

Ventique

60^E TM



Assembly Manual
ARF and ARFSV

Guido Tompazini

PREMIER
aircraft™

INTRODUCTION

Congratulations on the selection of your new Premier Aircraft Ventique 60e. Designed by Quique Somenzini, Flex Innovations co-founder and world aerobatic champion, this airplane is designed to excel in both precision and 3D aerobatics. Strict attention to structural and aerodynamic design detail make the Ventique a very special airplane that's sure to give you a lot of satisfaction.

Flex Innovations, Inc. and Premier Aircraft thank you for your purchase...enjoy it!

USING THIS MANUAL

This manual is divided into sections to make the assembly of the airplane easier to follow. Note the boxes (☐) next to each step to help you keep track of the steps that have been completed. Steps with duplicate procedures feature multiple boxes.

SPECIAL LANGUAGE DEFINITIONS

The following terms are used throughout the product literature to indicate various levels of potential harm when operating this product:

NOTICE: Procedures, which if not properly followed, create a possibility of physical property damage AND a little or no possibility of injury.

CAUTION: Procedures, which if not properly followed, create the probability of physical property damage AND a possibility of serious injury.

WARNING: Procedures, which if not properly followed, create the probability of property damage, collateral damage, and serious injury OR create a high probability of serious injury.

ATTENTION

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

All instructions, warranties and other collateral documents are subject to change at the sole discretion of Flex Innovations, Inc. For up-to-date product literature, please visit our website at www.flexinnovations.com and click on the support tab for this product.

WARNING

This product is not intended for use by children under 14 years without direct adult supervision.

IMPORTANT INFORMATION REGARDING WARRANTY

Please read our Warranty and Liability Limitations section before building this product. If you as the Purchaser or user are not prepared to accept the liability associated with the use of this Product, you are advised to return this Product immediately in new and unused condition to the place of purchase.

SAFETY WARNINGS AND PRECAUTIONS

Protect yourself and others by following these basic safety guidelines.

1. This manual contains instructions for safety, operation and maintenance. It is essential to read and follow all the instructions and warnings in the manual, prior to assembly, setup or use, in order to operate correctly and avoid damage or serious injury.
2. In some cases, the written instructions may differ slightly from the photos. In those instances the written instructions should be considered correct.
3. This model is not a toy, rather it is a sophisticated hobby product and must be operated with caution and common sense. This product 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.
4. This model must be assembled according to these instructions. Do not alter or modify the model outside of these instructions provided by Flex Innovations, Inc, as doing so may render it unsafe and/or unflyable. You must take time to build straight, true and strong. It is your responsibility to ensure the airworthiness of the model.
5. Use only compatible, appropriate components for the final assembly of this model. Ensure that the radio system is in functional condition, that the motor and ESC are appropriately sized for the model, and that all other components are appropriate for use in this model as specified in this instruction manual. All components must be installed correctly such that they operate correctly both on the ground, and in the air.
6. Inspect and check operation of the model and all its components before every flight.
7. If you are not an experienced pilot or have not flown a high-performance model before, it is recommended that you seek assistance from an experienced pilot in your R/C club for your first flights. If you're not a member of a club, the Academy of Model Aeronautics (AMA) has information about clubs in your area whose membership includes experienced pilots.
8. Keep the propeller area clear from such items such as loose clothing, jewelry, long hair, or tools as they can become entangled. Keep your hands and body parts away from the propeller as injury can occur.
9. LiPo batteries have very high energy density, therefore mishandling from stress, overcharging, heat, etc. can compromise the cells and may result in the risk of fire, causing serious injury and property damage. Please dispose of damaged or spent batteries in accordance with your local ordinances.

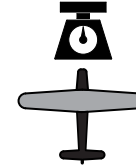
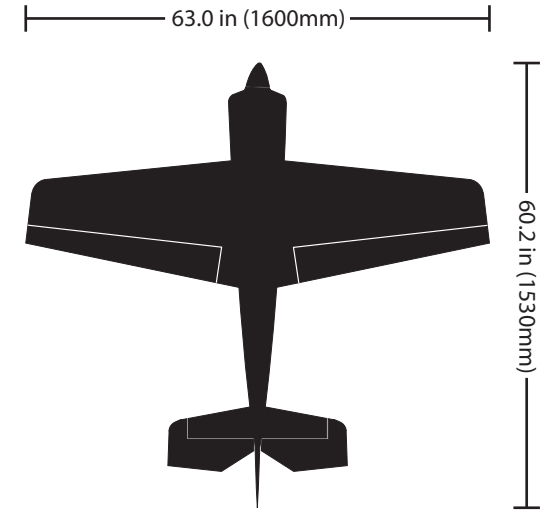
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KIT CONTENTS



SPECIFICATIONS



7lb 15 oz (3.6kg)
RTF with battery installed

825 sq. in (53.25 dm²)

RECOMMENDED COMPLETION ITEMS



6+ channel transmitter with adjustable dual rates/mixing



Potenza 60 470 Kv (FPZM1060A)
60-class brushless electric outrunner
470Kv, with 1550-1800 watts output



Hobby Wing SkyWalker 80A OPTO (FTVHQBQ8012)
80A OPTO (without BEC)



4,000mAh 6S 22.2v 40C LiPo (FPZB40006S40)
6S 22.2v 3,300-5,000mAh LiPo (motor battery)
1,300mAh 2S 7.4v 35C LiPo (FPZR13002S35)
2S 7.4v 1,000-1,650mAh LiPo (receiver pack)



17x7 Thin Electric Propeller
Premier Aircraft 17x7e wood (FPMP1707E) or APC 17x7e (LP17070E)



Potenza DS19410 (FPZDS19410TGHV)*
(4) standard digital coreless servos
150-180 oz/in (10.8-13.0 kg/cm)*



Potenza (FPZC0080)
Multi-Chemistry LiPo Balancing Charger

*Pre-installed on ARFSV

NEEDED TO FINISH

In addition to the major electronic components required to finish the airplane, some additional items will be required.

Setup 1: Pull-Pull Rudder Servo

- (3) 1.25-inch (32mm) heavy-duty aluminum single servo arms*
- (1) 2.5-inch (65mm) heavy-duty aluminum double servo arm*
- (1) 18-inch heavy-duty servo extension (elevator)**
- (1) 12-inch heavy-duty servo extension (ESC)**
- (2) 3-inch heavy-duty servo extensions (receiver to aileron)**

Setup 2: Push-Pull Rudder Servo

- (4) 1.25-inch (32mm) heavy-duty aluminum single servo arms*
- (2) 18-inch heavy-duty servo extension (elevator, rudder)**
- (1) 12-inch heavy-duty servo extension (ESC)**
- (2) 3-inch heavy-duty servo extensions (receiver to aileron)**

*included with ARFSV
**not included in either completion level

REPLACEMENT PARTS

FPM1000	ARF Kit Ventique 60E
FPM1050	ARFSV Kit Ventique 60E
FPM1001	Fuselage
FPM1002	Wing Set
FPM1003	Stabilizer
FPM1004	Rudder
FPM1005	Cowling
FPM1006	Canopy
FPM1007	C/F Landing Gear
FPM1008	Wheel Pants
FPM1009	C/F Wing Tube
FPM1010	Tail Gear Set
FPM1011	Wheels+Axle
FPM1012	Pushrod Linkage
FPM1013	Hardware Bag
FPM1014	Wing Hand Bag
FPM1015	Decal Set
FPM1016	SFG set
FPM1017	Shark Tooth set
FPM1018	Spinner 76mm Plastic Aluminum Back Plate

HANGAR 9® ULTRACOTE®/ORACOVER COLORS®

In the unfortunate event that your Ventique requires repair after a mishap, please reference the codes below for the appropriate color to repair your covering. UltraCote® will be the most commonly available brand in North and South America, and Oracover® will be most prevalent in Europe and the rest of the world.

Hangar 9® UltraCote®		Oracover®	
HANU866	True Red	22	Ferrari Red
HANU885	Midnight Blue	52	Dark Blue
HANU881	Silver	91	Silver
HANU870	White	10	White

REQUIRED TOOLS FOR ASSEMBLY

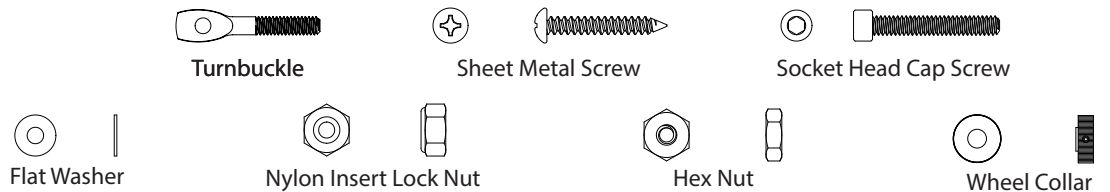
- | | | |
|---|--|---|
| <input type="checkbox"/> Double-Sided Foam Tape | <input type="checkbox"/> Drill Bits (sizes) | <input type="checkbox"/> Electric Drill |
| <input type="checkbox"/> Epoxy Brushes/Mixing Cups/Sticks | <input type="checkbox"/> Felt-Tipped Pen | <input type="checkbox"/> Flat File |
| <input type="checkbox"/> Heavy Card Stock | <input type="checkbox"/> Hex Wrench (sizes) | <input type="checkbox"/> Hobby Knife with #11 Blade |
| <input type="checkbox"/> Isopropyl Alcohol (91%) | <input type="checkbox"/> Light Machine Oil | <input type="checkbox"/> Low-Tack Masking Tape |
| <input type="checkbox"/> Needle-Nosed Pliers | <input type="checkbox"/> Nut Drivers (sizes) | <input type="checkbox"/> Paper Towels |
| <input type="checkbox"/> Petroleum Jelly | <input type="checkbox"/> Phillips Screwdriver (#1, #2) | <input type="checkbox"/> Pliers |
| <input type="checkbox"/> Ruler | <input type="checkbox"/> Tie Wraps (4-inch)* | <input type="checkbox"/> Toothpicks |
| <input type="checkbox"/> Side Cutters | <input type="checkbox"/> Velcro Straps/Tape | |

*optional, for organizing wiring inside fuselage

REQUIRED ADHESIVES FOR ASSEMBLY

- Thin CA Medium CA 30-minute Epoxy Blue Threadlocker

HARDWARE IDENTIFICATION LEGEND



ASSEMBLY SYMBOL LEGEND



BEFORE STARTING ASSEMBLY

Organization is key to building a successful, well-built, good-flying model. Please take a few moments to follow these next few steps to ensure that you are getting the most out of your Ventique, and ensure that it will be in your stable for a long time to come.

