

Item No.:FJ308
Version No.:FJ308-V01

Freewing MODEL[®]
www.sz-freewing.com

F-14 Tomcat User Manual

Wingspan : 1550mm

EN 1 ~ 14

中 15 ~ 28



  
MADE IN CHINA

Thank you for purchasing the F-14 "Tomcat" dual 80mm ducted fan based fighter airplane! This aircraft was designed and manufactured by Northrop Grumman for the US Navy. The F-14 "Tomcat" is the warbird fan's undisputed favorite Naval carrier-based jet fighter. In addition to its stunningly realistic appearance, the unique design of the variable-sweep wings, and powerful combat performance is its ability to mount the "Phoenix" missile. This made the strategic dreams of the U.S. Navy into reality! Although the legendary F-14 "Tomcat" fighter has bid farewell to the sea and sky, it does not stop us from continuing to praise and love this amazing aircraft.

This Northrop Grumman authorized aircraft kit is designed to the specifications of the F-14 "Tomcat" D prototype, with vivid attention to the design and overall detail, including, painting, the nose portion of the pitot tube, all antennas, weapons pylons, missiles and many other details.

In addition to scale, one of our main goals was to produce an operating variable sweep wing for F-14. We have integrated an electric worm and aluminum frame to achieve this and after thousands of tests and dozens of improvements, we solved the flight stability problem with regards to swept wing flight. Although the set up incorporates just two fixed wing positions, we feel we have brought out the pure joy of flight in either configuration. In deployed wing flight, the F-14 is very stable to fly. In swept wing flight, it becomes a totally different jet! In addition to quicker flight speeds, it's as if you switched from an upper wing trainer to an advanced aircraft, while maintaining its terrific flight characteristics, just as it should be and just what you would expect from Freewing.

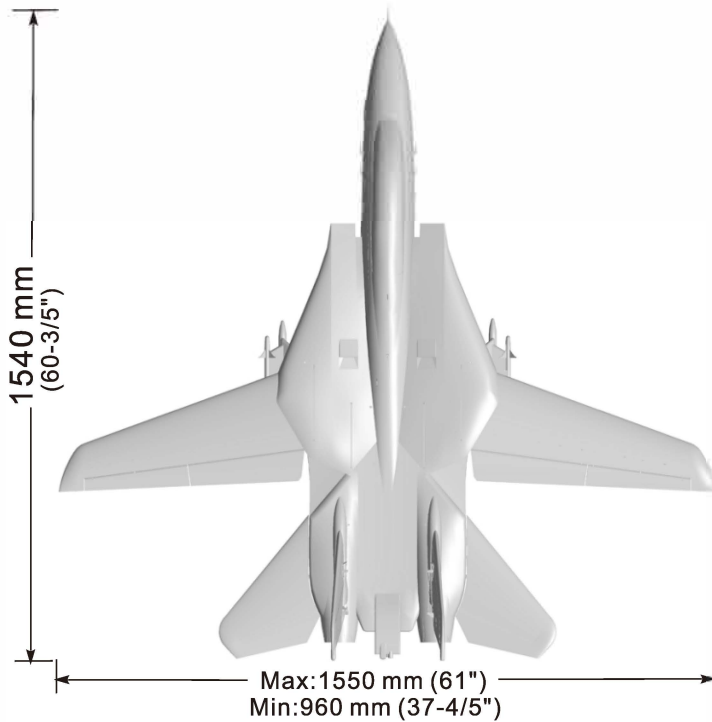
F-14 is a complicated model airplane, We highly recommend that you read the manual very carefully before beginning assembly, and adjust rates and control throws in accordance to manual parameters.

We hope you have a great maiden flight and many more great flight experiences with your F14!

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 aircraft under the direct supervision of an experienced adult pilot. Please keep these instructions for further reference after assembling the aircraft.

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 through the build.**
- 3. Freewing and its 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. The parameters stated here are derived from test results using our accessories.**
- 12. If you use other accessories, the test results will differ. We cannot provide technical support if you have a problem when using other accessories.**



Standard Version

Wingload : 240g/dm²
 Motor: o/r BL 3525-2050KV (2pcs)
 Servo: 9g / 17g MG servo (2 / 8pcs)
 ESC: 80A with 8A UBEC (2pcs)
 Ducted fan: 80mm 6-blade plastic fan (2pcs)
 Weight: 4160g (w/o Battery)
 Thrust: 5200g

Upgrade Version

Wingload : 255g/dm²
 Motor: o/r BL 3530-1750KV (2pcs)
 Servo: 9g / 17g MG servo (2 / 8pcs)
 ESC: 80A with 8A UBEC (2pcs)
 Ducted fan: 80mm 12-blade fan (2pcs)
 Weight: 4340g (w/o Battery)
 Thrust: 5600g

General function

- New electric retract landing gear (Large torque)
- Nose landing gear bay door
- Scale high LED light set, nose landing light
- Wing sweep controller
- Hardware
- Aluminum rear hub (with bearings)
- Scale cockpit, pilot

Package list

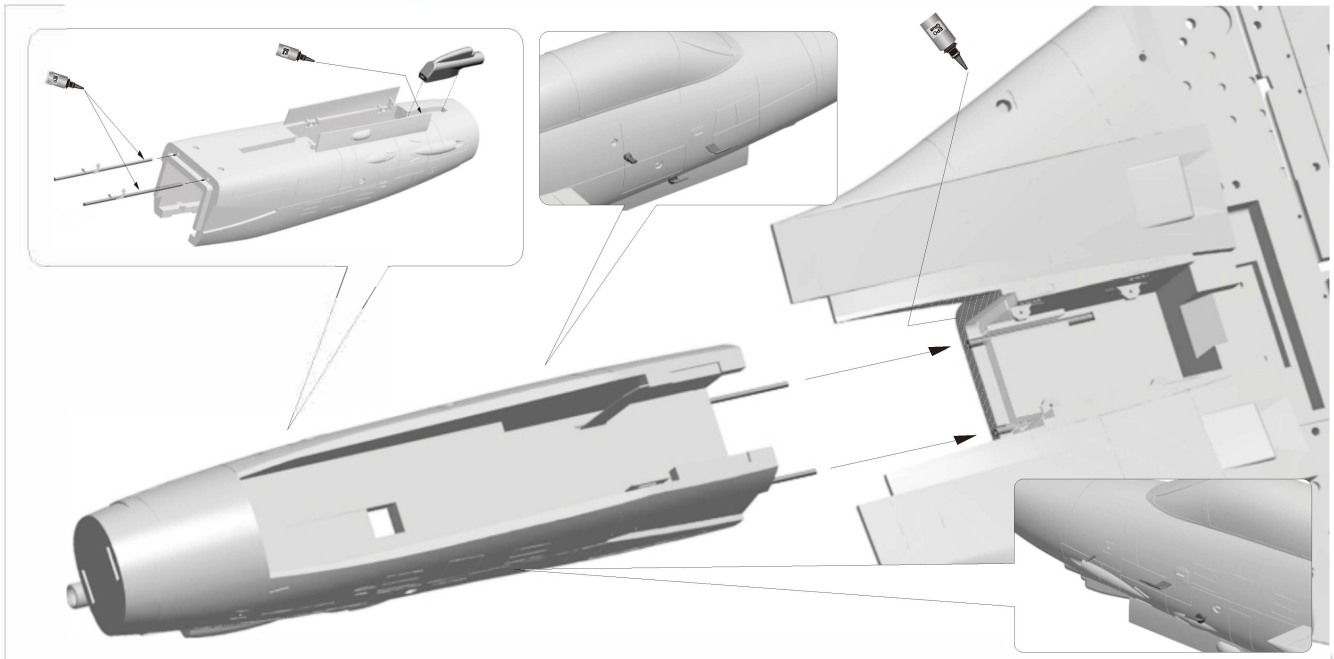


Open package and check the package list. (Different version include different contents) Included ✓ Optional ● Not included ✕

NO.	Parts Name	PNP	KIT Plus	KIT	NO.	Parts Name	PNP	KIT Plus	KIT
1	Fuselage	✓	✓	✓	12	EDF	✓	✕	✕
2	Main wing	✓	✓	✓	13	ESC	✓	✕	✕
3	Elevator	✓	✓	✓	14	Battery	●	●	●
4	Rudder	✓	✓	✓	15	Fin	✓	✓	✓
5	Nose cone	✓	✓	✓	16	Plastic part	✓	✓	✓
6	Missiles and pylons	●	●	●	17	Screw bag	✓	✓	✓
7	Retract landing gear	✓	✓	✓	18	Pushrods ,clevises	✓	✓	✓
8	LED light	✓	✓	✓	19	Hardware	✓	✓	✓
9	Wing sweep controller	✓	✓	✓	20	Carbon tube	✓	✓	✓
10	Servo	✓	✓	✕	21	Glue	✓	✓	✓
11	Motor	✓	✕	✕	22	Manual	✓	✓	✓

Fuselage

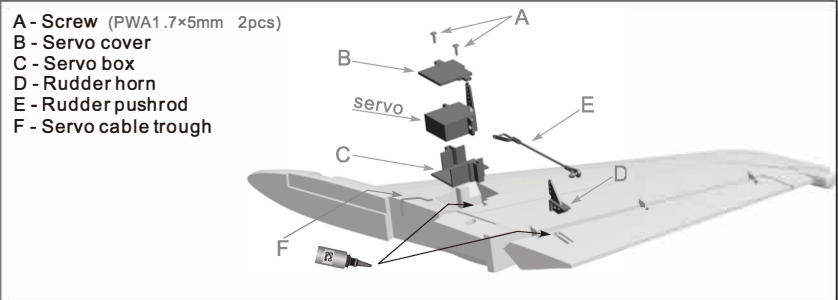
Joining the front and rear fuselage



Rudder

Rudder servo Installation

1. Use a servo tester or radio to center the servo arm.
2. Use glue to attach the 17g servo box (C) and rudder horn (D) to the rudder.
3. Insert the servo into the 17g servo box (C), and press the servo cable into the servo cable channel (F), cover the 17g servo with the cover (B), and use 2 screws (A) to secure the cover to the servo box.
4. Use rudder pushrod (E) to connect the servo arm to the rudder horn (D).



