

B-24 LIBERATOR USER MANUAL

WINGSPAN:2000MM(78.7in.)
LENGTH:1230MM(48.4in.)
WEIGHT:2190G(W/O BATTERY)

EN	1~11
中	12~22

Flightline
RC



FreeWing
MODEL
www.sz-freewing.com
MADE IN CHINA



The famed B-24 Liberator is one of the most recognizable WWII aircraft of all time. Serving in every theater of that global conflict, the B-24 fought to bring its brave crews home through unimaginable danger. With humility and reverence, FlightLineRC and Motion RC are proud to introduce the world's first foam electric PNP B-24 Liberator, in remembrance of the crews who gave the ultimate sacrifice and those who carry on its memory.

The FlightLineRC B-24 is approximately 1/16 scale, with a 2000mm wingspan and 1230mm length. Constructed from EPO foam and reinforced with integrated aluminum, carbon, and plastic structures, the B-24 delivers the ultimate all around experience for pilots seeking the ultimate foam PNP bomber replica. A magnetic nose section allows owners to swap between two B-24 variants, the -D ("Greenhouse" nose), and the -J ("Emerson turret" nose). The Upper Turret on both variants and the Nose Turret on the -J variant can be panned with an optional servo. Steerable tillers are pre-installed, including special provisions to fit FPV cameras inside.

The FlightLineRC B-24 uses four 3530-860KV brushless outrunner motors and four 30A ESCs. A quick disconnect ribbon wire harness consolidates wiring into a central circuit board in the fuselage. The recommended pair of 4s 14.8V 2800-4000mAh lipo batteries 2pcs can power the aircraft in excess of 110kph/70mph, for 4-10 minutes based on a pilot's throttle management. The outboard motor pair and inboard motor pair are run from separate flight batteries, allowing for powered landings in the event of one battery failing. A 70mm tall nose wheel and 85mm tail main wheels provide stable operation grass runways, and optional suspension struts are available. Assembly is comprised of only 12 screws and gluing on external details such as antennas.

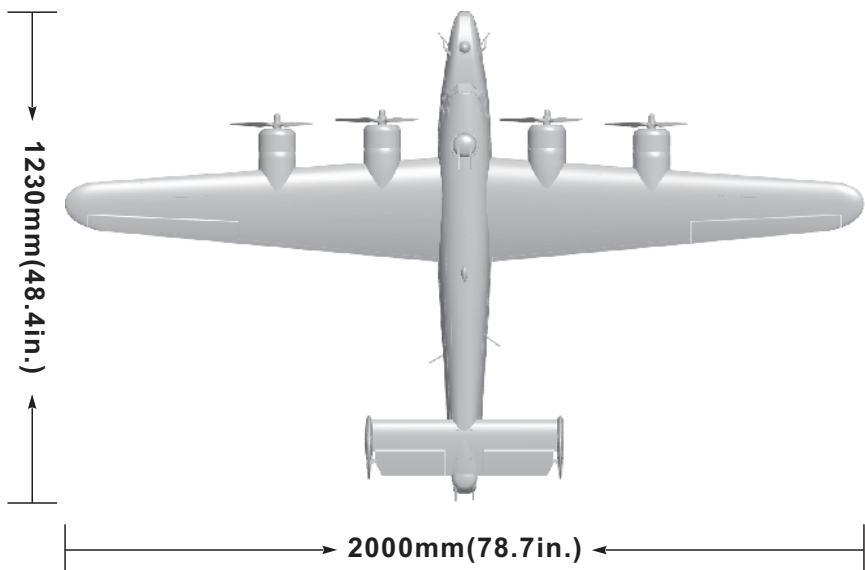
⚠ NOTE: This is not a toy. Not for children under 14 years. Young people under the age of 14 should only be permitted to operate this model under the instruction and supervision of an adult. Please keep these instructions for further reference after completing model assembly.

Note:

1. This is not a toy! 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. Before connecting the batteries, make sure your transmitter is powered up, with the correct channel selected and the throttle in the lowest position. If you have a kill switch, engage it as well.
12. Do not try to catch the airplane while in flight. Do not touch the airplane until it comes to a complete stop and the propellers stop turning.

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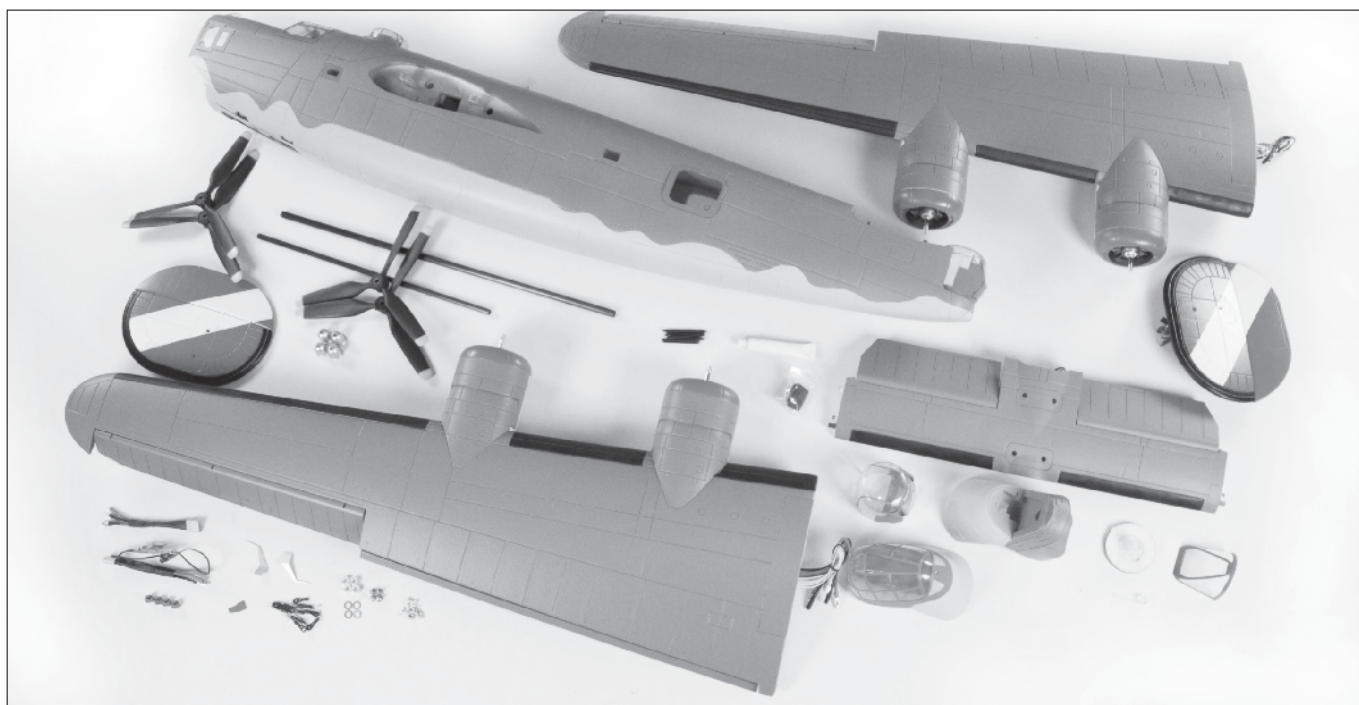


Wing loading : 100g/dm²
 Wing area : 35dm²
 Motor: 3530-860KV
 brushless outrunner motor (4pcs)
 Propeller : 3-Blade 9.5x7
 (4PiecS Standard/Reverse)
 ESC : 30A (4pcs)
 Servo : 9g digital metal gear servo (9pcs)
 Flight speed : 110KPH/70MPH
 Empty Weight : 2910g(without battery)
 Pull: 5400g

Material : EPO
 Aileron: Yes
 Flaps: Yes
 Elevator: Yes
 Rudder: Yes
 Landing gear: Retractable, Suspension
 Scale Pilot figure
 Battery: 4S 2800-4000mAh (2pcs)

⚠ 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 specific parts. Please refer to the list to confirm your kit's contents.