1. Remove all parts from their plastic bags, inventory all items, and closely examine all of the major airframe components for damage. If any items are missing, or you find damaged components, please contact customer support.
2. Use a covering iron with a covering sock on high heat to tighten the covering as necessary, paying special emphasis to the leading edges of the flying surfaces, hinge lines and stabilizer and wing saddle areas. Apply slight pressure over sheeted areas to thoroughly bond the covering to the wood. Use caution around seams to prevent inadvertently pulling them loose.
3. Gather all required components such as motor and radio equipment that will be used to equip the airplane. Create a new radio program in your transmitter and bind this model program to the receiver that will be used in the airplane.

HORIZONTAL STABILIZER INSTALLATION

Required Components

Fuselage (with canopy removed)
Wing Tube
Horizontal Stabilizer
Elevator Joiner Wire

Left and Right Wings
Wing Bolts (optional)
Left and Right Elevator Halves
Hinges (6 total)

Required Adhesives

Thin and Medium CA

30-Minute Epoxy

Required Tools/Building Materials

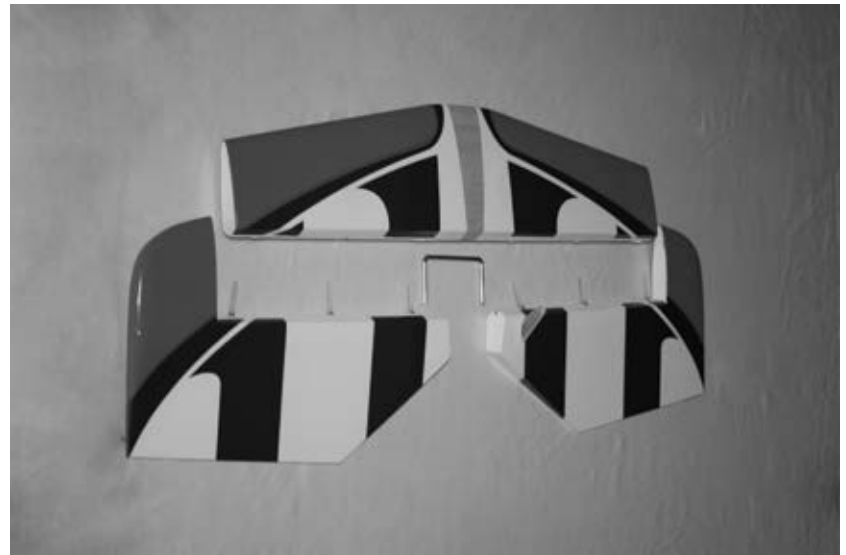
Ruler & Tape Measure
Petroleum Jelly
Epoxy Mixing Cups/Sticks
Low-Tack Masking Tape

Isopropyl Alcohol (91%)
Paper Towels
Toothpicks (optional)

HELPFUL HINT

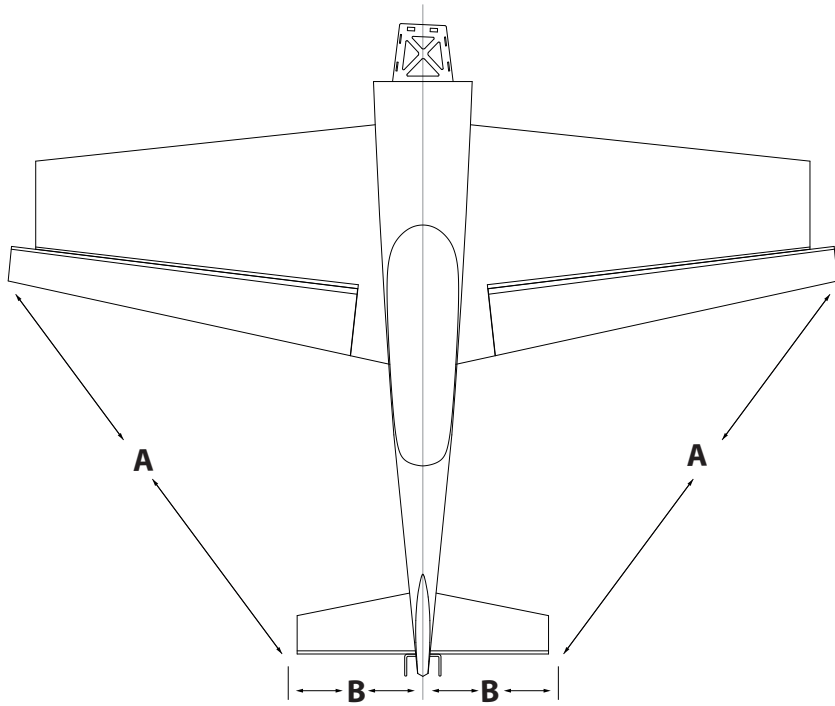
Because of the fuselage's rounded shape, you may find it easier to put the fuselage in a foam cradle while performing the horizontal stabilizer installation.

1.



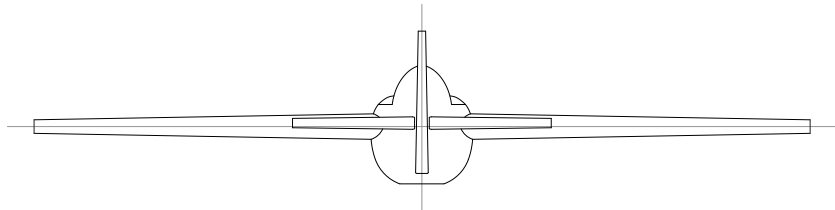
Insert the elevator joiner wire into the fuselage, and then slide the horizontal stabilizer through the saddle, using the covering cutouts as reference lines. Insert the wing tube into the fuselage and slide the left and right wings onto the tube at this time, ensuring that they are fully seated at this time.

□ 2.



Center the horizontal stabilizer in the fuselage such that the trailing edge (B) is equidistant on the left and right sides. Adjust the tips of the stabilizer fore and aft to achieve an equal distance between corresponding points on the stabilizer tips and wing tips on both sides of the fuselage.

□ 3.



Stand back approximately 6 feet (2 meters) from the rear of the airplane and carefully sight down the fuselage to level the horizontal stabilizer with the wing. It may be necessary to fabricate some shims from thin balsa sheet to correct a stabilizer that is out of level.

! NOTICE

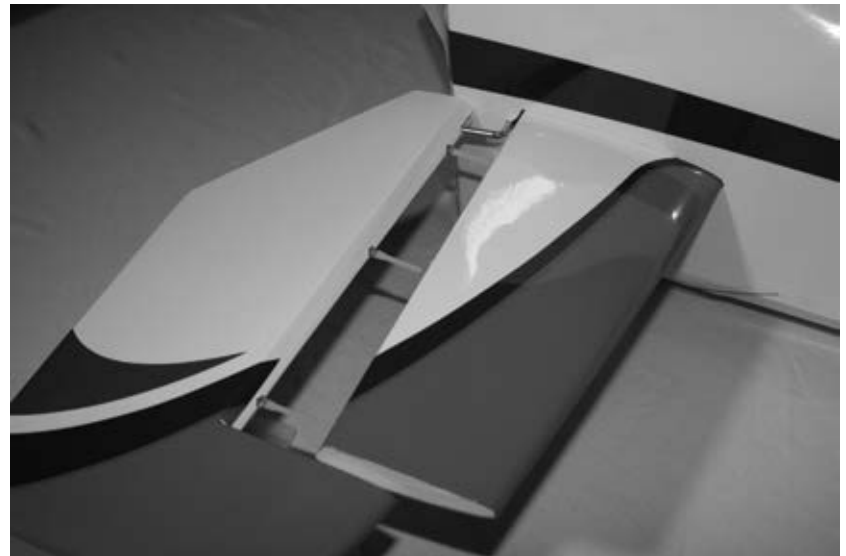
Do not use the top or bottom of the wing as a reference point to align the stabilizer. Because this airplane has a tapered airfoil, these lines are not level from one side of the airplane to the other. There should be an even gap between the stabilizer tips and the chosen reference points on the wings.

□ 4.



Once satisfied with the alignment of the stab, carefully tack it into place with thin CA, then wick thin CA around the entire upper surface of the horizontal stabilizer. Wait a few moments, then carefully flip the airplane inverted to glue the underside of the stabilizer.

□ □ 5.



Test the fit of the elevator halves by sliding each elevator half onto the horizontal stabilizer, indexing the joiner wire into the slots in the elevator. Ensure that the elevator halves are properly aligned with each other at the trailing edge with the counterbalance flush with the leading edge. Correct any misalignment by carefully bending the joiner wire. Do not adjust the slots in the elevator halves. Once everything fits properly, remove the elevators and sand the joiner wire to promote adhesion. Ensure all of the hinges and joiner wire are clean and free of oil before proceeding.

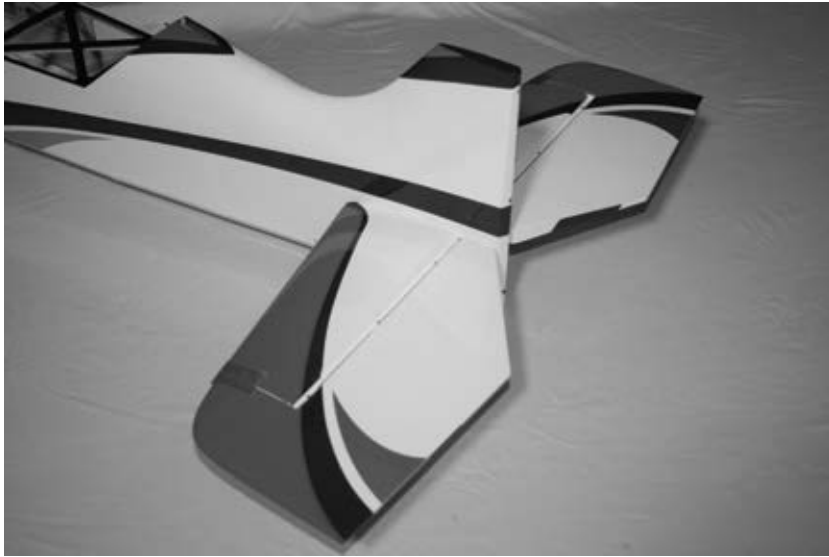
HELPFUL HINT

Carefully heat up a small amount of petroleum jelly in a cup to the point where it is liquid. Bend your hinges to their limits and dip the knuckle in the petroleum jelly to prevent the epoxy from gluing the hinge solid.

