



FREEWING

MiG-29 Fulcrum V2

User Manual

Wingspan: 1257mm

Length: 1878mm

Empty Weight: 4350G[w/o Battery]



EN 1~11

中 12~22

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Freewing first established the Twin 80mm class of EDF jets with its popular F-14 Tomcat then A-10 Warthog, and now we are proud to announce the Freewing MiG-29 Fulcrum! Represented in 1/9 scale, this large aircraft is 1878mm (74") long with a 1257mm (50") wingspan, powered by dual inrunner 80mm EDF power systems.

Computer designed and hand crafted, each Freewing MiG-29 represents the highest level of engineering for a modern Plug-And-Play EDF jet in 2020. Constructed from EPO foam, carbon, wood, aluminum, and other materials, the Freewing MiG-29 is optimized for high performance and superb scale handling. Its wide 50" wingspan and lifting body design provides gentle flight characteristics. Large flaps and suspension landing gear give pilots confident operation on grass airfields. An accurate overall outline, scale ordnance on removable pylons, and articulating landing gear doors enhance the model's scale fidelity. Twist-and-Turn main retracts provide improved aerodynamics, and screw-less quick release assembly gets modelers into the air quickly!

The Freewing MiG-29's uses our popular 80mm Inrunner power system that is proven across thousands of Freewing jets worldwide. Rapid acceleration, enhanced acrobatic envelope, and efficient energy consumption are key features of the Freewing MiG-29 Fulcrum. With high quality flight batteries, the MiG-29 can achieve airspeeds approaching 205km/h in level flight!

⚠ 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.

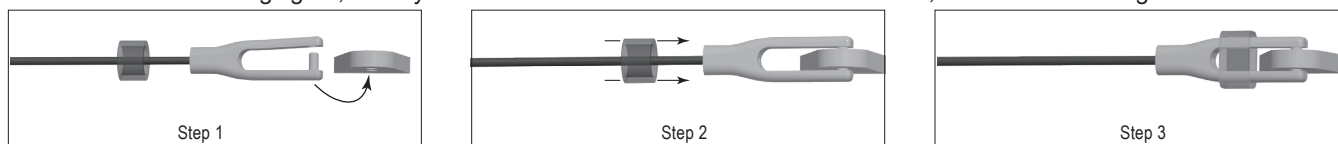
Note:

- 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.

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.





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.

Standard Version

Wingload: 128.7 g/dm²
 Wing Area: 45.6 dm²
 Motor: 3658-2150KV I/R Motor ×2
 Servo: 30g MG digital servo ×2 17g MG digital servo ×7
 9g MG digital servo ×2
 ESC: Dual100A with 8A UBEC ×1
 Ducted fan: 80mm 12-blade fan ×2
 Weight: 4350g (w/o Battery)
 Other: Gyro ×1

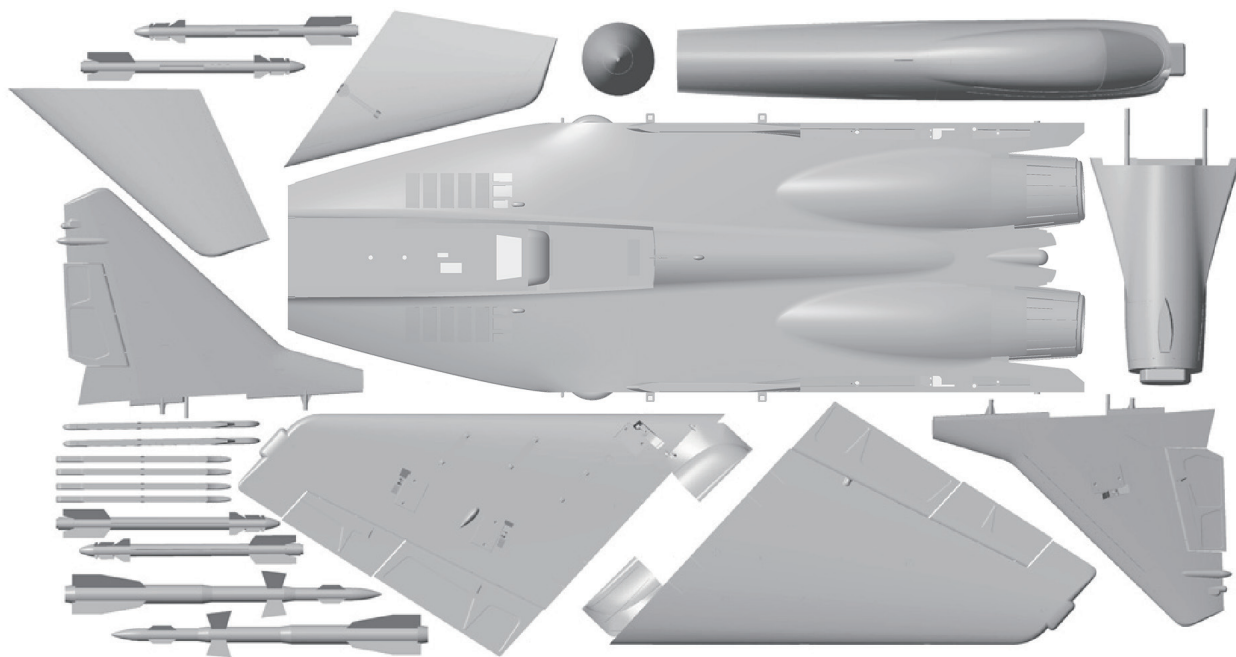
Thrust Vectoring Version

Wingload: 136 g/dm²
 Wing Area: 45.6 dm²
 Motor: 3658-2150KV I/R Motor ×2
 Servo: 30g MG digital servo ×2 9g MG digital servo ×6
 17g MG digital servo ×7
 ESC: Dual100A with 8A UBEC ×1
 Ducted fan: 80mm 12-blade fan ×2
 Weight: 4700g (w/o Battery)
 Other: Gyro ×2

Other features

Material: EPO
 Aileron: Yes Flap: Yes
 Elevator: Yes Rudder: Yes
 Landing gear: Electric Landing Gear
 Cabin door: Nose gear & Rear cabin door
 Scale LED lights
 Scale Pilot figure ×1
 Li-Po Battery: 6S 22.2V 5000-6000mAh ×2

