



30cc MXS-Bach - Red - FUSION CONCEPT



INSTRUCTION

MANUAL

Safety Precautions

Protect Your Model, Yourself and Others... Follow this Important Safety Precaution

Your RedWing RC 30cc MXS-Bach is not a toy, but rather a sophisticated, working model that functions very much like a full size airplane. Because of its realistic performance, the RedWing RC 30cc MXS-Bach, if not assembled and operated correctly, could possibly cause injury to yourself or spectators and damage property.

It is highly recommend that before your maiden flight of your RedWing RC 30cc MXS-Bach you have an experienced, knowledgeable modeler do an extensive “pre-flight” inspection of your RedWing RC 30cc MXS-Bach for an added safety percussion.

For information on flying clubs in your area, you can contact the national Academy of Model Aeronautics (AMA), which has more then 2,500 chartered clubs across the country. Contact AMA at the address or toll-free phone number below:

Academy of Model Aeronautics
5151 East Memorial Drive
Muncie, IN 47302-9251

Ph. (800) 435-9262
Fx. (765) 741-0057

Or visit the Internet at www.modelaircraft.org



Contents of Kit

- All Our planes come with carbon fiber parts (Spinners, Gear, Arms, Tubes). They are high quality with most features done for you already.



- Pre glued cowling ring with blind nuts mounted to the fuselage



- Canister Installation position if fuselage along with reinforced landing gear mounting area



- Removable wings and Stabs with carbon “anti- Roll” Pins pre installed



- laser etched engine mounting template for the DLE30, DLE 35RA, or the PTE36



- Pre installed Pull Pull wire with ball links on rudder



- Pre Cut Control horn slots



- Floor and dashboard for cockpit pre installed



Main Landing Gear and Tail Wheel

Main Landing Gear Installation

- All parts for the Main landing gear
- Install the landing gear in the pre drilled holes with the supplied “Phillips” head screws (with built in washer) and locking nuts.
- Use a 9/32 Sockets to tighten locking nuts along with using Blue Loctite on threads
- Install the landing gear spring steel axles with locking nuts.
- Use a Metric 14 Wrench and a ½ inch socket to tighten
- Use a Dremel and a grinding disk to grind a flat spot for the set screw to rest against ensuring a tight fit.
- Install the wheel and tighten the collar set screws using Blue Loctite ensuring that the wheel freely rotates on axles.



- Locate the blind nut and 2.5 Alan bolts.
- Press the blind nut into the wheel pants as shown and install into the pre drilled holes on landing gear with Blue Loctite.



Optional steps

- use a Dremel tool with a cutting head to cut down the bolt that holds on the wheel pants for clearance of the wheel.
- Use your favorite type of fuel proofing product to fuel proof the exposed landing block to ensure no fuel soakage from your exhaust.

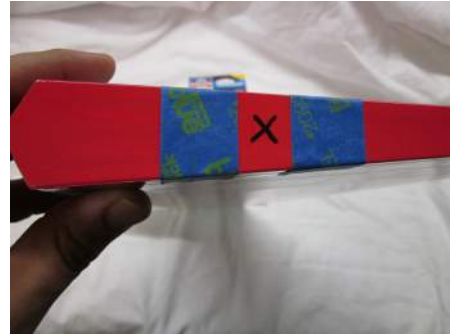


Tail Wheel Assembly

All parts for the tail wheel



- Locate the hard block on the bottom of the rudder and drill a 1/8 inch pilot hole and enlarge to 7/32 inch for the steering tube
 - DO NOT glue at this time until tail wheel is installed and completed



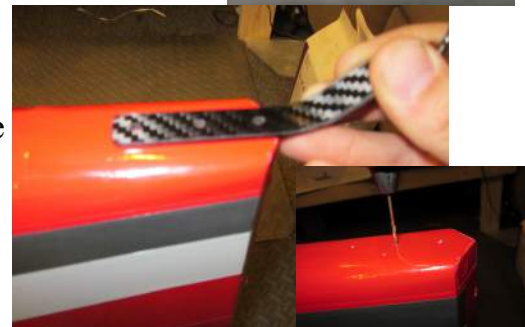
- Assembled tail wheel parts



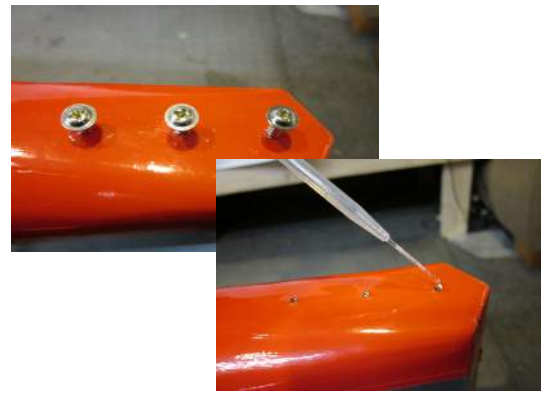
- Assemble the tail wheel using a 10mm socket and a 7/16 inch wrench and tighten to the carbon fiber tail wheel mount



