

P-38 LIGHTNING



ASSEMBLY INSTRUCTIONS

CAUTION The Phase 3 Models P-38 Lightning EP is designed for intermediate pilots. It is not intended for beginners. It is not a trainer!

Phase 3

**Includes Two Brushless Outrunner Motors,
Two Matching Propellers and Two Brushless
Electronic Speed Controllers!**

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SPECIFICATIONS AND FEATURES

- **Wing Span:** 1059mm (41.7 Inches)
- **Wing Area:** 15dm² (232.5 Square Inches)
- **Length:** 531mm (20.9 Inches)
- **Weight RTF:** 600 - 850g (21.2 - 30 Ounces)
- **Wing Loading:** 46 - 65g/dm² (13.16 - 18.63 Ounces/Square Foot)
- **Functions:** Ailerons, Elevator, Throttles and Steering (Optional)
- **Radio Required:** 4-Channel or More with 3-4 Micro Servos and Micro Receiver
- **Battery Required:** 3 Cell 2100mAh Li-Po
- Includes two brushless outrunner motors
- Includes two brushless electronic speed controllers
- Strong, moulded, pre-painted airframe
- Simple assembly requires no glue
- Great flying characteristics
- Scale details for great looks
- Includes optional landing gear with steerable nose gear
- Includes extensive decal sheet
- Includes high-quality hardware
- Fast and easy assembly - over 60 high-resolution colour photos to guide you

IMPORTANT Before beginning assembly, please read and understand the warnings listed on page 3. Failure to read and understand these warnings could lead to bodily harm and/or injury. The Phase 3 Models P-38 Lightning EP is not intended for those under 14 years of age, unless closely supervised by an adult.


TABLE OF CONTENTS

Introduction.....	2	Kit Contents	4-6
Our Guarantee.....	2	Tips From the Pros	6
Safety Warnings	3	Assembling the P-38 Lightning EP	7-19
Items Required for Flight	4	Balance Point (C/G) and Control Throws	Back Cover
Tools and Supplies Required for Assembly	4		

INTRODUCTION

Thank you for purchasing the Phase 3 Models P-38 Lightning EP. We're confident that the quality of your new aircraft meets and even exceeds your expectations. Before completing the assembly of your new aircraft, please carefully read through these assembly instructions in their entirety. Doing so will ensure your success the first time around!

These assembly instructions are designed to guide you through the entire assembly process of your new aircraft in the least amount of time possible. Along the way you'll learn how to properly assemble your new aircraft and also learn tips that will help you in the future. We have listed some of our recommendations below. Please read through them before beginning assembly.

- Please read through each step before beginning assembly. You should find the layout very complete and straightforward. Our goal is to guide you through assembly without any of the headaches and hassles that you might expect.
- There are check boxes next to each procedure. After you complete a procedure, check off the box. This will help prevent you from losing your place.
- Cover your work table with brown paper or a soft cloth, both to protect the table and to protect the parts.
- Keep a couple of small bowls or jars handy to put the small parts in after you open the accessory bags.
- We're all excited to get a new aircraft in the air, but take your time. This will ensure you build a straight, strong and great flying aircraft.
- If you come across this symbol , it means that this is an important point or an assembly hint.

During WW II, Lockheed developed and produced the P-38 Lightning as a high-altitude, long-range fighter for the U.S. Army Air Corps. Since the first day that this unique aircraft entered combat, the P-38 Lightning soon became known as the "Forked Tail Devil".

Phase 3 Models is proud to bring you this 1/15th scale model of the Lockheed P-38 Lightning. We've not only reproduced this great aircraft in great detail, we've pioneered new technologies in the model industry to bring you the best model possible.

With new production procedures and technologies developed by Phase 3 Models, all the plastic parts, reinforced carbon rods, tubing for electrical wires, and control systems are pre-installed inside the moulded structure and merged with the foam material, just like they are born together naturally. This makes the aircraft structure stronger and better looking, and results in quick, simple, and precise assembly. No glue is required for final assembly!

One of the biggest distractions from the look of a moulded foam aircraft are the dimples from steam holes everywhere on the airframe surface, but our new technology changes this. With new moulding techniques, Phase 3 Models is able to mould the foam structure without any unsightly dimples. The aircraft's surface is beautiful and smooth!

On top of all this, we've included many fine details that are found on the full-scale aircraft. These details include the canopy frame, machine guns, engine cowlings, turbo chargers, wheels and wheel doors.....even finer details like gun shell exit outlets, and formation lights. The Phase 3 Models P-38 Lightning EP is truly a flyable static model!

Due to the great power to weight ratio and perfect aerodynamic design, the aircraft is easy to control, flies precisely, and is manoeuvrable at both fast and slow airspeeds. The aircraft can be built without landing gear and be hand-launched or it can be built with landing gear and a steerable nose gear for take-off and landing from hard surfaces. The Phase 3 Models P-38 Lightning EP is truly a great model!

OUR GUARANTEE

Phase 3 Models guarantees this kit to be free from defects in both material and workmanship at the date of purchase. This does not cover any component parts damaged by use, misuse or modification. **In no case shall Phase 3 Model's liability exceed the original cost of the purchased kit.**

In that Phase 3 Models has no control over the final assembly or material used for final assembly, no liability shall be assumed for any damage resulting from the use by the user of the final user-assembled product. By the act of using the final user-assembled product, the user accepts all resulting liability.

SAFETY WARNINGS

GENERAL WARNINGS

- Do not fly your aircraft if another aircraft is on the same frequency as you.
- Never fly your aircraft from the street or at night. Always fly in an open area free of obstructions.
- When flying, make sure that any spectators are behind you.
- Always be conscious of the spinning propellers. Be careful not to allow loose clothing to be drawn into the propellers.
- Because your aircraft is operated by radio control, it is important to make sure that you are always using fresh and/or fully charged batteries. Never allow the batteries to run low or you could lose control of the aircraft.
- Never attempt to disassemble any of the aircraft's components, especially the electronics.
- Do not allow any of the electrical components to get wet or electrical damage may occur.

- You should complete a successful range check of your radio control equipment prior to each new day of flying, or prior to the first flight of a new or repaired aircraft.
- If your aircraft gets dirty, do not use any solvents to clean it. Solvents will damage the foam and plastic. Use a dry cloth to clean any dirt from the outside of the aircraft.

