



YAK54
The Original 35cc
Assembly Manual

Giuseppe Tompazini

INTRODUCTION

Congratulations on the selection of your new Premier Aircraft QQ Yak 54 35cc. 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 details make the QQ Yak 54 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!

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.

SPECIAL LANGUAGE DEFINITIONS

The following terms are used throughout the product literature to indicate various levels of potential harm when operating the 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 a 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 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 (in the original packaging) to the place of purchase

SAFETY WARNINGS AND PRECAUTIONS

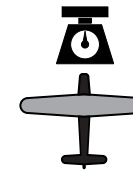
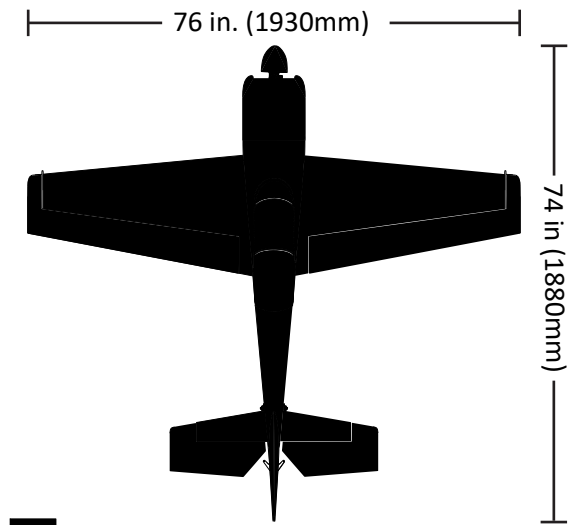
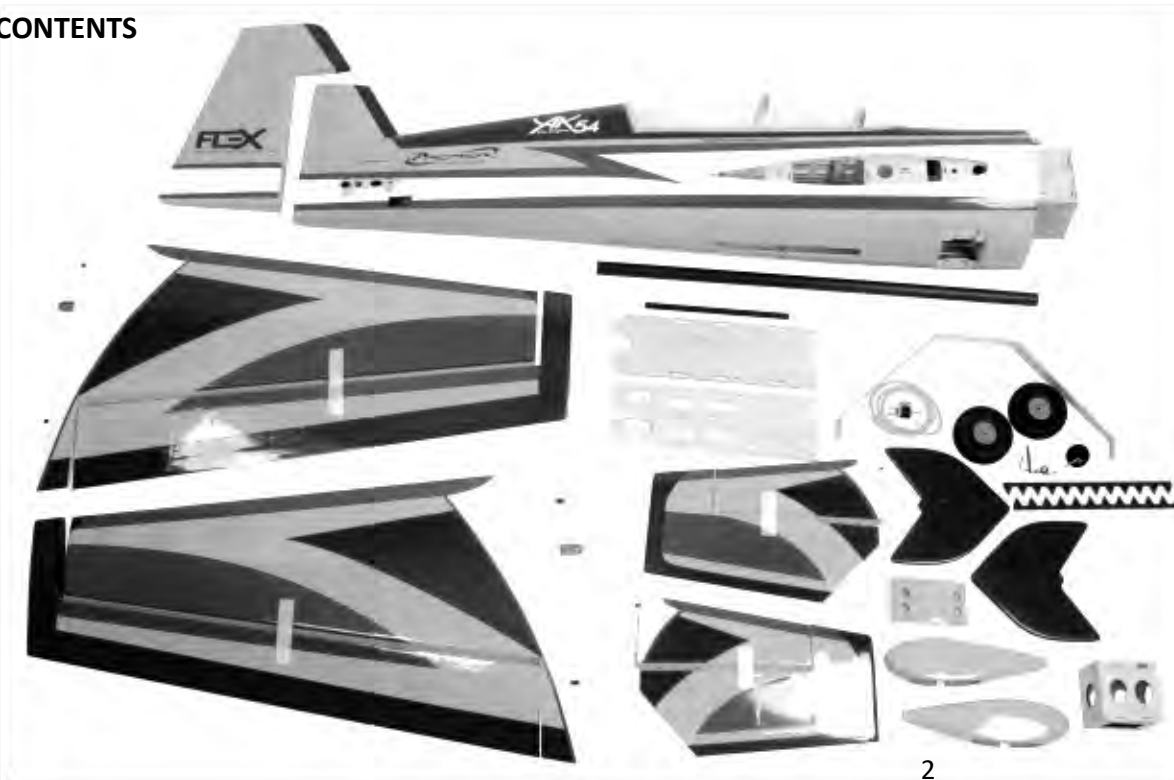
Protect yourself and others by following these basic safety guidelines.

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 air worthiness of this product.
5. Use only compatible, appropriate components for the final assembly of this model. Ensure that the radio system is in functional condition, that the engine is 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 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.

TABLE OF CONTENTS

Introduction	1	Gasoline Engine Installation	17-19
Using this Manual	1	Electric Motor Installation	19-20
Special Language Definitions	1	Cowling Installation	20-21
Warranty Notice	1	Shark Teeth Installation	22
Safety Warnings and Precautions	1	Field Assembly	23
Kit Contents	2	Center of Gravity	24
Specifications	2	Decal Installation	25
Completion Items	2	Aura 8 Setup	26
Recommended Completion Items	3	Radio Setup/Range Test/Before First Flight	27
Hangar 9 UltraCote/Oracover Colors	3	Replacement/Optional Parts	28
Required Tools	3	Limited Warranty	29
Required Adhesives	3	AMA Safety Code	30
Hardware Legend	3	Building and Flying Notes	31-32
Assembly Symbol Legend	4		
Before Starting Assembly	4		
Aileron Hinging and Control Horn Installation ...	4-6		
Aileron Servo/Linkage Installation	6-7		
Elevator/Rudder Control Horn Installation	8		
Elevator/Rudder Hinging	8-11		
Elevator/Rudder Servo Installation	11-13		
Landing Gear Installation	13-14		
Fuel Tank Tray Assembly	15-16		

KIT CONTENTS



12.5-12.8 lb (5.67-5.80kg)

*weight may vary due to production tolerances and gear selection.

1100 sq. in (71 sq. dm.)

RECOMMENDED COMPLETION ITEMS



6+ channel transmitter with adjustable dual rates/mixing



Desert Aircraft DA-35
Potenza 200 Electric Motor
30-40cc Gasoline (Petrol) Engine
3000-3500W Electric Motor w/ 80A HV ESC



Gas - Falcon Carbon Fiber 20x8
Electric - APC 20x11, Falcon EP 21x10
See your engine manufacturer's manual for recommendations on your particular engine.



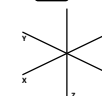
2 x 1300mAh Li-Po (Receiver)
1 x 1300mAh Li-Po (Ignition)
12S 3300-4200mAh Li-Po (Electric)



Gas - 6 x Potenza DS22209HV
(6) High Torque Digital Servos
200+ oz/in (14.4+ kg/cm)
Electric - 5 x Potenza DS22209HV
(5) High Torque Digital Servos
200+ oz/in (14.4+ kg/cm)



Potenza (FPZC0080)
Multi-Chemistry LiPo Balancing Charger



Aura 8 AFCS (FPZAURA08)
3-Axis Gyro with Stick Priority

NEEDED TO FINISH

In addition to the airframe, there are additional components required to finish the aircraft. Reference the list below, and note our recommendations.

Setup 1: Gasoline (Petrol)

- (1) 30-40cc Gasoline (Petrol) Engine
Desert Aircraft DA-35
- (1) Exhaust (consult your engine manufacturer)
Desert Aircraft DA-35 Standard Mufflers
- (1) Propeller for your engine (consult with engine manufacturer)
Falcon Carbon Fiber 20x8 (FPMPFC2008)
- (1) 1300mAh Li-Po Ignition battery
(consult your engine manufacturer)
Potenza 2S 1300mAh 25C Li-Po (FPZBR13002S25)
- (1) Choke Servo (Optional)
Potenza DS22209 Digital Servo (FPZDS22209)
- (1) 6-inch (150mm) Heavy Duty Servo Extension
(Choke)
- (1) Throttle Servo
Potenza DS22209 Digital Servo (FPZDS22209)
- (1) 3-inch (76mm) Heavy Duty Servo Extension
(Throttle)
- (1) 3 feet (1 meter) Gas Fuel Tubing (large diameter)

Setup 2: Electric Power

- (1) 200-Size Electric Motor
Potenza 200 (FPZM10200A)
- (1) 120-Amp High-Voltage ESC (No BEC)
Castle Creations Phoenix Edge 80HV
(FPZPHXEDGE80HV)
- (2) 6S 3500-4200mah 30C+ Li-Pos (in series for 12S)
Potenza 6S 4200mAh 40C Li-Pos (FPZB42006S40)
- (1) Propeller for your motor/esc (consult your motor and/or ESC manufacturer)
APC 20x11
- (1) 12-inch (305mm) Heavy duty Servo Extension (ESC)

Both Setups:

- (2) 1300mAh Li-Po Receiver Battery
Potenza 2S 1300mAh Li-Po (FPZBR13002S25)
- (1) 3-3/4-inch Spinner
Tru-Turn® 3-3/4-inch P-51-Style Aluminum Spinner
- (2) 24-inch (610mm) Heavy-Duty Servo Extensions
(Elevator)
- (2) 6-inch (150mm) Heavy-Duty Servo Extensions
(Aileron, Inside Wings)
- (2) 3-inch (76mm) Heavy-Duty Servo Extensions
(Receiver to Aileron)
- (2) 1-3/4-inch (radius) Single Servo Arms (2-aileron)
Potenza 25T 1.75-inch Single Servo Arm (FPZA0003)
- (1) 1-1/2-inch (radius) Double Servo Arm (Rudder)
Potenza 25T 1.5-inch Double Servo Arm (FPZA0004)
- (2) 1-1/4-inch (radius) Single Servo Arms (2-elevator)
Potenza 25T 1.25-inch Single Servo Arm (FPZA0001)

HANGAR 9® ULTRACOTE®/ORACOVER® COLORS

In the unfortunate event that your Mamba 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®

HANU872	Bright Yellow
HANU873	Deep Blue
HANU866	True Red
HANU870	White

Oracover®

33	Cadmium Yellow
50	Blue
23	Ferrari Red
10	White

REQUIRED TOOLS FOR ASSEMBLY

- | | | | |
|--|---|---|---|
| <input type="checkbox"/> Toothpicks | <input type="checkbox"/> Epoxy Brushes/Mixing Cups/Sticks | <input type="checkbox"/> Felt-Tipped Pen | <input type="checkbox"/> Flat File |
| <input type="checkbox"/> Isopropyl Alcohol (91%) | <input type="checkbox"/> Paper Towels | <input type="checkbox"/> Hex Wrench (2.5, 3, 4mm) | <input type="checkbox"/> Hobby Knife with #11 Blade |
| <input type="checkbox"/> Needle-Nosed Pliers | <input type="checkbox"/> Petroleum Jelly | <input type="checkbox"/> Light Machine Oil | <input type="checkbox"/> Low-Tack Masking Tape |
| <input type="checkbox"/> Ruler | <input type="checkbox"/> Tie Wraps (4-inch) | <input type="checkbox"/> Nut Drivers (5.5, 8mm) | <input type="checkbox"/> Hook & Loop Straps/Tape |
| <input type="checkbox"/> Phillips Screwdriver (#1) | | | |

REQUIRED ADHESIVES FOR ASSEMBLY

- Thin CA 30-minute Epoxy Blue Thread Lock

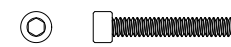
HARDWARE IDENTIFICATION LEGEND



Machine Screw



Self Tapping Screw



Socket Head Cap Screw



Rubber O-Ring



Flat Washer



Nylon Insert Lock Nut



Hex Nut



Wheel Collar



Ball Link



Rigging Coupler



Quick Connect



Wire Crimp



Spring Washer



Flange Nut

ASSEMBLY SYMBOL LEGEND



IMPORTANT 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 you are getting the most out of your Yak 54, 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 attention 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. Use thin CA to go over any important glue joints, such as the motor box, firewall, servo mounting rails, and any other pre-assembled joints that may see high stress during flight.
- 4. 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.

AILERON HINGING AND AILERON CONTROL HORN INSTALLATION

Required Components

Main Wings (x2) Ailerons (x2) Aileron Hinges (x12)
Control Horns (x4)

Required Adhesives

30-Minute Epoxy (Or other hinge-type glue)

Required Tools/Building Materials

Low-Tack Masking Tape Medium Grit Sand Paper Toothpicks (optional)
Petroleum Jelly Isopropyl Alcohol (91%)
Epoxy Mixing Cups/Sticks Paper Towels

HELPFUL HINT

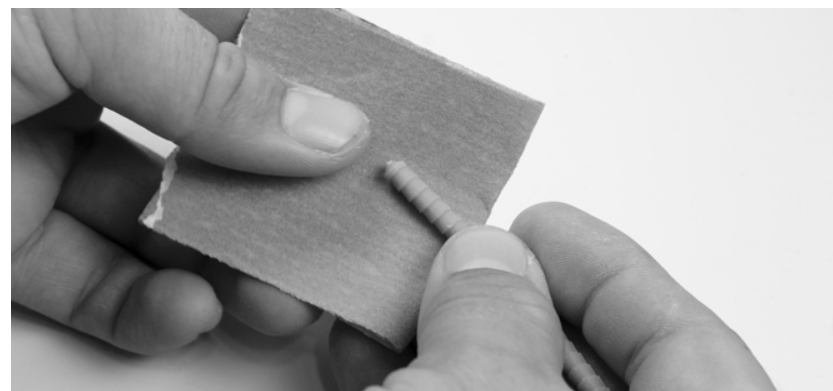
In order to help prevent scratches on your new model, it is always best to work with the parts on a soft surface, like packing foam or felt.

1.



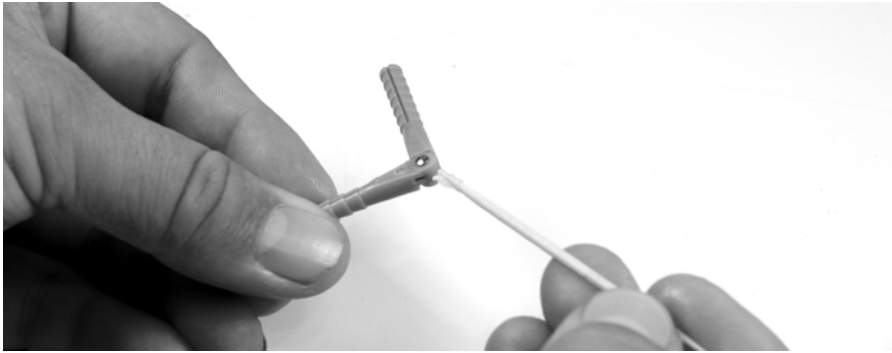
Test fit the hinges into the ailerons, and then the hinges into the wings. Ensure that the hinge pockets line up, and that the hinges move freely.