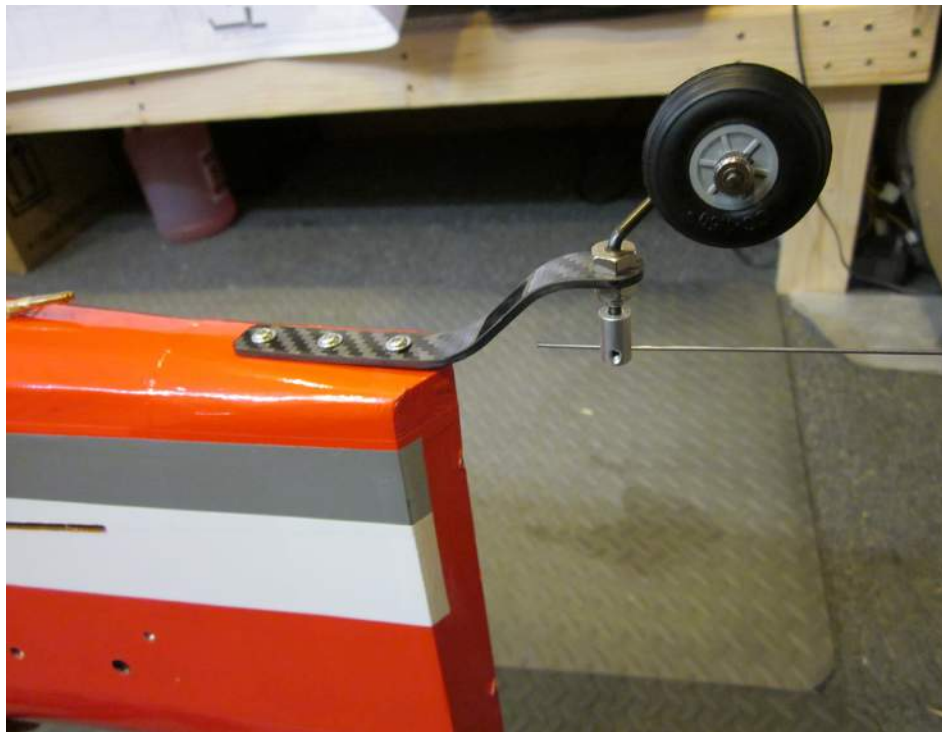
- Use the tail wheel bracket as a template, center the bracket, mark and pre drill holes using a 1/16 inch drill bit for the mounting screws



- Use the tail wheel screws to open the pre drilled holes in step above.
 - Wick Thin CA into the holes



- Once CA is dry attach the Tail Wheel mount and tail wheel to fuselage. Install the steering arm into the rudder steering tube and Epoxy the steering tube into place in the earlier drilled 7/32 inch hole.



Main Wing Assembly

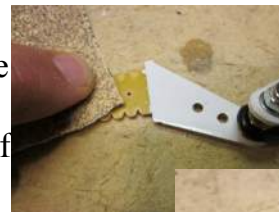
All parts for the tail wheel



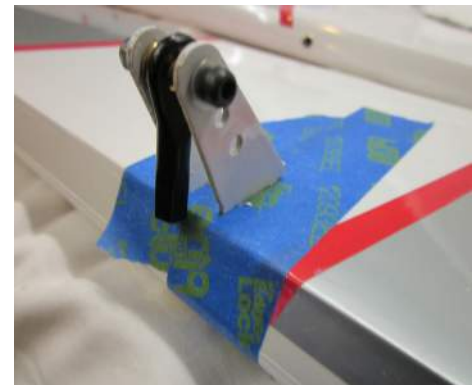
- locate the pre cut control horn slots and the control horns with the pre installed ball link