No.	Name	PNP	ARF Plus	Airframe	No.	Name	PNP	ARF Plus	Airframe
1	Fuselage	Pre-installed all electronic parts	Pre-installed servo	No electronic equipment	7	Scale Accessories	✓	✓	✓
2	Main wing	Pre-installed all electronic parts	Pre-installed servo	No electronic equipment	8	ESC wire	✓	✓	✓
3	Horizontal tail	Pre-installed all electronic parts	Pre-installed servo	No electronic equipment	9	Linkage Set	✓	✓	✓
4	Vertical tail	Pre-installed all electronic parts	Pre-installed servo	No electronic equipment	10	Glue & Non-slip mat	✓	✓	✓
5	Propeller & Spinner	✓	✓	✓	11	Carbon tube & Screw	✓	✓	✓
6	Nose Turret & Nose	✓	✓	✓	12	Manual & Decals	✓	✓	✓

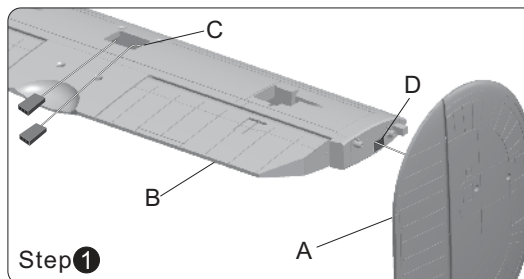
Wire Pull-Through Tool Instructions

Our tests show that excessively long servo extension lines increase the risk of poor connections that can lead to servo brown outs or failure, causing accidents during flight. Instead, this kit contains a steel wire that can be used to pull the main wing/elevator and rudder servo wires through the airplane to the battery compartment

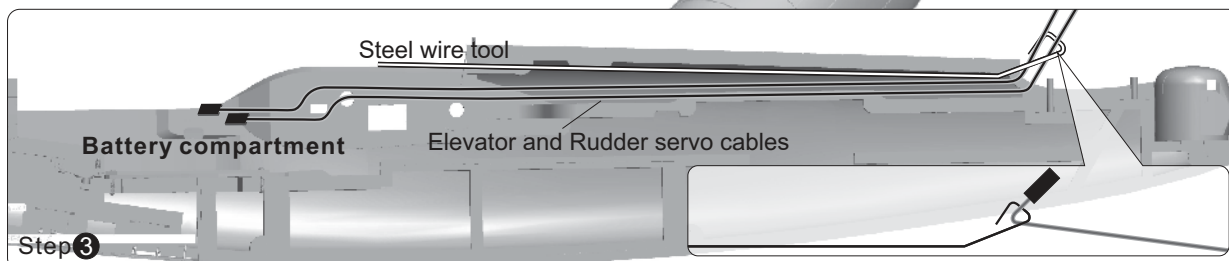
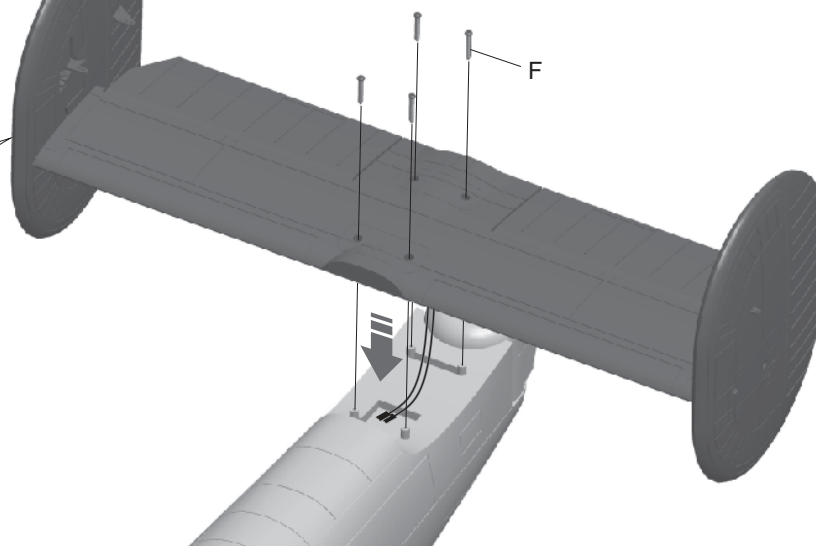
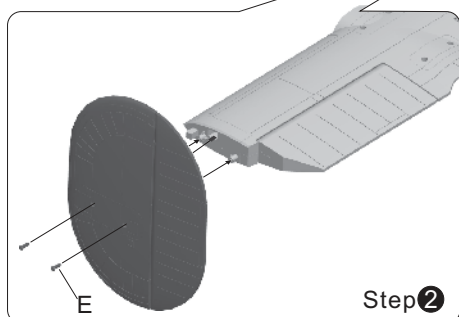
Horizontal Stabilizer/Vertical Stabilizer Assembly

As shown in the photo below:

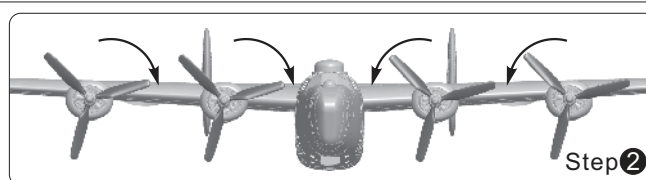
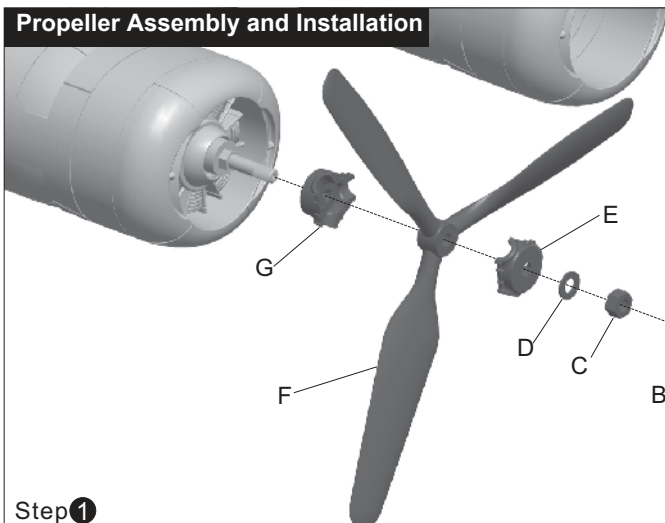
1. Insert the left and right rudder servo cables into the trough of the horizontal stabilizer, and pull the cables through the gap.
2. Secure the left and right vertical stabilizers to the horizontal stabilizer with 4 PA3x8 screws.
3. As shown in the photo, bundle the rudder/elevator cables and use the Wire Pull-Through Tool to feed the cables to the battery compartment.
4. Finally, install the horizontal stabilizer to the fuselage and secure it with 4 PA3x8 screws.



