



980MM P-39 HELLS BELLS

Operating Manual



Specifications

| | |
|---------------------|---|
| Wingspan..... | 980mm (38.6 in) |
| Overall Length..... | 912mm (36 in) |
| Flying Weight..... | 1360g (48.0 oz) |
| Wing Area..... | 18.35 dm ² (284.4 in ²) |
| Wing Load..... | 74.1g/dm ² (0.17oz/in ²) |
| Radio Controls..... | 6 Channel |




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WARNING

 **WARNING:** Read the ENTIRE instruction manual to become familiar with the features of the product before operating. Failure to operate the product correctly can result in damage to the product, personal property and cause serious injury.

This is a sophisticated hobby product and NOT a toy. It must be operated with caution and common sense and requires some basic mechanical ability. Failure to operate this Product in a safe and responsible manner could result in injury or damage to the product or other property. This product is not intended for use by children without direct adult supervision.

This manual contains instructions for safety, operation and maintenance. It is essential to read and follow all the instructions and warnings in manual, prior to assembly, setup or use, in order to operate correctly and avoid damage or serious injury.

Safety Precautions and Warnings

As the user of this product, you are solely responsible for operating in a manner that does not endanger yourself and others or result in damage to the product or the property of others. This model is controlled by a radio signal subject to interference from many sources outside your control. This interference can cause momentary loss of control so it is advisable to always keep a safe distance in all directions around your model, as this margin will help avoid collisions or injury.

Age Recommendation: Not for children under 14 years. This is not a toy.

- Never operate your model with low transmitter batteries.
- Always operate your model in an open area away from cars, traffic or people.
- Avoid operating your model in the street where injury or damage can occur.
- Never operate the model in the street or in populated areas for any reason.
- Carefully follow the directions and warnings for this and any optional support equipment (chargers, rechargeable battery packs, etc.) you use.
- Keep all chemicals, small parts and anything electrical out of the reach of children.
- Moisture causes damage to electronics. Avoid water exposure to all equipment not specifically designed and protected for this purpose.
- Never lick or place any portion of your model in your mouth as it could cause serious injury or even death.

FMS Reminder



Thank you for purchasing an FMS model product. Our goal is to provide high quality products and offer great customer service. If you have any problems with your purchase or want to offer suggestions for improvements (such as plane design, packaging, building instructions, etc.) please feel free to contact your local shop or send us email at support@fmsmodel.com

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Safety

Lithium Polymer (Li-Po) Battery Warning

CAUTION: Always follow the manufacturer's instructions for safe use and disposal of batteries. Fire, property damage, or serious injury can result from the mishandling of Li-Po Batteries.

- By handling, charging or using a Li-Po Battery you assume all risks associated with lithium batteries.
- If at any time the batteries begin to swell, or balloon, discontinue use immediately! Charging or discharging a swelling or ballooning battery can result in fire.
- Always store the batteries at room temperature in a dry area to extend the life of the battery. Always transport or temporarily store the battery in a temperature range of 40-120F. Do not store the battery or model in a car or in direct sunlight. If stored in a hot car, the battery can be damaged or even catch fire.
- Never use a Ni-Mh Charger to charge Li-Po Batteries. Failure to charge the battery with a Li-Po compatible charger may cause fire resulting in personal injury and property damage.
- Never discharge Li-Po Cells below 3V.
- Never leave charging batteries unattended.
- Never charge damaged batteries.

Charging the Flight Battery Warning

- Use a battery charger that is designed to safely charge the Li-Po Battery. Read the charger instructions carefully before use. When charging the battery, make certain the battery is on a heat resistant surface. It is also highly recommended to place the Li-Po Battery inside a fire resistant charging bag readily available at hobby shops or online.

Introduction and History

The Bell P-39 Airacobra was one of the principal American fighter aircraft in service when the United States entered World War II. The P-39 was an all-metal, low-wing, single-engine fighter, with a tricycle landing gear and equipped with an Allison V-1710 liquid-cooled V-12 engine mounted behind the cockpit. This installation caused some pilot concern, but this proved to be no more of a hazard in a crash landing than with an engine located forward of the cockpit. It made its initial flight in April 1939 at Wright Field and by the time of the Pearl Harbor attack, nearly 600 had been built.

FMS has replicated this unique plane in its 980mm Series for those that want a truly different aircraft to fly. If you love warbirds and enjoy the excitement of heart-pounding speeds, this aircraft will satisfy both of your desires! With the stock 3 bladed prop, 3648 brushless Outrunner motor, 4 cell LiPo battery and 60A ESC, the P-39 can attain speeds of up to 100mph+.

Be ready to turn heads with the awesome 980mm P-39 Airacobra.

