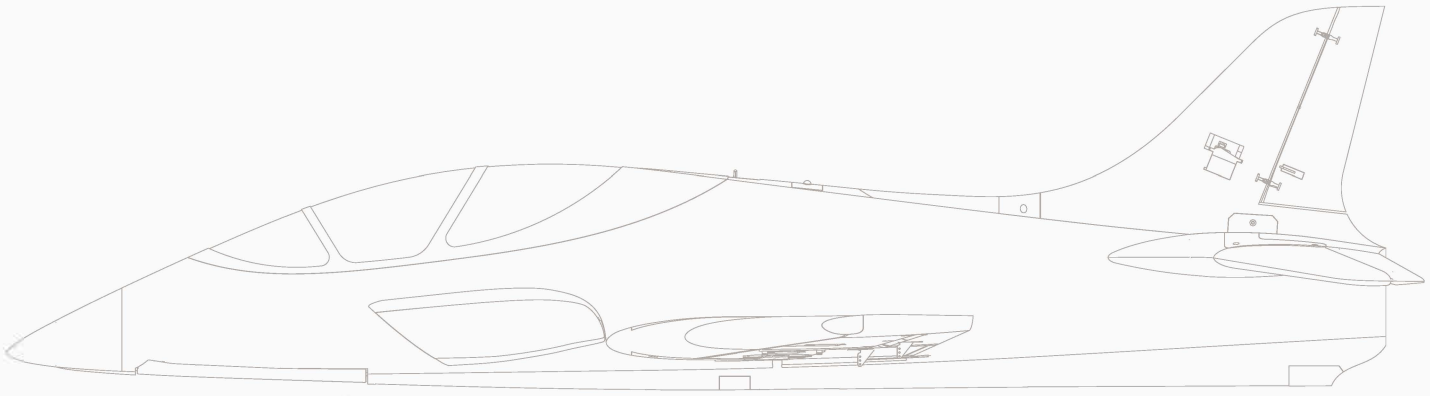
www.freewing-model.com

Avanti S

USER MANUAL

WINGSPAN:1236MM (48.7 in)
LENGTH:1300MM (51.2 in)

80mm EDF Sport Jet
DESIGN APPROVED BY SEBASTIANO SILVESTRI



MADE IN CHINA

Introduction

Thank you for purchasing our Freewing 80mm EDF Avanti S sport jet. This jet was originally designed after the famous Italian F3A world champion Sebart fiberglass turbo jet. We received Sebart's authorization, and design approval from Sebastiano Silvestri and redesigned it as a smaller version electric powered sport jet so more customers could enjoy this amazing airplane.

New Avanti S is constructed using new EPO material. Its length is 1300mm and its wingspan is 1236mm. It also utilizes a multi plug control board for easier assembly and disassembly and easier to transport . Coupled with a new Freewing 80mm 12-blade EDF power system with 100A ESC this airplane will deliver a strong enjoyable flight.

Avanti S has excellent flight stability and easily performs all F3A aerobatics, coupled with great slow speed characteristics allowing the pilot easy gentle landings. The Avanti S electric sport jet is great for pilots who love aerobatics, as well as an excellent primary EDF jet trainer .

⚠ **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.

Precautions

1. This is not a toy! Operators should have some basic experience. Beginners should operate only under the guidance of a professional instructor.
2. Before beginning assembly, please read through the instructions and carefully follow them throughout the build.
3. Freewing and it's vendors will not be held responsible for any losses due to improper assembly and operation.
4. Model airplane operators must be at least 14 years of age.
5. This airplane is made of EPO foam material, covered with surface spray paint. Don't use chemicals to clean as it may cause damage.
6. You should avoid flying in areas such as public places, areas with high voltage power lines, nearby highways, airports or in other areas where laws and regulations clearly prohibit flight.
7. Do not fly in bad weather conditions, including thunderstorms, snow, etc...
8. Lipo batteries should be properly stored in a fire proof container and be kept at a minimum of 2M distance away from flammable or explosive materials.
9. Damaged or scrap batteries must be properly discharged before disposal or recycling to avoid spontaneous combustion and fire.
10. At the Flying Field, properly dispose of any waste you have created, don't leave or burn your waste.. Ensure that your throttle is in the low position and that your radio is turned on before connecting the Lipo battery.
11. Ensure that the throttle is in the lowest position and transmitter switch on, before connecting a Lipo Battery to the ESC of the aircraft.
12. Do not try to catch the airplane while in flight or during landing. Wait for the airplane to come to a complete stop before handling.

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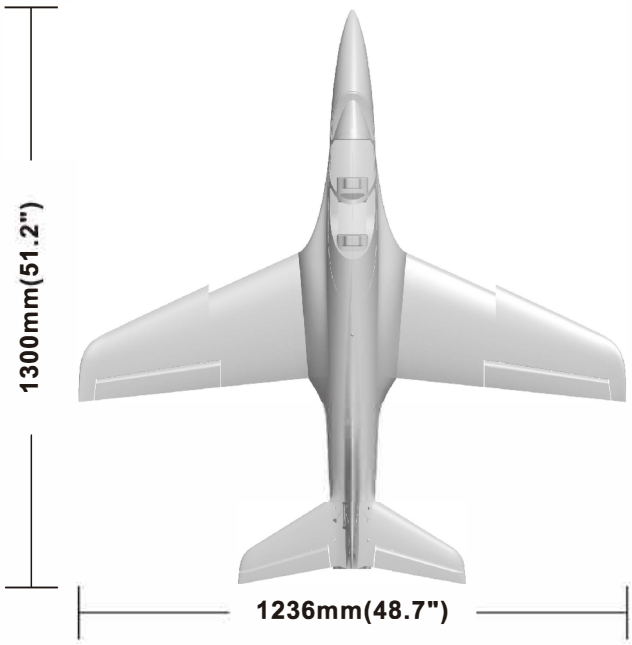
Product basic information



Standard version

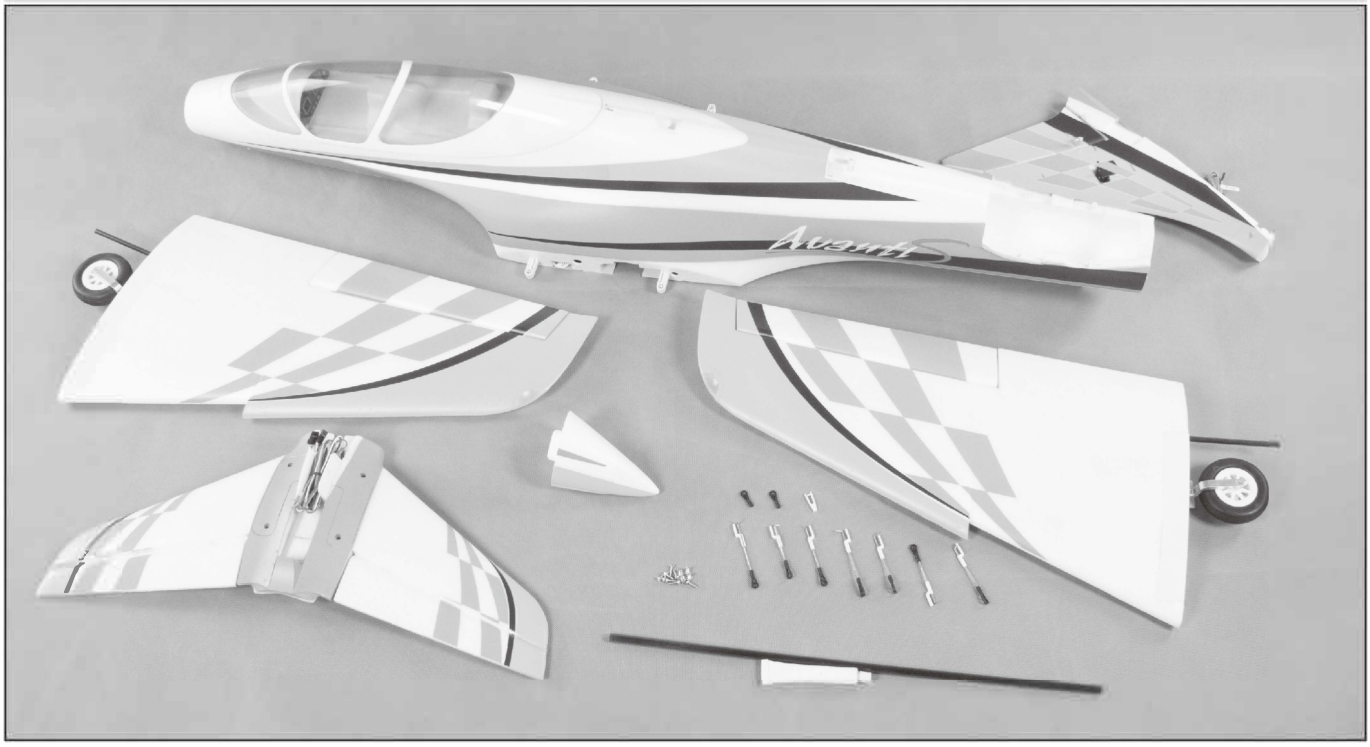
Wing loading : 93.5g/dm^2
Motor : 3530-1850KV brushless outrunner motor.
Ducted fan : 80mm 12-blade ducted fan
ESC : 100A brushless ESC UBEC 5A.
Servo : 9g digitalmetal gear servo (8pcs)
Weight : 1920g(w/o Battery).
Thrust : 3300g.