2.



Prepare the aileron hinges by scuffing the area that will be inserted into the wing or flying surface with medium grit sand paper. Be careful not to remove too much material. Use isopropyl alcohol, and a paper towel to remove any excess debris that remains on the hinges.

□ 3.

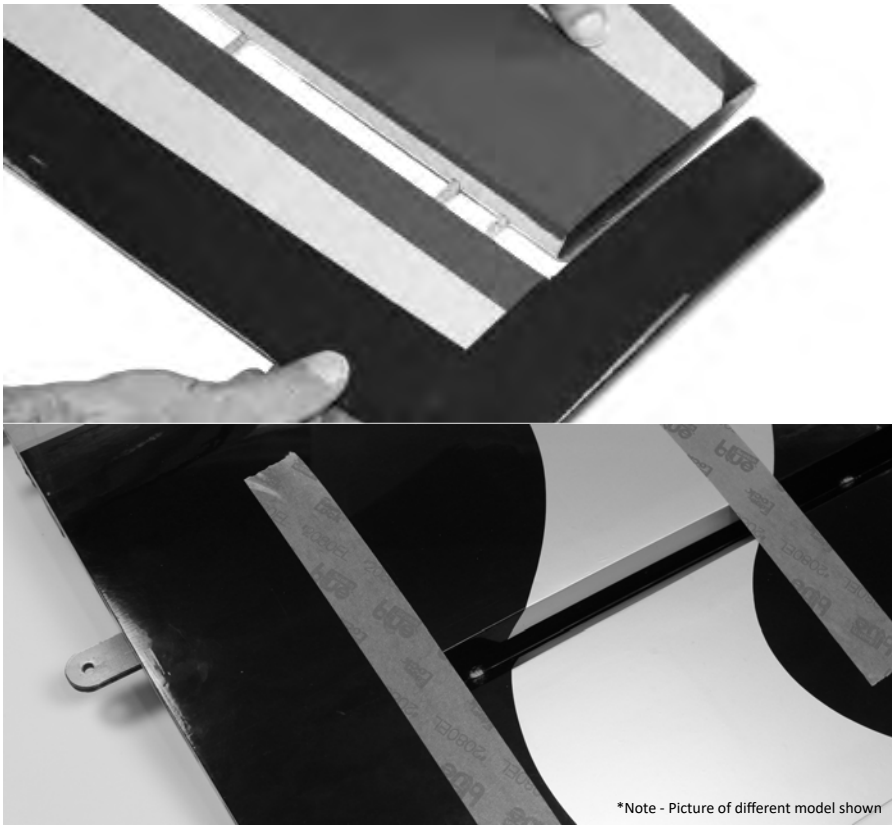


Using a toothpick or cotton swab, apply a small amount of petroleum jelly to the pivot of each hinge. Do not apply petroleum jelly to the entire hinge.

⚠ WARNING

Petroleum jelly prevents glue adhesion. Do not apply petroleum jelly to the surface areas of the hinge that require glue adhesion to the wing or surface.

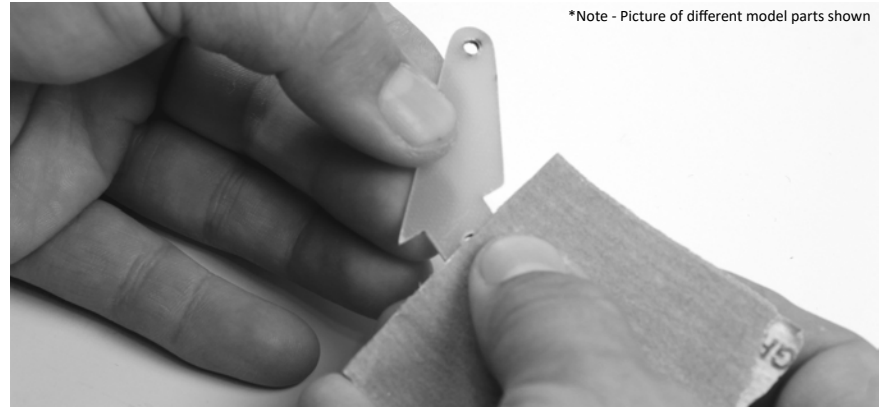
□ 4.



*Note - Picture of different model shown

Mix a sufficient amount of 30-minute epoxy in a cup, and with a toothpick, smear epoxy in the hinge pockets of the wing panel and aileron. Slowly and carefully, insert each hinge into the wing panel. 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 aileron in place to cure.

□ 5.



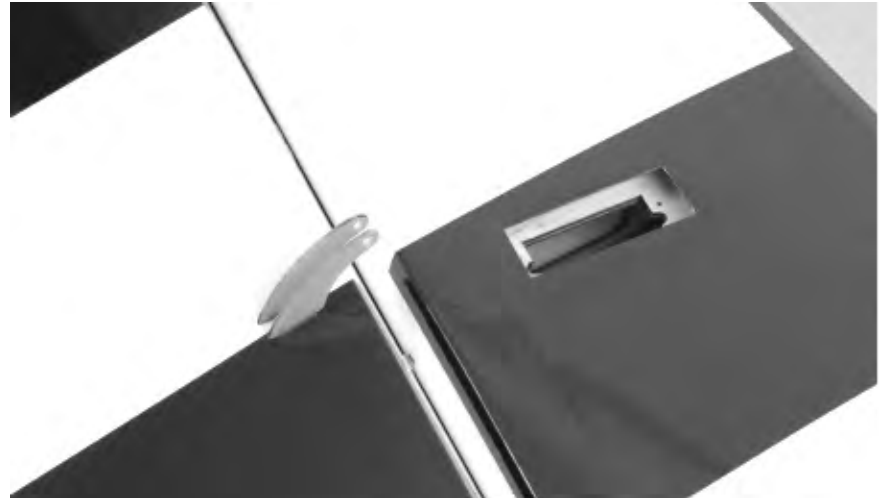
*Note - Picture of different model parts shown

Prepare the aileron control horns by sanding the section that extends into the control surface with medium grit sand paper. Use isopropyl alcohol and a paper towel to remove any excess debris from the control horn.

NOTICE

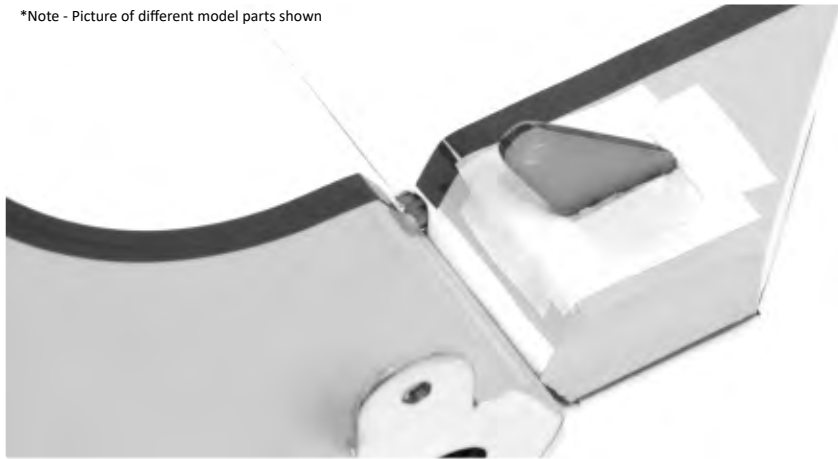
If not properly scuffed, glue may not adhere to the control horn, resulting in a failure.

□ 6.



Locate the control horn slots in the ailerons, remove the covering from the slots with a #11 hobby knife. Check the fit of the control horns in the slots of the ailerons. Make any adjustments necessary at this time.

□ 7. *Note - Picture of different model parts shown



Once satisfied with the fit of the control horns, apply low-tack tape approximately 1/32-inch (1mm) around the control horns. This will help keep epoxy off of the surface of the ailerons. Once the tape has been applied, remove the control horns.

□ 8.

30



Mix a sufficient amount of 30-minute epoxy in a cup, and with a toothpick, apply epoxy in the control horn slots in the aileron. Slowly and carefully, insert each control horn into the aileron. Partially remove and reinstall the control horn to ensure that you've completely coated it with glue. Before the epoxy has fully cured, remove the tape, and clean up any excess epoxy with a paper towel and isopropyl alcohol.

AILERON SERVO AND LINKAGE INSTALLATION

Required Components

Main Wing (x2)	Aileron Servo (x2)	6-Inch (150mm) Extension (x2)
Aileron Linkage, 65mm (x2)	Ball Links (x4)	Aileron Servo Arm (x2)
M3 Lock Nut (x4)	M3 Washer (x4)	M3x12 SHCS (x4)

Required Adhesives

Thin CA	Blue Thread Lock
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Required Tools/Building Materials

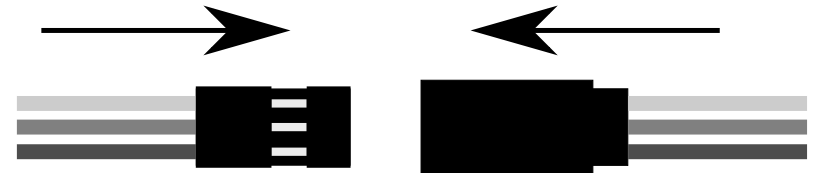
#1 Phillips Screwdriver	Ball Driver: 2.5mm	Nut Driver: 5.5mm
Thread or Shrink Tube		

□ 1.



Use a #1 Phillips screwdriver to thread a servo mounting screw into each of the pre-cut holes in the servo mounting rails in the wing. Remove the screw, and apply a small amount of thin CA to each of the holes to harden the threads cut by the screw. Let the CA fully cure before proceeding.

□ 2.



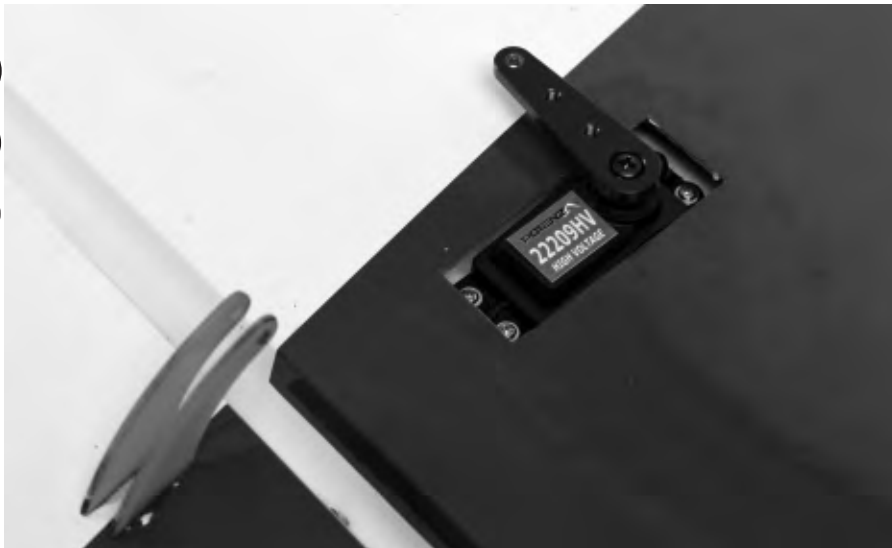
Secure a 6-inch (150mm) servo extension to the aileron servo. Use thread, tape, or shrink tube to keep the connection secure.

3.



Insert the aileron servo into the servo bay with the output shaft towards the leading edge of the wing. Be sure to route the servo lead out of the wing before mounting the servo to the wing using a #1 Phillips screwdriver and the screws provided with your servo.

4.



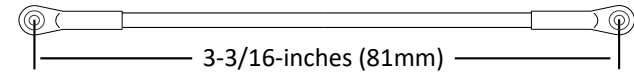
Center the servo using your radio system. Install a 1-3/4-inch (45mm) servo arm onto the servo. Apply a small drop of blue thread lock onto the servo arm screw, and fully tighten the screw. Be sure to avoid getting thread lock compound into the servo gears.

5.



Ball Link (2)

AILERON LINKAGE



*Note: Drawing not to scale

Using a pushrod of 2-9/16-inch (65mm) length, assemble the aileron linkages so that the total length from center of ball to center of ball is approximately 3-3/16-inches (81mm). Final length will be adjusted when centering the control surface.

6.



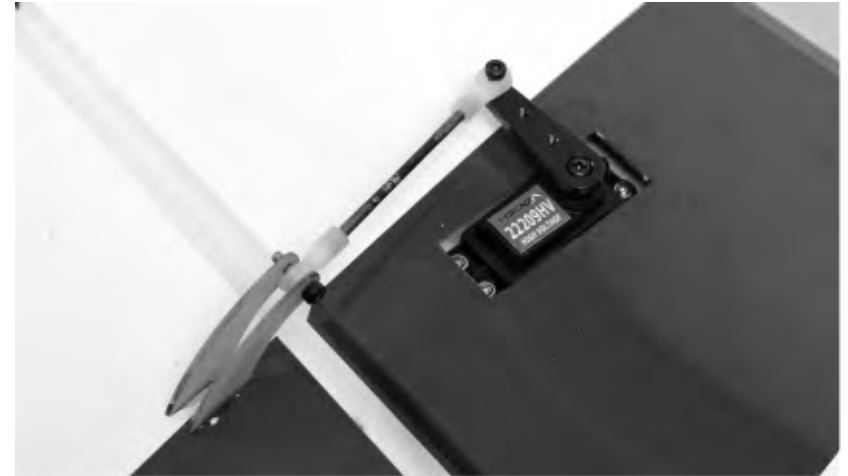
M3x12 (2)



M3 (2)



M3 (4)



Attach the linkage to the servo arm. The order of components starting AWAY from the wing is as follows:

- M3x12 Socket Head Cap Screw
- M3 Washer
- Ball Link
- Servo Arm
- M3 Washer
- M3 Lock Nut

With the radio powered on, and the servo centered with the arm parallel to the hinge line, adjust the linkage length so that the control surface is centered. Attach the linkage to the control horn in the following order:

- M3x12 Socket Head Cap Screw
- M3 Washer
- Control Horn
- Ball Link
- Control Horn
- M3 Washer
- M3 Lock Nut

ELEVATOR/RUDDER CONTROL HORN INSTALLATION

Required Components

Rudder Elevator (x2) Rudder Control Horns (x2)
Elevator Control Horns (x2)

Required Adhesives

30-Minute Epoxy

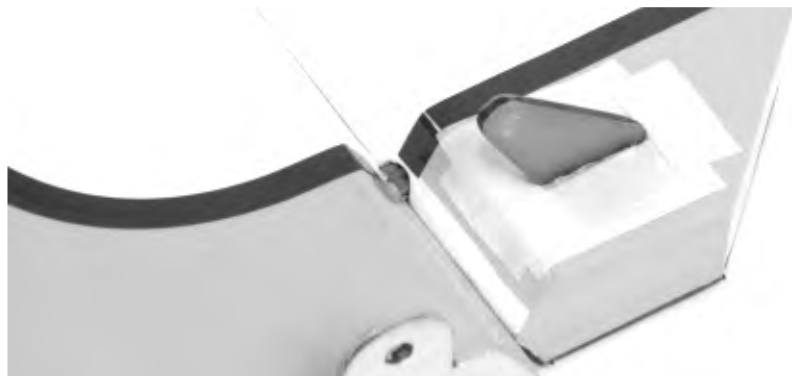
Required Tools/Building Materials

Low-Tack Tape Isopropyl Alcohol Paper Towels

□ 1.



