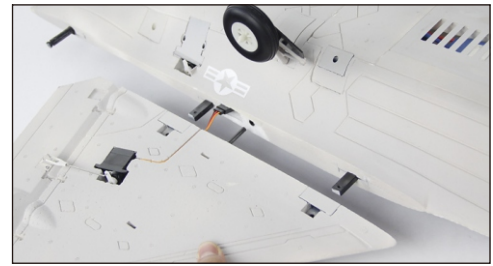
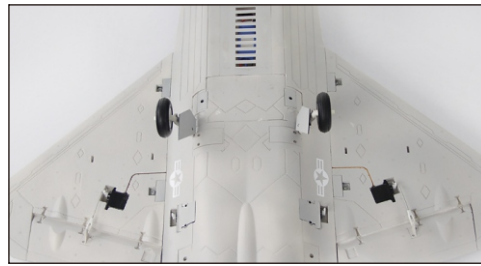
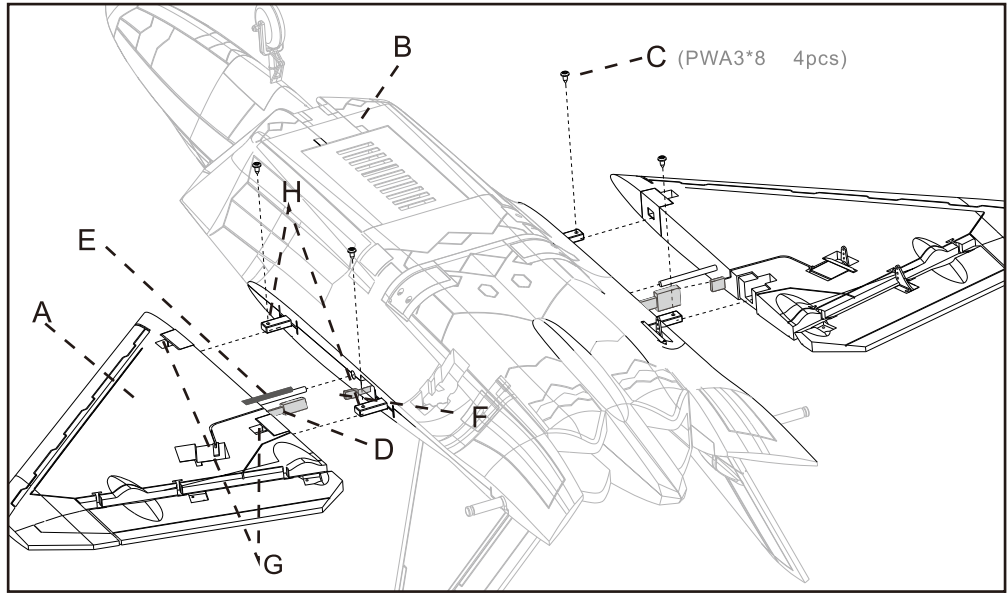
## Installing the Wing

1. Remove these accessories

- A-Left / right wing
- B-Fuselage
- C-Screw (PWA3\*8 4pcs)



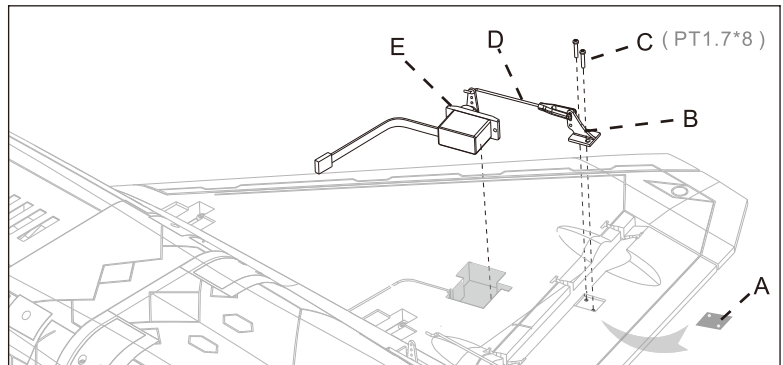
2. Connect the servo wire (D) and extension wire in fuselage(F).
3. Insert left wing(A) into fuselage, and we should pay attention of following:
  - Insert carbon tube in wing(E) to the carbon tube(F).
  - Insert plastic parts in wing (G) to the plug in fuselage(H).
4. Through plastic parts in wing (G), fix the wing by 2pcs screws ( C).
5. Use the same way to install the right wing.



