EXTRA 300 60E PRO

JASE "THE ACE" Dussia

ARF and Super PNP

FLEX INNOVATIONS™

www.flexinnovations.com

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https://www.flexinnovations.com/product/extra-300-60e-pro
https://wiki.flexinnovations.com/wiki/Aura

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INTRODUCTION

Congratulations on the selection of your new Extra 300 60E Pro!

The Extra 300 has been one of the most recognizable aerobatic aircraft worldwide for 30+ years. Produced by Extra Aircraft, the 300 model has won numerous aerobatic competitions over the years and has participated in countless air shows being flown by some of the most renown pilots. The striking outline and appearance of the Extra 300 makes it a favorite among both RC and full-scale pilots and enthusiasts.

Designed by Jase "The Ace" Dussia, the Flex Innovations Extra 300 60E Pro packs an abundance of all-around performance into one single airframe. With easy and predictable post-stall tendencies, the Extra 300 60E Pro is dependable in all attitudes. In addition to pin-point accurate precision and tracking, the Extra boasts tremendous amounts of tail authority and a high-speed roll rate only previously seen with flat foamies. The Extra 300 60E Pro showcases two phenomenal Clint Sweet designed color liveries.

The Extra 300 60E Pro is the second offering in the Flex Pro series of balsa aircraft. The PNP edition features a robust and potent Dualsky power setup with a 16x7E carbon fiber propeller, the Flex 18007HV servos, and much more. Both the ARF and PNP versions feature the Flex Speed-Lock system, pre-hinged and sealed control surfaces, fiberglass baffling, removable rudder, and more! Experience reliable all-around performance and iconic design of the Extra 300, now perfectly captured in the Flex Innovations Extra 300 60E Pro!

For the latest updates, features, addendums and more, before assembly, please visit:

https://www.flexinnovations.com/product/extra-300-60e-pro

Specifications

- **Wingspan:**
  60 in (1525mm)

- **Length:**
  62in (1575mm)

- **Weight:**
  6.5lbs (2950g)
  with 4200 6s 45C

RECOMMENDED EQUIPMENT

These are included and installed in the Super PNP version

- **Motor:** DualSky XM5050EA 530KV Motor

- **Propeller:** Flex 16x7 Carbon Fiber 2 Blade Prop

- **ESC:** Hobby Wing 100A Skywalker 100A V2

- **Servos:** (4) Potenza DS18007HV servos

- **Servo Arm:** (4) FPZA0005B Aluminum Servo Arm 1.5" Clamping (25T)

- **Servo extensions:** (2) FPZA1047 Flex 24in (610mm) Heavy Duty Servo Extension (2) FPZA1042 Flex 3in (110mm) Heavy Duty Servo Extension

- **Stabilization:** Flex Aura 8 (Optional for the ARF version)

REQUIRED TO COMPLETE

For both versions

- **Transmitter:** Minimum 7 channel

- **Receiver:**
  If using the Flex Aura 8 a serial capable receiver to match your transmitter, e.g. Spektrum 4651T or Futaba R2001SB
  If not using Flex Aura 8 a 6 channel receiver to match your transmitter

- **Flight Pack:** 3500mAh - 4200mAh 6S 22.2V 40C+ LiPo (FPZB42006s40 recommended)

REPLACEMENT PARTS LISTING

	FPM2600A	Extra 300 60E Pro ARF+ Red
	FPM2600B	Extra 300 60E Pro ARF+ Blue
	FPM2650A	Extra 300 60E Pro SUPER PNP Red
	FPM2650B	Extra 300 60E Pro SUPER PNP Blue
	FPM2601A	Extra 300 60E Pro Fuselage Red
	FPM2602LA	Extra 300 60E Pro Left Wing Red
	FPM2602RA	Extra 300 60E Pro Right Wing Red
	FPM2603A	Extra 300 60E Pro Horizontal Stab and Elevators Red
	FPM2604A	Extra 300 60E Pro Rudder Red
	FPM2605A	Extra 300 60E Pro Cowling with Baffling Red
	FPM2606A	Extra 300 60E Pro Canopy with Cockpit Red
	FPM2607A	Extra 300 60E Pro Landing Gear (Painted White) for Red Scheme
	FPM2608A	Extra 300 60E Pro Wheel Pants Red
	FPM2614A	Extra 300 60E Pro Decal Set Red
	FPM2615A	Extra 300 60E Pro SFGs with Hardware & Spacers Red
	FPM2617A	Extra 300 60E Pro Landing Gear Cuffs (Painted White) for Red Scheme
	FPM2618A	Extra 300 60E Pro Pilot Figure Red
	FPM2601B	Extra 300 60E Pro Fuselage Blue
	FPM2602LB	Extra 300 60E Pro Left Wing Blue
	FPM2602RB	Extra 300 60E Pro Right Wing Blue
	FPM2603B	Extra 300 60E Pro Horizontal Stab and Elevators Blue
	FPM2604B	Extra 300 60E Pro Rudder Blue
	FPM2605B	Extra 300 60E Pro Cowling with Baffling Blue
	FPM2606B	Extra 300 60E Pro Canopy with Cockpit Blue
	FPM2607B	Extra 300 60E Pro Landing Gear (Painted Silver) for Blue Scheme
	FPM2608B	Extra 300 60E Pro Wheel Pants Blue
	FPM2614B	Extra 300 60E Pro Decal Set Blue
	FPM2615B	Extra 300 60E Pro SFGs with Hardware & Spacers Blue
	FPM2617B	Extra 300 60E Pro Landing Gear Cuffs (Painted Silver) for Blue Scheme
	FPM2618B	Extra 300 60E Pro Pilot Figure Blue

REPLACEMENT PARTS LISTING (CONT.)

FPM2609	Extra 300 60E Pro Wing Tube
FPM2610	Extra 300 60E Pro Tailwheel with Hardware
FPM2611	Extra 300 60E Pro Wheel and Axle Set
FPM2612	Extra 300 60E Pro Pushrod & Linkage Set
FPM2613	Extra 300 60E Pro Hardware Set
FPM2619	Extra 300 60E Pro Rudder Wire
FPM2620	Extra 300 60E Pro Motorbox Kit
FPZA1053	Flex Speed-Lock
FPZDS18007HV	Potenza DS18007BLHV HV Coreless Servo
FPZDS18007HVGEAR	Potenza DS18007HV Gear Set
FPZDS18007HVCASE	Potenza DS18007HV Top Case w/ Bearing
FPZA0005B	Aluminum Servo Arm 1.5" Clamping (25T)
HW100ESC-HV	HobbyWing 100A V2 ESC w/ 7.4/8A BEC
XM5050EA-V3	Flex/DualSky XM5050EA 530KV Motor
FPMPF1607CF	Flex 16x7 Carbon Fiber 2 Blade Prop
FPZA1047	24" Servo Extension (Rudder and Elevator)
FPZA1042	3" Servo Extension (Ailerons)

OPTIONAL ITEMS

FPZB42006S40	Potenza 6S 4200mAh 40C LiPo Battery
FPZB35006S40	Potenza 6S 3500mAh 40C LiPo Battery
FPM337022	PREMIUM WING BAG – QQ CAP 232 & VENTIQUE 60E
SPMXC2000	Spektrum Smart S2100 G2 AC Charger 2X100W
SPMXBC100	Spektrum XBC100 Smart Lipo Battery Checker
SPMR8200	Spektrum NX8 Transmitter Only
SPM4651T	DSMX SRXL2 Serial Telemetry Receiver
FUTT6K	Futaba T6K Transmitter with R3006SB Rx Mode 2
FUTR2001SB	Futaba R2001SB SFHSS S-Bus
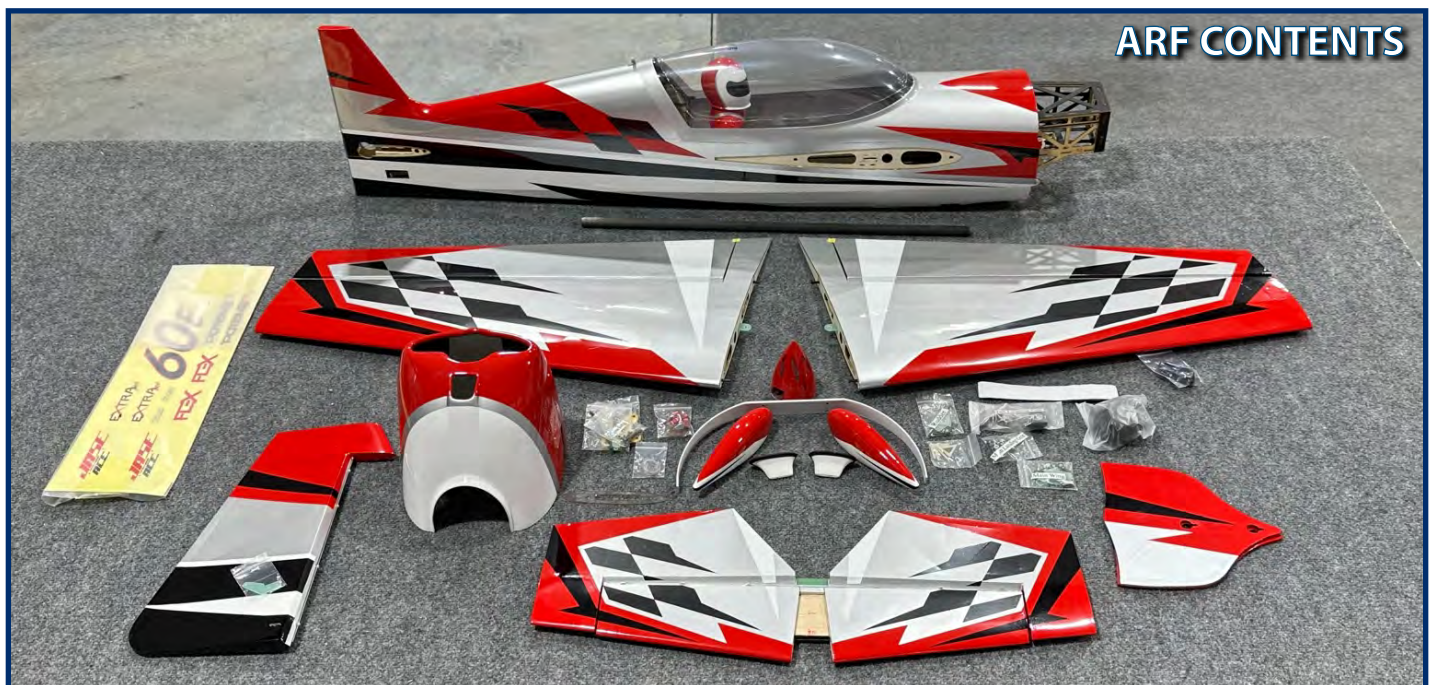
ARF CONTENTS

BEFORE YOU BEGIN

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.

⚠ WARNING

AGES 14+

This is NOT a toy! This product is not intended for use by children under 14 years of age without direct adult supervision.

ATTENTION

Read the ENTIRE instruction manual to become familiar with the features and assembly 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, LLC. For up-to-date product literature, please visit our website at www.flexinnovations.com and click on the Extra 300 60E Pro and Aura 8 product pages.

NOTICE

Do not use thread locker when attaching plastic parts, the parts will soften and fail.

NOTICE

The assembly of the Extra 300 60E Pro can be accomplished in a few hours. Prior to assembling the airplane, it is advisable to charge your battery so that you are ready to begin radio setup upon completion of the assembly of your model.

IMPORTANT INFORMATION REGARDING WARRANTY

Please read our *Warranty and Liability Limitations* section before building this product. If you as the purchaser and/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 in the manual, prior to assembly, setup, or use, in order to operate correctly and avoid damage or serious injury. In some cases, the written instructions may differ slightly from the photos. In those instances, the written instructions should be considered correct.

2. This model is not a toy, rather it is a sophisticated remote control 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.

SAFETY WARNINGS AND PRECAUTIONS (CONTINUED)

3. This model must be assembled according to these instructions. Do not alter or modify the model outside of these instructions provided by Flex Innovations, LLC, as doing so may render it unsafe and/or un-flyable. You must take time to build straight, true, and strong. It is your responsibility to ensure the air-worthiness of this product.

4. Use only compatible, appropriate components for the final assembly of this model. Ensure that the radio system is in functional condition, that the motor is appropriately sized for the model and that all other components are appropriate for use in this model as specified in this Extra 300 60E Pro Instruction manual. All components must be installed correctly so that they operate correctly both on the ground and in the air.

5. Inspect and check operation of the model and all its components before every flight.

6. 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.

7. 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.

IMPORTANT BEFORE ASSEMBLY

Carefully unpack your aircraft and inspect the parts. Review the manual and gather all the required tools and supplies.

- Remove all parts from their plastic bags, inventory all items and closely examine all the major airframe components for damage. If any items are missing or you find damaged components, do not proceed, please contact customer support.

- 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.

- Pro-Tip: You can use a "Seal-It Pen" to permanently seal any sharp edges or corners of covering that may come loose in flight.

- 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.

- 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

BATTERY CHARGING GUIDELINES

> ⚠️ **WARNING**
>
> **Follow all instructions provided by your battery and charger manufacturer. Failure to comply can result in fire.**

We recommend the use of an advanced LiPo balancing charger, such as the Spektrum Smart S2100 G2 AC 2X100W Charger for your batteries to get the maximum performance and lifespan from them.

Our airplanes are designed around our Potenza LiPo batteries, and we recommend the Potenza 6S 4200mAh 40C LiPo in the Extra 300 60E Pro based on our extensive testing and development. These batteries feature an EC5 connector, so no soldering is required for use in your Extra 300 60E Pro.

All are available online at www.flexinnovations.com and your local Flex Innovations retailer.