Rudder pushrod size

Pushrod diameter : Ø 1.5 mm

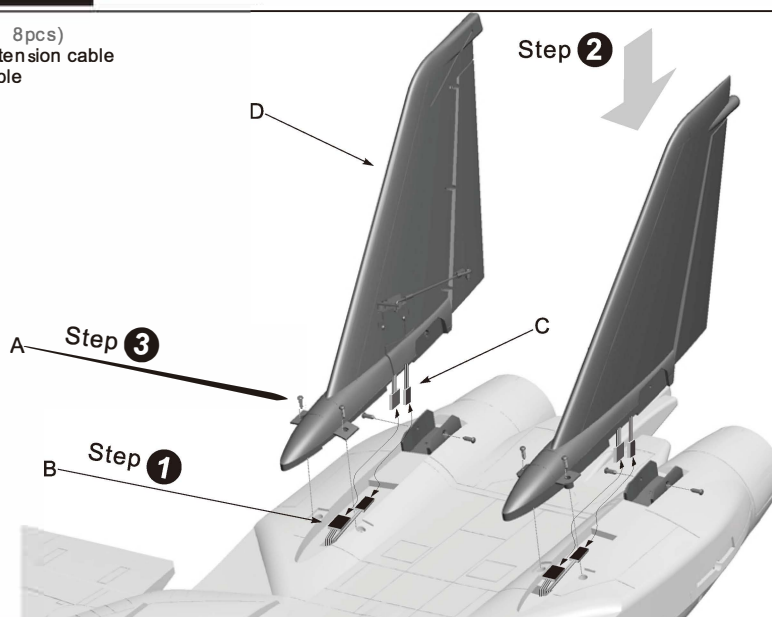
95mm (3-4/5")

Rudder pushrod mounting hole



Rudder Installation

- A - Screw (PA3x8mm 8pcs)
- B - Servo, LED light extension cable
- C - Servo, LED light cable
- D - Rudder



Elevator

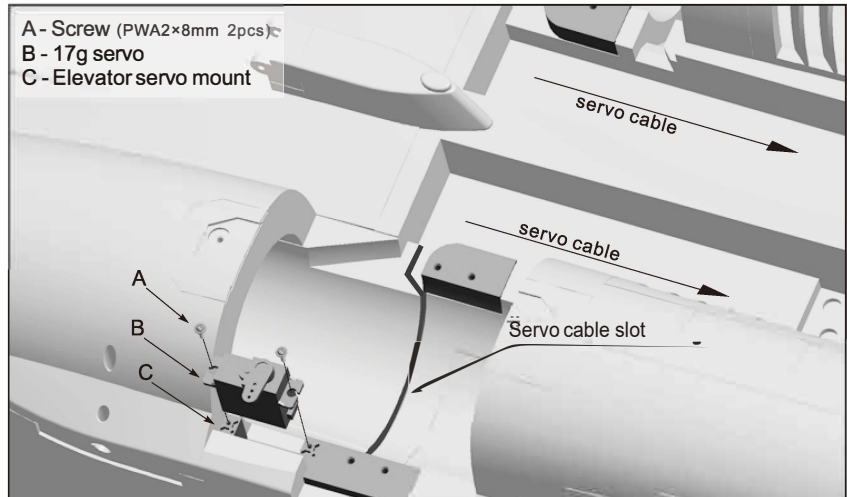
elevator servo installation

1. Use a servo tester or radio to center the servo arm.
2. Use screw (A) to secure the servo (B) to the elevator servo mount.
3. Insert the servo cable wire into the wire slot. When wire installation is complete, use the supplied tape to cover the slots.
4. Repeat these steps for the other side.

Elevator pushrod size

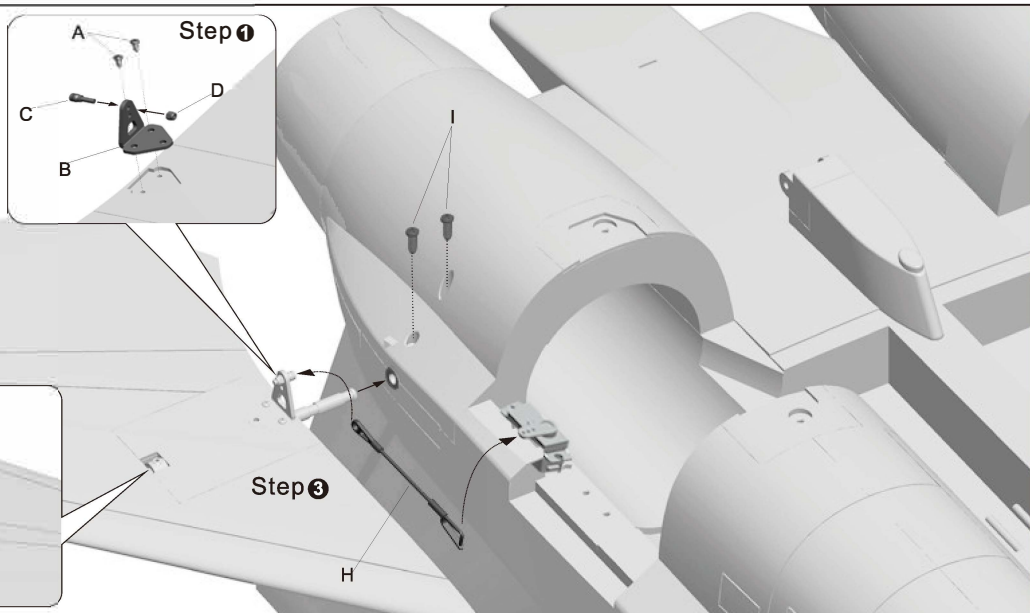


Elevator pushrod mounting hole



Install Elevator

- A- Screw (PA2.3x6mm 4pcs)
- B- Metal elevator horn
- C- Screw (Fm2x10mm 2pcs)
- D- Nut (M2mm 2pcs)
- E- Elevator rotational shaft
- F- Screw (PM2x4mm 2pcs)
- G- Elevator fixed ring
- H- Elevator pushrod
- I- Screw (PT3x8mm 4pcs)



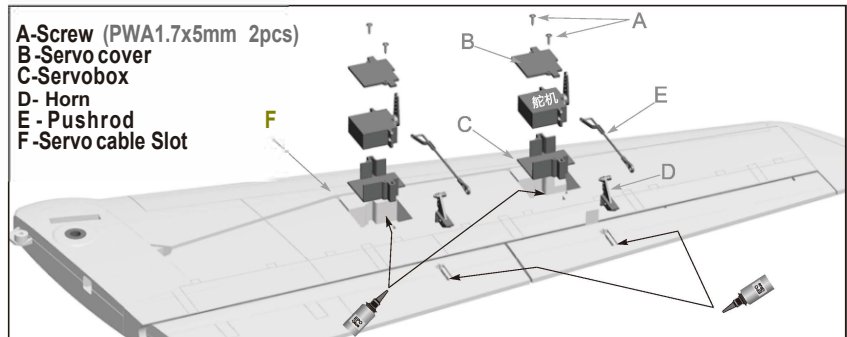
Note: Be aware of the screw depths when installing screws (I) to the elevator rotational shaft. Ensure that the screws reach to the notched position on the elevator rotational shaft to secure the elevators. Test it by trying to pull the elevators back out, they should remain in place, if they slide out, reset the screw's position until the elevators stay in place. Also, ensure that the elevators are able to move freely afterwards.



Main Wing

Main Wing Servo Installation

1. Use a servo tester or radio to center the servo arm.
2. Use glue to secure the 17 g servo box (C) and the control horn to the wing.
3. Insert the servo into the 17g servo box (C) and feed the servo cable into the wire slot (F). Secure the unit using the servo box cover and 2 screws (A)
4. Use pushrod (E) to connect the servo arm to the rudder control horn (D).