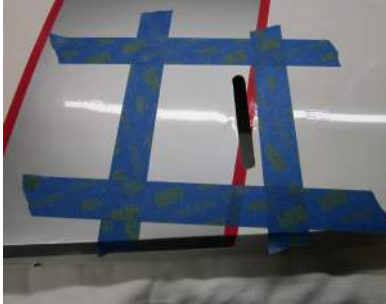
- use coarse, 60 grit sand paper or block and sand the lower unpainted portion of the control horn to ensure a good bond between the glue and surface of the control horn (remove the shiny look)



- tape off the pre cut control horn slots and apply your choice of gluing agent to the slot and ensure the painted control horns set completely into the slot before glue cures. (Gorilla Glue works well for this as it expands and holds well)



- locate either the internal wing servo mount or the external servo mount and open the covering. (internal servo mount is outlined in the blue tape below) Use an hobby knife to open the internal servo hatch or a heated soldering iron to open the external mounting location



- prepare your servo by centering it and adding your control horns along with a 6" Twisted Wire servo extension and a servo safety clip (sold separately at RedWing RC)



- install the servo into the wing and drill holes in for the mounting screws and harden with thin CA.

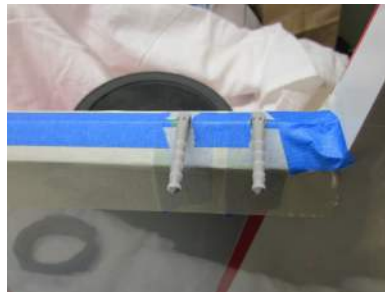
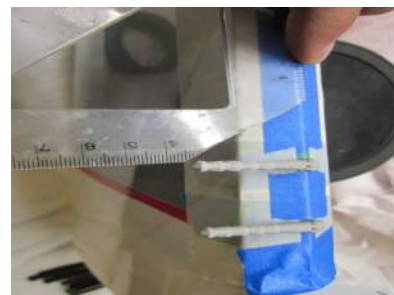


Glue control surfaces

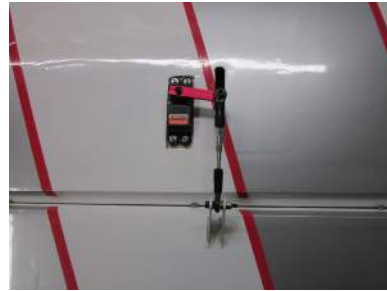
- gather the Robart style hinges, masking tape, hole punch and choice of glue (again Gorilla Glue works very well here)
 - Note: Highly recommended that you roughen the hinge with course 60 grit sand paper to allow for better adhesion with the glue and wood blocks inside wing



- use the hole punch to make a hole in the center of the tape. Place the hole over the pre drilled hinge holes on the wing and control surface. Glue the roughened Robart style hinge into the holes ensuring that the hinge is operating the correct way and is set at a 90 degree angle to the center line of the wing/control surface.
 - Recommended to glue one half at a time. Use tape to hold control surface to the wing to ensure that the glue does not push the two apart.



- Prepare the Turn buckle rods by installing the ball link and install on servo arm
 - the turn buckle wrench from RedWing RC makes this and other field adjustments a breeze



- Locate the SFG (Side Force Generators) location in the ends of the wings on the second rib. Use the heated soldering iron to open the slots in the wing.



- Insert the pre painted metal SFG mounts through the holes you just made and run the bolts through the SFG and tighten into the mounts both top and bottom of wing.



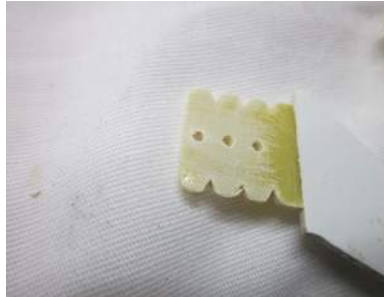
- Repeat steps above for second wing.
 - Install the wings, wing tubes, and wings bolts on the final assembly

Rudder Installation

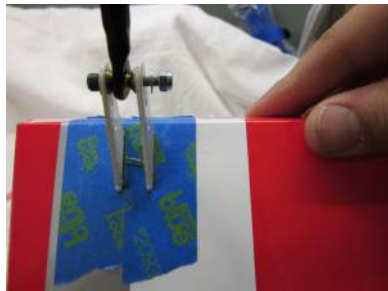
All parts for the Rudder



- Find and open the slots for the rudder control horn. Test fit the control horns on both sides and measure the correct length and trim the longer part on the non painted side of the control horn.