- A- Rudder
- B- Elevator
- C- Servo cable
- D- Elevator wire trough
- E- Screw (PA3x8 4pcs)
- F- Screw (PA3x8 4pcs)



Propeller Assembly and Installation



Referring to the photo:

1. Attach the propeller to the propeller shaft,
2. Make sure that the propellers are installed on the correct side. Refer to the photo above.

- A- Screw (PM2.5x6 4pcs)
- B- Spinner
- C- Screw nut
- D- Washer
- E- Propeller hub, front (A)
- F- Scale propeller
- G- Propeller B hub, front (B)

Main Wing Installation

Step 1

Carbon tube A (Ø10x500mm)

Carbon tube B (Ø8x360mm)

Throttle

Throttle

Aileron

Flap

Landing gear

FlightLine

Step 2

ESC wire & Ribbon wire

Main wing wire hole

Step 3

Screw (PWM4x8 4pcs)

1. Insert carbon tube A and B into the fuselage.
2. Pull the ESC wire and Ribbon wire through the hole.
3. Slide the left and right main wings to the fuselage.
4. Use 4 PWM4x8 screws to secure the main wings.

Nose Section -J Installation

(PNP includes two optional forward nose sections for the B-24-D ("Greenhouse") and B-24-J ("Emerson Turret")

- A- Nose Turret A
- B- Nose Turret B
- C- Nose Turret Base
- D- B-24-J Variant Foam Nose
- E- Washer
- F- Tiller
- G- Screw (PA2.3x8)
- H- Lower Windshield
- I - Gun Barrels

Magnet

Nose Section -D Installation

- A- Greenhouse for -D Variant
- B- Antennas
- C- Gun Barrels

Magnet

B1

C1

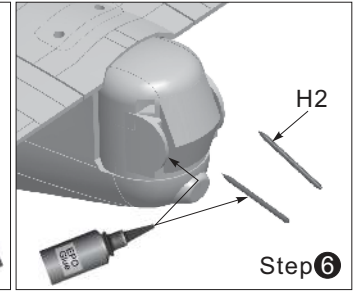
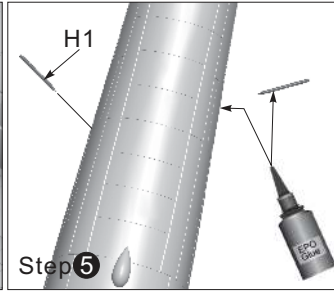
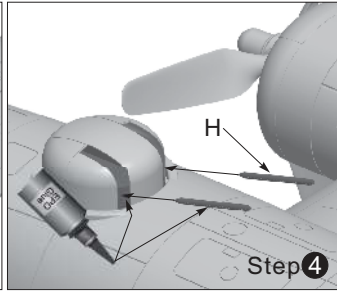
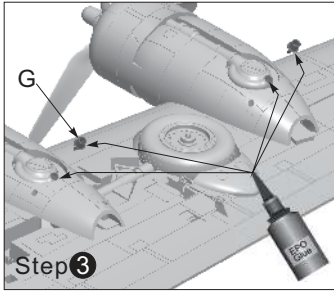
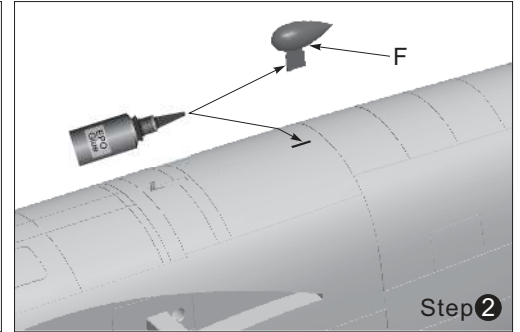
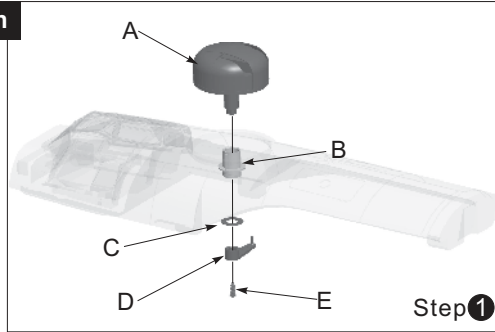
C2

PNP Assembly Instructions

EN

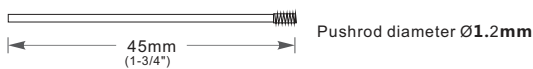
Scale Accessories Installation

- A - Upper Turret
- B - Upper Turret Base
- C - Washer
- D - Tiller
- E - Screw (PA2.3x8)
- F - Antenna
- G - Exhaust Pipe
- H - Gun Barrels



Pushrod Length Setup

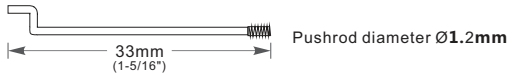
Nose gear steering pushrod length



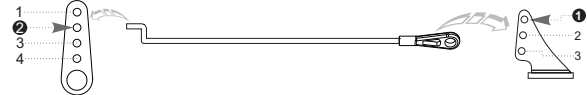
Nose gear steering pushrod mounting hole