Aileron pushrod size



Aileron pushrod mounting hole



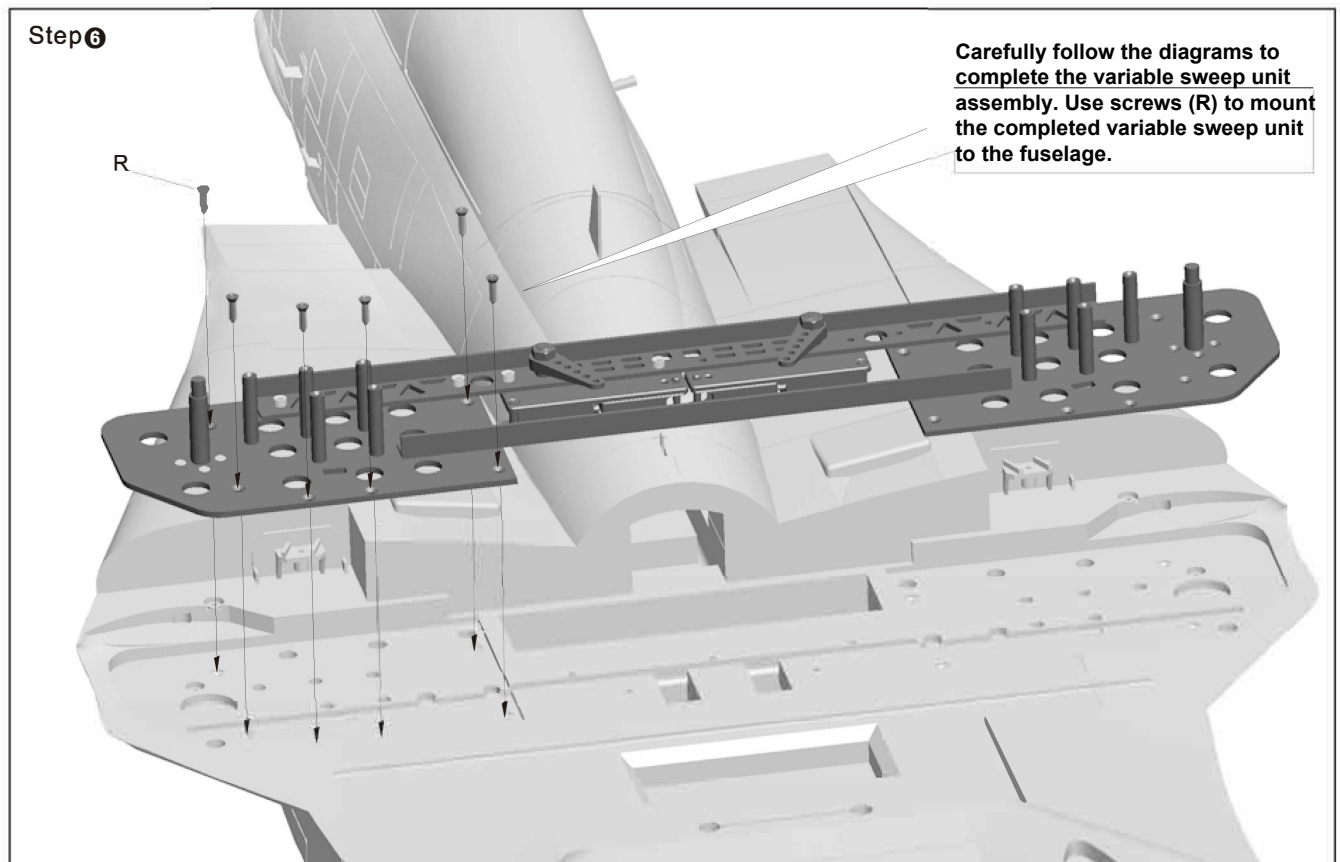
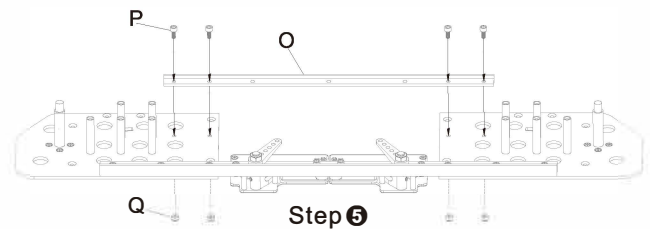
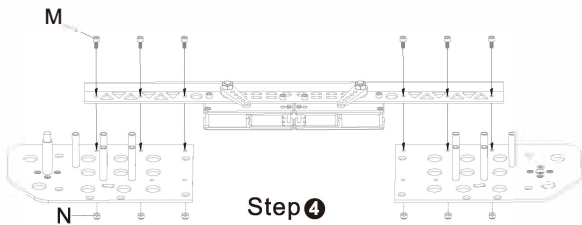
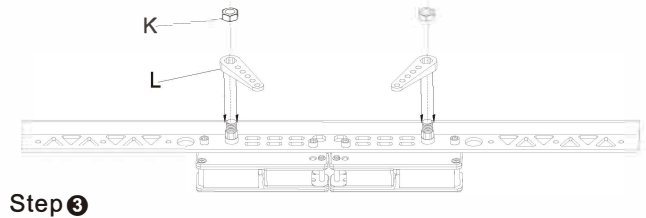
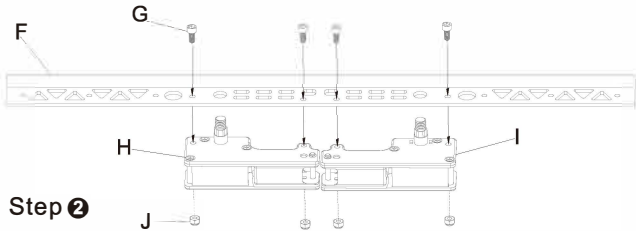
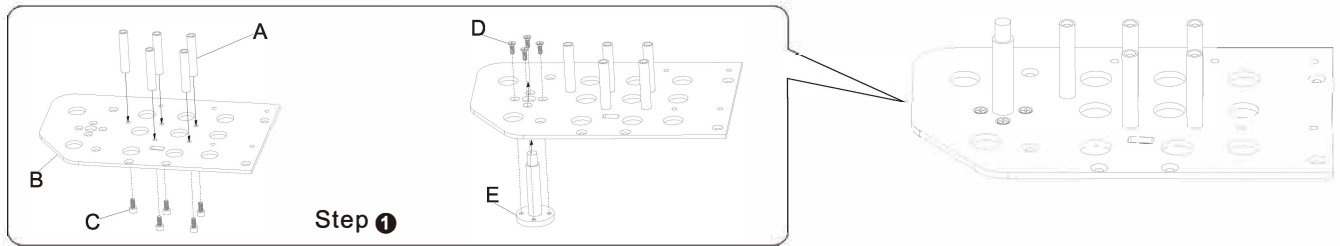
Flap pushrod size



Flap pushrod mounting hole



Variable Sweep Wing Installation

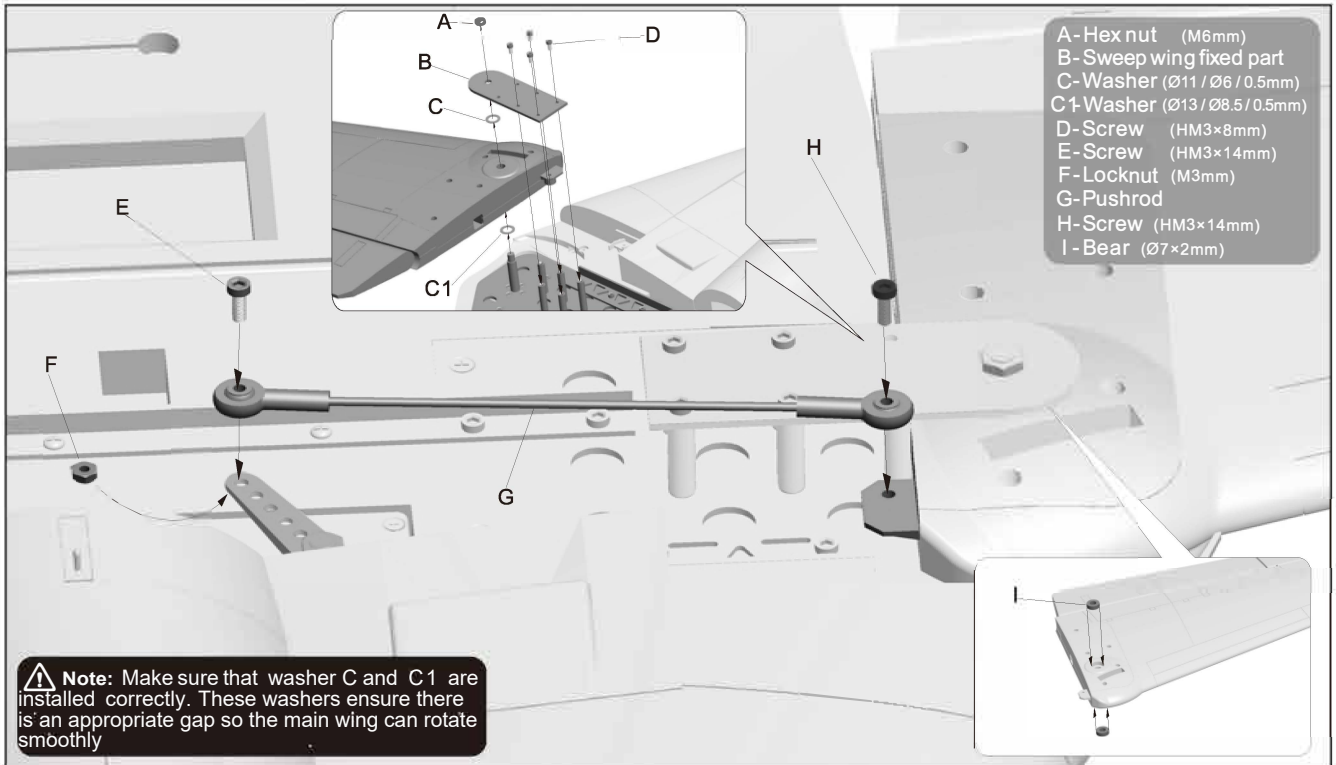


A-Sweep Wing supported rod
 B-Sweep Wing mounting plate
 C-Screw (HM3×6mm 10pcs)
 D-Screw (KM2.5×6mm 8pcs)
 E-Rotating shaft
 F-Stiffener(F)

G-Screw (HM3×8mm 4pcs)
 H-Wing sweep controller left
 I-Wing sweep controller right
 J-Locknut (M3 4pcs)
 K-Screw (M6 4pcs)
 L-Arm

M-Screw (HM3×8mm 6pcs)
 N-Locknut (M3 6pcs)
 O-Stiffener(B)
 P-Screw (HM3×8mm 4pcs)
 Q-Locknut (M3 4pcs)
 R-Screw (KA3×12mm 12pcs)