## Installing the Wing's servo

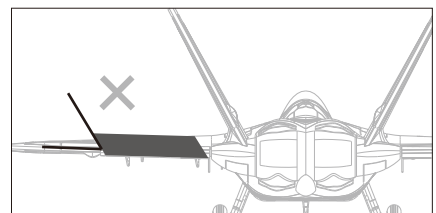
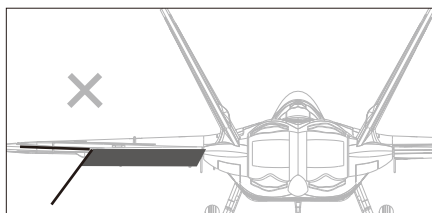
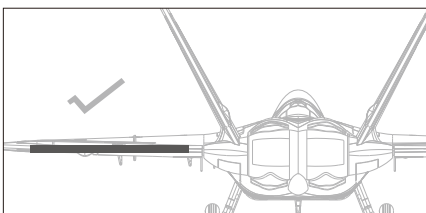
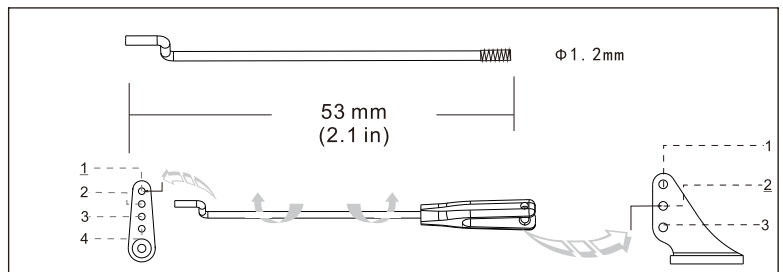
If you purchased KIT version, please refer to the following to install.

1. Firstly, we need to be center the servo arm through radio or servo tester.
2. Buckle control horn fixed part (A) into the mounting position of wing lower surface.
3. Install the control horn (B) on the wing surface as the photo shown.
4. Fix it by two screws ( C).
5. One head of pushrod (D) insert into servo arm, another head insert into control horn (B).



### Installation Notes of Wing pushrod

1. Please check the pushrod length.
2. Insert the pushrod into the first hole of servo arm, and insert clevis into the second hole of control horn.
3. Turn on the clevis to adjust the aileron, refer to the following photo.

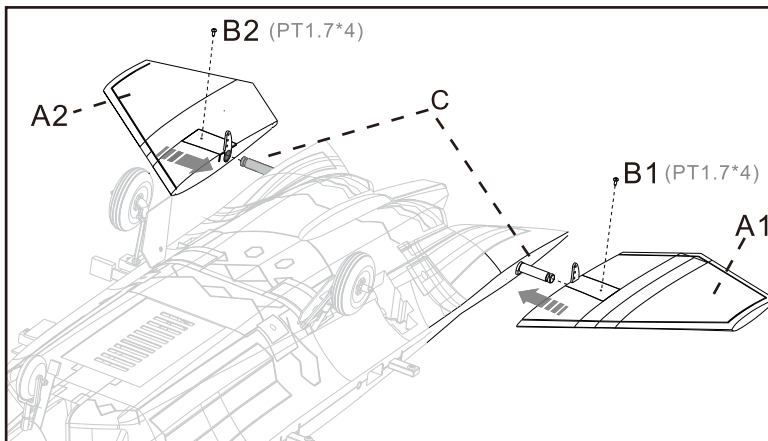
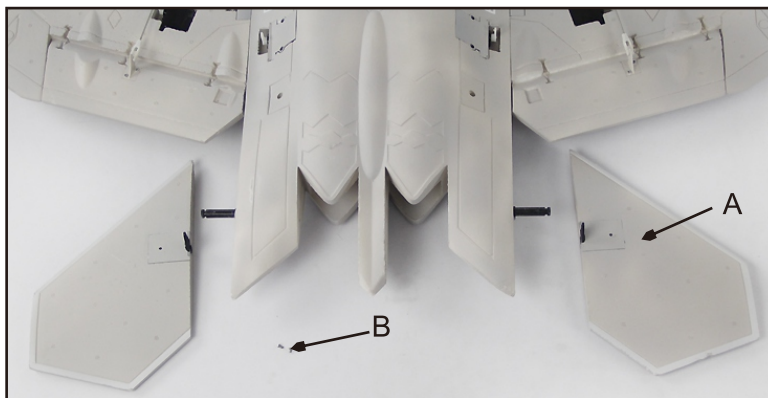