LOW VOLTAGE CUTOFF

LiPo batteries have a nominal (rated) voltage of 3.7v per cell, and fully charged, reach 4.2v per cell. Batteries are designed to be discharged below the nominal voltage, however, if they are discharged below 3.0v per cell, damage will occur and the pack will loose capacity. For best long term battery life, set a timer and land after a time that leaves approximately 15% of the battery's capacity remaining.

Low voltage cutoff is a feature that is built into the HobbyWing 100A V2 ESC that is designed to protect the connected battery from being discharged too far and causing permanent damage to the cells. Circuitry within the ESC will automatically detect when the input voltage from the battery pack reaches below 3.0V per cell (average) and will remove power to the motor, but still deliver power to the servos so that a safe landing may be made. If the motor begins to lose power rapidly during flight, the LVC has sensed that the total voltage of the pack has dropped below 3.0V per cell average, and the airplane should be landed immediately.

EXTRA 300
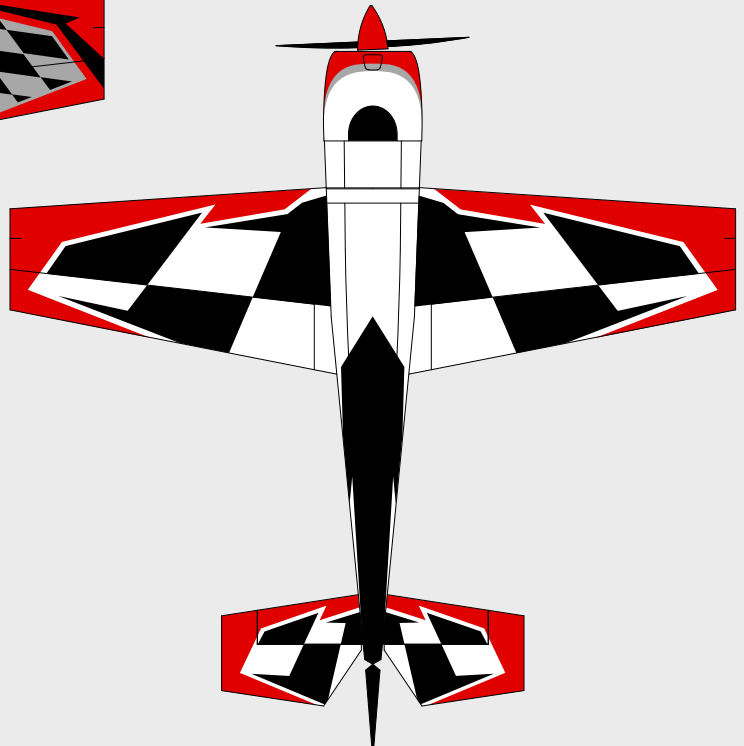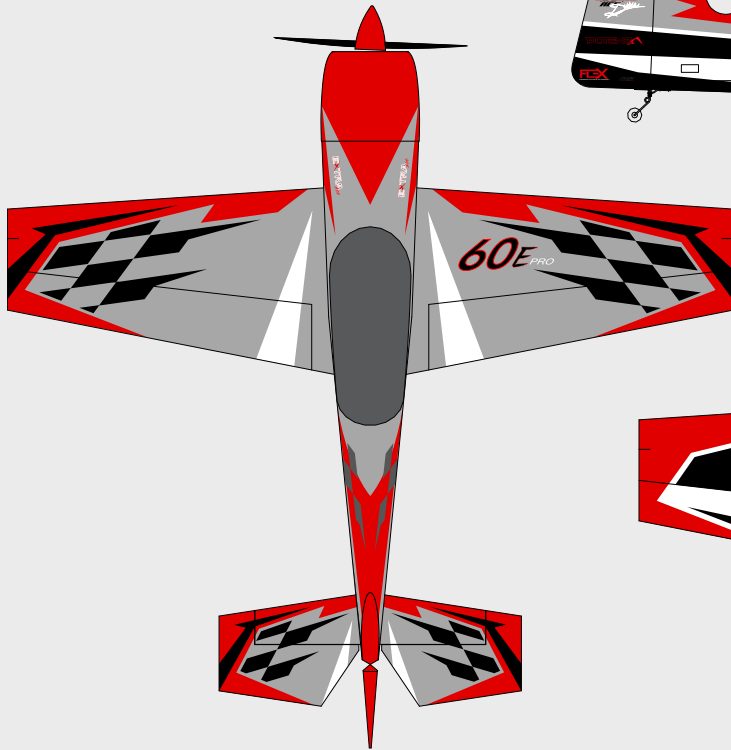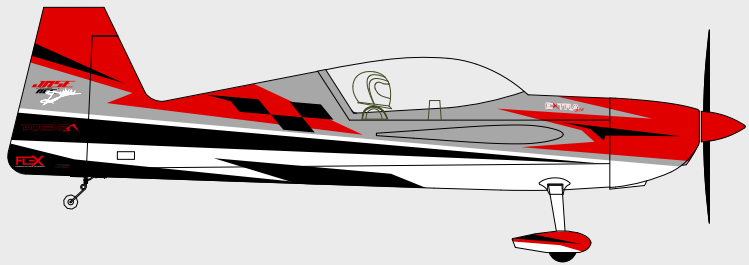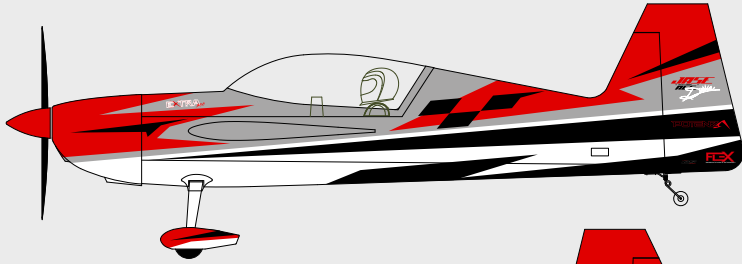
ORACOVER COLORS

TRUE RED HANU866   **WHITE** HANU870

SILVER HANU881   **BLACK** HANU874
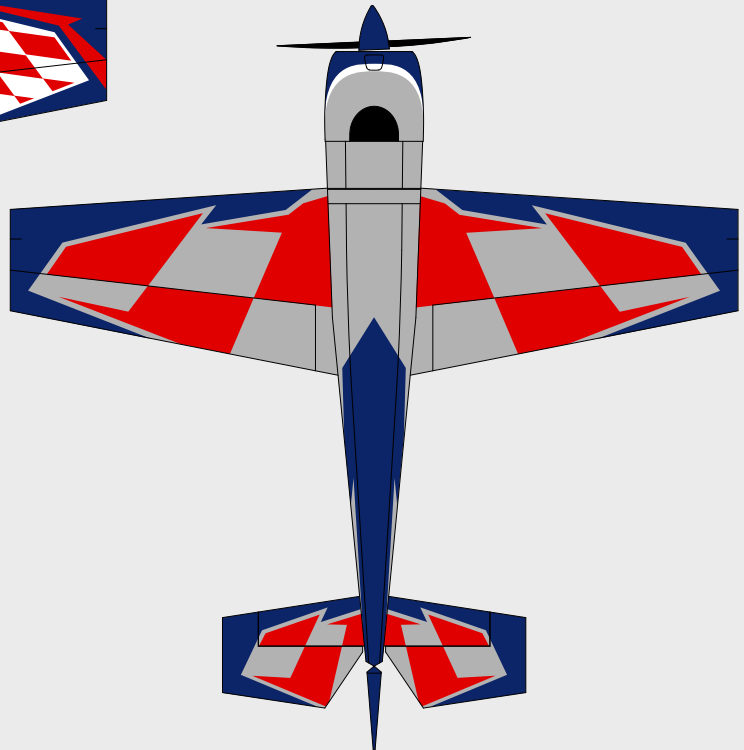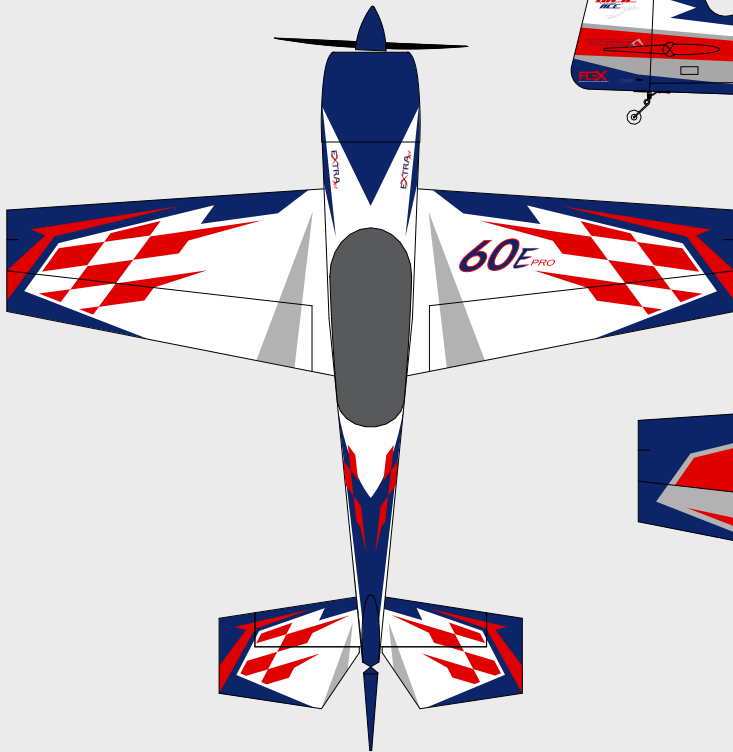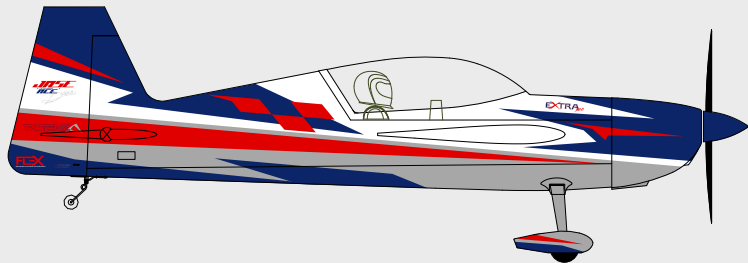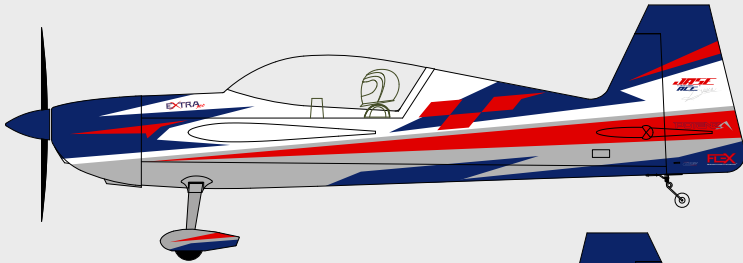
ORACOVER COLORS

■	**MIDNIGHT BLUE** HANU866		□	**WHITE** HANU870
■	**TRUE RED** HANU866			
■	**LIGHT GRAY** HANU882			

EXTRA 300

ARF
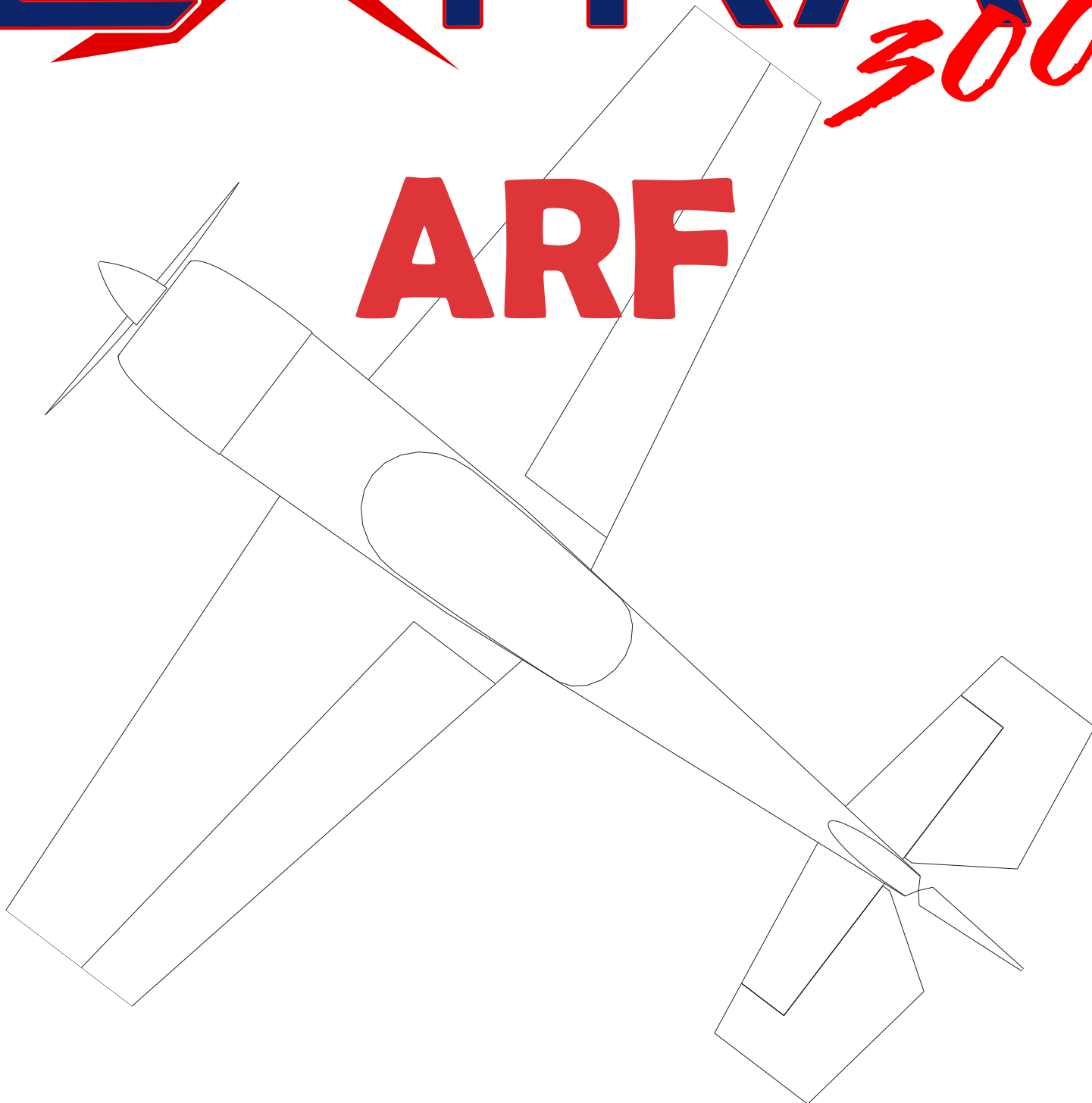
THIS SECTION CONTAINS ASSEMBLY INSTRUCTIONS FOR THE ALMOST READY TO FLY VERSION OF THE EXTRA 300 60E PRO

If you have the Super PNP version you can skip forward to the next section that starts on page 13.