Package List



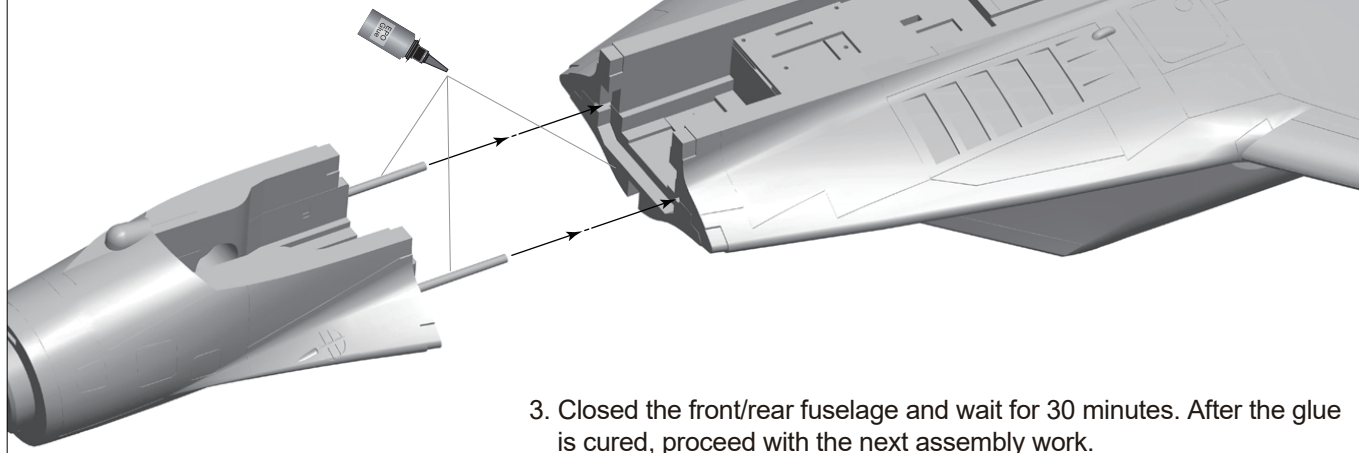
Different equipment include different spareparts. Please refer to the following contents to check your sparepart list.

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	Missiles	✓	✓

No.	Name	PNP	ARF Plus
6	Cockpit and Nose cone	✓	✓
7	Manual	✓	✓
8	Pushrod	✓	✓
9	Non-slipmat	✓	✓
10	Screw and Carbon tube	✓	✓

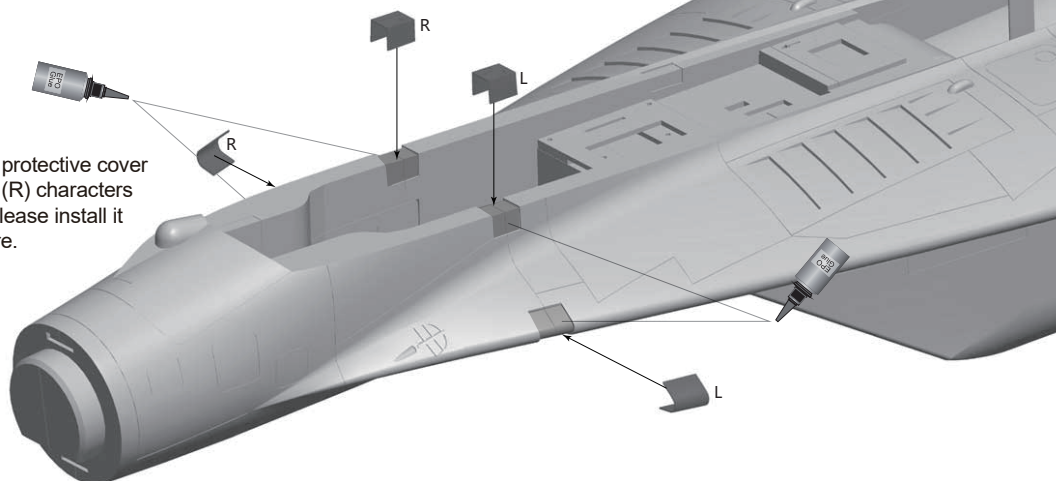
Install Fuselage

1. Apply glue evenly to the exposed carbon fiber tube surface of the front fuselage.
2. Apply glue evenly on the dark area of rear fuselage.



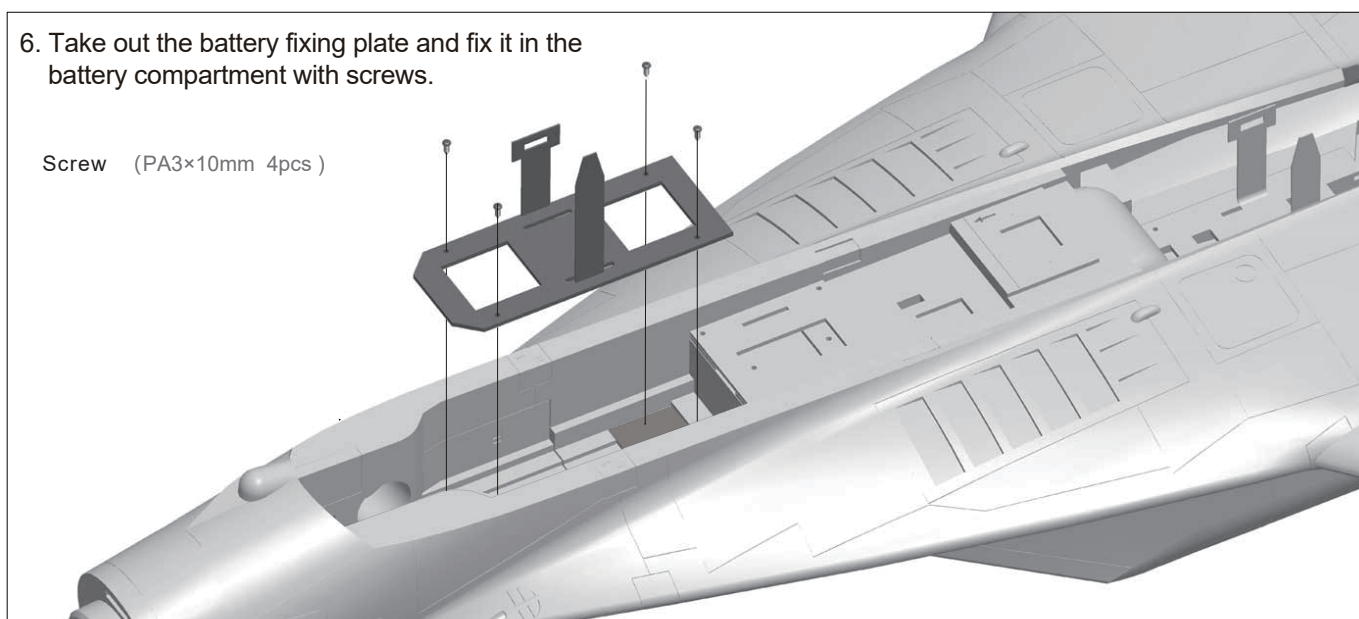
4. Take out the plastic protective cover in the accessory bag.
5. Use glue to glue these plastic parts to the position shown in the figure.

Note: The inside of the plastic protective cover is marked with left (L) and right (R) characters to distinguish its use position, please install it correctly according to the picture.