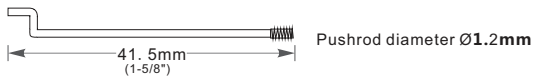
Flap pushrod length



Flap pushrod mounting hole



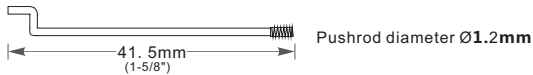
Aileron pushrod length



Aileron pushrod mounting hole



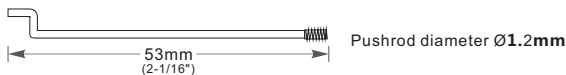
Elevator pushrod length



Elevator pushrod mounting hole



Rudder pushrod length

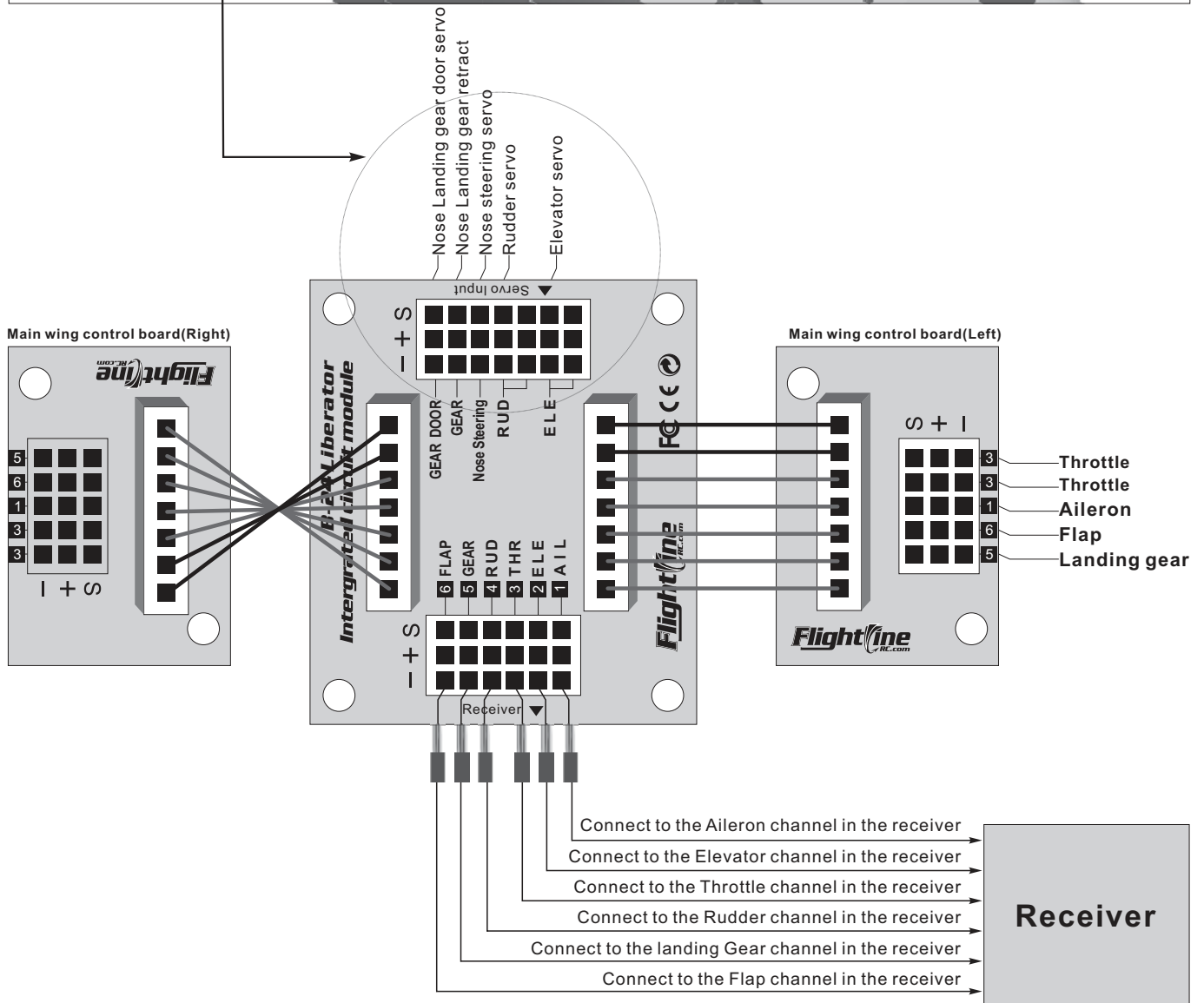
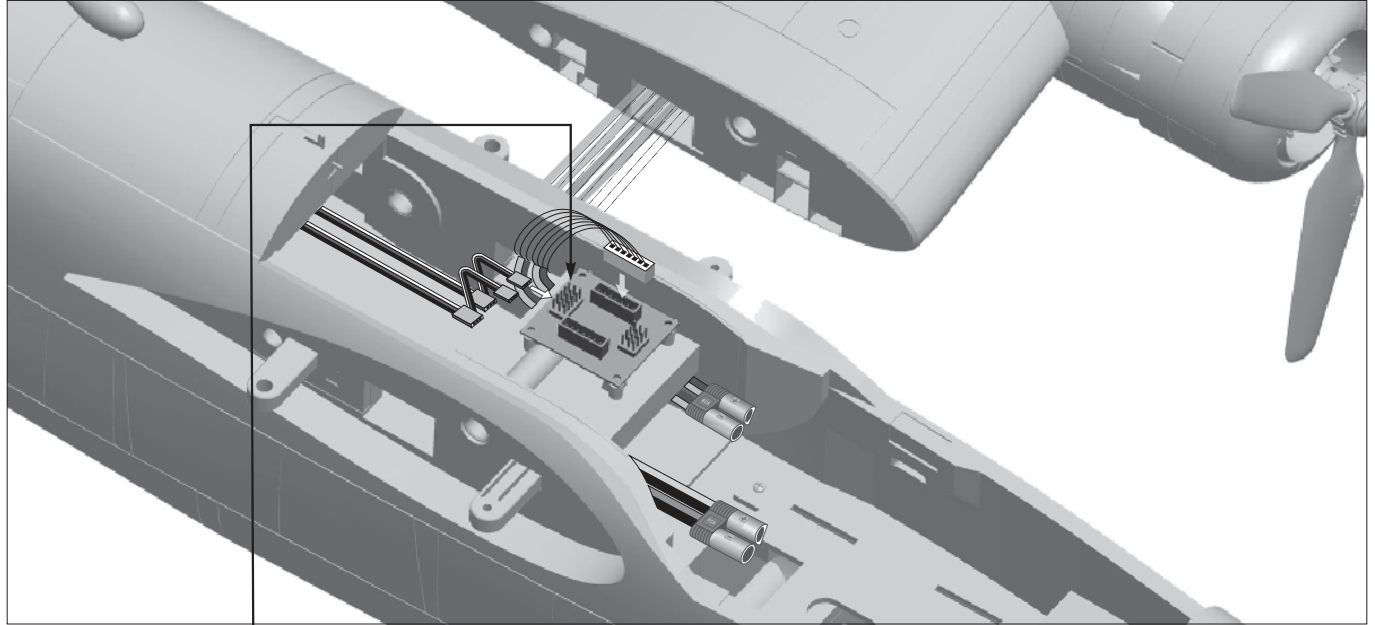


Rudder pushrod mounting hole

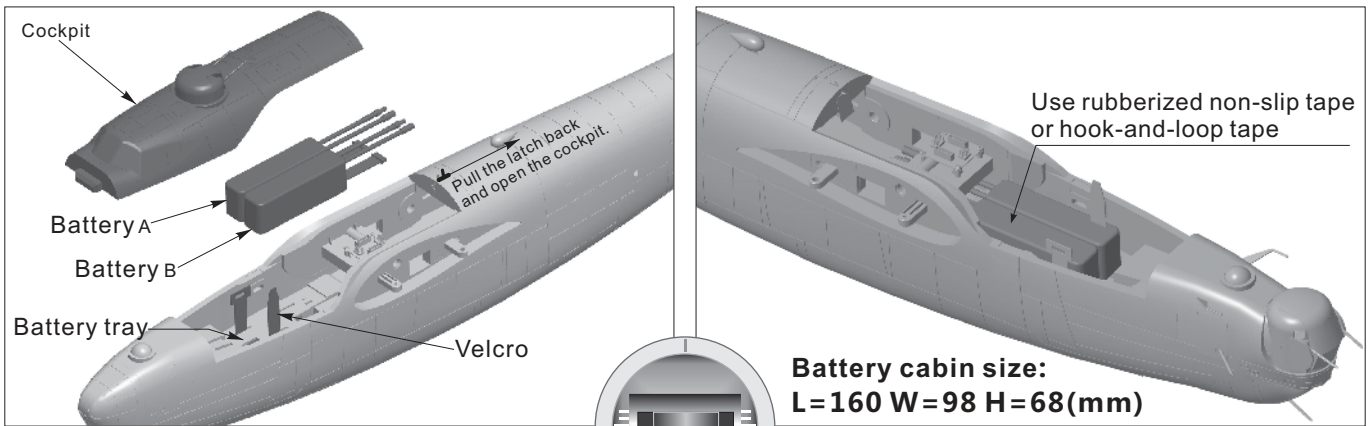


Control board connection diagram

The B-24 uses a convenient flexible ribbon wire harness to consolidate wiring. Refer to the photo for the proper wiring configuration.