Other features

- Electric retracts.
-New aluminum shock absorbing landing gear.
-Nose and main landing gear hatch doors.
-LED lights.

⚠ Note: The parameters stated here are derived from test results using our accessories.
If you use other accessories, the test results will differ. We cannot provide technical support if you have a problem when using other accessories.

Package list



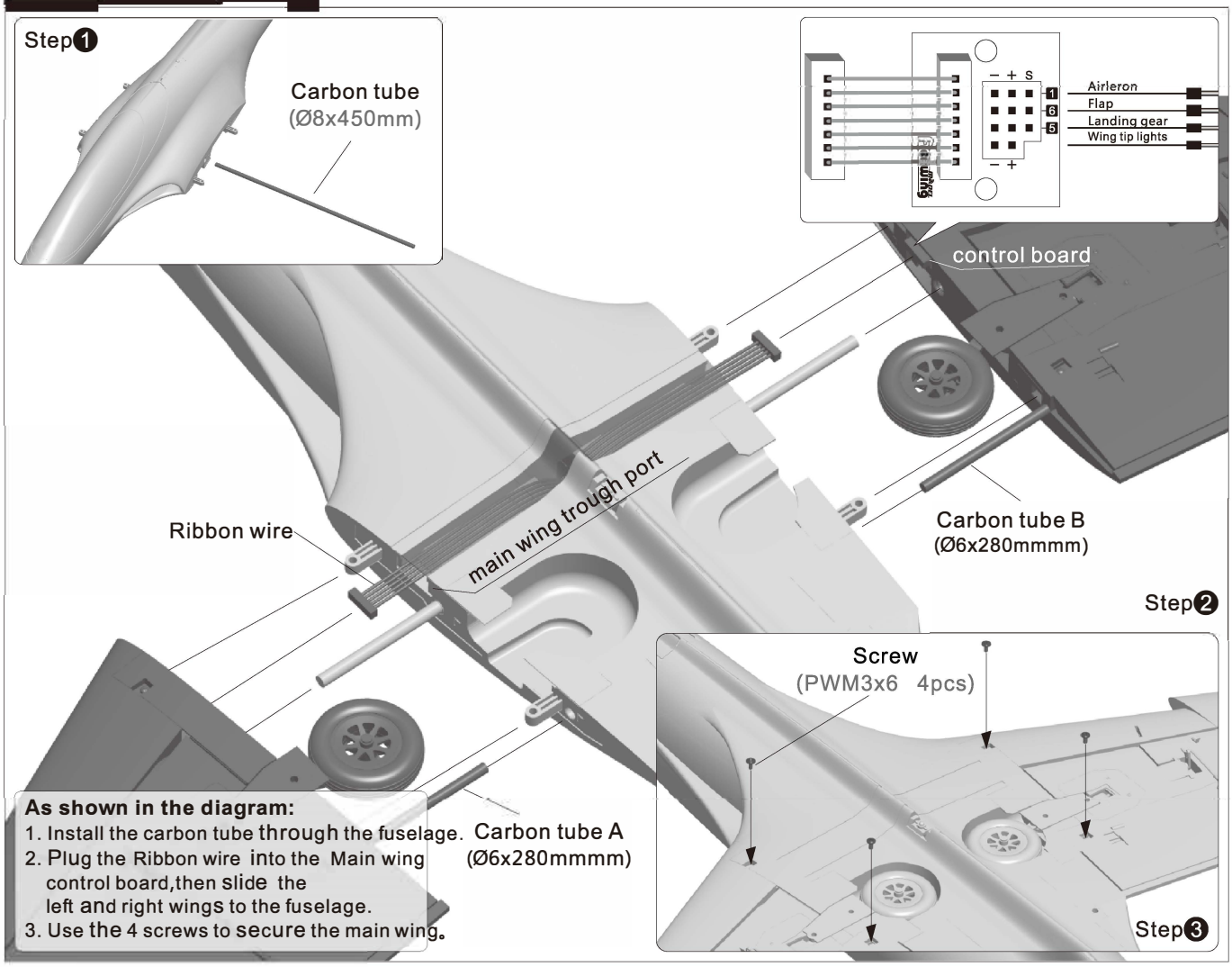
Different types of kits will come with certain specific parts. Refer to the list of parts for your type of kit in the chart below.

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

No.	Name	PNP	ARF Plus	Airframe
6	Linkage Set	√	√	√
7	Carbon tube	√	√	√
8	Carbon tube	√	√	√
9	Glue	√	√	√
10	Screws	√	√	√

PNP Assembly instructions

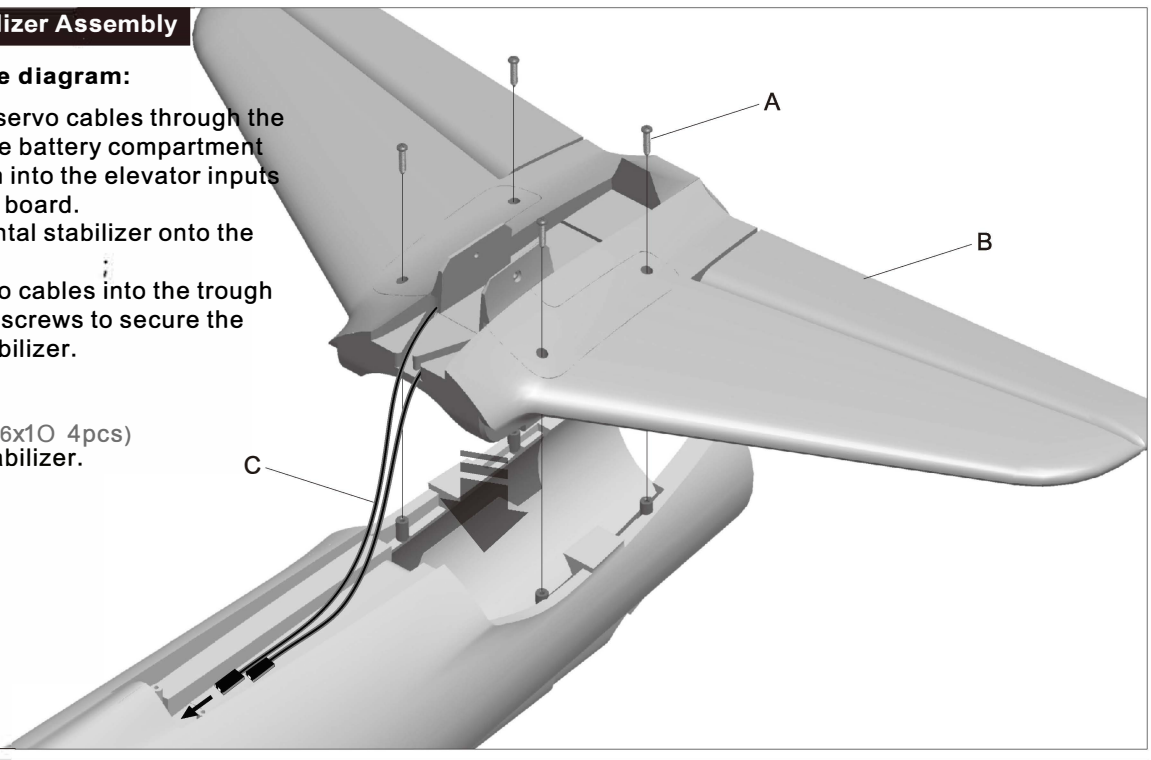
Main wing Assembly



As shown in the diagram:

1. Install the carbon tube through the fuselage.
2. Plug the Ribbon wire into the Main wing control board,then slide the left and right wings to the fuselage.
3. Use the 4 screws to secure the main wing.

Horizontal stabilizer Assembly



As shown in the diagram:

1. Feed the two servo cables through the fuselage to the battery compartment and plug them into the elevator inputs on the control board.
2. Fit the Horizontal stabilizer onto the fuselage.
3. Feed the servo cables into the trough and use the 4 screws to secure the horizontal stabilizer.