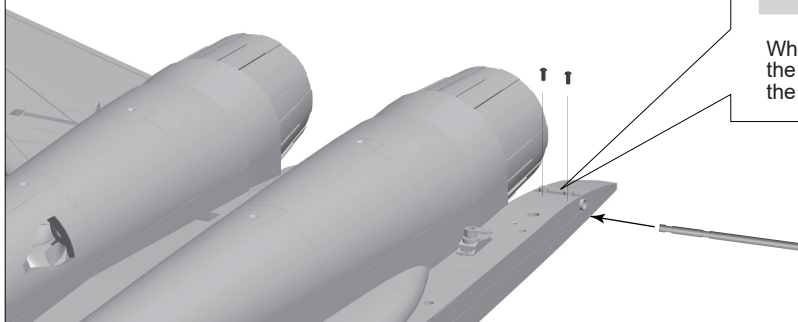
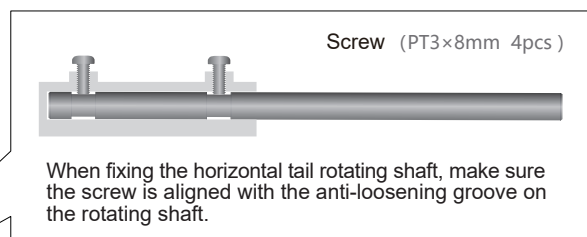
6. Take out the battery fixing plate and fix it in the battery compartment with screws.

Screw (PA3×10mm 4pcs)

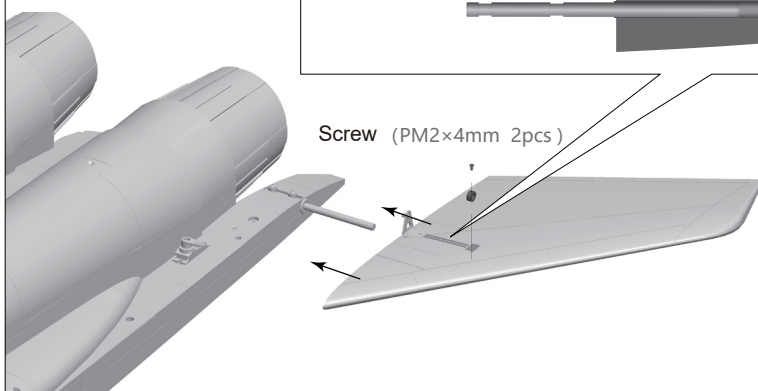
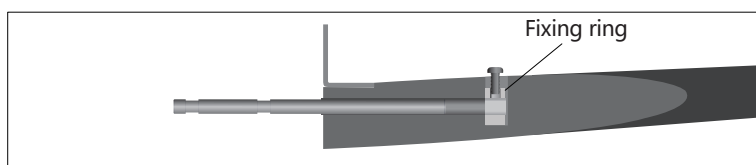


Install Horizontal Stabilizer

1. Turn over the fuselage, and let the belly is up. Then begin to install the full-elevator horizontal tail.
2. Insert the full-elevator rotating shaft into the fixing hole, and fix it with screws.
3. Put the horizontal tail which installed the elevator horn into the rotating shaft and fix it with the fixing ring.
4. Follow the above steps to install the full elevator horizontal tail on the other side.



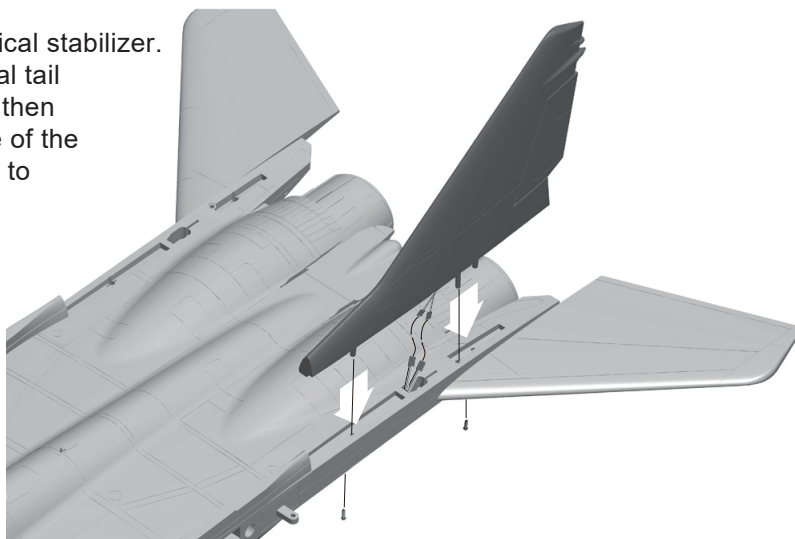
1. First lock the screw into the fixing ring, and lock it into half of the depth.
2. Place the retaining ring in the horizontal tail groove.
3. Put the horizontal tail into the rotating shaft, adjust the position of the fixing ring, and finally tighten the screw.



Install Vertical Stabilizer

1. Put on the fuselage, and take out the vertical stabilizer.
2. As shown in the photo, connect the vertical tail servo cable and the extension cable, and then insert the vertical tail into the fixed groove of the fuselage. Screw in the screws from below to secure the vertical Stabilizer.
3. Repeat the above steps to install the vertical tail on the other side.

Screw (PA3×10mm 4pcs)



Install Main Wing

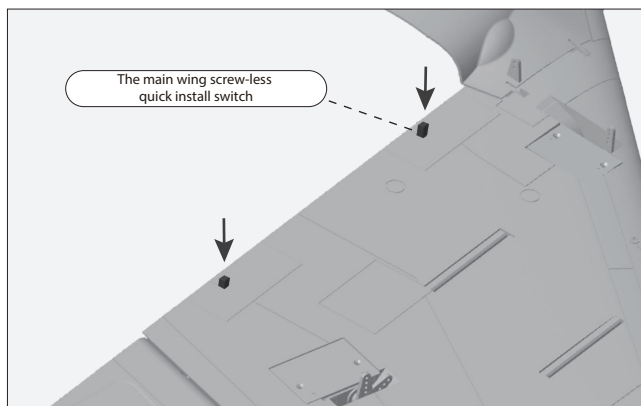
As the photo show: 1. Press the main wing screw-less quick install switch to unlock it ;

- 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:

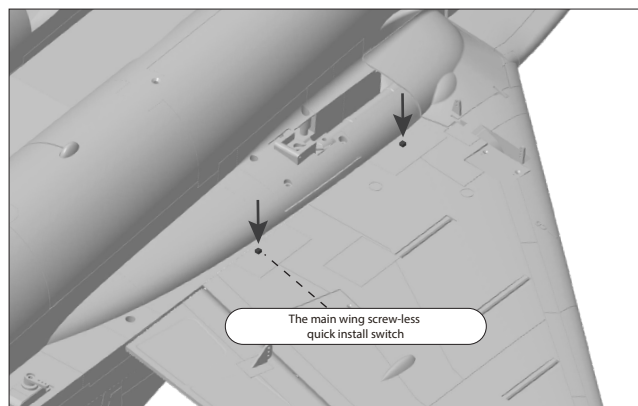
Press the main wing screw-less quick install switch to the bottom and release it. The button pops up to the highest position, indicating that the main wing has been unlocked and can be easily removed and installed.



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.