# Installing the Elevator

1.Remove these accessories

- A-left/right elevator
- B-screw (PT1.7\*4 2pcs)

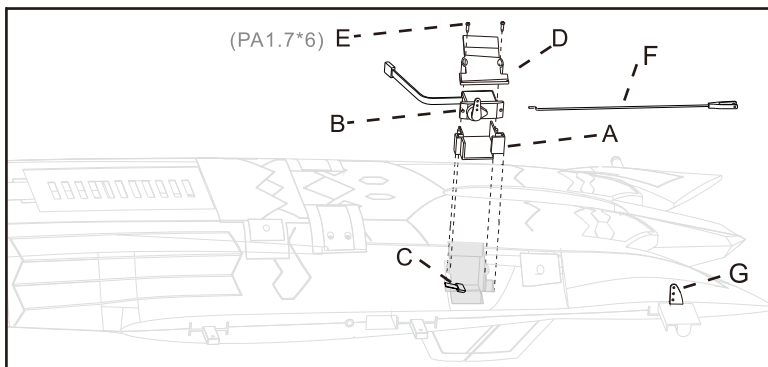
2.Insert left/right elevator (A1,A2) to the horizontal tail holder (C) of fuselage.  
3.Fix the elevator by screws((B1,B2)



# Installing the Elevator's servo

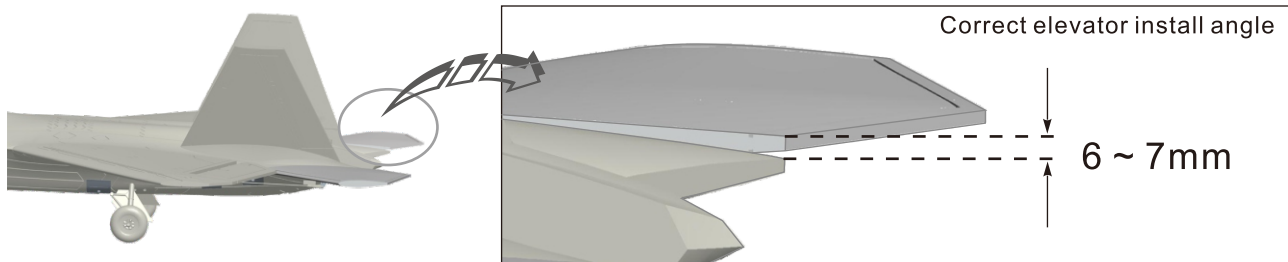
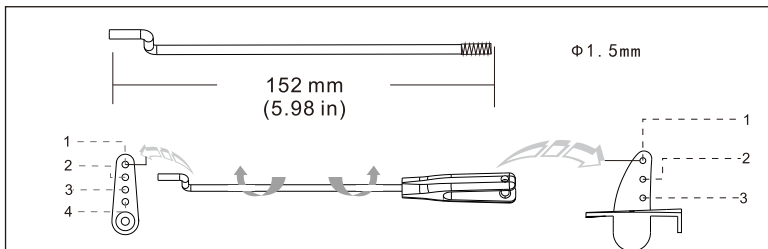
If you purchased KIT version, please refer to the following to install.

- 1.Firstly, we need to be center the servo arm through radio or servo tester.
- 2.Attach the elevator servo box (A) on the fuselage.
- 3.Connect extension wire (C) and servo wire.
- 4.Press servo (B) to the elevator servo box (A)
- 5.Press on the servo (B) by the elevator servo cover(D).
- 6.Screw tightly by two screws (E) to strengthen.
- 7.At last install on the elevator pushrod (F).



## Installation Notes of Elevator pushrod

- 1.Please check the pushrod length.
- 2.Insert the pushrod into the first hole of servo arm, and insert the plastic clevis into the first hole of control horn.
- 3.Turn on the clevis to adjust the elevator, refer to the following photo.



