EXTREME FLIGHT

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# EXTREME FLIGHT EXTRA 260

The full-scale Extra EA-260 is a hand-built, single-seat aerobatic aircraft derived from the Extra 230 and first flown in 1986. Designed by aerobatic pilot Walter Extra based on the layout of the Extra 230, the Extra 260 is a higher performance version of its predecessor. The first EA-260 was flown by Patty Wagstaff to victory in two U.S. National Aerobatic Championships, in 1991 and 1992, and then retired to the Smithsonian Institution.

The Extreme Flight Extra 260's are designed offer the incredible performance of the 260 design while also being easy-to-fly and giving new pilots extra confidence learning 3D flight. Extreme Flight offers 260's in sizes from 49" to 120". The 75" Extra 260 is designed to fly with 35CC gas single cyclinder engines, 40CC twin cylinder (both angle and straight spark plug designs), or 12S 3000-4000 watt electric power systems.

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## Please read the following paragraph before beginning assembly of your aircraft!

THIS IS NOT A TOY! Serious injury, destruction of property, or even death may result from the misuse of this product. Extreme Flight RC is providing you, the consumer with a very high quality model aircraft component kit, from which you, the consumer, will assemble a flying model. It is beyond our control to monitor the finished aircraft you produce. Extreme Flight RC will in no way accept or assume responsibility or liability for damages resulting from the use of this user assembled product. This aircraft should be flown in accordance to the AMA safety code. It is highly recommended that you join the Academy of Model Aeronautics in order to be properly insured, and to operate your model at AMA sanctioned flying fields only. If you are not willing to accept ALL liability for the use of this product, please return it to the place of purchase immediately.

Extreme Flight RC, Ltd. guarantees this kit to be free of defects in materials and workmanship for a period of 30 DAYS from the date of purchase. All warranty claims must be accompanied by the original dated receipt. This warranty is extended to the original purchaser of the aircraft kit only.
Extreme Flight RC in no way warranties its aircraft against flutter. We have put these aircraft through the most grueling flight tests imaginable and have not experienced any control surface flutter. Proper servo selection and linkage set-up is absolutely essential. Inadequate servos or improper linkage set up may result in flutter and possibly the complete destruction of your aircraft. If you are not experienced in this type of linkage set-up or have questions regarding servo choices, please contact us at info@extremeflightrc.com or 770-887-1794. It is your responsibility to ensure the airworthiness of your model.

Please read over the manual completely before beginning. This will give you an overall understand of the assembly process and familiarize you with the tools and supplies you will need.

Extreme Flight consantly upgrades and improves its products. Hardware and details may change, but the basic process remains the same. If you are confused about a step, please call or email us at the contact information on our website, we will be glad to help.

# Unpacking and Sealing Covering

Your aircraft has been on a journey around the world since it left our factory. Although the covering material was perfectly smooth when it was boxed up, changes in weather and humidity may have wrinkled the covering material. For certain, wrinkles will appear in the covering once you have unpacked your aircraft and it adjusts to the atmospheric conditions in your region. Learning to remove wrinkles from covering is a necessary skill to maintain your wood aircraft.

Your Extreme-Flight produced aircraft is covered in Ultracote covering material (US market name), also called Oracover in global markets. If you need replacement covering to repair damage, Ultracote/Oracover is widely available from retail hobby suppliers. Also, each roll of Ultracote/Oracover includes excellent instructions which are also available online. Please refer to them for details about working with and/or repairing your covering.

The basic tools are a covering iron and a hobby heat gun. Start by using the iron at 220F (104C) to seal all of the edges on the covering scheme. This is CRITICAL on the leading edges of wings and stabilizers. Then use the iron at 300F (149C) or a heat gun to shrink out any wrinkles in the covering. Remove the plastic canopy from the aircraft when using a heat gun to protect it from heat damage. GO SLOWLY AND CAREFULLY to avoid over-shrinking or burning the covering. This is a skill which takes a bit of practice. There are many tutorial videos online demonstrating shrinking wrinkles from Ultracote. IF YOU ARE INEXPERIENCED WITH COVERING, WE RECOMMEND TO USE ONLY THE IRON AT FIRST. THE HEAT GUN WORKS VERY FAST AND YOU MAY NOT BE ABLE TO REACT QUICKLY ENOUGH.

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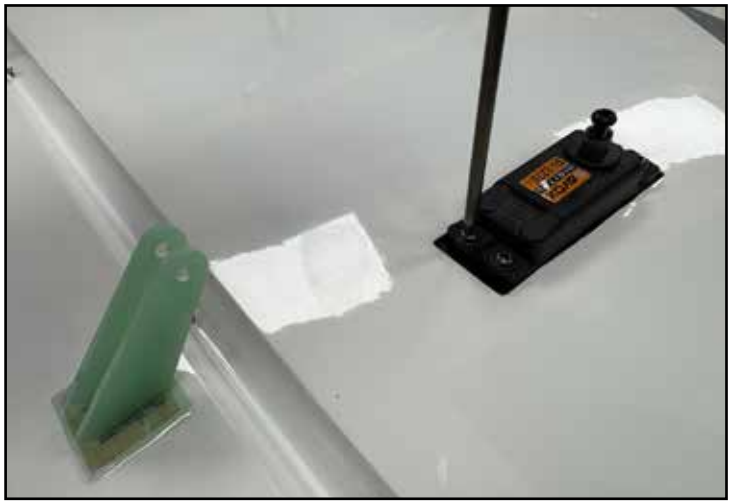
# 1

We begin assembly with the wings. They arrive to you pre-hinged, the hinge gaps are pre-sealed with covering, and the control horns are pre-installed. They utilize one full-size servo per wing to activate the ailerons, we recommend the Savox SV-1270TG or equivalent. Use Extreme Flight aluminum 1.5” servo arms or equivalent. Start by adding a drop of thin CA glue to each servo screw location to harden the servo mount. Attach your wire extension to your servo and use a plug lock as shown to prevent un-plugging in the air. Run the wire out the root of the wing as shown as use an included rubber grommet. Install the servo with 4 servo screws (here we are using Extreme flight hex-head servo screws). Assemble the arm and appropriate pushrod using screws, washers, tapered cone spacer, and locking nuts as shown.

NOTE: The pushrod linkage is slightly “crooked” at rest, this is by design so that it is optimized at high control throw. On our radio system, with the servo travel maximized, we were able to use the #2 hole on the arm as shown, Using the innermost possible hole increases power and resolution for the servo system.