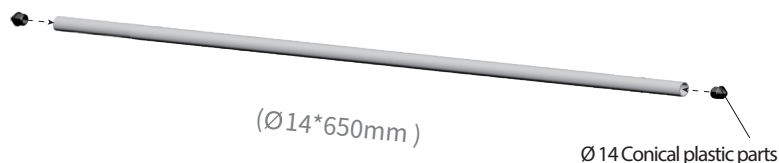


As the photo show:

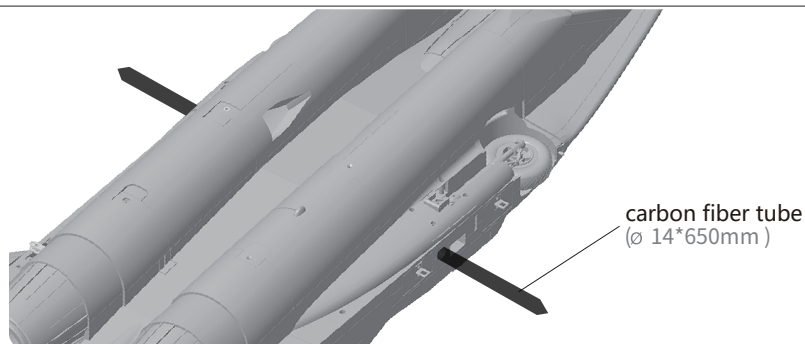
1. Use glue to fix the 【 Conical plastic part 】 on two carbon tubes respectively;

Carbon tube (Ø14*650mm)

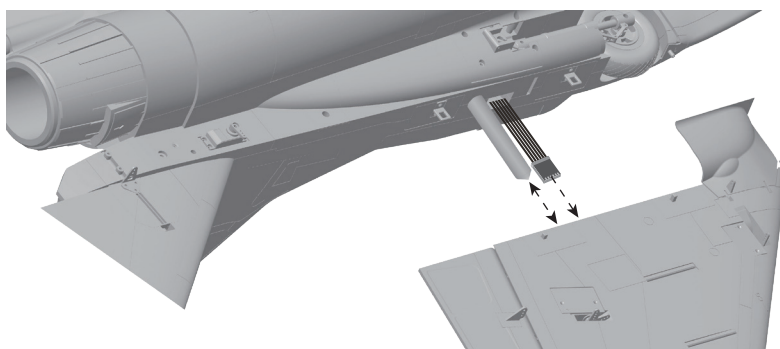
Conical plastic parts (Ø14mm)



2. Insert carbon fiber tube A and carbon fiber tube B into the fuselage respectively

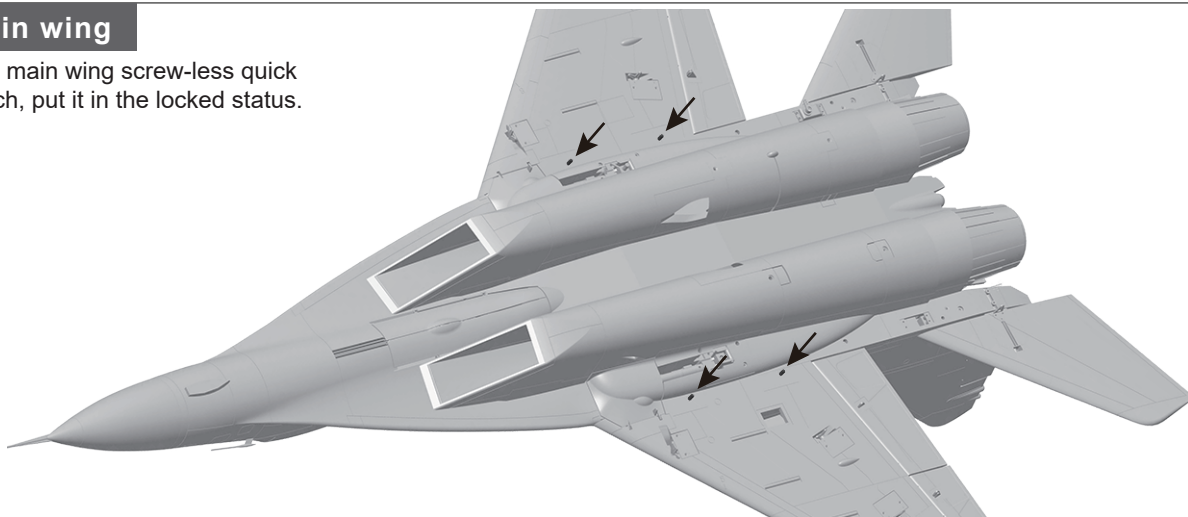


3. Align the main wing carbon tube with the fuselage, remove the ribbon cable from one end of the fuselage, connect it to the main wing slot, and push the main wing into the installation position of the fuselage; (Repeat this step for the other main wing)