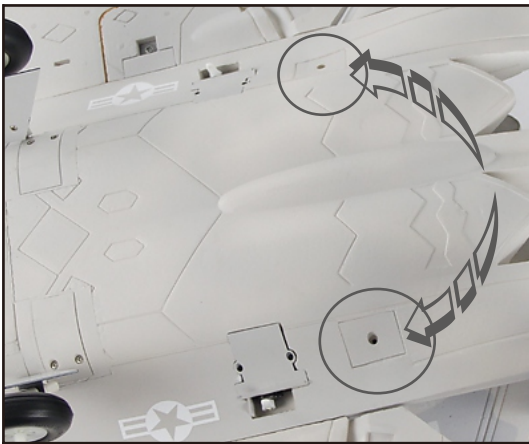
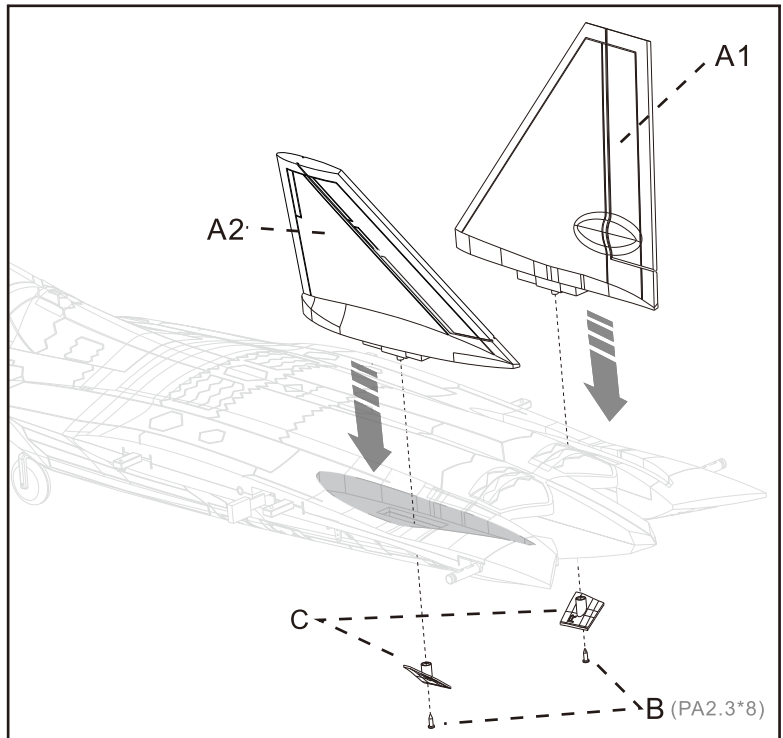
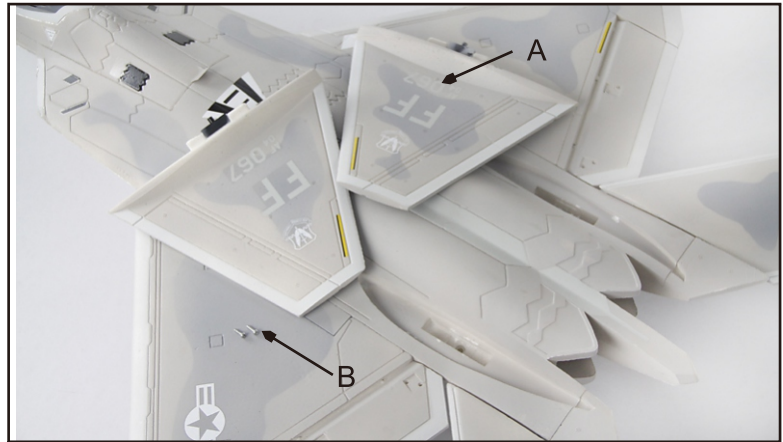
# Installing the Rudder