CONTROL HORN INSTALLATION

Required Tools and Fasteners: Hobby Knife with a #11 blade   Isopropyl Alcohol
(2) Aileron Control Horns   30-Minute Epoxy
(1) Elevator Control Horn   Paper Towels
(1 or 2) Rudder Control Horns   Toothpicks

1. Start by uncovering the control horn slots for your desired installation using a hobby knife, the slots for the control horns are located as follows:
    Aileron: 200mm from the aileron root.
    Elevator: 25mm from the elevator root on the left hand side of the airplane (as seen by the pilot).
    Rudder: 25mm from the bottom of the rudder, for push-pull uncover only the slot on the right hand side of the airplane (as seen by the pilot).

2. Dry fit the control horns with the baseplate as shown in the picture below. Cut the covering around the base plate to provide a strong bonding surface between the base plate and the control surface.

3. Scuff the control horns and base plates, where they will be installed into the control surfaces, with some medium grit sandpaper. Use isopropyl alcohol and a paper towel to clean the control horn and base plate to remove any debris left over after scuffing.

4. Mix an adequate amount of 30-minute epoxy. Apply epoxy to the slot in the control surface (use a toothpick to get the adhesive in the slot) as well as the control horns. Install the control horn and check for proper alignment. Use isopropyl alcohol and a paper towel to clean up any excess epoxy before it cures. Let it sit until the epoxy cures.
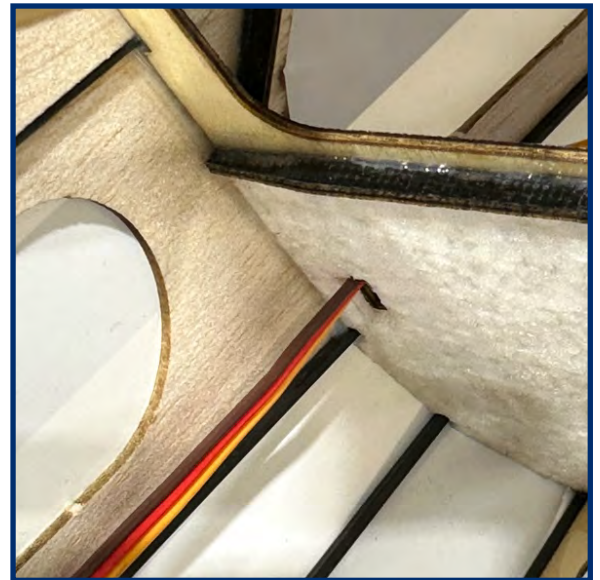
SERVO INSTALLATION

Required Tools and Fasteners: (4) Servos (Potenza DS18007HV recommended)
(2) 3" Aileron Servo Extensions   (2) 24" Rudder Servo Extension
(2) Servo Extension Safety Clips   Hobby Knife with a #11 blade
Mounting Hardware/tools as required by your servos

1. Locate the opening for the for the elevator on the left side of the fuselage and for the rudder servo on the right side of the fuselage (under the elevator).
2. Attach a 24" servo extension (FPZA1047 recommended) to your elevator servo and your rudder servo and secure them each with a servo extension safety clip (FPZA1040 recommended).

3. Mount the servos in their corresponding slot using the mounting hardware provided with your servos. The elevator servo goes in the left side of the fuselage and the rudder servo goes in the right side of the fuselage (as seen by the pilot when sitting in the cockpit). Ensure that the servo splines face the front of the airplane.

4. Route the servo leads through the fuselage as shown in the picture below right, slots are provided in the bulkheads to keep the leads organized.

5. Mount the aileron servos in their corresponding location in the wings using the mounting hardware provided with your servos. As you can see from the picture below left, the servo spline will face the leading edge of the wings.

6. Please note that the aileron servo extensions are not attached permanently to the aileron servos, they will be installed in the optional Aura 8 or in the receiver so that the ailerons can be disconnected when removing the wings.

SERVO INSTALLATION (CONTINUED)

7. Assemble the linkages for all the control surfaces. The following table gives the length of the push rods before installing the ball links and the linkage length after assembly is complete. The assembled length is measured from ball link center to ball link center. These linkage lengths give a good starting point for the installation but will be adjusted when we complete the final setup after the receiver and optional Aura 8 have been installed. To assemble the linkages, screw on the ball links to either end of the push rods. Both ends screw on with a clockwise motion (right hand thread), this ensures that the length of the linkage will not change when installed. Ensure that you get roughly the same number of turns on each ball link so that the linkage is secure on both sides. If necessary use pliers to stop the push rod from twisting and threading into the opposite ball link. Please note in the pictures on the previous page that the assembled elevator linkage ball links are parallel whereas the assembled rudder and aileron linkage ball links are perpendicular to each other.

	Push Rod Length	Assembled Linkage Length
Aileron, 2 needed	55mm	85mm
Elevator	80mm	110mm
Rudder	70mm	100mm

8. Do not install the linkages at this time, we will install them once the receiver and optional Aura 8 have been configured to ensure that the servos are appropriately centered.

MOTOR AND ESC INSTALLATION

Required Tools and Fasteners:

(QTY 4)   (QTY 4)
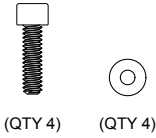
Motor (DualSky XM5050EA 530KV Recommended)
ESC (Hobby Wing 100A Skywalker 100A V2 Recommended)
Plywood Motor Spacer   Motor hardware provided with your motor
(4) M4X20 Socket Head Hex Bolts   (4) M4 Washers
2.5mm Hex Driver   Blue Thread Locker
Cable Ties

1. Install the X-Brace on the rear of the motor using the hardware supplied with your motor, use thread locker on the screws. Install the prop adapter on the front of the motor using the hardware supplied with your motor, use thread locker on the screws. If you are using the recommended motor it is pre-coated with thread locker on these bolts from the factory.

2. If you are using the recommended motor, the provided plywood spacer will provide the correct clearance between the cowling and the spinner. If you are using a different motor you will have to determine the correct spacing for the motor by using the cowling and testing the installation.
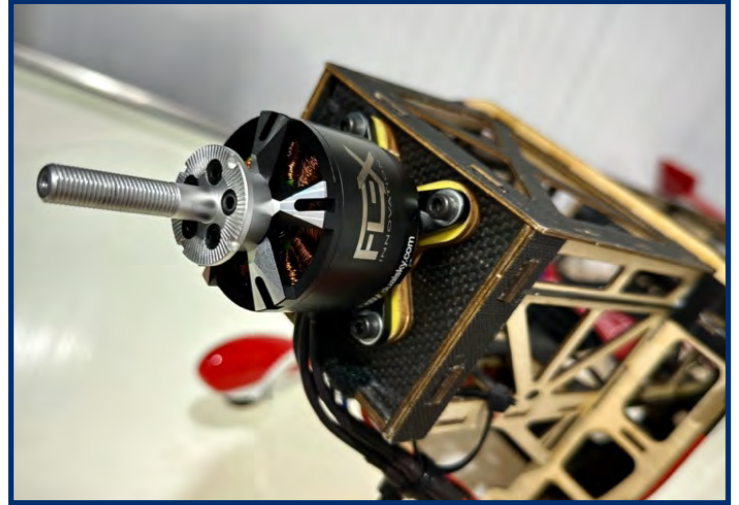
3. Use the M4X20 socket head hex bolts with thread locker and the M4 washers to mount the motor to the motor box with the wires facing down as shown in the picture below.

4. Install the ESC on the underside of the motor box in between the provided mounting brackets using cable ties as shown in the picture below. Additionally, it is recommended to apply heat shrink (provided with motor) at the motor/ESC wire bullet connectors. Make sure the motor is spinning in the proper direction (clockwise as seen by the pilot in the cockpit) before any heat shrink is applied. If the motor is not spinning in the correct direction, swap any two of the bullet connections. You can then secure the wires to the motor box using cable tied as shown.
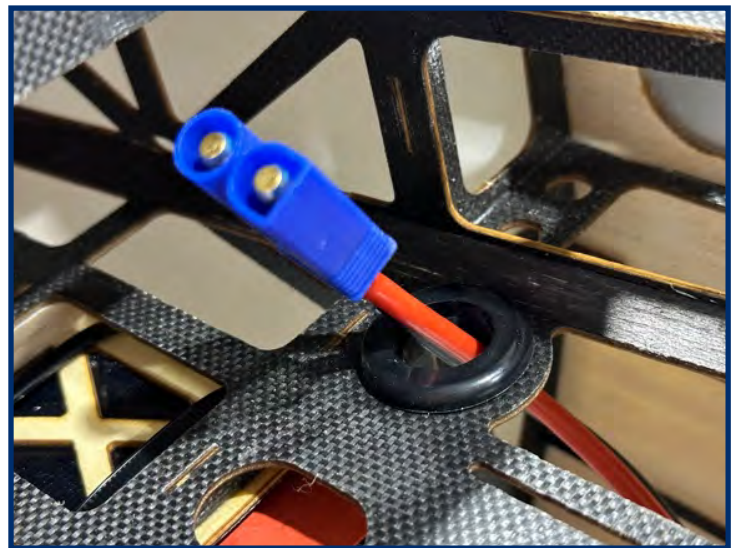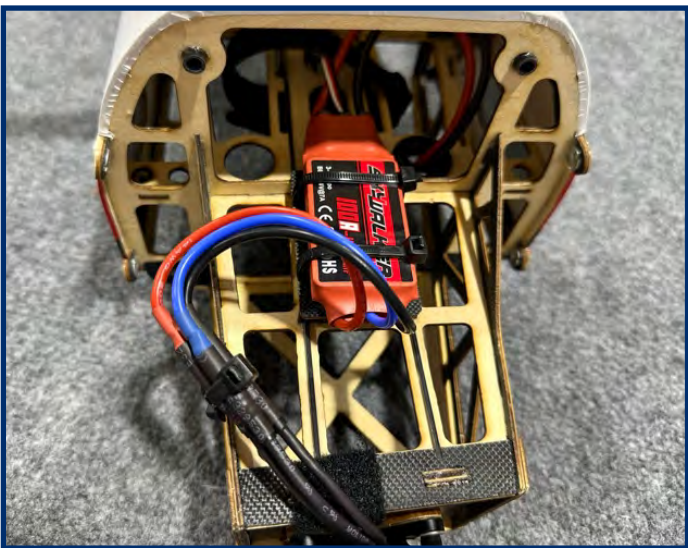
5. The picture to the right shows the battery connector secured through the fuselage opening with the use of the supplied rubber grommet

EXTRA 300

ARF & Super PNP

**THIS SECTION CONTAINS ASSEMBLY INSTRUCTIONS FOR BOTH VERSIONS OF THE EXTRA 300 60E PRO**

Note - The Flex Aura 8 is supplied with the Super PNP, however, it is optional with the ARF. The remainder of the manual assumes that you are using a Flex Aura 8 but if you are not just ignore the sections pertaining to it. Instead proceed with your receiver of choice, we will provide the necessary information for that setup as well.

HORIZONTAL STABILIZER INSTALLATION

Required Tools and Fasteners: 30-Minute Epoxy or thin/medium CA   Isopropyl Alcohol
Paper Towels

1. Remove the horizontal stabilizer filler piece from the rear of the fuselage.

2. Dry fit the horizontal stabilizer to ensure that you have a good understanding of how it will fit before you bond it in place. Ensure that it seats properly, all the way forward. The horizontal stabilizer is self-aligning and will be square as long as it is seated correctly. Check all the mating surfaces so that you know where to place your adhesive when you bond it in place.

3. Mix an adequate amount of 30-minute epoxy. Apply thin layer epoxy to the mating surfaces on both the fuselage and the horizontal stabilizer. Do not apply an excessive amount of adhesive as that will make the clean-up very difficult. Once again, ensure that the horizontal stabilizer is properly seated. Use isopropyl alcohol and a paper towel to clean up any excess epoxy before it cures. You can also use a combination of thin and medium CA to install the horizontal stab. For this process, use thin CA on all four seams first. Then, do the same with medium CA. Use isopropyl alcohol to clean any excess adhesive.
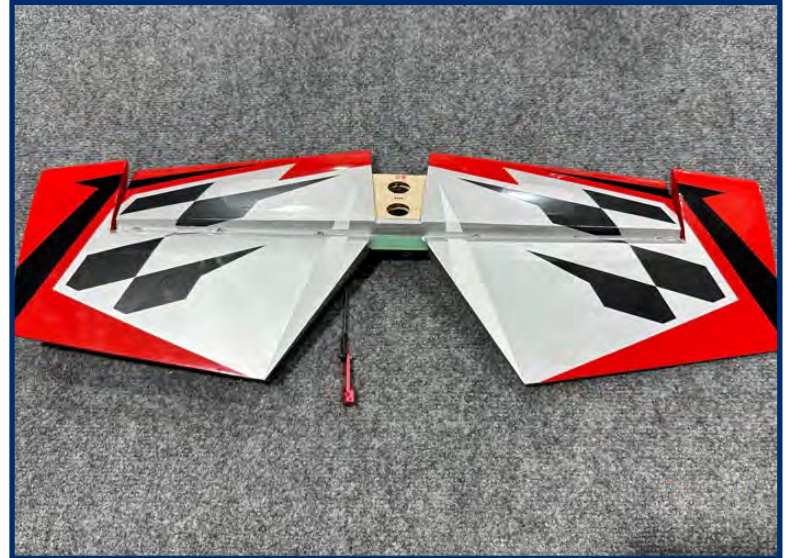

4. While the horizontal stab adhesive is curing, use any excess epoxy or medium CA to bond the filler piece at the fuselage rear that sits behind the elevator. Set the fuselage aside until the adhesive cures fully.