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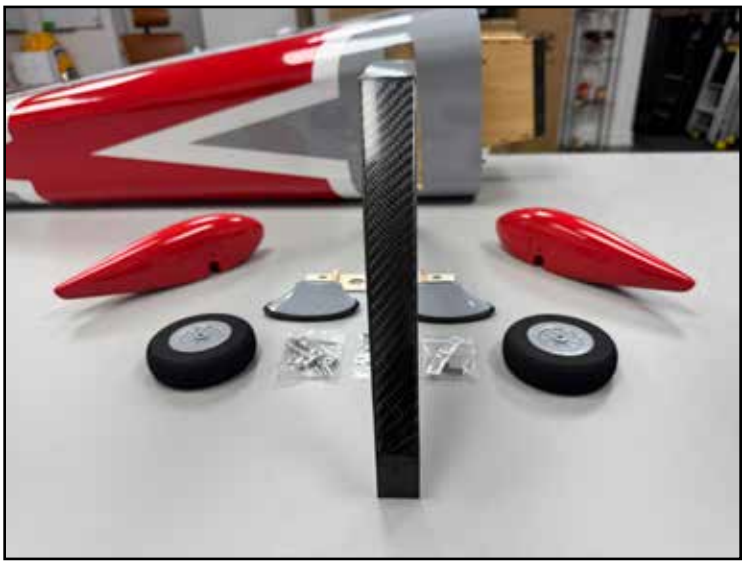
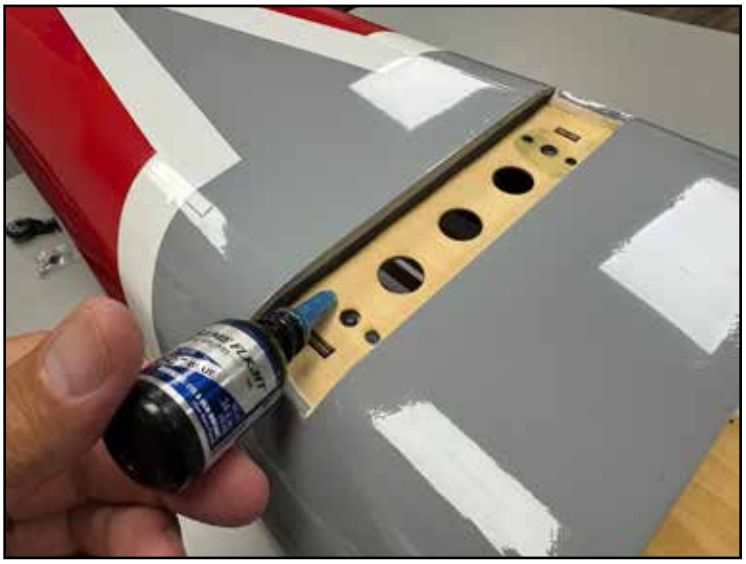
# 2

Locate the landing gear and associated parts. Note the carbon landing gear has a “front” and sweeps slightly forward when intalled correctly. Apply blue threadlocker to the nuts installed in the fuselage as shown. Attach the gear with four bolts. Locate the cover plate. Use a rubberized glue (we prefer Gorilla Clear Grip) and apply to the pedestals on the cover plate as shown, and adhere to the gear as shown. Allow to dry.





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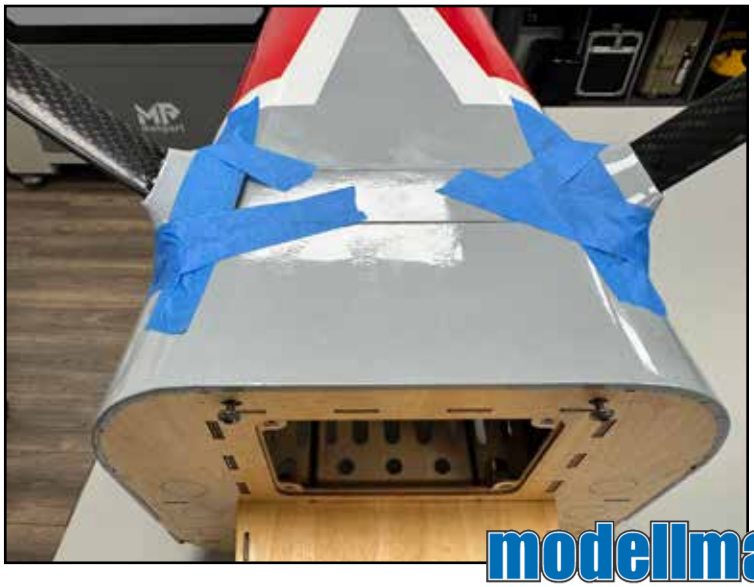
3 Locate the landing gear cuffs. Try the cuff on each side and find the best fit. Mark the end of the cuff on the landing gear as shown. Clean and scuff the gear leg and apply a large dollop of Clear Grip as shown. Slide the cuff on. Tape in place and allow to dry.

NOTE: The cuff is glued only to the gear leg. It floats against the fuselage when the gear flexes.



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# 4

Locate the wheels, axle system parts, and wheel pants. Attach the axles to the gear legs as shown with washers and locking nuts. There is a flat area near the tip of the axle. Orient this facing down toward the runway. Install the wheel and the wheel collar, using blue threadlocker on the set screw. The wheel pant slides over the axle and wheel, sand or grind the pant if necessary for easy fit. Use blue loctite on the 3mm screw and attach the pant to the gear leg.

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# 5

Locate the tailwheel parts bag. The tailwheel mounts on the fuselage with two wood screws. Apply a drop of thin CA to the screw holes in the lower fuselage. Attach the tailwheel to the fuse. The tailwheel is steered via a wire "tiller" which engages a ball link in the bottom of the rudder. Locate the hole in the bottom of the rudder and insert the ball link with expoy glue as shown. Allow to cure. Mount the rudder to the fuselage, feeding the tiller wire into the ball link, bringing the hinge halves together and overlapping, then inserting the hinge wire down through the top of the rudder as shown. Spend time to align the rudder carefully and twist the wire through all the hinges. Screw the wire into the top of the rudder as shown. You can use blue threadlocker but it is not necessary and this prevents future removal.

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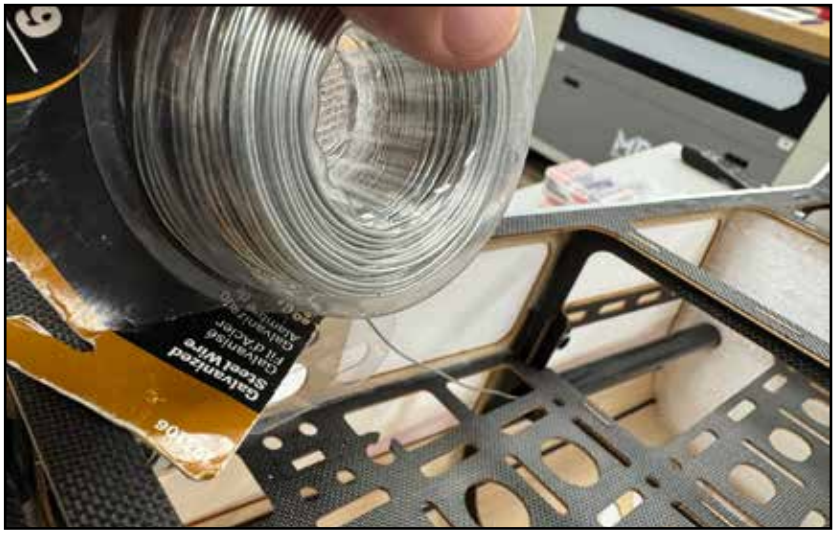
# 6

There is a plastic tube mounted in the fuselage to contain and guide the servo extension wires for the tail. There are a few methods to pull the extension wires through the tube, here we are using steel utility wire to pull the wires through. Attach your servos to the extension wires, again using plug locks. Use your rudder servo as a guide, and pre-drill the holes for the rudder servo screws with a 1mm drill but. Add a drop of thin CA to each hole. Mount your rudder servo as shown, here we are using Extreme Flight hex-head servo screws. The rudder uses a full-size high-performance metal-gear servo, we recommend the Savox SV-1270TG or equivalent.