Kit Contents

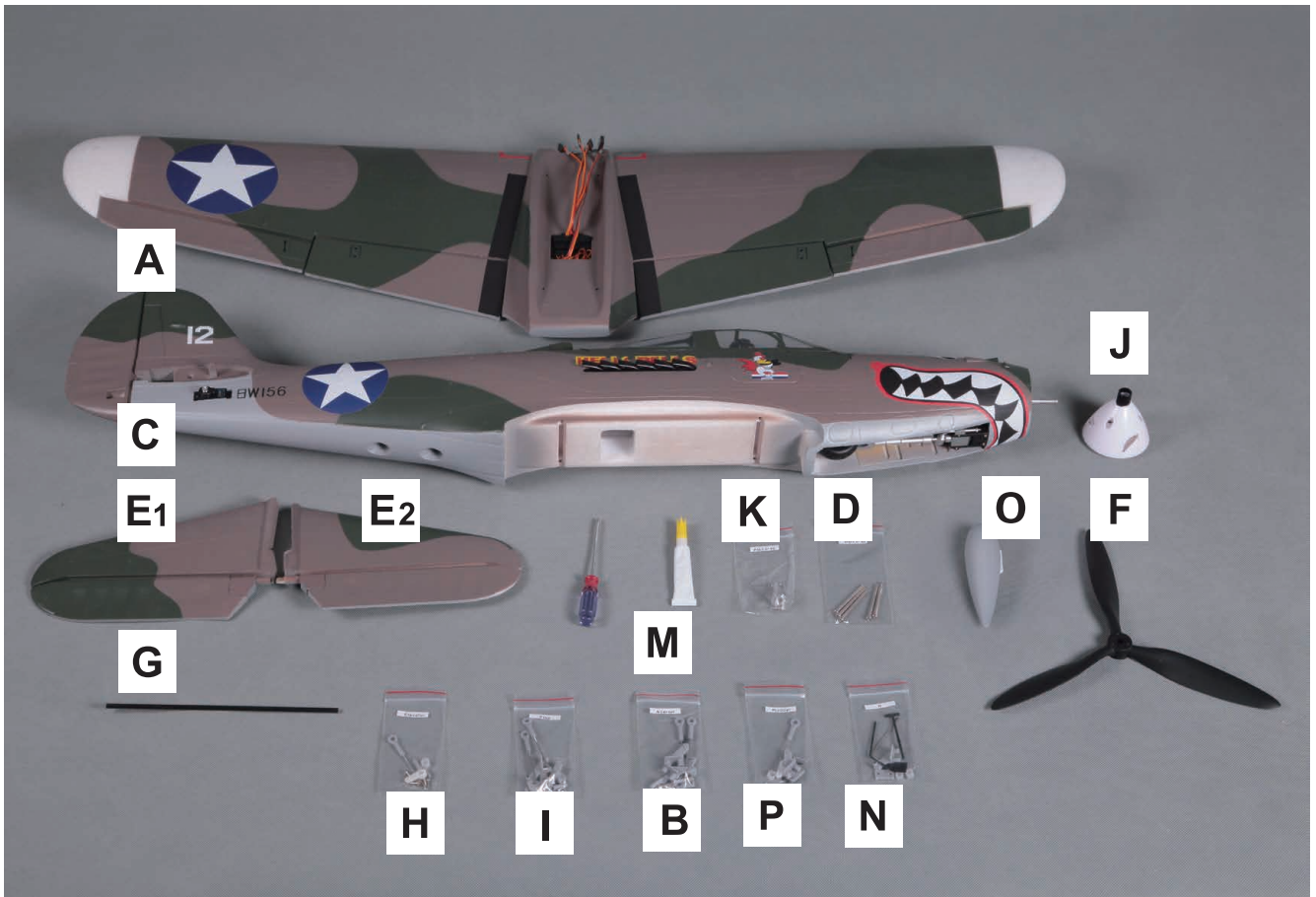
Before assembly, please inspect the contents of the kit. The photo below details the kit contents and labels the major components “A” thru “P” for your convenience. If any parts are missing or defective, please identify the name or part number (refer to the spare parts list near the end of the manual), then contact your local shop or email us.

FMS Team Product Support

3/F, Building B, 3rd Industry Zone, Matigang, Dalingshan Town,
Dongguan City, P.R.C.

Phone: 0086-769-86976655

Email: support@fmsmodel.com



Package details:

- | | | |
|---|---|--|
| A: Main wing | B: Aileron control horn and pushrod pack | C: Main fuselage |
| D: Main wing bolts | E1: Horizontal stabilizer (Left) | E2: Horizontal stabilizer (Right) |
| F: Propeller | G: Horizontal stabilizer spar | H: Horizontal stabilizer pack |
| I: Flap control horn and pushrod pack | J: Spinner | K: Spinner bolt |
| N: Airspeed Head Set 、 Antenna 、 Spare accessories | | |
| M: Glue | P: Rudder control horn and pushrod pack | |

Additional Required Items

Tools and Adhesives

- Glue Brush

Transmitter/Receiver (required for PNP and kit version)

This model requires a 6 channel receiver and transmitter.

Battery/Charger (required for PNP and kit version)

A 14.8V 2600 mAh 35C Li-Po Battery is recommended for the High Speed (HS) version. If using another battery, it must be the same voltage, approximately the same capacity, dimensions, and weight to fit in the fuselage without changing the center of gravity significantly. A standard Li-Po Battery Balancing Charger is required to safely charge the battery. Caution: Using a higher voltage Li-Po Battery than recommended could exceed the maximum capacity of the ESC and motor and result in ESC failure during flight. This would cause a complete loss of control creating a potentially dangerous condition.

Motor/ESC/Servos/Propeller

The HS kit version requires a brushless 3648-KV770 motor, a 60A ESC ,(7) 9g digital metal gear servos, and a 10.5 x7 three blade propeller.

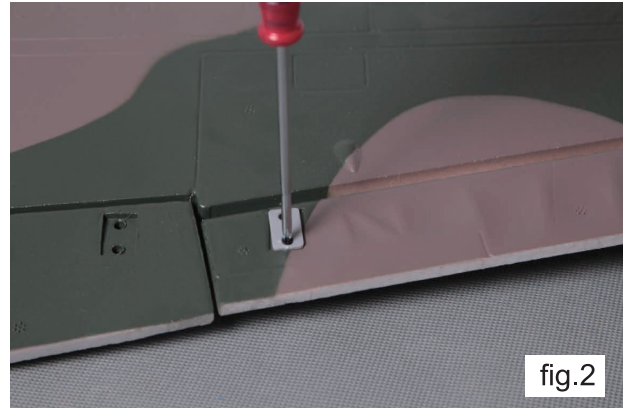
Assembly Instructions

The assembly instructions in this manual have been divided into logical steps. Check boxes have been placed in front of each step to help you keep track of your progress. Please read each step carefully, perform the task per the instructions, and mark when completed. If you are unavoidably interrupted before completing a step, it is advisable to make a detailed notation of any unfinished items to ensure the step is fully completed when you return to the task. Refer to the “Kit Contents” photos if you need help identifying a part.