□ 6.

30

x2



Mix a sufficient amount of 30-minute epoxy in a cup, and with a toothpick, smear epoxy in the hinge pockets on the horizontal stabilizer, and the slot for the elevator joiner. Slowly and carefully, insert each hinge into horizontal stabilizer. Partially remove and reinstall the hinge to ensure that you've completely coated it with glue. Clean up any excess epoxy with isopropyl alcohol, and tape the elevator in place to cure.

RUDDER AND TAILWHEEL INSTALLATION

Required Components

Fuselage Assembly
Tailwheel Assembly
M2.5x10mm Wood Screws (2)

Rudder
Hinges (3 total)
1.5mm Wheel Collar (2) with grub screw

Required Adhesives

Thin CA
Threadlock

30-Minute Epoxy

Required Tools/Building Materials

Ruler
Petroleum Jelly
Epoxy Mixing Cups/Sticks
Low-Tack Masking Tape
Flat File
Electric Drill

Isopropyl Alcohol (91%)
Paper Towels
Toothpicks (optional)
Light Oil
Ball Driver
Drill Bits: 1/16-inch (1.5mm)

- 1. Test fit the rudder to the fuselage by inserting the tailwheel assembly into the rudder, and then the rudder onto the fuselage. Once satisfied, prepare the hinges and the tailwheel wire in the same manner as the elevator joiner wire.

- 2. Mark a short centerline down the bottom of the fuselage to align the tailwheel bracket. Align the tailwheel bracket so that the screw holes are centered on the centerline marked on the fuselage, and mark the locations of the two holes. Lightly make an indentation in the wood with either your pen or a drill bit. Clean the lines off of the covering with isopropyl alcohol before proceeding.





- 3.



Use a 1/16-inch (1.5mm) drill bit to drill the holes for the mounting screws.



- 4. Mix a sufficient amount of 30-minute epoxy in a cup, and with a toothpick, smear epoxy in the hinge pockets on the fuselage, as well as the slot for the tailwheel wire. Carefully slide the rudder onto the fuselage. Clean up any excess epoxy with isopropyl alcohol, and tape the rudder in place to cure.

30

- 5. Mount the tailwheel bracket to the fuselage using (2) M2.5x10 wood screws and a #1 Phillips screwdriver. 
- 6. Locate the tailwheel and (2) 1.5mm wheel collars. Temporarily install the wheel collars and tailwheel, ensuring that the wheel can freely rotate between the collars. These wheel collars have a small flange that must be oriented TOWARDS the wheel. This minimizes the amount of surface area that the wheel has with the collar, reducing friction. Tighten the setscrews to make an indentation in the tailwheel wire. 

HELPFUL HINT

After drilling mounting holes, it's a good idea to reinforce them. Temporarily thread the appropriate mounting screw into the hole to cut threads. Once the screw has been removed, apply 2-3 drops of thin CA to the hole to harden the threads. This accomplishes several things; fuelproofing, strengthening (better wear and tear, prevents stripped threads) and the moisture of the CA will swell the wood threads slightly, making tightening the screw threads for a good fit.

- 7. Remove the wheel collars and tailwheel from the wire. Use a file to grind flat spots on the tailwheel wire on the marks made by the collar set screws. This prevents the wheel collars from rotating loose as it gives the set screw more surface area to "bite". Apply light oil to the axle, and threadlocker to the setscrews, and reassemble the tailwheel and collars onto the tailwheel wire to complete assembly.  

MAIN LANDING GEAR INSTALLATION

Required Components

Fuselage Assembly	Main Landing Gear Legs
Main Landing Gear Axles	Main Wheels
M3x15mm Socket Head Cap Screw (4)	M3x10mm Socket Head Cap Screw (2)
3mm Flat Washer (6)	M3 Blind Nut (2)

Required Adhesives

Medium CA	Threadlocker
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Required Tools/Building Materials

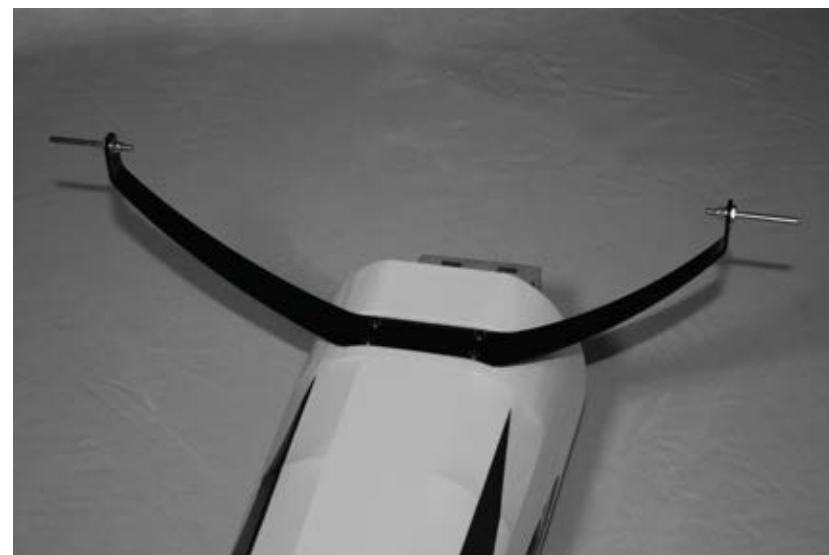
Ball Drivers: 1.5mm, 2.5mm	Electric Drill
Nut Driver: 7mm	Adjustable Wrench
Drill Bits: 3/32-inch (2.5mm), 9/64-inch (3.5mm)	

1.



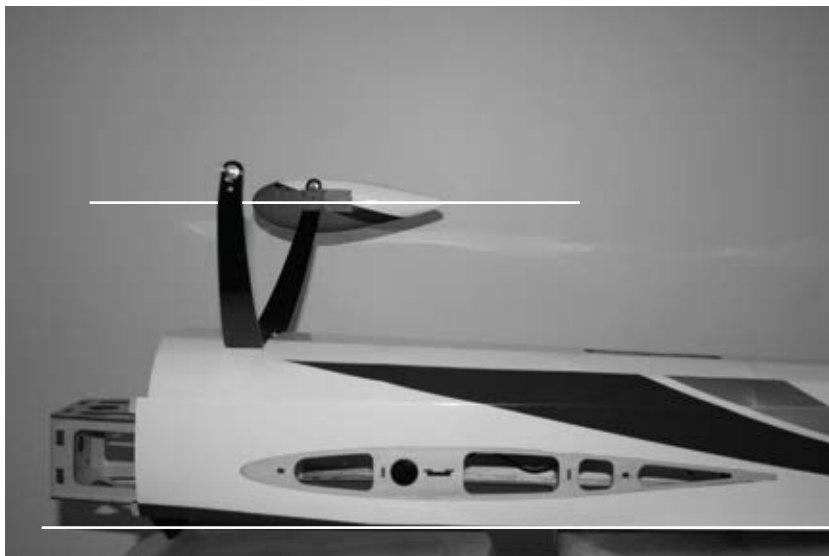
Install the main landing gear legs using (4) M3x15mm socket head cap screws, (4) M3 flat washers, and a 2.5mm ball driver. **Note that the gear should be installed such that it is angled (swept) towards the REAR of the airplane.**

2.



Install the wheel axles on the main landing gear legs as shown using a 7mm nut driver and an adjustable wrench. Ensure that the flat sides of the axle orient vertically to allow for installation of the wheelpants.

□□ 2.



Temporarily put the wheelpants on the landing gear and hold in place with tape. Align the wheelpants such that the centerline of the wheelpant is aligned with the fuselage centerline.

□□ 3.



After properly aligning the wheelpants, clamp them in place and use a 3/32-inch (2.5mm) drill to drill a hole through wheelpant, using the hole in the landing gear leg as a guide. After the holes have been drilled, remove the wheelpants and enlarge the holes to accept a blind nut with a 9/64-inch (3.5mm) drill bit. Install the blind nut into the wheel pant, ensuring that it is fully seated.

HELPFUL HINT

Apply a few drops of medium CA under the flange (banded side) of the blind nut before installing in the wheelpant. After installation, apply a bead of glue around the blind nut's perimeter to keep it in place. Ensure that no CA gets in the threads.

□□ 5.



Locate the main wheels and (4) 3.0mm wheel collars. Temporarily install the wheel collars and main wheels on the main axle (with wheel pants installed), ensuring that the wheel can freely rotate between the collars. These wheel collars have a small flange that must be oriented TOWARDS the wheel. This minimizes the amount of surface area that the wheel has with the collar, reducing friction. Tighten the setscrews to make an indentation in the tailwheel wire.

□□ 6.



Remove the wheel collars and tailwheel from the wire. Use a file to grind flat spots on the tailwheel wire on the marks made by the collar set screws. This prevents the wheel collars from rotating loose as it gives the set screw more surface area to "bite".

□□ 7.



Apply light oil to the axle, and threadlocker to the set screws, and reassemble the main wheels and collars onto the axles. Mount the wheelpants with (2) M3x10mm screws and (2) M3 flat washers to complete assembly.

MOTOR/ESC INSTALLATION

Required Components

Fuselage Assembly
M3x15mm Socket Head Cap Screw (4)

Motor and ESC
3mm Flat Washer (4)

Required Adhesives

Threadlocker

Required Tools/Building Materials

Ball Drivers (2.5mm)

□ 1.



Attach the motor to the firewall using (4) M3x15 socket head cap screws, (4) M3 flat washers, and a 2.5mm ball driver.

- 2. Mount the ESC to the bottom of the motor box with industrial-strength Velcro. Because the ESC can get warm when the motor is running, we suggest using medium CA to bond the Velcro to the wood- even if you are using self-adhesive Velcro. Because the Ventique is a very maneuverable airplane and can fly with very high "G" loads, we recommend also putting a strap around the controller for added security during maneuvering.

