

# Stinger

**WARNING! THIS IS NOT A TOY!**

**THIS IS NOT A BEGINNERS AIRPLANE**

**This R/C kit and the model you will build from it is not a toy! It is capable of serious bodily harm and property damage. It is your responsibility, and yours alone - to build this kit correctly, properly install all R/C. components and flying gear (engine, tank, radio, pushrods, etc. and to test the model and fly it only with experienced, competent help, using common sense and in accordance with all safety standards as set forth in the Academy of Model Aeronautics Safety Code. It is suggested that you join the AMA and become properly insured before attempting to fly this model. If you are just starting R/C modeling, consult your local hobby dealer or write to the Academy of Model Aeronautics to find an experienced instructor in your area.**

Write to : Academy of Model Aeronautics, 5151 Memorial Dr, Muncie, IN 47302

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## **STINGER BUILDING INSTRUCTION**

Thank you for purchasing our airplane kit. We sincerely hope you will enjoy building and flying our new Giant Scale Stinger. Building is straight forward with the minimum of parts for fast assembly. Flight characteristics are uncompromised and forgiving. Set the control movements to Hot Dog and enjoy aerobatics that will please the most seasoned pilot. A pure joy to fly. For best performance, we recommend the Stinger as shown on the plans. Before starting, please read through the instructions while looking over the plans. Start with the wing and tail group. They are needed to build the fuselage. You will note that the wing panels are completed as much as possible before joining them together, providing easier handling. We have also included some building tips to help you along the way.

### **WING CONSTRUCTION**

1. Remove the foam wing cores and inspect them. Don't worry about left and right hand panels because the airfoil is- symmetrical.
2. Sand the surface of the panels lightly with 100 paper to remove any ridges and irregularities you might find.
3. Trial fit the 1/2" x 5/8" balsa spars in the grooves for a good fit. Make sure the spars are flush with the top surface of the wing. When satisfied, glue all four spars in place with white glue. Make sure the wing core is on a flat surface so as not to induce a warp.
4. Pick out the root surface on each panel to be joined and lay out the notch in the leading edge. Also, lay out the slot for the 1/4" ply wing joiner. The dimensions are specified on the plans.
5. Cutting the notch and slot can be done best on a band saw however; a hand coping saw will also do it if you carefully follow the lines. Do this carefully.
6. Butt the wings together and trial fit the 1/4" x 2-5/8" x 22" dihedral brace. Check to see that the trailing edges line up. This may require some sanding. A 2' long sanding stick with 100 paper is ideal for truing edges. Do not glue panels together yet.

7. Install the 3/8" sq. balsa trailing edge on both panels. Use white glue and hold it in place with masking tape. When cured, block sand them to conform with the airfoil.
8. Lay a 3/32" x 3" sheet flush with the trailing edge. Use the opposite edge to draw a line from end to end, with a ballpoint pen, on the foam. Spread contact cement in this area. Also, spread contact cement on one side of the 3/32" sheet. We used Southern Sorghum by Dave Brown Products. Of course, there are others. When cured install the sheet being careful to rest the core on a flat surface. Use this method to sheet all four sides.
9. Prepare the sheeting for the leading edge. It is necessary to split two 3/32" sheets down the middle to get four pieces 1-1/2" wide. Because sheet balsa is usually cambered, it is necessary to use a straight edge to true the edges and you will lose some width. Edge glue a 3" and a 1-1/2" piece together. Four of these are required. When glued, the width of each sheet should be at least 4-1/2" wide. Block sand one side of each sheet.
10. Measure in 3/8" from the front edge of the main spar. Strike a line the full length of the wing panel on all four spars.
11. Apply contact cement in the area between the line and the wing leading edge. Also apply contact cement to the unsanded side of each sheet. When dry install each sheet by placing the edge on the line located on the spar. Carefully. Don't let the surfaces touch before alignment is determined. Work on a flat surface.
12. Trim off the excess sheeting on the leading edge flush with the foam. A long straight sanding stick will come in handy here. Glue the 1/2" x 7/8" x 42" leading edge in place on each panel. Use white glue and hold it in place with masking tape.
13. Determine the topside of each panel and install the 3/32" x 3/8" rib capping. Locate them 3-3/8" apart starting from the tip. Use white glue.
14. On the bottom side of each panel layout the servo location. We have shown the large S-134 servo. If your servos are smaller, the hole size must be cut down. Now, cut and dig out the hole in the foam. The servo connector access hole should be added at this time.
15. Install the rib cap strips on the bottom side of the panel. Same spacing as the top side. Cut and epoxy in place the 3/8" sq. ply servo rails. Trim the top edge of the servo box with 3/32"x3/8" balsa.