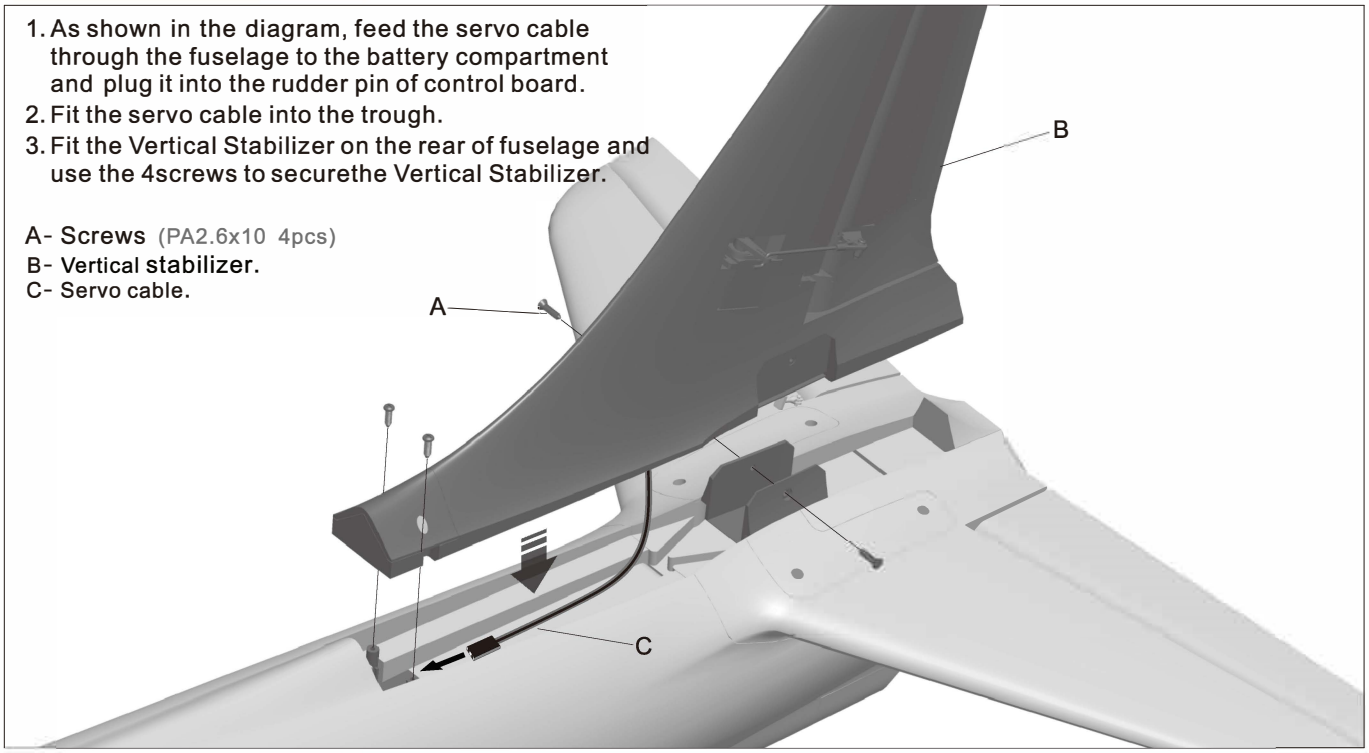
A- Screws (PA2.6x1O 4pcs)
B- Horizontal stabilizer.
C- Servo cable.

PNPAssembly instructions

Vertical Stabilizer Assembly

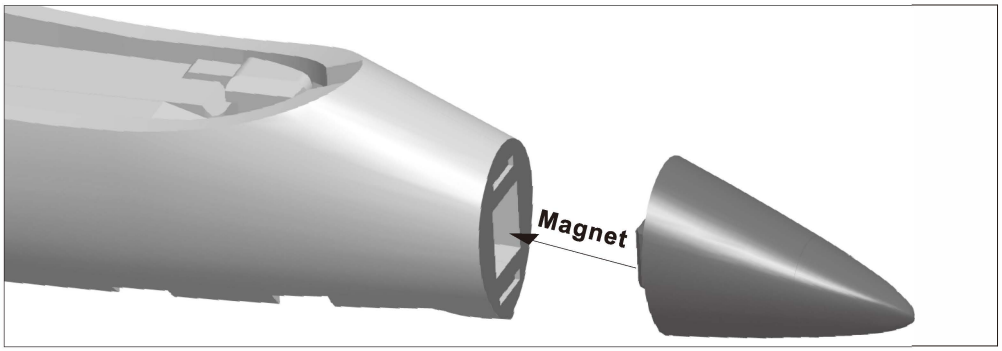
1. As shown in the diagram, feed the servo cable through the fuselage to the battery compartment and plug it into the rudder pin of control board.
2. Fit the servo cable into the trough.
3. Fit the Vertical Stabilizer on the rear of fuselage and use the 4screws to securethe Vertical Stabilizer.

A- Screws (PA2.6x10 4pcs)
B- Vertical stabilizer.
C- Servo cable.



Nose cone installation

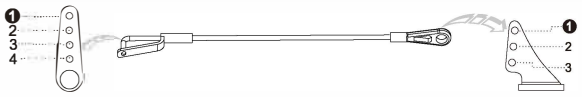
The nose cone utilizes magnets to secure it to the fuselage. Simply slide it into the retaining slot and the magnets will do the rest!