Main wing installation

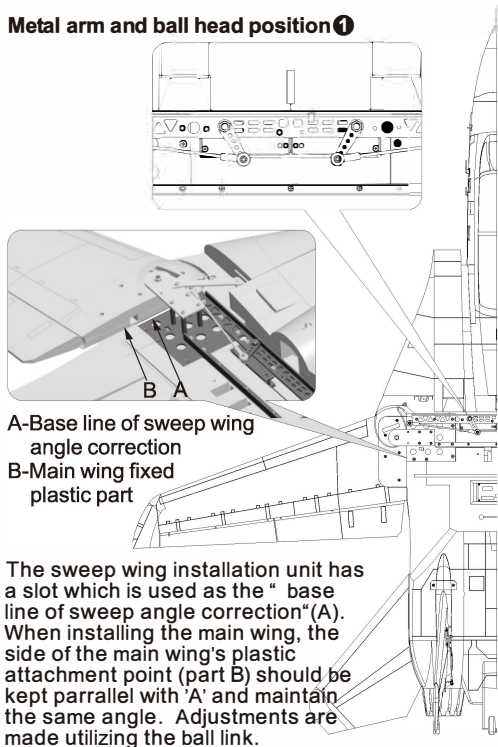


NOTE :

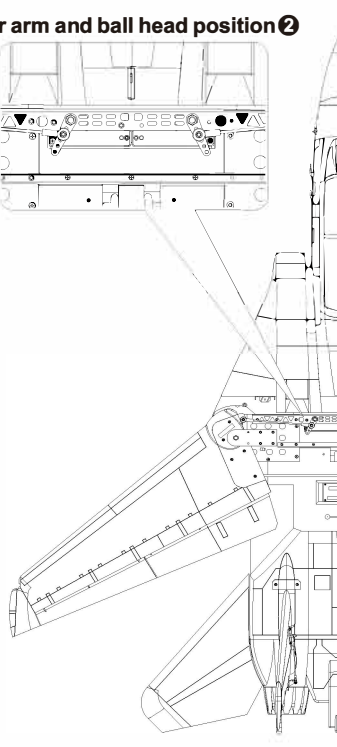
1. The metal arm is factory adjusted to 20 degrees when the wing is in the forward position. (When in forward position, the main wing angle is 20 degrees.) If this angle is not correct, the arm of the sweep wing controller will operate in the wrong direction, causing damage.
2. With F14 in forward wing configuration, the wing angle is 20 degrees. By adjusting the wing sweep controller, the max angle it can reach is 65 degrees. We can limit the max angle to 45 degrees by repositioning the installation hole of wing sweep controller arm.
3. In flight, with the main wing in swept wing configuration, the use of flaps will cause damage to the flap and flap servo. Flaps are only to be used when in forward wing configuration.

Sweep wing angle correction and settings

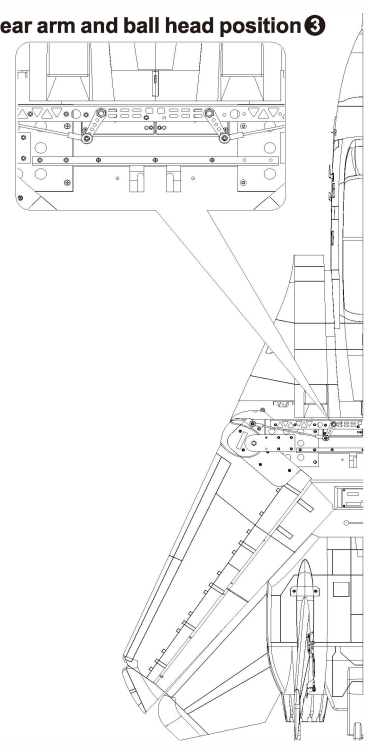
Metal arm and ball head position ①



Mear arm and ball head position ②



Mear arm and ball head position ③

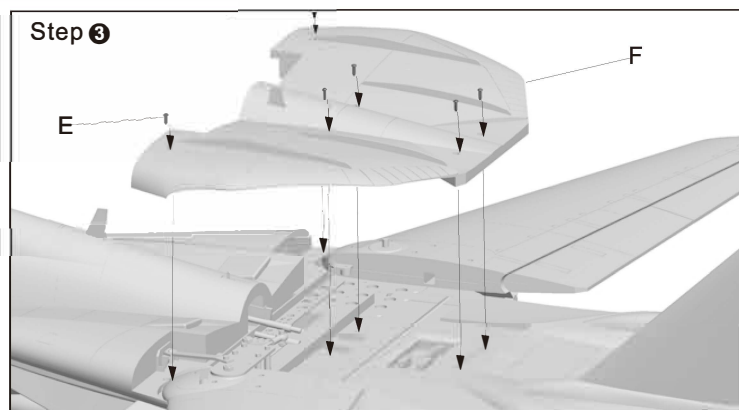
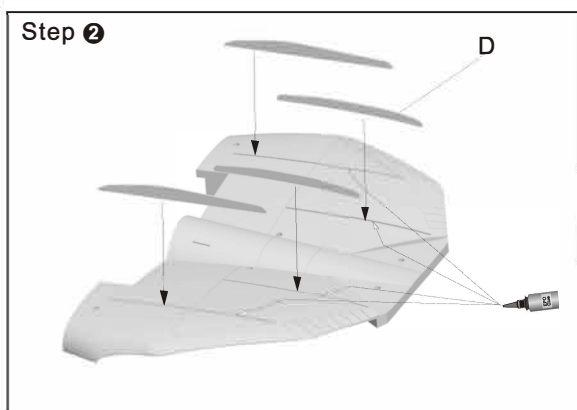
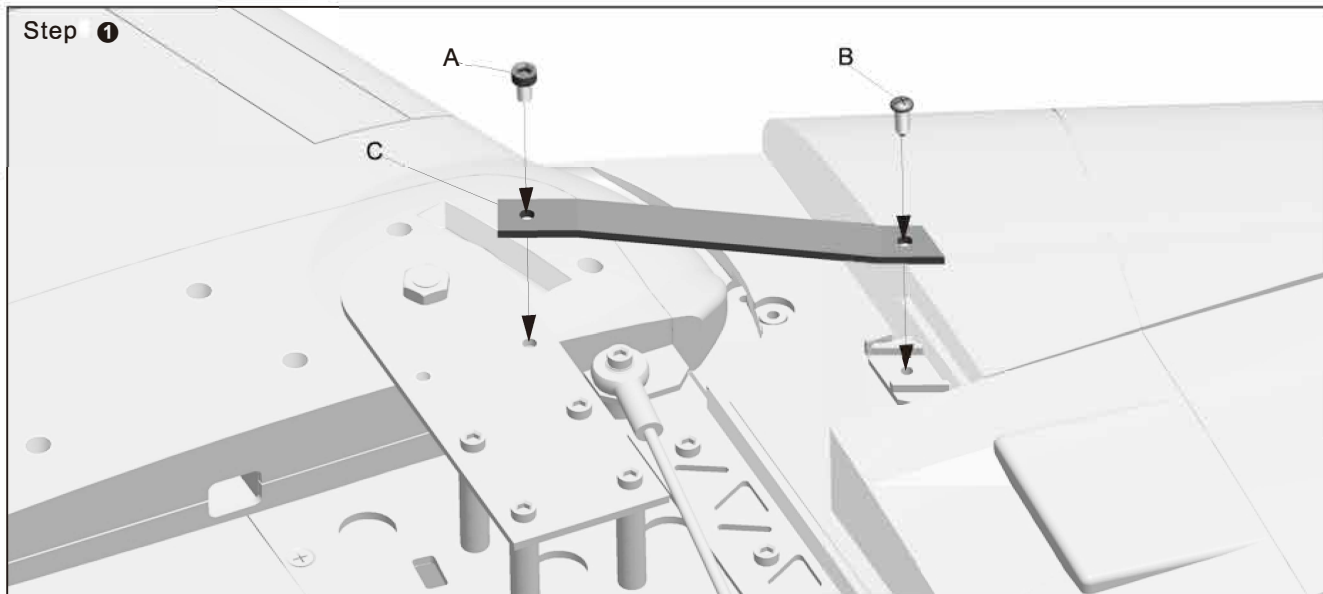


Forward wing angle 20 degrees

Swept wing angle 41 degrees

Swept wing angle 62 degrees

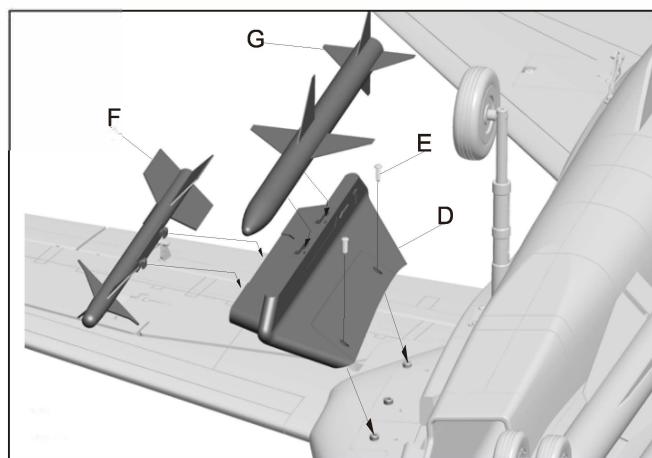
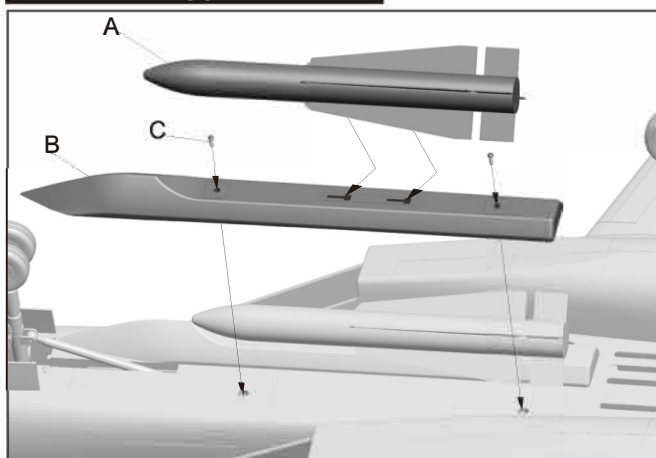
Main wing Installation



- A-Screw (HM3×8mm)
- B-Screw (PWA3×12mm)
- C-Mainwing reinforcement connecting rod (L/R)
- D-Wing fairings
- E-Screw (PA3×10mm / PA3×25mm)
- F-Wing unit foam cover

1. After adjusting the main wing, use screws to secure the main wing reinforcement connecting rod to help eliminate wing distortion.
2. Use glue to attach the wing fairings to the surface of the sweep wing unit's foam cover
3. Use screws to secure the foam cover.