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# 7

Locate the rudder pushrod and install it onto the rudder horn and servo arm as shown, with screws, washers, cone-spacer and locking nuts. With our radio system, we used a 1.5” Extreme Flight arm and located the push-rod to the outermost hole as shown. NOTE: The pushrod is slightly “crooked” at the neutral position. This is by-design so that it is properly oriented at full-throw.

Attach your elevator servo to the extension wire with a lock. Attach the elevator pushrod to the elevator horn as shown.

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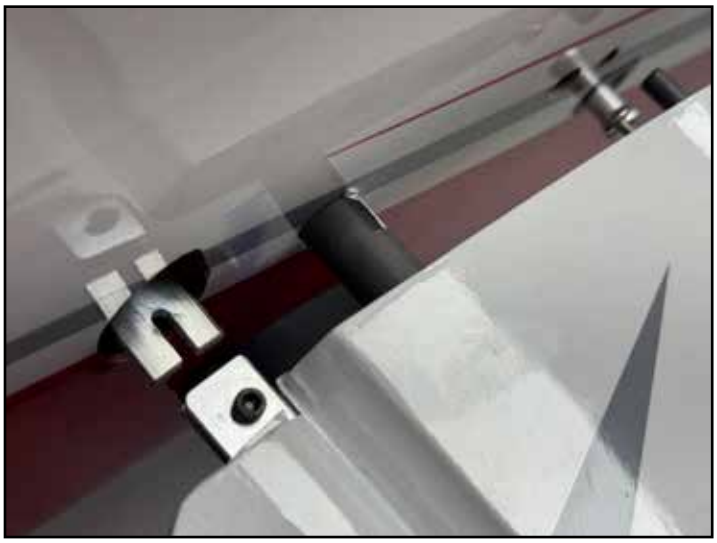
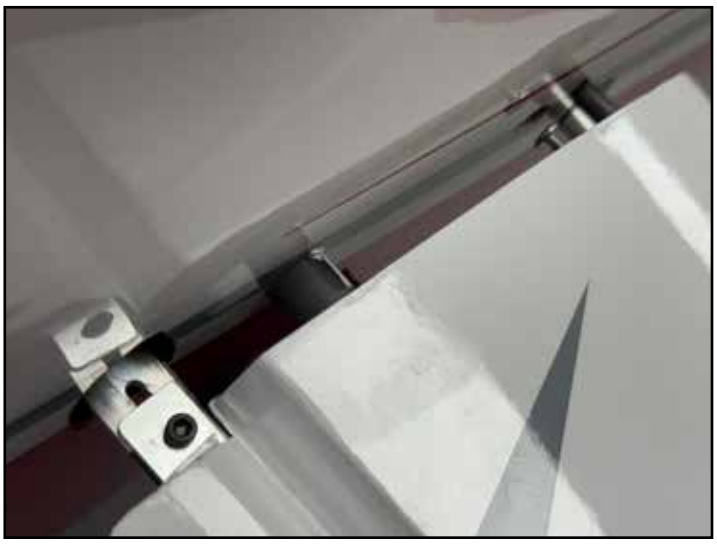
8 The stab/elevator mounts onto a carbon tube spar and slides onto the fuselage as shown. The connector between the two elevators is an aluminum joiner. It is clamped to each elevator half by a screw and locking nut. (Note that to remove for transport, you need only loosen one of these nuts, and the pushrod-to-arm screw.) install and latch both stabs in position, drill your elevator servo holes and mount your elevator servo as you did for the rudder. Attach the pushrod to the servo arm (1.5” aluminum arm in the outermost position) and mount to the servo as shown. For flight, be sure both elevator joiner clamp screws are tight. Again, we are using a Savox SV-1270TG servo.





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The 75” Extra 260 is designed and tested to use either 35CC gas single cylinder (the GP-38 or DA-35 are preferred) or 40CC twin cylinder (either angle-plug or straight-plug fits the cowl without modification). We tested on the DLE-40CC and GP-38. Performance is excellent on either one. We also tested on 3500 Watt 12S electric using 12S 3700mah lipo. Again, excellent performance.

What is vitally important to good performance in this aircraft is NOT to overload it. For all of our testing, we used only ONE 2S 2000mah lipo battery to power radio and ignition systems. This is sufficient for several flights before recharging. We do NOT use a separate ignition battery, we use an IBEC (ignition battery eliminator circuit) such as the Tech-Aero unit to power the ignition from the single onboard battery. We also do not use unneccesary switches, or any heavy equipment. Keep your Extra light, you’ll love it.

Also, the firewall of your Extra is built with a RIGHT THRUST ANGLE. Your engine/motor and prop will sit pointing slightly to the right when installed, as shown.  This is because the net gyroscopic and pitch effects of a prop spinning in the clockwise direction act to push the nose of the airplane left. All of our Extreme Flight aerobatic aircraft use right-thrust to help keep the nose pointed stright in high-thrust maneuvers and take some workload off of you, the pilot. Do not adjust this RIGHT THRUST angle.

# 10

The 75” Extra 260 has bolt locations for some common power system marked on the firewall. If your system is not marked, obtain the paper template for your mounting bolt pattern and use the four centering line marks on the firewall to line it up for drilling. We recommend approaching the final hole size in multiple drill size steps as shown to get the cleanest holes. If using electric power, mount your motor and standoffs as shown using large washers on the back of the firewall, and blue threadlocker.

Two air deflectors are included to direct air onto your brushless motor. Mount them into the cowl as shown using epoxy or Clear Grip glue. Mount your ESC to the bottom of the motor box and hook up your power system as indicated in its documentation.