Install the aileron control horns

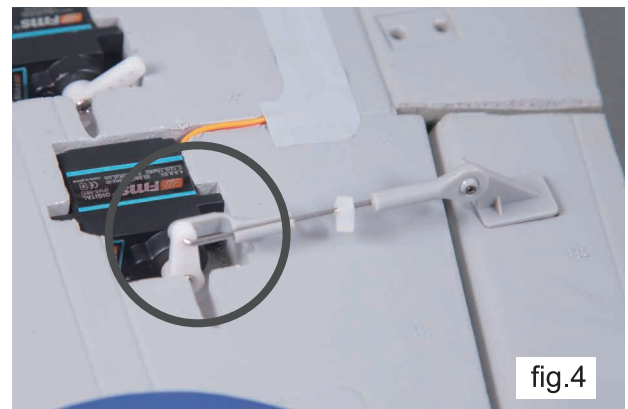
- 1) Locate the wing “A” and parts bag “B” which contains the aileron control horns, backing plate, screws, and control rod linkages.
- 2) Insert the control horns into the holes in the bottom surface of each aileron, with the horn pointing towards the hinge line of the wing (fig. 1). Place the control horn backing plate on the top side of the aileron surface. Using the provided screws, secure each control horn from the backing plate side. (fig. 2)



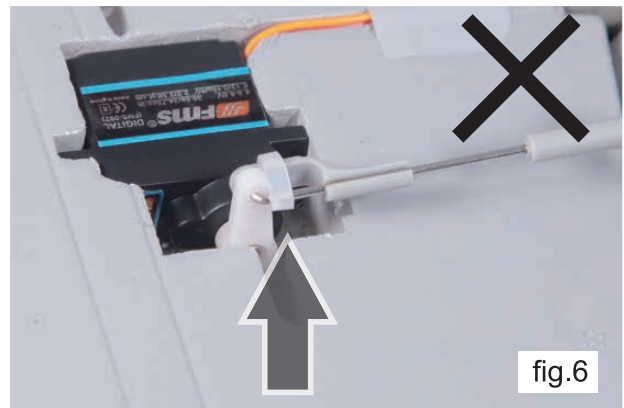
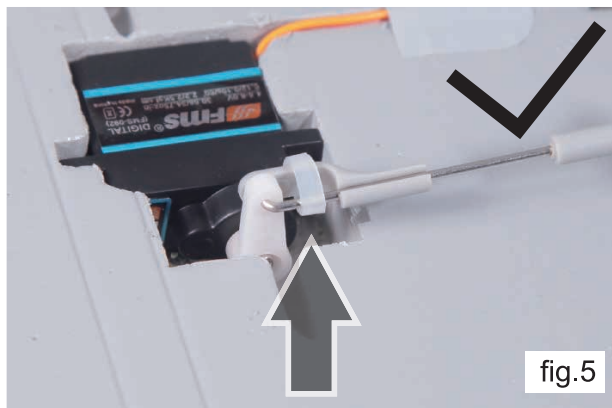


Connect the aileron control rod linkages

- 3) Slide the provided piece of fuel tubing over the control rod linkage and then insert the control rod linkage through the desired hole in the aileron servo arm (fig .3) Note: For a single rate transmitter use the first hole to achieve a high rate setting. Use the third hole nearest the servo to achieve a low rate setting
- 4) Press the hole in the clevis over the end of the control rod linkage, rotate it and snap the base of the clevis over the control rod linkage (fig. 4).

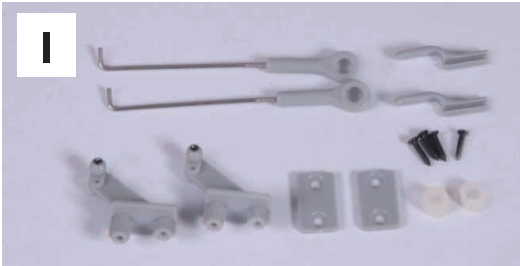


- 5) Slide the fuel tubing over the clevis to secure it (fig. 5). Note: Do not slide the fuel tubing too far or binding of the servo arm could result (fig. 6). Repeat steps 3-5 for the other aileron control rod linkage.



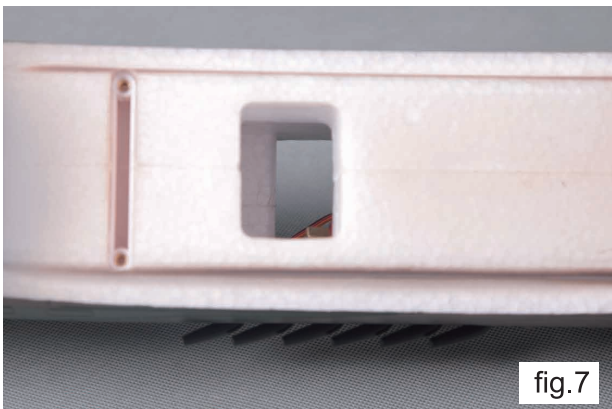
Connect the flap /rudder control rod linkages

- 6) Connect the flap/rudder control rod linkages in the same manner as the aileron control rod linkages.