EN

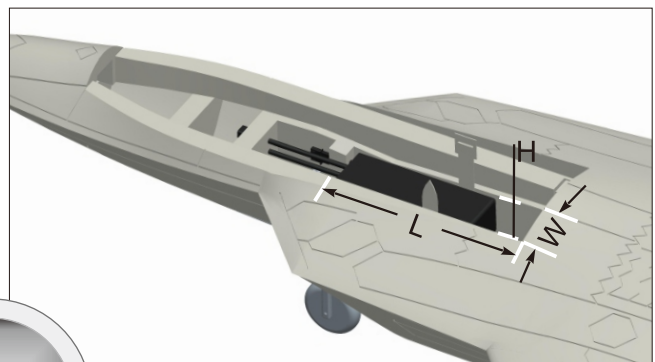
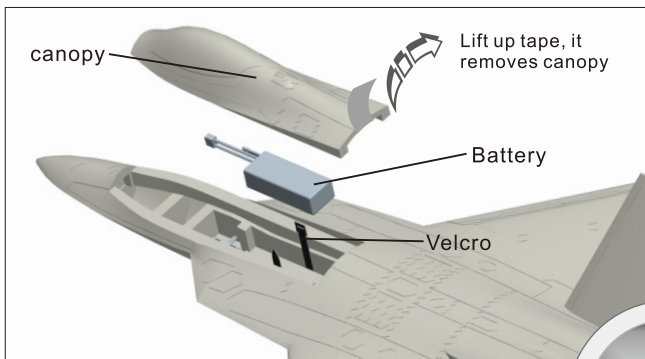
1.Remove these accessories

- A-left/right rudder
- B- screw (PA2.6\*10 2pcs)

- 2.Insert left/right rudder (A1 , A2) to the fuselage.
- 3.Reverse the fuselage and rudder together, put on the rudder screw fixed part(C).
- 4.Fix the rudder by 2pcs screws (B).

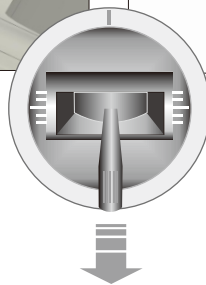


# Install on battery



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

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



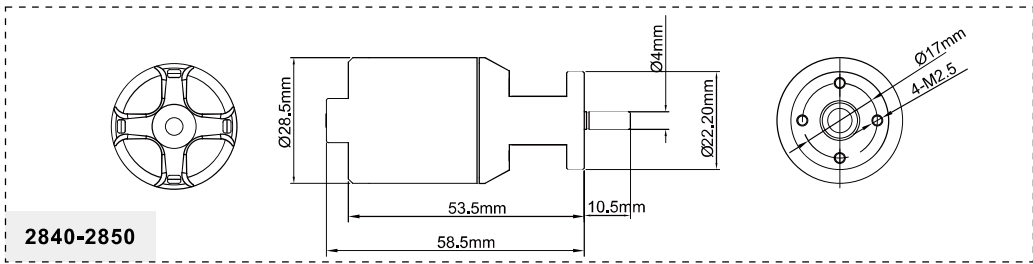
Our standard battery is  
4S 1600~2600mAh 35C

**You can choose the battery refer to the battery cabin size:**

**L=130mm W=40mm H=50mm**

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





2840-2850KV brushless motor use 4S 14.8V lipo battery and 40A ESC.

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

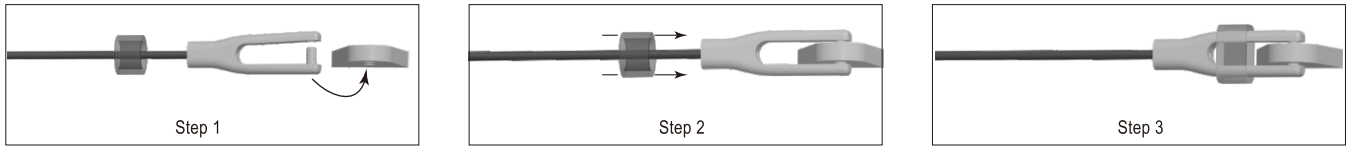
**2840-2850**

Model	KV Value	Voltage (V)	Current (A)	Pull (g)	RPM	Weight (g)	No Load Current	Propeller	ESC
2840-2850KV	2850RPM/V	14.8	40	1350	42180	145	2.7A	64mm Ducted Fan	40A

## Important additional notes

The Y-type clevis used in this product is equipped with a transparent silicone ring for secondary reinforcement, which can effectively prevent the clevis from accidentally loosening.

As shown in the following figure, when you buckle the clevis into the control surface horn, use the silicone ring to cover the clevis.