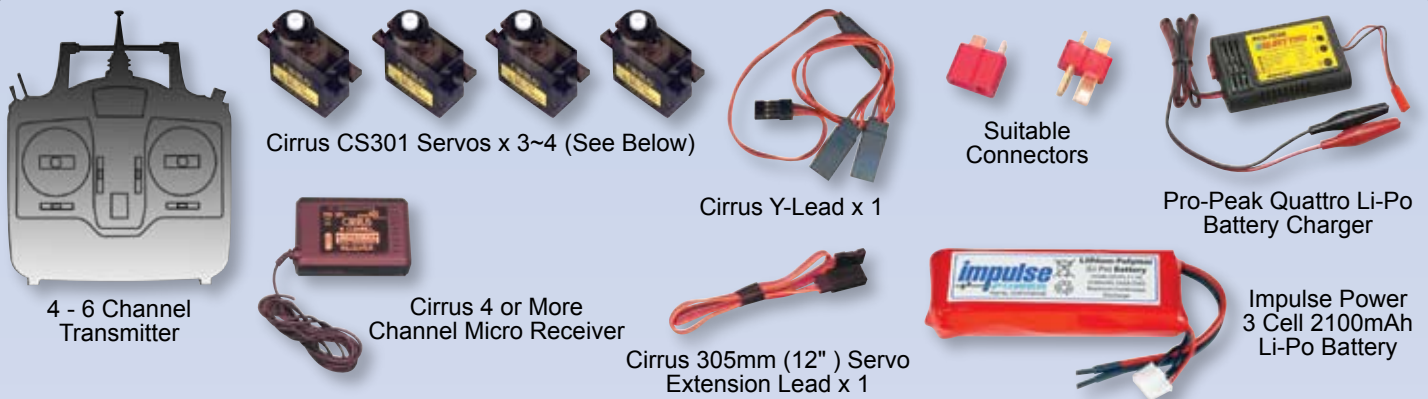
RADIO SYSTEM WARNINGS

- Always turn on your transmitter before turning on the aircraft and always turn off the aircraft before turning off your transmitter.
- Always unplug the Li-Po battery when not flying the aircraft.
- Never cut the receiver aerial shorter or you could lose control of the aircraft during flight.
- When flying the aircraft, make sure your transmitter aerial is completely extended.
- Never attempt to disassemble or modify any of the radio control system components.

LITHIUM POLYMER BATTERY WARNINGS - YOU MUST READ THIS BEFORE CHARGING YOUR LI-PO BATTERY

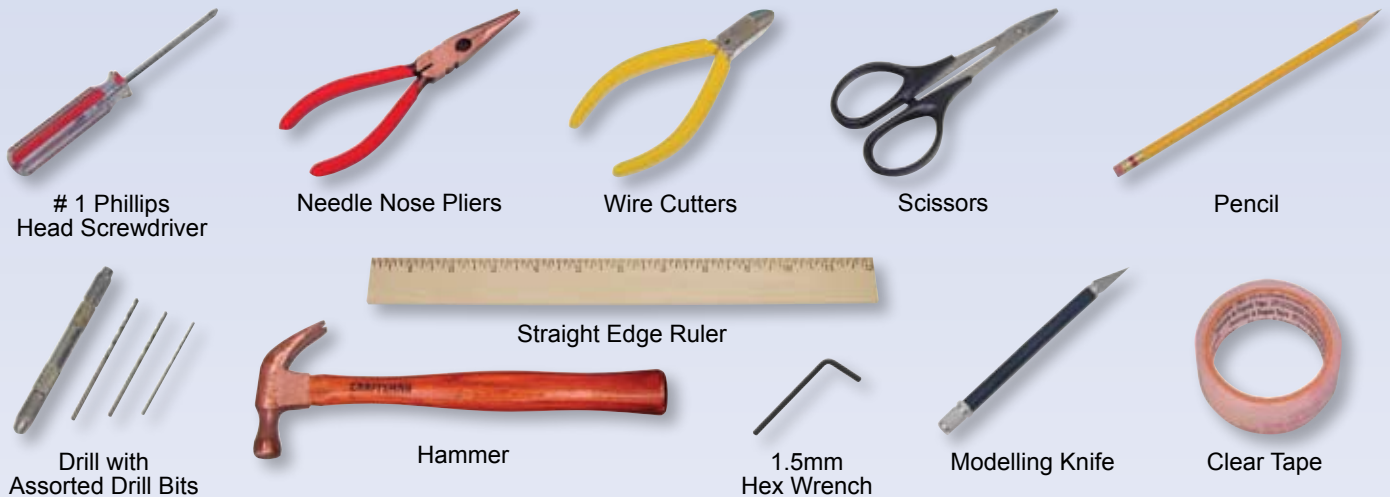
- This product may explode or catch fire. Serious injury can result from misuse. Serious injury, loss of property, fire and death can result from misuse of this product.
- All instructions, warnings and cautions must be followed at all times. Failure to do so can lead to serious injury or fire.
- Do NOT use this product before reading and understanding all directions and warnings.
- Do NOT use or charge if the battery is hot.
- Do NOT leave in direct sunlight or in a hot car or storage area.
- Do NOT overcharge. Maximum voltage for each pack must be followed.
- Do NOT get wet or expose to moisture.
- Do NOT short-circuit the Li-Po battery.
- ONLY discharge and charge the Li-Po battery outdoors or in a firesafe container.
- Do NOT leave the Li-Po battery connected when not in use.
- Do NOT operate or charge unattended.
- Do NOT use the product if you do not understand the warnings and proper use of the product.
- Always let the Li-Po battery cool and "rest" between uses and charging.
- We recommend the use of a firesafe container when charging or storing.
- Do NOT charge inside your car or inside your house.
- Inspect the Li-Po battery before each use for swelling or other malformation. If the cell has ballooned, it MUST be discarded.
- First check the polarity and then connect Li-Po battery to your charger.
- In use, do not over-discharge or exceed maximum discharge.
- When handling the Li-Po battery, remember not to poke, bend or damage the cells. The cell's outer casing is soft and can be damaged.
- Remember, the cells must never exceed 160 degrees Fahrenheit (71° C) for any reason.

ITEMS REQUIRED FOR FLIGHT



The P-38 Lightning EP includes optional landing gear with steerable nose gear. If you will not be using the optional landing gear, you will need only three micro servos. If you will be using the optional landing gear, you will need four micro servos - an extra one for steering.