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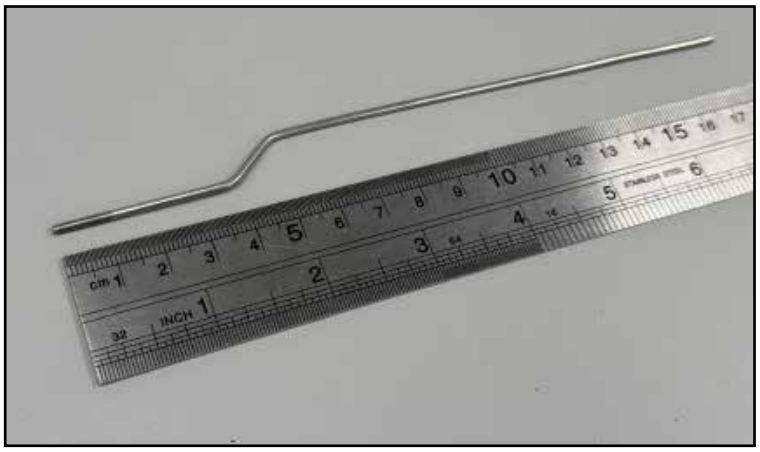
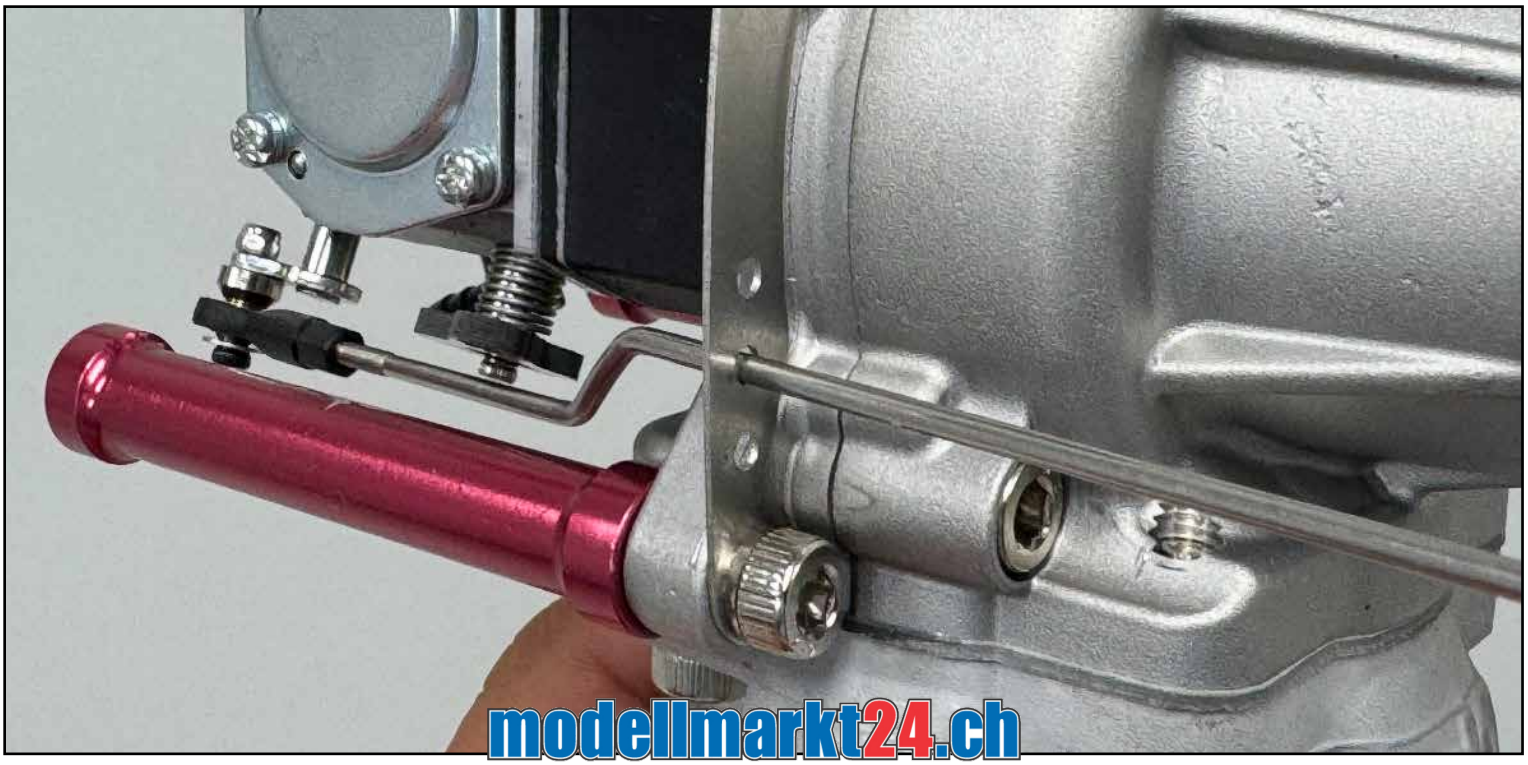
# 11

Next we'll detail the installation of a single cylinder engine using a GP-38 engine as an example. The 75" Extra 260 includes a choke linkage for single-cylinder (GP-38 and DA-35). A long pushrod, ball link, and sheet metal bracket are included. On 35-38CC engines, the choke and throttle linkage are often very close together and prone to inteference. The pictured sharp bend in the pushrod is necessary to clear the throttle linkage. Study the photos. At the front, we recommend a 90 degree bend in the choke pushrod so you can easily grab it through the opening at the front of the cowl.





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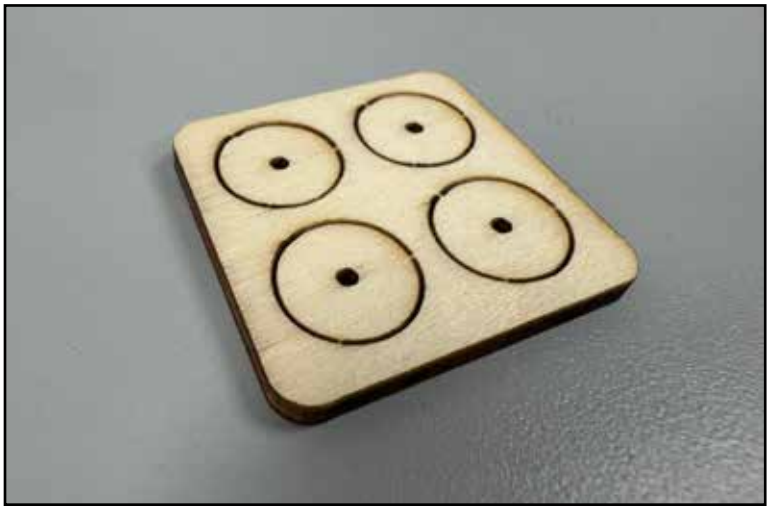
# 12

The 75” Extra 260 includes a 3mm throttle pushrod system and an infinitely adjustable aluminum throttle servo mount for a “full size” servo mounting screw pattern (here we are using a reduced-height Savos SV-1254MG servo). Drill your throttle arm on the engine for a 3MM screw. Attach the pushrod to the engine. Use a 1” aluminum arm on your throttle servo and when you have your throttle servo in the correct location, drive mounting screws through the mount into the floor of the motor box. Use the included wood donuts as backup for the servo mount screws as shown.