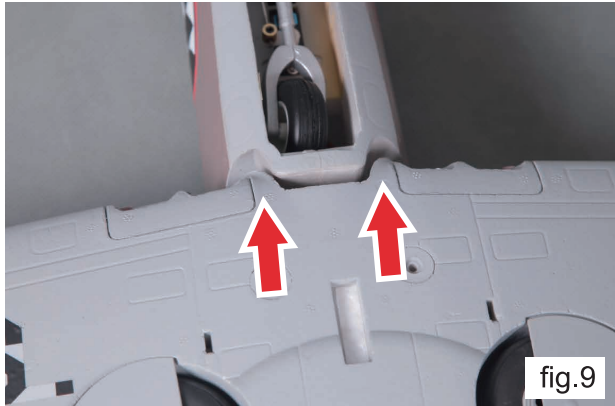


Install the Wing

- 7) Locate the fuselage "C", remove the canopy, and turn the fuselage over so the bottom side is facing up (fig. 7).
- 8) Begin to install the wing by guiding the servo leads through the opening in the bottom of the fuselage as you lower the wing into position (fig. 8).



- 9) Insert the nose on the leading edge side of the wing into the notch in the fuselage (fig. 9). Continue to guide the servo leads thru the opening in the fuselage by pulling on them from the canopy side of the fuselage as you fully seat the wing in position.
- 10) Secure the wing with the four provided machine screws "D" (fig. 10).

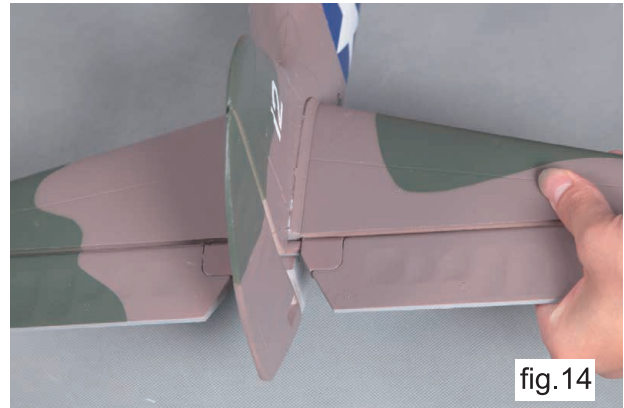


Install the horizontal stabilizer

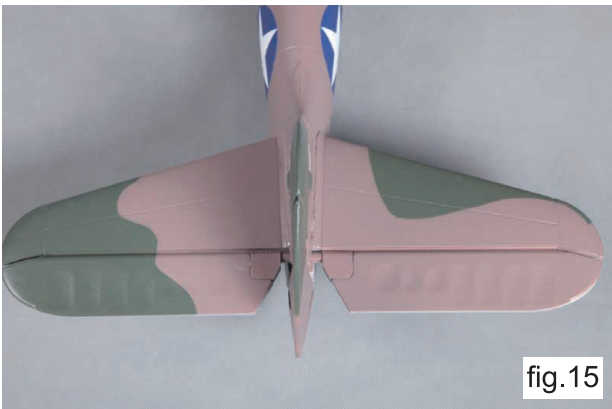
- 11) Locate the left half of the horizontal stabilizer “E1”. Align the notch in the stabilizer with the plastic tongue protruding from the fuselage (fig. 11).
- 12) Press the left half of the horizontal stabilizer into position (fig. 12).



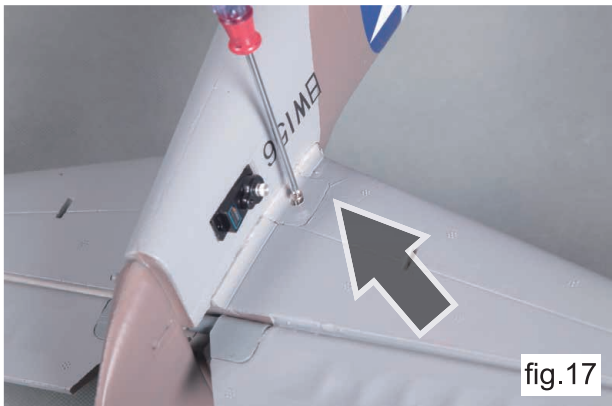
- 13) Insert the fiberglass connecting tube “G” into the left side stabilizer (fig. 13). Slide the tube approximately halfway in. Do not force it in farther than it will slide. This will push the connecting tube into the foam and prevent it from fully inserting into the right side stabilizer half.
- 14) While holding the left side stabilizer in place, guide the right side stabilizer “E2” over the connecting tube and align the notch with the plastic tongue (fig. 14).



- 15) Press the right side stabilizer into place (fig. 15).
- 16) Turn the fuselage over. Secure the horizontal stabilizer with the two supplied screws from bag "H" (fig. 16).



- 17) Connect the left and right elevator surfaces by installing the provided screw from bag "H" as shown (fig. 17).



Connect the elevator control rod linkages

- 18) Press the socket-style linkage connectors over the corresponding ball end on the control horn located on the underside of the elevator. (fig.18).



Receiver Connection

- 20) Connect the labeled leads per the receiver connection diagram (fig. 19). There is a Y-harness for the ailerons and a connection board for the retractable gear that must be used to combine the leads prior to making a connection to the receiver (fig. 20).