TOOLS AND SUPPLIES REQUIRED FOR ASSEMBLY



In addition to the tools shown above, you will also need a soldering iron, solder, heat-shrink tubing, and paper towels.

KIT CONTENTS

Before you begin assembly, group the parts as we list them below. This will ensure that you have all of the parts before you begin assembly and it will also help you become familiar with each part.

IF YOU FIND ANY PARTS MISSING OR DAMAGED, PLEASE CONTACT YOUR LOCAL MODEL SHOP, USING THE SEPARATE CUSTOMER SERVICE SHEET INCLUDED WITH YOUR KIT.

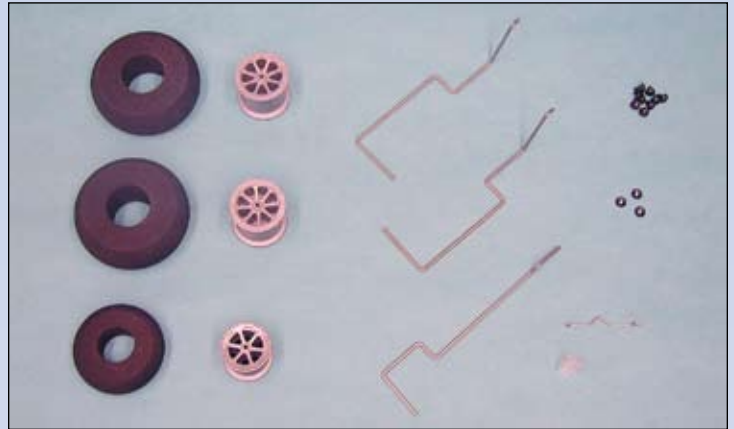
AIRFRAME ASSEMBLIES

- (1) Wing and Fuselage Pod
- (1) Right Fuselage Boom
- (1) Left Fuselage Boom
- (1) Stabiliser
- (2) Stabiliser Tip Panels



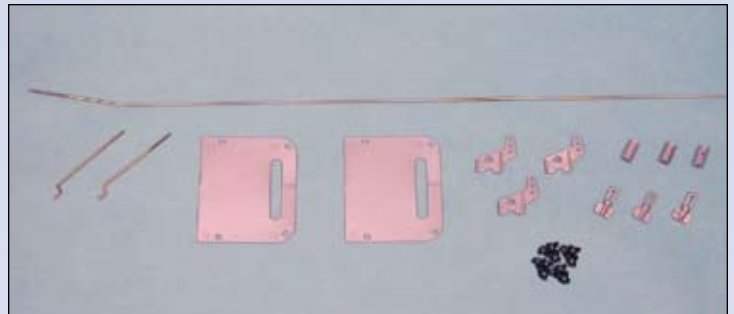
LANDING GEAR ASSEMBLY

- (2) Main Tyres
- (1) Nose Tyre
- (2) Main Wheels
- (1) Nose Wheel
- (2) Pre-bent Main Gear Wires
- (1) Pre-bent Nose Gear Wire
- (1) Pre-bent Steering Pushrod
- (1) Plastic Steering Hub
- (3) Metal Wheel Retainers
- (9) M2.6x5mm Wood Screws



CONTROL SYSTEM ASSEMBLIES

- (1) Elevator Pushrod Wire with Z-Bend
- (2) Aileron Pushrod Wires with Z-Bends
- (2) Plastic Aileron Servo Mounting Covers
- (3) Plastic Control Horns
- (3) Plastic Clevises
- (3) Plastic Clevis Retainers
- (11) M2.6 x 5mm Wood Screws



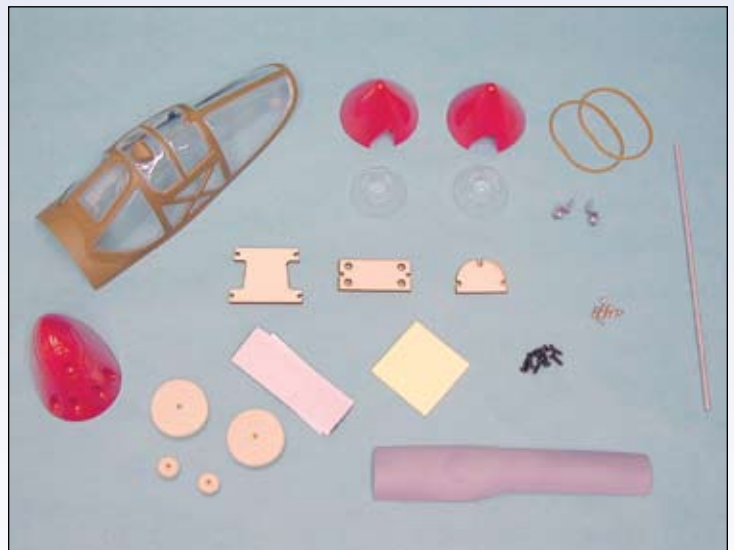
POWER SYSTEM ASSEMBLIES

- (2) Brushless Outrunner Motors
- (2) Brushless Electronic Speed Controllers
- (1) Y-Lead for Throttles
- (2) Nylon Propellers
- (2) Aluminium Motor Mounts
- (2) Threaded Propeller Adapters
- (2) M3 x 16mm Machine Screws
- (4) M2 x 5mm Machine Screws
- (4) M2 Grub Screws
- (4) M3 x 12mm Wood Screws



MISCELLANEOUS WING PARTS

- (1) Canopy
- (1) Nose Cone
- (2) Spinners with Spinner Mounts
- (4) Plywood Spinner Supports
- (3) Plywood Plates
- (2) Rubber Bands
- (2) Plastic Canopy Mounts
- (1) Velcro® (Hook and Loop Material)
- (1) Double-Sided Tape
- (1) Aluminium Tube
- (1) Nose Gear Door (Optional)
- (9) M2.6 x 8mm Wood Screws
- (6) M1.7 x 4mm Wood Screws

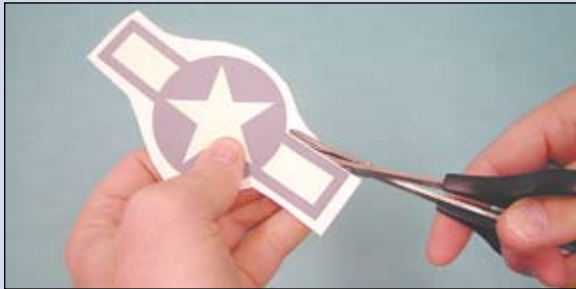


ASSEMBLING THE P-38 LIGHTNING EP

STEP 1: APPLYING THE DECALS

IMPORTANT The decals provided are water-slide decals. This decal material is lightweight and thin, and adheres well to the foam airframe and curved contours.