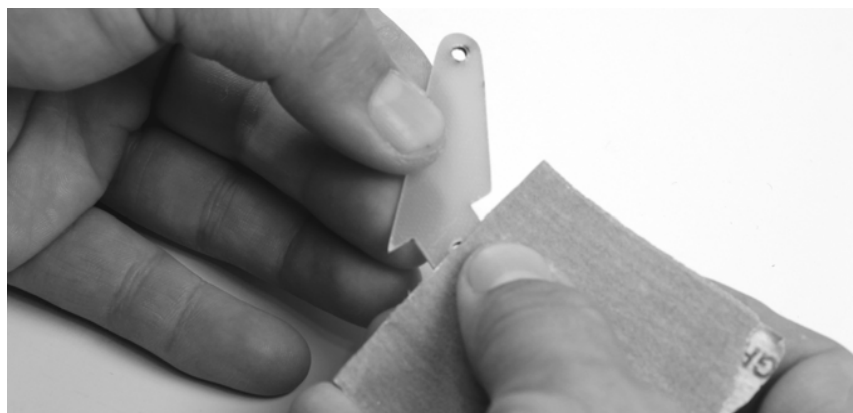
x2



Test fit the control horns in their corresponding slots. Make any adjustments necessary to the slots at this time. Once satisfied with the fit of the control horns, apply low-tack tape approximately 1/32-inch (1mm) away from the control horns. For the rudder pull-pull setup, but sure to do this to both sides of the rudder. After applying low-tack tape, remove the control horns from the slots.

□ 2.

x2



Prepare the control horns by sanding the section that extends into the control surface with medium grit sand paper. Use isopropyl alcohol and a paper towel to remove any excess debris from the control horn.

NOTICE

If not properly scuffed, glue may not adhere to the control horn, resulting in a failure.

□ 3.

30

x2



Mix a sufficient amount of 30-minute epoxy in a cup, and with a toothpick, apply epoxy in the control horn slots. Slowly and carefully, insert each control horn into the surfaces. Partially remove and reinstall the control horn to ensure that you've completely coated it with glue. Before the epoxy has fully cured, remove the tape, and clean up any excess epoxy with a paper towel and isopropyl alcohol.

RUDDER & ELEVATOR INSTALLATION

Required Components

Fuselage (canopy removed) Horizontal Stabilizers (L&R) Elevator Halves (L&R)
Elevator Hinges (x8) Rudder Rudder Hinges (3)
Tail Wheel Bracket Tail Wheel Wire Tail Wheel

Required Adhesives

30-Minute Epoxy

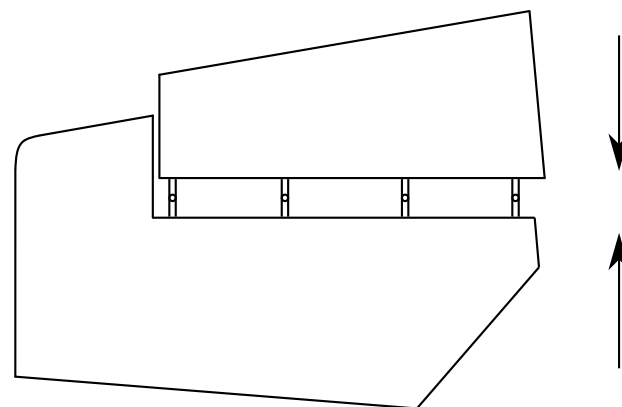
Required Tools/Building Materials

Epoxy Mixing Cups/Sticks Isopropyl Alcohol Paper Towels
Low-Tack Masking Tape Toothpicks

□ 1.



x2



Test fit the hinges into the elevators and horizontal stabilizers. Ensure that the hinge pockets line up, and that the hinges move freely.

□ 2.



Prepare the hinges by scuffing the area that will be inserted into the wing or flying surface with medium grit sand paper. Be careful not to remove too much material. Use isopropyl alcohol, and a paper towel to remove any excess debris that remains on the hinges.

NOTICE

If not properly scuffed, glue may not adhere to the hinges, resulting in a failure.

□ 3.

30



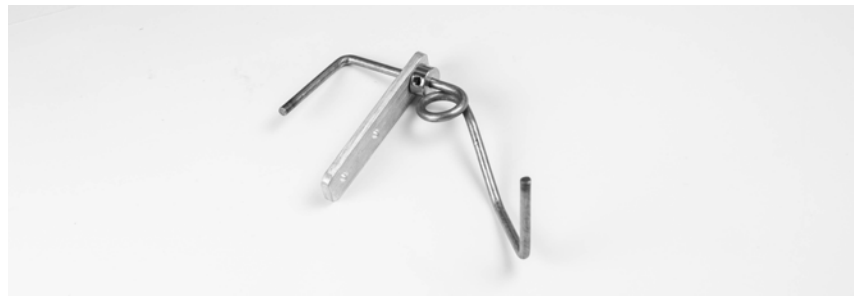
Mix a sufficient amount of 30-minute epoxy in a cup, and with a toothpick, smear epoxy in the hinge pockets of the horizontal stabilizer and elevator. Slowly and carefully, insert each hinge into the stabilizer and elevator. Partially remove and reinstall the hinge to ensure that you've completely coated them with glue. Be sure the hinges are oriented so that the elevators can move properly. Clean up any excess epoxy with isopropyl alcohol, and tape the elevator in place. Set the horizontal stabilizers aside to cure.

□ 4.



Prepare the tailwheel wire by scuffing the "L" shape bend side of the wire with medium grit sand paper. This is done to promote glue adhesion when hinging the rudder.

□ 5.



The tail wheel bracket has 3 holes. 2 are slightly closer together. Assemble the tail wheel wire and bracket by sliding the bracket over the "L" bent side of the wire, using the hole furthest away from the other two in the bracket. This hole is just large enough to fit the wire through it. It may be snug, but do not drill out this hole, as it is important to keep this tolerance tight for proper longevity of your bracket.

□ 6.



Use a file to make two small flat spots on the inside and outside of the tail wheel wire for the lock collar set screws.

□ 7.



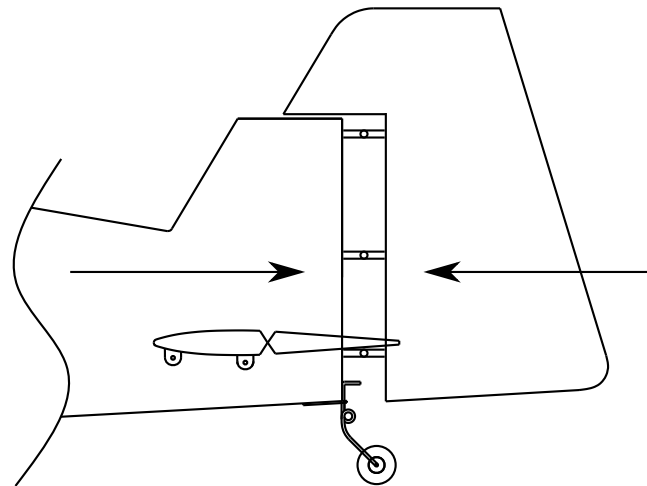
Finish the tail wheel bracket assembly by sliding a M2 lock collar onto the tail wheel axle with the flange facing the center of the axle. Apply a drop of light oil on the axle, and slide the wheel onto the axle. Install another M3 lock collar, with the flange facing the wheel. Apply blue thread lock to the set screws, tighten them into the lock collars, and on to the flat spots created in the previous step. Be sure the tail wheel rotates freely.

□ 9.



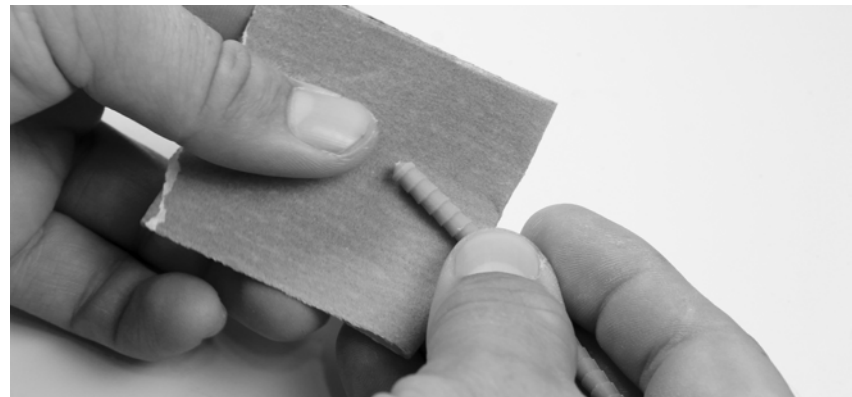
Place a washer over an M3x15 machine screw, and apply a drop of blue thread lock. Fully tighten the screw into the blind nut in the bottom of the fuselage.

□ 10.



Test fit the rudder hinges and tail wheel wire in the rudder and vertical fin. Make sure all of the hinge slots line up, and that the rudder can move freely. Adjust as needed. Once satisfied with the fit, remove the rudder and the hinges from the aircraft.

□ 11.



Use medium grit sandpaper to prepare the hinges for installation. Remove any excess debris with a paper towel and isopropyl alcohol. Apply petroleum jelly to the hinge points at this time. This can be applied in the same manner that was used for the elevator and aileron hinges.

⚠ WARNING

Petroleum jelly prevents glue adhesion. Do not apply petroleum jelly to the surface areas of the hinge that require glue adhesion to the wing or surface.

□ 12.

30



Mix a sufficient amount of 30-minute epoxy in a cup, and with a toothpick, apply epoxy in the rudder hinge and tail wheel slots. Slowly and carefully, insert each hinge into the slots. Partially remove and re-install the hinges and tail wheel wire to ensure that you've completely coated it with glue. Before the epoxy has fully cured, tape the rudder to the vertical stabilizer, and clean up any excess epoxy with a paper towel and isopropyl alcohol.

ELEVATOR/RUDDER SERVO INSTALLATION

Required Components

Fuselage	Elevator Servo (x2)	Rudder Servo
Elevator Linkage, 116mm (x2)	Rudder Pull-Pull Cable	Rigging Couplers
M3 Lock Nuts (x8)	M3 Washers (x20)	M3x12 SHCS (x8)
M3x10 SHCS (x4)	24-inch (610mm) Extension (x2)	Wire Crimp (x4)

Required Adhesives

Thin CA	Blue Thread Locker
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Required Tools/Building Materials

#1 Phillips Screwdriver	Ball Driver: 2.5mm	Nut Driver: 5.5mm
Thread or Shrink Tube	Needle-Nosed Pliers	

□ 1.



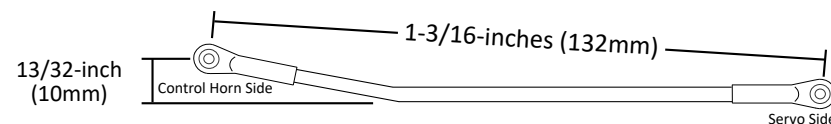
Follow the same steps for installing the aileron servo to install the elevator servo. Secure an 24-inch (610mm) extension to the servo. Route the extension through the guides in the fuselage and install the elevator servo with the output shaft facing the **NOSE** of the aircraft. Do not install the servo arm at this time.

□ 2.



Insert the horizontal stabilizer tube into one horizontal stabilizer half. Insert the tube into the fuselage, and secure the horizontal stab to the fuselage with two M3x10 socket head cap screws and two M3 washers. If you will be leaving the horizontal stabilizers installed all the time, add a small drop of blue thread lock to each of the horizontal stabilizer screws.

□ 3.



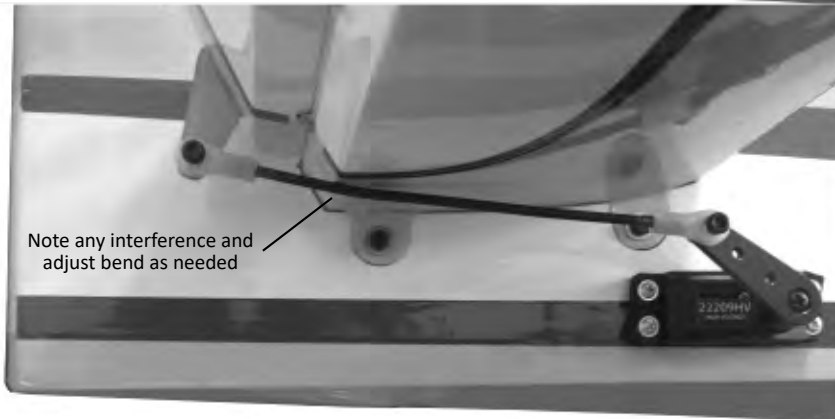
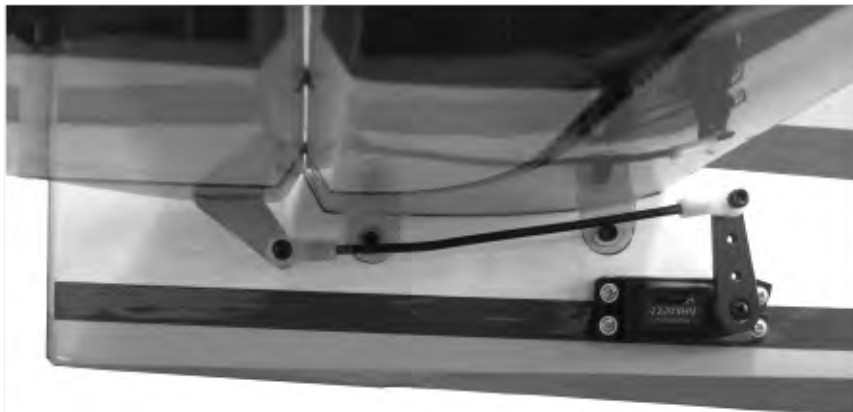
**Note: Drawing not to scale

Assemble the elevator linkage in the same manner as the aileron linkage using a 4-9/16-inch (116mm) linkage. Run the pushrod into each ball link approximately halfway.