16. Sand the wing tip smooth and flat. Place the panel on the end and trace the airfoil on 1/8" balsa. Cut out and glue in place. Do the same on the other wing panel
17. Plane and sand the leading edge to match the plans.
18. Trim out the excess sheeting in the leading edge notch. Sand smooth.
19. Sand the root end of each panel square and smooth. Check to see that each panel aligns with each other. Trial fit the panels with the 1/4" ply wing brace in place. When satisfied, apply 30 minutes Z-poxy and join the panels. No dihedral is required. Place on a flat surface and hold together with masking tape until cured.
20. Sheet the center section. as shown on the plans, with 3/32" x3"sheet.thesides of the notch with 1/8" sheet.
21. Glue the 1/8" x 1-1/2" x 5-1/2" ply wing bolt doubler in place. This is glued on top and not inset in the wing.
22. Cut and shape ft ailerons from the 3/8" x 2" x 42" sheets. Do not shape the leading edge until the hinge holes are drilled.
23. Locate and drill 3/16" holes in the ailerons and wing trailing edge. Lay the aileron on the wing trailing edge, tape in place, and mark a centerline on each for the hole locations. Drill carefully. (Note: see step 8 in Tail Group)
24. Now shape the leading edge of each aileron.
25. Sand the entire wing. Fiberglass the center section as shown on the plans with 2 oz. cloth

### **TAIL GROUP.**

1. Sort through the 3/8" sq. balsa and pick out the hard pieces. Use these for the leading and trailing edges.
2. Cut to length and pin down the leading and trailing edges.
3. Fit and glue the vertical and diagonal braces. Measure carefully and use a disc sander to promote good square joints.
4. Fit and glue in place, the 3/8" sq. hinge back up pieces.

6. Locate and drill the holes for the dowel inserts. These are the hard points for the tail struts. Use a short piece of brass tubing of appropriate size. Sharpen the end by running a x-acto knife around the inside diameter. Make a slight taper. For best results use a drill press. Cut and glue in the short pieces of dowel.
7. Glue the 1/8" x 318" x14-7/8" ply on the edge of the vertical fin. (read note 8 first)
8. Before sanding it is necessary to install the hinges, especially on the leading edge of the elevator. It is easier to drill a hole on a flat surface. To drill the holes and provide accurate hinge alignment make a simple drill fixture. Use a piece of 1/8" x 3/8" x 13" ply. Place on end flush with the stab Up and mark the hinge locations. Locate the center of the 3/8" width and drill a 3/16" hole at each location. You now have a simple drill fixture. Align the fixture on the stab trailing edge and hold in place with small "C" clamps. Drill the holes. Remove and align the fixture on the adjacent elevator leading edge. Make sure it's flush with the tip. Clamp in place and drill the holes. Obviously the drill will wear the fixture out in time but for a few holes it will last and provide additional accuracy. The same method can be used to locate the rudder hinges. Use the piece of 1/8" x 3/8" ply, provided in the kit , as a drill fixture for the rudder and fin before gluing in place.
9. Shape the elevator and rudder leading edge as shown on the plans. Round off the leading edges, Ups and trailing edges. Block sand the top and bottom surfaces. After final sanding put aside until fuselage construction is started.
10. The tail surfaces; can be covered at this time if desirable. It makes covering easier. Be sure to leave covering off the areas where glue is required. The tail group must be glued in place on the fuselage before the turtle deck is fitted in place.