Each graphic is reversed, so when you apply the decals to the airframe, the graphic should be applied toward the airframe surface and the paper should be facing up towards you. Make sure that you double-check that you're applying the correct decal to the correct side of the airframe to ensure that you don't apply the decal backwards by mistake.



- ❑ Working with one decal at a time, carefully cut out the decal, leaving 1.5mm (1/16") of material around the printed edges.



- ❑ Remove the clear protective layer from the decal. The decal will be sticky to the touch, so once the decal is pressed onto the airframe, it cannot be removed.

PRO TIP To ensure that the decal adheres properly to the airframe, firmly rub the entire decal down into place.



- ❑ Using a paper towel or a small sponge soaked in water, gently rub and blot the decal's paper backing to completely saturate it. You will notice that you will begin to be able to see the graphic under the paper backing.



- ❑ Wait approximately 30 seconds, then slide the paper backing off the decal and remove it.
- ❑ Use a soft tissue to blot up any excess water from the decal.
- ❑ Repeat the previous procedures to apply the remaining decals. Use the box cover photos for placement reference.

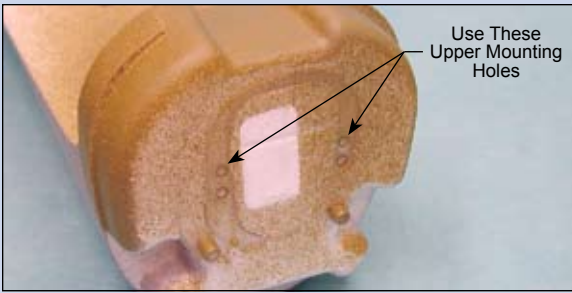
STEP 2: INSTALLING THE BRUSHLESS MOTORS



- ❑ Install one aluminium motor mount onto each motor, using two M2 x 5mm machine screws in each.

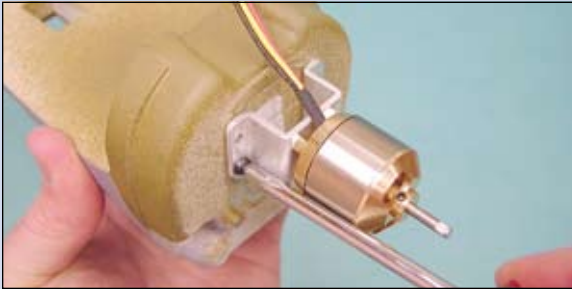
IMPORTANT Make sure that both motors are centred on the motor mounts.





- ❑ There are two sets of moulded holes in each firewall on the fuselage booms. The two lower mounting holes in the aluminium motor mounts should line up with the two upper moulded holes in each firewall.

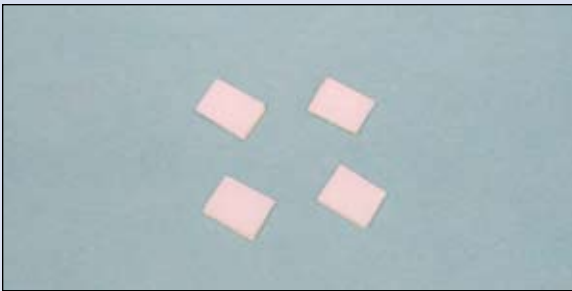
IMPORTANT The two lower moulded holes in each firewall are not used in this application.



- ❑ Position each motor mount so that the motor wires are towards the top of the fuselage booms, then align the two lower mounting holes in the aluminium motor mounts with the two upper moulded holes in each firewall.
- ❑ Install each motor mounting assembly, using two M3 x 12mm wood screws.

IMPORTANT The motor mounts are designed to be installed with two wood screws. This is sufficient to hold them securely in place.

STEP 3: INSTALLING THE COWLINGS



- ❑ Cut out four 10mm (3/8") square pieces of plastic from the plastic sheet and four 10mm (3/8") square pieces of double-sided tape from one piece of double-sided tape.
- ❑ Remove the protective backing from one side of each piece of double-sided tape.
- ❑ Apply one piece of plastic onto each piece of double-sided tape.

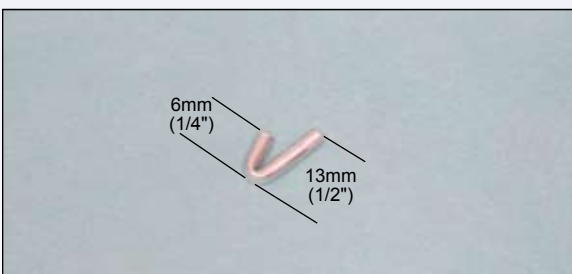


- ❑ Remove the protective backing from the other side of each piece of double-sided tape, then apply the four pieces of plastic onto one fuselage boom.

IMPORTANT Apply two pieces of plastic at the 10 o'clock and the 2 o'clock positions, then apply the two remaining pieces of plastic on the moulded steps at the 4 o'clock and 8 o'clock positions.



- ❑ Slide one threaded propeller adapter onto the motor shaft until it bottoms out, then secure it into place, using two M2 grub screws. Make sure the grub screws are tightened securely.



- ❑ Cut two pieces of aluminium tubing to a length of 19mm (3/4").
- ❑ Carefully bend each piece of aluminium tubing as shown.





- ❑ Carefully drill a 2.5mm (3/32") hole through the moulded slot in each side of the cowling.
- ❑ Install the short end of one aluminium tube through each hole.



- ❑ Secure the two pieces of aluminium tubing into place from inside the cowling, using two of pieces of clear tape.



- ❑ Slide the cowling into place over the motor. When aligned properly, the back edge of the cowling should be even with the moulded lip on the front of the fuselage boom and the cowling ring should be centred around the propeller adapter.
- ❑ When satisfied with the alignment, drill four 1.5mm (1/16") diameter pilot holes through the cowling and into the plastic cowling mounts, then secure the cowling into place, using four M1.7 x 4mm washer-head wood screws.

- ❑ Repeat the previous procedures to install the second cowling onto the other fuselage boom.