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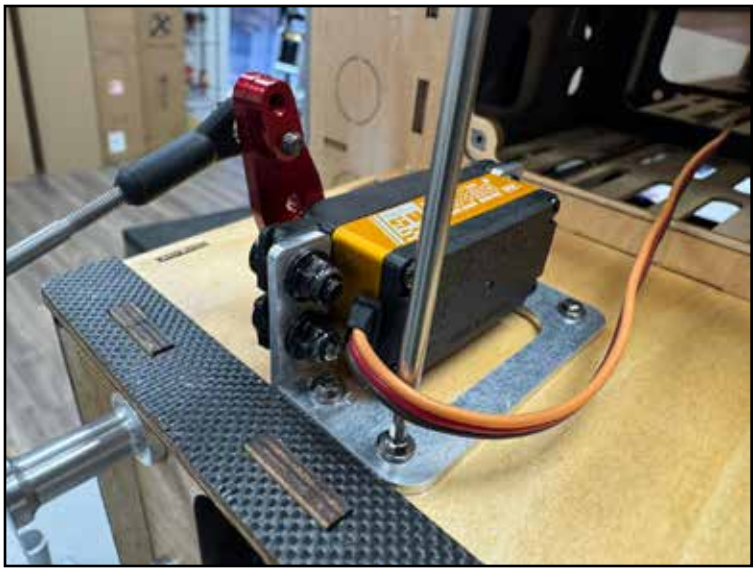
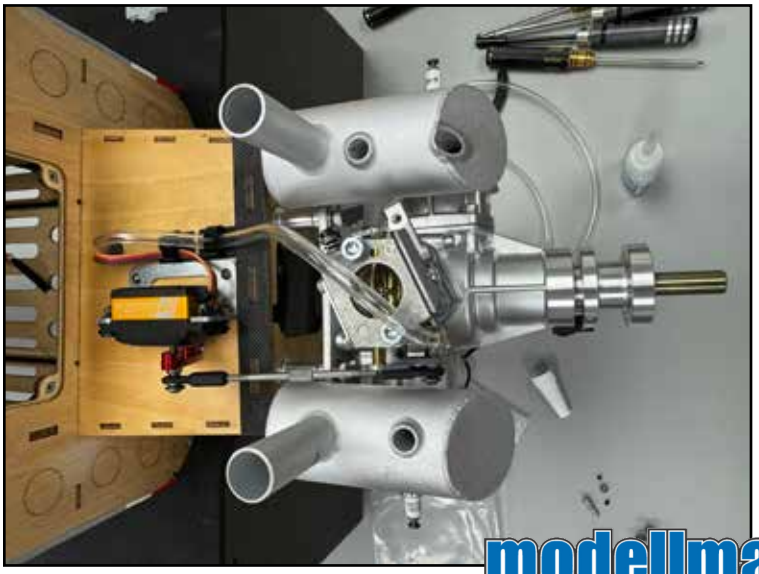
**13** If you are using a 40CC twin engine, here is the proper installation of the throttle servo, mount and pushrod on the *bottom* side of the motor box. Again, use the wood donuts as backup to the mounting screws. The choke linkage for a 40CC twin simply extends through a hole on the bottom of the cowl, it is much simpler than the single-cylinder choke linkage, and in some cases the choke lever can be accessed through the cowl vent with no linkage needed at all.





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**14** The 75” Extra 260 includes a clear plastic tool to help you make the holes in your cowl for exhaust tubes to exit. Mark and cut the needed hole in the clear tool and then transfer easily to the fiberglass cowl. Use a rotary tool to make the holes in the fiberglass (ensure good vetilation and eye protection!).

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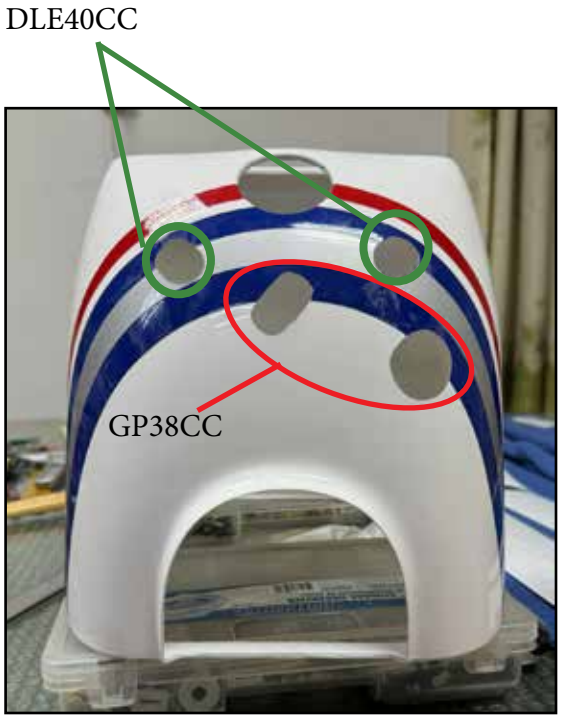
**15** Also use the clear plastic tool to determine if you will need to make a hole for your spark plug cap. Our installation of the GP38 needed a small slot for the plug. For some of the 40CC twins, exhaust tube extensions are needed. We use the listed silicone tubing as shown, 15mm inside diameter.



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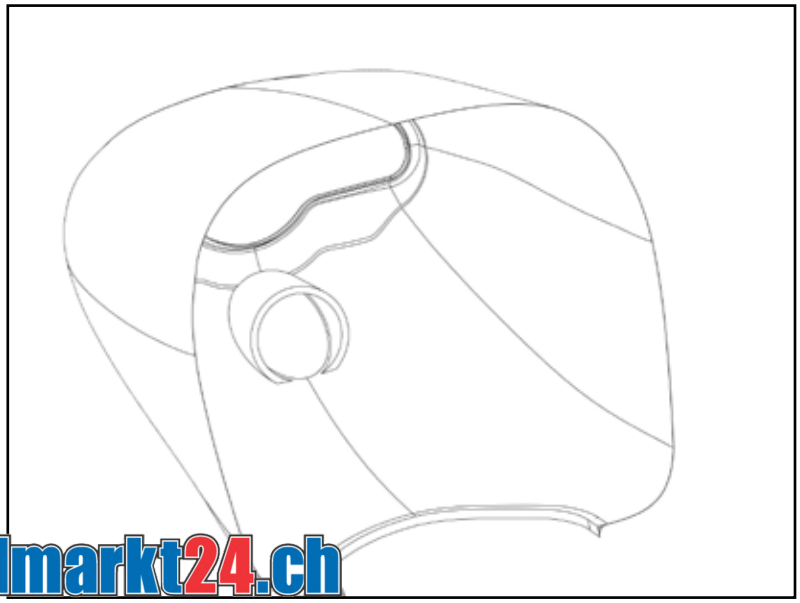
# 16

The 75” Extra 260 includes a fiberglass cooling duct for a 40CC twin. Trim this duct as needed with a rotary tool so that it has 6-10mm clearance to the engine. Glue in the cowl as shown with epoxy or Clear Grip. If you are using a 35-38CC single, a foam duct is included, roll the duct into a tube shape and glue into the cowl with medium CA to tack in place, then follow with Clear Grip.