HELPFUL HINT

Most motors and speed controllers have color-coded wires for connection. Generally matching colors will enable the motor to run in the correct direction. If the colors of your ESC and motor wire are not the same, usually the shades of colors will match, i.e.: lightest color to lightest color, medium color to medium color, and darkest color to darkest color.

COWLING ATTACHMENT

Required Components

Fuselage Assembly
M2.5x12mm Sheet Metal Screw (4)

Cowling

Required Adhesives

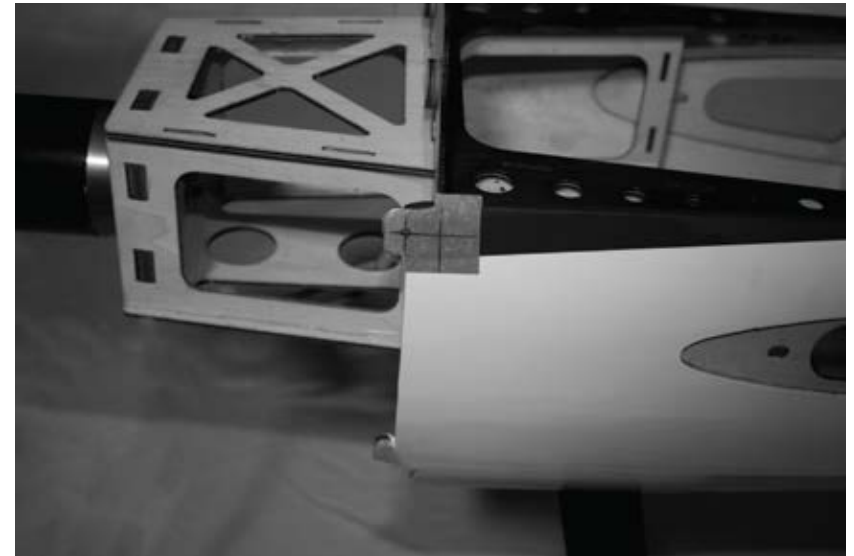
Thin CA
Threadlocker

Required Tools/Building Materials

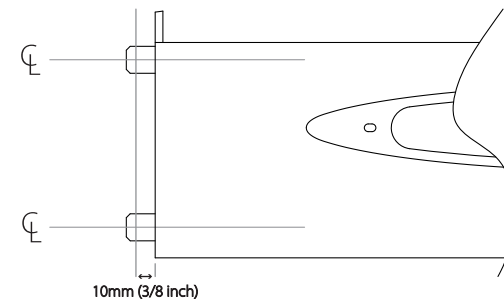
Low-Tack Masking Tape
Felt-Tipped Pen
Phillips Screwdriver (#1)
Drill Bits: 1/16-inch (1.5mm), 3/32-inch (2.5mm)

Heavy Card Stock
Ruler
Electric Drill

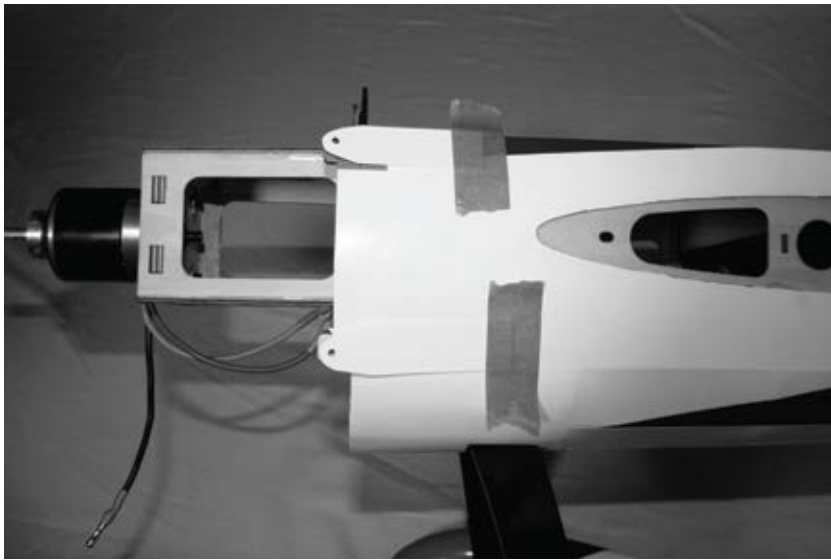
□ 1.



Apply a piece of low-tack masking tape on the airplane as shown. Mark a line horizontally down the center of the tab, and make a vertical line at the cowl ring fomer. Measure forward 10mm from this vertical line and make another line, marking the location for your cowling mounting screws. Do this for all four tabs.

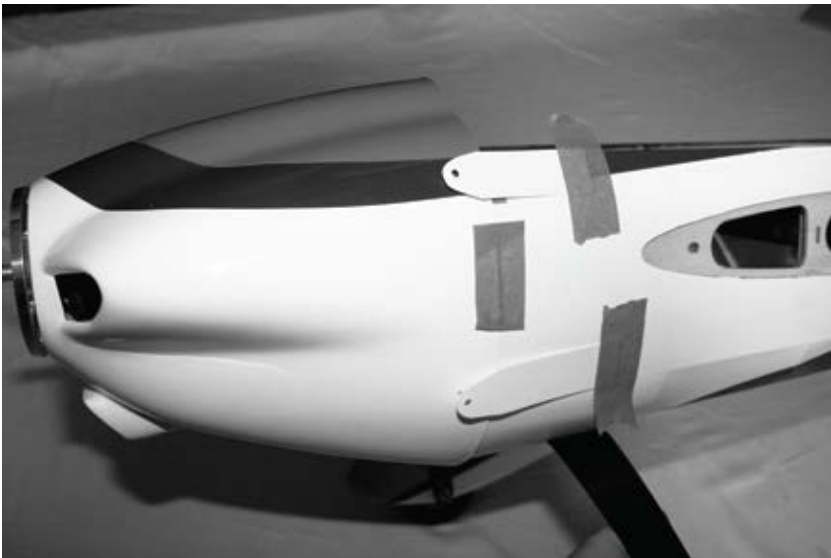


□ 2.



Cut four strips of heavy card stock and tape them to the fuselage at the rear as shown. Transfer the marks on the masking tape to the card stock strips. Remove the masking tape from the last step from all four tabs at this time.

□ 3.



Slide the cowling onto the fuselage with the card stock strips on the outside of the cowling. Install the spinner backplate and propeller onto the motor shaft. Position the cowling such that there is approximately 1/16-inch (1.5mm) gap between the rear face of the spinner backplate and the front face of the cowling. Align the paint lines on the cowling to the covering on the fuselage, then hold the cowling securely in place using masking tape.

□ 4.



Use a 1/16-inch (1.5mm) drill bit to drill four holes through the cowling and the mounting tabs at the marked locations. Remove the cowling from the fuselage, and enlarge the holes in the cowling using a 3/32-inch (2.5mm) drill bit. **DO NOT ENLARGE THE HOLES IN THE FUSELAGE.** Prepare the mounting holes in the fuselage in the same manner as the mounting holes for the tailwheel bracket. Attach the cowling to the fuselage using (4) M2.5x12 sheet metal screws to complete assembly.

WING TIP INSTALLATION

There are two options for mounting the wingtips on your Ventique. The first option is to simply mount them to the wings with the spacer blocks provided to maintain the airfoil's natural shape. Alternatively, side force generators (SFGs) are included in the kit and mount identically to the spacer blocks. SFGs are, in very simple terms, a vertical surface that will increase the side area of fuselage, increasing the rudder's effectiveness; particularly at low airspeeds and high angles of attack. An ancillary benefit of SFGs is also that they stop spanwise flow of air over the wingtips, which greatly reduces wing rocking in harriers and other similar 3D maneuvers.

Required Components

Left and Right Wings
(4) M3x15mm socket head cap screws

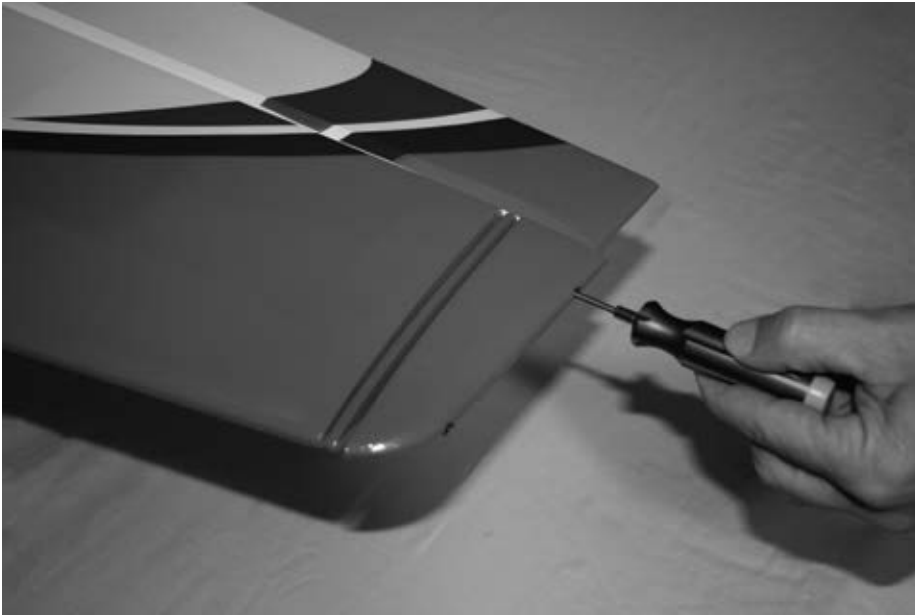
SFGs **OR** Wingtip Spacers

Required Tools/Building Materials

Ball Driver: 2.5mm

1. Install each wingtip using (2) M3x15mm socket head cap screws, and your choice of either the spacer blocks or side force generators. **Do not apply any threadlock to the screw threads as the added friction could cause the blind nuts to break loose when the screws are removed.**


M3x15 (4)



SHARK TEETH INSTALLATION (OPTIONAL)

New to the world of aerobatics are the shark teeth, featured on the Ventique. Shark Teeth are serrated protrusions that extend from the leading edge forward at the wings tips. The primary benefit of installing these on your Ventique is to improve even more the flight characteristics of the airplane in high-alpha flight. They greatly reduce, or when used in conjunction with the SFGs, virtually eliminate any wing rock in harriers. Intermediate flyers just learning 3D will appreciate the effect of the shark teeth while learning how to perform 3D maneuvers, and more advanced pilots will enjoy the feel of the reduced workload during extreme 3D without the hassle of gyro setup and installation.