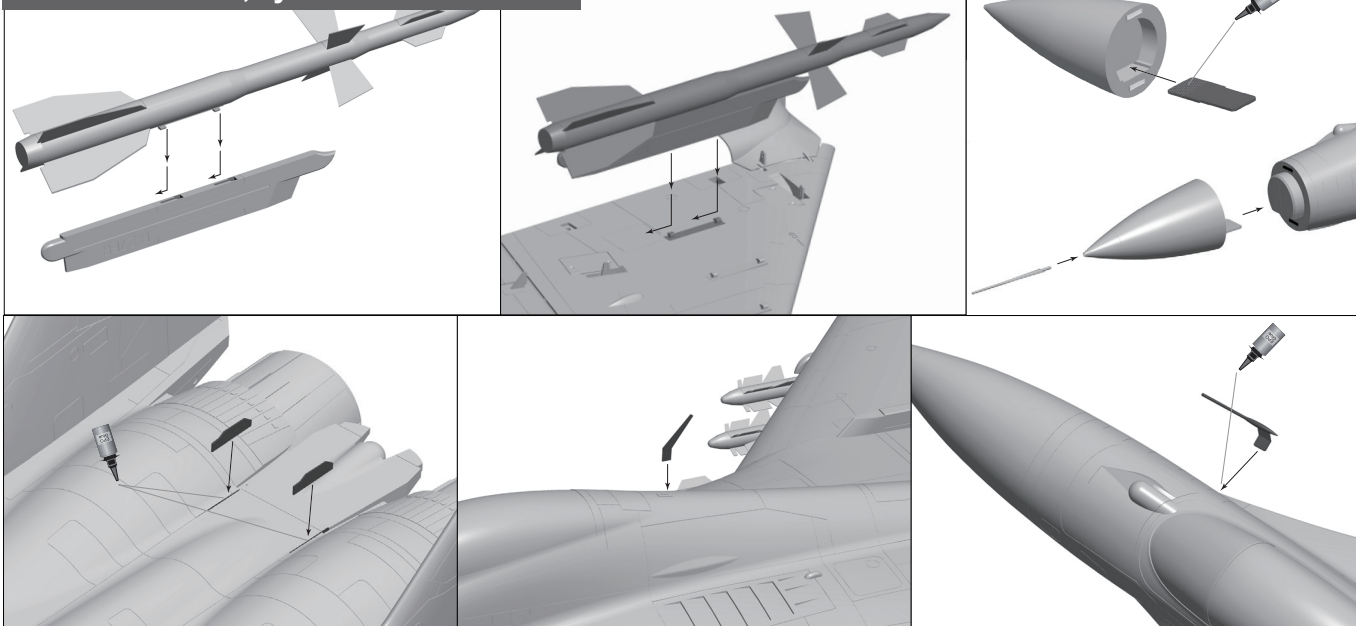


Install Main wing

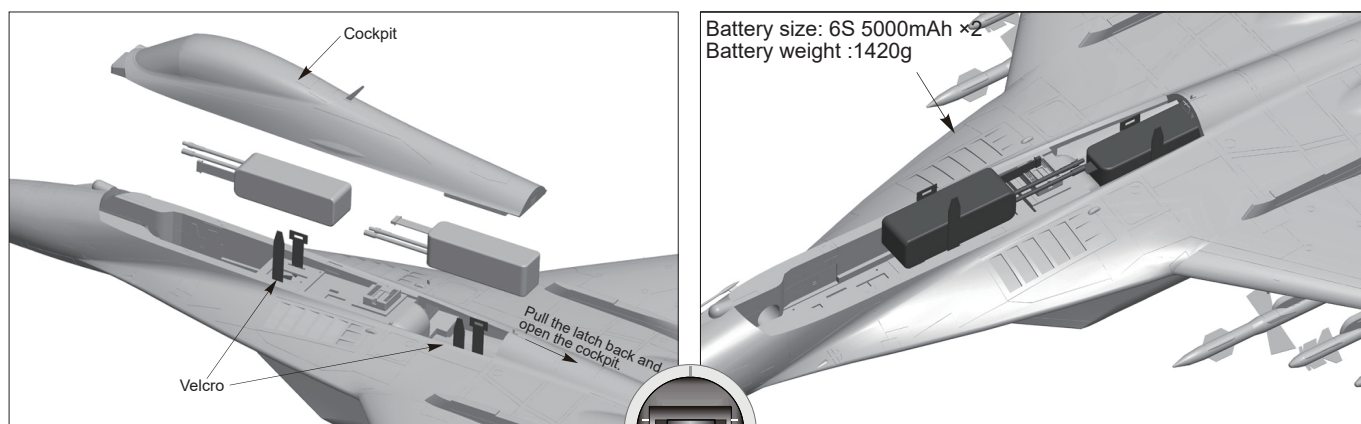
4. Press 4pcs main wing screw-less quick install switch, put it in the locked status.



Install Missiles, Pylons and Antenna



Install Battery



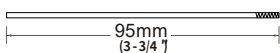
Before connecting the battery and receiver, please switch on the transmitter power and make sure the throttle stick is in the lowest position. Bind your receiver to your transmitter according to your transmitter's instruction manual.



We recommend the following LiPo battery:
6S 22.2V 5000mAh~6S 22.2V 5200mAh
 Discharge rate of C $\geq$ 35C

Pushrod instructions

Nose gear steering pushrod length

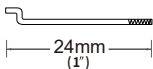


Pushrod diameter Ø1.5mm

Nose gear steering pushrod mounting hole

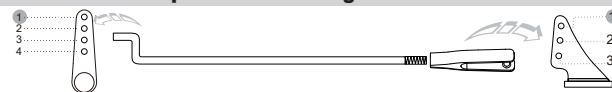


Nose cabin door pushrod length

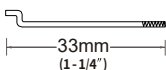


Pushrod diameter Ø1.2mm

Nose cabin door pushrod mounting hole



Rear cabin door pushrod length

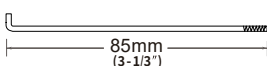


Pushrod diameter Ø1.2mm

Rear cabin door pushrod mounting hole



Rudder pushrod length

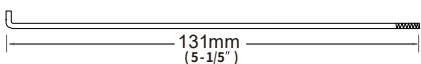


Pushrod diameter Ø1.5mm

Rudder pushrod mounting hole



Elevator pushrod length

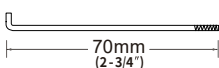


Pushrod diameter Ø1.5mm

Elevator pushrod mounting hole



Aileron pushrod length

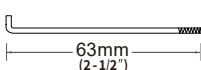


Pushrod diameter Ø1.5mm

Aileron pushrod mounting hole



Flap pushrod length



Pushrod diameter Ø1.5mm

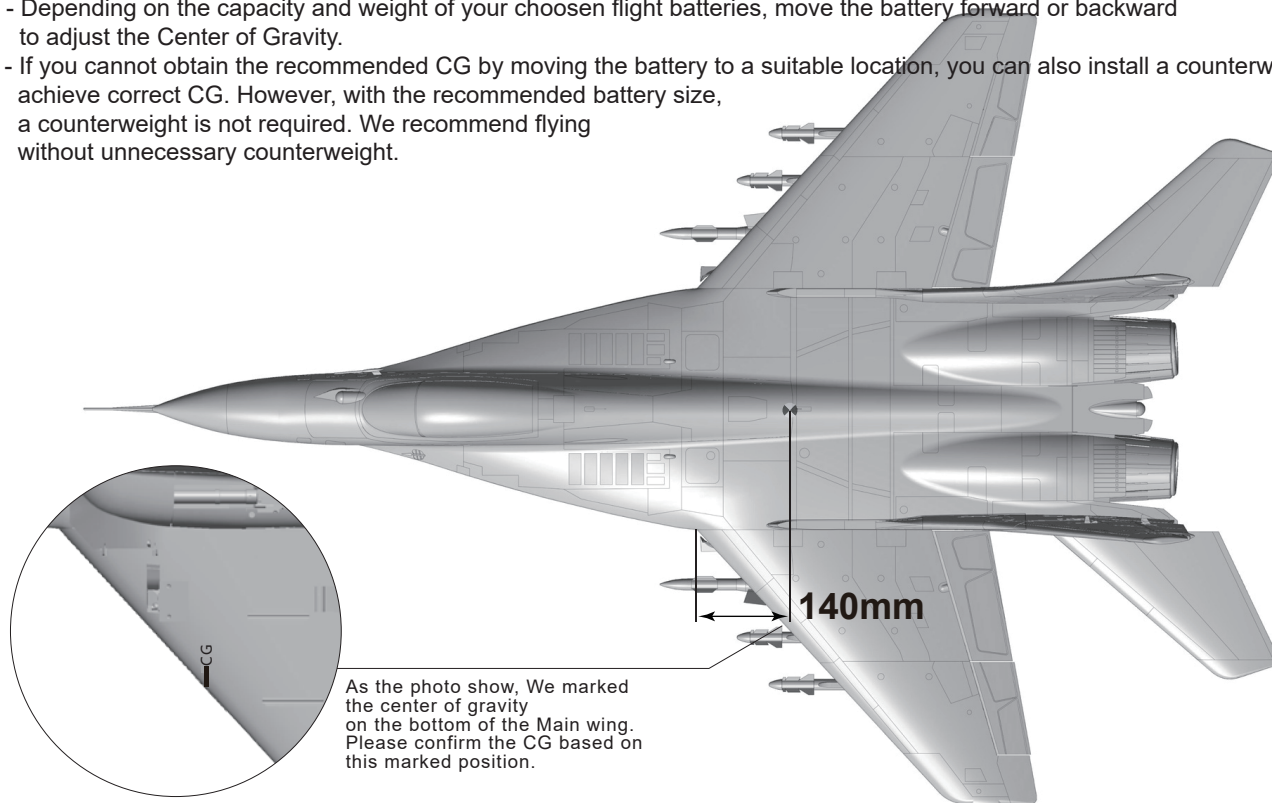
Flap pushrod mounting hole



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.