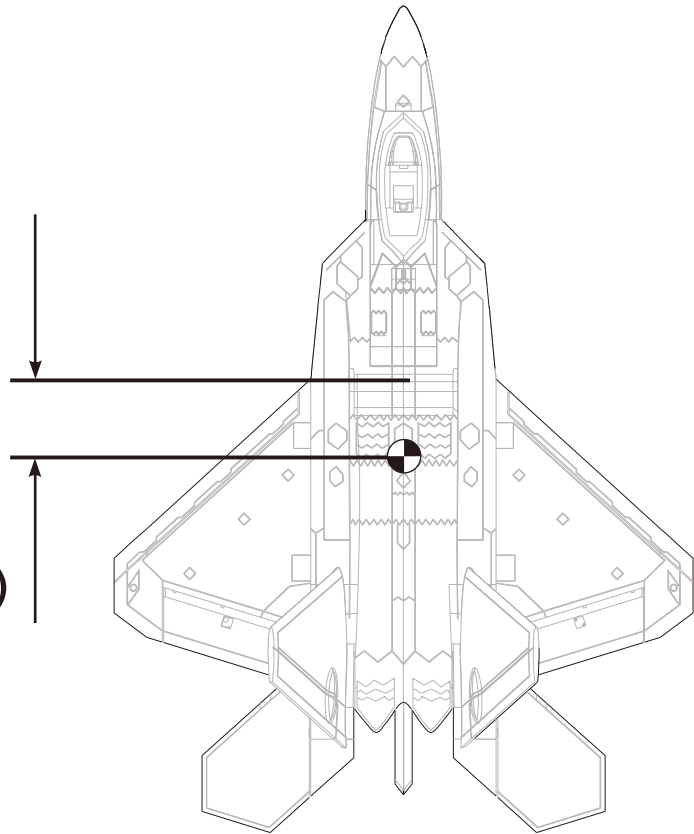


Correct center of gravity is directly related to the success of the flight, please refer to the following CG diagram to adjust your plane's center of gravity.

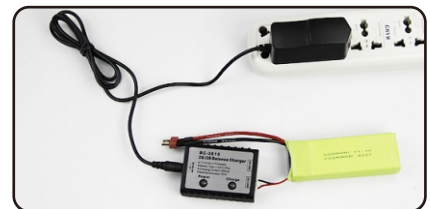
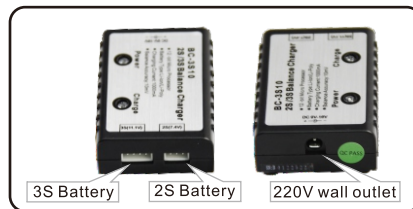
- You can move the battery forward or backward to adjust the center of gravity.

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

**83 ~ 88mm  
(3.27 ~ 3.47 in)**



## Charger Safe Use



You must first charge your flight battery before flying. Plug the charger into a 220V wall outlet. This charger can be used with 2 and 3 cell lipo batteries. The F-22 uses a 3 cell Li-po battery. The battery comes with two sets of wires and connectors. The set with the white plug and 4 wires is the charging lead. Connect the battery charge lead into the matching connector on the charger. 2 of the lights on the charger will turn red to indicate charging. It will take approximately 2.5 hours for the battery to fully charge. Once fully charged, the red lights on the charger will turn green to indicate that it is done. Flight times are approximately 3 to 5 minutes per charge.

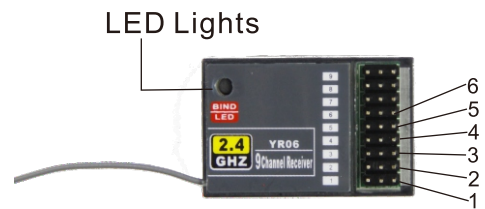
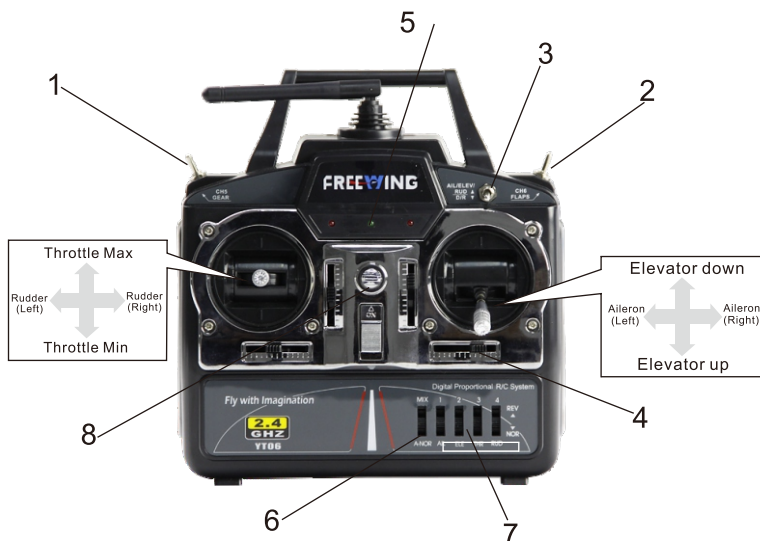
### Safety Instructions for charging and using Lipo batteries