Once assembled, make a small bend approximately 1-9/16-inch (40mm) from the center of one linkage. Reference the diagram above.

The final length of the linkage from center of link to center of link (including the bend) should be approximately 1-3/16-inches (132mm). Attach the linkage to the control horn using the same order of hardware as the aileron linkages (reference page 7).

□ 4.



Center the elevator servo and install the servo arm onto the servo. Note that the linkage length provided above should be extremely close, and the servo arm should angle slightly towards the tail. Verify the servo travels as needed and that the linkage does not interfere with the movement of the surface. Reference the pictures above.



□ 4.



Install the rudder servo in the rudder tray inside the fuselage. Be sure to orient the servo with the output shaft towards the tail of the airplane. Center the servo with your radio system and install a 3-inch double servo arm so that it is perpendicular to the servo case. Use as little electronic trim as possible. If you are using the Aura 8, this should be done in the Aura Config Tool. Apply a drop of blue thread lock to the threads of the servo arm screw, and secure it in place..

□ 5.



-  Ball Link (2)
-  Rigging Coupler (2)



Using pliers, thread a rigging coupler approximately halfway into a ball link.

HELPFUL HINT

You can take a ruler and felt-tipped marker to mark the center of the threads on the rigging coupler. Once the end of the ball link reaches the mark you made on the threads, you know the rigging coupler has sufficient thread depth into the ball link.

□ 6.



Attach the ball link to the rudder control horn and servo arm using a 2.5mm ball driver and a 5.5mm nut driver or pliers. Use the same order of components as listed on page 7.

□ 7.



Thread the pull-pull cable through a wire crimp, then through the rigging coupler and back through the crimp. For extra security, you can loop the wire back through the crimp a third time. Use a crimping tool to crimp the pull-pull cables.

Route the cables through the hole in the side of the fuselage, and up to the servo rigging couplers. Note that the pull-pull cables should cross inside the fuselage. Be sure that the cables are routed so that they are free from any interference in the fuselage. Thread the pull-pull cable through a wire crimp, then through the servo arm rigging coupler and back through the crimp. Tighten the cable while being sure that the rudder is centered, and use a crimping tool to crimp the pull-pull cable.

LANDING GEAR INSTALLATION

Required Components

Fuselage Assembly	Aluminum Landing Gear	Carbon Fiber Gear (Optional)
Main Wheel (2)	Axle (2)	M3 x 12 Screw (4)
M3 Flat Washer (4)	M8 Flat Washer (2)	M8 Lock Nut (2)
M4 x 20 Screw (4)	M4 Flat Washer (4)	M4 Lock Nut (4)
M4 Lock Collar	Wheel Pant (R&L)	

Required Adhesives

Blue Thread Lock

Required Tools/Building Materials

Ball Driver: 2.5mm
Open-End Wrench: 13mm

Nut Driver: 8mm
Felt-Tipped Pen

Flat File

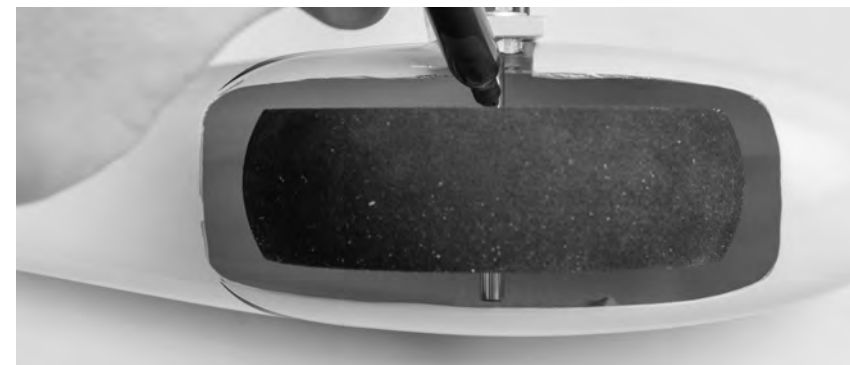
□ 1.



NOTE: Optional carbon fiber landing gear is available for purchase separately. Switching to carbon landing gear saves approximately 3 ounces (85g) in weight.

Assemble the axle to the landing gear leg using two 13mm open-end wrenches. Fully tighten at this time.

□ 2.



Temporarily slide a main wheel onto the axle, and attach the wheel pant in place using two M3x12 screws and two M3 flat washers. Center the wheel in the wheel pant, and mark the sides of the wheel on the axle with a felt-tipped pen. Remove the wheel pant and wheel.

Note: This is also a good time to verify proper clearance of the wheel and wheel pant. We recommend opening the wheel pant with a rotary tool and sanding drum so that your wheel has similar clearance as in the photo above.

□ 3.

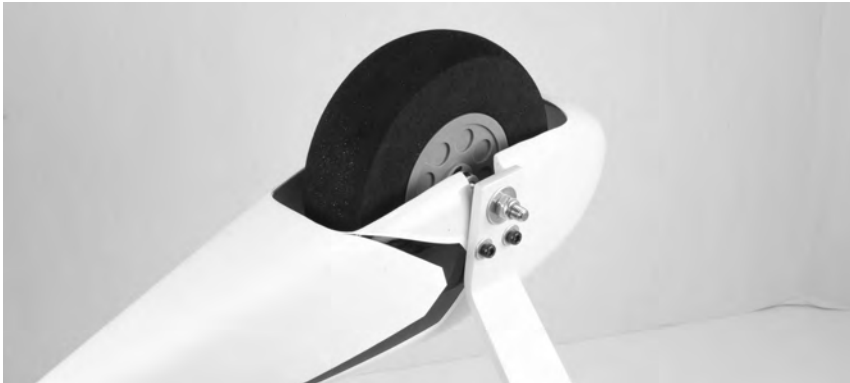


Use a flat file to make two flat spots on the axle where the marks were made in step 2.

□ 4.



M4 (2)
M3x12 (2)
M3 (2)



Slide an M4 wheel collar onto the axle with the flange away from the landing gear. Use blue thread lock on the set screw, and tighten the wheel collar down on the flat spot made in the previous step. Slide a main wheel onto the axle, followed by a second wheel collar with the flange facing the wheel. Use blue thread lock on the set screw, and tighten the wheel collar down against the wheel. Ensure the wheel spins freely.

To install the wheel pants, place an M3 washer onto an M3x12 screw. Apply a drop of blue thread lock on the screw, and run the screw through the landing gear leg, threading into the blind nuts located in the wheel pant. Before fully tightening, start the second screw (with blue thread lock) for that wheel pant. Now fully tighten both screws.

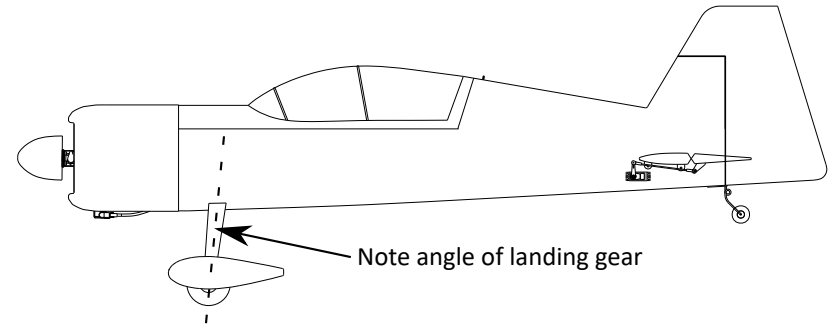
HELPFUL HINT

In order to help reduce damage to your model while building, the wheel pants can be installed last after completing the build.

□ 5.



M4x20 (1)
M4 (1)
M4 (1)



Remove the landing gear cover plate from the fuselage. Sit the landing gear on the fuselage so that it sweeps **forward** as it moves away from the fuselage. Place an M4x20 screw with an M4 washer through the landing gear cover, and through the landing gear. Add a drop of blue thread lock to each of the screws. Thread the screws into the aluminum landing gear plates mounted in the fuselage. Use an 8mm nut driver to tighten an M4 lock nut onto the screw from inside the fuselage. Repeat for the remaining 3 screws.

FUEL TANK TRAY ASSEMBLY

If you are using an electric motor setup, you may skip ahead to page 19.

Required Components

Fuel Tank	Brass Tubing (x2)	Fuel Line
Clunk	Fuel Stopper	Stopper Cap
Stopper Back Plate	Stopper Screw	Gas Tank Tray (Plywood)
Throttle Servo	Choke Servo (optional)	Ignition Battery
Receiver Battery	Hook and Loop Tape	Hook and Loop Strap (x2)
3-inch Servo Extension	6-inch Servo Extension (optional)	Shrink Tube or Thread
Throttle Linkage	Choke Linkage (optional)	

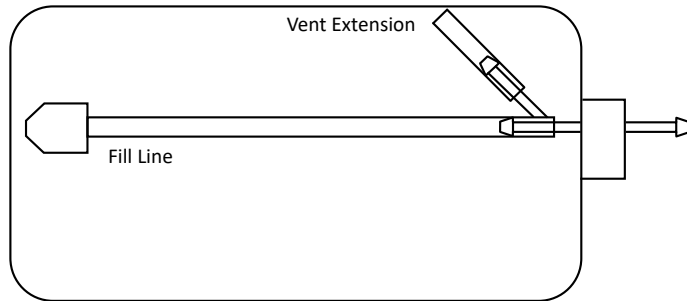
Required Adhesives

Thin CA	Blue Thread Lock
---------	------------------

Required Tools/Building Materials

#1 Phillips Screwdriver	2.5mm Ball Driver
-------------------------	-------------------

1.



You must supply large diameter, high-quality fuel line for your fuel system, it is not included with your aircraft.

The fuel tank stopper comes partially assembled. Cut a small section of fuel line, and secure it to the straight brass tube on the back side of the stopper. Secure the clunk to the other end of the line. Be sure that the clunk does not touch the back of the tank when the tank is held vertically, and that there is room for the fuel line to expand slightly when you first put fuel in the tank.

Cut another small section of fuel tubing, and secure it to the vent side of the tank (the angled brass tube) as a small vent line extension. It may take some test fitting, but make sure the fuel line just reaches the top of the tank, but does not touch it.

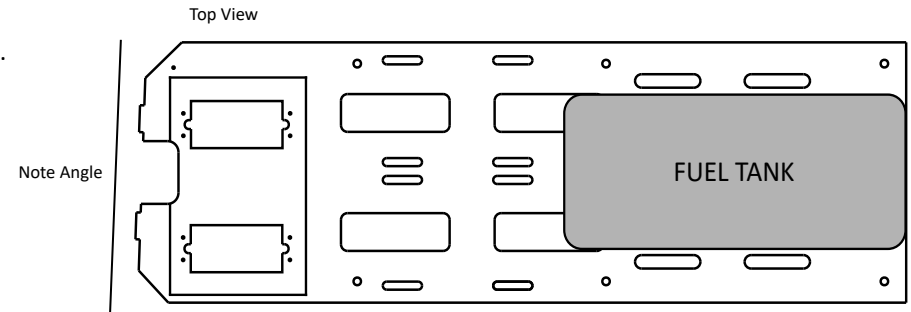
Once happy with the fit of all fuel lines inside the tank, secure all fuel line to the brass tubing and clunk using safety wire.

2.



Press the fuel stopper assembly into the fuel tank. Be sure that the the vent side of the fuel line bends towards the top of the fuel tank. Note that this may take a bit of force to seat the stopper assembly properly into the neck of the tank. Once fully seated, tighten the phillips head stopper screw until tight.

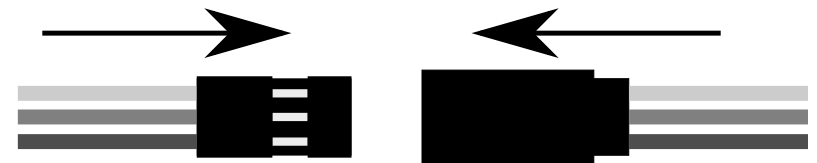
3.



Locate the plywood gas tray for the forward fuselage section. Reference the drawing above.

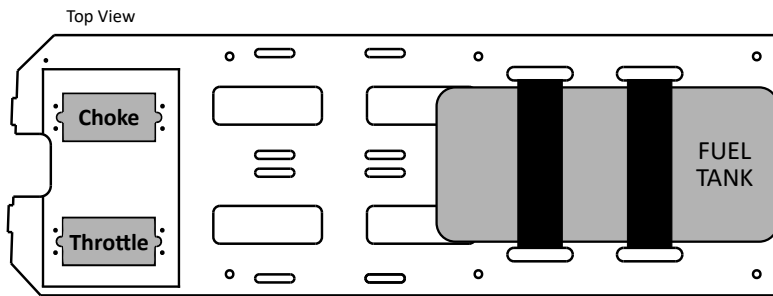
Note the angle on the front of the gas tray, and how it fits into the fuselage. Apply hook and loop tape to the fuel tank, and the top of the fuel tank location on the tray. Place the fuel tank onto the tray. Be sure to do this with the tray in the proper upright position. Secure the tank to the tray by wrapping two hook and loop straps around the tank and tray.

4.



Prepare the throttle servo by securing a 3-inch (76mm) servo extension to the servo lead using shrink tube or thread. If you are using a servo-operated choke, secure a 6-inch (153mm) servo extension to the choke servo.

□ 5.



Thread a servo mounting screw into each of the mounting holes you plan to use. Remove the screw, and apply thin CA to each of the holes. Let the CA fully cure before proceeding.

Note, if using the DA-35, the **throttle servo** is mounted on the **LEFT** side of the tray, and the **choke servo** is mounted on the **RIGHT** side of the tray.

Install the **throttle servo inverted** on the tray with the **output shaft towards the REAR** of the aircraft. You may also center the servo, and install a servo arm of approximately 1-inch (25mm) in length at this time.