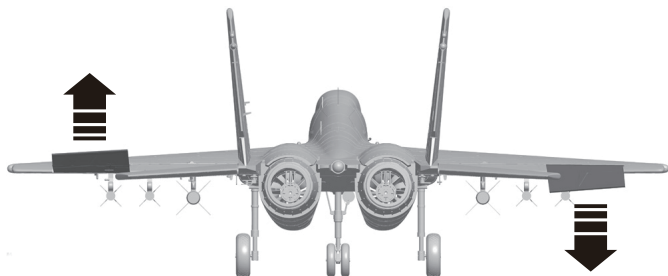
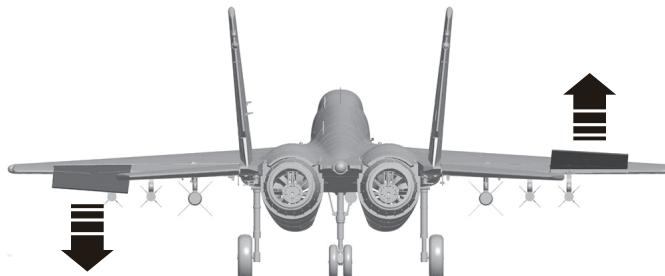
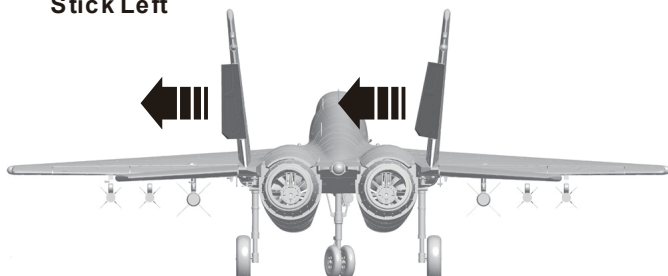
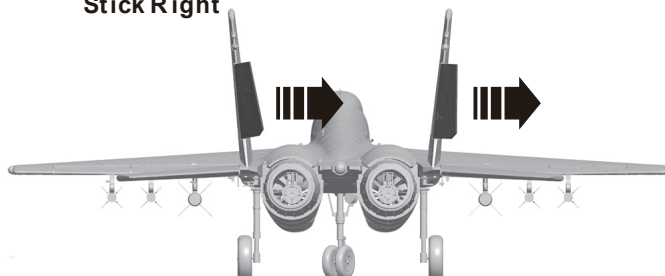
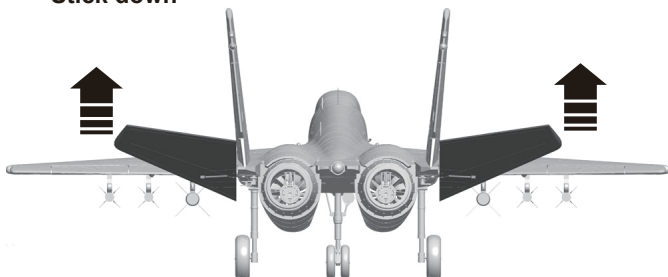
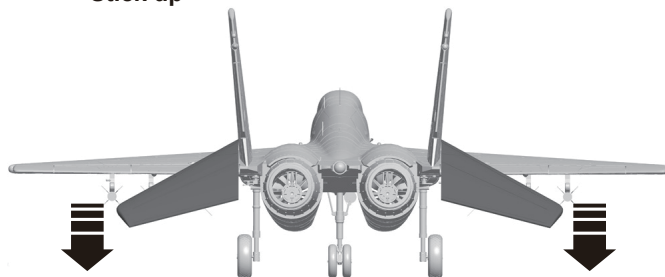
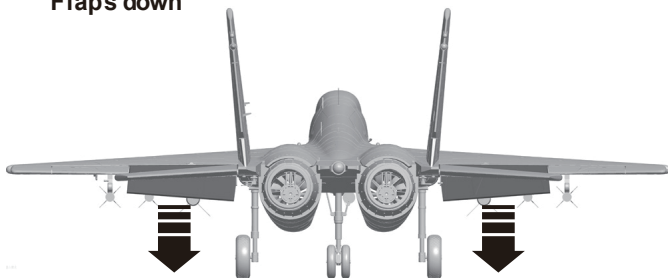
- Depending on the capacity and weight of your chosen flight batteries, move the battery forward or backward to adjust the Center of Gravity.
- If you cannot obtain the recommended CG by moving the battery to a suitable location, you can also install a counterweight to achieve correct CG. However, with 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.

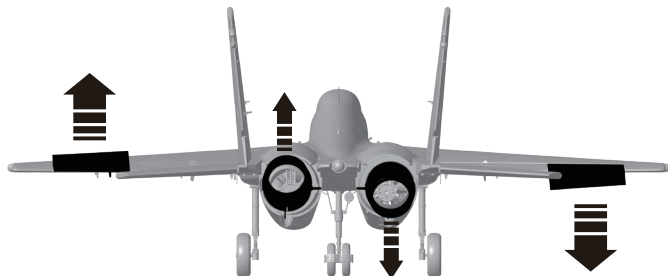
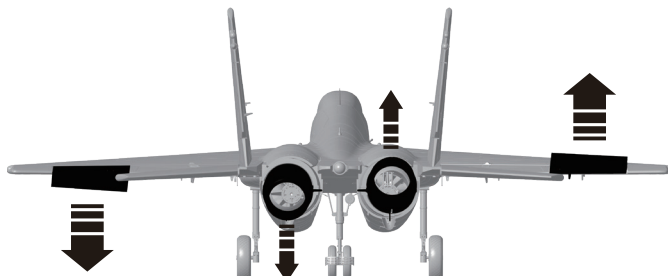
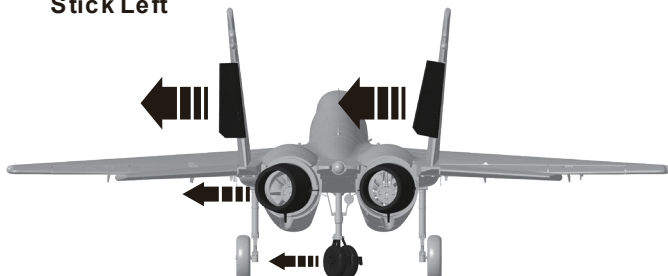
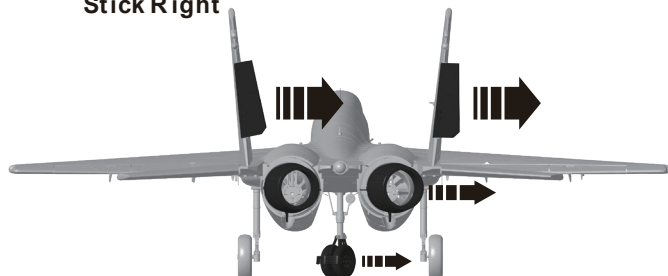
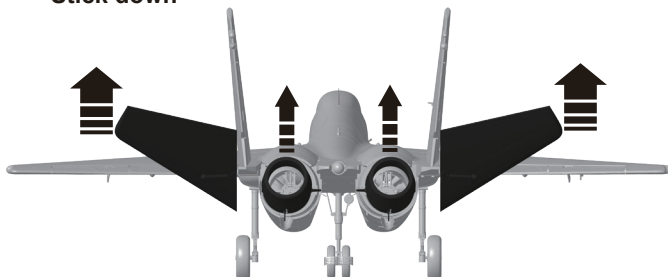
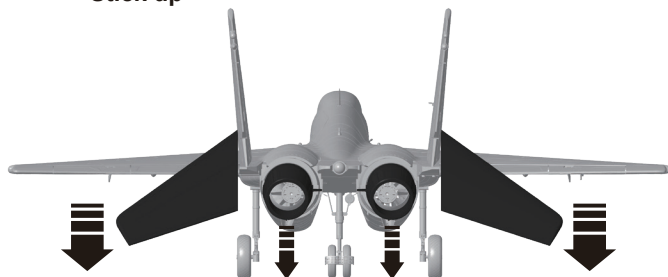
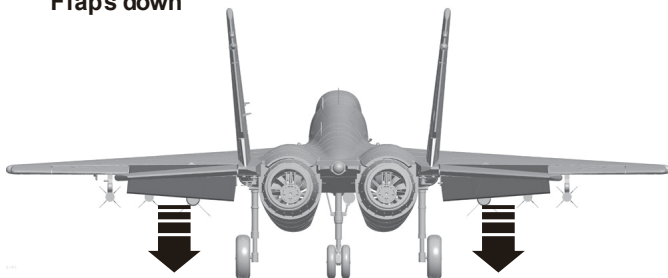
Standard Version Control Direction Test