## **FUSELAGE CONSTRUCTION**

1. Before construction, lay a fuselage side on the plans. Check the wing and stab cutouts. If they don't agree with the plans make them conform. This is important because it sets the incidence. It should be 0 degree - 0 degree. The sides were cut in pairs at the factory so both may be wrong.  
Note: The drawing may be slightly longer than the sides due to paper instability.

- 2.. Lay out the two fuselage sides. You will need a LH and RH so choose the side you want facing outside.
3. Mark the locations of F1, F2, and F3 on each fuselage sides. Cut to length and glue in place the 3/8" sq. and 3/8" tri stock on both sides. Allow room for the bulkheads. Trim the 3/8" tri stock from for the notch to allow the forward floor to fit near F2. The forward floor fits between the fuselage sides. Also add the 1/2" x 7/8" tail post.
4. Cut bulkheads F1, F2, and F3 from the material furnished. Paper templates are included. Laminate the two F1 firewall 1/4" pieces together and shape the top using the paper template. A light coat of 3M-77 spray will fasten the paper to the wood temporarily.
5. Lay one of the sides on a flat surface and glue F1, F2, and F3 in place. Use a square and make sure they are perpendicular. Use Z-poxy.
6. Glue on the opposite side. Also glue in the 1/4" ply front floor to help keep square. Check the tail post for alignment.
7. Cut to shape and glue in the wing saddle doubler on both sides. Also glue in the forward 3/8" tri cross braces.
8. Glue in the 11W ply rear floor.
9. Pull the tail posts together and sand enough off of each to maintain the width shown on the plans. Also, note where 3/8" sq. and 3/8" tri stock meet F3. These should be cut out at a slight angle to permit bond relief for the ply sides at that point. (See drawing) Now glue tail posts together.
10. Cut and glue in the 3/8" sq cross braces, the bottom 1/8" sheet and the 1/4" tail wheel mount. The fuselage sides should have a slight bend at F3 and are perfectly straight to the back.
11. Locate and glue the 1/4" ply wing hold down in place. Use Z-poxy. Add the 3/8" tri stock to reinforce it.
12. Before fitting the turtle deck in place is the right time to install the rudder and elevator pushrods. If you intend to mount the servos under the wing, pushrod exit slots will have to be cut in the fuselage sides. Otherwise, proceed to mount the servos as shown on the plans.

13. Cut rectangular holes in the fuselage side to accommodate the servos. Cut and glue the servo mount doublers in place. These add thickness to help anchor the servo securely.
14. Hook up the servos as shown on the drawing.
15. Cut out bulkheads FT1, FT2 and FT3 from the material designated using the paper templates
16. Prepare the turtle deck by cutting out the forward end leaving a  $\frac{3}{4}$ " flange. Provide a  $\frac{3}{8}$ " notch to allow it to over lap the fuselage sides by  $\frac{3}{8}$ ". Do not notch out for the stab yet. Glue FT3 in place.
17. At this time it is necessary to glue the stab and fin in place on the fuselage. Establish a centerline on the stab. Glue the vertical fin in place making sure it is square with the stab.
18. Glue the tail assembly in place. Make sure it is centered and square. Sitting the fuselage on a flat surface and measuring each stab tip will ensure squareness. Use Z-poxy (30 min.)
19. Slide the turtle deck over the fin as far as it will go. Check alignment with F-3. If turtle deck is too long cut some off the dorsal fillet until it aligns with F-3. When properly positioned, glue it all around with Zap-a-gap CA.
20. Cut out the  $\frac{1}{4}$ " x  $\frac{1}{2}$ " x 518" rear wing cover attach blocks. Install a #4 blind nut in each. Glue in place as shown on the plans. When cured run a pin thru the nut from the inside out to establish the center for a #4 clearance hole.
21. Trim out the fore and aft ends of the plastic tank cover. Leave a 11/2" w flange on both ends.. Notch the aft end 5/16" to slide over the fuselage. The forward end is against the firewall. Glue FTI in place. Now glue tank cover in place.
22. Glue FT2 in the forward plastic bulkhead. Drill the 1/4" holes for the hold-down dowels. Align this assembly with FTI and match drill the 1/4" holes into FT1. Insert a 1/4" dowel into each hole and mount in place. This will hold it while gluing but, not yet.
23. With the wing in place, cut and fit the wing cover. When trimmed on the mold lines a fairly close fit should be obtained. Some trimming will be necessary.