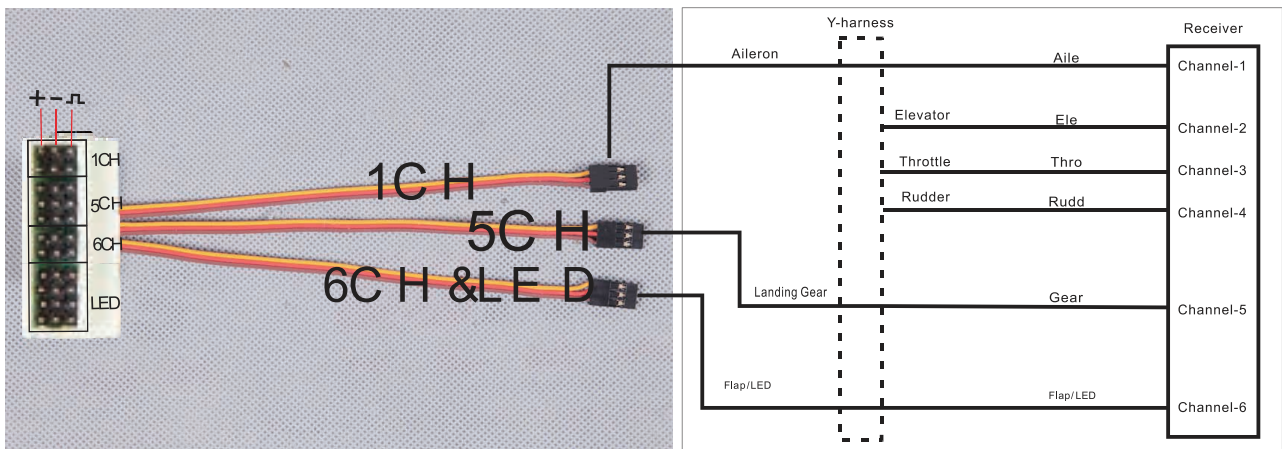


fig.19

Install the battery

- 21) Insert the battery into the battery compartment as shown (fig. 21). Secure the battery in place with the hook and loop strap.



Generic Binding Instructions

Binding is the process of programming your receiver to respond to your specific transmitter. Always follow your radio equipment manufacturer's specific binding instructions. Below is a typical generic procedure for reference:

1. Power off the transmitter.
2. Set the throttle control on the transmitter to its lowest position (all other controls should be at their neutral position).
3. Install binding plug in receiver bind port.
4. Connect the battery to the ESC.
5. The receiver LED will flash rapidly.
6. Turn on the transmitter while holding the bind button or switch in the bind position.
7. When the receiver binds, the LED on the receiver will turn on and remain steady.
8. Remove the binding plug from the receiver.

Note: We recommend re-binding the radio after all the control throw settings are adjusted. This will keep the servos from moving full stroke while the transmitter and receiver connect.

ESC Information

Please refer to the ESC instruction at the end of manual for detail information about your programmable ESC.

Motor Rotation

The motor and ESC comes pre-connected. The direction of motor rotation should be counterclockwise (fig. 22). If the motor is rotating in the wrong direction, simply reverse two of the three motor wires to change the direction of rotation.

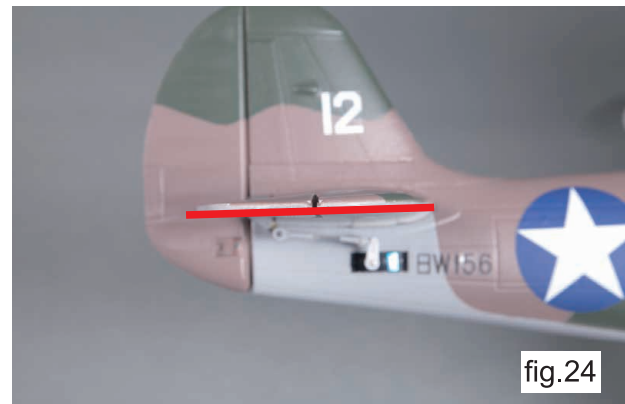
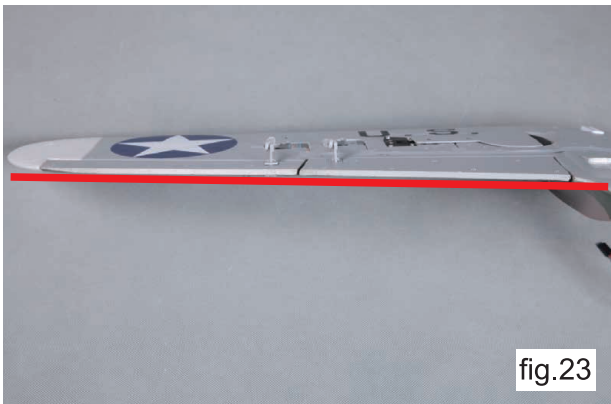


Control Surfaces

Center Adjustment (trim)

1. Follow all safety precautions as outlined in this manual and your transmitter manufacturer's manual, including setting the throttle to the off position.
2. Turn on the transmitter and plug in the ESC battery.
3. Center all the trim controls on the transmitter.
4. Look at all the control surfaces to determine which ones need adjustment.
5. Unplug the ESC battery and turn off the transmitter before attempting any adjustments.
6. Adjust clevises as necessary to center control surfaces to their neutral position.
7. Repeat steps 1 through 4 to verify adjustments.
8. If more adjustment is required, repeat steps 5 and 6 until process is completed.

Please see the following for reference; ailerons (fig. 23), rudder, elevator and, rear landing gear (fig. 24). Note: the rudder and rear landing gear neutral position is adjusted by loosening one of the screws on the control connector and moving the linkage rod. Tighten the screw when the adjustment is complete (fig. 25). The other control surfaces are adjusted by disconnecting the appropriate end of the control rod linkage and turning the threaded connector on the linkage rod.