Battery Size



Battery cabin size:
L=160 W=98 H=68(mm)

Before connecting the batteries to the ESC for the first time, please remove the propellers, position the model on a stand above the ground, and switch on the transmitter power. Ensure the throttle stick is in the lowest position. Engage the kill switch if you have one assigned

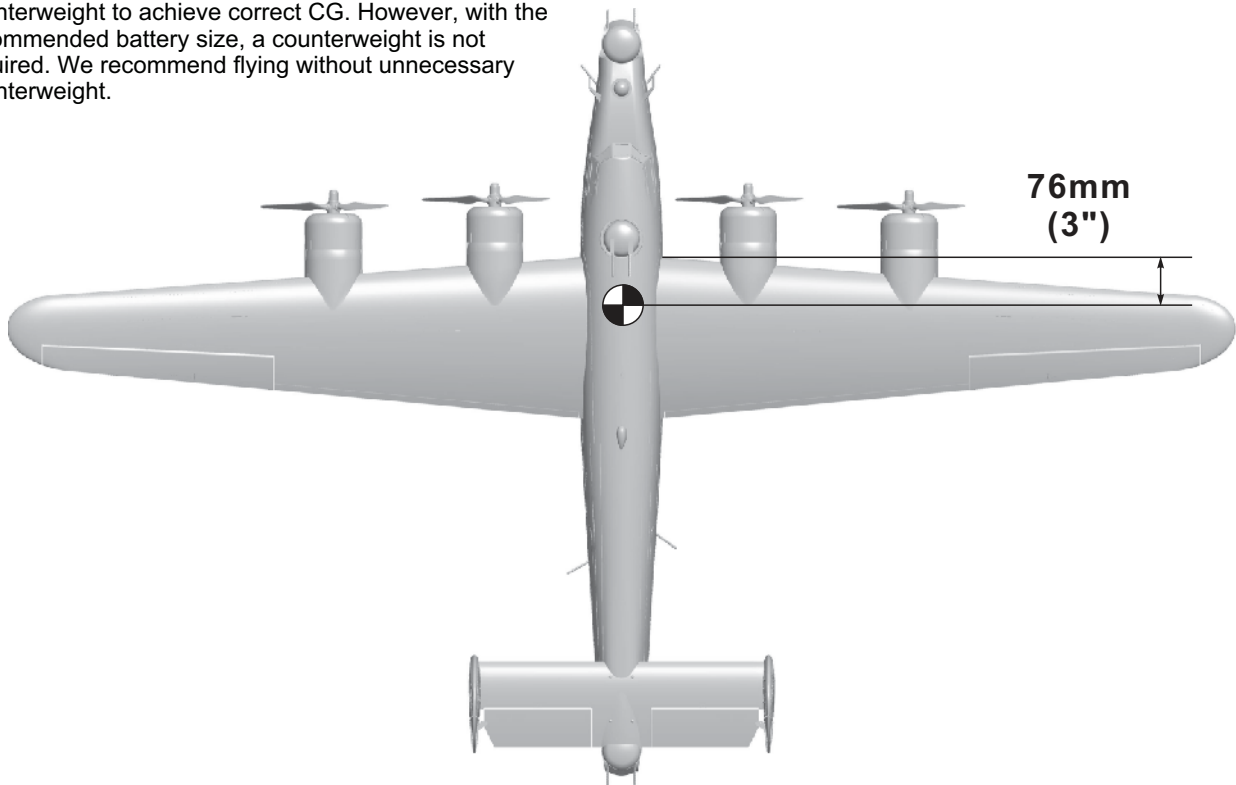
We recommend the following LiPo batteries:
4S 14.8V 2800mAh ~ 4S 14.8V 4000mAh (x2)
Discharge rate of C ≥ 35C

After you have programmed your radio transmitter, reinstall the propellers and carefully verify their correct rotation. With the aircraft level, the uppermost tips of all the propellers should rotate inward, toward the fuselage. The stock PNP configuration assigns the inboard motors to one flight battery, and the outboard motors to the second flight battery. If one battery fails, the model can be landed immediately on the remaining two engines flown at full power. Before all flights, ensure all areas forward of the propellers are clear to avoid injury.

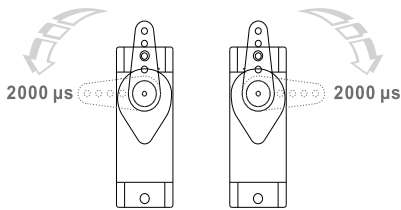
Center of Gravity

Correct Center of Gravity (CG) is critical for enabling safe stable flight performance and responsive control. Please refer to the following CG diagram to adjust your aircraft's Center of Gravity. This CG has been flight tested 200+ times for your safety.

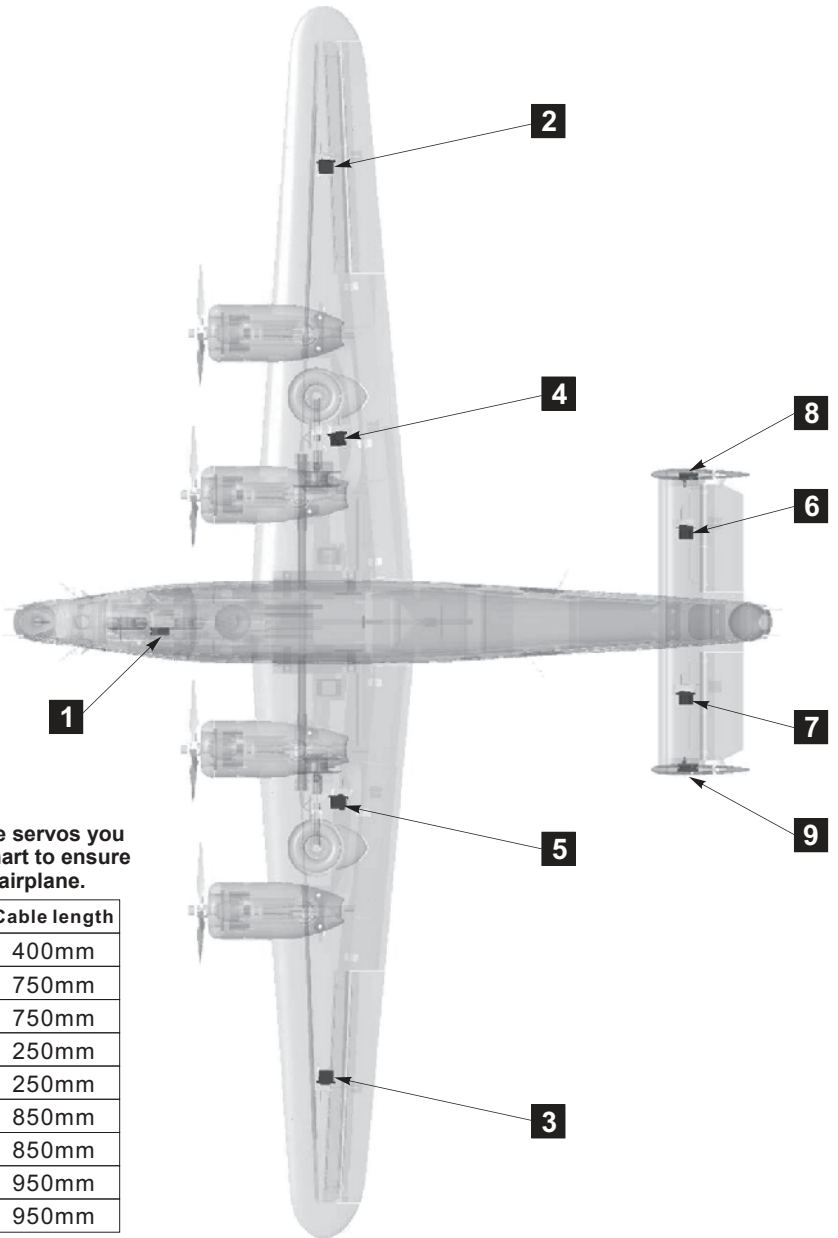
- Depending on the capacity and weight of your chosen flight batteries, move the battery forward or backward to adjust the Center of Gravity.
- If you cannot obtain the recommended CG by moving the battery to a suitable location, you can also install a suitable counterweight to achieve correct CG. However,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