The shark teeth install in a pre-made slot in the leading edge of the wing. This slot has been covered by UltraCote® at the factory, and installation is very easy and can be made temporary or permanent, depending on your needs.

Required Components

Left and Right Wing Panels

Shark Teeth

Required Adhesives

Water-Based Adhesive

Required Tools/Building Materials

Hobby Knife with #11 Blade

Trim Covering Iron (optional)

- 1.



x2



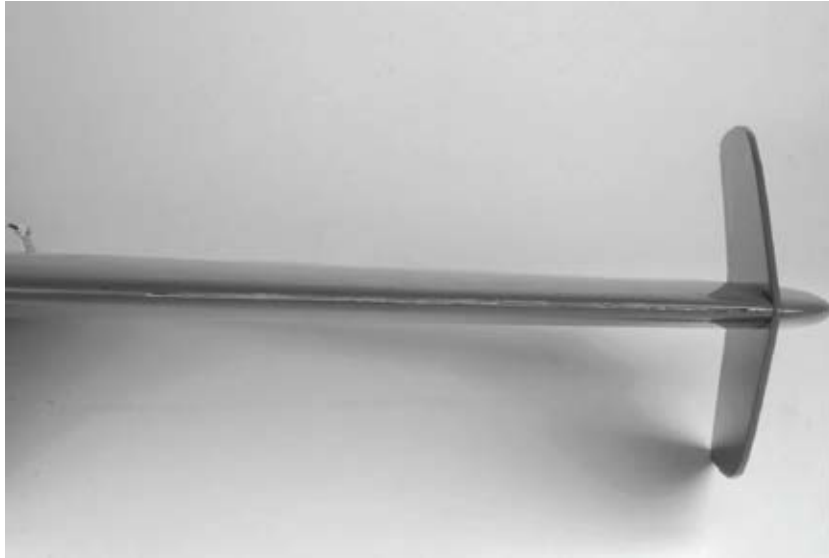
The slots for the shark teeth are located in the leading edge of the wing, and begin approximately 5/16 inches (9mm) from the wingtip, and are approximately 10 3/4 inches (275mm) in length. Use a hobby knife with #11 blade to cut the covering from the slots.

HELPFUL HINT

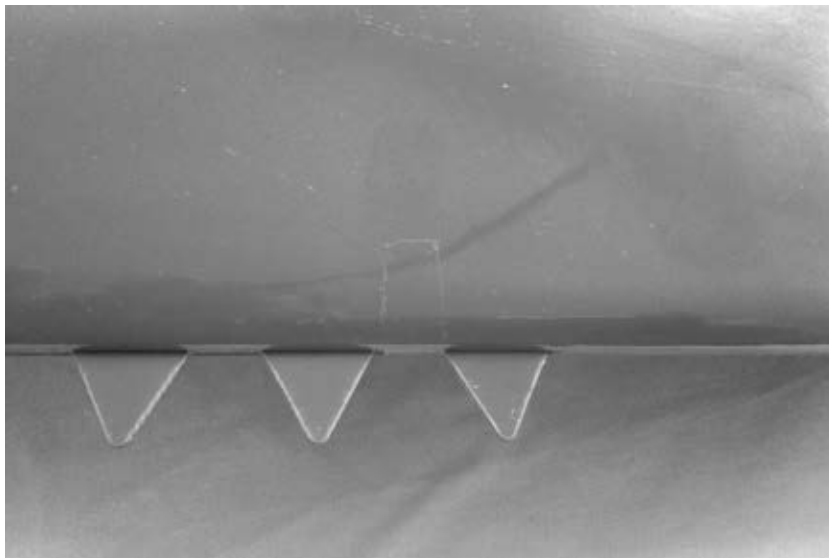
Even though the Ventique has no option for glow or gas, it is still a good idea to seal the covering into the slot for the shark teeth. Leave a small amount of covering around the edges of the slot and fold it into the slot with a trim iron for a professional finish that will not lift over time.

□□ 2.

x2



Install the shark fin strip into the leading edge of the wing with the serrations extending from the leading edge. For temporary attachment, clear cellophane tape is adequate, or use a water-based adhesive such as white glue for a little more permanent attachment. White glue dries clear, and is easy to clean up.



RECEIVER AND BATTERY INSTALLATION

Required Components

Fuselage Assembly
(3) 3-inch servo extensions
Double-Sided Foam Tape (optional)

Receiver
Velcro Strap and Tape
Receiver Battery

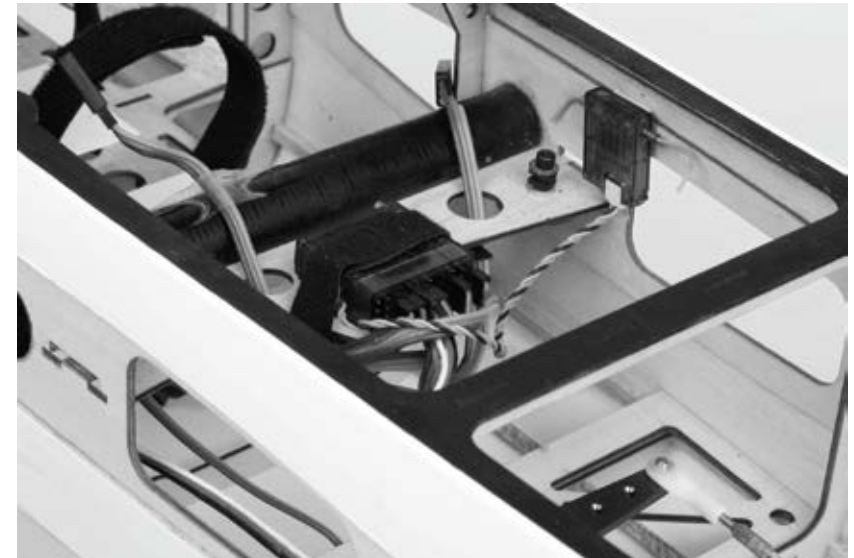
Required Adhesives

Medium CA

Required Tools/Building Materials

Hobby Knife with #11 Blade

□ 1.



Install the receiver in the fuselage using either industrial-strength Velcro or double-sided foam tape. Wrap a Velcro strap around the receiver to secure it.

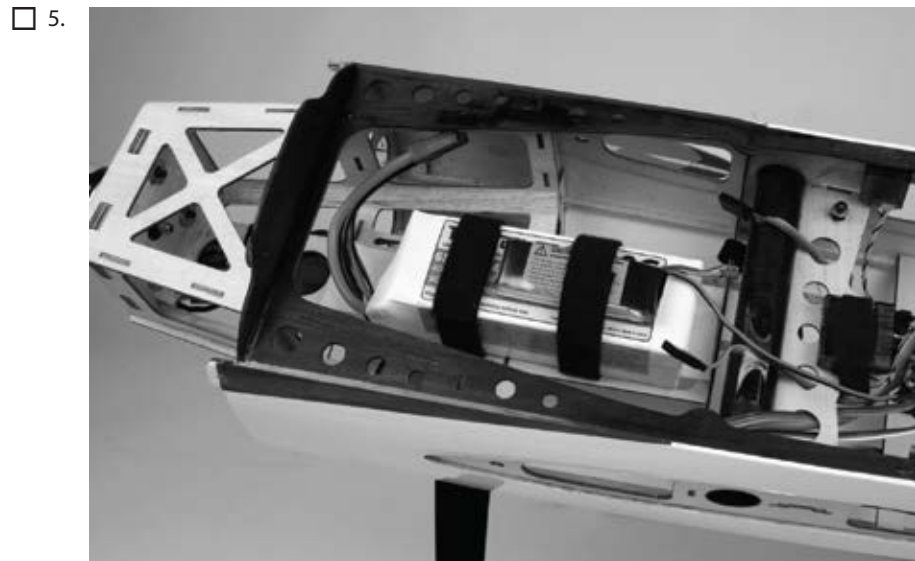
- 2. Attach (2) 3-inch servo extensions to the receiver into the appropriate ports for the aileron servos. Plug the ESC into the throttle channel at this time as well.
- 3. Attach industrial-strength Velcro tape to the battery tray with medium CA. We suggest attaching the "hard" side on the fuselage and the "soft" side on the battery. Loop two Velcro straps appropriate for the size of your battery around the battery tray to complete the internal assembly of the model.

HELPFUL HINT

Glue some squares of Velcro to the interior side wall of the fuselage to stick the Velcro straps to while installing or changing out the motor battery.



- 4. Install the motor battery onto the battery tray and secure with a Velcro strap around the front and rear of the pack. There are slots in the battery tray designed to pass a Velcro strap through and are placed such that they will accommodate most battery packs in a variety of locations.



Attach some self-adhesive Velcro to the top of the motor battery and attach the receiver pack. The Ventique does not use a switch, rather the battery is plugged directly into a 3-inch lead that installs in the receiver's battery port. Plug the battery in to power the receiver and servos, and unplug at the end of the flight. This eliminates possibility of a switch failure, and is much lighter and simpler than using a switch harness.

WING INSTALLATION

Required Components

Fuselage Assembly
Wing Tube
3mm Flat Washer (4)

Left and Right Wing Assemblies
M3x15mm Socket Head Cap Screw (4)
M3 Rubber 'O' Ring (4)

Required Tools/Building Materials

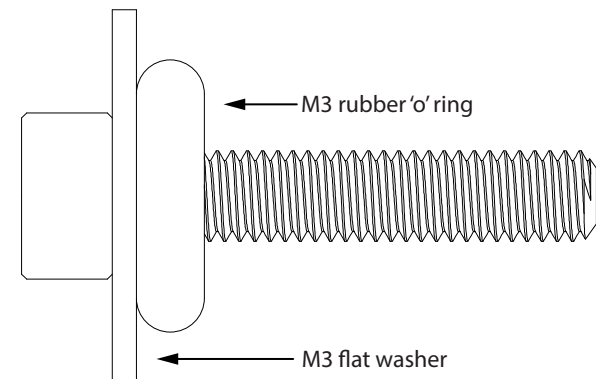
Ball Driver (2.5mm)

1.

x2



Slide the wing tube into the fuselage and the wings onto the wing tube until the root rib abuts the fuselage tightly. Secure the wing to the fuselage using (4) M3x15 socket head cap screws, (4) M3 flat washers, and (4) M3 rubber 'o' rings. The rubber 'o' rings take place of threadlocker for the wings since they are generally removed at the conclusion of a flying session and for storage. This is a longer-lasting solution than simply applying threadlock to the bolts every time the airplane is assembled.



