

F-35 C LIGHTNING II

User Manual

110 MM EDF Jet

Wingspan:1340mm Length:1618mm

Empty Weight:5200g (W/O Battery)



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Note:

www.freewing-model.com

- 1.This is not a toy! Operater 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.

⚠ 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.

Thank you for purchasing our Freewing 110mm EDF super scale jet, the F-35C. Before assembling this jet, please thoroughly read the instruction manual or watch the assembly video, and complete assembly, parameter setup and adjustment step by step following standard procedures. If you encounter unresolvable issues during the process, please promptly contact your authorized dealer or our customer service for technical support.

The FW F-35C Carrier-Based RC Jet features accurate scale outline with a 1:9.6 scale design, boasting a wingspan of 1340 mm and a length of 1618 mm. Its large dimension delivers striking visual presence paired with reliable flight stability, making it an outstanding choice for both static display and dynamic flight. Equipped with multiple proven mature structural designs and the latest 110mm EDF power system, this large-scale model achieves comprehensive upgrades in overall performance and user experience.

Ease of Use Adopting Freewing's exclusive QUICK II screwless quick-release main wing structure alongside plug-and-play electrical connections, this model delivers drastically improved handling convenience during transportation and field assembly. It greatly reduces the risk of accidental foam surface damage caused by cumbersome installation steps. In addition, the empennage is secured with screws, enabling damage-free maintenance and rapid replacement of spare parts.

Reliability The retractable landing gear is fitted with upgraded ET86-series rear-wheel alignment components fully machined from metal, featuring a torque rating of 21 kgf for outstanding structural strength and dependable reliability. The shock absorber cylinder and piston rod of the main landing gear measure $\Phi 16$ mm and $\Phi 9$ mm respectively, pre-filled with damping grease and equipped with sealing O-rings. Robust support construction combined with adjustable damping delivers optimal landing protection, efficiently dissipating massive impact energy from hard landings and minimizing bounce occurrence.

The hollow main wing incorporates an integral internal framework composed of carbon fiber tubes and wooden ribs to secure structural rigidity while further cutting down airframe weight. Two carbon fiber tubes are embedded inside the vertical stabilizer and plugged into reinforced plastic inserts at the fuselage rear. The horizontal stabilizer is molded from high-density 20-fold EPO foam with embedded carbon fiber tubing. This configuration delivers reliable structural strength to avert torsional deformation and cracking risks under heavy load conditions. The elevator control surfaces are driven by two high-torque 8.5 kg coreless servos paired with metal control horns and linkages, enabling precise and instantaneous response to pilot flight inputs.

Appearance & Details In addition to standard navigation lights, this scale model replicates the real landing/taxi lights and is fitted with simulated afterburner glow taillight effects. The airframe is finished with a matte gray base coat, complemented by light-gray panel line seam markings applied across all surfaces excluding the fuselage underside. Generic decals are pre-applied at the factory, while three optional sets of US Marine Corps waterslide decals are included for customers to apply as preferred, greatly expanding customization options for exterior styling.

Beyond the aforementioned core features, the model boasts numerous refined detailed fittings including concealed plastic hinges, functional landing gear cabin doors and scale-detail plastic accessories waiting to be discovered by users.

Performance The Freewing F-35C EDF jet model is equipped with a newly specified 110mm ducted fan unit paired with a 4678-680KV inrunner brushless motor and an HV 12S / 130A brushless ESC. It delivers a continuous operating current of 96~102A and a static thrust of 6.8 kg without airframe installation. Power is supplied by two series-connected Admiral 6S 5000mAh 50C lithium batteries, enabling a maximum flight endurance of approximately 6 minutes and a top speed around 210 km/h.

The model features a moderate takeoff ground roll; it takes off smoothly after roughly 30 meters of full-throttle taxi acceleration. It excels in flight stability with sharp, precise yaw tracking and crisp, accurate execution of all standard aerobatic maneuvers. Inverted flight performance stands out as a key advantage: the aircraft resists stall onset even during low-speed, high-angle-of-attack inverted flight. Approximately 80% rudder input maintains steady knife-edge flight with a straight flight path and only minor altitude bleed during extended side slipping. Cruising at low speeds requires merely 50% throttle. The landing envelope boasts generous control margin; the airframe holds consistent attitude throughout final approach. With properly coordinated airspeed and throttle settings, the model can be easily set down with a gentle landing at a 20°–25° angle of attack.



Standard Version

Wingload: 103g/dm²
 Wing Area: 65dm²
 Servo: 9g Hybrid digital servo(5pcs)
 9g MG digital servo(1pcs)
 17g MG digital servo(6pcs)
 30g MG digital servo(2pcs)
 Motor: 4678-680KV I/R Motor
 Ducted fan: 110mm 12-blade fan
 ESC: 130A High Voltage ESC(10A UBEC)
 Weight: 5200g(w/o Battery)
 Li-Po Battery: 6S 5000-6000mAh*2
 Operating Voltage: 12S

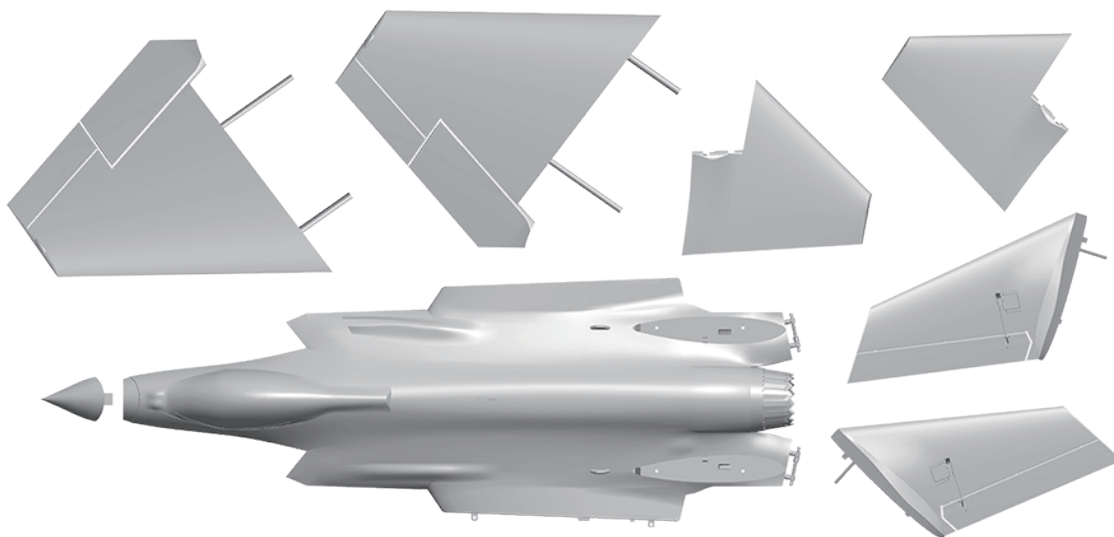
Other Notes

Landing gear: electric retracts and aluminum absorber struts, scale decorated part
 Cabin doors: front and rear complete cabin door servo control
 Navigation lights: LED navigation lights
 simulated formation lights, afterburner LED
 Other: Simulated cockpit



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.

