

INSTRUCTION MANUAL

BUTTERFLY ARF VERSION 3



Covering-material color options: Red, Blue or Orange.
(Shown with optional night-flying lighting system.)

Specifications:

Wingspan	47 inches
Length	30 inches
Wing Area	309.5 sq. inches
Flying weight	approx. 17 oz.
Brushless motor (Included)	2408-21-H
Brushless electronic speed control (Included)	15~18A
Propeller (Included, plus one spare)	Slow Fly 9x6 or 10x4.7
Battery (Not included)	7.4V or 11.1V 900 mAh Li-Po battery
Radio system (Not included)	Minimum of 3 channels with 2 mini servos

Maxford USA

IMPORTANT SAFETY PRECAUTIONS TO PROTECT YOUR MODEL, YOURSELF & OTHERS

1. This product should not be considered a toy, but rather a sophisticated, working model that functions much like a full-scale airplane. Because of its performance capabilities, this product, if not assembled and operated correctly, could cause injury to you or spectators and damage to property. Maxford USA provides you with a high-quality, thoroughly tested model airplane kit with assembly instructions. However, the quality and capabilities of your finished model airplane depends on how you build it, and your safety depends on how you use and fly it. Any testing or flying of this model airplane is done entirely at your own risk.
2. Assemble the model airplane according to the instructions. We recommend that you do not alter or modify the model, as doing so may result in an unsafe or unworkable model. In a few cases the instructions may differ slightly from the photos. In those instances the written instructions should be considered as correct. If you have any question about the instructions, before you proceed with assembly of this product, contact us at (562) 802-0680, Monday through Friday, except national holidays, between 8:30 AM to 5 PM Pacific time.
3. Take time to build it STRAIGHT, TRUE and STRONG.
4. Install the R/C system and other components in such a way that this model airplane passes all ground safety/range tests and ensure that all controls operate smoothly and correctly.
5. Check the operation of this model airplane before every flight to ensure that all equipment is still operating correctly and that the model has remained structurally sound. Also, before every flight check the clevises and other connectors; replace any found damaged or defective.
6. If you are not an experienced R/C pilot or have not flown this type of model before, we recommend that you get the assistance of an experienced R/C pilot.
7. Throughout the lifetime of this model, use only the supplied Maxford USA or same-sized motor, electronic speed control, and a new or well-maintained R/C radio system and recommended Li-Po battery.
8. **LITHIUM BATTERY HANDLING & USAGE: WARNING!!** Read the entire instruction sheet included with the battery. Failure to follow all instructions could result in permanent damage to the battery, its surroundings, and bodily harm! If you crash this model airplane, check whether the Li-Po battery is damaged. Do NOT use or charge a damaged Li-Po battery.

ONLY use a Li-Po approved charger. (NEVER use a NiCd/NiMH charger!)	NEVER charge in excess of 4.2V per cell.
ALWAYS set the charger's output to match the battery's voltage and mAh ratings.	NEVER discharge below 2.5V per cell.
ALWAYS charge through the battery's "charge" connector. (NEVER charge through the "discharge" leads.)	NEVER allow battery temp. to exceed 150° F (65° C).
ALWAYS charge in a fireproof location.	NEVER charge at currents greater than 1C (for example, in the case of a 900 mAh battery, that's 0.9 amps).
NEVER place on combustible materials or leave unattended during charge or discharge.	NEVER trickle charge.
	NEVER disassemble or modify pack wiring in any way or puncture cells.

ALWAYS KEEP OUT OF REACH OF CHILDREN.

9. While this kit has been flight tested to meet or exceed our rigid performance and reliability standards in normal use, if you plan to perform any extremely high-stress flying, such as racing or advanced aerobatics, or if you plan to install a larger motor than included, you (the buyer or user of this product) are solely responsible for taking steps to reinforce the high-stress points and/or substitute hardware that is more suitable for such increased stresses.
10. The Butterfly V3 includes carbon-fiber reinforced plastic that should not require any cutting or sanding. (Fiberglass parts are NOT included; however, some accessories you might elect to use with this model airplane may contain fiberglass). Nonetheless, be warned that carbon-fiber and fiberglass dust may cause eye, skin and respiratory tract irritation. So if you ever grind, drill or sand such parts, always wear safety goggles, a particle mask and rubber gloves, and never blow into such a part to remove carbon-fiber or fiberglass dust, as the dust may blow back into your eyes.