STEP 4: INSTALLING THE PROPELLERS AND SPINNERS



- ❑ Carefully drill one 3mm (1/8") diameter hole through the centre of one spinner mount.
- ❑ Slide one M3 x 16mm machine screw and one small spinner support plate through the hole in the spinner mount, then slide one large spinner support plate onto the machine screw and up against the back of the spinner mount.



- ❑ Install one propeller and the spinner mount assembly onto the propeller adapter, making sure that the machine screw is tightened firmly.



- ❑ Place the spinner cone over the spinner mount, and while holding the spinner cone in place, drill two 1.5mm (1/16") diameter pilot holes through the spinner cone and into the spinner mount (one on each side).
- ❑ Secure the spinner cone into place, using two M1.7 x 4mm wood screws, then repeat the previous procedures to install the second propeller and spinner assembly onto the other motor.



STEP 5: INSTALLING THE WING HOLD-DOWN NUTS



- ❑ Place one 3mm hex nut into the moulded recess in the bottom of one fuselage boom.



- ❑ Remove one self-adhesive hex nut retainer from the protective backing, then apply it to the bottom of the fuselage boom to hold the hex nut in place.

- ❑ Repeat the previous procedures to install the second 3mm hex nut in the bottom of the other fuselage boom.

STEP 6: INSTALLING THE ELEVATOR SERVO

IMPORTANT When you install the elevator servo in the next procedure, the servo output shaft should be towards the back of the fuselage boom. The elevator servo is installed in the right fuselage boom.



- ❑ Test-fit and install your elevator servo into the bottom of the right fuselage boom, using the mounting screws provided with your servo.

IMPORTANT Depending on the size of your servo, you may need to enlarge the servo mounting hole and/or redrill new pilot holes for the servo mounting screws.

STEP 7: INSTALLING THE AILERON SERVOS



- ❑ Centre your two aileron servos, then attach the servo horns onto the servos, making sure that the servo arms are centred, too.
- ❑ Install and tighten the servo horn retaining screws, to hold the servo horns securely to the servos.



- ❑ Mount one aileron servo onto one aileron servo mounting cover, using a piece of double-sided tape. When positioned properly, the servo should be centred on the servo mounting cover and the servo arm should stick out through the slot.

IMPORTANT The servo should be centred on the servo mounting cover. This will result in the servo arm being ahead of centre. This is normal.





- ❑ Install the aileron servo cover assembly onto the bottom of the wing, using four M2.6 x 5mm wood screws.

IMPORTANT When installed, the servo arm should be towards the front of the wing.

- ❑ Repeat the previous procedures to mount and install the second aileron servo onto the other half of the wing.

STEP 8: INSTALLING THE AILERON CONTROL LINKAGES



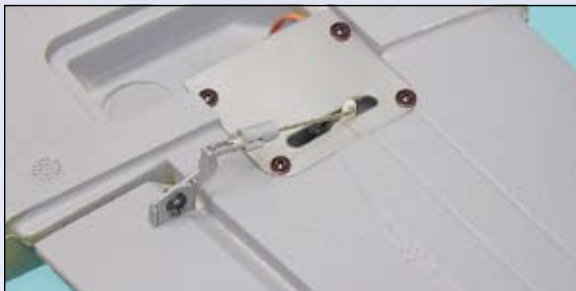
- ❑ Install one adjustable control horn onto the inside of the control horn mount, using one M2.6 x 5mm wood screw.



- ❑ Slide one clevis retainer onto one aileron pushrod wire.

IMPORTANT Make sure that the end of the clevis retainer with the slot in it is toward the threaded end of the pushrod wire.

- ❑ Thread one clevis onto the pushrod wire.



- ❑ Install the Z-Bend in the pushrod wire into the outermost hole in the servo arm. You may need to enlarge the hole to fit the pushrod wire.

- ❑ With both the servo arm and the aileron centred, adjust the clevis and snap it into the top of the control horn.

- ❑ Carefully push the clevis retainer over the clevis to lock it into place.

- ❑ Repeat the previous procedures to install the second aileron control linkage on the other half of the wing.

- ❑ Run the two ends of a Y-Lead through the moulded tunnels in the wing, then plug the aileron servo leads into the Y-Lead. The excess servo wires can be coiled up inside the moulded pocket next to the aileron servos.

STEP 9: INSTALLING THE STEERING SERVO



IMPORTANT The steering servo should only be installed if you're going to install the optional landing gear. If you're not going to install the optional landing gear, please skip this step.

- ❑ Using a sharpened pencil, make a hole from the steering servo mounting pocket and into the cockpit area by firmly pushing the pencil through the foam. Use the pencil to elongate the hole enough to fit the servo plug through.





IMPORTANT When you install the steering servo the servo output shaft should be toward the back of the fuselage pod.

- ❑ Test-fit and install your steering servo into the bottom of the fuselage pod, using the mounting screws provided with your servo.

STEP 10: INSTALLING THE AIRBORNE EQUIPMENT



- ❑ Slide the male end of one 305mm (12") long servo extension lead through the moulded tube in the right side of the wing and into the cockpit. This extension lead is for the elevator servo.



- ❑ Slide the battery wires and the throttle servo lead on one ESC through the moulded hole in one half of the wing and into the cockpit.

- ❑ Push the ESC down into the moulded space in the wing. It should fit snugly, but if it seems loose, use a small piece of double-sided tape to hold the ESC in place.

- ❑ Repeat the previous procedures to install the second ESC into the other half of the wing.



- ❑ Plug the two throttle leads into the throttle Y-Lead provided, making sure that the polarity is correct. The ESCs are set-up in a later stage.

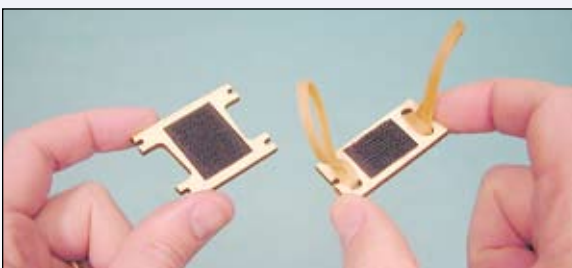
- ❑ Plug the servo leads into your receiver, then mount your receiver to the front of the cockpit floor, using a piece of double-sided tape.

IMPORTANT Install the receiver so that the top of the receiver is below the plywood frame that's moulded into the cockpit.

STEP 11: INSTALLING THE BATTERY TRAYS



- ❑ Loop one rubber band through the two holes on each side of the forward battery tray.