Package List



Different equipment include different spareparts. Please refer to the following contents to check your sparepart list.

No.	Name	PNP	ARF Plus
1	Fuselage	Pre-installed all electronic parts	Pre-installed servo
2	Main wing	Pre-installed all electronic parts	Pre-installed servo
3	Horizontal tail	Pre-installed all electronic parts	Pre-installed servo
4	Vertical tail	Pre-installed all electronic parts	Pre-installed servo
5	Nose cone	✓	✓

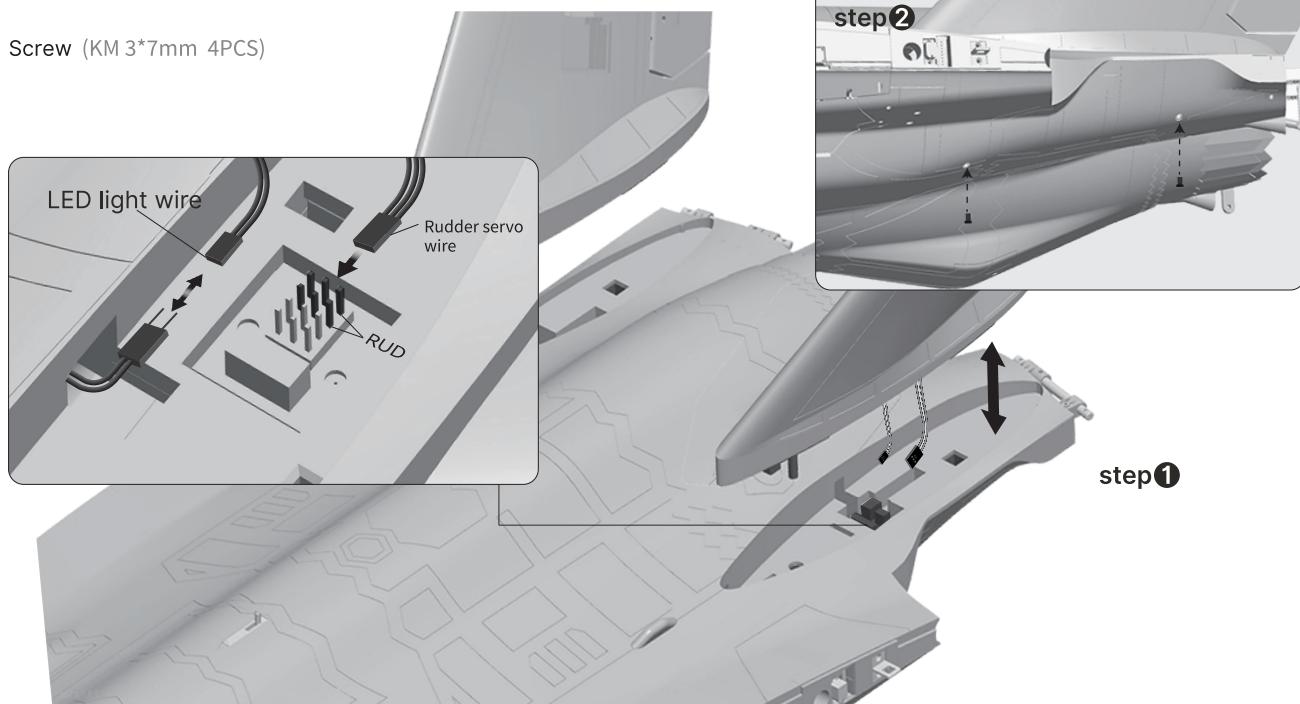
No.	Name	PNP	ARF Plus
6	Cockpit	✓	✓
7	Landing gear	✓	✓
8	Annex bag	✓	✓
9	Manual	✓	✓

Install the Vertical tail

As the photo show:

1. Insert the rudder servo wire onto the tail wing control board, and connect the vertical tail LED light wire to the LED extension cable;
2. After installed the vertical tail onto the fuselage, tighten it with four screws.
(Repeat this step for the other vertical tail)

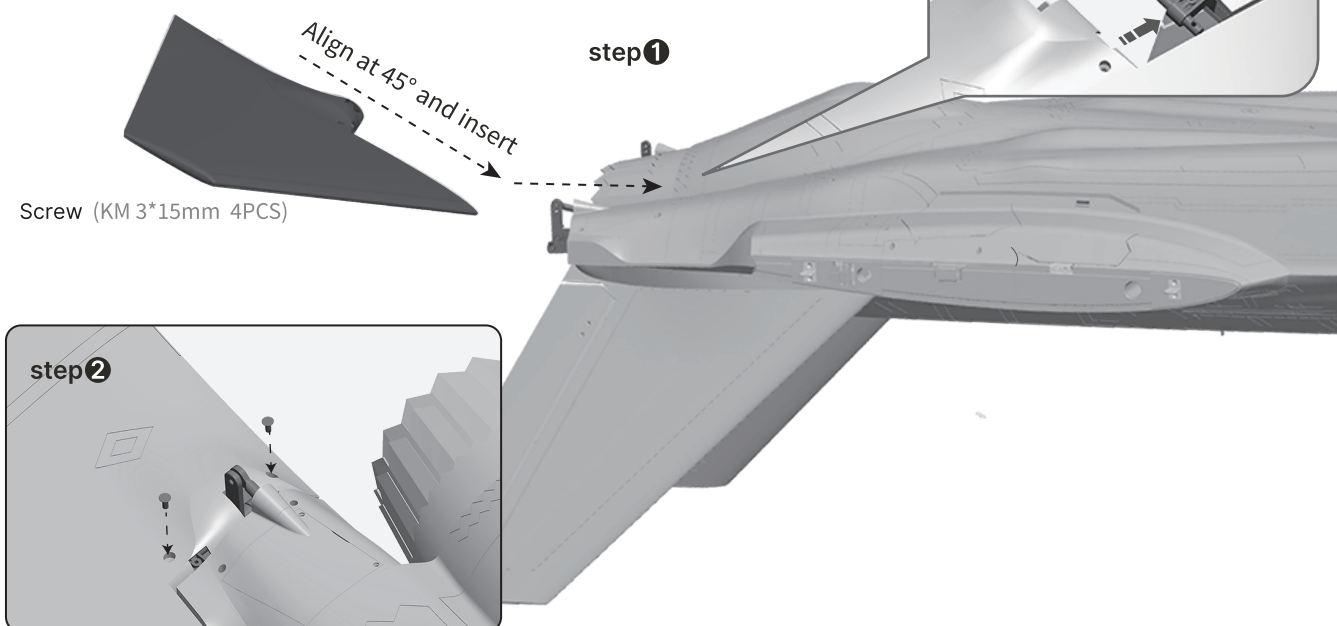
Screw (KM 3*7mm 4PCS)



Install the Horizontal tail

As the photo show:

1. Flip the fuselage over. Align the horizontal tail at a 45° angle with the pivot shaft at the rear of the fuselage, insert it into position, then fit it securely onto the rear fuselage pivot shaft.
2. Tighten the screws to secure the horizontal tail and prevent it from detaching.
(Repeat the above steps and install the other side with a horizontal tail.)