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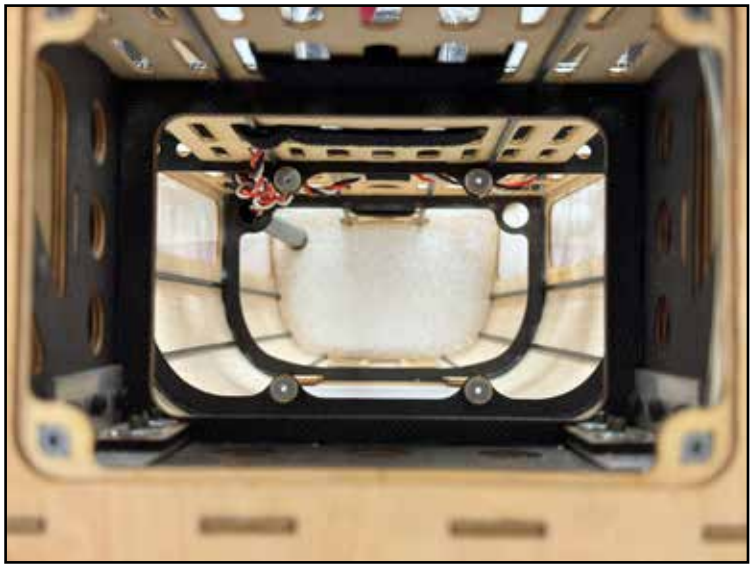
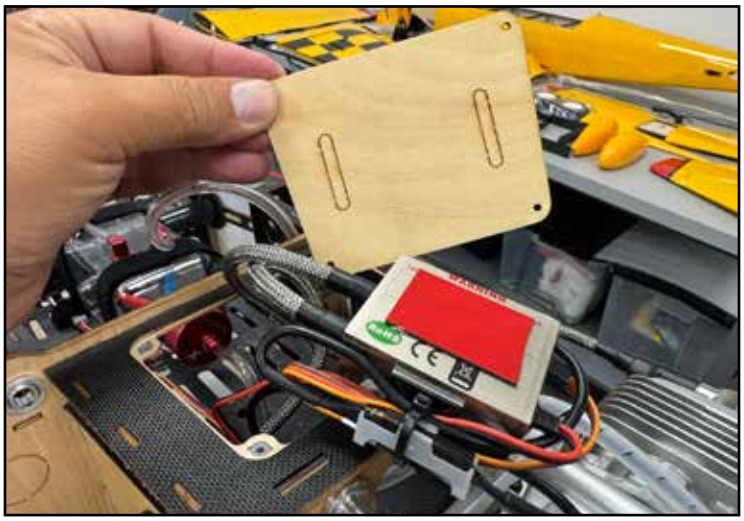
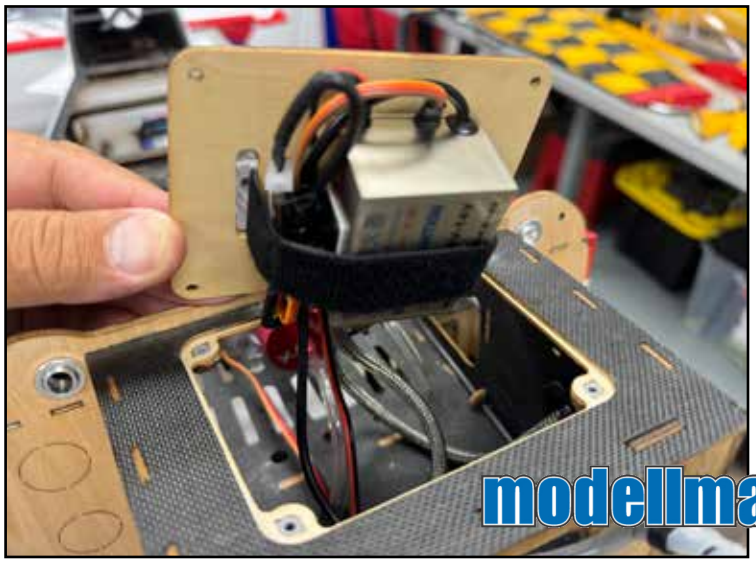
17

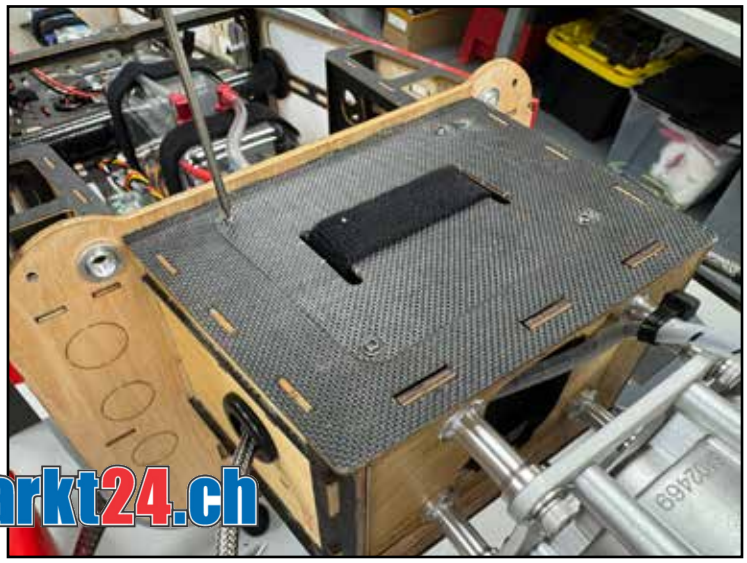
The 75” Extra includes an exhaust tunnel for a canister or tuned pipe, and a mount and vibration absorbers. The mount screws into the plastic receptacles in the tunnel. A cover plate with cooling vents and an exit for a canister exhaust is included, it screws into the bottom of the fuselage after the covering has been removed from the opening. For electric operation, the same vented plate is installed and, typically, the top plate of the motor box is left off, to allow cooling air to enter for the batteries. For any installation except canister/tuned pipe, install the blockoff plate on the front of the exhaust tunnel.

Mount for your ignition box to the bottom of the motor box top plate as shown. Run your ignition wire(s) out the sides of the motor box as shown.