- Prepare the control horns and slots as you did in the wing installation. Once your comfortable with the way everything fits glue in the control horns, hinges and rudder to the fuselage



- locate the re installed Pull Pull wire at the rear of the fuselage. Remove tape and thread the brass wire screws into the ball links attached to the control horn on both sides.



- Just like in the wing installation drill and tap the servo screws and then wick thin CA into the holes to harden wood, then re-install servo



- Connect the rudder servo arm to the servo and the Pull Pull ball link to the ends. Crimp the Pull Pull brass collars and wick thin CA into them.



- Pull the wire tight while ensuring the servo and rudder are in there centered position thread and crimp the brass collars along with wick thin CA into them. Ensure that the wires are tight but not stressing the servo and cross within the fuselage

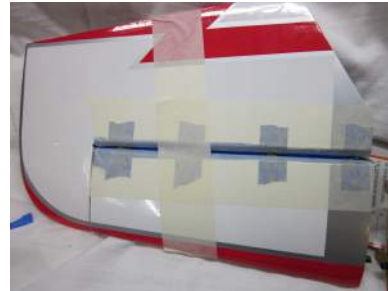


Stabilizer Installation

All parts needed



- Find pre cut slots for the rudder control horn, Test fit the control horns on both sides. Prepare the control horns and slots as you did in the wing and Rudder installation. Once your comfortable with the way everything fits glue in the control horns, hinges and Elevators to the stabilizer fins



- Locate the servo mounting location on the fuselage (both sides) use a heated soldering iron to open the holes for the servos. Pre drill and harden the servo screw holes as done in the previous steps and install the servos with the 18" twisted wire servo extensions and secure with safety clips. Run the wires inside to fuselage in the designed servo lead holes



- insert the carbon fiber stabilizer tube into the pre drilled hole



- Locate the four (4) 5/64" screws and use Blue Loctite on the threads and attach the Stabilizers to the side of the fuselage



- Connect the control horns to the centered servo using the provided ball link



Engine Installation



- Install your choice of motor, DLE30, DLE35RA, or the PTE36 (pictured above)

- Locate the laser etched motor mount standoff drill points. Use a smaller bit and increase size as you get to the correct diameter for the screws in your standoffs



- Install the Standoff's with provided bolts. Install the bolt into a flat washer then insert into the firewall, then drop Blue Loctite on the threads and tighten standoff. Repeat until all four are installed.



- Temporarily mount the motor on the standoffs, mark the location of the fuel line and carburetor throttle arm. Remove motor and drill to appropriate size for fuel line and your throttle push rod.
 - Attach a ball link to the throttle push rod and secure to the carburetor throttle arm with a bold and nylon locking nut



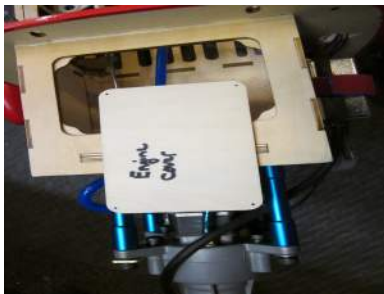
- Locate the pre glued throttle servo mount bracket and find an ideal location inline with the throttle push rod installed earlier.



- Once you have located an optimal location for the servo mount glue into place with 15 minute Epoxy.
 - Once it has dried install your throttle servo with the arm facing towards the motor or firewall. Drill your servo screw holes and harden as listed before. Hook up servo to your control arm on the servo with a Z-bend and plastic wire keeper



- Locate the Engine access hatch and use self-ta screws to tightly secure to the engine mount mount box.



Fuel Tank

- Your RedWing RC MSX-Sbach comes with a pre plumbed fuel tank per-installed for you. If you chose to use this or an upgraded fuel tank the process is the same to installation



- Locate the carburetor supply nipple on the tank and run your line through the firewall to the carburetor



- Run the vent and fuel supply line to the bottom and side of the fuselage place a vent line end on the vent line and attach to the fuselage. Use a fuel dot on the fuel fill line. Ensure that on the fuel fill line that you install a Gas safe fuel filter inline.