Install Main Wing

As the photo show:

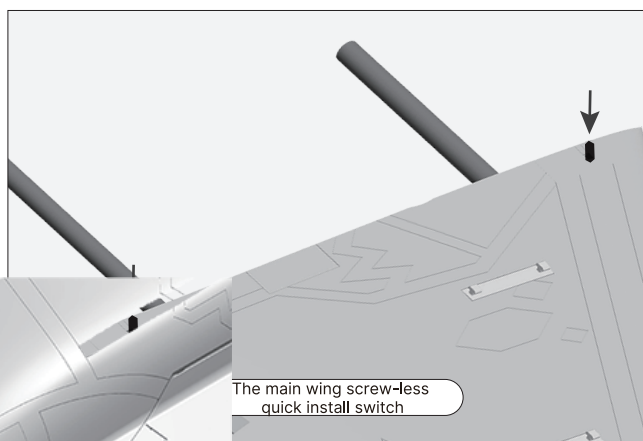
1. Press the fuselage screw-less quick install switch to unlock it ;^①

① Two different status diagrams of the main wing screw-less quick install switch: (The working mode is to press the button to the bottom and release it. The button pops up to the highest position, which is the unlocked status. Once the button is pressed to the bottom again and released, but the button does not pop up, which is the locked status)

Unlock status

As shown in the following photo:

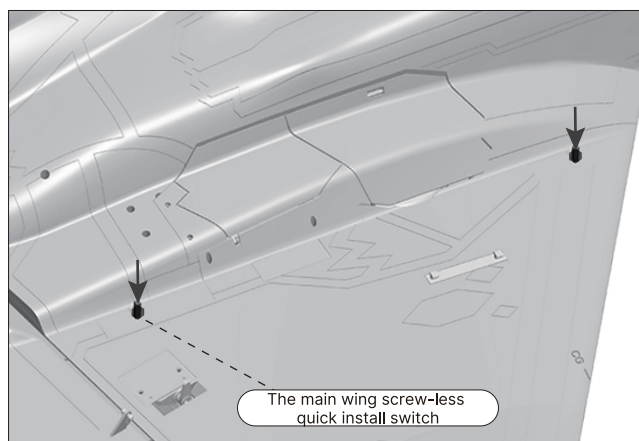
Press the main wing screw-less quick install switch to the bottom and release it. The button pops up to the highest position, indicating that the main wing has been unlocked and can be easily removed and installed.



Lock status

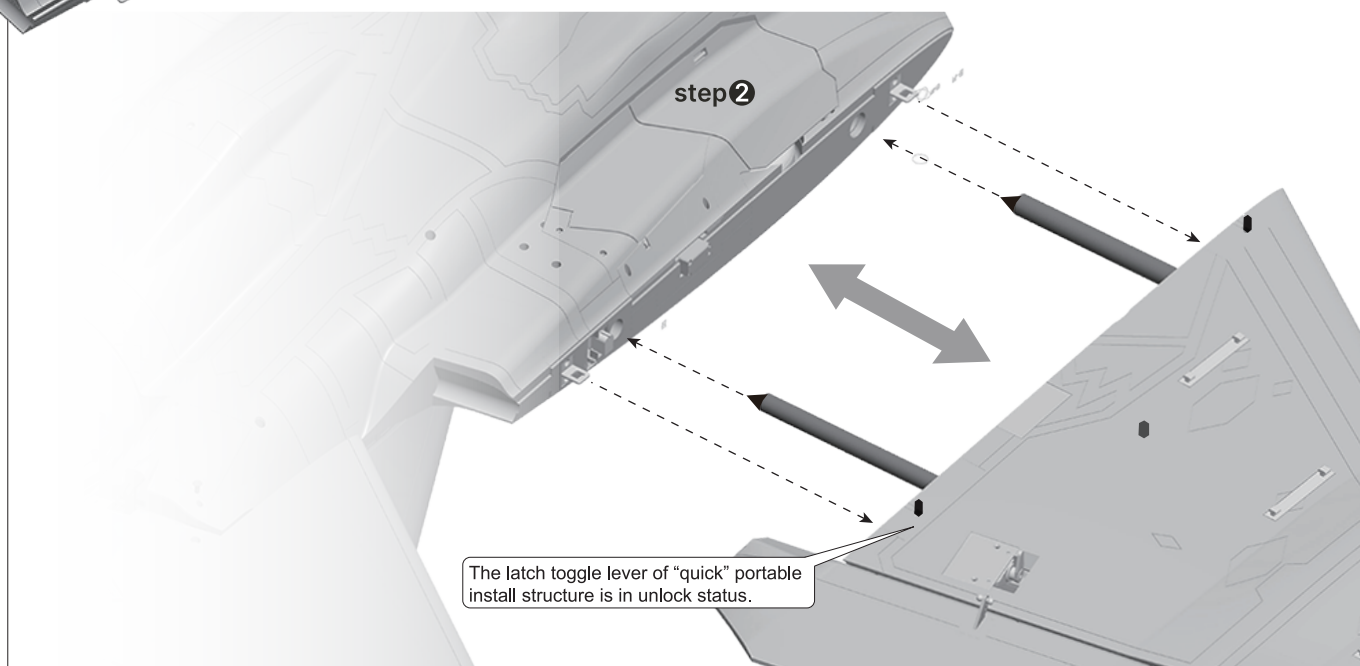
As shown in the following photo:

After installed the main wing, press again the main wing screw-less quick install switch to the bottom and release it. If the button does not pop up, it is the locked status. At this point, pull the main wing outward and can not remove it.