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****Rudder****Stick Left****Stick Right****Elevator****Stick down****Stick up****Flaps****Flaps down**

Thrust Vectoring Version Control Direction Test

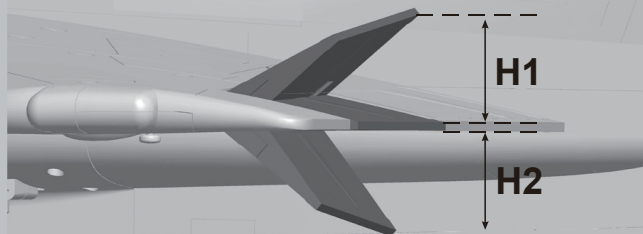
After installed the plane, before flying, we need a fully charged battery and connect to the ESC, then use radio to test and check that every control surface work properly.

Aileron**Stick Left****Stick Right****Rudder****Stick Left****Stick Right****Elevator****Stick down****Stick up****Flaps****Flaps down**

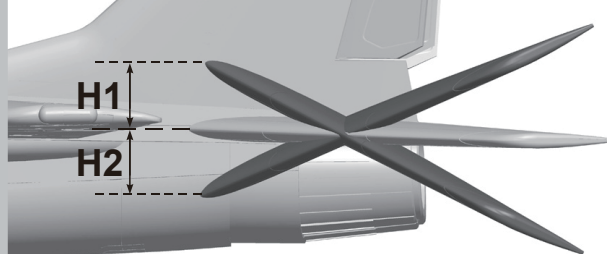
Dual Rates

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.

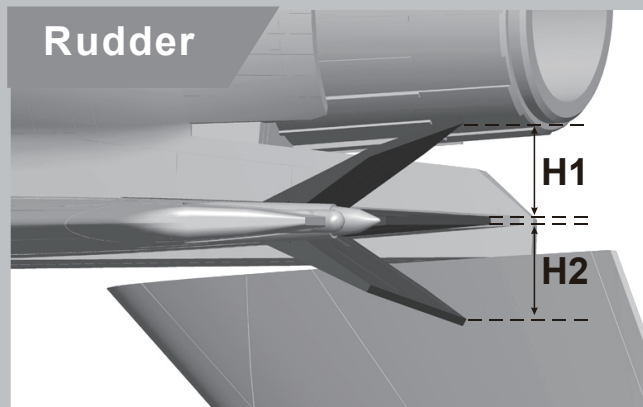
Aileron



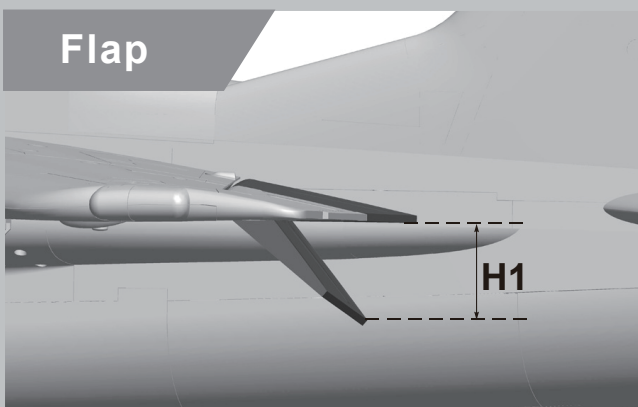
Elevator



Rudder

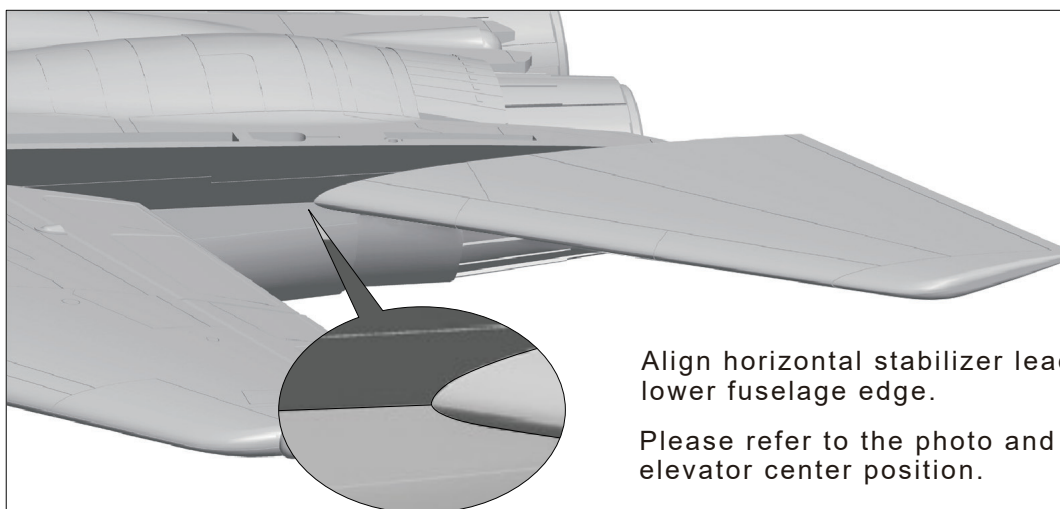


Flap



	Aileron (Measured closest to the fuselage)	Elevator (Measured closest to the fuselage)	Rudder (Measured from the bottom)	Flaps
Low Rate	H1/H2 38mm/38mm D/R Rate: 80%	H1/H2 34mm/34mm D/R Rate: 80%	H1/H2 33mm/33mm D/R Rate: 70%	H1 22mm
High Rate	H1/H2 43mm/43mm D/R Rate: 100%	H1/H2 39mm/39mm D/R Rate: 100%	H1/H2 36mm/36mm D/R Rate: 80%	H1 39mm