- ❑ Cut out two pieces of Velcro® (hook and loop material). Cut one piece (32mm) 1-1/4" long and the second piece (19mm) 3/4" long.

- ❑ Apply the (32mm) 1-1/4" long piece to the centre battery mount and apply the (13mm) 1/2" long piece to the forward battery mount, on the same side of the mount as the two rubber bands.





- ❑ Align the slots in the sides of each battery tray with the corresponding pre-drilled pilot holes in the plywood cockpit frame, then secure the battery trays into place, using nine M2.6 x 8mm wood screws.

STEP 12: INSTALLING THE NOSE CONE

- ❑ Cut out four 5mm x 15mm (3/16" x 9/16") pieces of double-sided tape.

PRO TIP So that the outer surface of the nose cone is flush with the outer surface of the fuselage pod when it's installed, the outer surface of each piece of double-sided tape should be just below the surface of the moulded lip when it's installed. To achieve this fit, you may need to cut a shallow recess below where each piece of double-sided tape is installed.



- ❑ Remove the protective backing from one side of the double-sided tape, then apply each piece of double-sided tape onto the fuselage pod.

IMPORTANT Position one piece on the top and one on the bottom, then position the other two pieces on each side.



- ❑ Remove the protective backing from each piece of double-sided tape, then install the nose cone, making sure that the back edge of the nose cone is flush with the moulded lip in the fuselage and that the nose cone is centred.



- ❑ Cut out four 16mm (5/8") long pieces of aluminium tubing.
- ❑ Drill a 2.5mm (3/32") hole through the centre of each moulded machine gun fairing in the top of the nose cone.
- ❑ Slide each piece of aluminium tubing through each hole and push them into the foam to secure them into place.

STEP 13: INSTALLING THE FUSELAGE BOOMS AND THE STABILISER

- ❑ Working with the right fuselage boom, plug the elevator servo lead into the servo extension lead in the wing.



- ❑ Push the excess servo wire into the moulded pocket next to the aileron servo, then install the front of the wing into the fuselage boom, making sure that the plastic tabs in the wing fit into the matching slots in the fuselage boom.





- ❑ Push the wing down into the wing saddle and align it with the sides of the fuselage boom.
- ❑ Install and tighten one M3 x 40mm machine screw and one M3 flat washer to secure the wing to the fuselage boom.

IMPORTANT Double-check to ensure that the servo wires are not pinched between the wing and the fuselage boom.



- ❑ Slide mounting tabs in the right stabiliser tip panel into the outside of the stabiliser mounting slot in the fuselage boom.

IMPORTANT The green painted side should face up.



- ❑ Slide mounting tabs in the right side of the stabiliser into the inside of the stabiliser mounting slot.

IMPORTANT When you slide the stabiliser into place, make sure that the stabiliser mounting tabs are on TOP of the stabiliser tip panel mounting tabs.



- ❑ Turn the aircraft upside down and secure the stabiliser and the stabiliser tip panels together, using two M2.6 x 5mm wood screws.



- ❑ Install the left fuselage boom to the wing and install the stabiliser and the left stabiliser tip panels to the fuselage boom, using the same techniques that you used to install the right fuselage boom.

STEP 14: INSTALLING THE ELEVATOR CONTROL LINKAGE



- ❑ Install one adjustable control horn onto the outside of the control horn mount, using one M2.6 x 5mm wood screw.





- ❑ Firmly push the threaded end of the pushrod wire through the pushrod support tube from inside the bottom of the right fuselage boom.



- ❑ Install the Z-Bend in the pushrod wire into the third hole out from the centre of the servo horn.
- ❑ Centre the servo, then attach the servo horn to the servo, making sure that it's centred and pointing towards the outside of the fuselage boom.
- ❑ Install the servo horn retaining screw to secure the servo horn to the servo.



- ❑ With both the servo horn and the elevator centred, install one clevis and clevis retainer onto the pushrod wire and snap it into the control horn, using the same techniques that you used to install the clevis retainers and clevises onto the aileron pushrods.

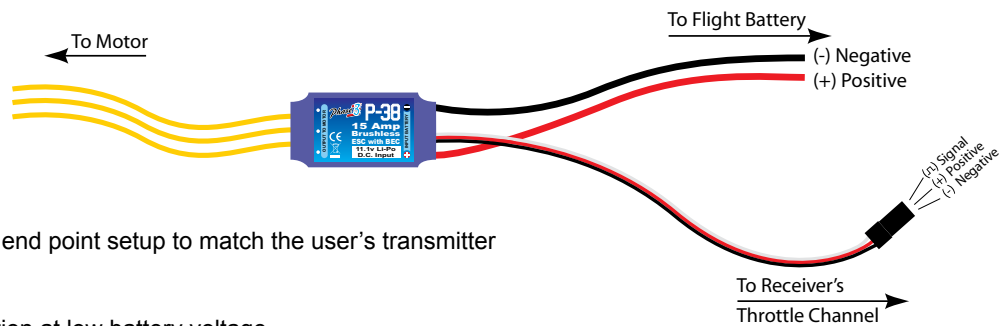
IMPORTANT The bend in the pushrod wire should be towards the control horn, so that the pushrod lines up with the control horn without binding.

STEP 15: SETTING UP THE ELECTRONIC SPEED CONTROLLERS

P-38 15 Amp Brushless ESC with BEC

Features

- Automatic throttle start and end point setup to match the user's transmitter
- Selectable brake function
- Build in protection:
 - Soft throttle reduction at low battery voltage
 - No signal protection
- Easy operation



Connecting the ESCs

1. Temporarily connect the motors to the controllers. The wiring order of the three connectors is not important at this stage.
2. The controllers should already be connected to the receiver's 'Throttle' channel using the Y-Lead supplied. The red wire is Positive, black wire is Negative and white wire is Signal.



3. Working inside the cockpit, Solder a plug onto the ESC battery wires. Solder both positive (red) ESC battery wires to the positive terminal on your plug and solder the two negative (black) ESC battery wires to the negative terminal on your plug.

PRO TIP Place a piece of aluminium foil over the airframe below the motor wires to protect the airframe from heat.

Do not connect the main power battery at this stage.

4. If you are using a Futaba transmitter, reverse the throttle channel. If you are using a JR transmitter, leave the throttle channel in its normal position. If using a different transmitter, refer to the instructions supplied with your radio. In all cases, leave the throttle ATV (Adjustable Travel Volume) set at 100%.
5. The controllers automatically detect the transmitter's throttle start & end points - no manual setting is needed - you just need to decide whether you require a brake or non-brake set-up.