Install the **choke servo inverted** on the tray, with the **output shaft towards the REAR** of the aircraft. You can center the servo, and install a servo arm of approximately 1-inch (25mm) in length at this time.

Be sure to use blue thread lock when securing the servo arm screws.

□ 6.



Quick Connect (1)

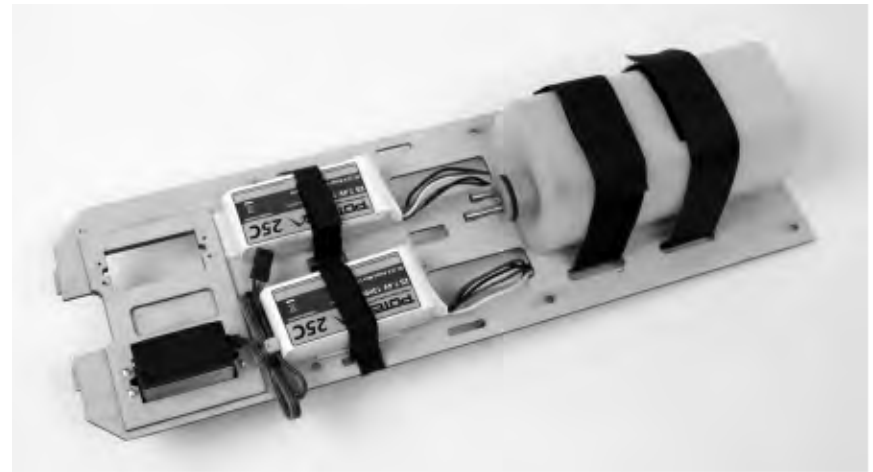


**Note - different model shown

Secure the quick connector to your throttle and choke (if using a servo for choke) servo arm. Be sure to use blue thread lock for a secure attachment. Be sure the connector rotates freely after it has been tightened. The order of components is as follows:

- Quick connect housing
- Washer
- Servo Arm
- Washer
- Nut

□ 7.



You can mount your receiver batteries at this time. Note that due to variations in production and equipment choices, you may need to move the batteries at a later step to adjust the CG of your model.

Once finished, place the assembly aside for a later step. Do not install into the fuselage at this time.

GASOLINE ENGINE INSTALLATION

If you are using an electric motor setup, you may skip ahead to page 19.

Required Components

Engine	Exhaust	Ignition
Fuselage Assembly	Standoffs*	M5x20 SHCS (x4)*
M5x15 SHCS (x4)*	M5 Flat Washer (x4)*	Throttle Linkage
Choke Linkage	Ball Link (x2)	M3x15 SHCS (x2)
M3 Lock Nut (x2)		

***NOTE:** Some hardware is provided with the (recommended) DA-35. If you are not using the DA-35, you may need to supply similar hardware appropriate for your particular engine/manufacturer. The length from the firewall to the back of the spinner should be approximately 162mm (6-3/8-inches). Use this information to calculate the length of standoffs you will need, and any associated hardware.

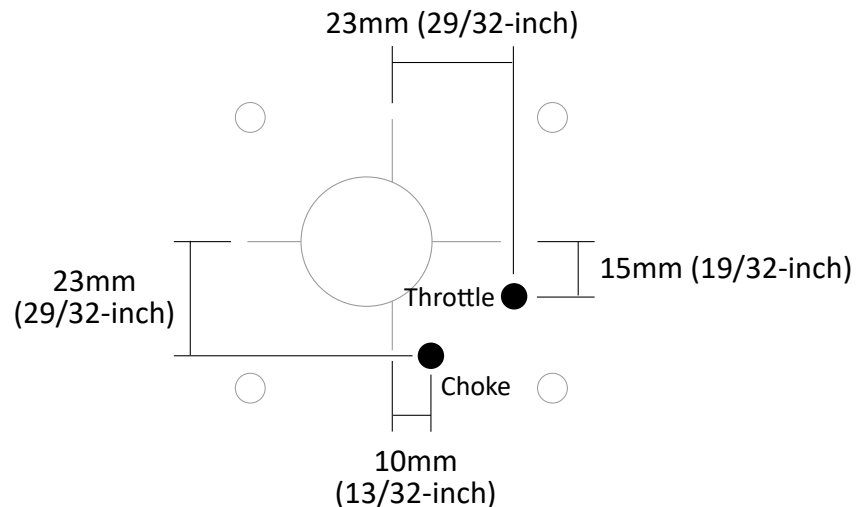
Required Adhesives

Blue Thread Lock

Required Tools/Building Materials

4mm Ball Driver	2.5mm Ball Driver	Needle-Nosed Pliers
Drill	1/4-inch (6mm) Drill Bit	

□ 1.



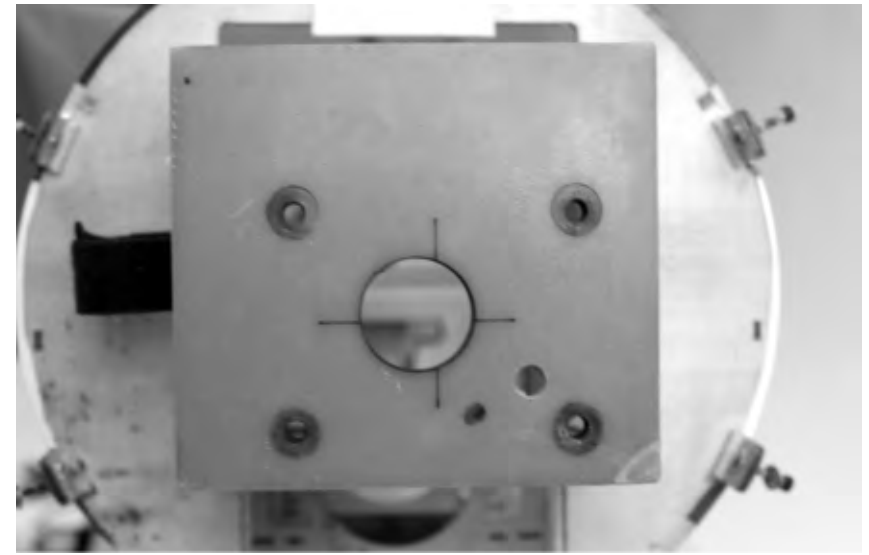
Using the reference marks etched into the firewall of the fuselage, mark the location for the throttle linkage hole, for the DA-35. If you are using a different engine, you may have to mount the engine, mark the location, and remove the engine before proceeding.

Facing the firewall, the throttle linkage hole is 23mm (29/32-inch) right of the centerline, and 15mm (19/32-inch) below the centerline.

If you are using a servo-operated choke, mark its linkage location. It is 10mm (13/32-inch) right of center, and 23mm (29/32-inch) below center.

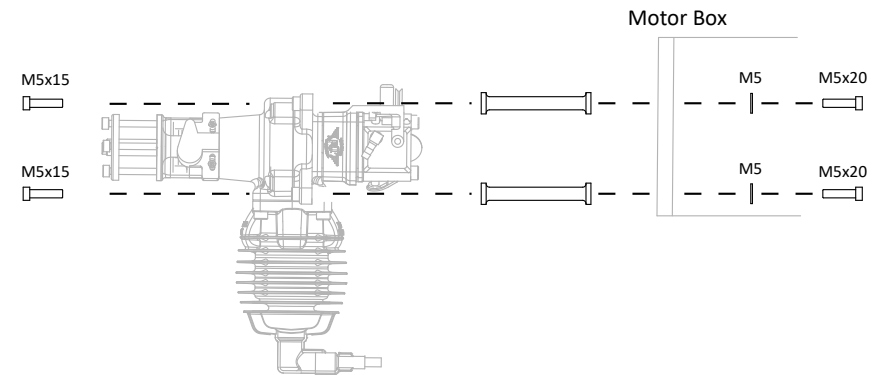
Reference the diagram above.

□ 2.



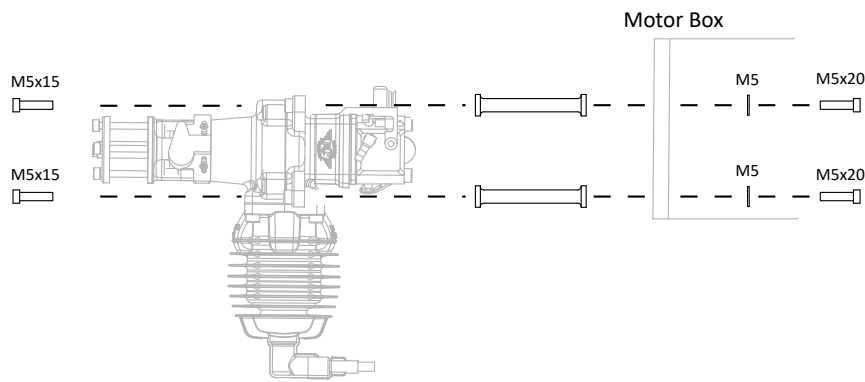
Use a drill and 1/4-inch (6mm) drill bit to drill any needed holes marked from the previous step. Note that these holes may need enlarged once you have the linkage secured and operating with your servo(s).

□ 3.



Locate the standoffs, M5x20 screws and M5 washers supplied with your DA-35 engine. Place an M5 washer on the screw, and apply a drop of blue thread lock to each screw. Hold the engine standoff in place over one of the holes in the firewall, and secure it in place with an M5 screw. Note that the screw head and washer should be on the inside of the fuselage.

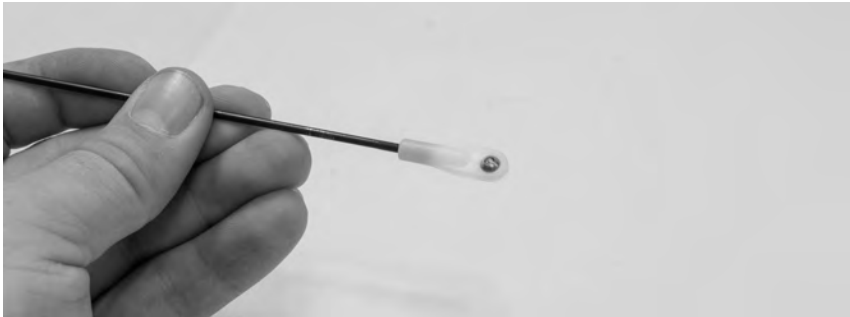
4.



Connect any fuel lines as needed to your engine, and use an M5x15 screw to secure the engine to the standoffs. Be sure to apply blue thread lock to the screws.

You can install your fuel dot or filler method of choice at this time.

5.



Locate your throttle and choke linkages. These are the longest linkages included with your kit, and are only threaded on one side. Thread a ball link onto the end of each linkage approximately halfway.

6.



The throttle linkage requires some bends to operate properly. Bend the linkage as shown in the image above. Further bends may be required when you finish assembly with the servo actuating the throttle.

Bend your choke linkage as needed for proper actuation of the choke butterfly.

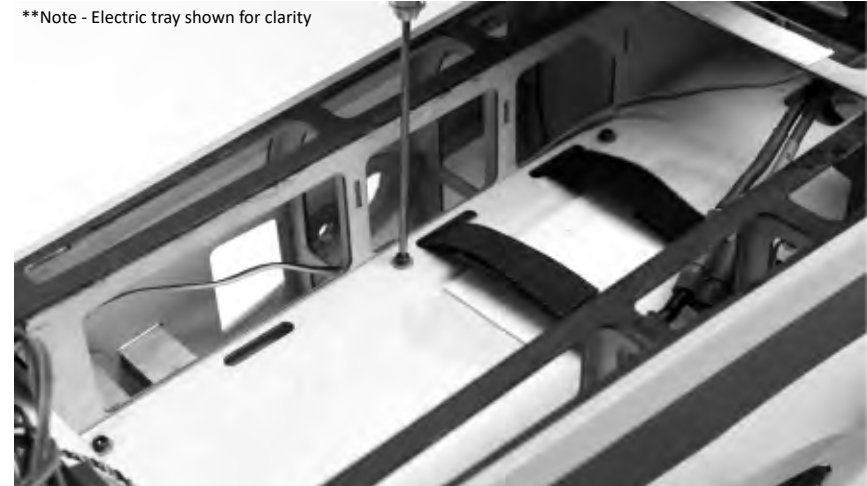
7.



Connect your throttle and choke linkages to the throttle and choke arms on the engine. If using the DA-35, it is recommended that you replace the 2 M3x15 screws and M3 lock nuts with 4-40 x 1/2-inch screws and #4 lock nuts.

The recommended choke setup for the DA-35 is shown in the image above. This method is easy to install, and easy to actuate through the front of the cowl. This method also saves a significant amount of weight, complexity, and cost by avoiding the use of another servo. Note that you may need to rotate the choke arm on the engine to allow proper hand-actuation of the choke lever. If you do move the choke arm on the engine, be sure to secure it with blue thread lock. Once the choke arm is rotated in the proper direction, secure the choke linkage to the choke arm, and use a medium-sized cable tie to securely fasten the choke linkage to the standoff. Be sure that the cable tie is not too tight, and has free operation of the choke linkage, while not being too loose and allowing the choke linkage to vibrate.