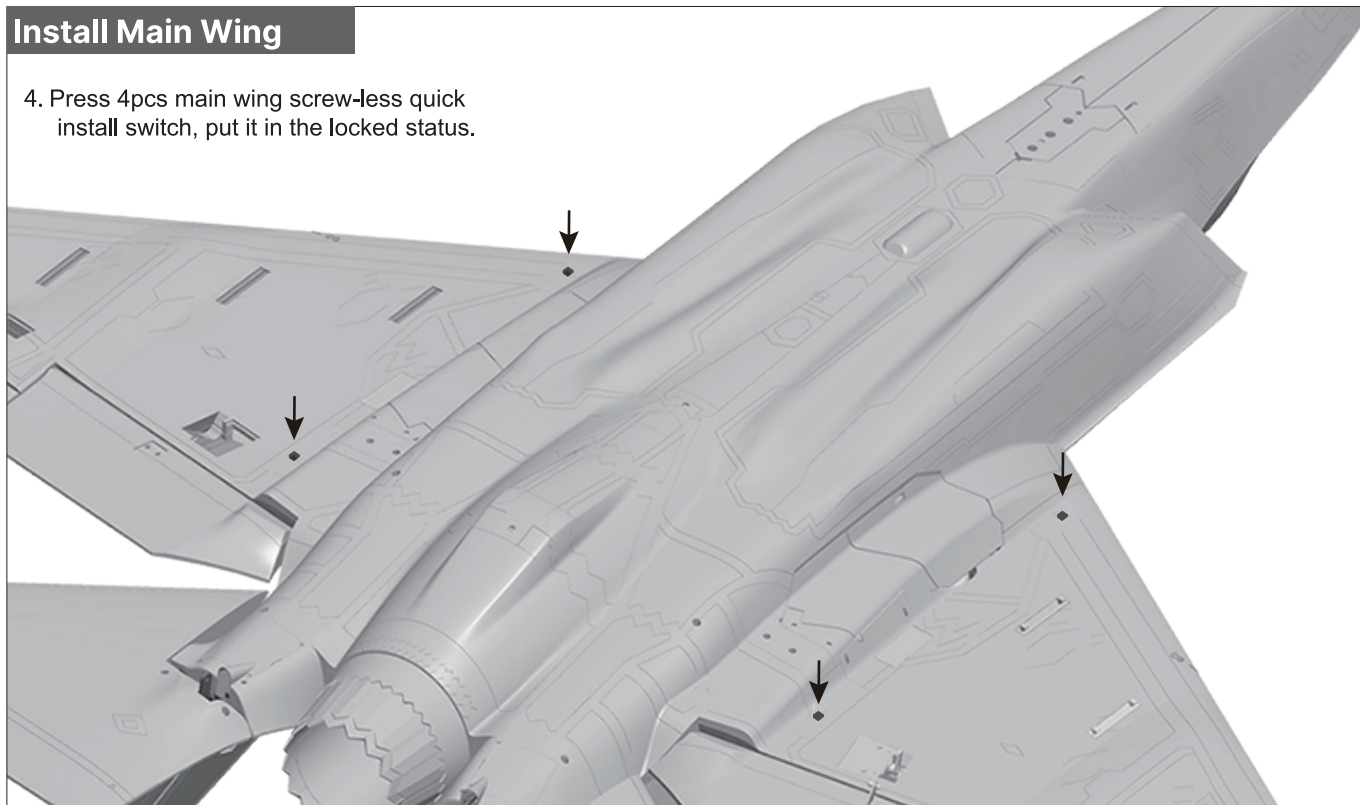
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Presses on both sides with the fuselage and the main wing, and push the main wing into the position on top of the fuselage. (Repeat the above steps to install the other main wing.)



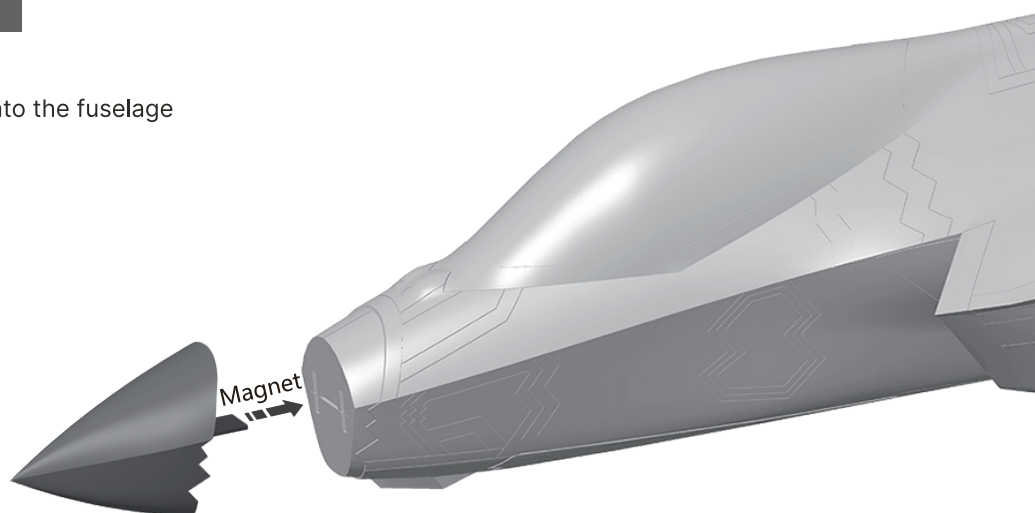
Install Main Wing

4. Press 4pcs main wing screw-less quick install switch, put it in the locked status.

**Install Nose Cone**

As the photo show:

1. Install the nose cone onto the fuselage

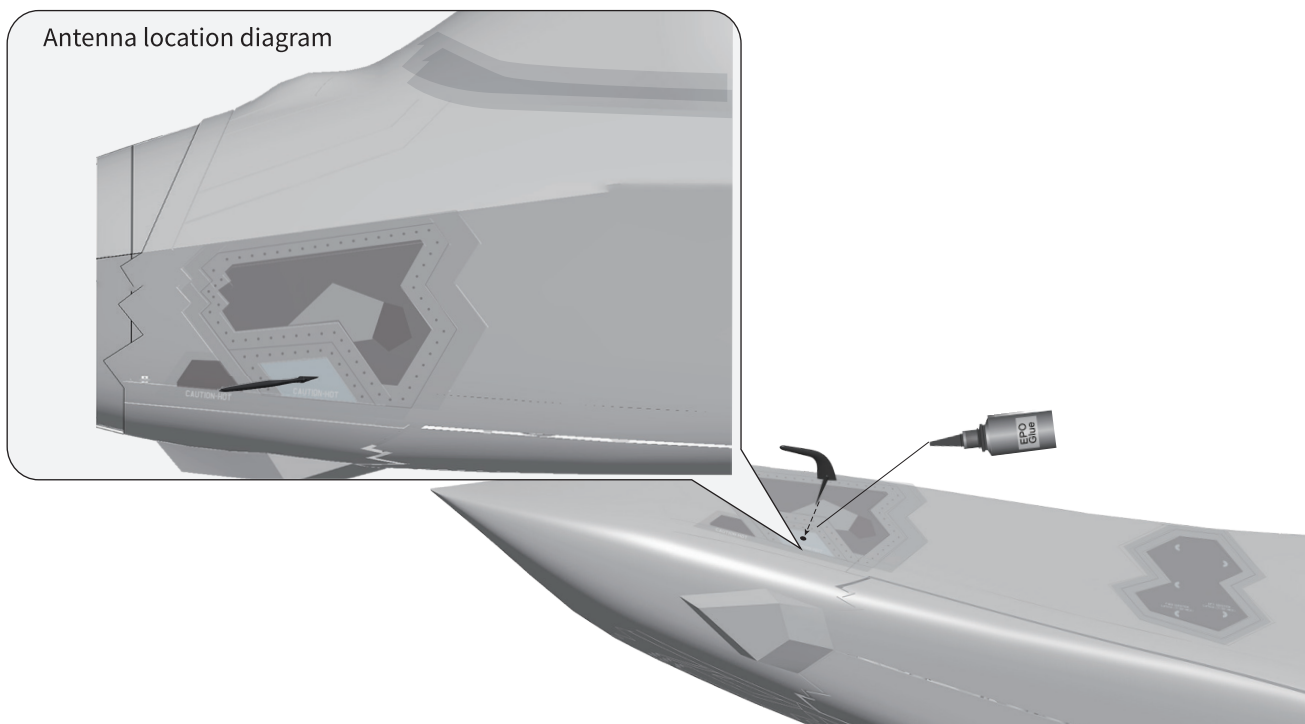


Install other accessories

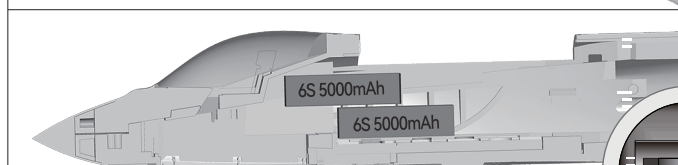
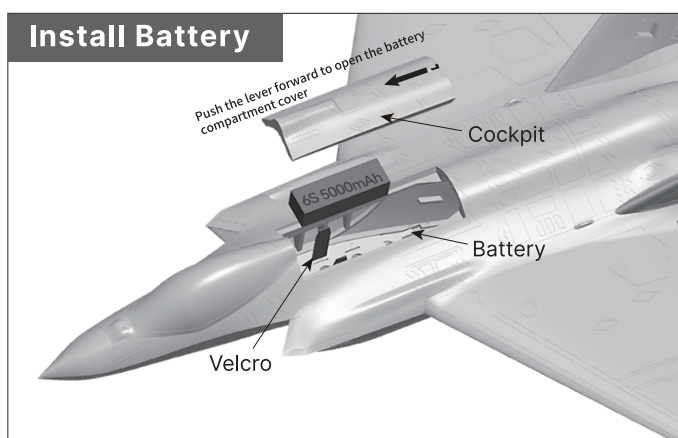
As the photo show:

1. Refer to the diagram and insert the antennas into the fuselage.

Antenna location diagram

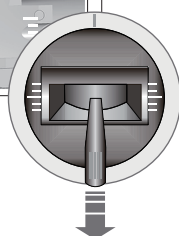


Install Battery



Battery cabin size: L=250 W=90 H=123mm

Before connecting the battery and receiver, please switch on the transmitter power and make sure the throttle stick is in the lowest position. Bind your receiver to your transmitter according to your transmitter's instruction manual.



We recommend the following LiPo battery:
6S 22.2V 5000mAh~6S 22.2V 6000mAh (2pcs)
Discharge rate of C $\geq$ 35C

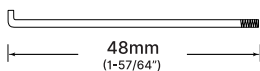


IMPORTANT NOTICE: Battery Connection Sequence

When connecting the battery, always connect the two EC5 connectors first, then connect the AS150 connector. The EC5 connectors have no anti-spark design, while the AS150 connector features built-in anti-spark protection. Reversing the connection order will cause electrical arcing and damage the connectors.

Pushrod Instructions

Aileron pushrod length

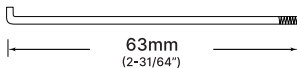


Pushrod diameter Ø1.5mm

Aileron pushrod mounting hole



Rudder pushrod length

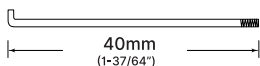


Pushrod diameter Ø 1.5mm

Rudder pushrod mounting hole



Flap pushrod length

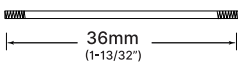


Pushrod diameter Ø 1.5mm

Flap pushrod mounting hole(Inside)

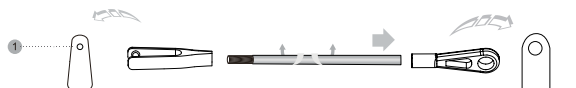


Elevator pushrod length

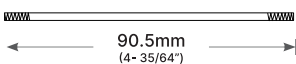


Pushrod diameter Ø 2.7mm

Elevator pushrod mounting hole



Nose gear steering pushrod length

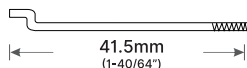


Pushrod diameter Ø 1.5mm

Nose gear steering pushrod mounting hole



Nose Cabin door pushrod length



Pushrod diameter Ø1.2mm

Nose cabin door pushrod mounting hole



Rear cabin front door pushrod length

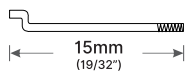


Pushrod diameter Ø1.2mm

Rear cabin front door pushrod mounting hole



Rear cabin rear door pushrod length



Pushrod diameter Ø1.2mm

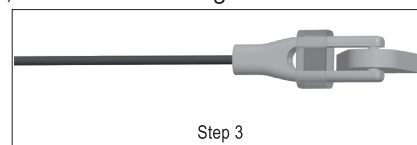
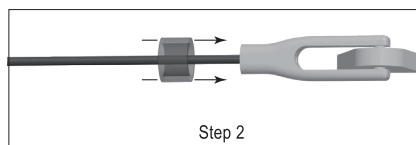
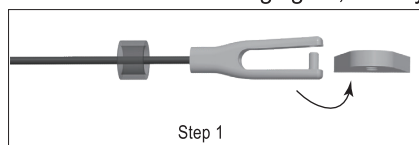
Rear cabin rear door pushrod mounting hole



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.