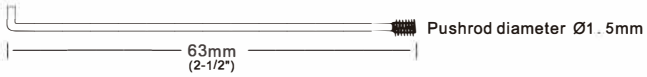
Pushrod instructions

Flap pushrod size

Flap pushrod mounting hole

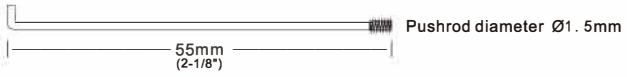


Aileron pushrod size



Aileron pushrod mounting hole

Elevator pushrod size



Elevator pushrod mounting hole

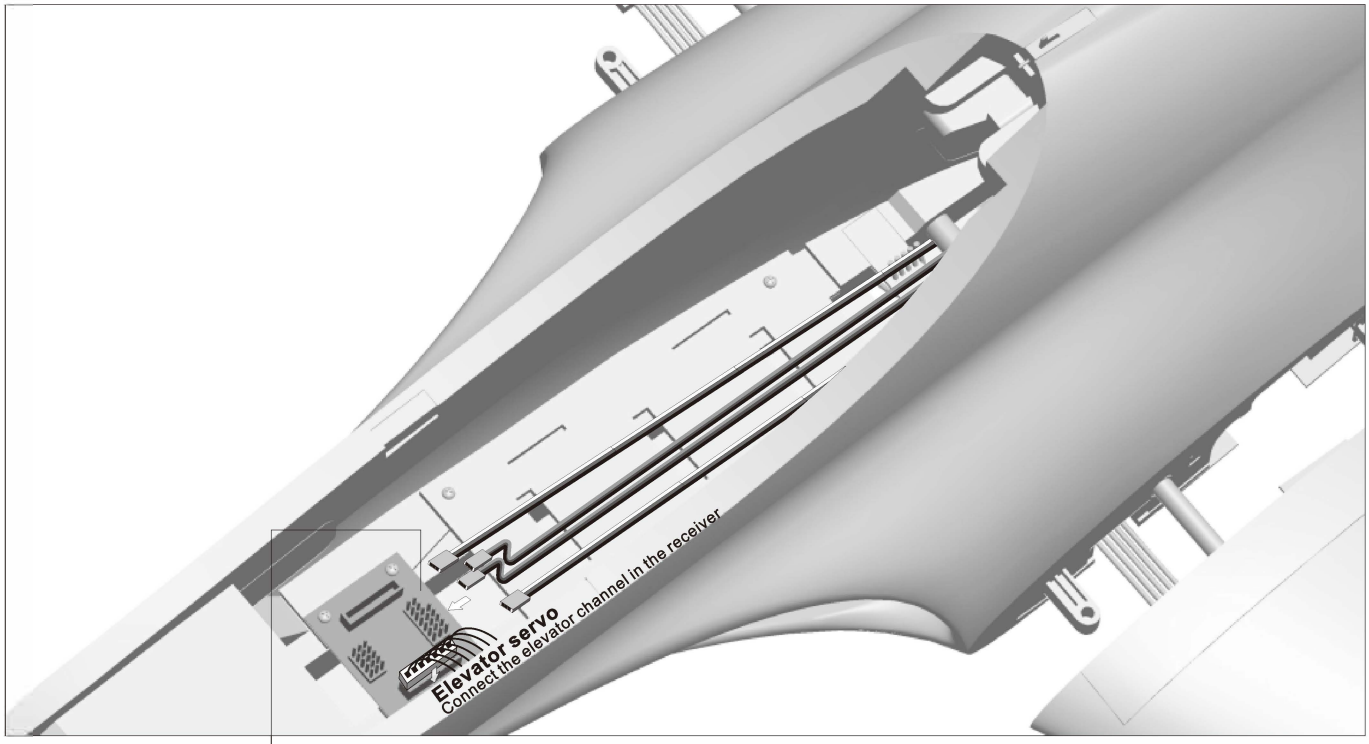
Rudder pushrod size

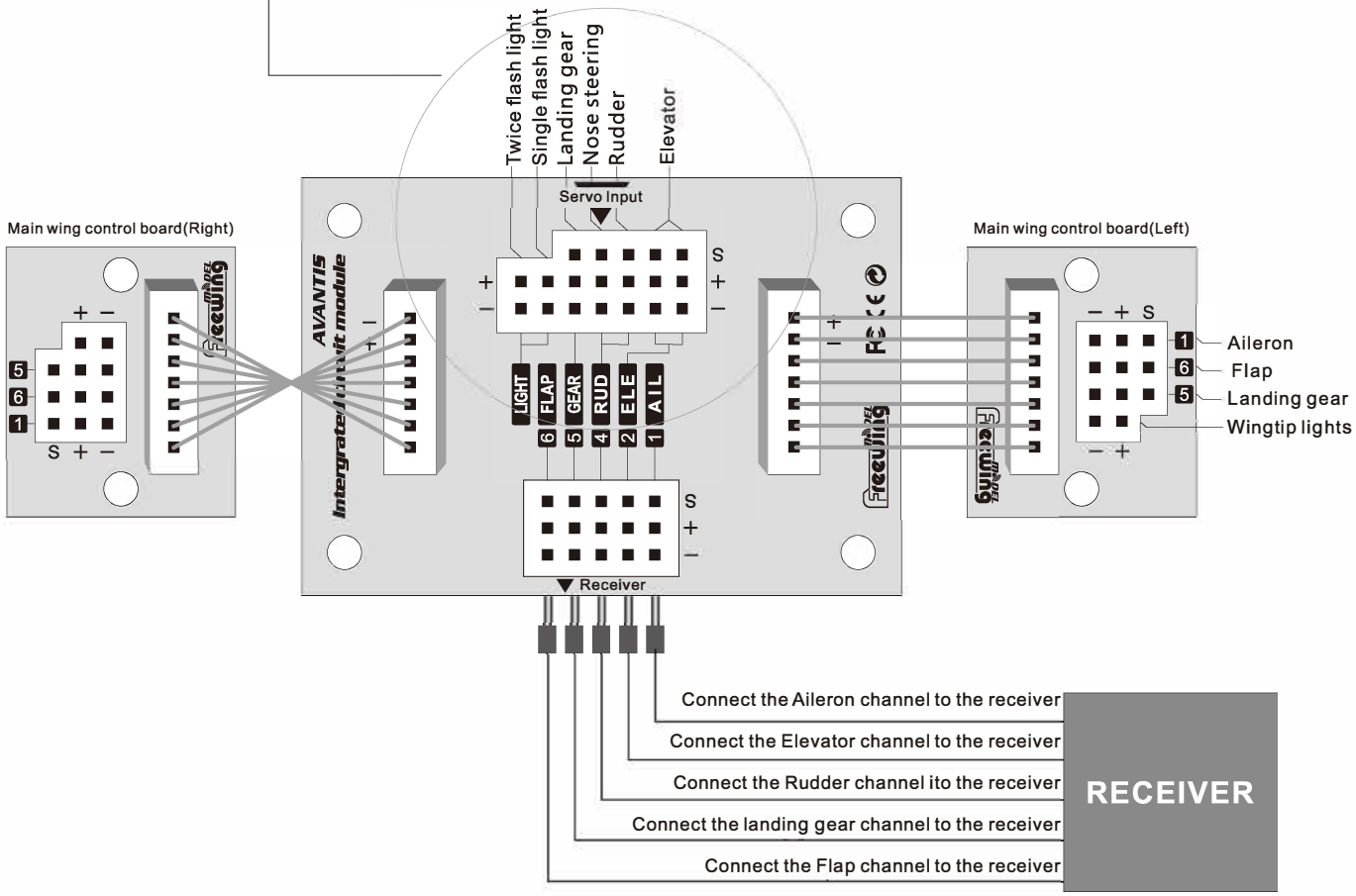
Rudder pushrod mounting hole

PNP Assembly instructions

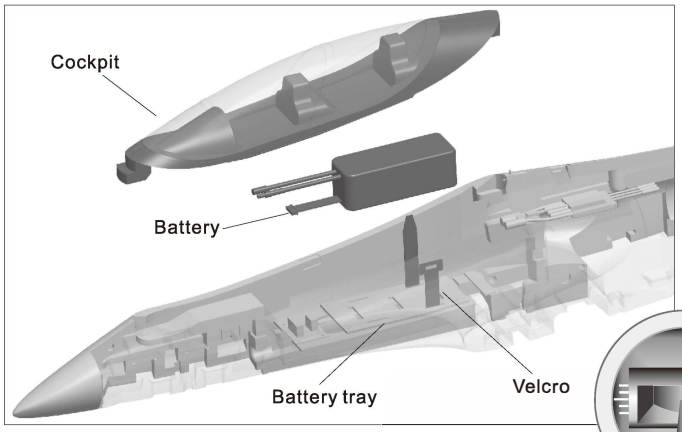
Control board connection diagram

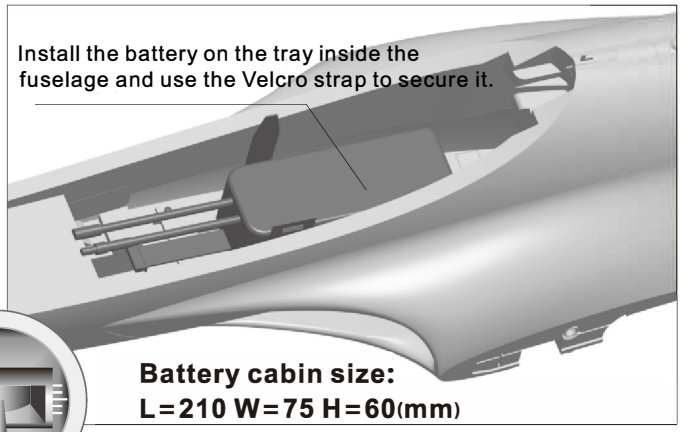
Avanti S utilizes a ribbon wire for convenient assembly. Refer to the following diagram to properly connect the electronic equipment.





Battery Installation





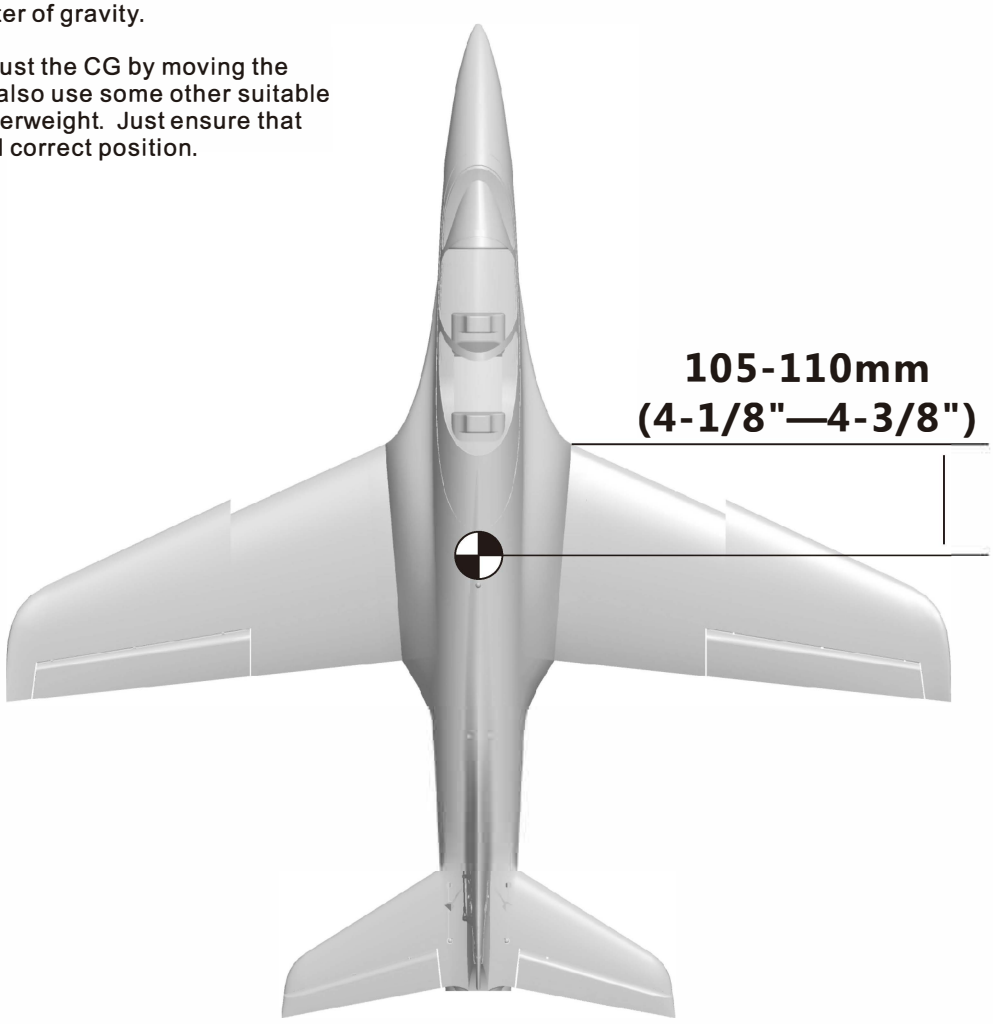
Before connecting a battery to the ESC, switch on your radio and make sure that the throttle is in the lowest position. Engage the kill switch if you have one assigned.