24. Place the wing in the wing saddle. Center it carefully making sure the front notch is against F2. Now trace the 3/8" holes in F2 on the dihedral brace in the wing. Carefully drill 3/8" holes in the wing. Glue the two 3/8" dowels in place.
25. Install the wing back on the fuselage with the dowels in place, tight against F2. If F2 is square with the sides, the wing should set square. Make sure. Now lay out the wing hold-down bolt locations. Drill 9/32" holes, at a slight angle, completely thru. Remove the wing and drill out the holes in the fuselage with a 5/16" drill. Install the 1/4-20 blind nuts in the ply wing hold-down from the bottom side. Glue them in place.
26. Once satisfied with the wing cover fit, tack glue to FT2. The dowels will hold it in place. When cured, remove and do the final gluing.
27. Align the rear plastic bulkhead with the turtle deck. Two small pieces of tape will hold it in place. Apply a small amount of glue to the flange and place the wing cover over ft. When cured, remove and do the final gluing.
28. Trim and fit canopy. Now is the time for a pilot and instrument panel. Glue the canopy in place with RC-56 or Zap-a-gap CA.
29. By all means fiberglass the wing cover on the inside as shown on the plans. It will add stiffness and prevent breakage. Use 2 oz. cloth.
30. Cut out the cowl mounting blocks and glue them on the Tank Cover as shown on the plans.
31. Mount the engine. Depending on your type of engine, if you soft mount it and the muffler used, will determine the engine location from the firewall. Once this is established, begin the cowl assembly. The top piece over laps the bottom by 1/4w. Tape the two halves together. Run a bead of Zap-a-gap CA around the inside seam. Do the same on the outside. Cut out the hole in front for the engine crankshaft. Fit the cowl to go over the engine and muffler. It may be necessary to cut off a portion of the bottom half of the cowl to fit the engine.
32. Mount the cowl with seven #4 x 3/8 sheet metal screws. See plans for locations. Once the cowl is complete, we suggest you fiberglass the entire inside with 2 oz. cloth for additional strength.