Direction Check

Turn on your transmitter and receiver. Viewing the model from the rear, move the controls on the transmitter per the instructions that follow and verify the control surfaces are responding in the appropriate direction. You may have to reverse the direction of one or more channels on your transmitter to correct any issues. (Mode 2)

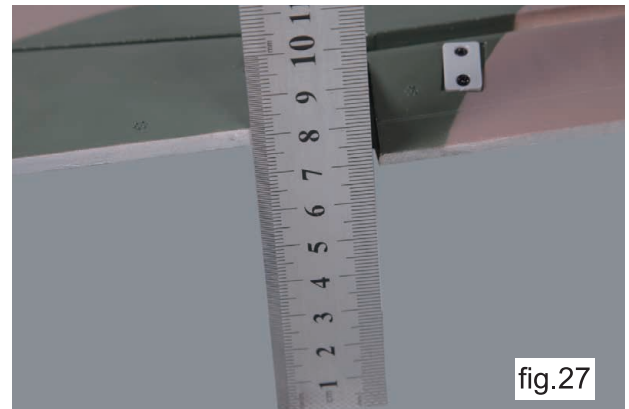
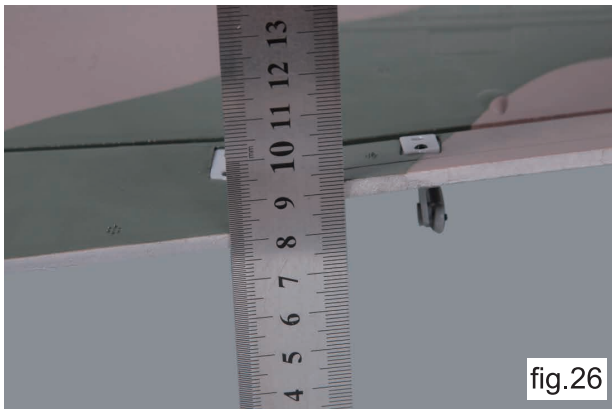
1. Move the left joystick to the right. The rudder should move to the right. Move the joystick to the left. The rudder should move to the left. Reverse channel on transmitter if necessary.
2. Move the right joystick down towards the bottom of the transmitter. The elevator should move up. Move the joystick towards the top of the transmitter. The elevator should move down.
3. Move the right joystick to the right. The right aileron should go up. The left aileron should go down. Move the joystick to the left. The right aileron should go down. The left aileron should go up.

Travel Settings (throw)

Adjust the throw by moving the clevis position on the control surface horns. A commercially available gauge is helpful in this task though not required. If you have a single rate transmitter, adjust throws to low rate settings. If you have a dual rate transmitter, adjust the throws to achieve high rate settings.

Aileron Control Throw Setting (low rate)

10 mm up/down (fig. 26-28). Pictures are for reference only on how to use the gauge.



Elevator Control Throw Setting (low rate)

8 mm up/down

Rudder Control Throw Setting (low rate)

7 mm left/right

Flap Control Throw Setting

25 mm mid down

35 mm full down

Note: Measure the throw (deflection) at the widest point (chord) of each control surface.

Dual Rates and Exponential Recommendations

On many transmitters, dual rates can be setup for aileron, elevator, and rudder channels. If your transmitter is capable, designate a switch on the transmitter to change between a low and high rate of servo travel for each channel. Low rates are for normal flying. High rates are for extreme aerobatics.

To use dual rates, the control surface throw settings should be set to equal the high rate settings. When the transmitter switch is in the high rate position, the control surface will travel 100%. When the transmitter switch is in the low rate position, the servo will travel less than 100% (a percentage that you determine) to make the control surface throw equal to the low rate deflection.

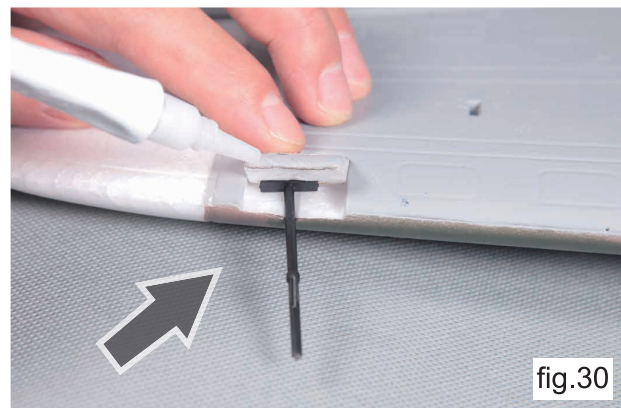
Aileron high rate 14 mm up/down

Elevator high rate 15 mm up/down

Rudder high rate 12 mm left/right

Final Assembly, Detailing, and Propeller Set

- 1) Locate the antenna sets "M". Glue on the antenna before inserting to the foam as the arrow shown (fig. 29)
- 2) Glue on the airspeed head area and install the foam cover with the airspeed head. (fig.30)

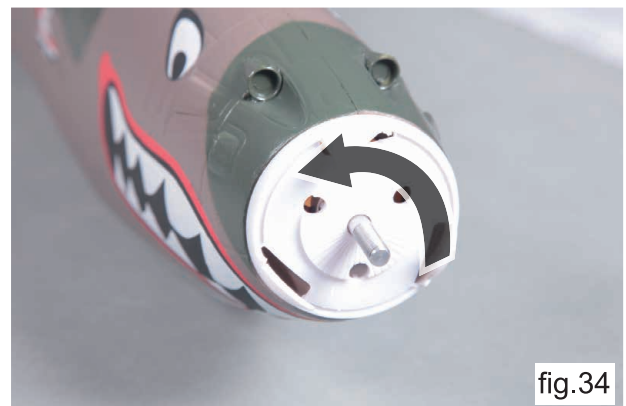


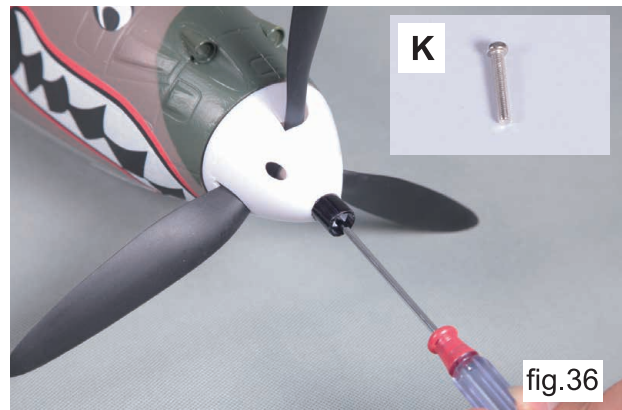
- 4) Slide the external fuel tank “O” into the slot on the bottom of the fuselage as shown (fig.31). Note: This step is optional as the external fuel tank could reduce performance.