RUDDER AND TAIL WHEEL INSTALLATION

Required Tools and Fasteners:

(QTY 2)   (QTY 1)

Rudder Hinge Piano Wire
(2) M2X12 Flanged Self-tapping Screws
#1 Phillips Screwdriver

Tail Wheel Assembly
(1) M2X12 Self-tapping Screw
Thin CA adhesive
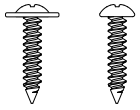
1. Place the rudder in position, ensure that the hinge halves line-up and that the bottom of the rudder is flush with the fuselage. Insert the rudder hinge piano wire, starting from the bottom of the fuselage, through all 4 of the rudder half hinges. Once in place the rudder hinge pin will be held in place by the tail wheel assembly.

2. Locate the positions of the pre-drilled holes for the tail wheel mounting screws under the covering. The two main screws which attach to the carbon-fiber bracket to the fuselage will approximately be 20mm and 40mm away from the hinge pin. The screw for the tail wheel steering arm will be located on the rudder, 15mm away from the hinge pin. Punch a small hole through the covering and use a #1 Phillips screwdriver to drive the screws into these locations to form the threads in the wood. Remove the screws and wick some thin CA into the wood and the formed threads to strengthen this area. Wait for the glue to cure.

3. Install the tail wheel assembly using the two flanged self-tapping M2 screws to hold the carbon-fiber bracket to the fuselage. Once in place use the standard self-tapping M2 screw for the steering arm. This screw needs to be driven so that it allows a little space for the bracket to slide back and forth on the screw as the rudder rotates. **DO NOT TIGHTEN THIS SCREW COMPLETELY AS THIS WILL DAMAGE EITHER THE RUDDER OR THE TAIL WHEEL ASSEMBLY AS THE RUDDER ROTATES.**
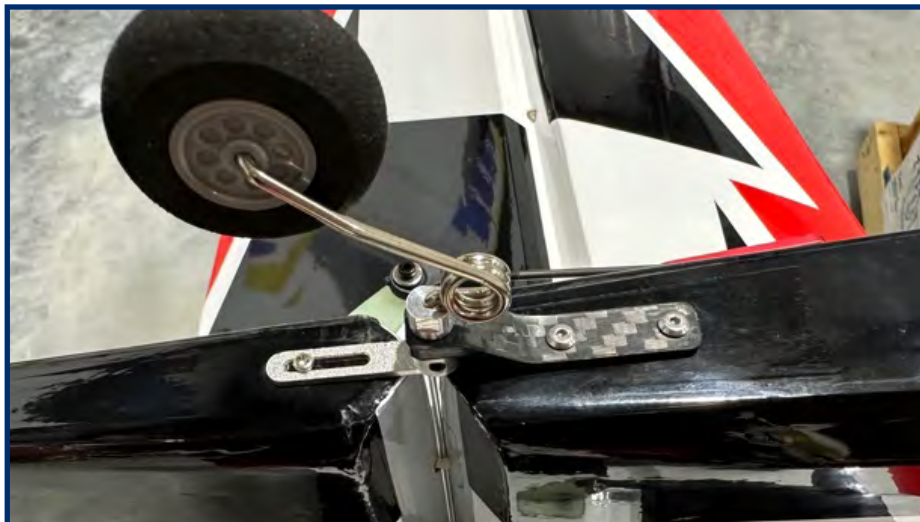
MAIN LANDING GEAR INSTALLATION

Required Tools and Fasteners:
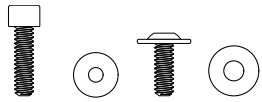
(QTY 4) (QTY 4) (QTY 2) (QTY 6)

(4) M3X20 Socket Head Hex Bolts
(6) 4mm Washers
2.5mm Hex Driver
1.5mm Hex Driver
7mm Wrench

(4) M3 Flat Washers
(2) M3X15 Hex Bolts
2mm Hex Driver
10mm Wrench
Silicon or goop style adhesive
Blue Thread Locker

1. Locate the landing gear and hardware along with the wheel pants, wheels, axles, collars, and landing gear cuffs.

2. Mount the landing gear onto the fuselage using four M3X20 socket head hex bolts, four M3 flat washers, thread locker and a 2.5mm hex driver. Note the landing gear has a slight forward sweep.

3. Orient the landing gear cuffs as shown. To mount the cuffs, hold them up to the fuselage and apply a piece of masking tape to mark the bottom line. Remove the cuff and apply a bead of adhesive just above the tape on both sides of the landing gear. We recommend marine grade Goop. Slide the cuff back into place and tape to the fuselage. Allow approx. 24 hours of cure time.

4. Install the wheels and tires onto the axle and locking them in place with the provided wheel collets. Remove the collet set screws from the collet, add blue thread locker and re-install it using a 1.5mm hex driver. Align the set screw with the flat spot on the axle.

5. Place the threaded side of the wheel axle into the landing gear. Place the wheel pants between the wheel and the landing gear over the axle. Slide a washer and thread the lock nut onto the axle and tighten. This process should help clamp the wheel pant in place. Make sure the wheel pant is on a proper angle before fully tightening.


6. To completely secure the wheel pant, apply the self-tapping screw into the smaller top hole of the landing gear through the wheel pant. .

WING INSTALLATION

Required Tools and Fasteners: None!

1. The Extra 300 60E Pro feature tool-less and screw-less field assembly. This is accomplished using the Flex Speed-lock technology.

2. Insert the wing tube into the fuselage and center it.

3. Unlock the Flex Speed-lock wing locks. Do this by pulling out on the knob (towards the center of the fuselage) and then slide the knob upwards until it stop, this is the raised/unlocked position as shown in the picture below. Notice that when the Flex Speed-lock is unlocked the plastic tube will protrude past the top of the fuselage.
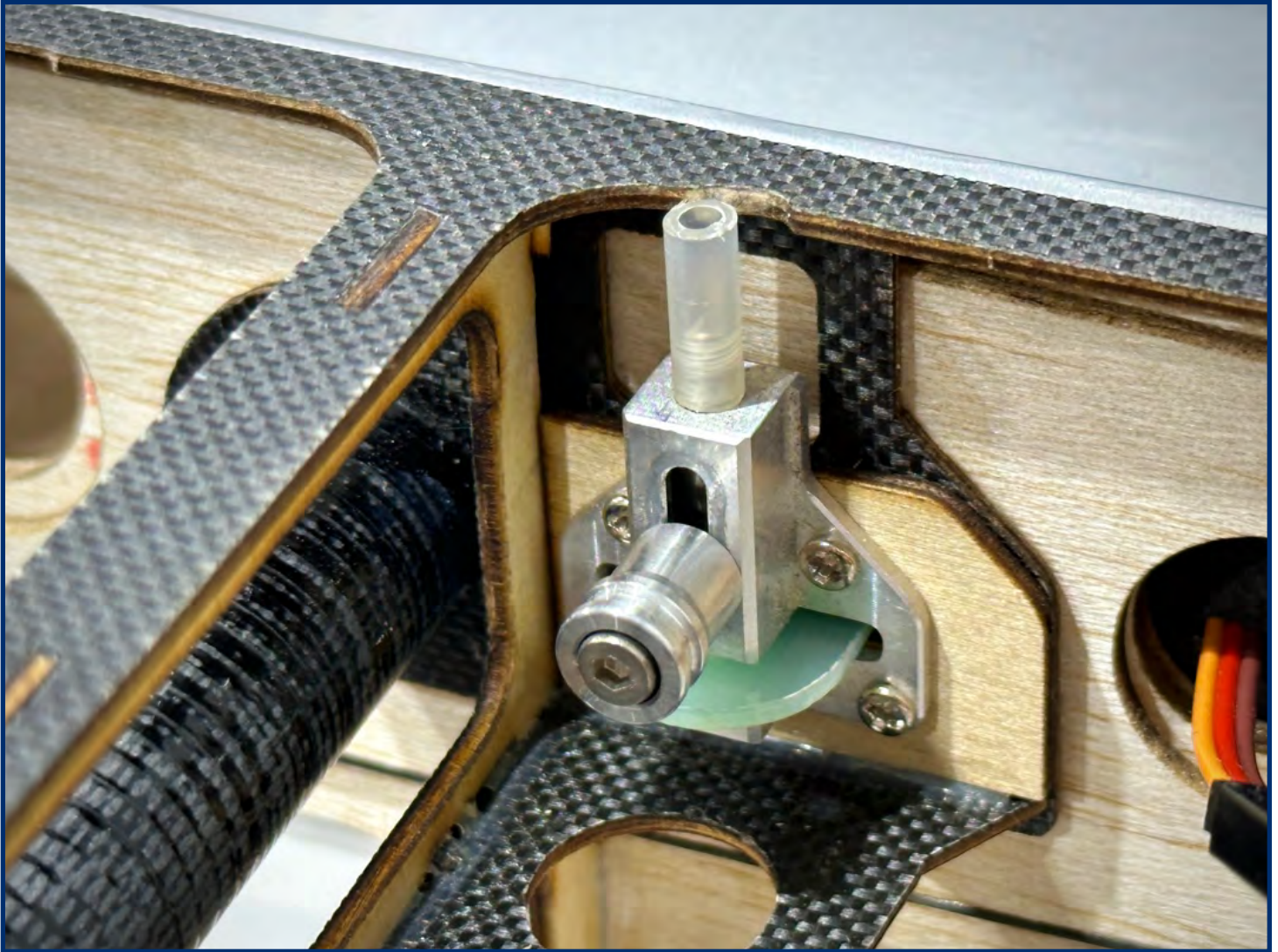
4. Slide a wing panel onto the wing tube, feeding the aileron servo wire into the fuselage. Once the wing is completely seated push on the plastic extension tube to latch the Flex Speed-lock and lock the wing in place. Repeat for the other wing panel.

5. Connect the aileron servos to the servo extensions coming out of the optional Flex Aura 8 or your receiver.

NOTICE

When operating the Flex Speed-lock only use the knob to un-lock the the wing. To lock the wing always press on the top of the plastic extension tube until you hear the Flex Speed-lock latch (click). This will guarantee that the Flex Speed-lock latches in place properly, if you push down on the knob you may inadvertently leave the knob in an unlatched state that could allow it to come undone accidentally.

The extension tubes of the Flex Speed-lock protrude above the edge of the frame when in the un-locked position as shown in the picture above, this is by design. When the Flex Speed-lock is latched the top of the plastic extension tube will be flush with the top of the fuselage, this provide visual confirmation and will ensure that the canopy can't be installed unless the wings are locked into place.

AURA 8 AFCS

The Aura 8 AFCS (Advanced Flight Control System) comes pre-programmed and pre-installed in your Extra 300 60E Pro Super PNP, making setup a breeze. The Aura 8 is also available for installation in your Extra 300 60E Pro ARF. If you choose to install the Aura 8 in your ARF you can use the Aura Config Tool Wizard to load the Extra 300 60E Pro config file onto the Aura 8 to achieve the same configuration as the Super PNP. On the ARF, install the Aura 8 with the provided mounting pad and the servo ports facing the rear of the aircraft. It is also recommended that you use a small hook and loop strap to further secure it once all connections are made.

This highly-refined 3-axis gyro makes the Extra 300 60E Pro fly like it is a larger aircraft and in less wind. Thanks to the Aura's advanced implementation, it not only enhances the flying experience, but it never interferes with the pilot's control.

The Aura 8 AFCS comes configured with Flight Modes (dual rates, expos and gyro settings) set by the Flex Innovations team, and offers a great starting point for most pilots. **Since these are already configured for you in the Aura, there is no need to set up dual rates or expos in your transmitter**. Simply follow the Transmitter Configuration Guide in this manual for complete details on the transmitter programming required for the Extra 300 60E Pro and Aura 8 AFCS.

Visit **wiki.flexinnovations.com/wiki/Aura** for the latest Aura-related product information and updates.

The following shows the pre-configured Aura flight modes in the Extra 300 60E Pro Super PNP.

Extra 300 60E Pro Aura Profile

Flight Mode 1: Sport

- For general flight, high speed aerobatics or test flights
- Rates are low and expos tuned for comfortable flight.
- Gyro gain[1] is set to low.

Flight Mode 2: XA

- For Extreme Aerobatics flight.
- Rates are set very high and expos tuned for aggressive, high speed flight.
- Gyro gain[1] is set to low.

Flight Mode 3: 3D

- For slow speed 3D flight.
- Rates are set to maximum and expos are tuned for 3D flight.
- Gyro gain[1] is set to moderately high.
- **Gyro oscillation[2] will occur at mid to high speeds. Do NOT fly at mid to high speeds in this Flight Mode.**

NOTE - Gyro can be disabled in any flight mode using the Gyro Gain Kill switch assigned to Channel 7 (see table on next page).

NOTE - Rudder stick movement will also move the ailerons and elevator. This is NORMAL and is the pre-programmed mixing.