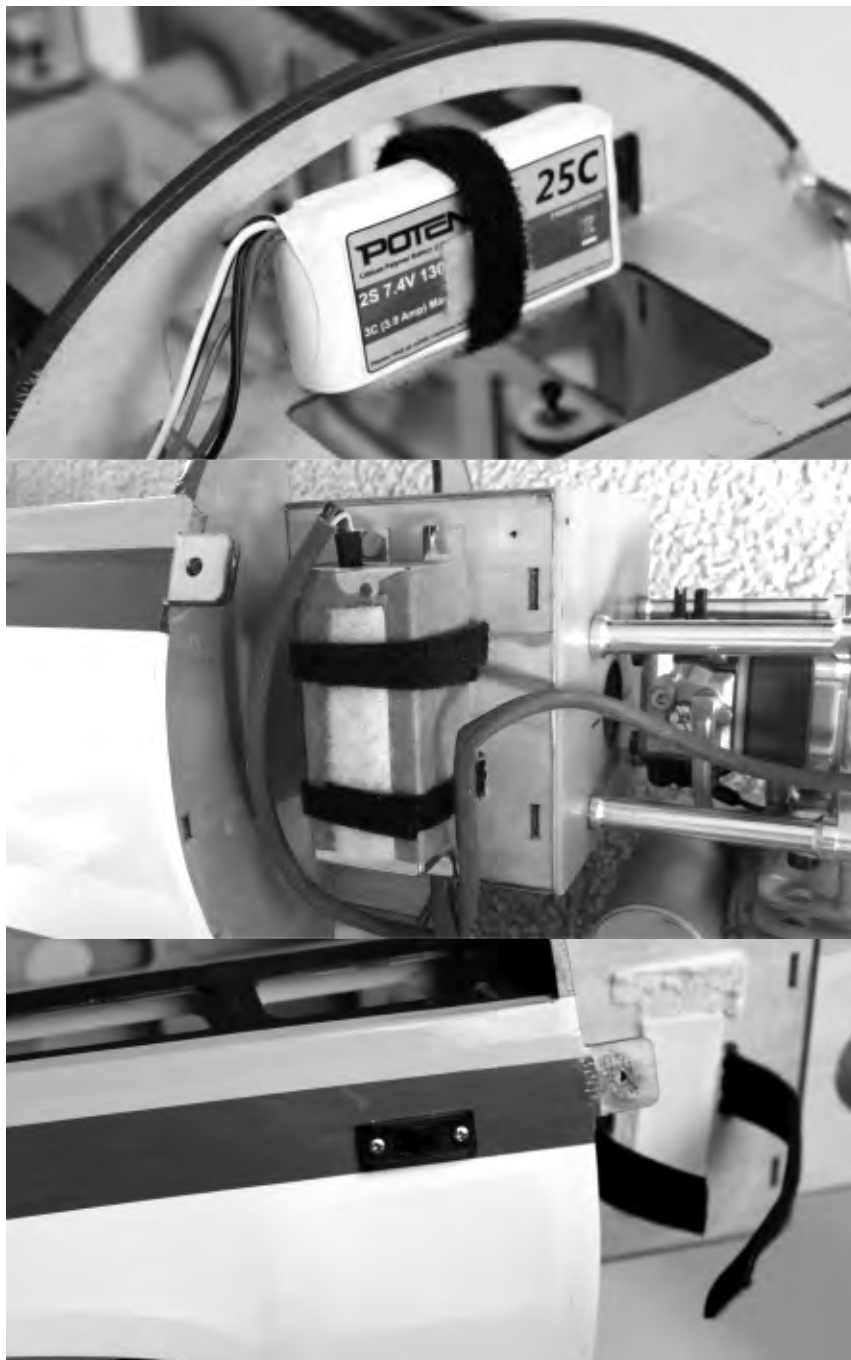
8.



**Note - Electric tray shown for clarity

Note that you may need to connect the throttle (and choke linkage if using servo-operated choke) while installing the tray. Remove the hatch on the bottom side of the motor box. This will allow adequate room to install the linkages. Remove the screw from the quick connect, and slide the linkage through the hole. Install the fuel tank tray assembly into the fuselage using a 2.5mm hex driver, M3x12 screw, and M3 washer. Apply a drop of blue thread lock to each screw, and fully tighten. Once the tray is fully secured in place, you can finish setting up your throttle (and choke) servo(s) at this time. Be sure to apply blue thread lock to the quick connect screw when securing it in its permanent location.

□ 8.



You can install your ignition, ignition battery and ignition switch at this time. Note that there are pre-cut switch locations in both sides of the forward fuselage sheeting.

ELECTRIC MOTOR AND ESC INSTALLATION

If you are using a gas engine setup, you may skip ahead to page 20.

Required Components

Motor	Electronic Speed Controller	Electric Motor Box
Fuselage Assembly	12-inch Servo Extension	M5x15 SHCS (x4)
M5x12 SHCS (x4)	M5 Flat Washer (x8)	M5 Lock Nut (x4)
M5 Spring Washer (x4)		

Required Adhesives

Blue Thread Lock

Required Tools/Building Materials

4mm Ball Driver

8mm Nut Driver

□ 1.



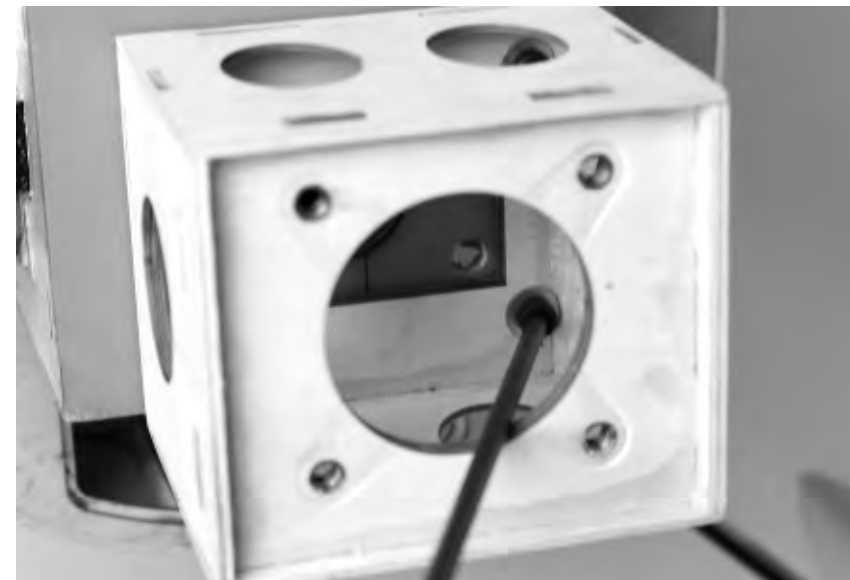
M5x15 (4)



M5 (4)



M5 (4)



Use a 4mm ball driver, 8mm Nut Driver, (4) M5x15 screws, (4) M5 washers, and (4) M5 lock nuts to secure the electric motor box to the main firewall of the fuselage. Be sure to use blue thread lock when securing the screws. Note that the electric box is square, but the screws are not centered. When installing, make sure the bottom of the motor box is flush with the bottom of the electric motor box. If it is not flush, rotate 180 degrees and re-install.

□ 2.



M5x15 (4)

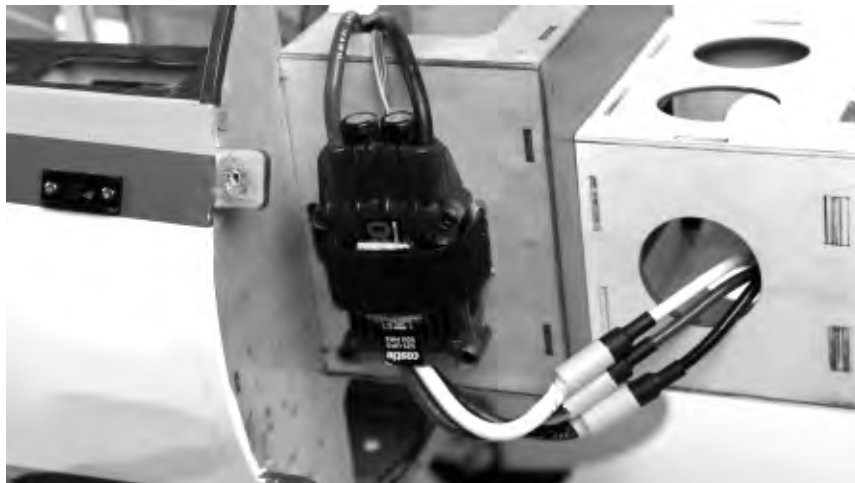


M5 (4)



Assemble the motor as needed. Use a 4mm ball driver, (4) M5x12 screws, and (4) M5 spring washers to secure the motor to the electric motor box. Be sure to use blue thread lock on the screws when assembling.

□ 3.



If required, install bullets and/or the battery connector before you install the ESC onto the airplane. Secure a 12-inch (305mm) servo extension onto the throttle lead of the ESC using heat shrink tubing or thread. Once complete, install the ESC onto the motor box using hook and loop tape, and a hook and loop strap. Connect your motor to your ESC, and verify the motor spins in the proper direction at this time.

COWLING INSTALLATION

Required Components

Fuselage Assembly
Spinner
M3 O-Ring (x4)

Cowling
M3 Flat Washer (x8)

Propeller
M3x15 SHCS (x4)

Required Adhesives

Blue Thread Lock

Low-Tack Masking Tape

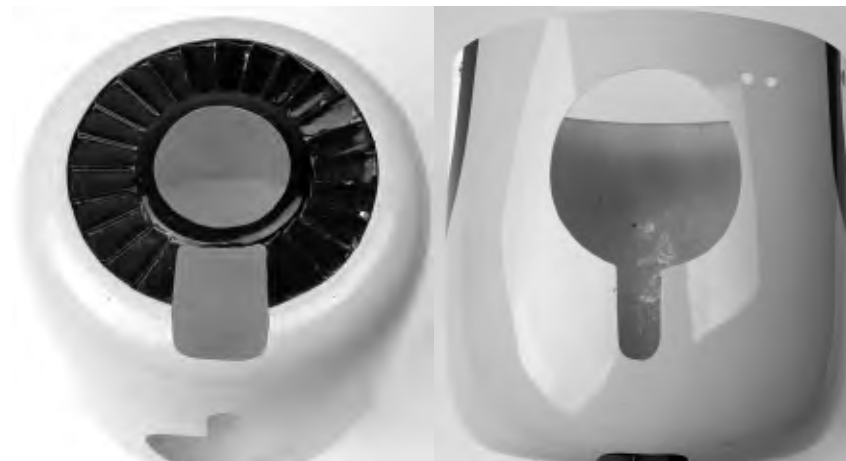
Required Tools/Building Materials

2.5mm Ball Driver
1/16-inch (1.5mm drill bit)
Sanding Drum

Felt-Tipped Pen
1/8-inch (3mm) drill bit

Drill
Rotary Tool

□ 1.



Slide the cowling onto the fuselage. Note any interference with your motor or engine of choice, and use a rotary tool with a sanding drum to remove material from the cowling until the cowling fits properly. The cowling, when properly aligned, will sit flush with the aft side of the cowling former in the fuselage.

For cooling purposes, follow the guide below, and the photos above:

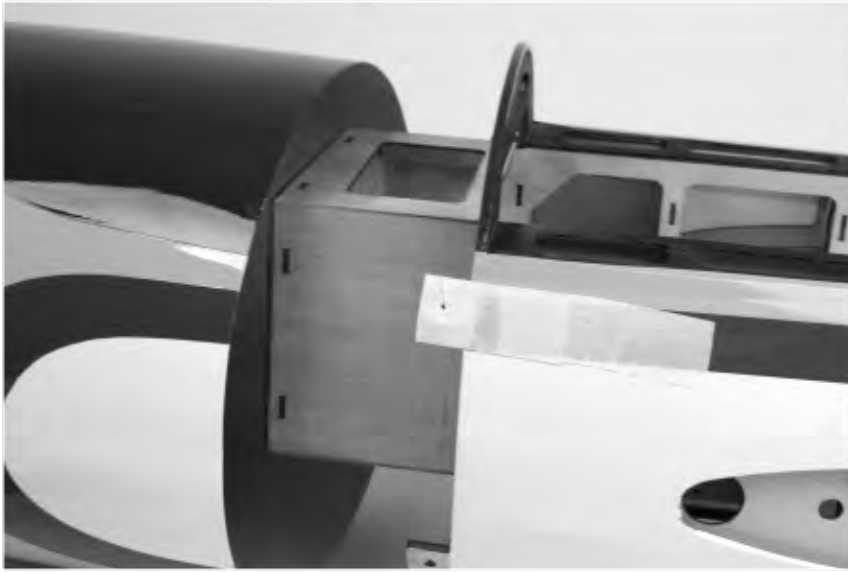
Gasoline Engines

Remove material for the crankshaft as needed, as well as a large area in front of the cylinder head. We also recommend a 4-inch (100mm) diameter hole in the bottom of the cowling to allow proper exit flow of air.

Electric Motors

Remove material for the motor or motor shaft as needed. Be sure that there is at least a 1/4-inch (6mm) gap around the motor. Open a hole with approximately a 3-1/4-inch (80mm) diameter in the bottom of the cowling for proper cooling exit.

□ 2.



Take a strip of low-tack masking tape, and fold over the end of the tape so that it sticks to itself. Place the piece of tape on the fuselage, so that the folded side is over the mounting tabs for the cowling. Use a felt-tipped pen to mark the blind nut location on the tape.

□ 3.



Fold the tape towards the rear of the airplane, and slide the cowling into place. Be sure to align the rear of the cowling with the rear of the cowling former, and also align the cowling both in yaw and pitch relative to the fuselage. Tape the cowling in place once happy with the alignment. Fold the tape from the previous step over the cowling. Use a drill and 1/16-inch drill bit to drill a pilot hole in the cowling at the mark made in the previous step. Once the hole is confirmed, use a 1/8-inch (3mm) drill bit to open the hole large enough for the M3 screw to pass through.

□ 4.



M3x15 (4)



Cowling screw hardware is to be placed in the order as follows:

- M3x15 Screw
- M3 Washer
- M3 O-ring
- M3 Washer

Use a 2.5mm ball driver to secure the cowling in place. Use blue thread lock to secure the screws.



You can install the propeller and spinner at this time.

SHARK TEETH INSTALLATION (OPTIONAL)

Required Components

Main Wings (2) Shark Teeth Strips (2)

Required Adhesives

15-Minute Epoxy

Required Tools/Building Materials

Low-Tack Tape Mixing Cups Mixing Sticks
Isopropyl Alcohol Paper Towels

□ 1.



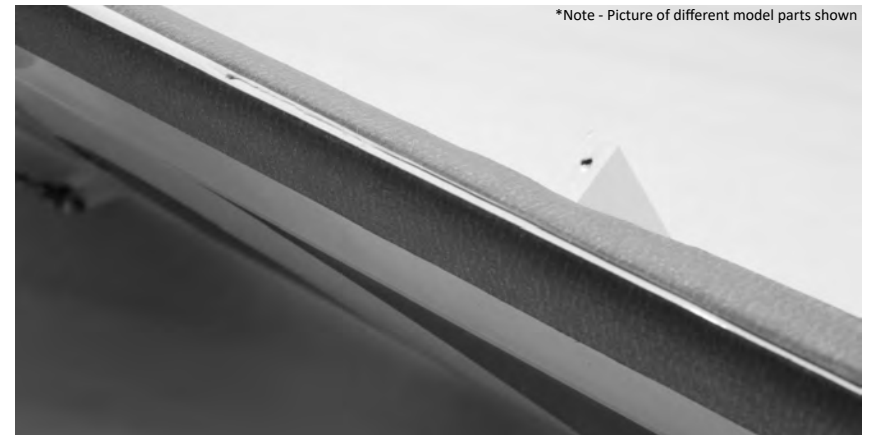
Locate the slots in the leading edge of the wing starting at the tip rib just before the aileron counter balance. Use a #11 hobby knife to open the slots at the leading edge of each wing panel. Test fit the shark teeth strips into these slots. Ensure everything fits and aligns properly.