Missiles and pylon Installation



- A-AIM-54 missile
- B-Pylon
- C-Screw (PA3×8mm)
- D-Composite pylon
- E-Screw (PA3×8mm)
- F-AIM-9 missile
- G-AIM-7 missile

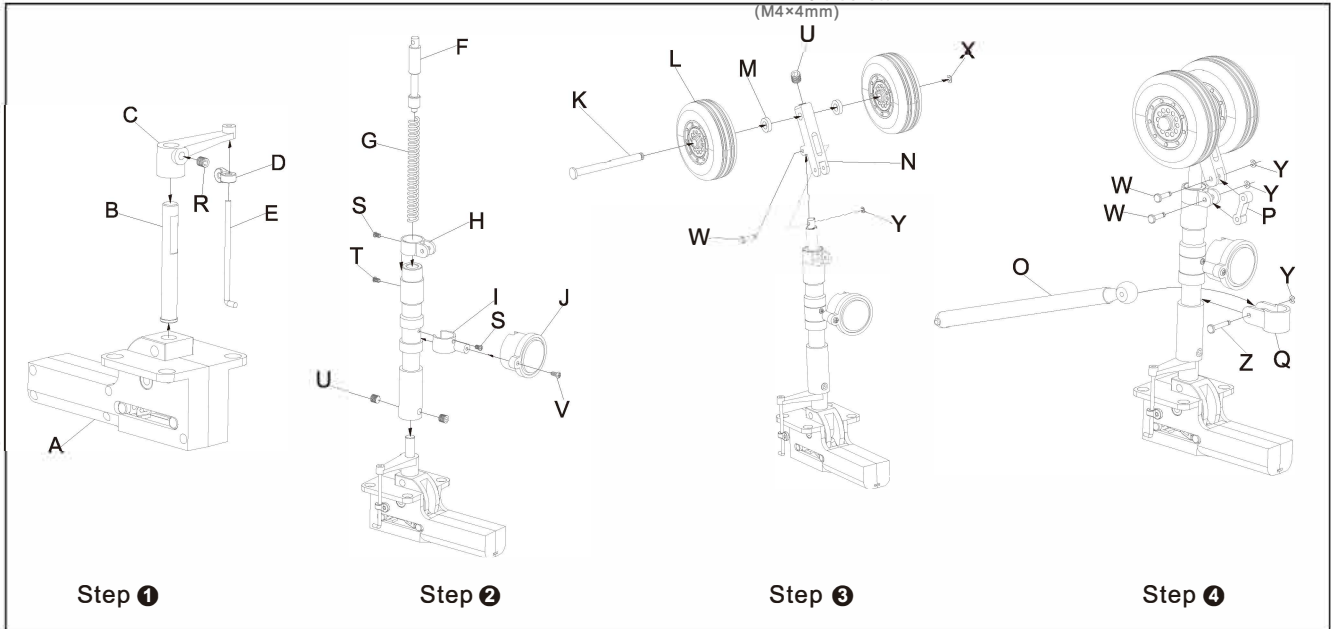
1. Use screws to affix the two types of pylons.
2. Lock the missiles on the plastic fixed slot of the pylons, move forward in the arrow's direction and lock tightly.

Nose Landing Gear Assembly

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

Accessories name and specification

- | | | |
|---------------------------------------|----------------------------------|----------------------------------|
| A -Retract controller | H-O-shape connecting arm | O-Plastic supporting rod |
| B-Nose gear main rod | I -LED light fixed arm | P-8-shape connecting arm |
| C-Nose gear steering arm | J -LED light | Q-U-shape plastic connecting arm |
| D-Nose gear steering control ring | K-Nose wheel axle | V-Screw (PA2×8mm) |
| E-Nose gear steering rod | L-Wheel (∅45×16mm) | W-Pin (∅3.5×9.2mm) |
| F-Nose gear shock absorber active rod | M-Washer | X-E-buckle (id ∅2.0mm) |
| G-Spring | N-Nose gear slant supporting rod | Y-E-buckle (id ∅1.5mm) |
| | | Z-Pin (∅2×11.1mm) |
| | | U-Grub screw (M4×4mm) |
| | | S-Screw (PM2×3mm) |
| | | T-Screw (PM2×4mm) |

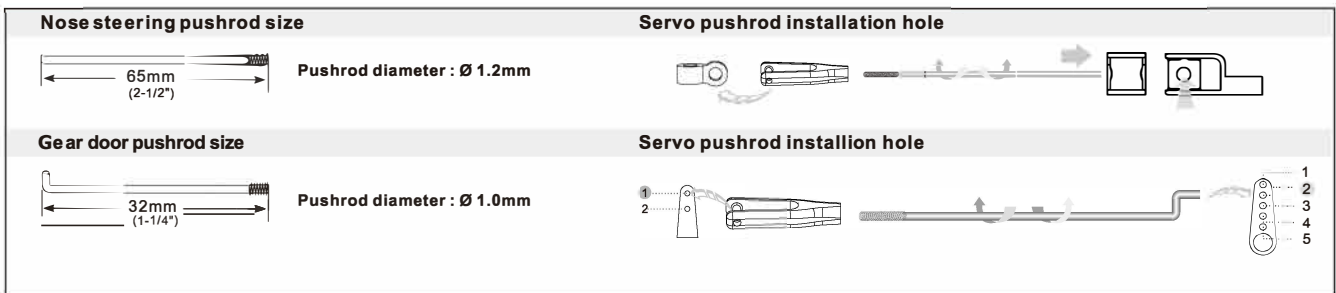
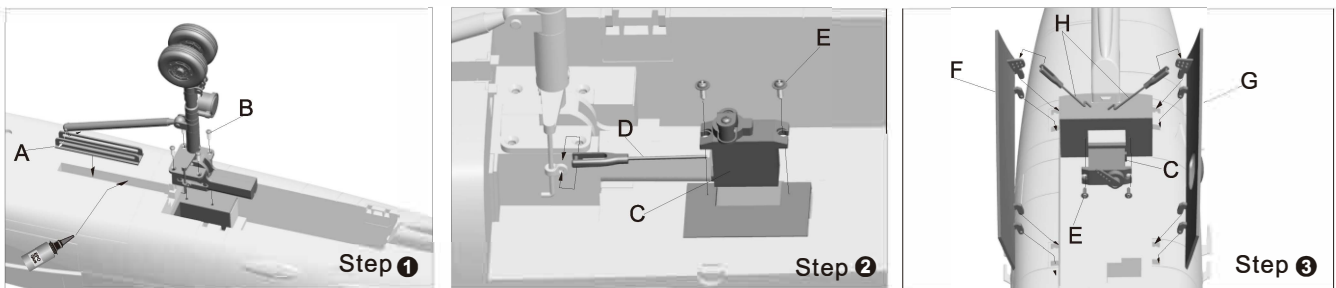


nose wheel steering servo and gear door installation

Please refer to the following photos for installation, replace or modification nose gear cabin door.

Accessories name and specification

- | | |
|-------------------------|--------------------------------------|
| A-Plastic guide track | E-Screw (PWA2×9mm) |
| B-Screw (PWA3×12mm) | F-Left side cabin door of nose gear |
| C-9g servo | G-Right side cabin door of nose gear |
| D-Nose steering pushrod | H-Cabin pushrod |

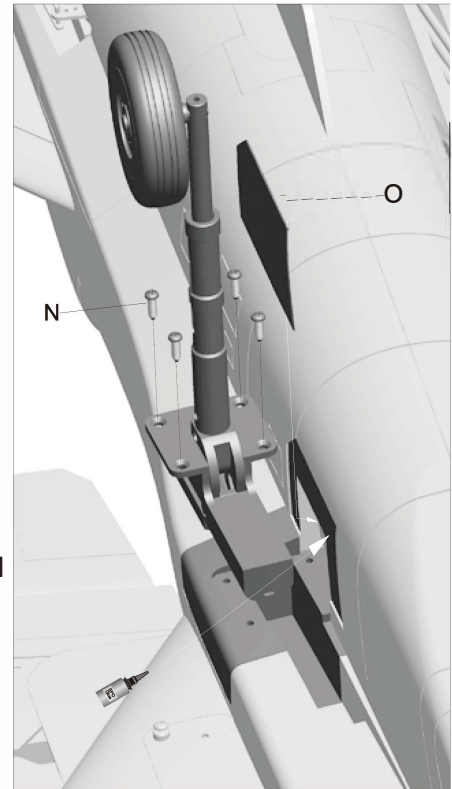
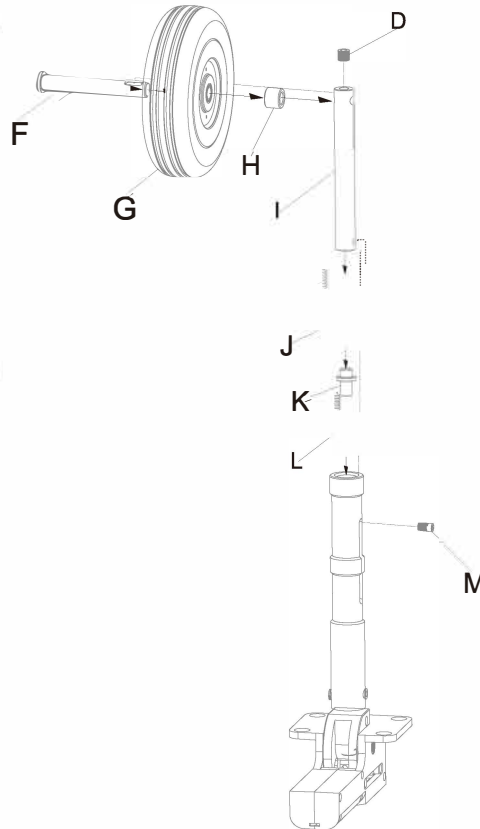


Main Gear Assembly

Please refer to the following photos to assemble and disassemble the main landing gear

List of parts and specs.