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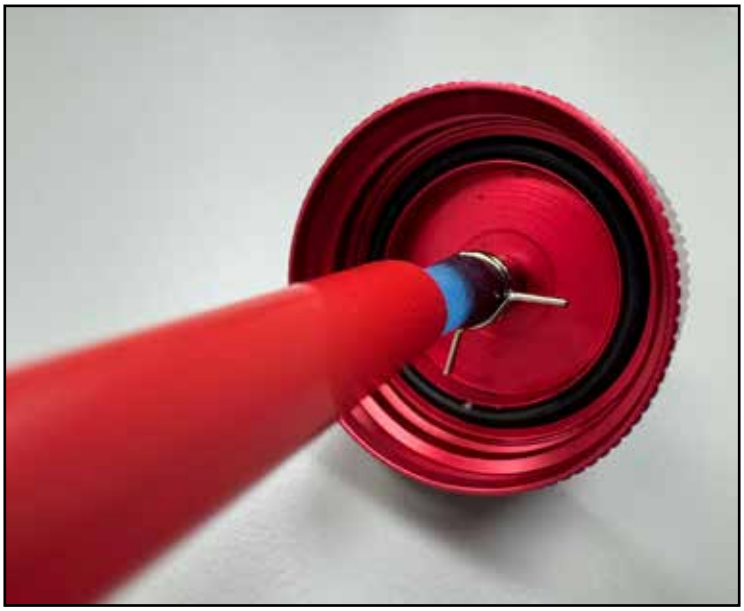
**18** Prepare your fuel tank. We prefer to use a fountain drink straw over the clunk line to add stiffness for extreme aerobatic manuevers as shown. Re-assemble as shown and check the tightness of all fittings. Apply the velcro strip to the bottom side to attach to the tray. We do not use any foam between the tank and tray.



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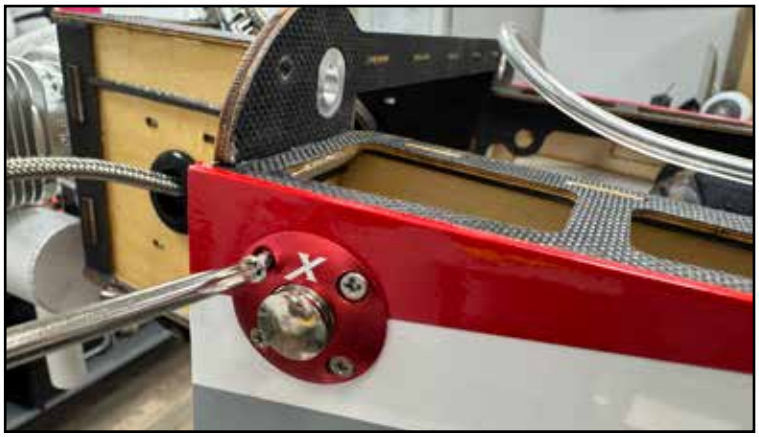
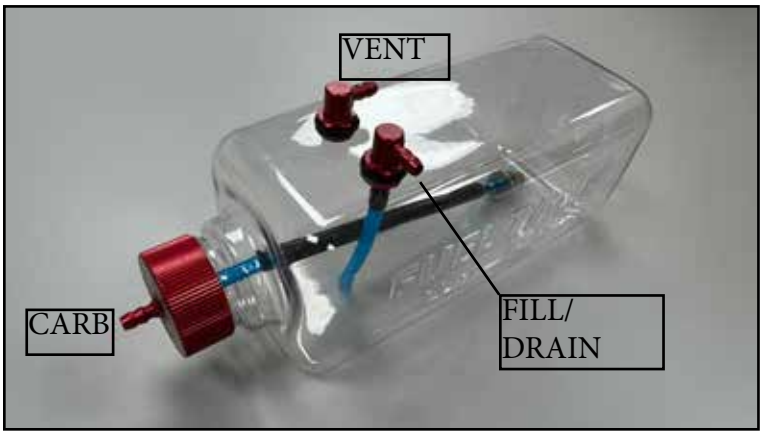
# 19

Remove the covering over the fuel dot opening as shown. If using a large dot, expand the hole as neccessary. Mount the tank with two strong velcro straps as shown. Plumb the tank as shown, include a loop in the vent line as shown to prevent fuel siphoning during flight. Run the vent to the indicated location and terminate outside the bottom of the fuse as shown.





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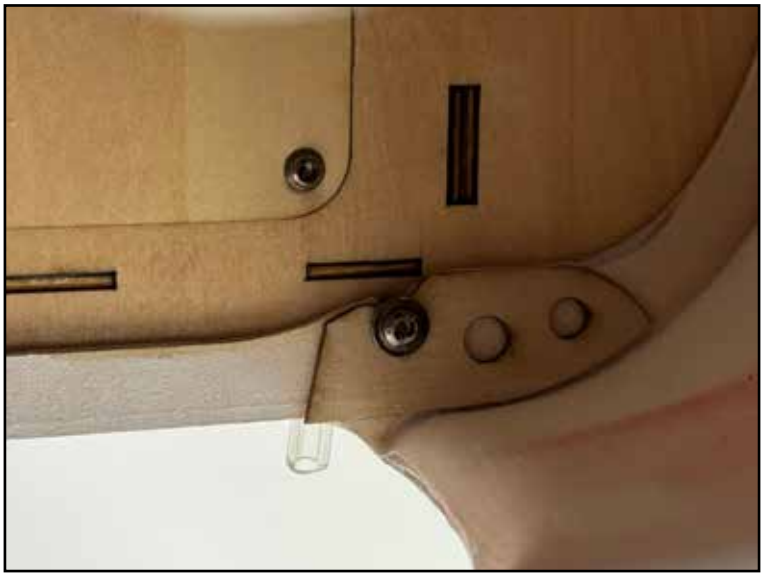
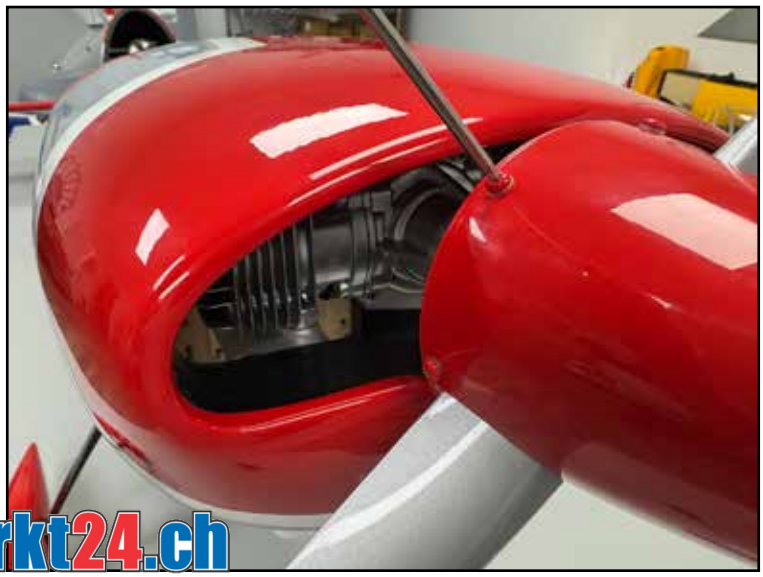
# 20

Install the cowl with upper and lower screws with blue loctite.