SERVO INSTALLATION (ARF ONLY)

NOTICE

The following section is only applicable to the ARF Ventique. If you have purchased the ARFSV completion level, the servos and linkages are preinstalled. Please reference the following steps as a checklist to ensure that the factory-installed components are airworthy, or if you require a tail-mounted rudder servo.

WARNING

If you have an ARFSV Ventique, it is your responsibility to ensure an airworthy model. Because of the size and power of this model, any malfunction of the control system can cause a crash which may result in personal injury or damage to property. YOU must verify the integrity of the control linkages are in accordance with the notes herein. Please remove all servo output screws and apply threadlocker to the threads of the servos to ensure that there is sufficient threadlocker on the screws.

The brevity of this section assumes that the modeler assembling this model has some familiarity with linkage construction and installation. Because techniques and preferences differ greatly from modeler to modeler, this section will only cover the main technical aspects of the linkage design that are unique to this model. Ensure that you are installing your servos with the appropriate hardware provided with the servos or OEM replacement hardware. If used servos are being installed in the airplane, ensure that they are not damaged, which would include broken gears, connectors, or mounting tabs.

Required Components

Fuselage Assembly
(4) Servos/Linkages

Left and Right Wing Assemblies
(1) 18-inch Servo Extension*

Required Adhesives

Thin CA

Threadlocker

*If installing the rudder servo in the optional tail location, an additional 18-inch servo extension will be required.

HELPFUL HINTS

1. Always apply threadlocker to servo screws if using metal-g geared servos. Do not use threadlocker on plastic-g geared servos as it will embrittle and degrade the plastic. This is good practice for gas, glow, and electric models.
2. Always secure any permanent servo connections with dental floss, heat shrink tubing, or vinyl electrical tape.
3. Harden all servo mounting holes with thin CA as instructed earlier in the manual. Solid servo mounts are critical to the performance of this aircraft.
4. Always make every effort to minimize the amount of sub trim used to align the servo arms. Sub trim should only be used as a last resort.

2.



Install the aileron servos per manufacturer recommendations with the output shafts orienting AFT (closest to the hinge line). Install a 1.25-inch servo arm on the servo. Orient the arm perpendicular to the servo case when the servo is at neutral. Thread the ball links onto the ends of both pushrods and adjust the length of the linkage so that the aileron is centered when the servo is at neutral.

3A.



Install the elevator servo with the output shaft oriented towards the front of the airplane (away from the hinge line). Follow the same instructions from the aileron servo to install the servo arm and linkage.

There are two options for installing the rudder servo; the primary location is in the fuselage with pull-pull connections, and the second is to locate the servo in the tail. This is only recommended if you are using a heavier motor or battery than specified.

3A.



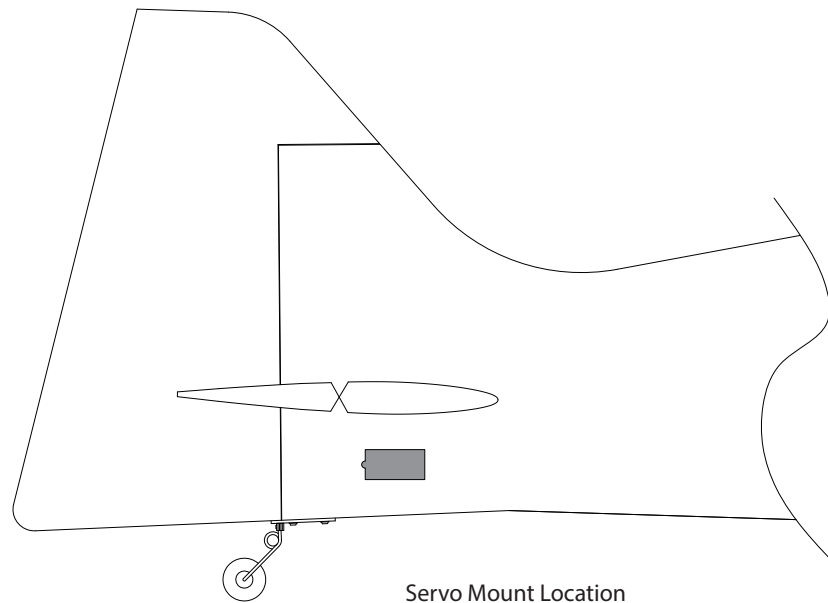
Install the rudder servo in the fuselage with the output shaft oriented towards the tail, as shown. The rudder linkage is designed to be used with a 2.5 inch double arm.

3B.

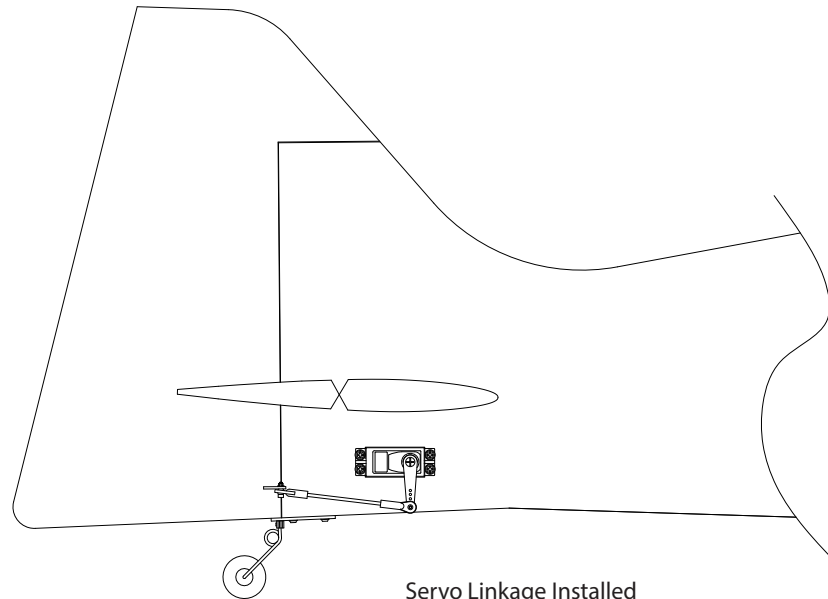


There is an additional servo mount located in the tail for the rudder servo. It is located opposite of the elevator servo mount, and should only be used when using a heavier battery or motor than the stock setup. When installing the servo in the rear servo mount, please note the following changes:

1. The linkage changes from pull-pull to push-pull with a direct pushrod.
2. The servo arm changes from the a 2.5 inch double arm to a 1.25 inch single arm.
3. The output shaft will orient towards the nose, away from the hinge line.
4. Use the extra pushrod in the hardware back and (2) ball links and their hardware to make up the pushrod and its connections.



Servo Mount Location



Servo Linkage Installed

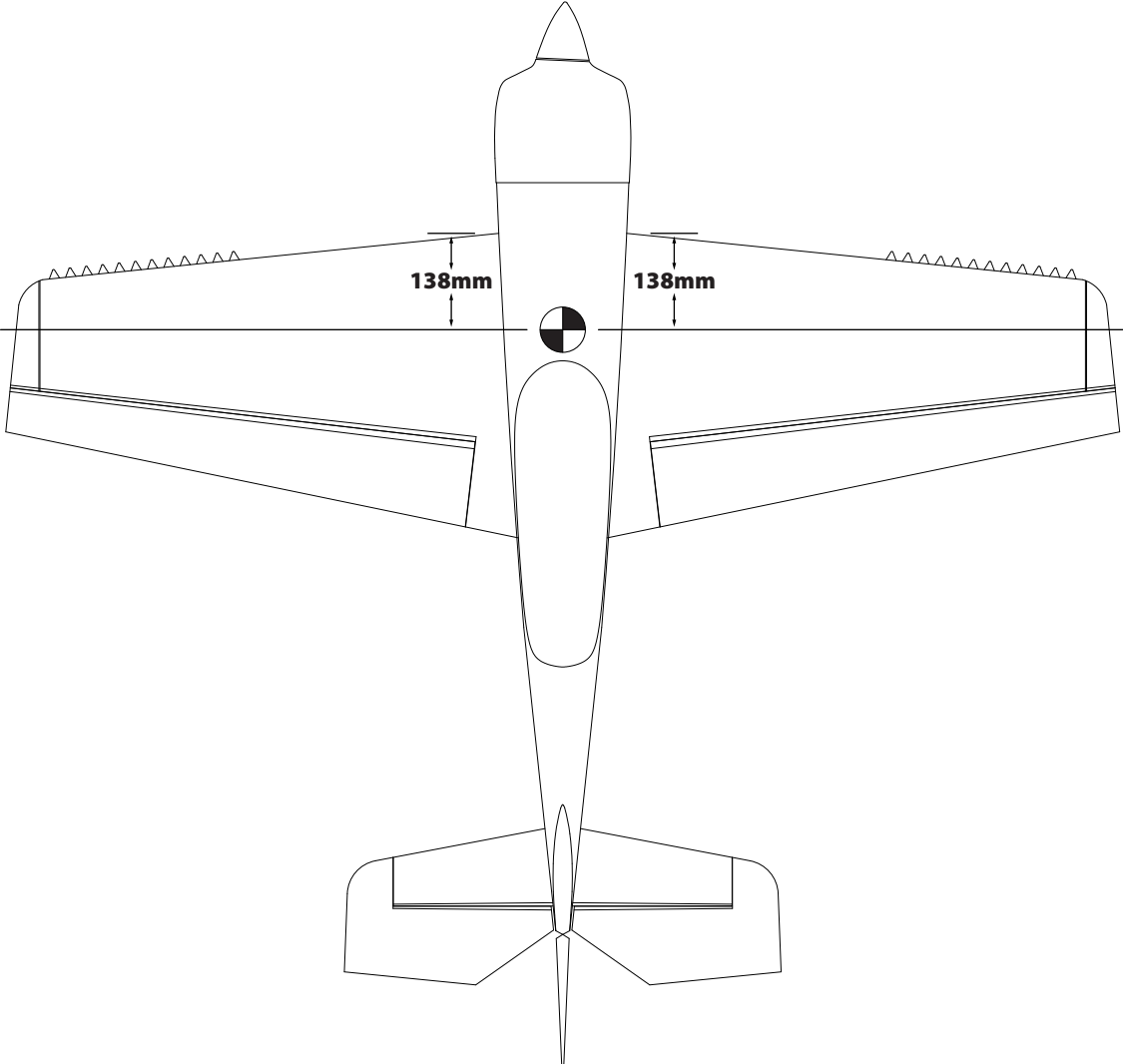
CENTER OF GRAVITY

Setting the center of gravity is one of the most important steps for success, particularly with a new airplane. The Ventique is a high-performance airplane with large control surface throws, and a very high thrust to weight ratio. These two factors combined make the Ventique a very enjoyable aircraft to fly, but if the center of gravity is not within an acceptable range, it will make the airplane difficult, if not impossible, to control. In order to have the most success and enjoyment from your Ventique, please follow the next few steps very carefully.