- A -Retract controller
- B -Grub screw (M4×4mm)
- C -Rear gear main rod
- D -Grub screw (M4×4mm)
- E -Rear gear main supporting rod
- F -Rear wheel axle
- G -Wheel (∅60×17mm)
- H -Washer
- I -Rear gear shock absorber active rod
- J -Spring
- K -Spring guide post
- L -Spring
- M -Screw (M3×5.2mm)
- N -Screw (PWA3×12mm)
- O -Rear gear blister piece (left/right)

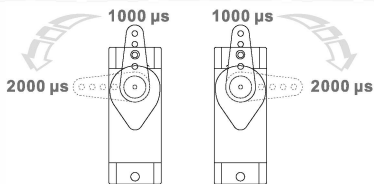


Step ①

Step ②

Step ③

Servo Introduction

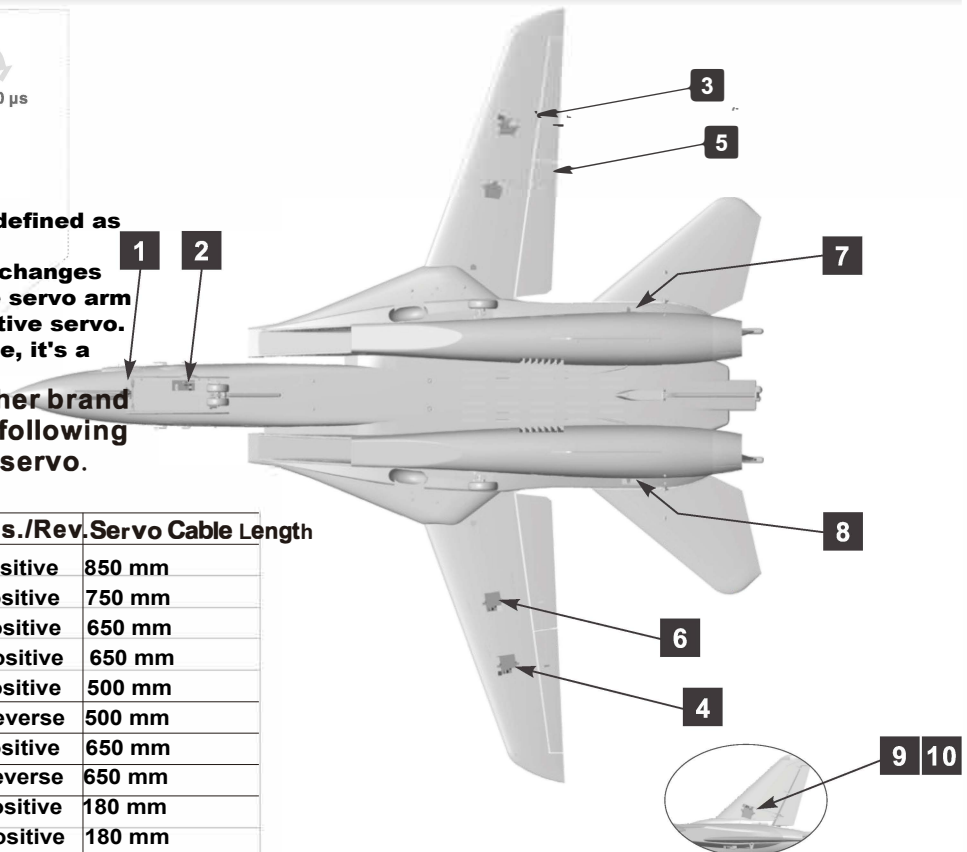


A servo or reversed servo is defined as follows:

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

Installing position	No. Pos./Rev.	Servo Cable Length
Front Gear Door 9g MB	1 Positive	850 mm
Nose Gear steering 9g MB	2 Positive	750 mm
Aileron (L) 17g MG	3 Positive	650 mm
Aileron (R) 17g MG	4 Positive	650 mm
Flap (L) 17g MG	5 Positive	500 mm
Flap (R) 17g MG	6 Reverse	500 mm
Elevator (L) 17g MG	7 Positive	650 mm
Elevator (R) 17g MG	8 Reverse	650 mm
Rudder (L) 17g MG	9 Positive	180 mm
Rudder (R) 17g MG	10 Positive	180 mm



F-14 Tomcat

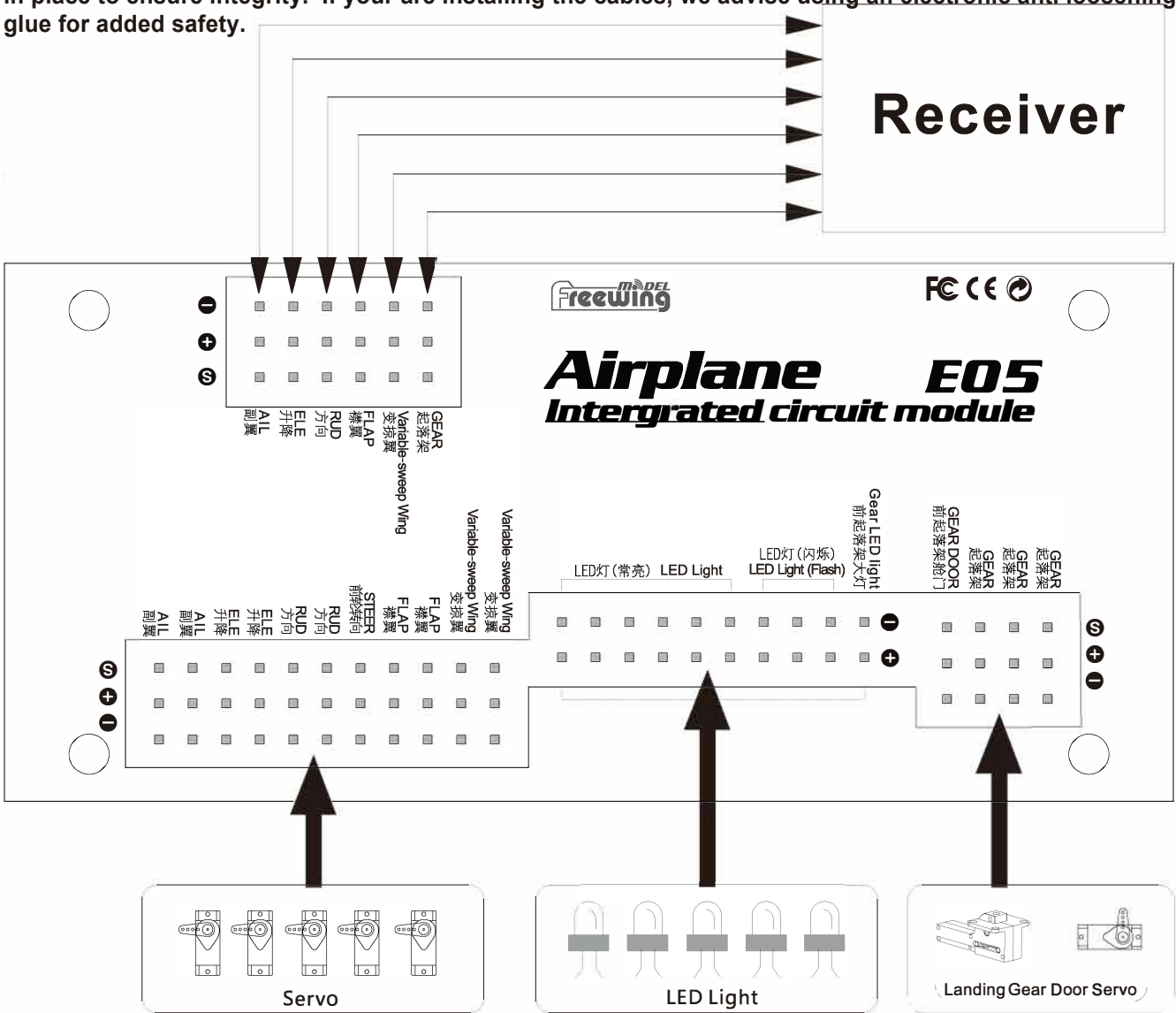
Item No.: FJ308
Version No.: FJ308-V01

Integrated circuit module introduction

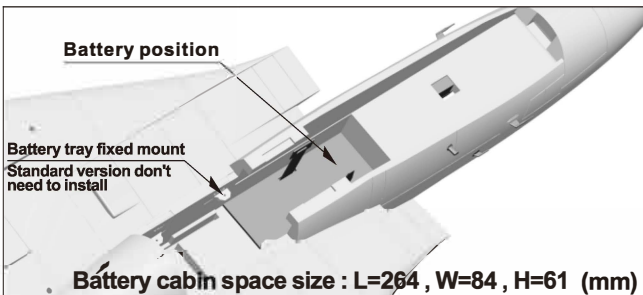
With reference to the diagram, connect the servo cables to the integrated circuit module and the receiver correctly.