- Do not put the battery on, or near anything, that can catch fire.
- Charge the battery on a non-flammable base, i.e. a metal tray.
- Do not disassemble the battery
- Do not short-circuit the battery
- Do not use, or leave, the battery near a fire, stove or heated place.
- Do not immerse the battery in water or seawater.
- Do not charge the battery near a fire or under the blazing sunlight.
- Do not impact or throw the battery.

## 1. Radio include the transmitter and receiver.



## 2. Radio function introduction (Mode 2)



- Aileron → Ch1
- Elevator → Ch2
- Throttle → Ch3
- Rudder → Ch4
- Landing Gear → Ch5
- Flaps → CH6

- 1. Gear Switch (For 6CH)
- 2. Flap Switch (For 6CH)
- 3. D/R (For 6CH)
- 4. Trim
- 5. Power indicator
- 6. Delta
- 7. Reverse
- 8. Neckstrap Attachment

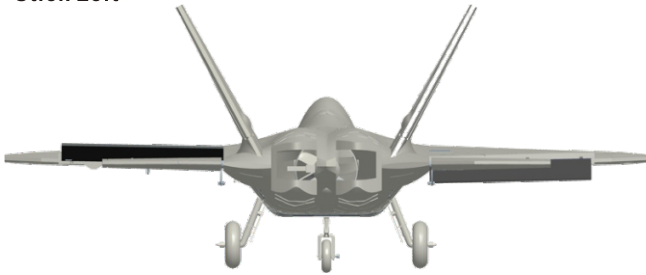
**Note:** The factory have bind the aircraft and transmitter, you can use directly. In exceptional circumstances, it need to re-frequency, please set up as following method.

- Press on the receiver Frequency switch.
- While press on the receiver frequency switch, the receiver power on.  
(Now receiver frequency signal light should be continued flashing.)
- Switch on transmitter. ( Red/yellow/green, the three LED signal light in transmitter should be continued flashing.)
- Release the receiver frequency switch.
- After the success of frequency, receiver frequency signal light and transmitter signal light are "lights on", not flashing.