Each of the modes has been tuned by our team to offer a solid start. Because tastes in control feel are unique, if changes in rate, expo or gains are needed, adjustments can be made through Aura. We highly recommend that you do not change any of these in your transmitter.

[1] Gain: The amount of correction the gyro applies. The higher the gain, the more correction the gyro applies.
[2] Oscillation: Rapid and repeating movements back and forth, often extreme.

AURA 8 SERVO CONNECTIONS

DEFAULT AURA CONNECTIONS

S1 – Throttle
S2 – Left Aileron
S3 – Right Aileron
S4 – Elevator
S5 – Rudder
S6 – Empty
S7 – Empty
S8 – Empty

Port B – Serial Receiver Input

Mini Port A&B – Remote Receiver Inputs

Mini Port A   Mini Port B

A   B   TLM

POTENZA™
Aura 8™

USB

S1 S2 S3 S4 S5 S6 S7 S8 - + ⊓   B

Micro USB Port

Port B
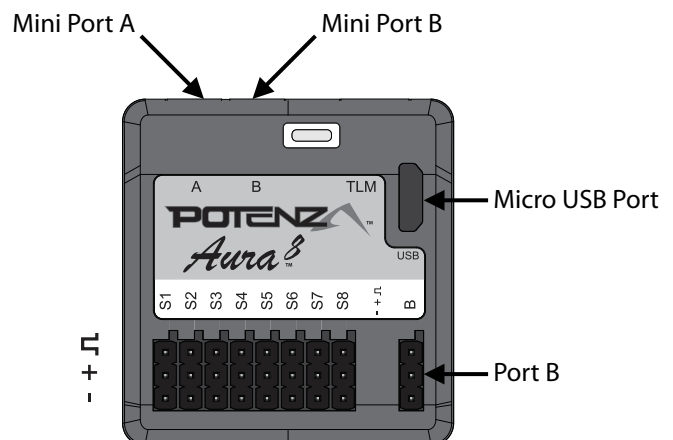
TRANSMITTER SETUP

If you do not plan on using an Aura 8 on your Extra 300 60E Pro ARF you will need to configure your transmitter and install your receiver as directed by the instructions provided with these. You can find the recommended controls throws and rates for this on page 23 of this manual. If you are using this setup you can skip this page and the next one as they pertain specifically to the Aura 8 configuration.

The Aura 8 is designed to work seamlessly with all popular transmitter and receiver brands, however, transmitter setup is significantly different than when setting up a model without Aura. Follow these steps:

1. Start with a new model memory in your transmitter. Reset it to be certain it is set to defaults.
2. Adjust your transmitter settings according to the Transmitter Configuration Guide below.
3. **Make ONLY the changes shown in the Transmitter Configuration Guide.** No other changes are required.

Transmitter Configuration Guide

	Spektrum, Futaba, JR [1] & Graupner	FrSky	Jeti (EX-Bus)
Wing/Tail Type	1 Aileron, 1 Elevator, 1 Rudder	1 Aileron, 1 Elevator, 1 Rudder	1 Aileron, 1 Elevator, 1 Rudder
End Points (Travel Adjust or ATV)	Ail/Ele/Rud – 125%	Ail/Ele/Rud – 100%	Aileron/Ele/Rud – 100%
	Thro/CH5/CH6 – 100%	Thro/CH5/CH6 – 84%	Thro/CH5/CH6 – 80%
Reversing [2]	Not Allowed		
Sub-Trim	Verify at Zero, NOT ALLOWED		
Trim Levers	Verify at Zero		
CH5 (Gear) – Flight Mode	Assign to a 3 Position Switch		
CH6 (Aux 1) – Unused	N/A		
CH7 (Aux 2) – Gyro Gain Kill [3]	Assign to a 2 Position Switch		
First Flight Timer [4]	For your first flight, set to 4:00		

1 JR customers should use JR XBUS Mode A, and follow the chart above. This is the preferred JR DMSS connection to Aura.

2 If you are using a Futaba transmitter, please note that some Futaba transmitters have the throttle set to reversed by default. We recommend that you leave the reversing set to the defaults and reverse it if needed after testing. **NOTE: do all throttle testing with the prop removed!**

3 The default Aura program has Gyro Gain Kill disabled, please see the section of this manual titled **Extra 300 60E Pro Aura Optional Features Configuration** on page 26 to enable Gyro Gain Kill.

4 This time is a safe starting point for most pilots. This aircraft can typically fly anywhere between 4 to 6 minutes (with 6S 4200mAh LiPo), depending on an individual's flying style.

FOR CUSTOMERS USING TRANSMITTERS OTHER THAN WHAT IS LISTED IN THE CHART ABOVE, PLEASE VISIT OUR WIKI PAGE FOR INSTRUCTIONS SPECIFIC TO YOUR TRANSMITTER AND RECEIVER BRAND

https://wiki.flexinnovations.com/wiki/Aura

## RECEIVER INSTALLATION FOR AURA 8

Choosing a Receiver

Aura will auto-detect modern serial receiver connections. For use in the Extra 300 60E Pro, only a serial receiver connection or two Spektrum Remote Receivers can be used. Below are a few examples of serial receivers that can be used with the Aura 8. This is not a complete list of compatible receivers, rather a short list to assist in your receiver selection.

Spektrum SRXL – SPMAR6610T, SPMAR8020T, SPMAR10100T
Spektrum SRXL2 – SPM4651T, SPM4650
Futaba S.Bus – Futaba R7008SB, R2001SB, R6202SBW
Hitec S.Bus – Optima SL, Maxima SL
FrSky S.Bus – RX4R, RX6R
Graupner HoTT (Sum D of 8) – GR12L, GR16L
JR XBus (Mode A & Mode B) – RG012BX, RG613BX, RG821BX
Jeti EX-Bus – REX10, R9 EX, REX6
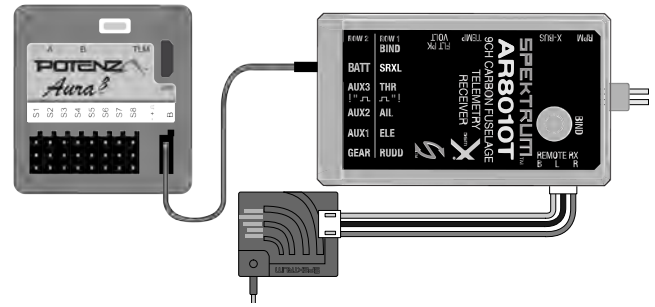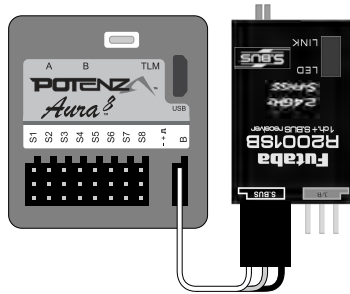
CONNECTING YOUR RECEIVER TO AURA 8

Serial Receivers

If using a standard serial receiver, connect the provided male to male cable to your receiver's serial port. Connect the other end of the cable to Aura Port B noting proper polarity.
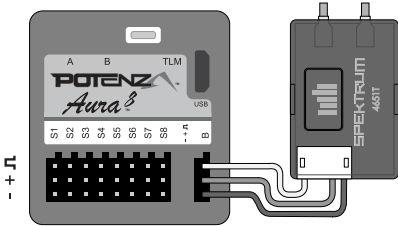
Note: SRXL2 receivers like the 4651T require the use of a different cable to connect to Aura. The cable is included with the receiver when it is purchased directly from Flex Innovations. You can also purchase the cable itself at flexinnovations.com (FPZA1039). Other receivers like the AR6610T provide a standard servo port for the SRXL2 signal.

Note: If you are using Futaba S.Bus, be sure to use the proper S.Bus port in your receiver. DO NOT use the S.Bus2 port, as it is not supported for use with the Aura 8. Refer to your manufacturer's instructions for proper S.Bus use.

Note: When using Spektrum SRXL or SRXL2 to connect to the Aura, always connect the remote receivers to the Spektrum receiver, NOT to the Aura.

Binding Your Receiver

Bind your receiver to your transmitter per your receiver and transmitter manufacturer's instructions.

FOR CUSTOMERS USING TRANSMITTERS AND RECEIVERS OTHER THAN WHAT IS SHOWIN ABOVE, PLEASE VISIT OUR WIKI PAGE FOR INSTRUCTIONS SPECIFIC TO YOUR TRANSMITTER AND RECEIVER BRAND

https://wiki.flexinnovations.com/wiki/Aura

Aura 8 Auto-Detect

Note: Before powering up the airplane for the first time ensure that there is not trim or sub-trim on any of your main channels (aileron, elevator or rudder) as this may lead the Aura 8 Auto-Detect feature to fail or work improperly. Once your receiver is bound, powered, and connected to the Aura, the Aura will begin the Auto-Detect process to learn what type of receiver you are using and set itself up for that specific system. Auto-Detect is indicated by a series of sweeping LEDs of various colors. After Auto-Detect is completed, verify that Aura is on and receiving data from your receiver by looking at the LEDs on the Aura.

Ready-To-Fly:

Solid Orange LED: Aura On and Calibrated

Solid Green LED: Aura receiving Valid receiver data

Possible Errors:

Flashing Orange LED: Aura Moved During Power Up

**No Green LED:** Aura NOT receiving receiver data

CONNECTING BATTERY/ARMING ESC

Observe the following procedures to safely power up your model after it has been bound. **Ensure the propeller is removed unless this sequence is followed to power up before flight.**

1. Turn on the transmitter. **Lower the throttle stick AND throttle trim** to their lowest settings. Be sure to wait for your transmitter to indicate that radio signal is being broadcast before proceeding.

> If a battery is connected to the ESC with the throttle fully open on the transmitter, the ESC will enter programming mode. If this occurs, simply disconnect the battery, lower the throttle and reconnect the battery.

2. Ensure the aileron, elevator and rudder gimbals are centered.
3. With the airplane on a solid surface, connect the battery to the ESC and wait. The ESC will make the motor emit a series of audible tones during their initialization process.
4. The ESC will make the motor emit a short, final tone sequence indicating that the ESC is now armed and that the motor will spin in response to throttle stick movement.
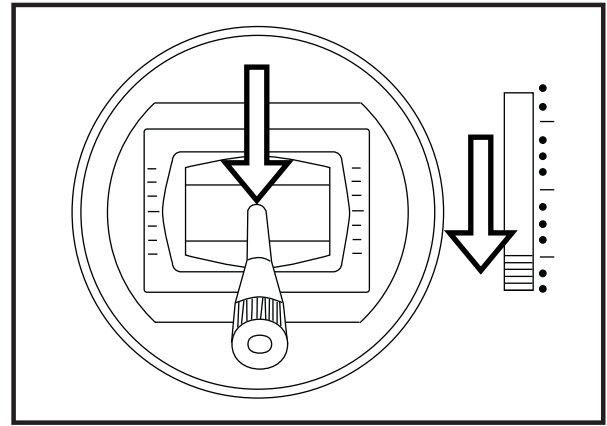
> ⚠ **CAUTION**
>
> **Always connect the battery when the throttle stick and throttle trim are in the idle/cut-off position.**

> ⚠ **WARNING**
>
> **When making adjustments to linkages, transmitter settings, or the Aura 8 flight control system, remove the propeller to guard against accidental spool up.**

> ⚠ **WARNING**
>
> **Hold aircraft securely when connecting the battery before flight. Always ensure that the propeller is clear of any and all objects as they may become entangled.**

ESC THROTTLE CALIBRATION

In order to map the full range of the ESC's output to your throttle stick motion you will have to preform an ESC throttle calibration.
NOTE: Execute ESC throttle calibration with the propeller and spinner removed.

1. Power on your transmitter, DISABLE any throttle hold or throttle kill switches, **completely lower the throttle trim** and set the stick to full throttle.
2. Connect the flight pack to your Extra 300 60E Pro.
3. Listen for the tones coming from the ESC through the motor, about 2 seconds after RF is engaged you should hear two tones.
4. Pull your throttle stick back to idle.
5. Listen for the ESC arming tones from the motor.
6. Unplug the flight battery to complete calibration.

The ESC throttle range has now been properly calibrated, and is stored in the ESC's memory until it is calibrated again. You can repeat this process as many times as necessary.

> ⚠ **CAUTION**
>
> **Note: After throttle calibration is complete it is necessary to reset the failsafe on your receiver (see your radio documentation, this may require a re-bind).**

MOTOR ROTATION TEST

Take this this opportunity to check proper motor rotation direction, the motor should spin CW when viewed from the tail of the airplane (pilot point of view). If the motor is rotation is incorrect, swap any 2 motor → ESC wires to reverse motor rotation.

CONTROL SURFACE LINKAGE INSTALLATION

Required Tools and Fasteners:

Elevator and Rudder Pushrod Assemblies	#2 Phillips Screwdriver
(8) M2x10 Phillips Head Machine Screw	1.5mm Hex Driver
(16) M2 Flat Washer	Needle-Nosed Pliers (or Hemostats)
(8) M2 Lock Nut	Blue Thread Lock
(4) Servo arms and screws	

Super PNP NOTICE

This section is a combined section for both the ARF and the Super PNP version of the Extra 300 60E Pro. There are several instructions that do not pertain to the Super PNP version as the servo arms and pushrods are mostly completely installed for you from the factory. However, it is important that you still pay attention to the content on this page, we have tried to call out the differences between the two edition in all the steps if you see something that does not need to be done that is fine. The following are the critical steps that you will have to execute with the Super PNP version, all are documented below:

- **Ensure that servo arms are centered once you have the radio and airplane powered with no sub-trim.**
- **Remove all the screws on the servo arms and re-install them with blue thread locker.**
- **Attach the elevator and rudder pushrods to the corresponding control horns.**

1. If you have the ARF locate the rudder and elevator pushrod assemblies, as well as the servo arms and hardware. Reference the chart on page 11 for the lengths of the different pushrods.