Servo Direction



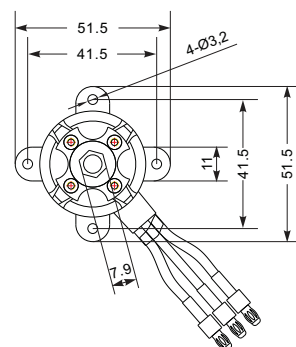
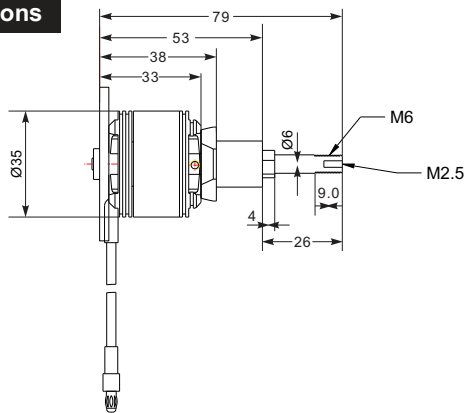
A servo or reversed servo is defined as follows:
 When the servo input signal changes from 1000µs to 2000µs, if the servo arm **rotates clockwise**, it's a **positive servo**.
 If it **rotates counter clockwise**, it's a **reversed servo**.



Note: If you choose not to use the factory servos, the servos you choose may be a different size. Use the following chart to ensure that the servos you choose are compatible with this airplane.

Position	Servo regulation	No.	Pos./Rev.	Cable length
Nose gear steering servo	9g Digital-MG	1	Positive	400mm
Aileron(L)	9g Digital-MG	2	Positive	750mm
Aileron(R)	9g Digital-MG	3	Positive	750mm
Flap(L)	9g Digital-MG	4	Positive	250mm
Flap(R)	9g Digital-MG	5	Positive	250mm
Elevator(L)	9g Digital-MG	6	Positive	850mm
Elevator(R)	9g Digital-MG	7	Positive	850mm
Rudder(L)	9g Digital-MG	8	Positive	950mm
Rudder(R)	9g Digital-MG	9	Positive	950mm

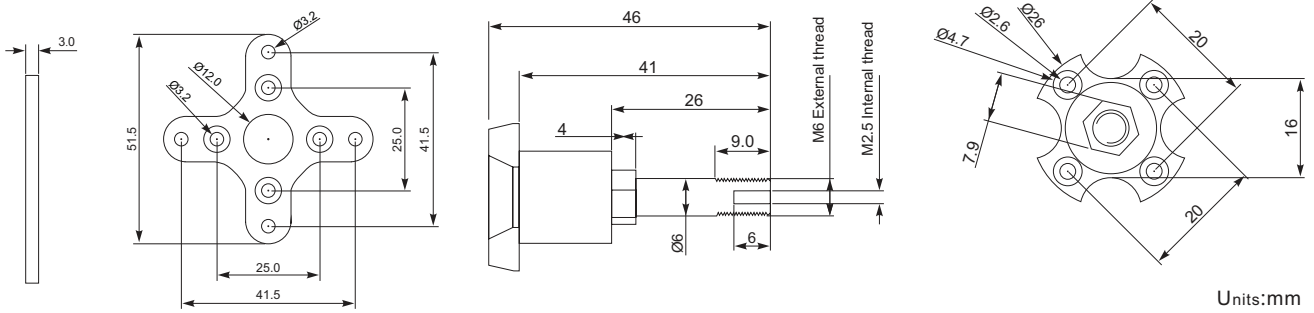
Motor Specifications



3530-860KV
Units:mm

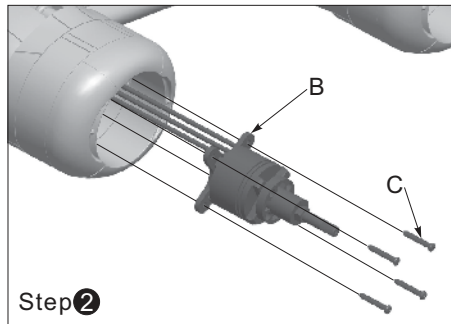
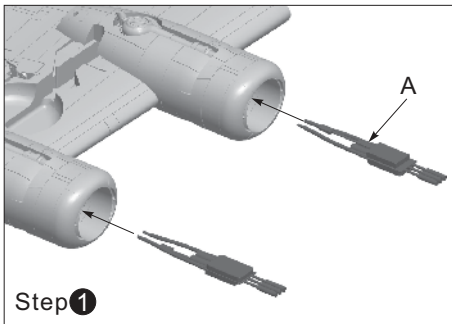
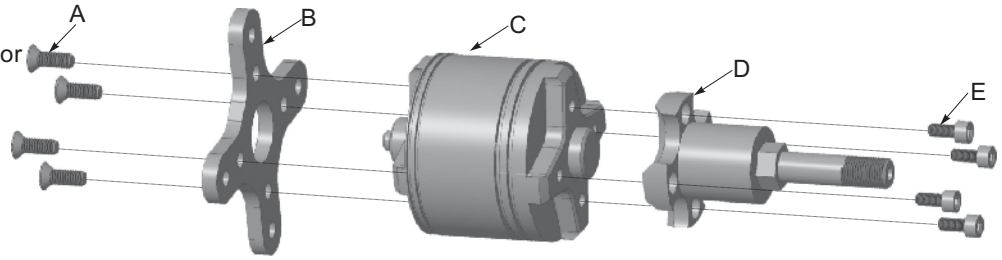
Item No.	KV Value	Voltage (V)	Current (A)	Pull (g)	Motor Resistance	Weight (g)	No Load Current	Propeller	ESC
	860RPM/V	14.8	25	1350	0.02 Ω	106	2.3A/10V	3-Blade 9.5x7	≥30A

X-Shaped Motor Mount & Propeller Shaft



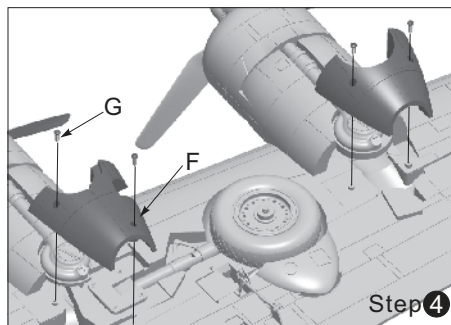
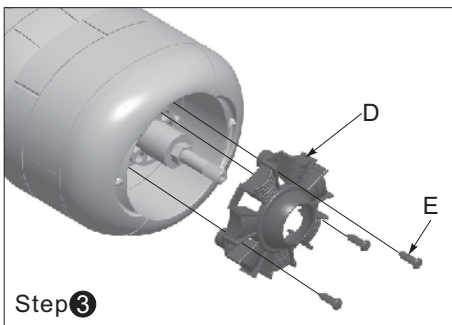
Power system Installation

- A-Screws (PM3x6)
- B-Motor Mount
- C-3530-860KV out-runner motor
- D-Prop shaft adapter
- E-Cup head screws (M2.5x6)



Refer to the left diagrams 1 and 2 to install the ESC's and Motors.