Install your prop. If you are unfamiliar with the process of drilling props for your engine bolt pattern, we highly recommend getting a pre-drilled prop from Extreme Flight. Take note of the witness mark inside your Extreme Flight carbon spinner to maintain its balance when installing the cone.





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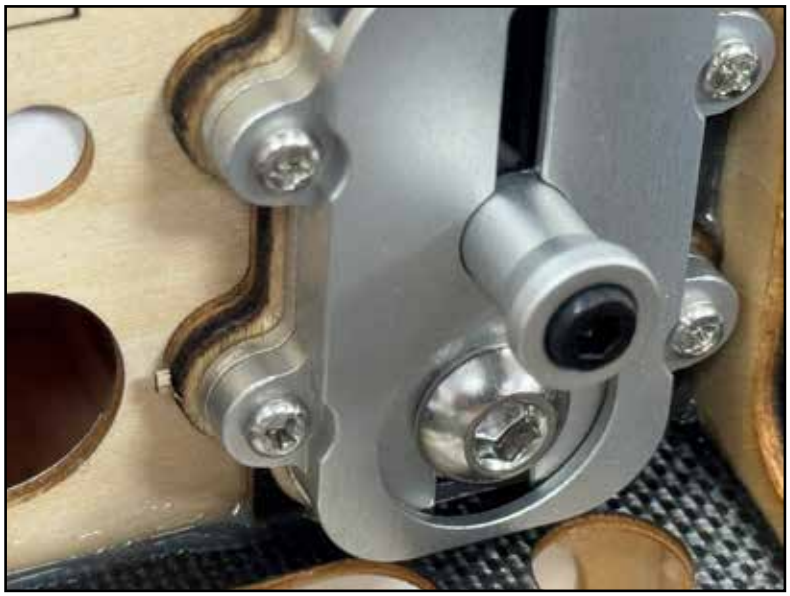
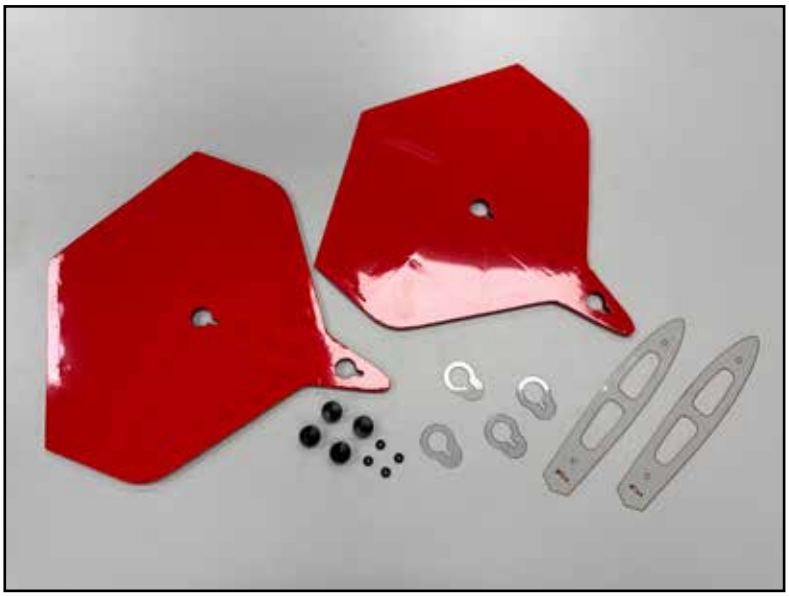
# 21

Slide the carbon wing tube into place and install the wings. Latch the wings in place. Note that the latch screws in the wings are adjustable if you need the latch to fit tighter or looser. Locate the SFG parts and glue the keyhole covers onto the SFG plates as shown. Screw the SFG's onto the wingtips with the spacers in-between the SFG plates and the tips. You can remove the SFG's by unscrewing a few turns and sliding the plates forward. The SFG's add additional stability to the airframe, we always fly with them installed.





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22 Install your receiver and flight battery. For all testing installations, GP38, DLE40, and 12S electric, we were able to achieve balance simply by moving the 2S 2000mah flight battery. The 75” Extra 260 is very easy to check balance, simply pick it up by the former marked CG as shown.For your maiden flight, the plane should hang level when supported by the former. Move the battery or equipment to achieve CG before flight.

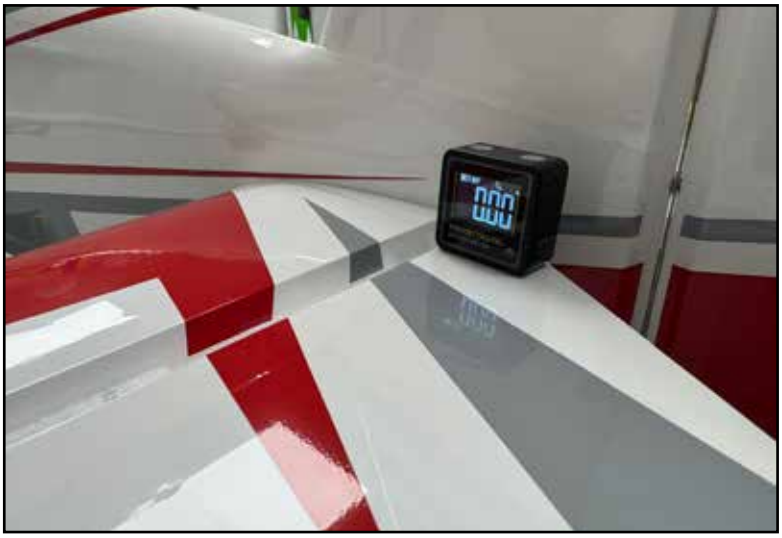
23

Set your control throws as follows:

Ailerons - Low Rate 15-20 deg up and down, 40-45% expo
High Rate 37 deg up, 36 deg down, 60-70% expo

Elevators - Low Rate 10-12 deg up and down, 15-20% expo
High Rate 50 deg up and down, 60-70% expo

Rudder - Low Rate 20 deg, 40-50% expo
High Rate 45-50 deg, 60-80% expo



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A 145mm pilot figure is available from Extreme Flight for your 75” Extra 260. It attaches to the canopy hatch as shown with two thumb screws.

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If repairs are needed, here are the covering color codes for your Extra 260:

| Oracover colors | Ultracote colors |
|---|---|
| Blue/Orange Scheme | |
| Dark Blue #52 | Midnight Blue- # HANU885 |
| Orange #60 | Orange - #HAN877 |
| White #10 | White-# HANU870 |
| White/Blue/Red scheme | |
| Dark Blue #52 | Midnight Blue- # HANU885 |
| White #10 | White-# HANU870 |
| Ferrari Red #23 | True Red #HANU 866 |
| Red/Grey Scheme | |
| Ferrari Red #23 | True Red-#HANU866 |
| White #10 | White-# HANU870 |
| Light Grey #11 | Grey #HANU882 |

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