NEW FEATURES OF THE BUTTERFLY V3

- Carbon-fiber leading edge.
- Removable lighting system (was built-in on V2).
- Power system upgrade to brushless motor and controller.

WARRANTY, LIABILITY WAIVER, AND RETURN POLICY

Maxford USA guarantees this kit to be free from defects in material and workmanship at the time of purchase. All of our products have been inspected in our factory and are checked again when shipped from our warehouse.

However, Maxford USA cannot directly control the materials you may use nor your final-assembly process. Therefore, Maxford USA can NOT in any way guarantee the performance of your finished model airplane. Furthermore, in purchasing this product, you (the buyer or user of this product) exempt, waive, and relieve Maxford USA from all current or future liability for any personal injury, property damage, or wrongful death, and if you (the buyer or user of this product) are involved in any claim or suit, you will not sue Maxford USA or any of its representatives.

If you do not fully accept the above liability and waiver, you may request a return merchandise authorization number (RMA#) as explained in item 2, below.

If you think there is a missing part or any shipping damage, please read our after-sales service and return policy as outlined below.

1. Inspect your order upon delivery for any shipping damage or missing part. If you find a problem you must contact us within 10 days from receipt of your purchase by calling (562) 802-0680, Monday through Friday, except holidays, between the hours of 8:30 AM and 5 PM Pacific time. During this telephone conversation, and with your support, we will determine how to resolve your concern. (Note: Maxford USA Li-Po batteries are sold without warranty and are not eligible for return or credit.)
2. To request an RMA#, call (562) 802-0680, Monday through Friday, except holidays, between the hours of 8:30 AM to 5 PM Pacific time. If we elect to issue you an RMA#, you must clearly mark this RMA# on the outside of the package. (No return or exchange will be authorized after 10 days from the date of your receipt of the product; any package delivered to us without a Maxford USA RMA# is subject to being returned to the sender, as received, with return postage payable upon delivery.) Returned merchandise must be in its original condition as received from Maxford USA, with no assembly or modification, in the original packing materials, complete with all manuals and accessories. Return shipping and insurance charges must be prepaid by you, the buyer.
3. Returned merchandise that is accepted by Maxford USA for credit is subject to a 10% to 20% restocking fee (the final amount will be determined by Maxford USA upon receipt and examination of the returned merchandise).

Return Address:

Maxford USA Corp.
13909 Artesia Blvd.
Cerritos, CA 90703

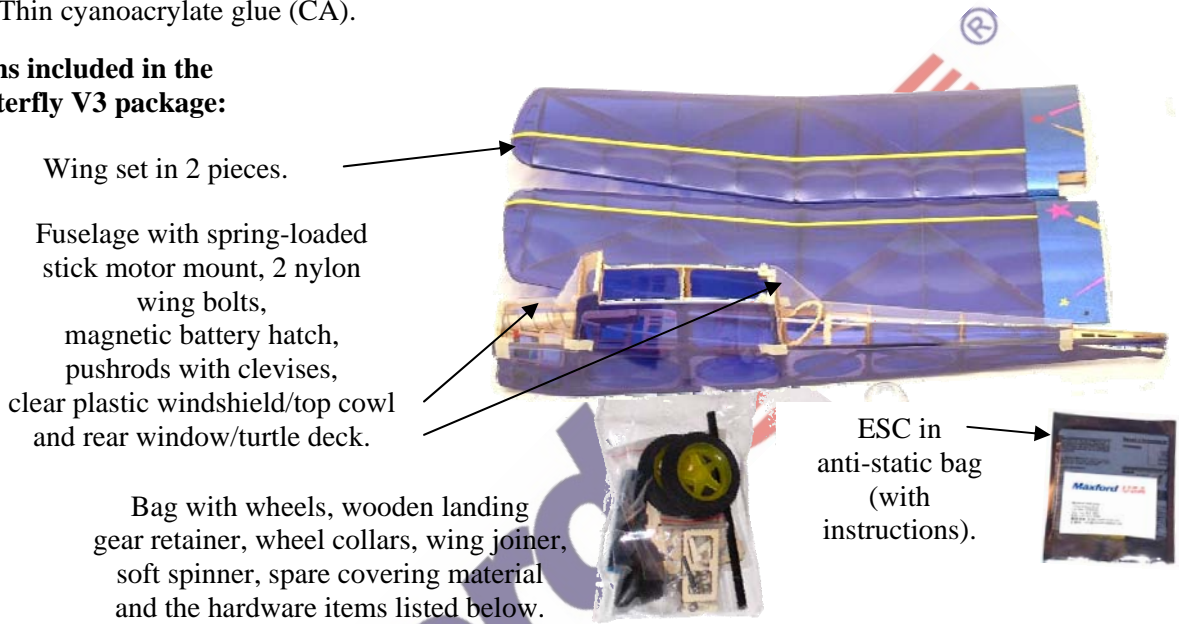
(IMPORTANT: If issued by Maxford USA, print the RMA# on the package near the above address.)

PARTS LIST

1. Items you must supply to complete the Butterfly:

- 2 ea. SG-50 or equivalent mini servos.
- 2 or 3 cell 900 mAh Li-Po battery.
- Li-Po battery Charger.
- Connectors for use between the electronic speed control (ESC) and motor, and between the battery and the ESC, with heat-shrink tubing.
- Receiver and transmitter (minimum of 3 channels for rudder, elevator & throttle).
- Thin cyanoacrylate glue (CA).

2. Items included in the Butterfly V3 package:



Wing set in 2 pieces.

Fuselage with spring-loaded stick motor mount, 2 nylon wing bolts, magnetic battery hatch, pushrods with clevises, clear plastic windshield/top cowl and rear window/turtle deck.

Bag with wheels, wooden landing gear retainer, wheel collars, wing joiner, soft spinner, spare covering material and the hardware items listed below.

ESC in anti-static bag (with instructions).

3. Included but not pictured above:

- a. Hardware –
- | | |
|---|-------|
| 2×6 mm screws | 8 ea. |
| 2×10 mm screws (to secure the landing gear collars) | 2 ea. |
| 2×12 screw, washer and nut (to secure tail group) | 1 set |
| 2×19 screw, washer and nut (to secure tail group) | 1 set |
| Control horns | 2 ea. |
- b. Other included items –
- | | |
|---|-------|
| Brushless motor (with washer and two self-locking nuts) | 1 set |
| Vertical and horizontal stabilizers (with pre-hinged rudder and elevator) | 1 set |
| Clear plastic front cowl | 1 ea. |
| Pre-formed wire landing gear | 1 ea. |
| 4 1/2 inch (116 mm) carbon-fiber wing joiner | 1 ea. |
| Propeller(s) | 2 ea. |
| This illustrated instruction manual. | |

4. Optional Accessories available on-line at – <http://www.maxfordusa.com>:

- Night-flying lighting system.
- All-wood, transparent covered floats – available in Red, Blue or Orange.
(NOTE: You will also find replacement wings, brushless motors, electronic speed controls, and a wide variety of high-quality servos, batteries, and many other RC hobby items at the above Web address.)

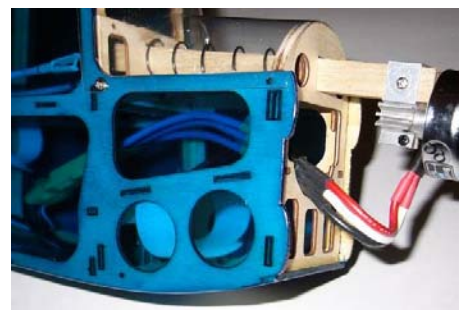
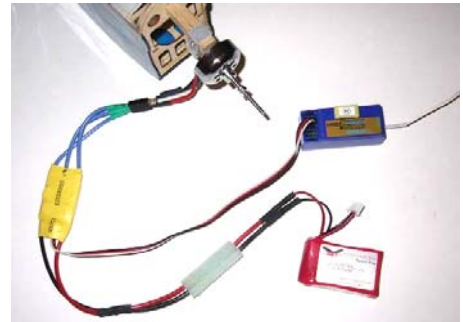
BUTTERFLY V3 ASSEMBLY INSTRUCTIONS

Step 1: Install the power and radio control systems.