The battery capacity and discharge rate we advise to use are as follows:
6S 22.2V 4000mAh ~ 6S 22.2V 5200mAh
Discharge rate of C ≥ 35C

Center of gravity

The correct center of gravity is directly related to the success of the first flights. Please refer to the following CG diagram to initially adjust your plane's center of gravity. This CG is the result of several prerelease test flights, however once you have familiarized yourself with the airplane you can adjust the CG to suite your individual taste

- You can move the battery forward or backward to adjust the center of gravity.
- If you can not adjust the CG by moving the battery, you can also use some other suitable material to counterweight. Just ensure that CG is in the initial correct position.



Control Direction Test

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

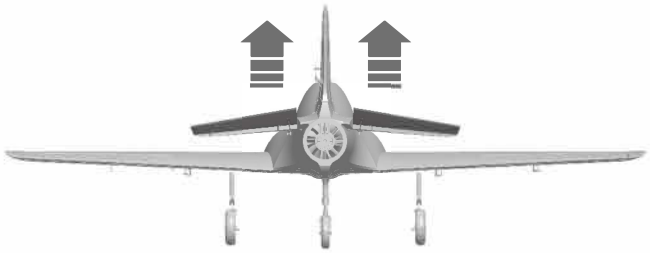
Aileron

Stick Left

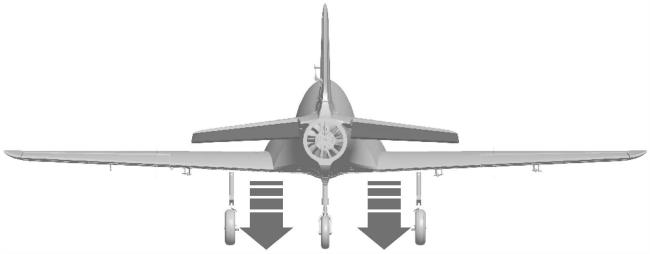
Stick Right

Elevator

Stick Back



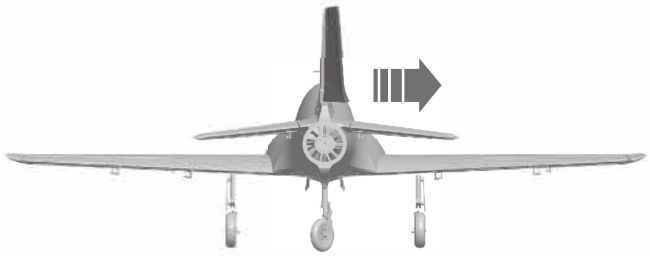
Stick Forward



Rudder

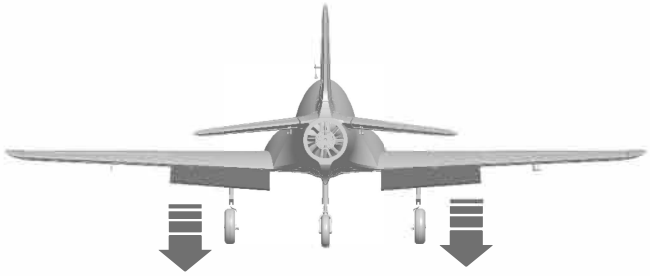
Stick Left

Stick Right



Flaps

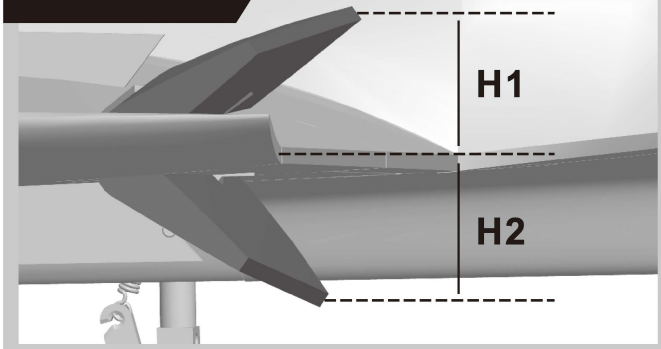
Flaps down



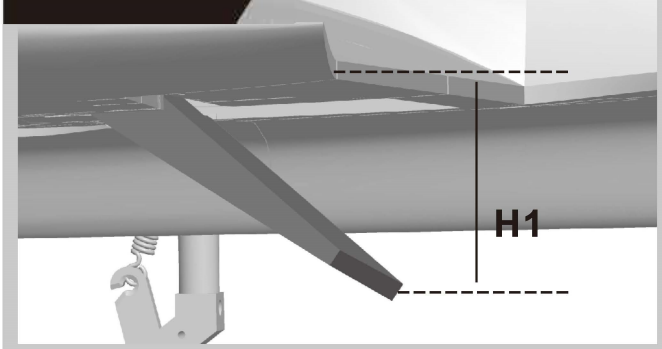
Dual Rates and Flight settings

According to our test results, the following rates proved to be a good starting point. Low rates are good for initial flights or less experienced pilots. High Rates will be more sensitive to control inputs After initial flights, adjust the rates to suit your own style.

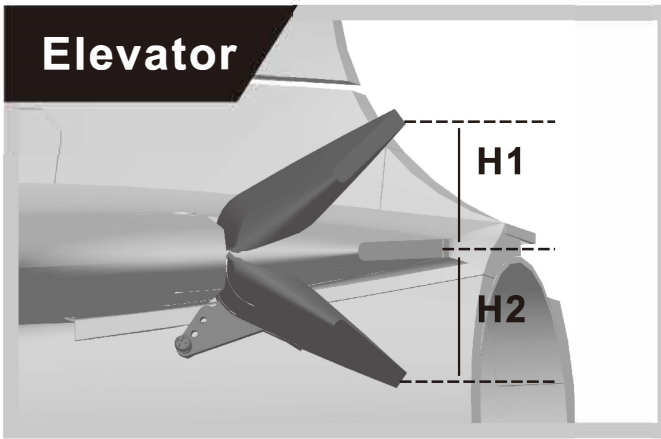
Ailerons



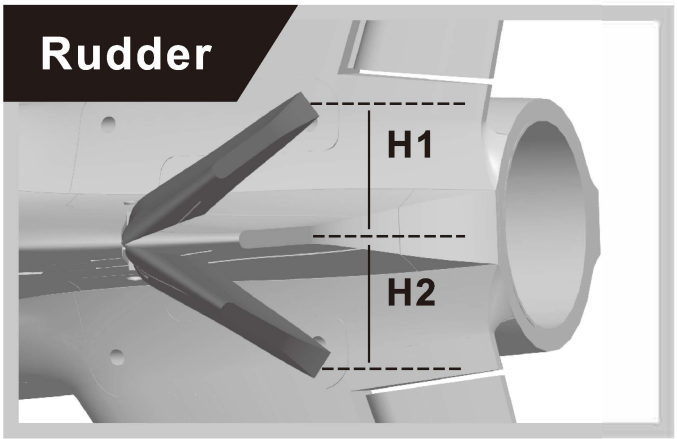
Flaps



Elevator



Rudder

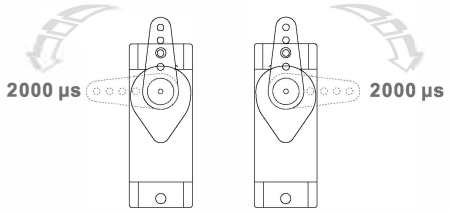


	Ailerons	Elevator	Rudder	Flaps
Low Rate	H1/H2 19mm/19mm D/R Rate: 70%	H1/H2 22mm/22mm D/R Rate: 85%	H1/H2 39mm/39mm D/R Rate: 85%	H1 23mm
High Rate	H1/H2 26mm/26mm D/R Rate: 100%	H1/H2 25mm/25mm D/R Rate: 100%	H1/H2 46mm/46mm D/R Rate: 100%	H1 55mm