Muffler and Canister

Muffler

- Install the muffler with the provided Muffler bolts using Blue Loctite on the threads and ensure that the muffler gasket is installed between the motor and the muffler.
 - Install the motors electronic spark control box to the side of the motor box securing it with Velcro and ensuring that you have protective rubber foam between the box and motor mount box



- If your not going to install a canister locate the canister bay cover and install with self-tapping screws to seal off the motor compartment from inside the fuselage

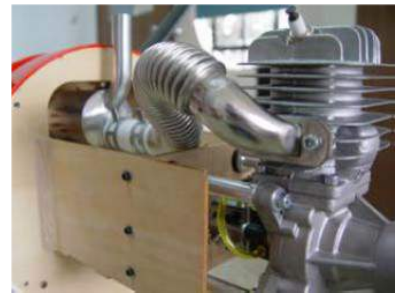


- **Canister**

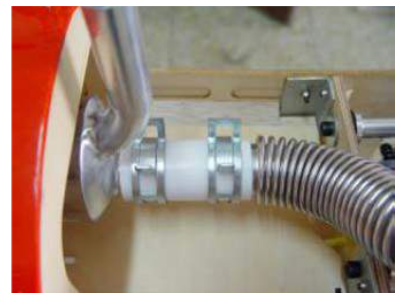
- Remove the covering from the pre cut canister air exit opening and ensure the edge has been sealed. Use a heated soldering iron with accomplish this for you



- Bend the flexible manifold to connect to the canister muffler. Mark and trim the excess pipe to fit.
 - Tighten the manifold bolts and secure with Blue Loctite



- Use the silicone coupler and clams to join the manifold and the canister muffler

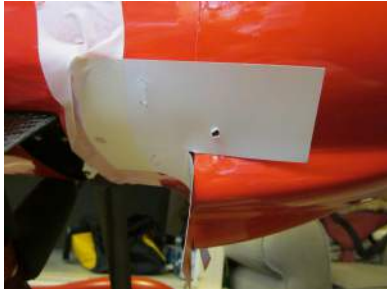


Canopy and Cowl installation

- locate the 2.5 metric Allen head screws with the rubber washer and metal washer inside. Set up your screws as pictured.



- Locate the hole on the fuselage for the wing bolts and open them with a heated soldering iron. Use scrap cardboard or stiff paper to mark the location of the cowl mounting plate and transfer that to the cowl, drill a 1/8inc hole for the cowl screw to go through. Place the top cowl screws into the pre drilled hole and tighten.
 - Use this step for the holes for the muffler exit and spark plug hole if needed



Installation Radio

- Install your radio system, engine disrupt safety switch, flight battery, and telemetry module, and misc radio equipment.
 - Center your trims and manually center all control surfaces with the turn buckle wrench. Set-up your rates (see below)
 - Recommended Throws: adjust to liking as you fly
 - Low Rates Settings | High Rate Settings
 - Rudder: 30 degrees, 20% expo | 40 degrees, 35% expo
 - Ailerons: 30 degrees, 25% expo | 50 degrees, 40% expo
 - Elevator: 40 degrees, 20% expo | 55 degrees, 40% expo
- Break in the engine as stated in the owners manual of the motor company.

Do a final and thorough inspection of the entire plane, control linkages, control horns, control arms, servos, hinges, tail wheel, landing gear, motor, prop, tank. Electronics!!!!

Center of Gravity

(Recommended CG: 5.25" to 5.5" from the LE at the root of the wing)

Find the Center of Gravity

Mean Aerodynamic Chord (MAC)

One theory is that all aircraft should balance at a point defined as 25% of the Mean Aerodynamic Chord, with no consideration given to tail area or moment arm. For the scale model RC airplane, I prefer to take these facts into consideration.

When designing a scale model we do not have the ability to change dimensions or ratios-we are restricted by our wish to build an accurate reproduction of the full size.

The formula I have used, came from a book written a few years ago by Gordon Whitehead titled "Radio Control Scale Aircraft Models for Everyday Flying" (A great book that every scale modeler should own)

Here is the formula- $CG\ POSITION = \frac{MAC}{6} + \frac{(3 \times TAIL\ AREA \times TAIL\ MOMENT\ ARM)}{8 \times WING\ AREA}$. Note that the Moment Arm is defined as the distance from the 25% MAC of the wing to the 25% MAC of the tailplane.

For a constant chord wing the MAC is obvious but for tapered or swept wings it is not so easy. However a simple graphical method is shown here-

- Draw or trace the wing shape as shown. Then extend the Leading Edge (L.E.) and Trailing edges to the center line of the plane. Also square off the tips. Now extend the opposite chord lengths as indicated on the drawing; i.e. lengthen tip chord B by root chord A and A by length B. The four extreme points are then connected by diagonals. The point where these lines intersect will indicate the Mean Aerodynamic Chord (MAC). To find the 25% of MAC position we must measure 25% of the MAC back from the L.E. and extend this to the aircraft center line.