- A- ESC
- B- Motor
- C- Screws (PA3x15 16pcs)
- D- Engine cowl
- E- Screws (PA2.3x6 12pcs)
- F- Engine Pod cover
- G- Screws (PA2.3x6 8pcs)



Refer to the left diagrams 3 and 4 to install the dummy radial engines and engine pod covers.

Control Direction Test

After the build is complete but with the propellers removed, power up the radio and connect two fully charged batteries to the ESC's. Use the radio to ensure correct control direction.

Aileron

Stick Left

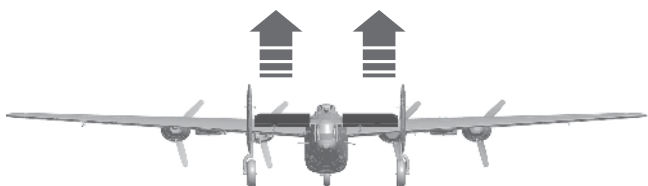


Stick Right

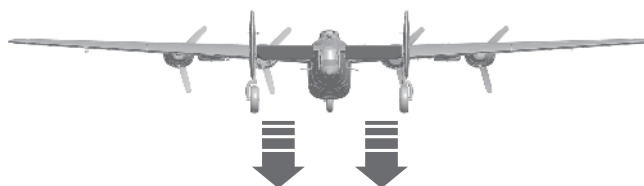


Elevator

Stick Back

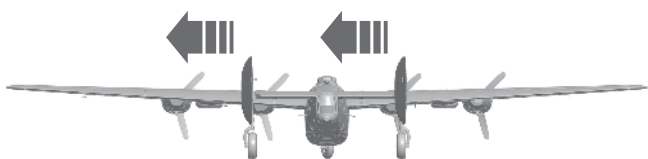


Stick Forward

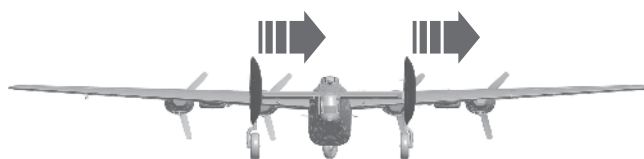


Rudder

Stick Left



Stick Right



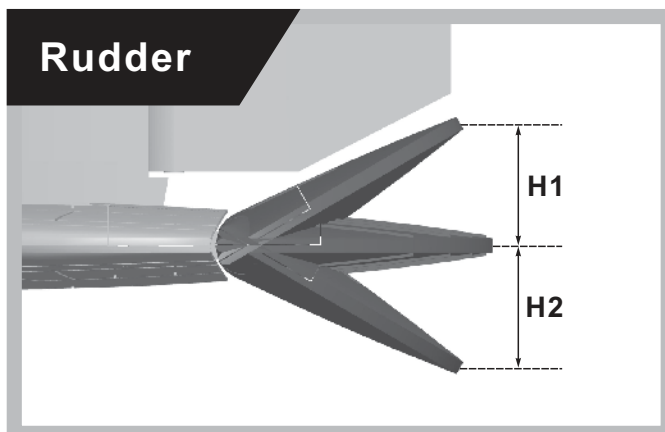
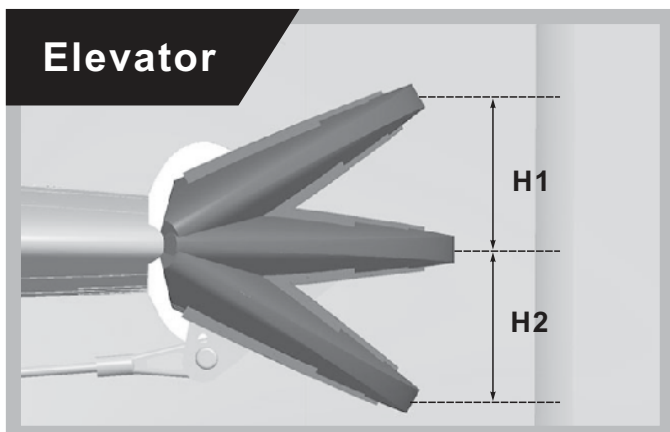
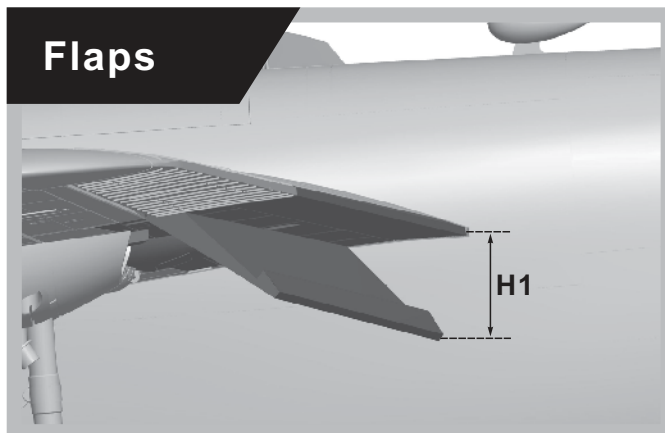
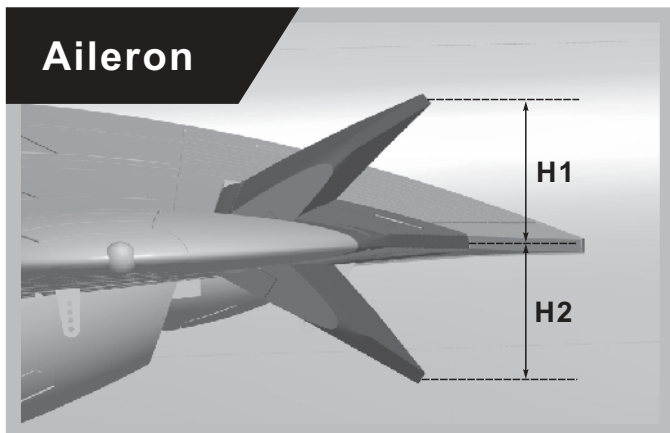
Flaps

Flaps down



Dual Rates

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



	Aileron(measured closest to the fuselage)	Elevator(measured closest to the fuselage)	Rudder(Measured from the bottom)	Flaps
Low Rate	H1/H2 20mm/20mm D/R Rate : 85%	H1/H2 18mm/18mm D/R Rate : 75%	H1/H2 15mm/15mm D/R Rate : 80%	H1 13mm
High Rate	H1/H2 22mm/22mm D/R Rate : 100%	H1/H2 23mm/23mm D/R Rate : 100%	H1/H2 19mm/19mm D/R Rate : 100%	H1 29mm

! IMPORTANT :
Throttle Calibration

Before your first flight, remove the propellers and calibrate your ESC pairs and verify that all four motors are synchronized. Reinstall the propellers and taxi test the model to check for synchronous thrust.

Flap Mixing and Tips

- 1 - A Flap-to-Elevator Mix is required to maintain level flight when the flaps are deployed. With 13mm of flaps(Low Rate), mix 1.5mm of Down Elevator. With 29mm of flaps (High Rate), mix 3mm to Down Elevator.
- 2 - When flaps are deployed, do not advance the throttle very quickly. The B-24 is intended to be flown as a scale bomber, with moderate throttle advance. Add rudder input to flatten turns for more scale appearance.