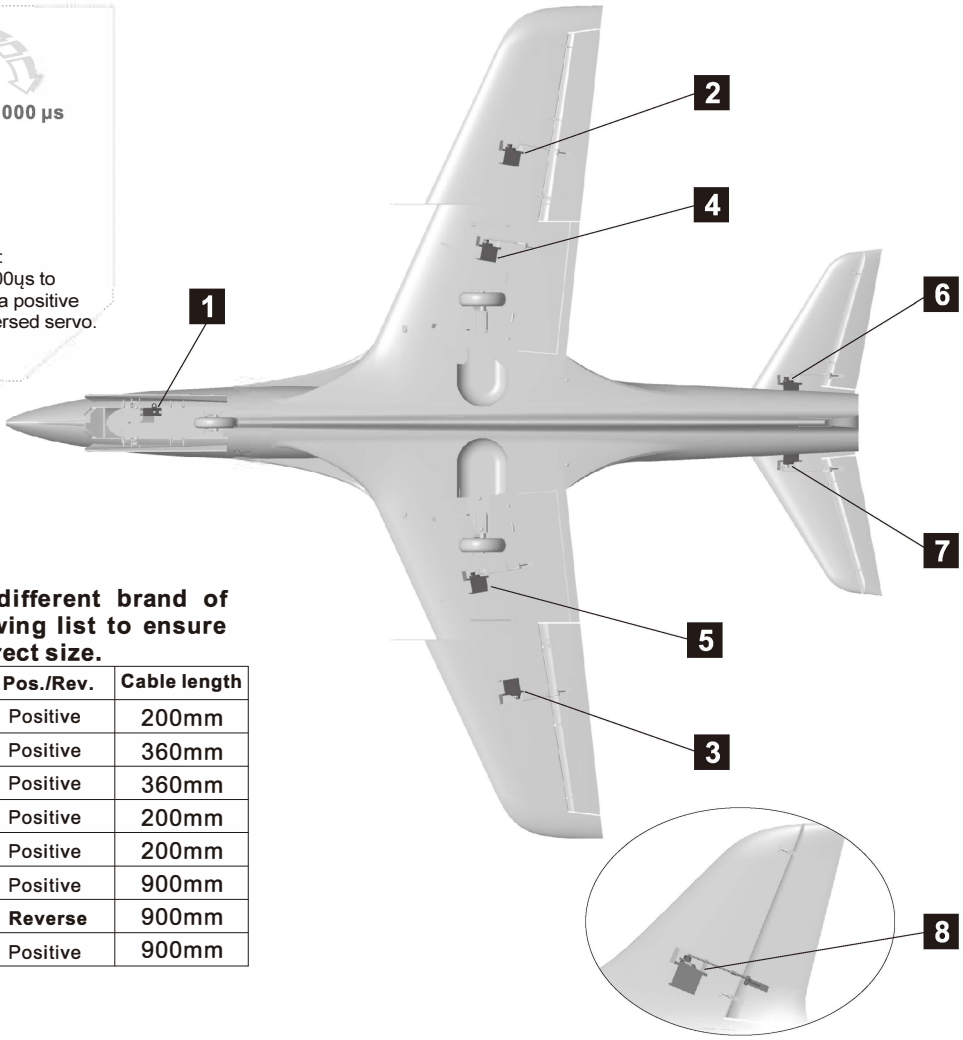
⚠ **Flight attention:** When the flaps are fully deployed, the nose will tend to rise up. To correct this, you will need to do a flap/elevator mix:
With half flaps, you will need to mix 1mm of down elevator,
With fully deployed flaps, you will need to mix 2mm.

Accessories Description

Servo Introduction



A servo or reversed servo is defined as follows:
When the servo input signal changes from 1000μs to 2000μs, if the servo arm rotates clockwise, it's a positive servo. If it rotates counter clockwise, it's a reversed servo.

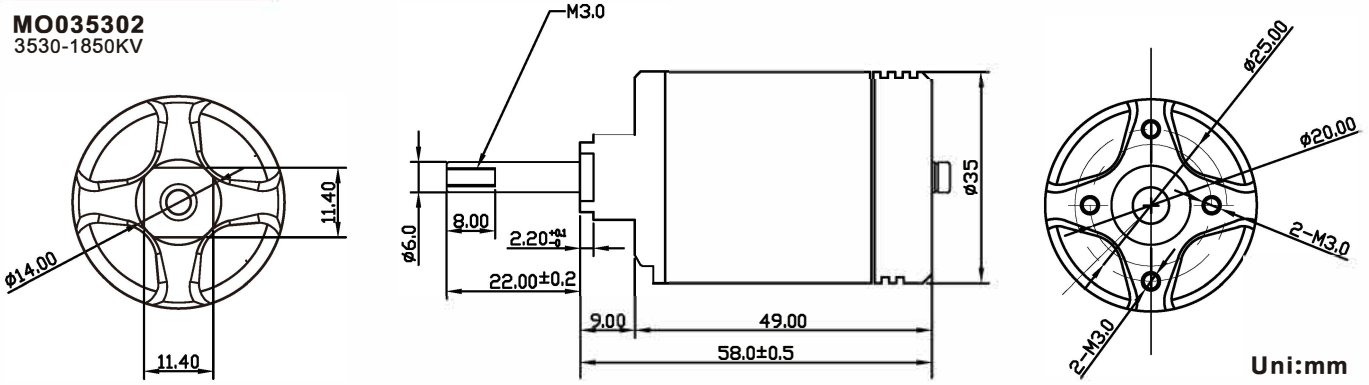


If you choose to purchase a different brand of servo, please refer to the following list to ensure the servo you purchase is the correct size.

Servo position	Model	No.	Pos./Rev.	Cable length
Nose gear steering servo	9g Digital MG	1	Positive	200mm
Aileron(Left)	9g Digital MG	2	Positive	360mm
Aileron(Right)	9g Digital MG	3	Positive	360mm
Flap(Left)	9g Digital MG	4	Positive	200mm
Flap(Right)	9g Digital MG	5	Positive	200mm
Elevator(Left)	9g Digital MG	6	Positive	900mm
Elevator(Right)	9g Digital MG	7	**Reverse**	900mm
Rudder	9g Digital MG	8	Positive	900mm

Motor Parameters

MO035302
3530-1850KV



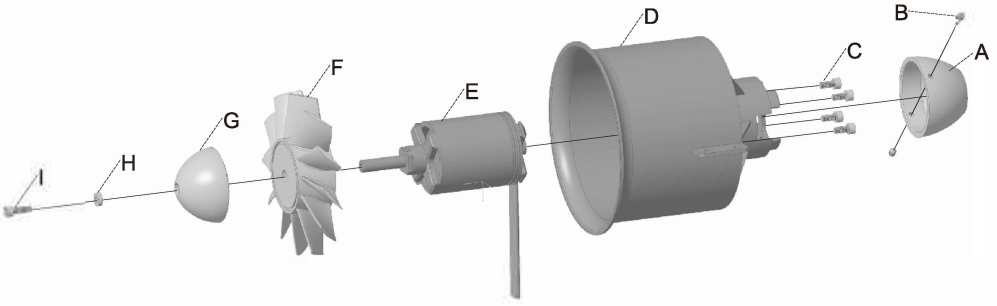
Item No.	Use motor	motor(KV)	Thrust(kg)	Current(A)	Use voltage (V)	Use ESC (A)	EDF Weight (g)	Max power (W)	Efficiency (g/w)
E7239	O/R BL 3530	1850	3350	90	22.2(6S)	100	318	2000	1.67