Non-Brake Set-Up:

Switch on the transmitter and move the throttle stick to its full throttle position. Connect the flight battery and wait until 3 short 'beeps' can be heard from the brushless motors. Now move the throttle stick to the low throttle position. Once this setting has been completed the ready-alarm sound will be heard.

Brake Set-Up:

Switch on the transmitter and move the throttle stick to its full throttle position. Connect the flight battery and wait until 4 short 'beeps' can be heard from the brushless motor, move the stick to the low end. When the setting is done, the ready-alarm sound will be heard.

6. If you increase the throttle, the motors will spin.

IMPORTANT Before you solder the three sets of motor wires together, you need to verify that each motor spins the correct direction. The propeller should spin anti-clockwise when viewed from the front. If either propeller spins in the wrong direction (clockwise), you should swap two of the three motor wires and check again.

Do not swap the positive and negative battery leads to change the direction that the propellers spin or you will damage the ESC and your Li-Po battery.



- Carefully solder the motor wires from one motor to the ESC motor wires, make sure heat-shrink tubing is used to insulate the solder joints.

PRO TIP Place a piece of aluminium foil over the airframe below the motor wires to protect the airframe from heat.

Precautions

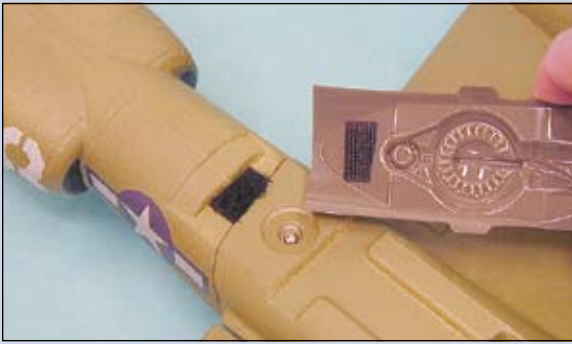
- When you connect your battery to the controller, ensure you observe the correct polarity. Failure to do this will damage your controller and battery.
- During the flight, when the voltage of the battery pack drops below the safe flying voltage, the throttle will automatically be lowered to reduce the current draw. This warning will give sufficient time for the mode to be landed safely. As soon as you detect this 10-15% decrease in power, please land as soon as possible.

Note: If the receiver signal is lost or encounters interference the speed controller will automatically cut-off.

ESC SPECIFICATIONS

Voltage range:	Li-XX: 2 ~ 3 cells (7.4V ~ 11.1V)	Protection:	Over / under working battery voltage alarm warning
	Ni-XX: 6 ~ 9 cells (7.2V ~ 10.8V)		In flight low voltage protection – soft throttle reduction
Constant Current:	15.0A		No signal protection
Maximum Current:	20.0A for 15 seconds	BEC Current:	1.0Amp
Maximum RPM:	2-pole motor / 210,000 rpm	Weight:	10.0g
	6-pole motor / 70,000 rpm	Size:	36 x 21 x 6mm
	12-pole motor / 35,000 rpm		

STEP 15: INSTALLING THE TURBO CHARGER COVERS



- ❑ Cut out a 13mm (1/2") long piece of Velcro® (hook and loop material).
- ❑ Apply one half of the Velcro® (hook and loop material) to the top of the fuselage boom, just behind the wing mounting joint and apply the other half to the corresponding space on the bottom of one turbo charger cover.



- ❑ Slide the mounting tab at the front of the turbo charger cover underneath the back edge of the cowling, then align and press the back of the turbo charger cover down to secure it into place with the Velcro® (hook and loop material).

- ❑ Repeat the previous procedures to solder the three sets of motor wires together and install the second radiator cover on the other fuselage boom.

STEP 16: INSTALLING THE CANOPY



- ❑ Measure and drill one 1.5mm (1/16") diameter pilot hole through each side of the forward canopy frame. Position each hole 10mm (3/8") up from the bottom edge of the canopy.



- ❑ Install one canopy mount on each side of the canopy, using two M1.7 x 4mm wood screws.

IMPORTANT Position the two canopy mounts in the upright position so that the rubber bands can be hooked over them.



- ❑ Hook one rubber band over each canopy mount to hold the canopy in securely in place.



STEP 17: INSTALLING THE LANDING GEAR

IMPORTANT Installing the landing gear is optional. If you're flying off thick grass (or have a thick grass landing area) you should not install the landing gear because it will get caught up in the grass and cause damage. If you're flying off a hard surface, or from very short grass, you should install the landing gear.



- ❑ Firmly push one wheel into each of the three tyres. The two larger wheels (main gear wheels) fit into the two larger tyres and the smaller wheel (nose gear wheel) fits into the smaller tyre.



- ❑ Slide one main gear wheel onto one main landing gear wire.
- ❑ Carefully install one metal wheel retainer onto the wire, using a small hammer to tap the retainer into place.

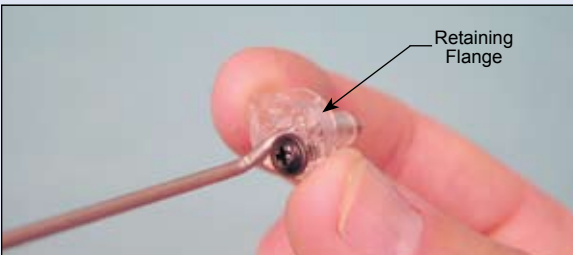
IMPORTANT The wheel retainer should be positioned up against the wheel, but not so far up against the wheel that the wheel can't spin freely.



- ❑ Push the end of the main gear wire into the moulded hole in the back of the mounting slot in the bottom of one fuselage boom, then secure the landing gear wire into place, using three M2.6 x 5mm wood screws.

IMPORTANT When installed, the wheel should be towards the outside of the fuselage boom and the landing gear wire should be angled forward.

- ❑ Repeat the previous procedures to install the second main landing gear assembly into the other fuselage boom.

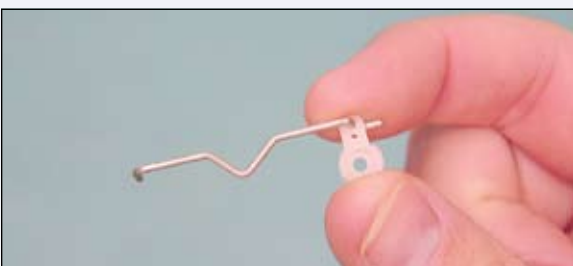


- ❑ Push the nose landing gear wire into the slot in the top of the plastic steering hub, making sure that the landing gear wire faces **away** from the moulded retaining flange at the back of the steering hub.