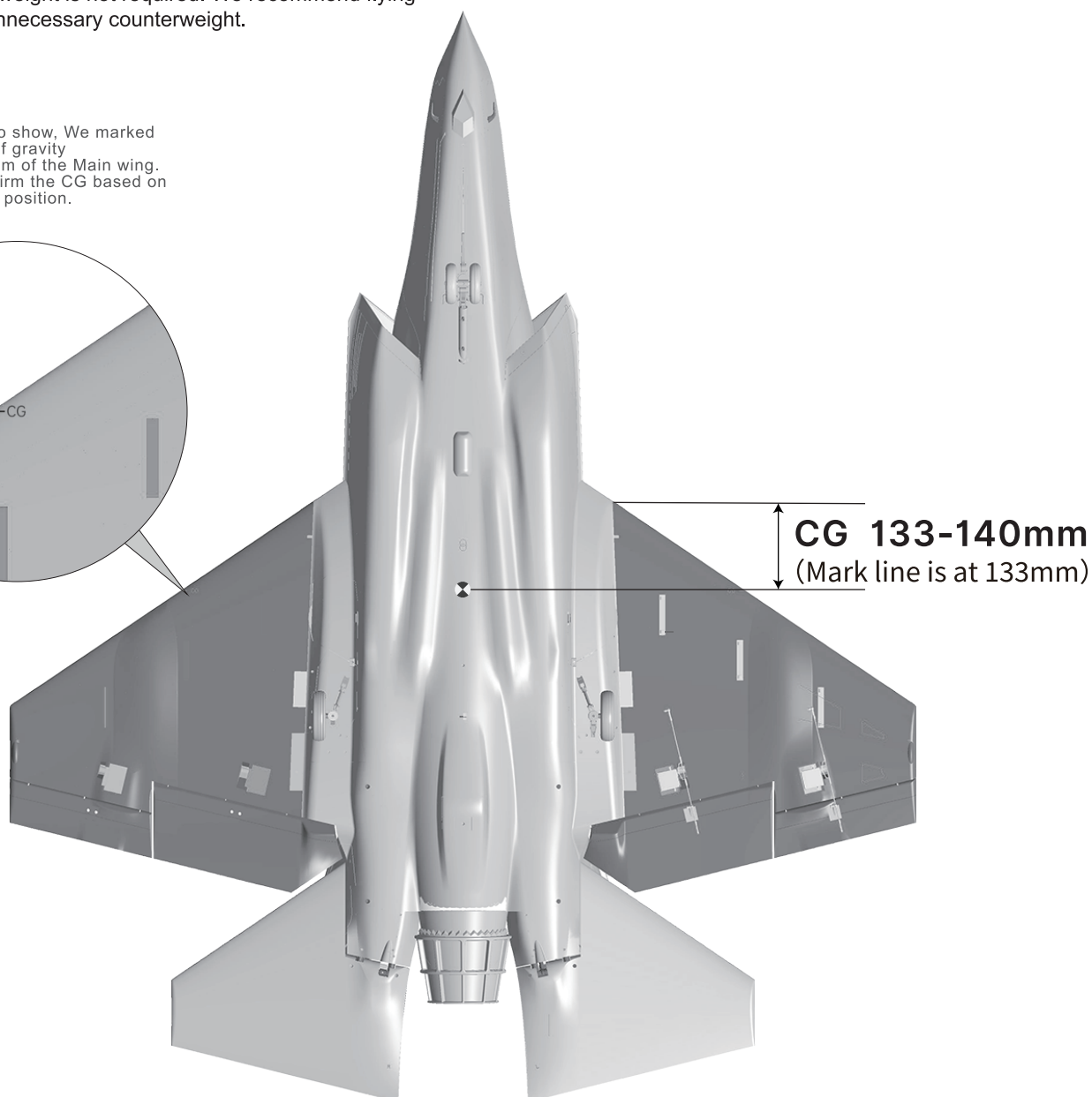
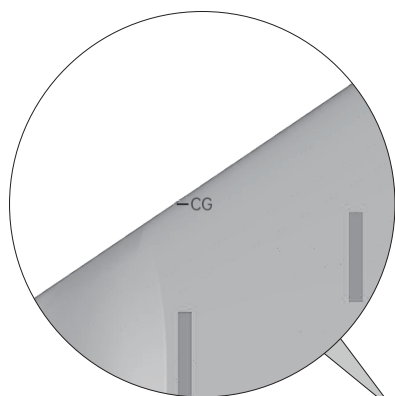


Center of Gravity

Correct Center of Gravity ("CG") is critical for enabling safe aircraft stability and responsive control. Please refer to the following CG diagram to adjust your aircraft's Center of Gravity.

- Depending on the capacity and weight of your chosen flight batteries, move the battery forward or backward to adjust the Center of Gravity.
- If you cannot obtain the recommended CG by moving the battery to a suitable location, you can also install a counterweight to achieve correct CG. However, with the recommended battery size, a counterweight is not required. We recommend flying without unnecessary counterweight.

As the photo show, We marked the center of gravity on the bottom of the Main wing. Please confirm the CG based on this marked position.



After installed this F35 model plane, please connect to the receiver and power on, then adjust it.

1. When all channels of radio are fine tuned to zero and the control stick is centered: check whether each control surface on the aircraft is in the center position. If it is found that the control surface is not in the center position, please adjust the control rod to center it;
2. Please refer to the diagram below and use the radio to test each control surface to ensure that its movement direction matches the diagram. If the opposite movement occurs, first check whether the relevant channel in the radio has enabled the reverse function; If the problem persists, please contact us for assistance in resolving it.