Elevator Neutral Position

1. Before your first flight, mechanically set the Elevator's Neutral Position to 1.5mm Up.

舵面测试

当您按前面的步骤组装好飞机后，在飞行前，我们需要用一块充满电的电池，连接到电调。用遥控器测试每个舵面的工作情况，检查是否正常！

副翼

副翼摇杆
向左运动

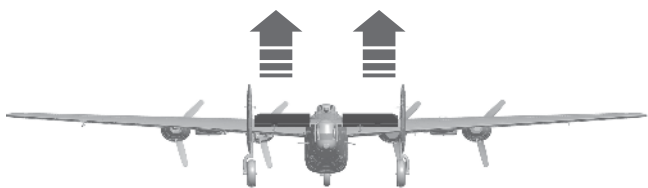


副翼摇杆
向右运动

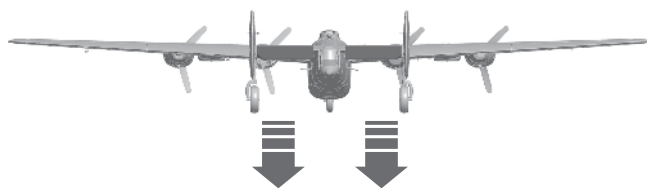


升降舵

升降摇杆
向下运动

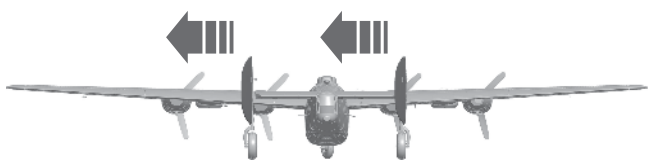


升降摇杆
向上运动

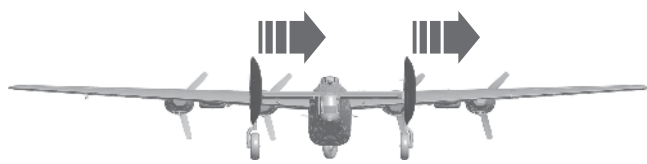


方向舵

方向摇杆
向左运动



方向摇杆
向右运动



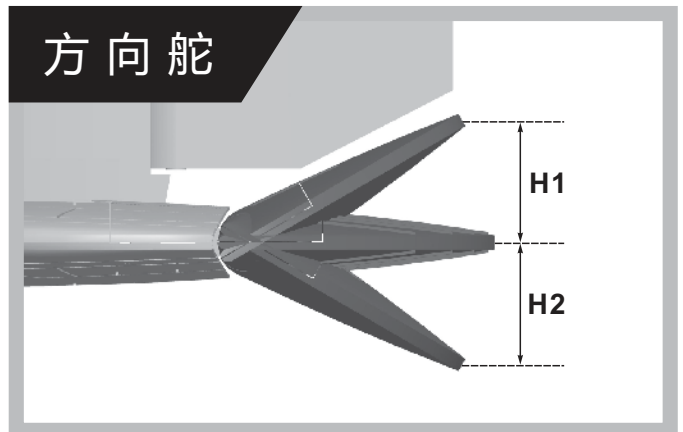
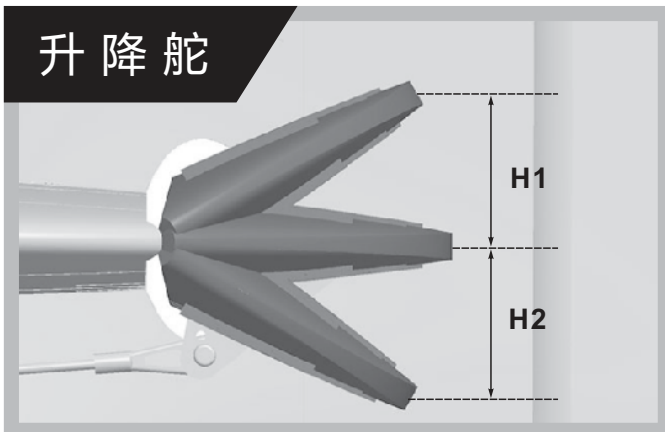
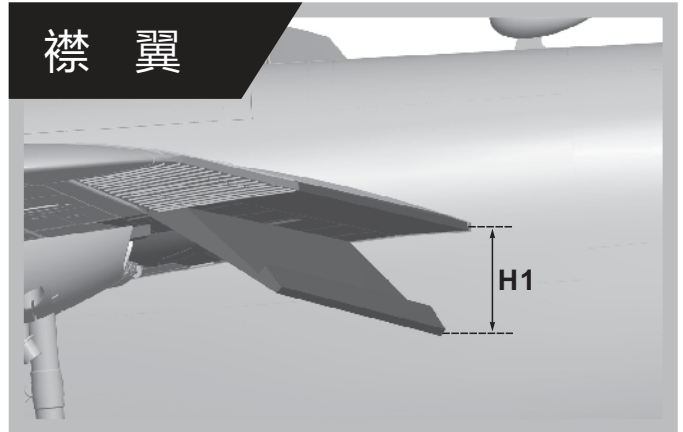
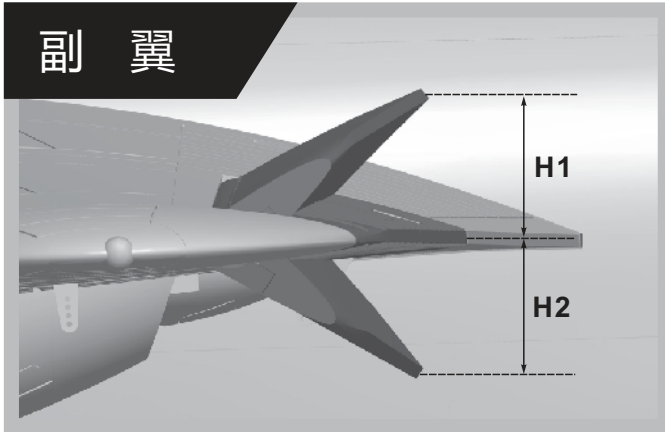
襟翼

襟翼放下



大、小舵参数

根据我们的测试经验，我们认为，按以下参数来设置大小舵量，将有助于飞行。小舵量飞机的操纵会笨拙些，大舵量飞机的操纵会灵敏些，我们建议初次飞行使用大舵量起飞，然后视操纵习惯选用小舵量或者大舵量飞行。



	副翼(内侧)	升降舵(内侧)	方向舵(下端)	襟翼
小舵量	H1/H2 20mm/20mm 舵量比率：85%	H1/H2 18mm/18mm 舵量比率：75%	H1/H2 15mm/15mm 舵量比率：80%	H1 13mm
大舵量	H1/H2 22mm/22mm 舵量比率：100%	H1/H2 23mm/23mm 舵量比率：100%	H1/H2 19mm/19mm 舵量比率：100%	H1 29mm

⚠️ 特别注意事项：

飞行前检测：

第一次飞行此产品或者更换遥控器后，必须校准油门，这样才能保持4套动力产生的拉力一致，具体校正方法见电调说明书。

飞行前设定：

1. 降落开襟翼飞机抬头比较明显，需要混控点降舵才能很好降落，小舵量襟翼需要1.5mm降舵，大舵量襟翼需要3mm降舵
2. 升降舵调平飞机飞行会有比较明显的低头现象，这样需要1.5-2mm升舵飞机就能够很好的平飞；
3. 放下襟翼飞行时，我们需要较柔和的增加油门，不能瞬间加大油门量，否则会出现飞机突然向下飞行，容易造成飞机坠毁事故。



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