- ❑ Secure the landing gear wire to the steering hub, using one M2.6mm x 5mm wood screw installed in the left pilot hole.



- ❑ Install the nose gear wheel onto the nose landing gear, using the same techniques that you used to install the main gear wheels onto the main landing gear wires.



- ❑ Install the Z-Bend in the steering pushrod wire into the second hole out from the centre of the servo horn.

IMPORTANT You will need to cut away the excess servo arm so that it won't interfere with the fuselage pod when it's installed.



- ❑ Centre the steering servo, then attach the servo horn to the servo, making sure that it's centred and pointing toward the left side of the fuselage pod.
- ❑ Install the servo horn retaining screw to secure the servo horn to the servo.



- ❑ Push the steering hub completely down into the steering hub mount in the fuselage pod, making sure that the landing gear wire is angled forward.
- ❑ Install one M2.6 x 5mm wood screw into the pilot hole in the back of the steering hub mount and tighten it securely. After tightening the wood screw, loosen it just enough so that you can pivot the nose gear smoothly right and left.



- ❑ Push the 90° bend in the steering pushrod into the moulded hole in the right side of the steering hub.
- ❑ Secure the steering pushrod onto the steering hub, using one M2.6 x 5mm wood screw.

IMPORTANT After tightening the wood screw, loosen it slightly so that the steering pushrod can pivot freely when the nose gear pivots right and left.

STEP 18: INSTALLING THE LANDING GEAR DOORS - FOR USE WITHOUT LANDING GEAR

IMPORTANT Installing the landing gear doors is optional, although we highly suggest it because installing them will help prevent damage to the bottom of the aircraft during belly landings and will help reduce drag.



- ❑ Align and install one main landing gear door onto the bottom of one fuselage boom, using a couple of pieces of clear tape to hold the landing gear door securely in place.

IMPORTANT The narrower end of the landing gear door should be toward the front of the fuselage boom.

- ❑ Repeat the previous procedure to install the second main landing gear door onto the bottom of the other fuselage boom.



- ❑ Install the nose landing gear door onto the bottom of the fuselage pod, using the same techniques that you used to install the main landing gear doors.



STEP 19: INSTALLING THE LANDING GEAR DOORS - FOR USE WITH LANDING GEAR

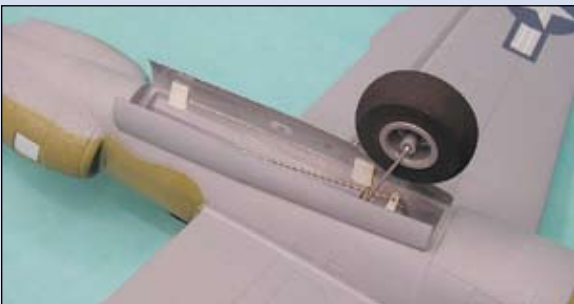
IMPORTANT Installing the landing gear doors is optional, although we recommend installing them for added scale realism.



- ❑ Carefully cut the two main landing gear doors along the moulded scribe line to split the landing gear doors in half. After cutting both landing gear doors in half, you'll end up with two sets of main landing gear doors.



- ❑ Cut out ten 15mm x 10mm (9/16" x 3/8") pieces of plastic from the plastic sheet and ten 15mm x 10mm (9/16" x 3/8") pieces of double-sided tape from one piece of double-sided tape.
- ❑ Remove the protective backing from one side of each piece of double-sided tape, then apply one piece of plastic onto each piece of double-sided tape.



- ❑ Working with two main landing gear doors for now, remove the protective backing from four pieces of double-sided tape, then adhere two plastic hinges to the outer edge (the curved edge) of each landing gear door.
- ❑ Align and install the two main landing gear doors to one fuselage boom, making sure the plastic hinges are pressed firmly against the inside of the landing gear housing.

IMPORTANT The narrower end of the landing gear doors should be toward the front of the fuselage boom.

- ❑ Repeat the previous procedures to install the second set of main landing gear doors onto the other fuselage boom.



- ❑ Install the nose landing gear door, using the same techniques that you used to install the main landing gear doors.

IMPORTANT Hinge the nose landing gear door along the right edge of the landing gear housing.

STEP 20: INSTALLING THE FLIGHT BATTERY



- ❑ Secure your battery to the two battery mounts, using two pieces of Velcro® (hook and loop material).

IMPORTANT The battery may need to be moved forward or aft to balance the aircraft.

- ❑ Run your receiver aerial out of the fuselage pod and extend it completely. Secure it the bottom of the wing and fuselage boom using pieces of clear tape. Do not cut the aerial shorter or the reception range of your radio control system will be reduced.



BALANCE POINT (C/G) AND CONTROL THROWS

IMPORTANT It is critical that your aircraft be balanced correctly. Incorrectly balancing your aircraft can cause your aircraft to lose control and crash! **Balance the airplane upside down.**

BALANCE POINT (C/G):



- ❑ The balance point (C/G) is located between the two moulded lines in the centre of the wing, as displayed in the blue shaded area in the photo.

- ❑ Turn the aircraft upside down, place your fingers on the wing at the balance point, and carefully lift the aircraft. If the nose of the aircraft drops, the aircraft is nose heavy. To correct this, move the battery back far enough to bring the aircraft into balance. If the tail of the aircraft drops, the aircraft is tail heavy. To correct this, move the battery and receiver forward far enough to bring the aircraft into balance. When balanced correctly, the aircraft should sit level or slightly nose down when you lift it up with your fingers at the C/G location.

**WE DON'T SUGGEST BALANCING THE AIRCRAFT OUTSIDE OF THE SHADED AREA
OR AN UNCONTROLLABLE CRASH COULD RESULT!**

CONTROL THROWS:

Test Flying

Ailerons: 10mm (3/8") Up and 10mm (3/8") Down
Elevator: 10mm (3/8") Up and 12mm (7/16") Down
Steering: 10mm (3/8") Right and 10mm (3/8") Left

THE CONTROL THROWS ARE MEASURED FROM THE WIDEST POINT OF THE CONTROL SURFACES

Phase 3

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