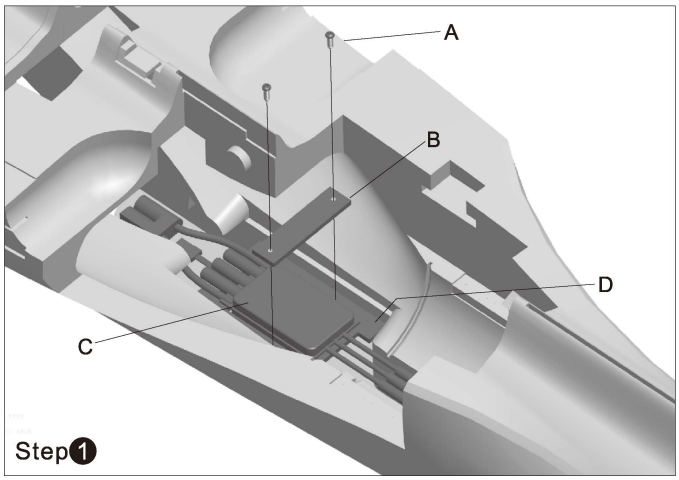
Accessories Description

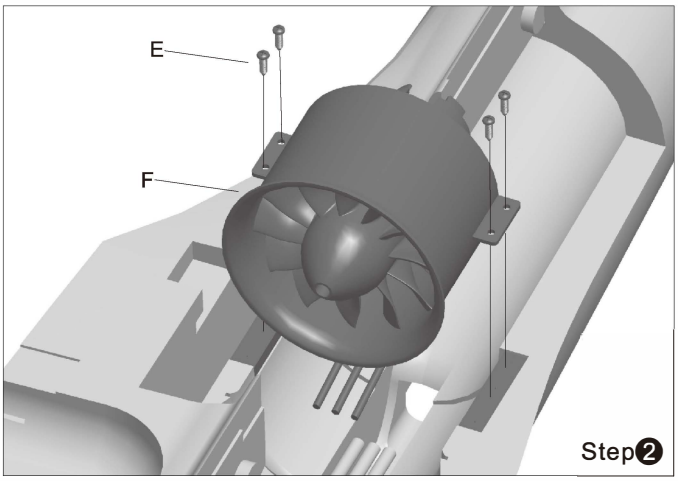
Motor installation

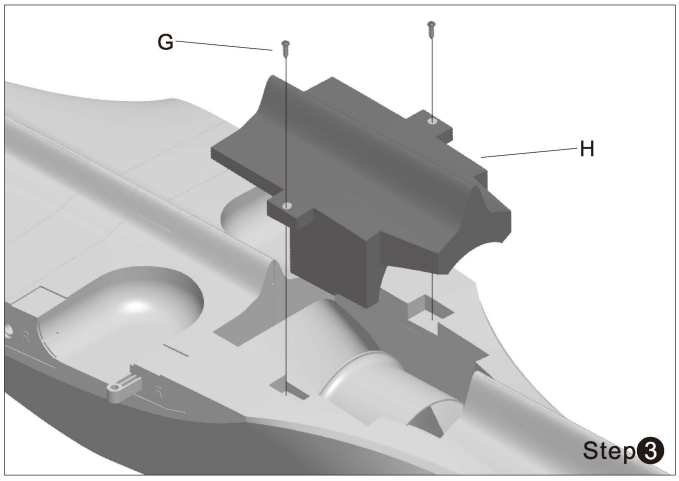
Standard version

A - Motor spinner
B - Grub Screws (2pcs)
C - Screws (PM3X6mm 4pcs)
D - 80mm ducted fan metal frame for outrunner motor
E - 3530-1850KV motor
F - 80mm 12-blade ducted fan
G - Spinner
H - Spacer
I - Screws (PM3X10mm)









Refer to the diagram above to install power system and ESC.

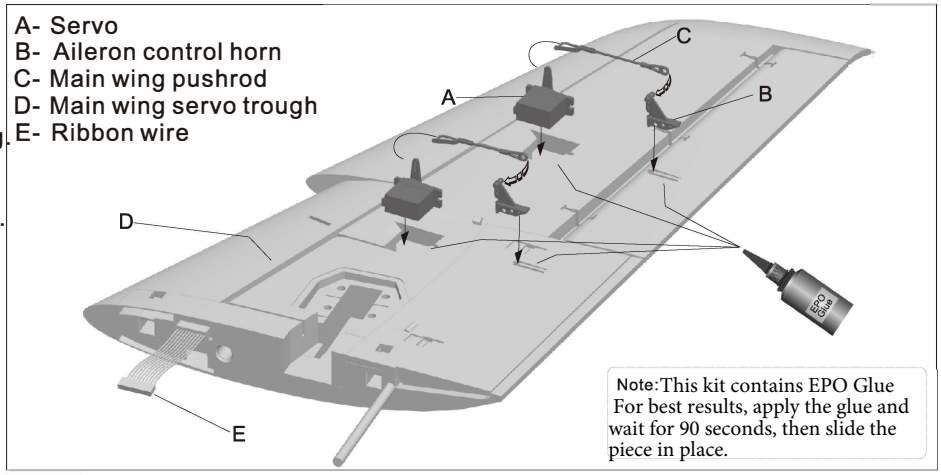
A - Screws (PA3x25)
B - ESC fixed wood piece (1)
C - ESC
D - ESC fixed wood pieces (2)
E - E - Screws (PWA3x8)
F - 80mm EDF power system
G - Screws (PA3x8)
H - EDF cover

⚠ **Note:** Once the battery and ESC are connected, do not touch them as it may result in accidental injury. When testing the aircraft, use a safety test stand and don't handle the airplane while testing.

Accessories Description

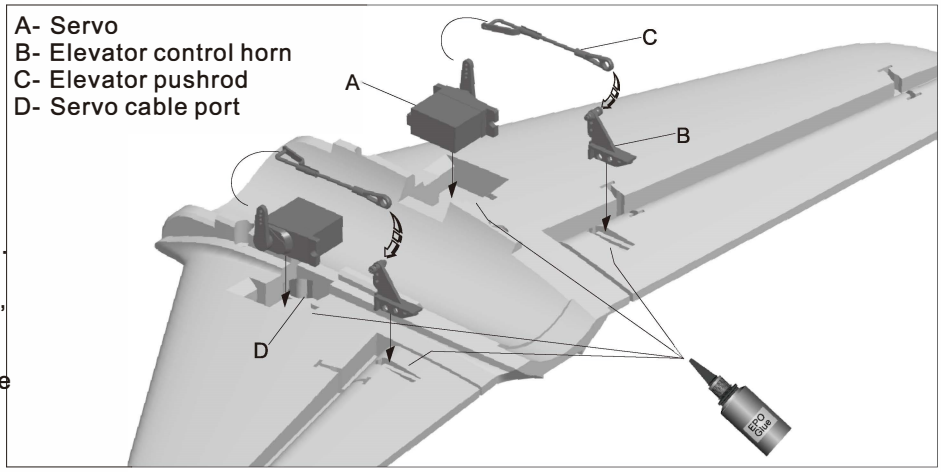
Aileron pushrod Installation

1.Use a servo tester or radio to center the servo.
2.Use glue to secure the servo and aileron control horn to the main wing.
3.Feed the servo wires through the trough. After all the servos and cables are installed, apply the decal.
4.Insert one end of the pushrod into the servo arm and adjust its length.
Snap the clevis over the ball link on the control horn.
5.Repeat the above four steps for the other wing.



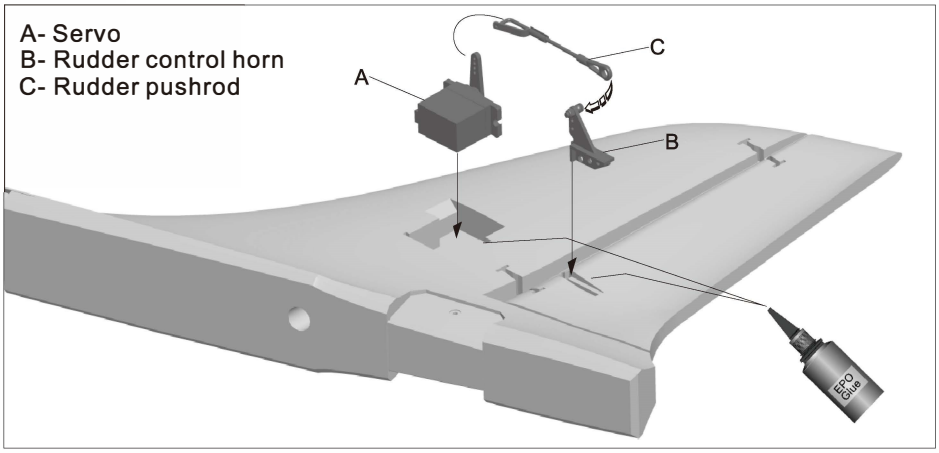
Elevator pushrod Installation

1.Use a servo tester or radio to center the servo.
2.Use glue to secure the servo and elevator control horn to the Horizontal stabilizer.
3.Feed the servo wire through the trough, after all the servos and wires are installed apply the decal.
4.Insert one end of the pushrod into the servo arm and adjust its length, then snap the clevis over the ball link on the control horn.
5.Repeat the above four steps for the other side.



Rudder pushrod Installation

1.Use a servo tester or radio to center the servo.
2.Use glue to secure the servo and rudder horn to the Vertical stabilizer.
3.Feed the servo wire through the trough, after the servo and wires are installed apply the decal.
4.Insert one end of the pushrod into the servo arm and adjust its length. Snap the clevis over the ball link on the control horn.



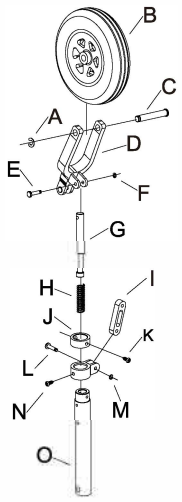
Accessories Description

Nose landing gear Installation

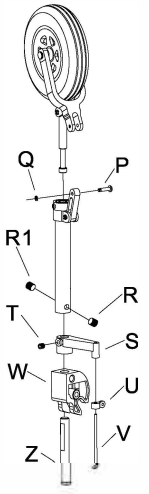
Refer to the following diagram when assembling or disassembling the nose landing gear .