□ 2.



Apply low-tack tape to the shark tooth strips, leaving only the area that extends into the wing panel uncovered. Use a medium grit sand paper to sand both sides of this exposed area.

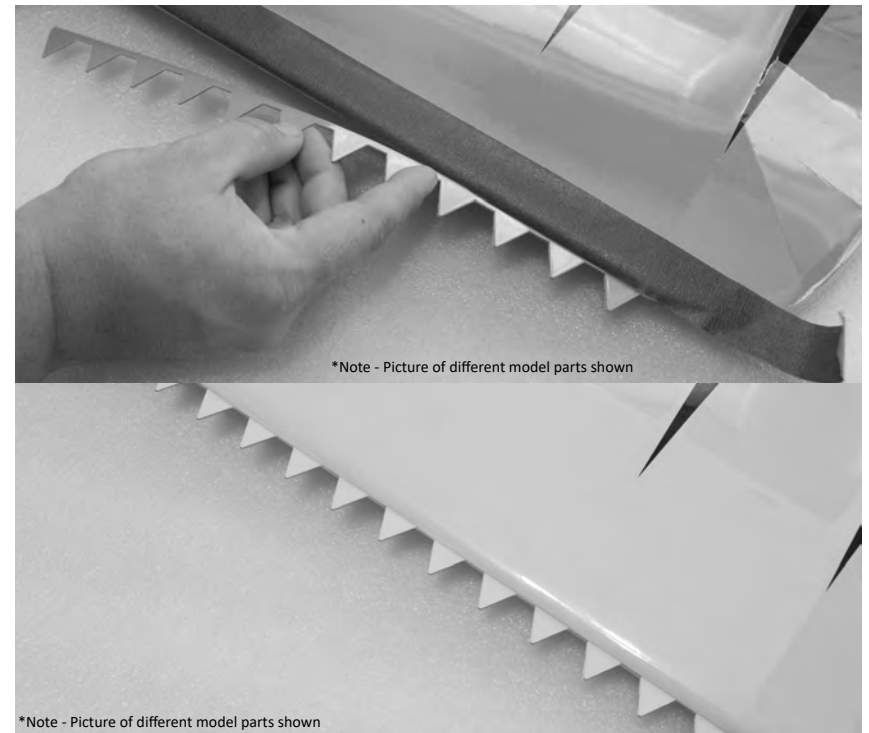
□ 3.



Apply low-tack tape on each side of the slot in the wing panels. Leave a small gap approximately 1/16-inch (1.5mm) between the tape and the slot.

□ 4.

15



Mix a sufficient amount of 15-minute epoxy, and use a toothpick to apply it within the slot in the leading edge of the wing. Insert the shark tooth strip into the wing, being sure it has been fully coated with epoxy. Before the epoxy fully cures, remove the tape, and clean up any excess with isopropyl alcohol and paper towels.

FIELD ASSEMBLY

Required Components

Fuselage Assembly
M3x10 SHCS (x4)
M4x15 SHCS

Wing Assembly (x2)
M3 Flat Washer (x4)
M4 Washer (x4)

Horizontal Stabilizer Assembly (x2)
M3x15 SHCS (x6)
M4 O-Ring (x4)

Required Adhesives

None

Required Tools/Building Materials

2.5mm Ball Driver

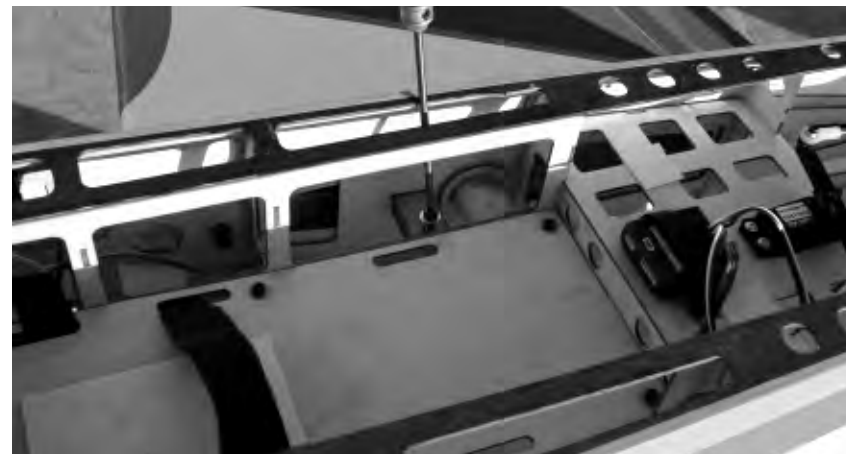
3mm Ball Driver

1.



Slide the horizontal stabilizer tube into one of the horizontal stabilizers. Then slide the tube through the hole in the fuselage. Be sure to make any linkage connections for the elevator servo. Secure the stabilizer to the fuselage using (2) M3x10 screws, and (2) M3 washers. Slide the other stabilizer on the tube, and repeat the process. Note it may be easier to connect the elevator linkage to the control horn AFTER the horizontal stabilizer is secured to the fuselage.

2.



Remove the canopy from the fuselage. Slide the main wing tube into one wing panel, and then through the wing tube slot in the fuselage. Make any necessary servo lead connections, and be sure the wing is seated fully into the fuselage. Use (1) M4x15 screw, (1) M4 washer and (1) M4 O-Ring to secure the wing to the fuselage. Be sure that the O-Ring is between the washer and wing tab. Repeat this process for the other wing panel.

3.



To install the SFGs, deflect the aileron so that the counter balance is out of the way. Use a 2.5mm ball driver, and (3) M3x15 screws to secure the SFG in place. Note that each SFG is vertically symmetrical (above and below the wing), and can be mounted on either the right or left side. Note, however, that the screws are counter-sunk into one side of the SFG, to avoid contact with the aileron counter balance.

CENTER OF GRAVITY

Setting the center of gravity (CG) is one of the most important steps for success, particularly with a new airplane. The Premier Aircraft QQ Yak 54 35cc is a high-performance airplane with large control surface throws, and a very high thrust to weight ratio. These two factors combined make the Yak 54 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 Yak 54, 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 CG. This means the batteries, servos, linkages, hardware, propeller, spinner; everything. The airplane must be in ready-to-fly condition (with the fuel tank empty), otherwise the measurement will not be accurate.

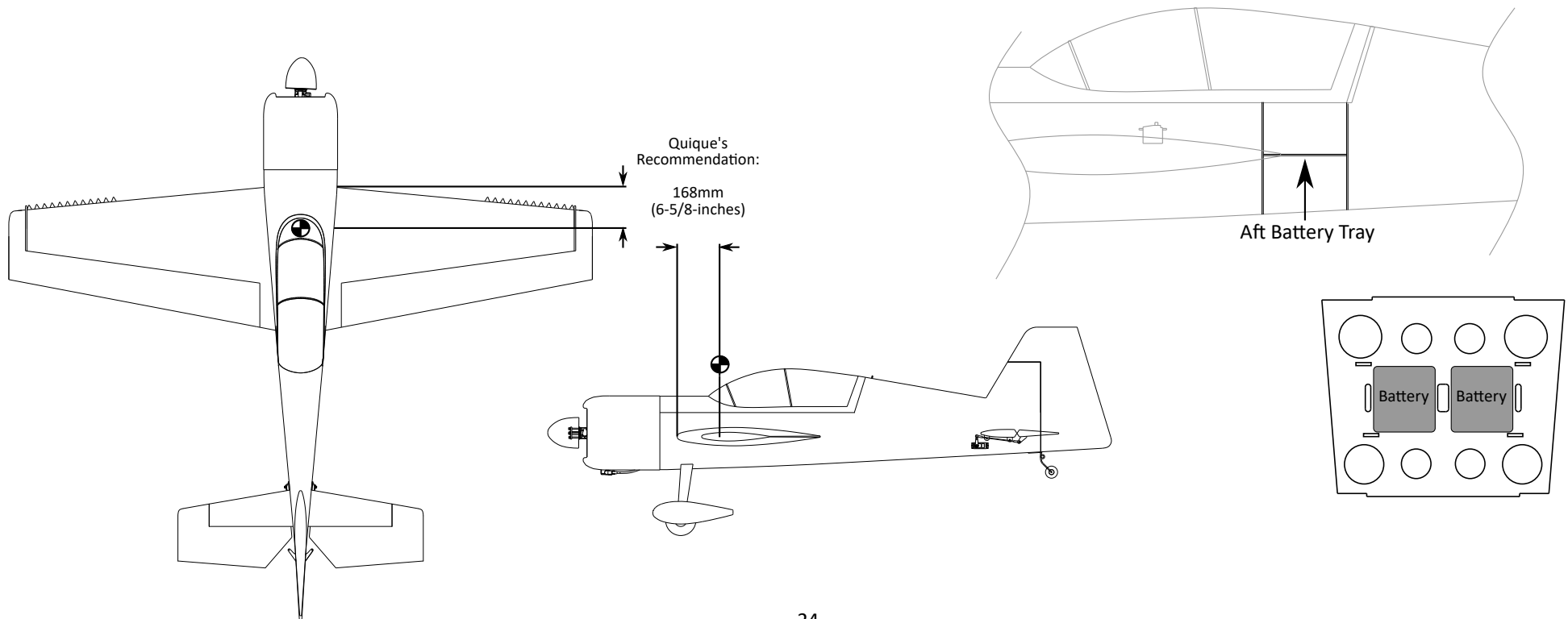
You can use many different methods to measure CG; from expensive CG stands, to using your fingers and a friend. Whatever the method used, be sure that your tests are repeatable, accurate, and free from errors and inconsistencies. This is the most critical step in preparing a new model for the first flight - an improperly measured CG can make your first flight dangerous, and could potentially lead to a crash of your model.

Checking the CG on the ground is a good way to ensure the model is safe to fly, and first flights are free of unwanted surprises from an improper CG. While this is a great way to ensure a safe CG for first flights, Quique recommends that your final CG location be determined in-flight. To test this, fly the model inverted on a 45-degree ascending line. Rest all sticks at neutral (while at full throttle), and watch how the model responds. The optimum CG location for the QQ Yak 54 is set properly when the model maintains the 45-degree line, and does not climb steeper, or flatten out. This will provide a balanced feel, that is forgiving yet agile, and is Quique's favorite location to fly the QQ Yak 54.

The recommendations below are to be used solely as a safe starting point for your first few flights. It is expected that you will fine-tune the CG after the initial flight(s).

The acceptable CG range is from **162mm (6-3/8-inches) to 172mm (6-3/4-inches) AFT from the LEADING EDGE of the WING ROOT**. It is critical that the starting point for your model be within this range. This measurement is determined from many test flights by designer and many time world aerobatic champion, Quique Somenzini.

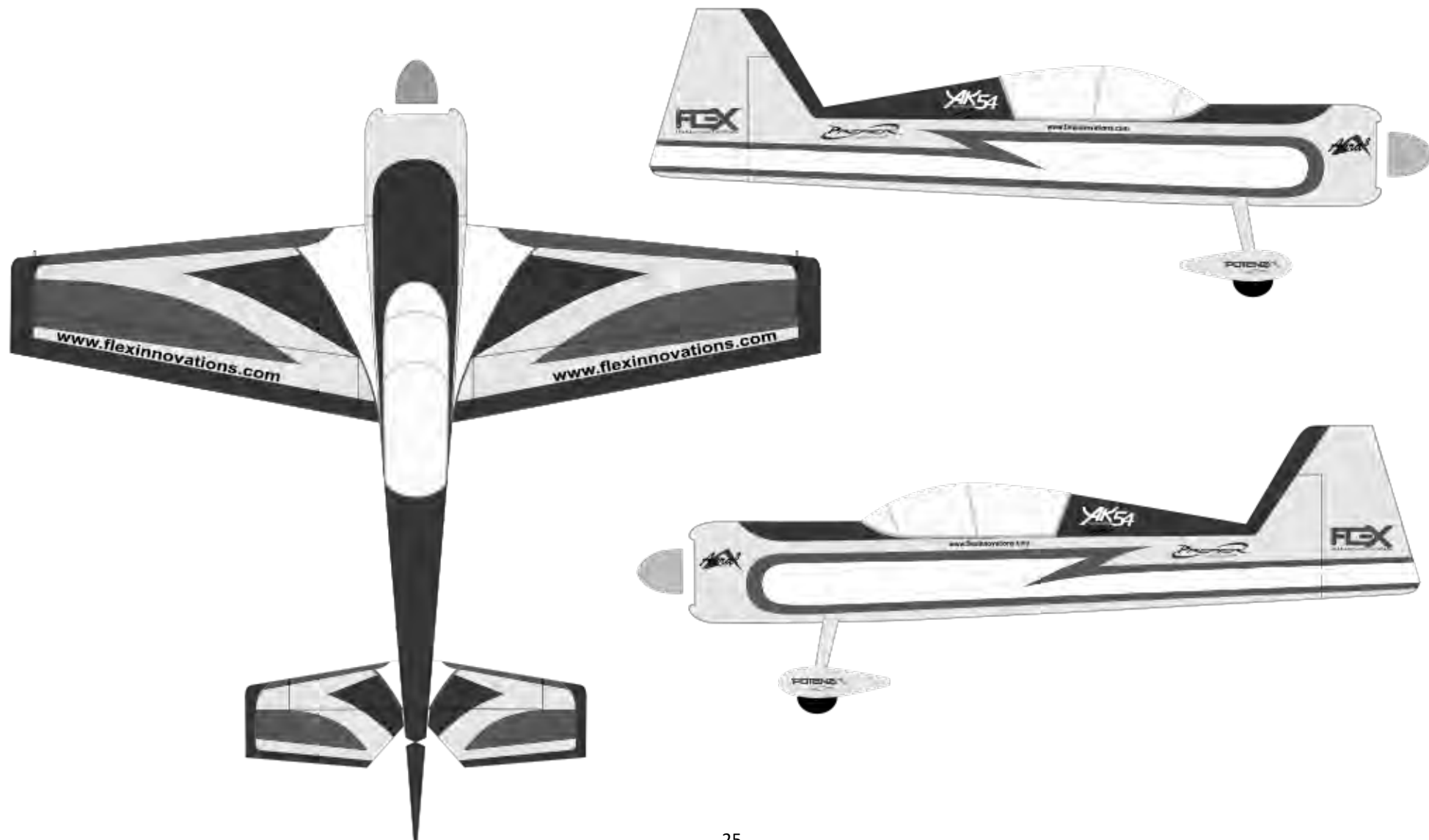
If you are using a heavier engine than the DA-35, you may need to move your batteries aft in the fuselage quite significantly. There is a secondary battery tray that is included with your QQ Yak 54. This tray installs below the pull pull cables under the aft section of canopy. Reference the drawings below and right.