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

**Aileron**

Stick Left

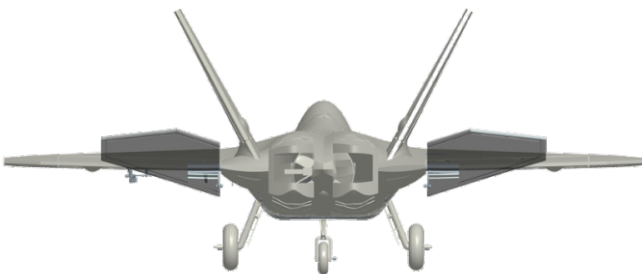


Stick Right

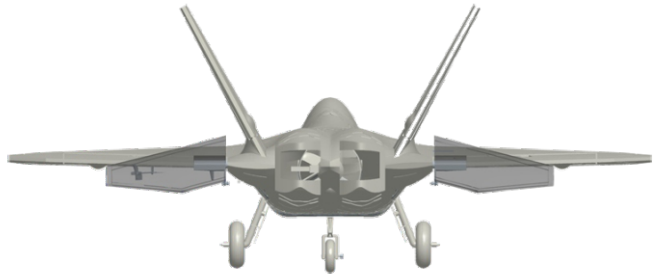


**Elevator**

Up Elevator

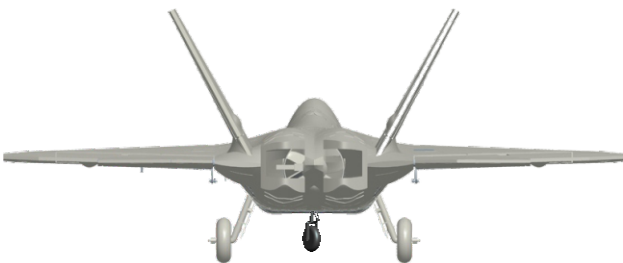


Down Elevator

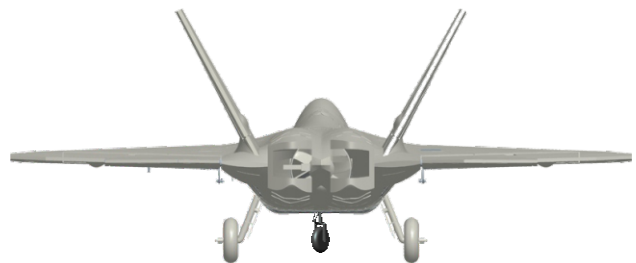


**Rudder**

Stick Left



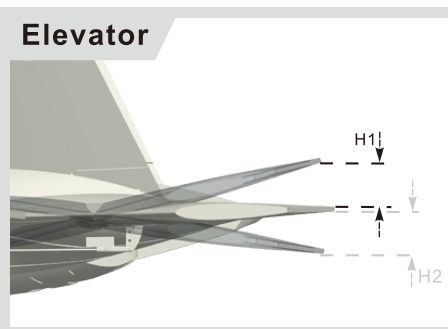
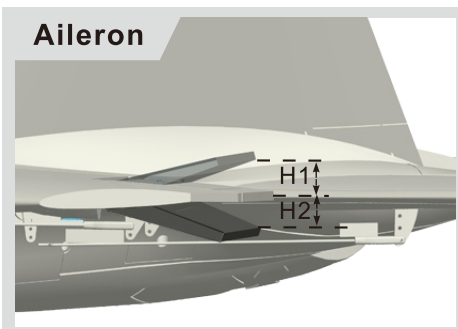
Stick Right



**Dual Rates**

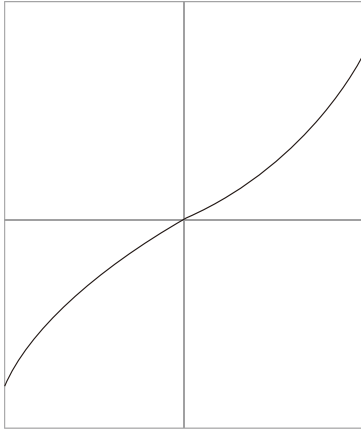
According to our testing experience, use the following parameters to set Aileron/Elevator Rate. Program your preferred Exponential % in your radio transmitter. We recommend using High Rate for the first flight, and switching to Low Rate if you desire a lower sensitivity. On successive flights, adjust the Rates and Expo to suit your preference.

**⚠ Note :** If your radio haven't the rate setup function, you can adjust the hole of control horn which connect with pushrod, to increase or decrease its rate.



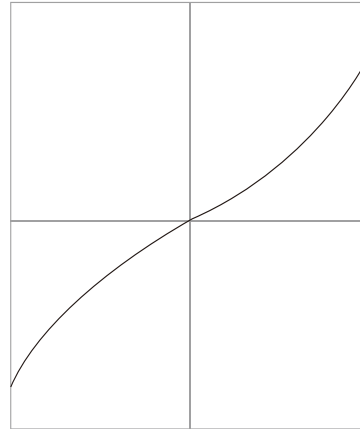
	Aileron	Elevator
<b>Low Rate</b>	H1/H2 20mm/20mm D/R Rate : 50%	H1/H2 28mm/28mm D/R Rate : 80%
<b>High Rate</b>	H1/H2 28mm/28mm D/R Rate : 70%	H1/H2 42mm/42mm D/R Rate : 100%

1. Aileron EXP curve is shown as below :



Futaba brand Remote Control : EXP A -30  
 EXP B -30  
 Spektrum brand Remote Control : EXPO 30% 30%

2. Elevator EXP curve is shown as below :



Futaba brand Remote Control : EXP A -30  
 EXP B -30  
 Spektrum brand Remote Control : EXPO 30% 30%



**Dongguan Freewing Electronic Technology Ltd**  
**HK Freewing Model International Limited**

Add.: FeiYi Building, face to Labor Bureau, Fumin Middle Road, Dalang Town,  
Dongguan City, Guangdong Province, China

Web: <http://www.sz-freewing.com>

Email: [freewing@sz-freewing.com](mailto:freewing@sz-freewing.com)

Tel: 86-769-82669669 Fax: 86-769-82033233