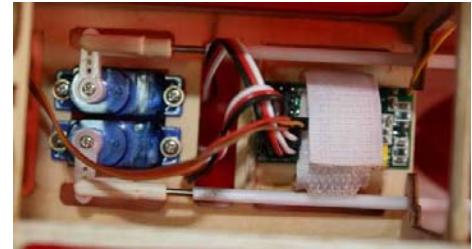
1. Remove 2 pcs. of tape; then, lift off and set aside the clear plastic windshield/top cowl.
2. Pull the stick mount forward as far as it will go; then, insert and center the pin into the hole in the stick mount. (If necessary, use an end of the landing gear wire to ream the hole in the stick mount to obtain a snug, secure fit.) Using a needle, poke holes through the windshield/top cowl and covering material into the pre-drilled holes in the fuselage; then, mount the windshield/top cowl onto the fuselage with 2 ea. 2×6 mm screws.



3. Solder matching connectors onto the motor's and the ESC's set of 3 hi-current wires; also, solder a polarized connector onto the ESC's and the battery's red and black leads. Use heat-shrink tubing on all connections to prevent short circuits. Connect the ESC's 3 wires to the motor's 3 wires in any, arbitrary order. **AT THIS TIME DO NOT CONNECT THE ESC TO THE BATTERY; ALSO, DO NOT ATTACH A PROPELLER TO THE MOTOR.**
4. Mount the motor to the stick with 2 ea. 2×6 mm screws. Check the motor's rotation as follows ...
 - a. Connect the ESC's 3-wire plug into the receiver's throttle channel.
 - b. If you are using a computer radio, ensure the throttle's "end point adjustment" is set to its normal, full-range setting, which is "±100%" on most transmitters. Switch ON the transmitter and set its throttle and throttle trim controls to minimum.
 - c. With the transmitter ON and with **NO PROPELLER** on the motor, connect the ESC to the battery and listen for a series initialization sounds from the ESC.
 - d. Raise the transmitter's throttle stick half way up; the motor should power-up in the clockwise direction as viewed from the rear of the airplane. If so, proceed to #5, below.
 - e. If the motor powered-up in the counterclockwise (wrong) direction as viewed from the rear of the airplane, return the throttle control to minimum, disconnect the ESC from the battery, swap any 2 of the 3 ESC to motor pairs of wires, and repeat the above "a" through "d" to check that the motor now rotates in the correct direction. (For details, please review the ESC's owner's manual.)
5. With the motor test successfully completed, return your transmitter's throttle control to minimum, disconnect the ESC from the battery and from the receiver, and (if you are not using a 3-terminal polarized connector), apply different-colored dabs of paint to each of the 3 pairs of ESC to motor connectors (so you never need to repeat this trial-and-error process); then, insert the ESC through the largest opening in the nose and into the fuselage.