Install the Propeller Assembly

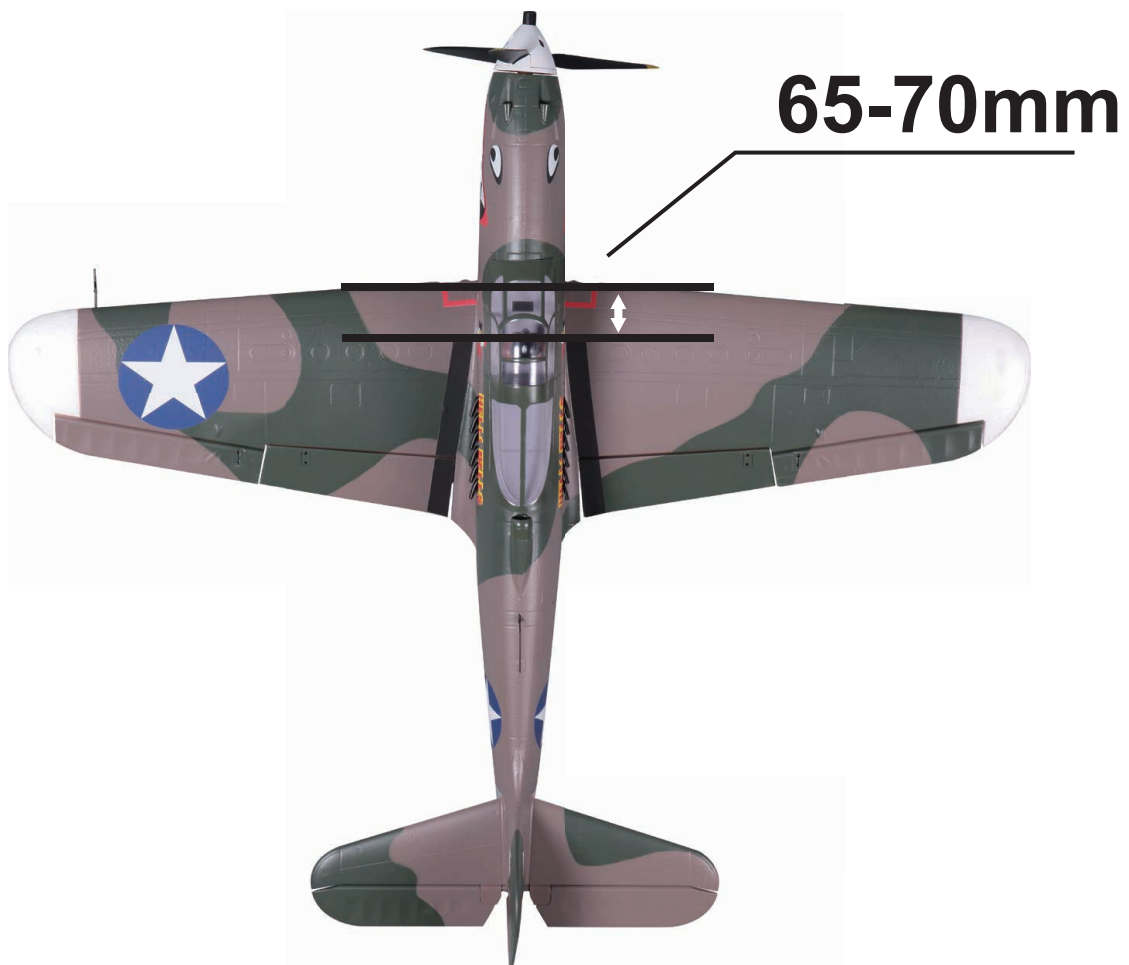
- 5) Prior to installing the propeller assembly, balancing is recommended. There are commercially available balancers for this task. Please follow the manufacturer’s instructions carefully.
- 6) Key the propeller assembly to the motor shaft by fitting the assembly over the hex nut on the shaft “J” (fig. 33).
- 7) Install the propeller to the motor shaft and make sure the root of the propeller sits right on the saddle with the painted propeller tips facing the front of the plane. Secure the bullet into place using a screw driver. (fig.34)
- 8) Secure the spinner into place using the included machine screw “K”. (fig. 35-36)





Center of Gravity

Before balancing your model, make sure the it is completely assembled, the battery is installed, and the retractable landing gear is in the lowered position. The recommended center of gravity (CG) for your model is 65mm-70mm from the wing's leading edge (measured at point of contact with fuselage). Lightly mark the ideal center of gravity position on the top surface of the wing on each side of the fuselage. Support the plane inverted at the marks made on the top of the wing with your fingers or a commercially available balancing stand. It should be level or just slightly nose down. Adjust the position of battery as necessary to achieve the proper balance.



Pre-flight Checklist

Prior to first flight:

- 1.Ensure your transmitter and ESC batteries are fully charged per manufacturer's instructions.
- 2.Ensure propeller is properly secured.
- 3.Ensure receiver and ESC battery are secure.
- 4.Check all control surface actuating hardware (linkages, screws, nuts, bolts, etc.)
- 5.Perform a range test on the radio equipment.
- 6.Check control surfaces for proper direction and throw.
- 7.Check center adjustment of each control surface.
- 8.With someone holding the aircraft, start the motor and make sure it runs smoothly and in a CCW direction when viewed from the front. Ensure it will transition from off to high throttle and back to off.