Accessories name and specification

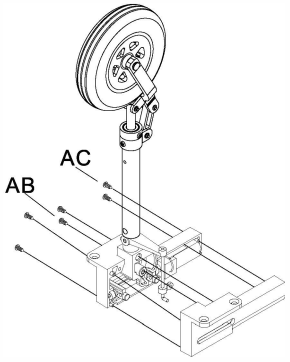
A- E-clip (M3)
B- Nose wheel (Ø65x16mm)
C- Nose gear axle
D- U-shape slant supporting rod
E- Pin (Ø3.5x10.2mm)
F- E-clip (M1.5)
G- Nose gear steering ring
H- Spring
I -8-shape connecting arm
J - Nose strut fixed ring
K- Screws (PM2x3 1pcs)
L - Pin (Ø3.5x9.2mm)
M- E-clip(M1.5)
N- Screw (PM2x3 1pcs)
O- Nose gear strut
P - Pin (Ø3.5x10.2mm)
Q- E-clip (M1.5)
R- Grub Screw (M4x3mm)
S - L-shape steering tiller
T - Grub Screw (M3x3mm)
U - O-shape ring
V - Pushrod
W- Rotating arm
Z- Nose metal wire
AB- Screws (PA1.4x12 2pcs)
AC- Screws (PA1.7x10 4pcs)
AD- Screws (FA3x12 4pcs)
AE- Retract Reinforcement Plate
AF- Nose landing gear
AG- Nose steering pushrod
AH- Screws (PWA2.3x8 2pcs)
AI - Servo
AJ- Nose landing gear door type A
AK- Cabin door spring
AL- Screws (PA2x8 4pcs)
AM- Spring



Step❶



Step❷



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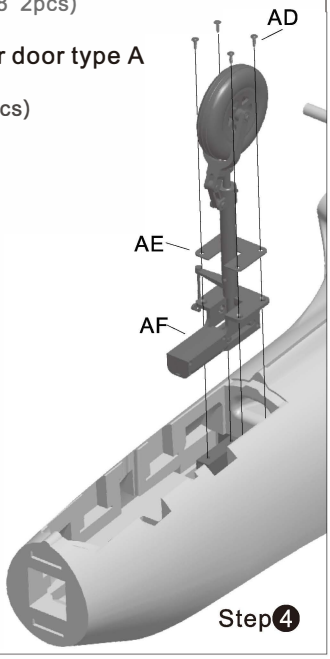

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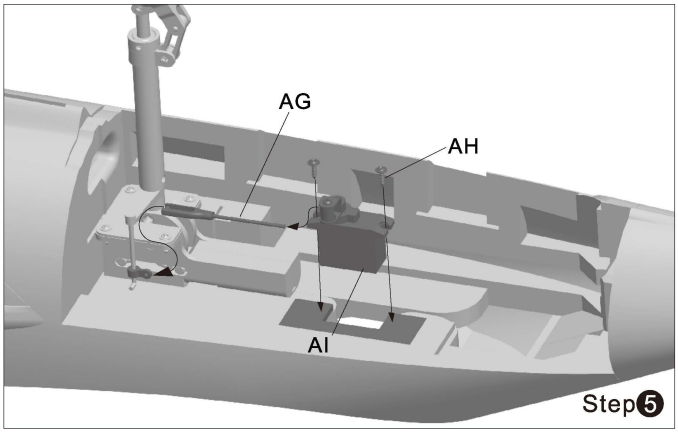

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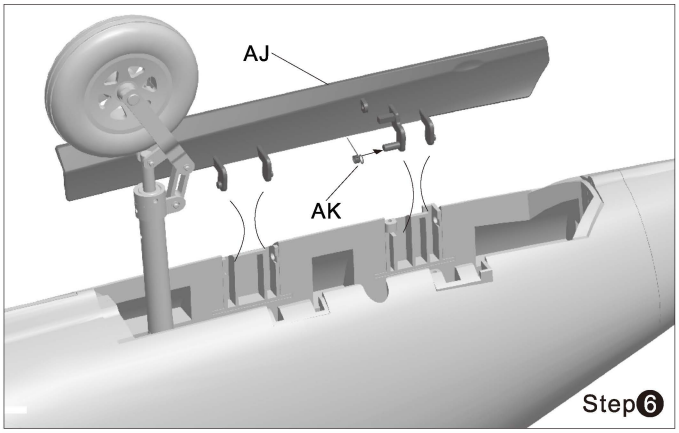

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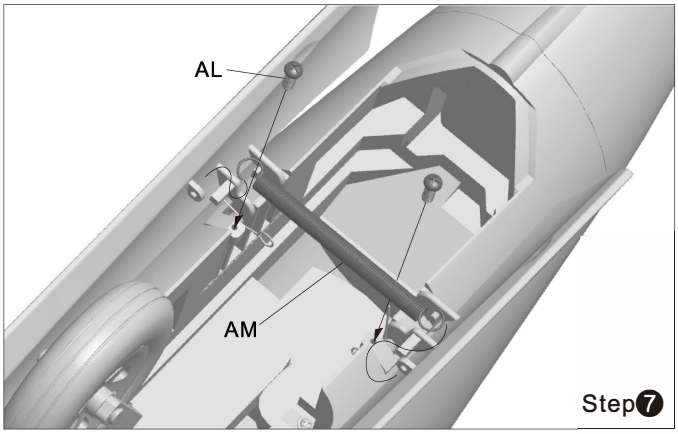


Step❼

Nose steering pushrod size

Pushrod diameter Ø1. 5mm

Servo pushrod installing hole

⚠ Note : When installing, please check the flat position of spare parts,when securing,the flat position must face towards the screw hole so that it can lock the part securely so the parts do not come loose and fall off.

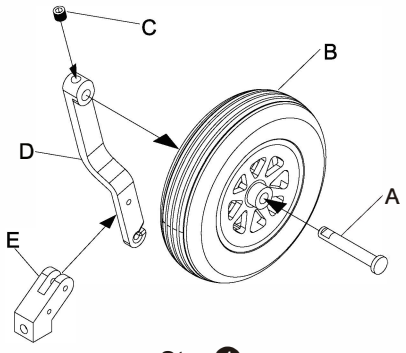
Accessories Description

Install main landing gear

Refer to the following diagram when assembling or disassembling the main landing gear

Accessories name and specification

A - Main gear axle
B - Main wheel (Ø70x20mm)
C - Grub Screw (M4x4mm 1pcs)
D - Main gear slant supporting rod
E - Main gear strut A
F - Grub Screws (M4x3mm 2pcs)
G - Main gear strut B
H - Spring
I - Screw (PM3x4mm 1pcs)
J - Grub Screws (M4x3mm 2pcs)
K - Main gear main rod
L - Retract controller
M - Grub Screws (M3x5mm 2pcs)
N - Screws (PM2x5mm 2pcs)
O - Main gear door
P - Screws (FA3x12mm 4pcs)
Q - Main landing gear set
R - Main landing gear mount



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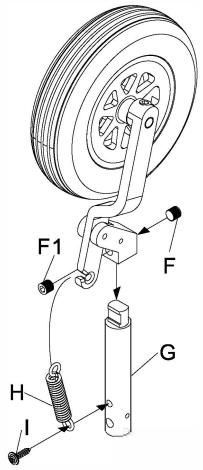

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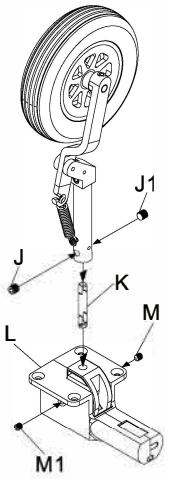

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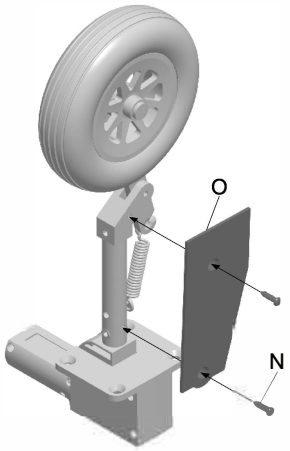

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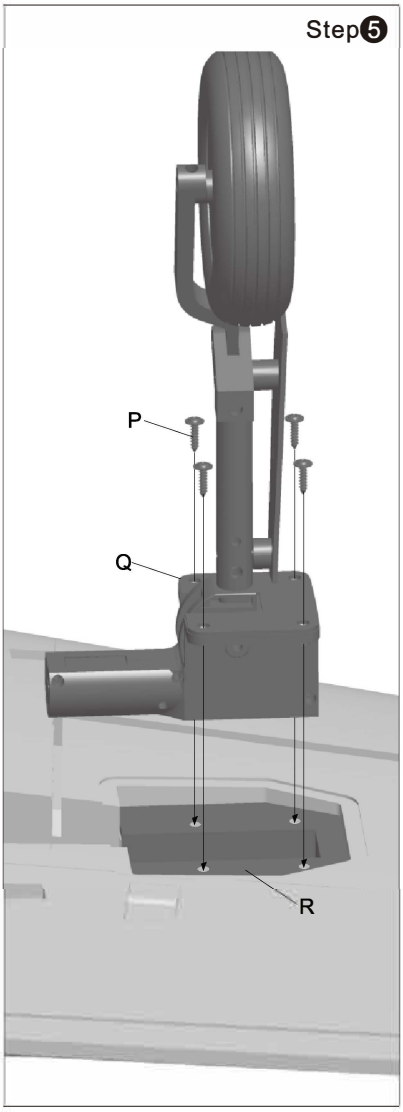

Wing-fence Installation

Refer to the diagram:
Use a knife to cut the wing-fence groove along the top of the main wing, at a depth of 3mm, a thickness of 2mm and a length 153mm. Using a small amount of glue, insert the wing-fence into the groove.

Note: The wing fence is provided as a spare part and is optional.