2. Power on your transmitter, and power on the airplane. Once the Aura 8 has initialized and you can verify that the servos are operating properly. Set the gyro gain kill switch to off before making any adjustments to servo arm positions or to pushrod lengths. This will disable the Gyro and ensure that the control surfaces are centered and don't have any motion if the airplane is accidentally moved. If you have not enabled the gyro gain kill switch ensure that you don't move the airplane when checking on servo arm and control surface positions so that the servos are centered.

3. With the aircraft still powered on, install the elevator, rudder and aileron servo arms perpendicular to the servo case, being sure to orient the servo arm towards the top of the fuselage for the elevator, towards the bottom of the fuselage for the rudder (as shown below) and towards the wing tip for the ailerons. Apply blue thread lock to the servo arm screws, and secure the servo arms in place. If you have the Super PNP version remove the servo arm fastening screws and apply thread lock to them.

⚠ AURA 8 WARNING

DUE TO VARIANCES IN PRODUCTION AND THE LARGE CONTROL SURFACE THROWS ON THIS AIRCRAFT, PROPER SERVO CENTERING AND TRAVEL ADJUSTMENT IS CRITICAL TO PREVENT SERVO OVER TRAVEL AND FAILURE. IF THE SERVO ARMS ON YOUR AIRCRAFT DO NOT SIT PERPENDICULAR TO THE SERVO CASE, YOU MUST USE THE AURA CONFIG TOOL TO ADJUST THE SUB-TRIM AND OUTPUT SCALE VALUES TO PREVENT OVER TRAVEL OF THE SERVOS.

To download the Aura Config Tool, please visit: https://www.flexinnovations.com/aura-config-tool-install/
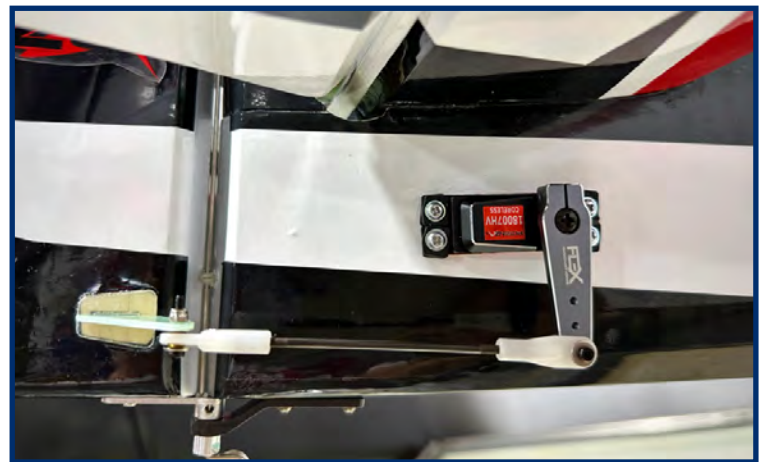

4. Before installing the push-rods, ensure that all servo arms are perfectly perpendicular to the servo bodies. If you are using an Aura 8 this needs to be done with the aura config tool, not via TX trim or sub-trim. If you are not using an Aura 8 you can do this with sub-trim in your radio.

5. If you have the ARF version use a 1.5mm hex driver to attach the pushrod ball link to the servo arms using an M2X10 socket head hex bolt, an M2 washer and an M2 Lock nut. For the elevator and rudder use the outermost hole in the servo arm but for the ailerons use the middle hole (see picture on page 10 for reference).

CONTROL SURFACE LINKAGE INSTALLATION (CONTINUED)

6. Use a 1.5mm hex driver, M2x10 machine screw, M2 washers and M2 lock nut to secure the linkage to the control horns. If you have the ARF version you will have to attach all four pushrods but if you have the Super PNP you will only have to attach the elevator and rudder pushrods as the aileron pushrods will have been installed for you at the factory. The sequence of the hardware components at the control horn end is as follows:

    1. M2x10 Machine Screw
    2. M2 Washer
    3. Ball Link
    4. M2 Washer
    5. Servo Arm or Control Horn
    6. M2 Washer
    7. M2 Lock Nut
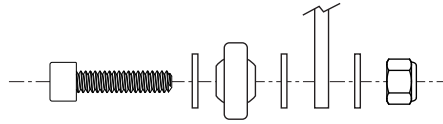
7. As you are attaching the pushrods, take this opportunity to ensure that all control surfaces are centered. If any of the control surfaces are not centered, remove one end of the pushrod and adjust the length until you get the control surface as close to center as possible. Spending time now to get this right will give you a much better flying airplane. For any final adjustments, once you have exhausted any mechanical options, use the Aura config tool to adjust the servo positions (if you are not using Aura 8 then you can use the sub-trim in your radio).

CONTROL SURFACE THROWS

If you are using the Extra 300 60E Pro program for the Aura 8 all control throws and expos for all flight modes have been expertly set by the Flex Innovations crew, you don't have to do anything, just go fly. Of course, these rates are a great starting point but feel free to adjust them to your liking using the Aura Config tool.

If you are not using the Aura 8 you will want to use the following table as a starting point for your control throw setup:

Extra 300 60E Pro Control Throws and Expos				
	Hight Rate		**Low Rate**	
	Up/Left	**Down/Right**	**Up/Left**	**Down/Right**
Aileron Throw	38 degrees	37 degrees	20 degrees	20 degrees
Elevator Throw	55-60 degrees	55-60 degrees	15 degrees	15 degrees
Rudder Throw	Max. without binding	Max. without binding	20 degrees	20 degrees
Aileron Expo	50-55%	50-55%	20%	20%
Elevator Expo	50-55%	50-55%	20%	20%
Rudder Expo	45-50%	45-50%	10%	10%

NOTE

Designer and multi-time XFC champion Jase Dussia has found, based on his extensive test flights and experience. That the Extra 300 60E Pro performs best with one degree of aileron differential. Note that aileron throws are not symmetrical in the table above. The Aileron differential has been programmed in the Aura 8 if you are using the Extra 300 60E Pro config file.
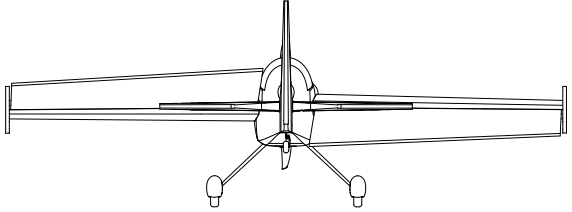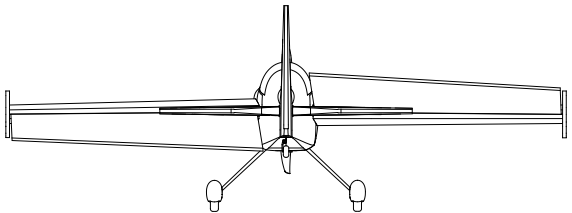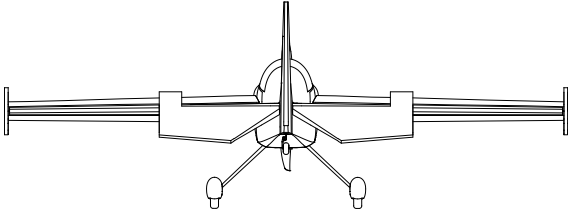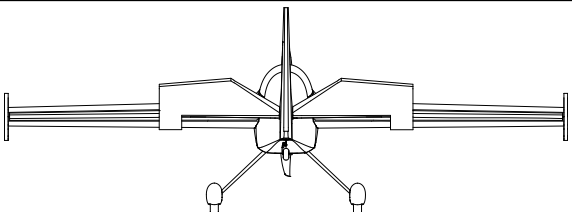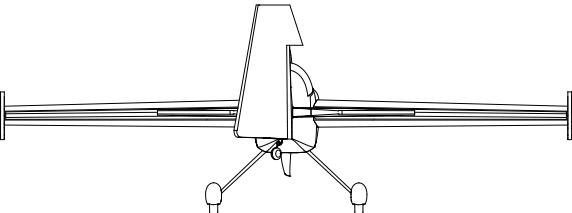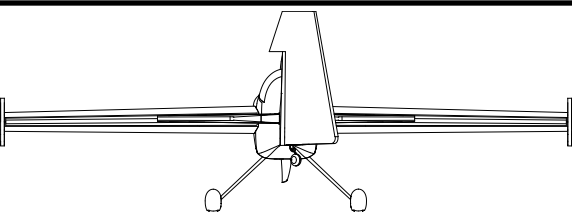
If you don't have a throw meter to measure these you can use a "level" app on your phone, there are plenty of good apps available that will give you degree of tilt.

CONTROL DIRECTION TEST

Refer to the chart below to determine the proper control surface directions.

If controls are reversed when using Aura 8, DO NOT REVERSE CONTROLS IN YOUR TRANSMITTER OR IN THE AURA CONFIG TOOL. Email us at support@flexinnovations.com for corrective action. Note that BOTH the Transmitter Control Direction Test AND the Flight Controller Sensor Direction Test MUST BE PASSED! IF EITHER ONE DOES NOT PASS, DO NOT FLY!
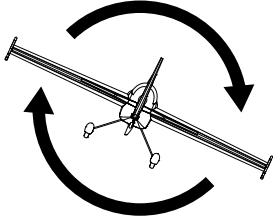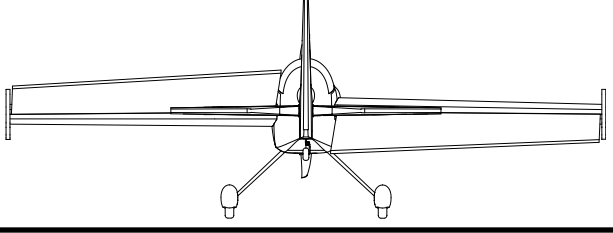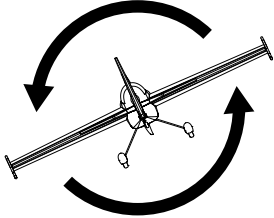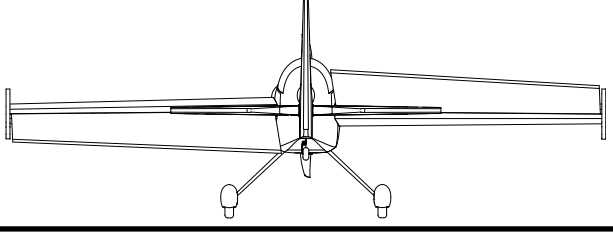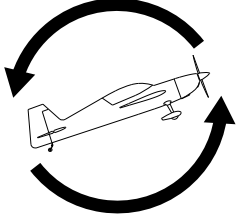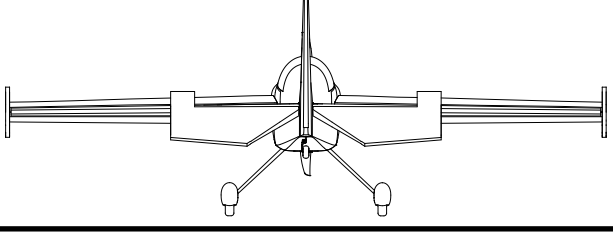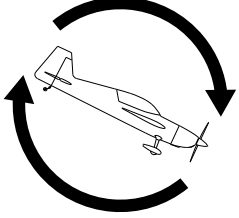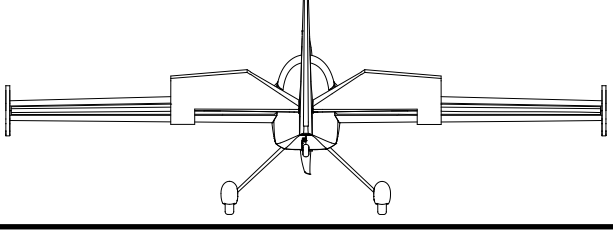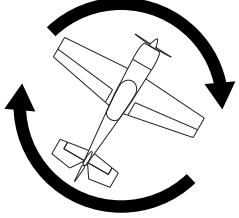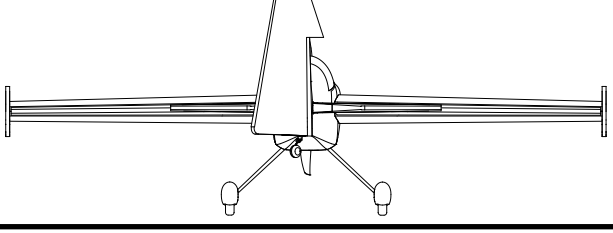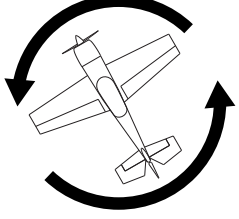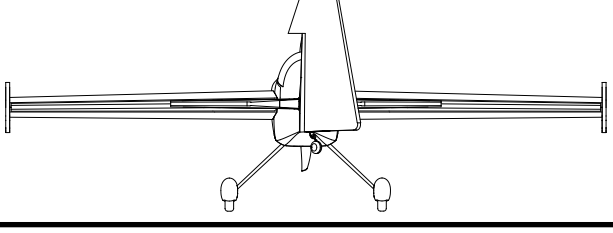
NOTE: There is pre-configured rudder to aileron and rudder to elevator mixing programmed into the Aura 8. Simultaneous movement of these control surfaces with rudder input is intentional and completely **NORMAL**.

	Transmitter Command	Proper Control Surface Deflection
AILERON	Stick Left	
	Stick Right	
ELEVATOR	Stick Forward	
	Stick Aft	
RUDDER	Stick Left	
	Stick Right	

AURA SENSOR DIRECTION TEST

If you are using an Aura 8, perform a test of the gyro system to verify the corrections made for a given movement are correct. **If any of the tests do not result in the correct reaction from the airplane's gyro system, DO NOT FLY THE AIRPLANE, and contact us via email at support@flexinnovations.com**

The flight control system activates with RF broadcast. Perform these tests in Flight Mode 3 (higher gain) for better visibility and then in other flight modes. Ensure that gyro gain kill has not been enabled and that the gyro gain kill switch (ch7) is not active, if it is there will be no motion when performing this test. Control surface deflections are exaggerated in the pictures below for clarity. Please note that the control surfaces will move ONLY while the aircraft is being ROTATED.