Before balancing your model, please ensure that all of the components are installed in your airplane when checking the CG. This means the batteries, servos, linkages, screws, bolts, hardware; everything. The airplane must be in ready-to-fly condition, otherwise the measurement will not be accurate.

There are several methods for determining center of gravity, from using a CG machine, to using fingers. Regardless of the method used, ensure that the tests are accurate and repeatable. If there are any inconsistencies between measurements, work to isolate the source of the error to ensure that the test can be repeated with the same results.

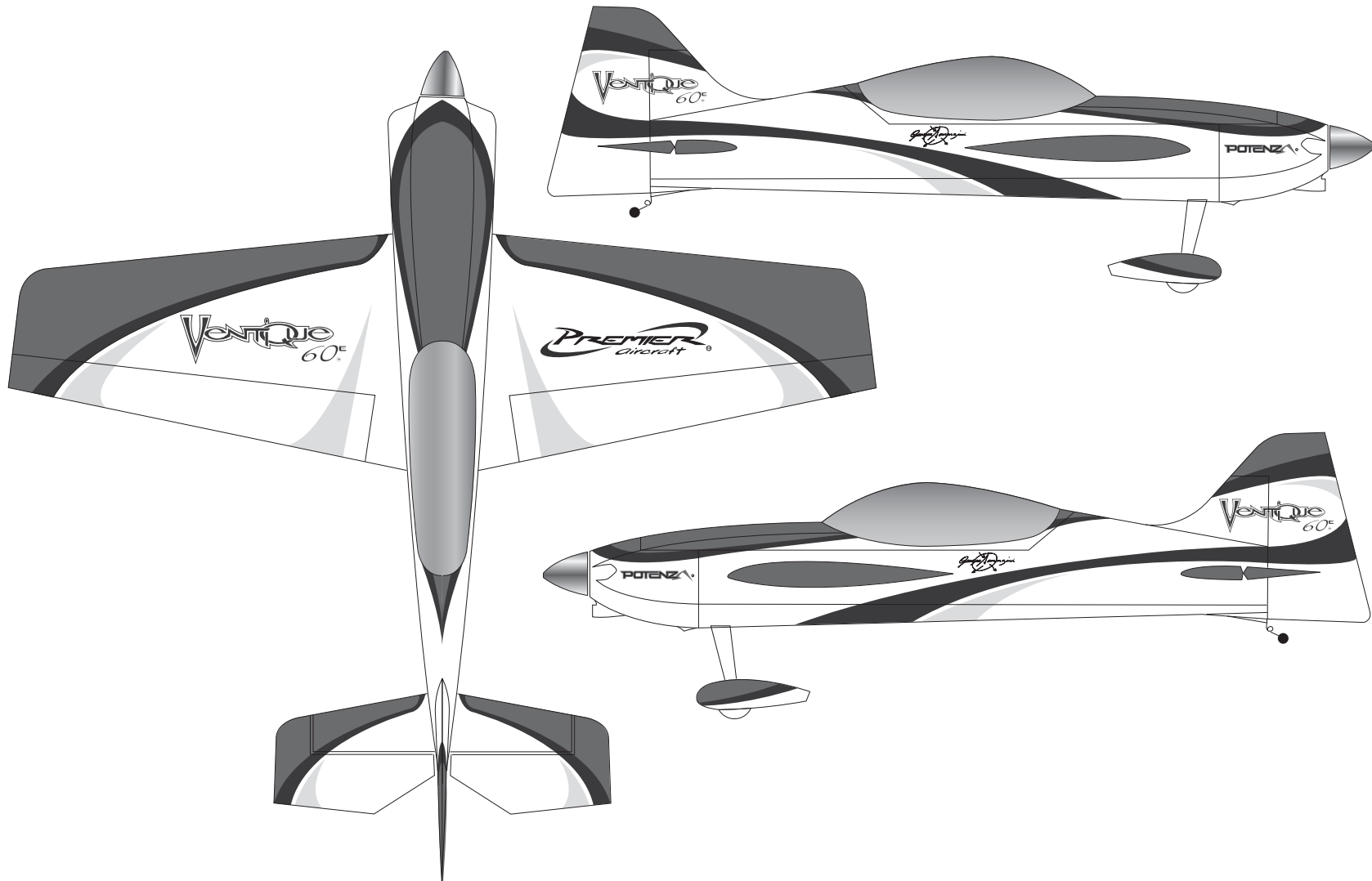
The location of the center of gravity for the Ventique is 138mm **AFT** from the **LEADING EDGE** of the **WING ROOT**. This measurement is determined from a different spot than most CG measurements, and it is critical that the starting point for your model be at this point. This measurement was determined from many test flights by designer and many time world aerobatic champion, Quique Somenzini.



DECAL INSTALLATION

Use the photos provided below, as well as the images on the box for a guide to apply decals to your model.

1. Thoroughly clean the model to ensure that it is free of oil, fingerprints, and dust.
2. Separate the decals, but do not remove the paper backing at this time.
3. Prepare a dishpan or small bucket with a mixture of warm water and liquid dish detergent. The ratio should be approximately one teaspoon per gallon of water.
4. Submerge the decal into the water/soap mixture and gently remove the paper backing. Removing the backing under water prevents fingerprints from being visible on the back side.
5. Apply some water/soap mixture with your palm to the area desired. Once the area is saturated, position the sticker on the airplane. *Even though these are not water transfer decals, using wet application methods allows the sticker to be repositioned, reduces bubbles, and eliminates fingerprints and other blemishes from being visible.*
6. Hold the decal in place and use a paper towel to gently wipe most of the water away.
7. Use a soft piece of balsa or similar and squeegee the remaining liquid from underneath the decal.
8. Repeat until all decals are applied. Leave the model alone for at least 12 hours to allow the rest of the water to evaporate.



RADIO SETUP

The following radio setup has been tested thoroughly during the development of the airplane and has been determined to be the optimal starting point for your Ventique. As you become more familiar with the airplane, you may tweak the rates and expo to better suit your flying style, but these numbers will be a very good starting point.

Control Throws are measured at the root of the aileron and on the counterbalance for the rudder and elevator.

Elevator Low Rate (15% Exponential)

UP	3/8 inches	10mm
DOWN	3/8 inches	10mm

Elevator High Rate (50% Exponential)

UP	2 1/2 inches	65mm
DOWN	2 1/2 inches	65mm

Aileron Low Rate (25% Exponential)

UP	2 inches	50mm
DOWN	2 inches	50mm

Aileron High Rate (60% Exponential)

UP	4 inches	100mm
DOWN	4 inches	100mm

Rudder Low Rate (10% Exponential)

LEFT	1 3/16 inches	30mm
RIGHT	1 3/16 inches	30mm

Rudder High Rate (45% Exponential)

LEFT	2 3/4 inches	70mm
RIGHT	2 3/4 inches	70mm

High rate should be reserved for 3D aerobatics, and low rate should be reserved for precision aerobatics. It is highly recommended that your first few flights, takeoffs and landings be done in low rate. This is a very powerful and agile airplane, and lesser experienced pilots taking off in high rate could over control the airplane and crash.

The Ventique does not require any differential or mixing.

RANGE TESTING

Carefully follow the binding and range testing instructions included with your radio equipment. If there are any issues at all with passing the range test, please consult your radio manual to determine the appropriate solution before attempting to fly.

BEFORE FIRST FLIGHT

Before your first flight, please go over the finished, fully-assembled model at home before going out to the flying field. The key to a successful first flight is preparation, and ensuring that your airplane is airworthy is the logical first step.

1. For optimal performance of your model, balance your propellers and spinner. Most propellers are balanced fairly well out of the bag, however some fine-tuning can make a mediocre propeller perform great, and also point out a propeller that is out of balance. An out-of-balance propeller or spinner can wreak havoc on the electronic components in the airplane, as well as prematurely shorten the lifespan of the motor, the servos, or the model itself. A balanced propeller will be quieter, generate more thrust, and operate more efficiently than one that's not balanced.
2. Though not as critical to flight as the normal center of gravity check, checking the lateral center of gravity is beneficial to this model as an aerobatic airplane. A heavy wing can make some maneuvers more difficult to perform as once the wing is loaded, the heavy wing will tend to drop, making loops out of square. This is even more exaggerated during 3D flight where there are large, fast pitch changes.
3. Recheck all linkages. Ensure that the pushrods are sufficiently threaded into ball links, ensure that all metal-to-metal connections have threadlock applied, and ensure that all controls move in the correct direction.
4. Verify proper function and operation of the ESC. Set the controller to the proper cell count (if auto-detect function is not available), set the voltage cutoff to "soft", set pole count the appropriate number for the motor used, and adjust the braking values as required. Run the motor up with a freshly-charged battery pack to ensure that the motor makes full power, and that the throttle end points are properly set.
5. Secure any loose wiring inside the fuselage, and ensure that wires do not rub or chafe.
6. Ensure that all batteries (transmitter, receiver, and motor) are fully charged prior to leaving for the flying field.
7. Take a few moments to assemble the airplane away from any commotion or talkative onlookers. Ensure that all connections are properly made and secured, the wing bolts are tight, and take a few minutes to plan out your first flights.
8. If the motor batteries are new, avoid prolonged full-throttle runs, and vertical climbs. Limit the first few flights to gentle throttle transitions, and start off short, gradually lengthening the flight times as you become comfortable with the performance of your battery packs. 4:00 is a good time to limit the first few flights to. As you become more familiar with the airplane and begin to fly it in a more aggressive style, monitor the capacity of the batteries as they are recharged and use this information to adjust flight times accordingly. Never go below 3.1v per cell or exceed 80% of the battery's capacity.