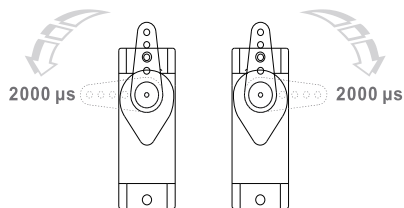
The Elevator Center Position



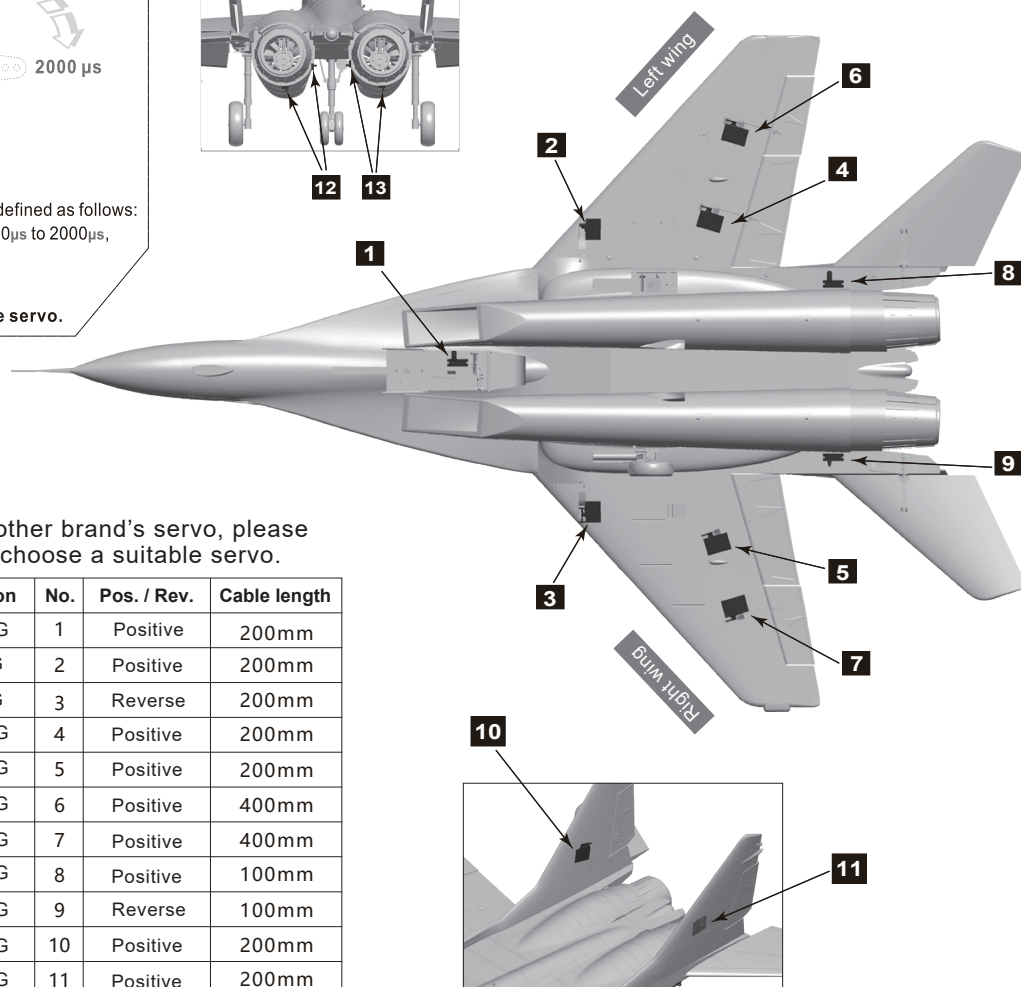
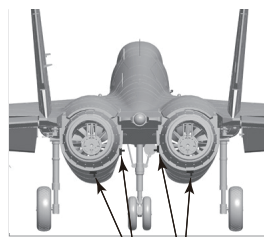
Align horizontal stabilizer leading edge with lower fuselage edge.

Please refer to the photo and set the correct full elevator center position.

Servo Direction



The servo positive or reverse rotation is defined as follows:
When servo input signal change from 1000μs to 2000μs,
The servo arm is
rotated clockwise, its positive servo.
The servo arm is
rotated counterclockwise, its reverse servo.



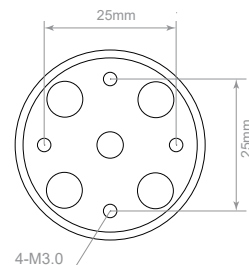
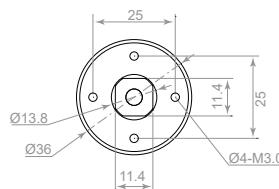
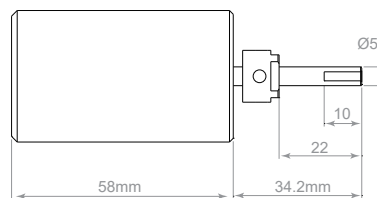
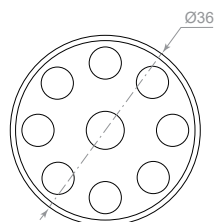
If you need to purchase another brand's servo, please refer to the following list to choose a suitable servo.

Position	Servo regulation	No.	Pos. / Rev.	Cable length
Nose gear steering servo	17g Digital-MG	1	Positive	200mm
Rear cabin door(L)	9g Digital-MG	2	Positive	200mm
Rear cabin door(R)	9g Digital-MG	3	Reverse	200mm
Flap(L)	17g Digital-MG	4	Positive	200mm
Flap(R)	17g Digital-MG	5	Positive	200mm
Aileron(L)	17g Digital-MG	6	Positive	400mm
Aileron(R)	17g Digital-MG	7	Positive	400mm
Elevator(L)	17g Digital-MG	8	Positive	100mm
Elevator(R)	17g Digital-MG	9	Reverse	100mm
Rudder(L)	17g Digital-MG	10	Positive	200mm
Rudder(R)	17g Digital-MG	11	Positive	200mm

Vector(L)	9g Digital-MG ⁷²	12	Positive	300mm
Vector(R)	9g Digital-MG ⁷²	13	Positive	300mm

Motor Specification

#MOI36585
3658-2150KV



Unit:mm

Item No.	Fan size	Motor specifications	Voltage (V)	Current (A)	Max power (W)	Thrust (g)	Efficiency (g/w)	Speed (rpm)	Weight (g)
E72314	80mm 12-Blade	3658-2150KV	22.2	95	2100	3550	1.7	47700	340



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