	Aircraft Movement	Proper Control Surface Deflection
AILERON		
ELEVATOR		
RUDDER		

EXTRA 300 60E PRO AURA OPTIONAL FEATURES CONFIGURATION

The Aura installed in your Extra 300 60E Pro comes with the Quick Set feature. Quick Set allows the pilot to adjust options in the Aura without the use of a computer. The options of the Extra 300 60E Pro are described below:

- Gyro Gain Kill switch: A switch can be used to immediately kill the Gyro Gain in case of emergency such as the Aura becoming unmounted in the aircraft.

To use this feature, you will need a minimum 7 channel transmitter.

Extra 300 60E Pro Optional Feature Transmitter Setup

CH 7 (Aux 2) | Gyro Gain Kill Switch (Optional) → Assign to 2-position switch

By default, the Gyro Gain Kill Switch feature of the Aura is DISABLED and the gyro gain is always enabled (always on) as described on page 18.

Flight Modes are as described in the table on page 18.

Quick Set Procedure

Step 1 - Enter Quick Set Mode

1. Make sure all power is off on the Extra 300 60E Pro
2. Remove the prop before making changes
3. Turn on your transmitter
4. Remove the Servo lead from Aura Port S2.
5. Install a bind plug in Aura Port S2.
6. Plug in the motor battery to power up the Extra 300 60E Pro
7. After entering the Quick Set mode, the Orange LED will be off and the Green LED will be on SOLID. Initially the Blue and Red LEDs will also be off.

Step 2 - Choose Optional Settings

After entering Quick Set mode as described above, you toggle the Gyro Gain Kill switch (CH7) on the transmitter to enable or disable the Gyro Gain Kill option.

8. If you want to activate/deactivate the Gyro Gain Kill switch, toggle the CH7 switch on your transmitter .
   - If the Blue LED is ON, the Gyro Gain Kill switch is ENABLED.
   - If the Blue LED is OFF, the Gyro Gain Kill switch is DISABLED.

Step 3 - Saving your Selections

9. After setting the Gyro Gain Kill option as desired, remove the bind plug to save your settings. The Blue, Green, and Red LEDs will briefly turn on while the Aura is saving, the return to their previous state .
10. Completely power off the Extra 300 60E Pro and Aura
11. Replace the Servo Lead in Aura Port S2
12. Power up and Fly as usual with your updated Aura configuration!

Note: This process can be repeated as many times as desired to enable or disable Gyro Gain Kill.

COWLING INSTALLATION

Required Tools and Fasteners: (4) M3X15 Button Head Machine Screws   (4) O-Rings
(4) M3 Washers   2mm Hex Driver
Blue Thread Lock

(QTY 4)   (QTY 4)   (QTY 4)

1. To get the best fit for the cowling first install the canopy, then slide the cowling over the motor and motor box and temporarily set it in position.

2. Slide the spinner backplate in position on the motor shaft and align the cowling with the spinner backplate leaving a small gap.

3. Ensuring that the cowling lines up with with the spinner back plate, install the (4) M3X15 mounting bolts, washers and o-rings into the corresponding mounting points in the fuselage using a 2mm hex driver. Use thread-lock on these bolts.

4. Make any final alignments to the cowling position as you tighten the bolts.

PROPELLER AND SPINNER INSTALLATION

Required Tools and Fasteners: Adjustable Wrench or   13mm Wrench and 11mm Wrench
2.5mm Hex Driver

1. The spinner is shipped with two different bushings to fit different diameter prop shafts. If you have the Super PNP or are using the recommended motor you will need to install the 8mm busing into the spinner back-plate.

2. if you have the ARF version you will have to supply the prop and potentially ream it to fit the shaft diameter of you motor.

3. Slide the spinner backplate in position on the motor shaft, followed by the prop, the prop washer and finally the prop nut, finger tighten.

4. Place the spinner cone in position and adjust the position of the prop on the back plate so that the mounting screws provided with the spinner line up with the appropriate holes.

5. Remove the spinner cone and tighten the main prop nut with an adjustable wrench or a 13mm wrench. The nut should be snug but do not over-tighten as you may damage the prop adapter. Install the jam nut using an adjustable wrench or an 11mm wrench. This will ensure that the main nut can't come loose.

6. Install the spinner cone with the supplied bolts using a 2.5mm hex driver. Do not use thread locker on these screws as it will soften and weaken the plastic in the spinner.

OPTIONAL SIDE FORCE GENERATORS INSTALLATION

Required Tools and Fasteners: (4) SFG Thumb Screws
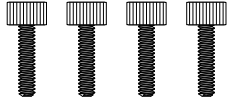
1. Start the two thumb screws, through the plastic spacer, into the nuts embedded in the wing tip.

2. Once the thumb screws are started properly but not tight you can install the side force generator over the thumb screws and slide it rearward to place the screws in the notches. The front of the side force generator will be flush with the leading edge of the wing.

3. Finger tighten the thumb screws to secure the side force generators to the wing tip.

4. Repeat for the other wing.

DECAL INSTALLATION

1. Decals are provided with your Extra 300 60E Pro, these decals are simple peel and stick decals.

2. Recommended placement for the decals is shown in the color scheme diagrams that are on pages 6 and 7.

BATTERY INSTALLATION

1. Push the spring-loaded latch tab back to release the hatch. Lift the hatch away from the fuselage, starting at the rear.

2. Install an adhesive-backed hook strip to the battery tray, and an adhesive-backed loop strip to the battery.

3. Place the battery on the tray as shown in the picture below, and secure it in place with the hook and loop strap provided.

4. Reinstall the hatch by first lining up the pins in the front and then latching the rear, confirm that the latch has positively engaged.
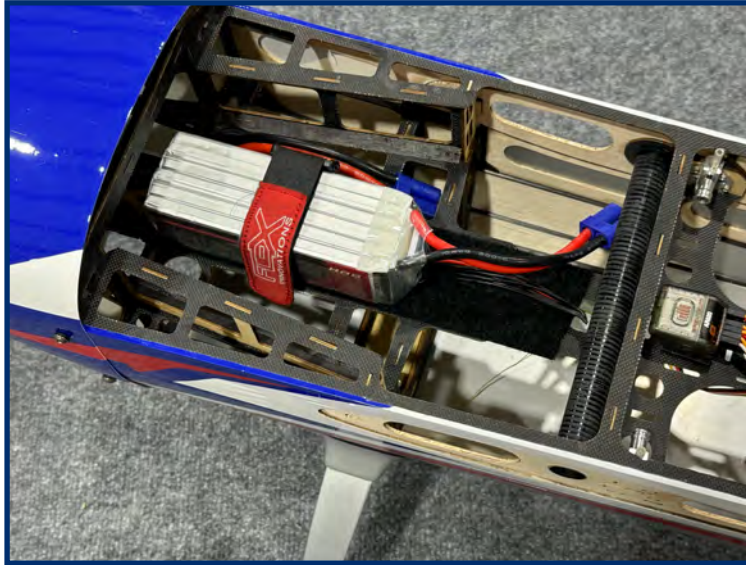
⚠ CAUTION
Always keep limbs clear from the propeller when the battery is connected. After the ESC arms, the propeller will rotate when the throttle is moved. Unlike an internal combustion engine, electric motors apply more voltage to counteract resistance, therefore any object that is entangled in the propeller will be severely damaged before the motor will stop.

⚠ WARNING
When making adjustments to linkages, transmitter settings, or the Aura 8 flight control system, remove the propeller to guard against accidental spool up.

CENTER OF GRAVITY VERIFICATION

Setting the center of gravity (CG) is one of the most important steps for successful flight, particularly with a new airplane. The Extra 300 60E Pro is an extremely capable airplane with large control surface throws and a high thrust to weight ratio. These factors make it an enjoyable aircraft to fly, but if the CG is not within an acceptable range, it will make the airplane difficult, if not impossible to control.

Prepare the aircraft to its flight-ready state. This means all hardware, components and flight battery should be installed before proceeding. The center of gravity (CG) is measured from the leading edge of the main wing at the wing tip, toward the rear of the aircraft. Lift the aircraft upright, with all components installed, from the bottom of the wing at the CG location noted.

The recommended CG location for the Extra 300 60E Pro is 81mm (3 3/16 inches) measured rearward, from the Leading Edge of the wing, at the Wing Tip.

Designer and multi-time XFC champion Jase Dussia has found this to be the sweet spot for the CG based on his extensive test flights and experience.

Recommended CG
81mm (3 3/16 inches)
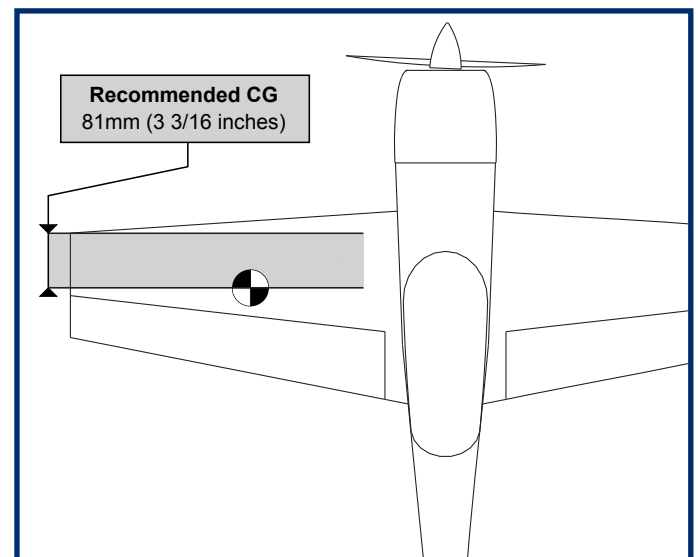
⚠ NOTICE
The CG measurement should be made with the completed airframe with all components (batteries, servos, receiver, linkages, screws, bolts, hardware, etc.) installed. Failure to do so will result in inaccurate measurement.

PRE-FLIGHT CHECKLIST

To help ensure a successful first flight, as well as many flights after, perform a few simple pre-flight checks to be sure the aircraft is ready to fly:

1. Verify all control surfaces move freely when disconnected from the servo. If you have a tight or binding surfaces that use pin hinges, apply a small drop of light oil to each hinge pivot. Move the surface back and forth to work the oil into the hinge. Repeat as needed.

2. Verify that all hardware and other aircraft parts are properly secured, including those connections that require blue thread lock. This includes hardware and parts installed by the factory.

3. Verify your battery is fully charged and in good condition. Avoid using batteries with swollen cells, or batteries that do not charge back to their full capacity.

4. Verify that the CG is in the proper location and that the battery is secured in place.

5. If using one, ensure that the Aura 8 is on and functioning properly. Power on your transmitter, followed by the aircraft. Ensure the Aura 8 is calibrated properly and receiving a valid radio source (solid orange+solid green LEDs).

6. Verify transmitter stick inputs result in the proper control surface movements (reference page 24) and the Aura flight modes work properly.

7. If using one, verify aircraft movement results in proper Aura 8 sensor corrections (reference page 25).

8. Verify the motor and ESC function properly. Point the aircraft in a safe direction. Hold the airframe firmly, smoothly advance the throttle to full and back to idle. Listen and watch for any odd or unusual behavior for the motor or speed controller.

9. Remove the prop and check that the fail-safe is set properly on your receiver. Follow your transmitter and receiver instructions for how to properly set and test the fail-safe configuration.

AMA SAFETY CODE

When flying your aircraft, we recommend following the guidelines set by the Academy of Model Aeronautics (AMA). You can find their safety handbooks as well as more information on the AMA at their website, located at the address below:

www.modelaircraft.org

FLYING YOUR EXTRA 300 60E PRO

Selecting a Flying Site

Selecting a flying site is critical to a successful flight. Airplanes require a lot more room than other R/C products, therefore, a neighborhood or parking lot is less than ideal. A large open field with short grass and generous overfly area are the best candidates if no AMA field is available in your area. Know your overfly area - ensure that there are no houses, playgrounds, or other buildings that may be damaged if the airplane were to crash.

Takeoff

Taxi or place the aircraft on the runway centerline, with the nose pointed into the wind. Select Select Flight Mode 1 with the gyro gain kill switch set to **gyro on**, then set the throttle trim so that the motor spins at its lowest RPM without stopping. Smoothly advance the throttle to full while maintaining directional control with the rudder and slight back pressure on the elevator. The airplane should lift off smoothly before the throttle is fully open. Fly in Flight Mode 1 until the aircraft is fully trimmed (see special trimming instructions), and you are comfortable with its handling, then explore the other modes as desired.

Flying

Altitude is your friend on the first flight. Briskly climb to a safe altitude and trim the airplane out. The airplane should fly straight and level at 2/3 to 3/4 power with no hands on the transmitter. Try some basic maneuvers, and slowly progress into the airplane's flight envelope as you become more comfortable with the airplane's flight qualities and perfect your setup. Note: If at any time you experience unexpected control system inputs or oscillations, switch off the gyro function using your gyro gain kill switch (assigned on page 19), land and troubleshoot the issue.

Landing

Be mindful of your flight time and allow adequate battery reserve for a couple of go-arounds, if necessary, on the first few flights. Select Flight Mode 1 and slow the airplane and align with the runway, into the wind. The airplane should descend smoothly in this configuration with proper airspeed. Once you are close to the ground, gradually close the throttle completely and begin to smoothly apply up elevator as required to arrest descent and the airplane should gently touch down with a short roll out.