LIMITED WARRANTY

Warranty Coverage

Flex Innovations, Inc. and its authorized resellers (“Flex”) warrant to the original purchaser that the product purchased (the “Product”) it will be free from defects in materials and workmanship at the date of purchase.

Outside of Coverage

This warranty is not transferable and does not cover:

- (a) Products with more than 45 days after purchased date.
- (b) Damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or due to improper use, installation, operation or maintenance
- (c) Modification of or to any part of the Product.
- (d) Product not compliant with applicable technical regulations.
- (e) Shipping damage.
- (f) Cosmetic damage

OTHER THAN THE EXPRESS WARRANTY ABOVE, FLEX MAKES NO OTHER WARRANTY OR REPRESENTATION, AND HEREBY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF NONINFRINGEMENT, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE PURCHASER ACKNOWLEDGES THAT THEY ALONE HAVE DETERMINED THAT THE PRODUCT WILL SUITABLY MEET THE REQUIREMENTS OF THE PURCHASER'S INTENDED USE.

Purchaser's Solution

Flex's sole obligation and purchaser's sole and exclusive remedy shall be that Flex will, at its option, either (i) service, or (ii) replace, any Product determined by Flex to be defective. Flex reserves the right to inspect any and all Product(s) involved in a warranty claim. Service or replacement decisions are at the sole discretion of Flex. Proof of purchase is required for all warranty claims. **SERVICE OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY.**

Limitation of Liability

FLEX SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY, REGARDLESS OF WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, TORT, NEGLIGENCE, STRICT LIABILITY OR ANY OTHER THEORY OF LIABILITY, EVEN IF FLEX HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Further, in no event shall the liability of Flex exceed the individual price of the Product on which liability is asserted. As Flex has no control over use, setup, assembly, modification or misuse, no liability shall be assumed nor accepted for any resulting damage or injury. By the act of use, setup or assembly, the user accepts all resulting liability. If you as the purchaser or user are not prepared to accept the liability associated with the use of the Product, purchaser is advised to return the Product immediately in new and unused condition to the place of purchase.

Law

These terms are governed by Florida law (without regard to conflict of law principals). This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. **FLEX RESERVES THE RIGHT TO MODIFY THIS WARRANTY AT ANY TIME WITHOUT PRIOR NOTICE.**

Questions & Assistance.

Visit <http://www.flexinnovations.com/flex-authorized-reseller> for customer support in your region.

Inspection or Services

If this Product needs to be inspected or serviced and is compliant in the region you live and use the Product in, please contact your regional Flex authorized reseller. Pack the Product securely using a shipping carton. Please note that original boxes needs to be included, but are not designed to withstand the rigors of shipping without additional protection. Ship via a carrier that provides tracking and insurance for lost or damaged parcels, as Flex is not responsible for merchandise until it arrives and is accepted at our facility.

Warranty Requirements

For Warranty consideration, you must include your original sales receipt verifying the proof of purchase date. Provided warranty conditions have been met, your Product will be replaced free of charge. Shipping charges are as follow: to Flex by customer, Flex out it is by Flex. Service or replacement decisions are at the sole discretion of Flex.



Academy of Model Aeronautics National Model Aircraft Safety Code

Effective January 1, 2014

- A. **GENERAL:** A model aircraft is a non-human-carrying aircraft capable of sustained flight in the atmosphere. It may not exceed limitations of this code and is intended exclusively for sport, recreation, education and/or competition. All model flights must be conducted in accordance with this safety code and any additional rules specific to the flying site.
- Model aircraft will not be flown:
 - In a careless or reckless manner.
 - At a location where model aircraft activities are prohibited.
 - Model aircraft pilots will:
 - Yield the right of way to all human-carrying aircraft.
 - See and avoid all aircraft and a spotter must be used when appropriate. (AMA Document #540-D.)
 - Not fly higher than approximately 400 feet above ground level within three (3) miles of an airport without notifying the airport operator.
 - Not interfere with operations and traffic patterns at any airport, heliport or seaplane base except where there is a mixed use agreement.
 - Not exceed a takeoff weight, including fuel, of 55 pounds unless in compliance with the AMA Large Model Airplane program. (AMA Document 520-A.)
 - Ensure the aircraft is identified with the name and address or AMA number of the owner on the inside or affixed to the outside of the model aircraft. (This does not apply to model aircraft flown indoors.)
 - Not operate aircraft with metal-blade propellers or with gaseous boosts except for helicopters operated under the provisions of AMA Document #555.
 - Not operate model aircraft while under the influence of alcohol or while using any drug that could adversely affect the pilot's ability to safely control the model.
 - Not operate model aircraft carrying pyrotechnic devices that explode or burn, or any device which propels a projectile or drops any object that creates hazard to persons or property.

Exceptions:

- Free Flight fuses or devices that burn producing smoke and are securely attached to the model aircraft during flight.
- Rocket motors (using solid propellant) up to a G-series size may be used provided they remain attached to the model during flight. Model rockets may be flown in accordance with the National Model Rocketry Safety Code but may not be launched from model aircraft.
- Officially designated AMA Air Show Teams (AST) are authorized to use devices and practices as defined within the Team AMA Program Document. (AMA Document #718.)
- Not operate a turbine-powered aircraft, unless in compliance with the AMA turbine regulations. (AMA Document #510-A.)

- Model aircraft will not be flown in AMA sanctioned events, air shows or model demonstrations unless:
 - The aircraft, control system and pilot skills have successfully demonstrated all maneuvers intended or anticipated prior to the specific event.
 - An inexperienced pilot is assisted by an experienced pilot.
- When and where required by rule, helmets must be properly worn and fastened. They must be OSHA, DOT, ANSI, SNELL or NOCSAE approved or comply with comparable standards.

B. RADIO CONTROL (RC)

- All pilots shall avoid flying directly over unprotected people, vessels, vehicles or structures and shall avoid endangerment of life and property of others.
- A successful radio equipment ground-range check in accordance with manufacturer's recommendations will be completed before the first flight of a new or repaired model aircraft.
- At all flying sites a safety line(s) must be established in front of which all flying takes place. (AMA Document #706.)
 - Only personnel associated with flying the model aircraft are allowed at or in front of the safety line.
 - At air shows or demonstrations, a straight safety line must be established.

- An area away from the safety line must be maintained for spectators.
 - Intentional flying behind the safety line is prohibited.
- RC model aircraft must use the radio-control frequencies currently allowed by the Federal Communications Commission (FCC). Only individuals properly licensed by the FCC are authorized to operate equipment on Amateur Band frequencies.
 - RC model aircraft will not knowingly operate within three (3) miles of any pre-existing flying site without a frequency-management agreement. (AMA Documents #922 and #923.)
 - With the exception of events flown under official AMA Competition Regulations, excluding takeoff and landing, no powered model may be flown outdoors closer than 25 feet to any individual, except for the pilot and the pilot's helper(s) located at the flightline.
 - Under no circumstances may a pilot or other person touch an outdoor model aircraft in flight while it is still under power, except to divert it from striking an individual.
 - RC night flying requires a lighting system providing the pilot with a clear view of the model's attitude and orientation at all times. Hand-held illumination systems are inadequate for night flying operations.
 - The pilot of an RC model aircraft shall:
 - Maintain control during the entire flight, maintaining visual contact without enhancement other than by corrective lenses prescribed for the pilot.
 - Fly using the assistance of a camera or First-Person View (FPV) only in accordance with the procedures outlined in AMA Document #550.
 - Fly using the assistance of autopilot or stabilization system only in accordance with the procedures outlined in AMA Document #560.

C. FREE FLIGHT

- Must be at least 100 feet downwind of spectators and automobile parking when the model aircraft is launched.
- Launch area must be clear of all individuals except mechanics, officials, and other fliers.
- An effective device will be used to extinguish any fuse on the model aircraft after the fuse has completed its function.

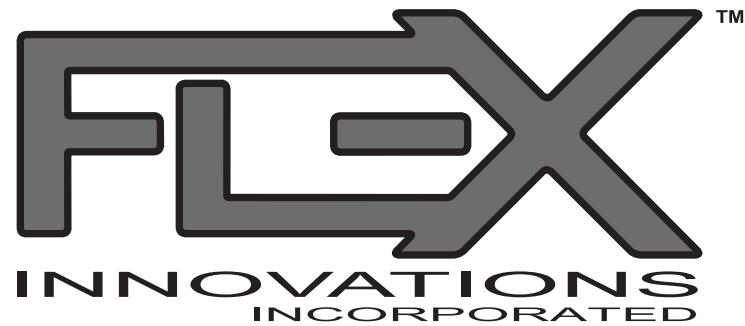
D. CONTROL LINE

- The complete control system (including the safety thong where applicable) must have an inspection and pull test prior to flying.
- The pull test will be in accordance with the current Competition Regulations for the applicable model aircraft category.
- Model aircraft not fitting a specific category shall use those pull-test requirements as indicated for Control Line Precision Aerobatics.
- The flying area must be clear of all utility wires or poles and a model aircraft will not be flown closer than 50 feet to any above-ground electric utility lines.
- The flying area must be clear of all nonessential participants and spectators before the engine is started.

If you are not an AMA member, please consider joining. Founded in 1936 and open to anyone interested in model aviation, the AMA is the governing body for model aviation in the United States and sanctions over 2,000 competitions annually. Membership in the AMA provides liability insurance coverage, protects modelers' rights and interests, and is required to fly at most of the 2,700+ R/C sites nationwide.

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