NOTE: Before flight, recheck every port on the integrated circuit panel to ensure none are loose.

In the PNP version, the cables have been factory installed and secured using a glue designed to hold them in place to ensure integrity. If you are installing the cables, we advise using an electronic anti loosening glue for added safety.



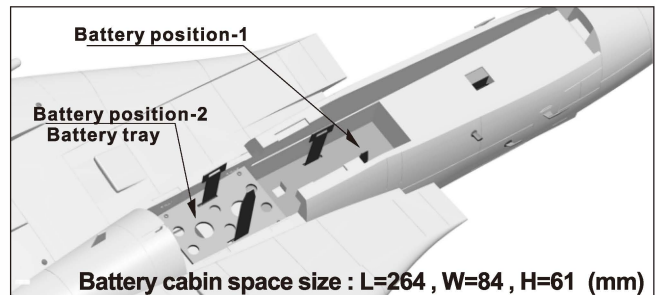
Battery Installation



Standard power system equipment (One battery)

We recommend the following battery size and discharge rate:

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



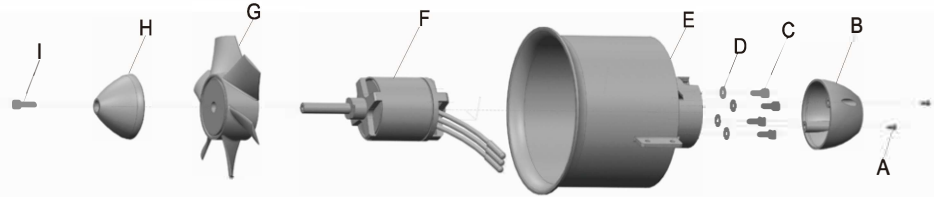
Upgraded power system equipment (Two batteries)

We recommend the following battery sizes and discharge rates:

6S 22.2V 4000mAh ~ 6S 22.2V 5000mAh (2pcs)
Discharge rate of C ≥ 35C

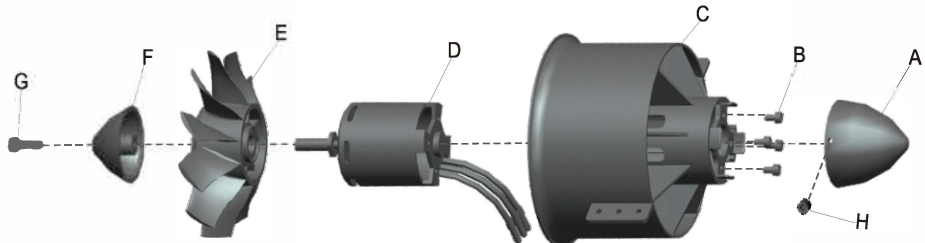
Standard Version

- A-Screw (PT2.3×6mm)
- B-Motor spinner
- C-Screw (HM 3×7mm)
- D-Metal gasket (Ø3.1mm)
- E-80mm plastic ducted fan frame
- F-Outrunner brushless motor
- G-80mm 6-blade ducted fan
- H-Spinner
- I-Screw (HM 3×10mm)



Upgrade Version

- A-Motorspinner
- B-Screw (HM 3×6mm)
- C-80mm metal ducted fan frame
- D-Outrunner brushless motor
- E-80mm 12-blade ducted fan
- F-Spinner
- G-Screw (HM 3×10mm)
- H-Screw (M3×3mm)

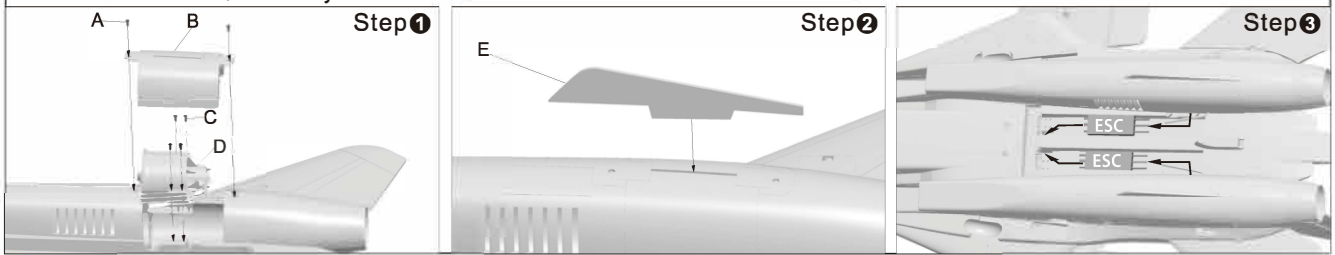


Use the following steps to install the power system and ESC. Put the ESC cables into the battery compartment. Note the direction of the arrows.

- A-Screw (PA3×8mm)
- B-Fan cover
- C-Screw (PWA3×8mm)
- D-Power system
- E-Belly fin

⚠ Note: When using two batteries to fly, the first battery should connect to the ESC with UBEC, then connect the second to the second ESC, or the two power systems will not start at the same time.

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

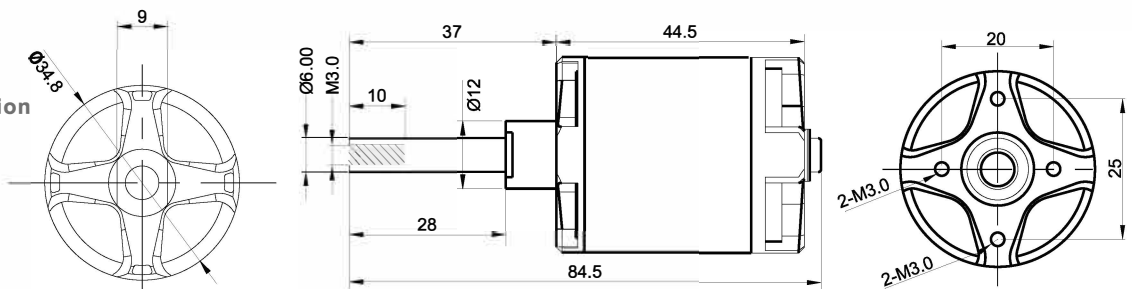


Motor parameters

MOJ35252

3525-2050KV

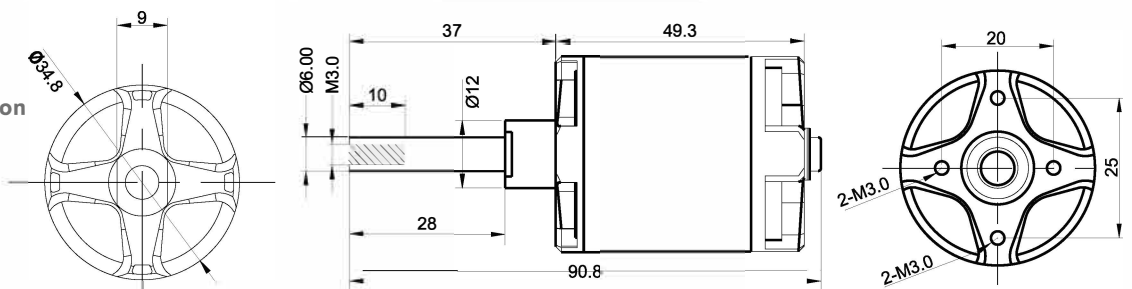
For the Standard Version



MOJ35301

3530-1750KV

For the Upgrade Version



Item No.	KV Value	Voltage (V)	Current (A)	Thrust (g)	Motor Resistance	Weight (g)	No Load Current	Fan	ESC
MO035252	2050RPM/V	22.2	63	2500	0.0087Ω	125	4.8A/15V	6-Bladed 80mm Ducted Fan	≥ 80A
MO035301	1750RPM/V	22.2	72	2600	0.0146Ω	150	4.6A/23V	12-Bladed 80mm Ducted Fan	≥ 80A