> ⚠ **CAUTION**
>
> **USE CAUTION WHEN FLYING YOUR EXTRA 300 60E PRO IN MODE 3 AT HIGH AIRSPEEDS. DOING SO CAN INDUCE CONTROL SURFACE OSCILLATIONS AND MAY CAUSE A CRASH.**

Trimming

The first several flights on your new Extra 300 60E Pro should be dedicated to trimming and setup. Fly the airplane at 2/3 power in any Flight Mode you are comfortable flying in (FM1 recommended), and trim for level flight. **DO NOT CHANGE FLIGHT MODES**. **Land, adjust linkages or execute Quick Trim (see below) and return the trim and/or sub-trim to zero and fly again. Repeat process until the airplane flies hands off, straight and level**.

Transmitter trim or sub-trim will cause trim shifts when different flight modes are selected. To eliminate this trim shift, the model should be mechanically trimmed, or Aura "Quick Trim" may be used instead.

Aura Quick Trim

The Aura 8 features a Quick Trim Mode that eliminates the need for mechanical linkage adjustments during test flights. Aura will learn the trim values from your transmitter, and apply them to the control surfaces at power up when enabling quick trim mode.

> NOTE: Quick Trim can also be used BEFORE flying to make small changes to center the control surfaces before flight.

1. Fly the airplane in your preferred Flight Mode at 2/3 power (FM1 recommended). Trim the aircraft with the transmitter trimmers and land. **DO NOT CHANGE FLIGHT MODES**.

2. Power off the Extra 300 60E Pro. Insert a bind plug into Aura Port S3 (you will need to remove the servo lead that is currently in S3). Check the transmitter is on and re-power the Aura to enter Quick Trim.

3. Wait 5 seconds for the Aura to completely initialize. Confirm Quick Trim mode is active by checking the Blue LED is slowly flashing.

4. Remove the bind plug from Aura Port S3 to save your trim settings. Re-install the servo that was previously removed into port S3. Removing the bind plug stores the current trims in the Aura. The Blue LED will flash quickly after control surface trim values are stored. While the trim values are stored in Aura, they are not applied to the control surface(s) until the Aura is re-powered.

5. Remove power from the Extra 300 60E Pro and center all control surface trims on the transmitter.

6. Re-power the Extra 300 60E Pro. The control surfaces should be unchanged even though the trim has been centered on the transmitter.

7. Switch between other Flight Modes to ensure you do not see any changes in trim.

> NOTE: QUICK TRIM MAY BE REPEATED AS NEEDED FOR FINE TUNING, OR IF CHANGES TO THE AIRCRAFT ARE MADE.

> NOTE: ENSURE AILERON/ELEVATOR/RUDDER SUB-TRIMS ARE AT ZERO IN THE TRANSMITTER **BEFORE** FLYING FOR THE QUICK TRIM PROCESS TO WORK PROPERLY.

AIRCRAFT TROUBLESHOOTING GUIDE

Should you encounter any abnormal situations with your Extra 300 60E Pro, refer to the table below to determine the probable cause and a recommended solution for the issue. If the required solution does not rectify the problem, please contact product support at support@flexinnovations.com for further assistance.

> **⚠ NOTICE**
>
> Unless specifically required, ALWAYS troubleshoot the airplane with the propeller removed.

DISCREPANCY	PROBABLE CAUSE	RECOMMENDED SOLUTION
Motor non-responsive (no ESC initialization tones audible)	Throttle not at idle and/or throttle trim too high	Lower throttle stick and trim completely. If problem persists, ensure that the sub-trim and travel adjust are properly set in the radio's programming
	Motor disconnected from ESC	Ensure plugs are fully seated. Check battery and/or plugs for damage and replace any damaged components found - DO NOT ATTEMPT REPAIR
Motor non-responsive (throttle calibration tones received)	Throttle channel is reversed	Reverse throttle channel in radio programming
Motor turns in the wrong direction	The three motor wires are connected incorrectly to the ESC	Swap any TWO motor wires
Reduced flight time or aircraft underpowered	Battery not fully charged	Ensure battery is fully charged prior to installing in aircraft
	Propeller installed backwards	Install propeller so that the convex side faces forward (tractor configuration)
	Battery is too weak or damaged	Remove battery from service completely and replace with a different battery
	Ambient temperature is too cold	Ensure battery packs are adequately warm (70°F/21°C) before flight
	Battery capacity too small for intended use	Replace battery with one of proper capacity and discharge capacity
	ESC reaching preset LVC (low-voltage cutoff)	Recharge flight battery or reduce flight time
	Battery's discharge rating may be too small	Replace battery with one with higher 'C' rating
Excessive propeller noise and/or vibration	Damaged spinner and/or propeller, collet, or motor	Replace damaged components - DO NOT ATTEMPT REPAIR
	Propeller is not balanced	Balance or replace the propeller
	Prop nut is loose	Tighten prop nut with appropriate-sized wrench
	Spinner is not fully in place or tightened	Loosen the spinner bolt, adjust as required, retighten spinner bolt
	Propeller nut or propeller adapter threads not cut straight	Replace propeller nut or propeller shaft - DO NOT ATTEMPT REPAIR
Control surfaces nonresponsive	Airframe or control linkage system damage	Examine airframe for damage, repair as required; inspect control linkage system (servo, pushrod, control horn) for damaged components and replace as required
	Wire damaged or connector loose	Examine wires and connections, replace as necessary
	Transmitter bound incorrectly, incorrect active model memory, incorrect Aura data input configuration, incorrect Aura transmitter settings	Consult radio manual for proper binding and model selection instructions
	Battery voltage too low	Use volt meter to check battery; recharge or replace as necessary
	Battery disconnected from ESC	Check that the EC5 plugs are fully seated
	BEC (battery elimination circuit) damaged	Replace ESC - DO NOT ATTEMPT REPAIR
	Damaged Servo	Replace Servo - DO NOT ATTEMPT REPAIR
Failed control direction test	Incorrect Aura 8 or Transmitter Setting - DO NOT FLY!	Reference transmitter and receiver sections of this manual. Refer to control surface direction chart and transmitter setup; adjust appropriate settings as required. Check Extra 300 60E Pro and Aura wiki web pages for additional information. If no solution is found, contact customer support at support@flexinnovations.com
Failed Sensor Direction Test	Aura 8 is not mounted in the proper orientation	Mount Aura in the proper orientation
	Aura 8 settings incorrect	Reference the transmitter and receiver sections of this manual. If no is solution is found, contact customer support at support@flexinnovations.com
Control surface oscillation	Exceeding maximum airspeed for configuration	Reduce airspeed
	Gains too high for aircraft/flight configuration	Refer to Aura 8 manual to decrease desired control surface gain
	Propeller/spinner not balanced	Balance or replace propeller and/or spinner
	Motor vibration	Inspect motor mounting bolts and re-tighten as necessary
	Loose Aura 8 mounting	Re-align and secure the Aura 8 to the aircraft
	Control linkage slop	Examine control system and repair or replace worn components
	Improper transmitter setup	Refer to Aura 8 manual to correctly configure transmitter
	Damaged propeller or spinner	Replace damaged component- DO NOT ATTEMPT REPAIR
	Improperly set master gain	Ensure master gain is set for proper gain value
Trim changes between flight modes	Trims are not properly zeroed	Readjust control linkage and re-center trims in radio
	Sub-trim is not properly zeroed	Remove sub-trim; adjust the servo arm or clevis to achieve proper geometry
	Transmitter is not properly calibrated (aileron/elevator/rudder are not neutral with sticks centered; reference transmitter monitor	Calibrate transmitter (reference manufacturer's instructions, or return to manufacturer for calibration
Gyro doesn't respond to aircraft movements	Gyro gain kill switch unassigned or in incorrect position	Channel 7 output is used by the Aura 8 to disable the gyro. Assign channel to appropriate switch, follow the quick set procedure on page 26 and ensure that operation is as desired, reverse channel if required

LIMITED WARRANTY

Warranty Coverage

Flex Innovations LLC and its authorized resellers ("Flex") warrant to the original purchaser that this product (the "Product") 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 the purchase date
   (b) Damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or due to improper use, installation, operation, or maintenance
   (c) Damage to other components or assemblies associated with the use of the Product.
   (d) Modification of or to any part of the Product
   (e) Product not purchased from an authorized Flex Innovations dealer or distributor.
   (f) Product that has been partially, or fully assembled
   (g) Shipping damage
   (h) Cosmetic damage
   (i) Services or labor associated with the repair, use or assembly of the Product.

OTHER THAN THE EXPRESS WARRANTY ABOVE, FLEX MAKES NO OTHER WARRANTY REPRESENTATION, AND HEREBY DISCLAIMS 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 Remedy

Flex's sole obligation and purchaser's sole and exclusive remedy shall be that Flex will, at its option, either (i) service, (ii) replace any part of the Product determined by Flex to be defective, or (iii) replace the Product determined by Flex to be defective. Flex reserves the right to inspect 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 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 and/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 of 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 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 the original shipping carton. Please note that both the inner and outer boxes need to be included. The inner box is not designed to withstand the rigors of shipping without additional protection from the outer shipping carton. 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 or its defective parts will be replaced or serviced free of charge. Responsibility of shipping charges are as follows:

   To Flex from customer, Customer is responsible.
   To Customer from Flex, Flex is responsible.

Service or replacement decisions are at the sole discretion of Flex.

COMPLIANCE INFORMATION FOR THE EUROPEAN UNION

CE Declaration of Conformity (In accordance with ISO/IEC 17050-1)

Product(s):   Extra 300 60E Pro
Item Number(s): FPM2600A
                 FPM2600B
                 FPM2650A
                 FPM2650B

The object of declaration described above is in conformity with the requirements of the specifications listed below, following the provisions of the EMC Directive 2004/108/EC.

EN 55022: 2010+AC: 2011
EN 55024: 2010
EN 61000-3-2: 2006+A2:2009
**EN 61000-3-3: 2013**

EN 61000-6-3: 2007/A1:2011
EN 61000-6-1: 2007

Instructions for disposal of WEEE by users in the European Union

This product must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of their waste equipment by handing it over to a designated collections point for the recycling of waste and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where to drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or where you purchased the product.

Building and Flying Notes
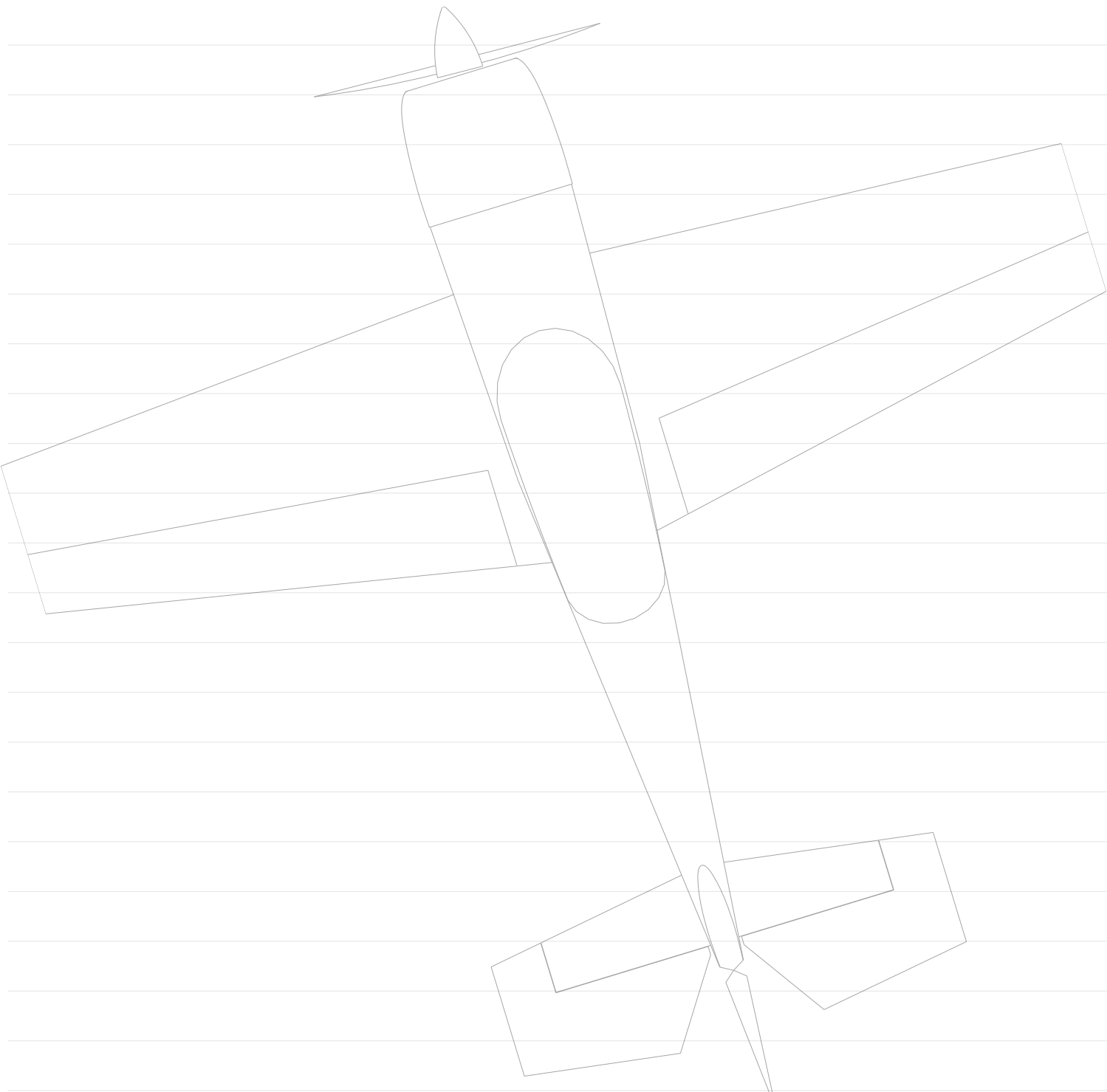
Enjoy your Flex Innovations Extra 300 60E Pro!

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www.flexinnovations.com

Rev. A
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