6. Use 2 ea. 2×6 mm screws to mount the clear plastic front cowl to the nose of the fuselage. Then, mount 2 mini servos into the servo tray, using the screws that were supplied with these servos.
7. Connect each pushrod's clevis to each servo's arm. Plug-in the two servo's connectors to the elevator and aileron channels. (We recommend you use the transmitter's aileron channel to operate the airplane's rudder.) Plug-in the ESC into the throttle channel on the receiver. Use supplied Velcro tape to secure the receiver onto the platform behind the servos. NOTE: If your receiver is too large to fit on the platform, wrap it in soft foam rubber and place it below the platform (behind and below the servos).
8. Set the transmitter's throttle and trim controls to minimum and center the elevator's and aileron's trim controls. Switch the transmitter ON, connect the ESC to the battery, listen for a series initialization sounds from the ESC, and your servos will move to their centered positions. With the servos centered, press the servo-arms onto the servo's output shaft, and install the screws to secure the servo arms.
9. Operate the transmitter's aileron control and the clevis on the left-side of the fuselage should move (as viewed from the rear of the fuselage); operate the transmitter's elevator control and the clevis on the right-side of the fuselage control should move (as viewed from the rear of the fuselage). If the wrong pushrods move, unplug the battery from the ESC, switch OFF the transmitter, and swap the servo's connections at the receiver.
10. Remove 4 pcs. of tape; then, lift off and set aside the clear plastic rear window/turtle deck. Route the antenna through the holes in the fuselage formers and out, over the elevator; then mount the rear window/turtle deck with 4 ea. 2×6 mm screws.



Step 2: Install the landing gear. (Note: Replace this step with separately-provided instructions if you are using the optionally available all-wood, transparent-covering float set.)

11. Insert the landing gear wire into the slot on the bottom of the fuselage, followed by the wooden landing gear retainer. Apply a drop or two of CA glue to hold the landing gear securely. (If you will possible install the float, you may not want to glue it.)
12. Press a plastic spacer, a wheel, a second plastic spacer, and a wheel collar on each axle. Secure each of the wheel collars with a 2×10 mm screw, and lock each screw with a drop of CA glue.



Step 3: Install the tail surfaces.

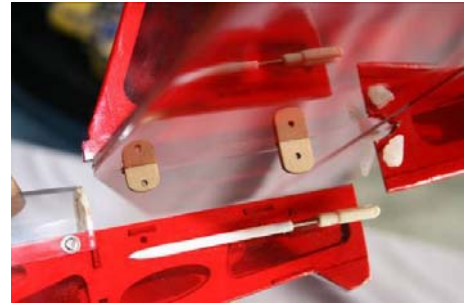
13. Locate the control horn holes predrilled in the left side of the rudder and at the bottom right of the elevator (as viewed from the rear of the fuselage), and cut away the covering film from the control horn areas. Install the rudder and elevator control horns and secure each of them with a drop of CA glue.



14. Insert the two wooden projections at the bottom of the vertical stabilizer through the two slots in the center of the horizontal stabilizer. Insert the small projection at the front of the vertical stabilizer into the opening in the former at the rear of the turtle deck, and press the projections down fully into the openings in the fuselage.

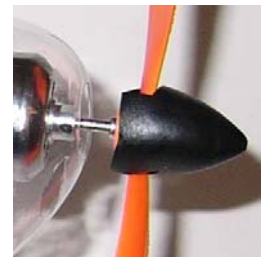
15. Attach the tail surfaces to the fuselage with 2 sets of screws, washers and nuts (1 ea. 2×12 mm screw in the rear hole, and 1 ea. 2×19 mm screw in the front hole). Apply CA glue to secure this assembly.

16. Adjust the length of the rudder and elevator pushrods so their associated control surfaces are centered when the servos are centered; then, attach the clevises to the rudder and elevator control horns.



Step 4: Attach the propeller and spinner.

17. Install a self-locking nut, plastic end first, fully onto the propeller shaft. Then, place a propeller onto the shaft, aligned with (and captured by) the metal end of the self-locking nut. Finally, place a washer and a second self-locking nut (this time, with its metal end first) onto the shaft, tighten this second nut securely, and press the soft spinner firmly over the propeller hub assembly.



The soft spinner and spring loaded motor mount design may save your plane from a nose down landing.

Step 5: Now is a good time to install the optional LED lights.