Aileron

Stick Left

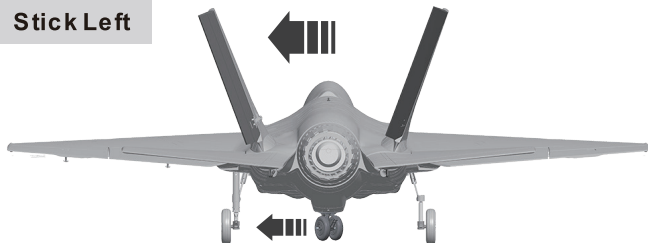


Stick Right

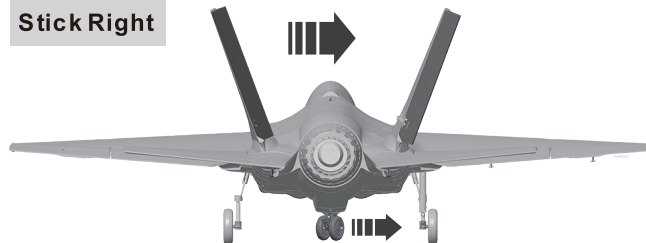


Rudder

Stick Left

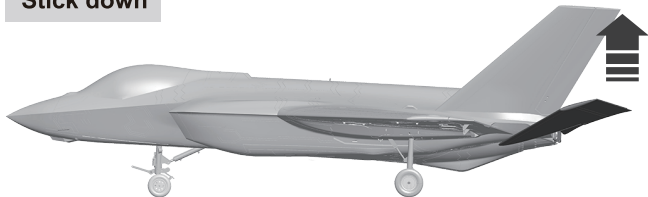


Stick Right

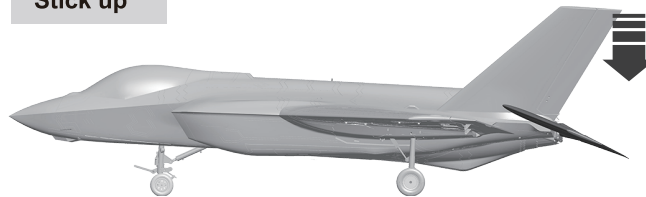


Elevator

Stick down



Stick up



Flaps

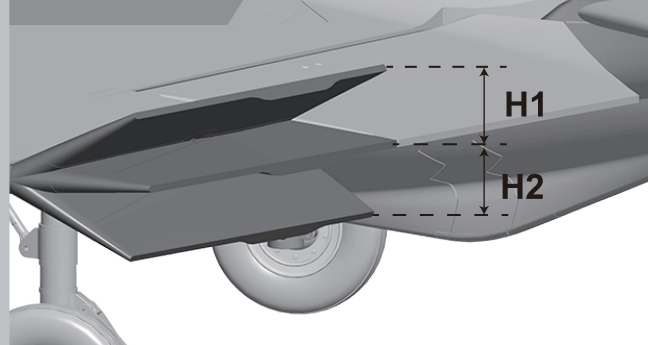
Flaps down



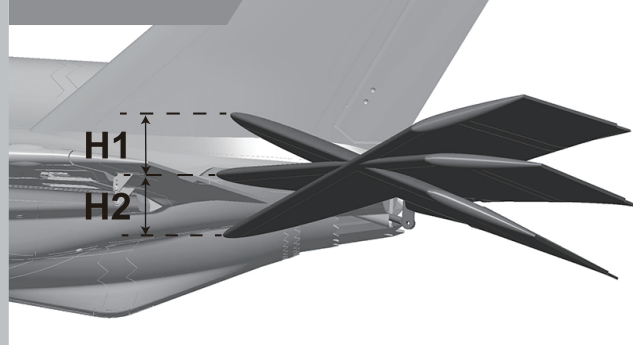
Dual Rates

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.

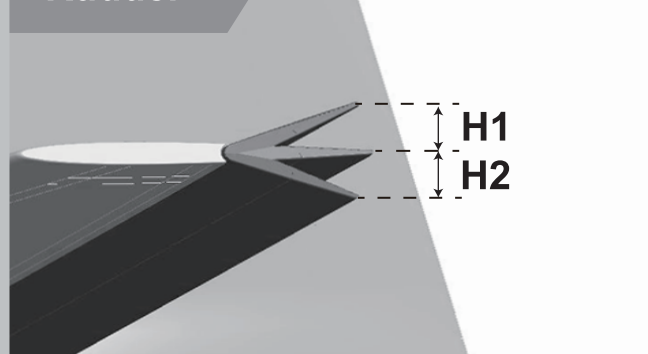
Aileron



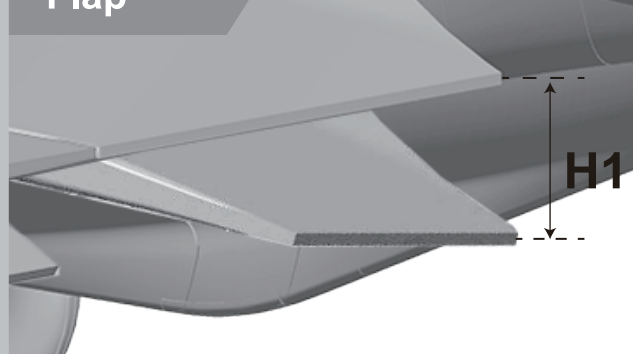
Elevator



Rudder



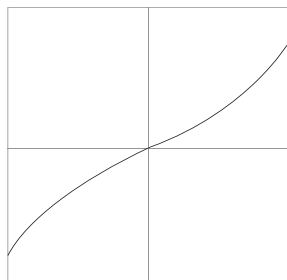
Flap



	Aileron (Measured closest to the fuselage)	Elevator (Measured closest to the fuselage)	Rudder (Measured from the bottom)	Flaps
Low Rate	H1/H2 30mm/30mm D/R Rate: 80%	H1/H2 31mm/31mm D/R Rate: 80%	H1/H2 17.5mm/17.5mm D/R Rate: 60%	H1 24.5mm
High Rate	H1/H2 38.5mm/38.5mm D/R Rate: 100%	H1/H2 35mm/35mm D/R Rate: 100%	H1/H2 24mm/24mm D/R Rate: 80%	H1 41mm

Remote Control EXP Setting Suggestion

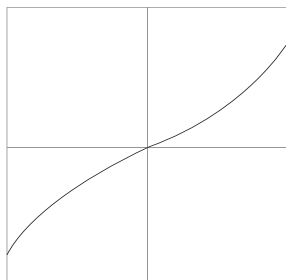
1. Aileron EXP curve is shown as below :



Futaba brand Remote Control : EXP A -30
EXP B -30

Spektrum brand Remote Control : EXPO 30% 30%

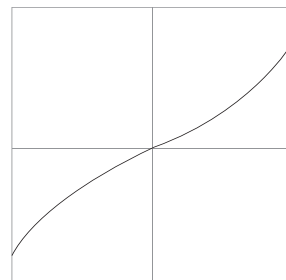
2. Elevator EXP curve is shown as below :



Futaba brand Remote Control : EXP A -30
EXP B -30

Spektrum brand Remote Control : EXPO 30% 30%

3. Rudder EXP curve is shown as below :



Futaba brand Remote Control : EXP A -30
EXP B -30

Spektrum brand Remote Control : EXPO 30% 30%

Important Flight Notes:

1. When F-35 110mm EDF model jet landing and flaps are developed, there may be a slight down-head. A Flap-to-Elevator Mix is required to maintain a good landing when flaps are deployed.

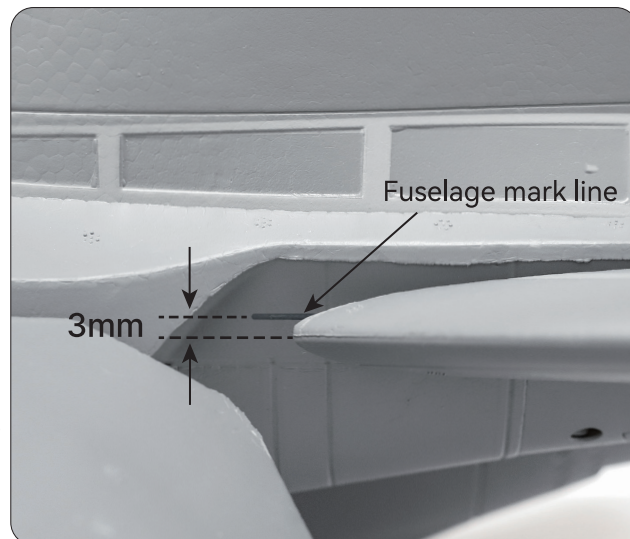
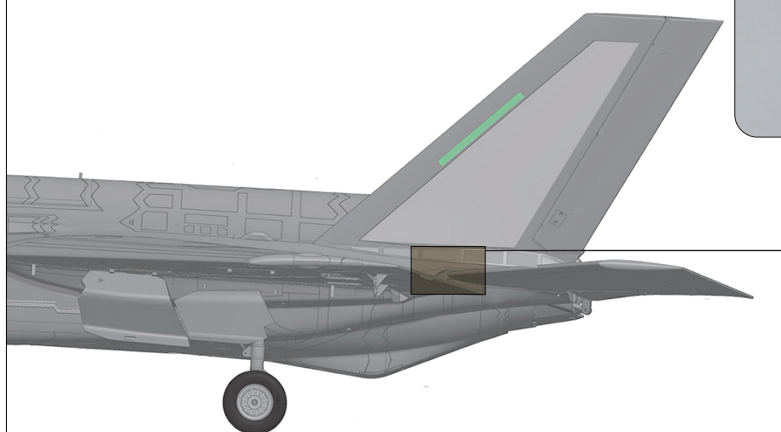
The detail is as below:

With flaps (Low Rate), mix 3 mm of Up Elevator.