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 of the decal.
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. Do not move, or otherwise touch the model for at least 12 hours to allow the rest of the water to evaporate.



AURA 8 AFCS SETUP

If you choose to use the Aura 8 Advanced Flight Control System (AFCS), you can download a pre-configured Aura program for the Yak 54 35cc at:

www.flexinnovations.com/wiki/aura

QQ Yak 54 35cc Config File Overview

- 3 flight modes on CH5/GEAR (1: High Rate/High Gain (Slow Airspeed), 2: Low Rate/Low Gain (Precision Aerobatics) 3: High Rate/Low Gain (3D High Airspeed))
- Quick Set: Disabled
- Quick Trim: Enabled
- Master Gain: Enabled on CH6/Aux1 as an on/off function via 2-position switch
- Download: (Done as Spektrum SRXL but you can easily change in setup for other brands/connections).

Note: Gains in Flight Mode 1 are relatively high. High speed flight may cause oscillations with these settings.

This model file is in a base to be customized. You are expected to adjust Direction, Output Scale, Mix Rates, etc. to match your model. **This is to be done IN THE AURA CONFIG TOOL, NOT THE TRANSMITTER when using Aura!** Perform and pass all transmitter command and sensor direction checks before flying! If you are near the 'limit' of your servo or linkage travel, use Min/Max Servo Pulse Width to set a protection limit.

This file is set for a "master gain" driven by a separate switch as a gyro on/off switch using CH6/AUX1. Set the transmitter to use CH6/AUX1 on a two-position switch, and reduce the transmitter travel for Aux 1 to 0% in the gyro "on" switch position.

We recommend making the first flight with the Aura Master Gain set to the Gyro 'Off' position. From there, trim as needed, and complete an Aura "Quick Trim" to teach Aura your transmitter trim offsets.

It is important to eliminate any tray flex that could cause vibration or servo oscillation issues with your Aura. Be sure to use medium CA to glue the double-sided foam tape (included with your Aura) to the plywood tray. Also install a hook and loop strap around your Aura to prevent it from coming loose in your QQ Yak 54.



All major radio brands are compatible with the AURA. Choose the application that works best for you, and reference all of our Aura information at www.flexinnovations.com/aura

Note that 2 Spektrum Remote Receivers are NOT recommended for this aircraft. We recommend using a conventional receiver with SRXL such as the AR9020.

AURA TRANSMITTER CONFIGURATION GUIDE

Wing Type	Normal - 1 Aileron, 1 elevator, 1 rudder	
Travel Adjust	Aileron/Elevator/Rudder	-125/+125%
	Ch. 5 (Gear)	-100/+100%
	Ch. 6 (Aux 1)	** -100/0%
Subtrim	Transmitter Subtrim Not Allowed - Use Aura Subtrim	
Trim Levers	Verified Neutral - Only used for first flight(s) - Use Aura Quick Trim to re-center after first flight(s)	
Ch. 5 (Gear)	Assigned to 3-position switch	
Ch. 6 (Aux 1)	Assigned to 2-position switch	
Reversing	All channels set to normal. Reverse Ch. 5 and Ch. 6 to preference	
Gas Timer	Timer set to 9:00 for first flights*	
Electric Timer	Timer set to 6:00 for first flights*	

*Flight times may vary depending on engine/motor selection

**Different radio brands show the channel output value differently. To verify this is working properly, check the gyro function in both switch positions. Confirm that in one position, the gyro is OFF, and the gyro is ON in the other. If it does not function as previously stated, reverse the 0/100% values in your transmitter travel adjust (ATV) menu, and check for gyro OFF function again.

The information provided below is the recommended control throws to be set up in your Aura 8. Note that expo values are pre-configured in the Config File you can download on our website. When starting with the Config File for the QQ Yak 54 35cc, use the Config Tool to adjust the output scale to match the high rate listed below. The low rate values that are pre-configured in the Config File, will get you very close to the listed low rate values below.

This setup has been tested thoroughly during the development of the airplane, and has been determined to be the optimal starting point for your Yak 54. As you become more familiar with the airplane, you may tweak the rates and expo to better suit your flying style, but these numbers are a very good starting point for your initial flights.

Control throws are measured using the counter balance at the leading edge of each control surface.

Elevator Low Rate			Elevator High Rate*		
UP	11/16-inches	17mm	UP	2-3/4-inches	70mm
DOWN	11/16-inches	17mm	DOWN	2-3/4-inches	70mm
Aileron Low Rate			Aileron High Rate*		
UP	1-3/4-inches	45mm	UP	7-1/2-inches	90mm
DOWN	1-3/4-inches	45mm	DOWN	7-1/2-inches	90mm
Rudder Low Rate			Rudder High Rate*		
LEFT	2-3/16-inches	55mm	LEFT	3-11/32-inches	85mm
RIGHT	2-3/16-inches	55mm	RIGHT	3-11/32-inches	85mm

High rate values may vary. A difference of +/- 3mm (1/8-inch) is acceptable, and will not affect the performance of the model.

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.

Hi-Torque, Digital servos in this category have significant power draw. Dual RX batteries, connectors, and wires are required.

TRANSMITTER CONTROL THROWS AND EXPO - WITHOUT AURA

This page is for those using the QQ Yak 54 35cc without stabilization, like the Aura 8. If you are using the Aura 8, be sure to look at the Aura setup information section on the previous page.

The following setup has been tested thoroughly during the development of the airplane, and has been determined to be the optimal starting point for your Yak 54. 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 using the counter balance at the leading edge of each control surface, unless otherwise noted.

Elevator Low Rate (20% Exponential)

UP	11/16-inches	17mm
DOWN	11/16-inches	17mm

Aileron Low Rate (35% Exponential)

UP	1-3/4-inches	45mm
DOWN	1-3/4-inches	45mm

Rudder Low Rate (15% Exponential)

LEFT	2-3/16-inches	55mm
RIGHT	2-3/16-inches	55mm

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.

Hi-Torque, Digital servos in this category have significant power draw. Dual RX batteries, connectors, and wires are required.

Elevator High Rate (60% Exponential)

UP	2-3/4-inches	70mm
DOWN	2-3/4-inches	70mm

Aileron High Rate (60% Exponential)

UP	7-1/2-inches	90mm
DOWN	7-1/2-inches	90mm

Rudder High Rate (40% Exponential)

LEFT	3-11/32-inches	85mm
RIGHT	3-11/32-inches	85mm

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 propeller(s) and spinner(s). 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. 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 freely, and in the proper direction.
3. Verify proper function and operation of your engine choice. Ensure that the fuel-air mixture is correct, and that the engine is making full power. If not familiar with gasoline engines, ask for the assistance of a more experienced pilot in your area, or speak with your engine manufacturer.
4. Secure any loose wiring inside the fuselage, and ensure that wires do not rub or chafe.
5. Ensure that all batteries (transmitter, receiver, ignition) are fully charged prior to leaving for the flying field.
6. 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.
7. If your engine is 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 engine. Six minutes is a good time to limit your first flights to. As you become more familiar with the airplane and begin to fly it in a more aggressive manner, monitor the temperature of the engine, and adjust the fuel-air mixture according to your engine manufacturer's recommendations.

REPLACEMENT PARTS

Part Number Description

Part Number	Description
FPM1200	Premier Aircraft QQ Yak 54 35cc ARF
FPM1201	QQ Yak 54 35cc Fuselage Without Canopy Hatch
FPM1202	QQ Yak 54 35cc Right Wing Set with Aileron
FPM1203	QQ Yak 54 35cc Left Wing Set with Aileron
FPM1204	QQ Yak 54 35cc Horizontal Stabilizer w/Elevators
FPM1205	QQ Yak 54 35cc Cowling with Hardware
FPM1206	QQ Yak 54 35cc Canopy Hatch
FPM1207	QQ Yak 54 35cc Aluminum Landing Gear
FPM1209	QQ Yak 54 35cc Wheel Pant Set
FPM1210	QQ Yak 54 35cc Carbon Fiber Wing and Stab Tubes
FPM1211	QQ Yak 54 35cc Tail Gear with Hardware
FPM1212	QQ Yak 54 35cc Main Wheel and Axle Set (4-inch)
FPM1213	QQ Yak 54 35cc Pushrod Linkage/Control Horn Set
FPM1214	QQ Yak 54 35cc Hardware Set
FPM1215	QQ Yak 54 35cc Wing Bag Set
FPM1216	QQ Yak 54 35cc Decal Sheet
FPM1217	QQ Yak 54 35cc SFG and Shark Tooth Set
FPM1218	QQ Yak 54 35cc Laser Cut Wood Parts
FPM1219	QQ Yak 54 35cc Fuel Tank with Accessories
FPM1220	QQ Yak 54 35cc Rudder with Accessories

OPTIONAL ACCESSORIES

FPZAURA08	Potenza Aura 8 Advanced Flight Control System (AFCS)
FPM1208	QQ Yak 54 35cc Carbon Fiber Landing Gear
FPMDA35	Desert Aircraft DA-35cc Single Cylinder Engine
FPMDA35MUFLR	Desert Aircraft DA-35cc Muffler
FPZM10200A	Potenza 200 High-Performance BL Motor (175kv, 28 Pole)
FPMTT375	Tru-Turn 3-3/4-inch P-51 Style Spinner
FPZB42006S40	Potenza 6S 4200mAh 40C Li-Po Battery
FPZBR13002S25	Potenza 2S 1300mAh 25C Li-Po Receiver Battery
FPZDS22209	Potenza DS22209HV Digital Servo
FPZA0001	Potenza 25T 1.25-inch Single Servo Arm
FPZA0003	Potenza 25T 1.75-inch Single Servo Arm
FPZA0004	Potenza 25T 1.5-inch (Radius) Double Servo Arm
FPMPFC2008	Falcon 20x8 Carbon Fiber Propeller
FPZMC0080	Potenza C80 80W Charger
FPZA1010	Potenza Multi-Function Digital Battery Analyzer
FPMA0001A	Flex Innovations Hat - White

ENJOY YOUR **YAK54**

The Original



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

The 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 CLAIMS 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 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

Contact Us By:

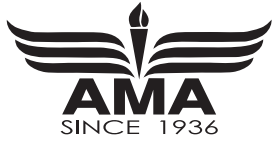
E-Mail - support@flexinnovations.com
Phone - 1 (866) 310-3539

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 need 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 any warranty conditions have been met, your Product will be replaced free of charge. Shipping charges are as follows: to Flex by customer, Flex out 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, 2017

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.

1. Model aircraft will not be flown:
 - (a) In a careless or reckless manner.
 - (b) At a location where model aircraft activities are prohibited.
2. Model aircraft pilots will:
 - (a) Yield the right of way to all human-carrying aircraft.
 - (b) See and avoid all aircraft and a spotter must be used when appropriate. (AMA Document #540-D.)
 - (c) Not fly higher than approximately 400 feet above ground level within three (3) miles of an airport without notifying the airport operator.
 - (d) Not interfere with operations and traffic patterns at any airport, heliport or seaplane base except where there is a mixed use agreement.
 - (e) Not exceed a takeoff weight, including fuel, of 55 pounds unless in compliance with the AMA Large Model Airplane program. (AMA Document 520-A.)
 - (f) 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.)
 - (g) Not operate aircraft with metal-blade propellers or with gaseous boosts except for helicopters operated under the provisions of AMA Document #555.
 - (h) 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.
 - (i) 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.)
- (j) Not operate a turbine-powered aircraft, unless in compliance with the AMA turbine regulations. (AMA Document #510-A.)

3. Model aircraft will not be flown in AMA sanctioned events, air shows, or model demonstrations unless:
 - (a) The aircraft, control system and pilot skills have successfully demonstrated all maneuvers intended or anticipated prior to the specific event.
 - (b) An inexperienced pilot is assisted by an experienced pilot.
4. 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)

1. All pilots shall avoid flying directly over unprotected people, vessels, vehicles or structures and shall avoid endangerment of life and property of others.
2. 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.
3. At all flying sites a safety line(s) must be established in front of which all flying takes place. (AMA Document #706)
 - (a) Only personnel associated with flying the model aircraft are allowed at or in front of the safety line.
 - (b) At airshows or demonstrations, a straight safety line must be established.

- (c) An area away from the safety line must be maintained for spectators.
- (d) Intentional flying behind the safety line is prohibited.
4. 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.
5. 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.)
6. 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.
7. 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.
8. 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.
9. 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

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

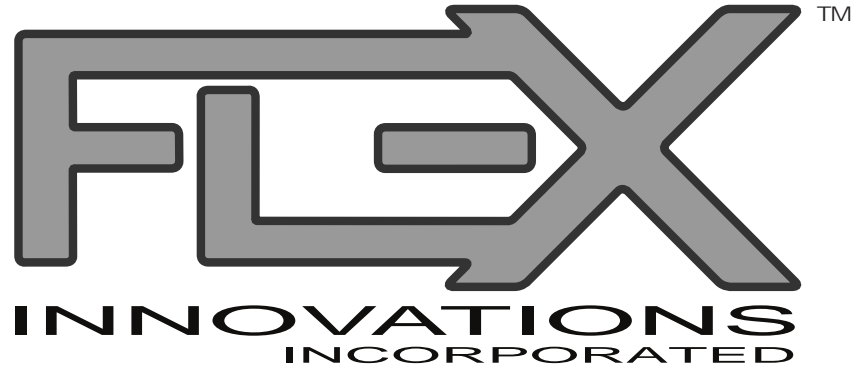
D. CONTROL LINE

1. The complete control system (including the safety thong where applicable) must have an inspection and pull test prior to flying.
2. The pull test will be in accordance with the current Competition Regulations for the applicable model aircraft category.
3. Model aircraft not fitting a specific category shall use those pull-test requirements as indicated for Control Line Precision Aerobatics.
4. 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.
- 5.

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.

Academy of Model Aeronautics
5161 East Memorial Drive
Muncie, IN 47302-9252
Toll Free (800) 435-9262
Fax (765) 741-0057

www.modelaircraft.org



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