Flight Safety

- 1.Do not fly in strong winds or bad weather.
- 2.Never fly in crowded areas near people, cars, buildings, power lines, airports, etc. The plane can travel at high speed so choose a wide open space and give yourself plenty of room to operate. Remember you are responsible for the safety of others.
- 3.Not recommended for children under 14 years of age. Children under 12 must have adult supervision.
- 4.Never use or leave the battery charger in a wet environment.
- 5.Keep the model away from heat which can easily destroy the foam structure of the plane, the electronics, or the battery.
- 6.Do not attempt to catch the model while flying.
- 7.Stay clear of the propeller at all times, even when it is not moving because the transmitter could easily be bumped and cause the propeller to move without warning.
- 8.Never leave the model unattended with a battery installed. Injury could be caused by children or unaware adults turning on the transmitter.
9. When preparing for flight, turn the transmitter on and ensure the throttle is off before connecting the battery.

Daily Flight Checks

Prior to first flight:

- 1.Check condition of major components. Ensure wing, tail, motor, and landing gear are secure.
- 2.Check condition of propeller.
- 3.Check all control surface actuating hardware (linkages, screws, nuts, bolts, etc.)
- 4.Check the voltage on the transmitter and batteries.
- 5.Perform a range test on the radio equipment.
- 6.Check control surfaces for proper direction and throw.
- 7.Check center adjustment of each control surface.

Post flight:

1. Disconnect battery
2. Turn off transmitter
3. Remove battery from model.
4. Recharge battery.
5. Store battery away from model in fire proof container.
6. Repair or replace any damaged parts on the model airplane.

Spare parts list content

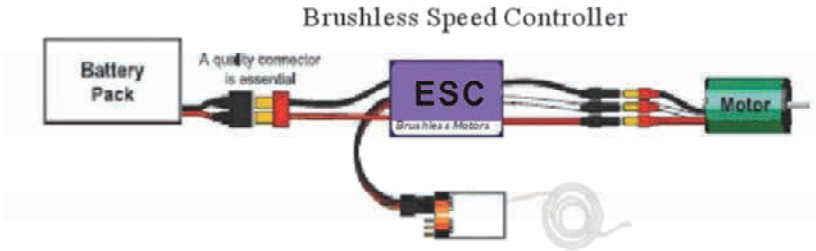
- PI 101 Fuselage
 - PI 102 Main wing set
 - PI 103 Horizontal Stabilizer
 - PI 104 Cockpit
 - PI 105 Spinner
 - PI 106 Propeller
 - PI 107 Airspeed Head
 - PI 108 Exhaust Pipe
 - PI 109 Motor Mount
 - PI 110 Motor Board
 - PI 111 Retract
 - PI 112 Main Landing Gear Set
 - PI 113 Main Landing Gear System
 - PI 114 Front Landing Gear System
 - PI 115 Motor Shaft
 - PI 116 Linkage Rod
 - PI 117 Screw Set
 - PI 118 Decal Sheet
 - PI 119 Pipe
 - PI 120 Antenna
 - PI 121 Oil Tank
 - FMSCON 002 (Multi-connector set)
 - FMS-Motor-3648 KV770 (3648-KV770 Motor)
 - FMS-ESC-70A (70A ESC)
 - FMSSER9MGD (FMS 9g digital metal gear servo positive)
 - FMSSER9MGDR (FMS 9g digital metal gear servo reverse)
 - FMSSER9MGD-54DEG (FMS 9g digital metal gear servo 54 degree)
 - FMSSER9SLP (FMS 9g Positive slow servo flaps)
- Note:** All of the parts are painted with no decal applied
Visit our website to see photos of this product: www.fmsmodel.com

ESC instruction

Wires Connection:

The electronic speed controller can be connected to the motor by soldering directly or with high quality connectors. Always use new connectors, which should be soldered carefully to the cables and insulated with heat shrink tube. The maximum length of the battery pack wires shall be within 6 inches.

- Solder controller to the motor wires.
- Solder appropriate connectors to the battery wires.
- Insulate all solder connectors with heat shrink tubes.
- Plug the "JR" connector into the receiver throttle channel.
- Speed Controller Red and Black wires connects to battery pack Red and Black wires respectively.



Specification:

Programming Mode Audible Tones

| Programming Mode Audible Tones | ESC Functions |
|---|--|
| 0 Throttle Calibration (within the first 4 Sec) ● ● ● ● | |
| 1 Brake * * * * | Brake On /Off |
| 2 Battery type ~ ~ ~ ~ ~ ~ ~ ~ | NiCad LiPo |
| 3 Low Voltage Cutoff Threshold * | Low 2.8V/50% Medium 3.0V/60% High 3.2V/65% |
| 4 Restore Factory Setup Defaults _ _ _ _ | Restore |
| 5 Timing Setup _ _ _ _ _ _ _ _ _ _ _ _ | Automatic (7-30°) Low (7-22°) High (22-30°) |
| 6 Soft Acceleration Start Ups ∨ | Very Soft Soft Acceleration Start Acceleration |
| 7 Governor Mode * * * * ** ** ** ** *** *** *** ** | Rpm off Heli first range Heli second range |
| 8 Motor Rotation W W W W | Positive/Reverse |
| 9 Switching Frequency // // // // \\ \\ \\ \\ | 8kHz 16kHz |
| 10 Low Voltage Cutoff Type _ ⊗ ⊗ ⊗ ⊗ _ ⊗ ⊗ ⊗ ⊗ | Reduce Power Hard Cut Off |



MADE IN CHINA