With flaps (High Rate), mix 6 mm to Up Elevator.

2. Please refer to the right photo and adjust the flaps and elevator to the correct center position.

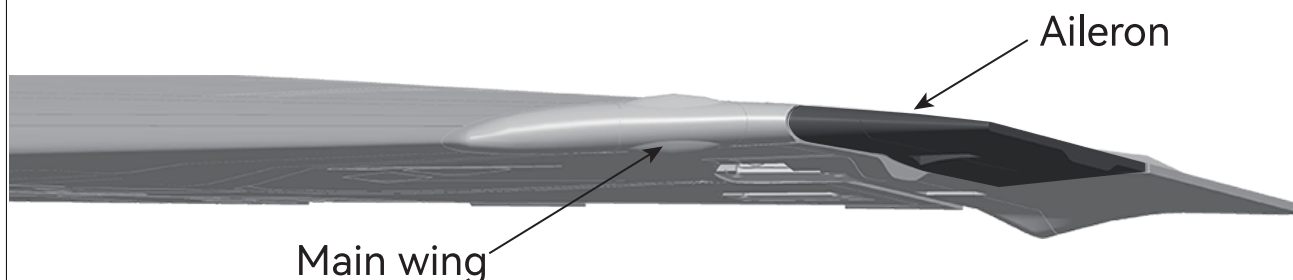
Distance from the leading edge of the horizontal tail root (at the forefront position) to the fuselage mark line: 3mm (Downward: 3mm)



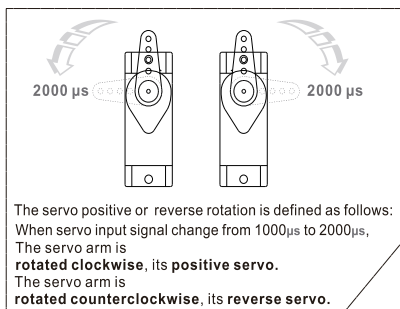
Refer to the airfoil contour in the illustration, and adjust the aileron to the correct neutral horizontal position to align the aileron surface with the airfoil profile of the main wing.

Keep your line of sight level with the side profile of the wing, and observe the overall airfoil curve from the wing root to the wing tip.

Slowly fine-tune the aileron angle until the upper and lower surfaces of the aileron flow naturally into the airfoil contour of the adjacent wing, forming a smooth, continuous curved surface with no breaks or steps.

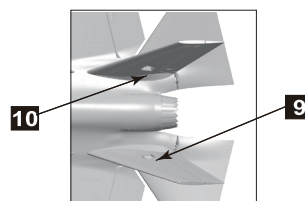
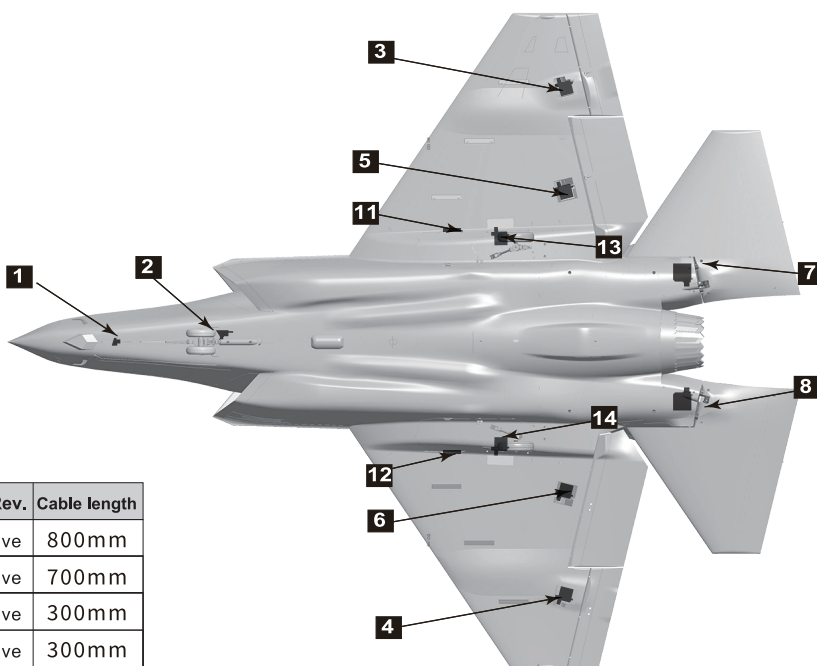


Servo Direction



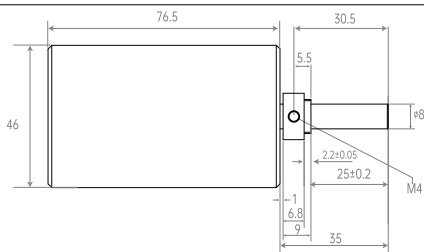
If you need to purchase another brand's servo, please refer to the following list to choose a suitable servo.

Position	Servo regulation	No.	Pos. / Rev.	Cable length
Nose cabin door	9g Digital-Hybrid	1	Positive	800mm
Nose gear steering servo	9g Digital-MG	2	Positive	700mm
Aileron(L)	17g Digital-MG	3	Positive	300mm
Aileron(R)	17g Digital-MG	4	Positive	300mm
Flap(L)	17g Digital-MG	5	Positive	100mm
Flap(R)	17g Digital-MG	6	Reverse	100mm
Elevator(L)	30g Digital-MG	7	Positive	200mm
Elevator(R)	30g Digital-MG	8	Reverse	200mm
Rudder(L)	17g Digital-MG	9	Positive	200mm
Rudder(R)	17g Digital-MG	10	Positive	200mm
Rear cabin front door (L)	9g Digital-Hybrid	11	Positive	100mm
Rear cabin front door (R)	9g Digital-Hybrid	12	Reverse	100mm
Rear cabin rear door (L)	9g Digital-Hybrid	13	Reverse	100mm
Rear cabin rear door (R)	9g Digital-Hybrid	14	Positive	100mm

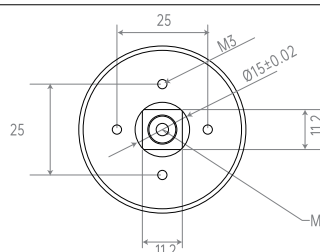


Motor Specification

4678-680KV
MI046781



Unit:mm



Item No.	Fan size	Motor specifications	Voltage (V)	Current (A)	Max power (W)	Thrust (g)	Efficiency (g/w)	Use ESC (A)	Weight (g)
171101001	110mm 12-Blade	4678-680KV	47 (12S)	97	4560	6900	1.52	130	832