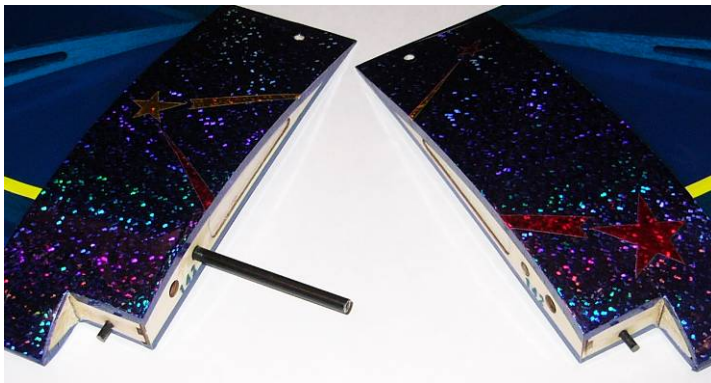
18. Insert the optional LED assemblies into each wing panel through the openings at the wing root. Use a 400×1 mm stainless steel wire to push the strings of LEDs to the tip of each wing within the clear plastic light-housing tubes.



19. Plug the light's connector into any free channel on your receiver and the lights will blink ON whenever your airborne system has power.

Step 6: Join the wing panels and attach the wing to the fuselage.

20. Fully insert the carbon-fiber wing joiner into the hole in the root of either wing panel and secure it with a drip of CA glue. Prepare the wing panels for flight by inserting the free end of the wing joiner into the other wing panel, but **DO NOT GLUE** the wing panels together. (For flight, the two wing panels are held together and secured in alignment by the 2 carbon rod mounting pegs at the center front of the wing and the 2 nylon bolts at the trailing edge of the wing; for easier storage between flights and/or transportation, the wing panels can be removed from the fuselage and separated.)
21. Attach the wing to the fuselage by aligning and inserting the 2 carbon rod mounting pegs at the center front of the wing into the corresponding openings behind the clear plastic windshield; then, insert the two nylon bolts through the two holes at the trailing edge of the wing and snug them into the threaded holes inside the fuselage (but do not tighten them so much that the wing's trailing edge becomes deformed or crushed).



Congratulations, assembly is finished!

Final checks before flying:

1. Check that all screws and connections are secure, but do not overtighten the nylon bolts (#21, above.)
2. Check the control directions of the elevator and rudder (i.e., pull the stick toward you and the elevator should deflect upwards; push the stick to the left and the rudder should deflect to the left as viewed from the rear of the fuselage. If necessary, we recommend you correct a reversed control's direction at the transmitter.
3. Check the airplane's center of gravity (CG) and, if necessary, move the ESC or battery, or add weight to the nose or tail, to ensure the CG is 2 3/8 inches (60 mm) back from leading edge of the wing.
4. Move your transmitter's throttle and its trim control to minimum, and turn on the transmitter; then, connect the airplane's battery to the ESC.

REMEMBER: A ROTATING PROPELLER IS DANGEROUS!

- ALWAYS SWITCH THE TRANSMITTER ON (WITH ITS THROTTLE ALL THE WAY DOWN) BEFORE CONNECTING THE BATTERY TO THE ESC, AND ALWAYS RETURN THE THROTTLE TO MINIMUM AND DISCONNECT THE BATTERY FROM THE ESC BEFORE SWITCHING THE TRANSMITTER OFF.
 - HANDLE THE MODEL WITH EXTREME CARE WHENEVER THE BATTERY IS CONNECTED TO THE ESC.
 - STAY CLEAR OF THE PROPELLER AND THE PROPELLER'S ARC.
5. Make sure that all controls operate smoothly.

6. Recommended control throws:

- a. Elevator 30 degrees (1 1/8 inches / 28 mm) up and down.
- b. Rudder 30 degrees (1 1/4 inches / 31.5 mm) left and right.

For replacement parts, visit our web site at <http://www.maxfordusa.com>



WANT MORE FUN?

You may also add floats to your Butterfly. Check our web site at

<http://www.maxfordusa.com>

for details of our all-wood, transparent-covering float set.



REMINDER: AN IMPORTANT NOTICE TO OUR CUSTOMERS!

This product is NOT a toy.

Any testing or flying of this model airplane is done entirely at your own risk.

PLEASE ENJOY YOUR HOBBY AND FLY SAFELY!

Distributed by:

Maxford USA Corp.

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Manual written by Curt Sidles