F-14 Tomcat

Item No.: FJ308
Version No.: FJ308-V01

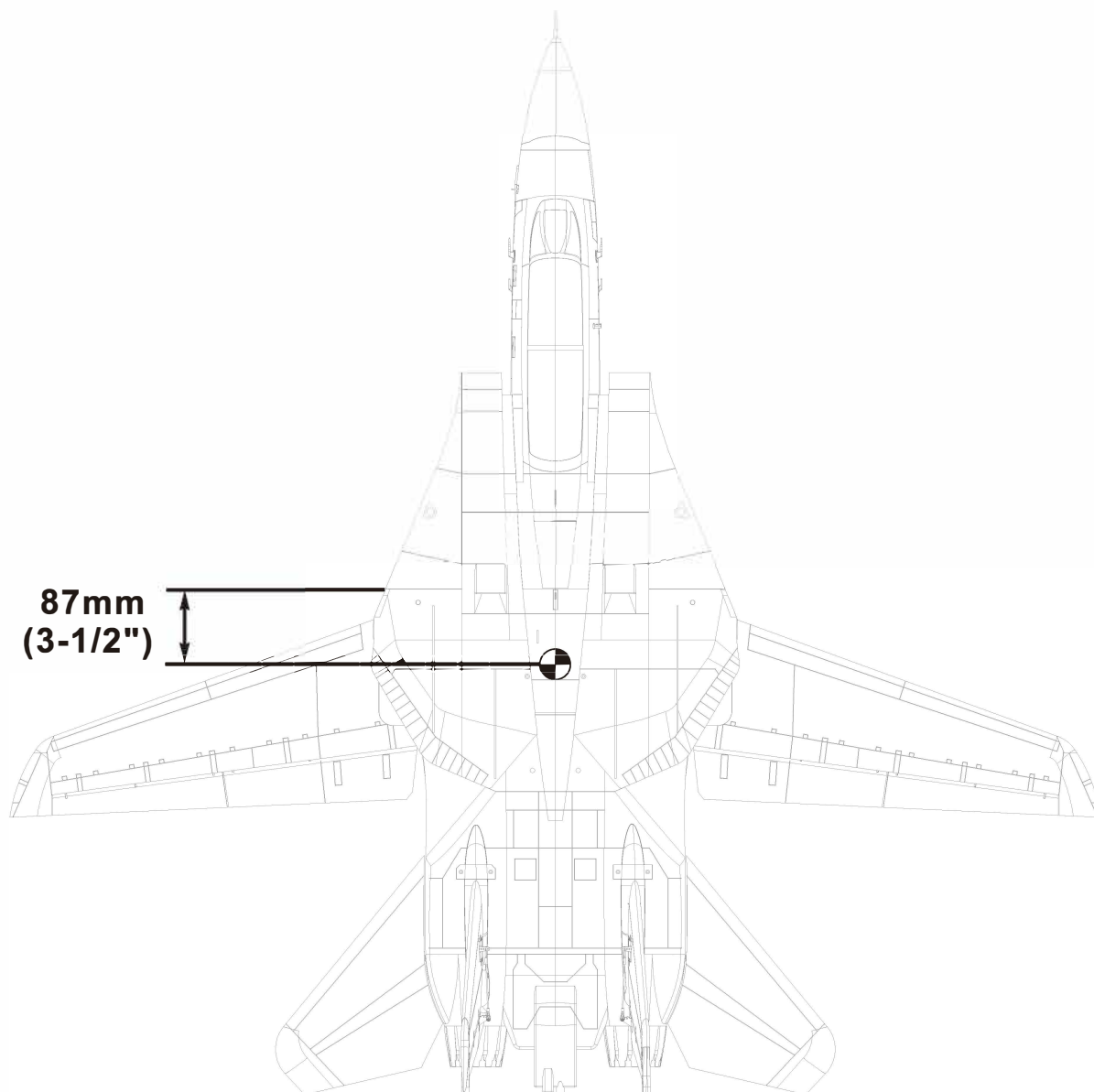
Center of Gravity

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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 achieve the correct CG by moving the battery, you can also use an alternate material such as sticky back lead weight to dial the CG in.



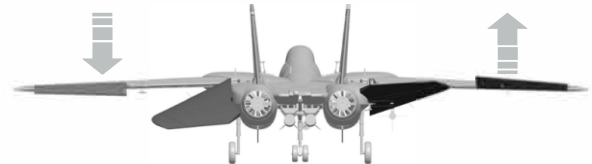
After completing the assembly of the aircraft, before first flight, connect a fully charged battery to the ESC, then use your radio to check that every control surface responds properly and in the correct direction.

Aileron

Stick Left

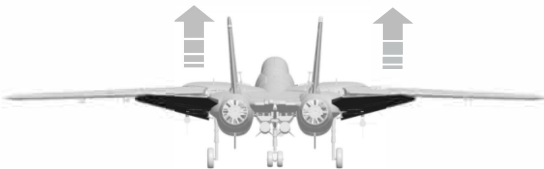


Stick Right

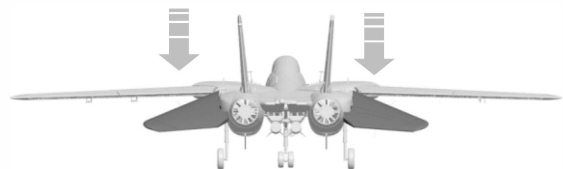


Elevator

Up Elevator



Down Elevator



Rudder

Stick Left

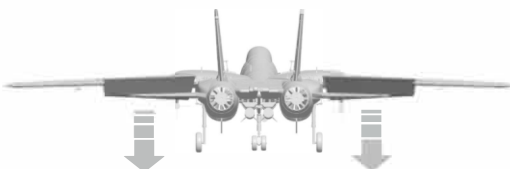


Stick Right



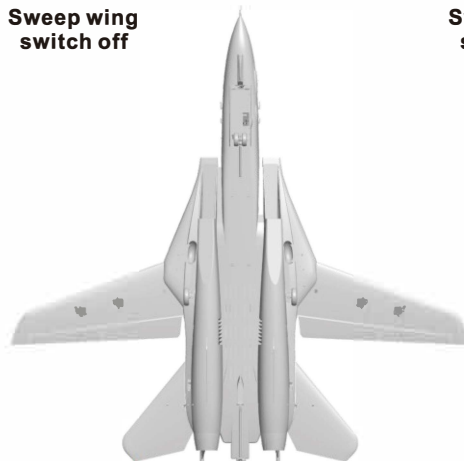
Optional Flaps

Flaps down

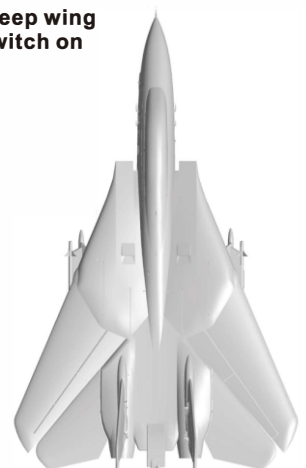


Sweep wing

Sweep wing
switch off



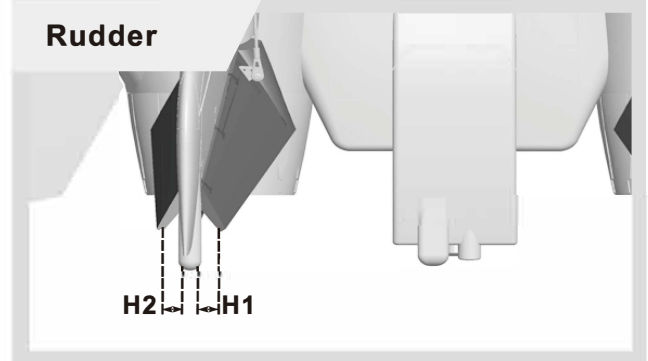
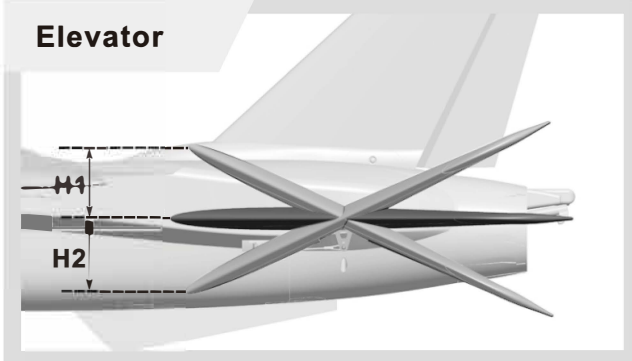
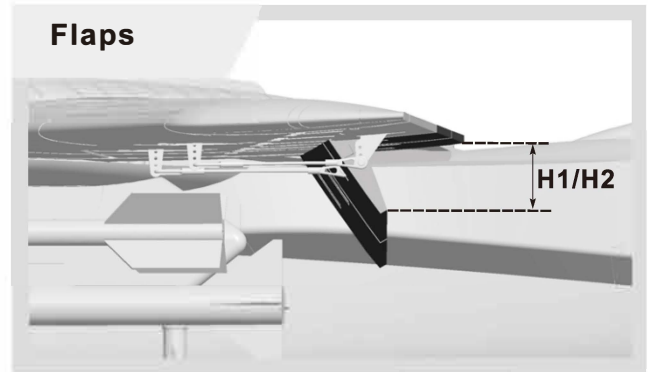
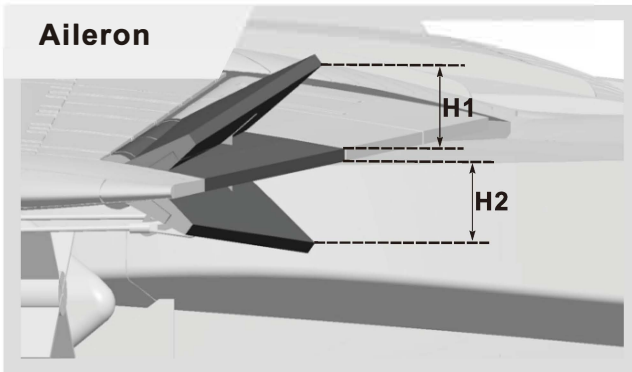
Sweep wing
switch on



Dual Rates

EN

Control sensitivity on the F-14 will change according to the wing position. It is recommended that you set up your rates using the following parameters. When changing the sweep of the wing, you will want to switch rates for ease of operation.



	High Rate	Low Rate
Aileron	H1/H2 14mm D/R Rate : 100%	H1/H2 8mm D/R Rate : 65%
Flaps	H1/H2 40mm	H1/H2 30mm
Elevator	H1/H2 34mm D/R Rate : 100%	H1/H2 24mm D/R Rate : 65%
Rudder	H1/H2 30mm D/R Rate : 100%	H1/H2 20mm D/R Rate : 65%

Elevator angle correction

Caution: The neutral point of the elevator is critical, it will directly affect the flight characteristics . Please refer to the photo to correct your neutral elevator angle!





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