33. Locate the wheel pants. Lightly sand the mating surfaces. Cut out the wheel opening in each half. Leave a small flange all the way around for strength. Tape the two halves together and apply a bead of Zap-a-gap CA around the inside seam. Remove the tape. Fill the outside seam with Bondo or a similar filler.
34. Locate the wheel axle position on each wheel pant. Drill or cut a 5/16" hole. Establish the location for the #4 screw, from W1, on the landing gear and drill a 1/8" hole.
35. Slip a 3/16" wheel collar on the axle all the way in. Next, if using a C.B. wheel, bush it with brass tubing to fit a 3/16" axle. Slip on the retaining 3/16" wheel collar. Make up both axles.
36. Cut out W1 and W2 from 1/8" ply and 1/4" respectively. Mount a #4 blind nut in W1. Glue W1 to the inside of the wheel pant as shown on the plans.
37. Slip the wheel and axle assembly into the wheel pant. It is necessary to spread the pant to do this. Fasten the axle to the landing gear. Install the #4 x 5/8w screw. Spread the wheel pant and slip W2 on the axle end. When in place, glue W2 to the wheel pant.
38. Locate and mount the #1/4-20 blind nuts in the forward floor. Mount the landing gear with 1/4-20 hex head bolts and pull the blind nuts up tight.
39. Make up the tail struts. Modify twelve Du-Bro Solder Links as follows: break off the side with the pin. Drill out the hole in the remaining side with a 3/32" drill. Make a 45 degree bend half way down the side. Bend carefully or it will break.
40. Solder the modified link on the end (the non threaded end) of a 17 threaded rod. As an example, temporarily mount the soldered link and rod to the vertical fin. Slip a modified link on the opposite end and mark its location to be soldered. Remove and solder it in place. Make up three more struts in this manner.
41. The four struts on the bottom side of the stab are constructed as follows: screw a Nylon clevis on the end of the threaded rod. Fasten it to the aluminum strut support. Slip a modified link on the opposite end and mark the soldering location on the rod. Now solder. Make up three more struts in this manner.

42. Mount the tail wheel and hook up the pushrod as shown on the plans.
43. Covering and trimming is your choice. After completing your model. don't forget to balance within the C.G. limits specified on the plans. Set the controls for Hot Dog or Sport and bore your own holes in the sky!

**GOOD LUCK!**

## **HARDWARE AND MATERIAL LIST REQUIRED TO FINISH THE STINGER**

### **GENERAL**

1. 4- Channel Radio with 70 oz/in servos
2. Engine size - 1.2 to 4.2 cu/in
3. Gas fuel line
4. Propeller - depending on engine size
5. 4" Spinner - C.B. or Tru-Turn
6. Fuel Tank - Sullivan SS24
7. Covering, paint and trim - your choice
  
8. 4" Wheels, Du-Bro or C.B.

### **FUSLAGE**

1. 1/4 - 20 x 1-1/4" hex bolt (4) (retain engine)
2. 1/4 - 20 x 1-3/4" hex bolt (2) (wing-hold-down)
3. 1/4 - 20 x 5/8" hex bolt (2) (landing gear)
  
4. 1/4 -20 blind nut (4) (wing-hold-down and landing gear)
5. #4 - 40 blind nut (4) (landing gear) (Wing Cover Attach)
  
6. 3/16" axle, Du-bro #249 (2) (landing gear)
7. 3/16" wheel collar, Du-Bro #141 (4) (landing gear)
  
8. #4 - 40 x 3/8 bolt - (landing gear)
9. Ohio Superstar tailwheel (M size)
10. #4 x 1/2" sheet metal screw (2) (tail wheel)
11. 3/16" ID Brass Tube (landing gear)
12. 1/4" OD Brass Tube (landing gear)
13. #4-40 X 3/8" bolt (2) (wing cover attach)

### **TAIL ASSEMBLY**

1. Adjustable Control Horn, Du-Bro #493 (4) (Rudder & Elevator)
2. Kwik-Link with Rod, Du-Bro #306 (4) (Rudder & Elevator pushrod)
3. Spring Keeper, Du-Bro #331 (4) (Rudder & Elevator)
4. Kwik-Link with Rod, Duo #122, (tailwheel pushrod)
5. Solder Link, Du-Bro #112 (16) (tail struts & tailwheel pushrod)
6. Threaded Rod, Du-bro #172 (8) (tail struts)
7. #2 x 3/8" sheet metal screw (28) (servo mounting)

8. Aileron Horn Connector, Du-Bro #103 (1) (tailwheel pushrod)
9. Robart Super Point #310 (13) (Rudder & Elevator)

### **WING**

1. Adjustable Control Horn, Du-Bro #493 (2) (aileron)
2. Kwik Links & Rod, Du-Bro #306 (2) (aileron pushrod)
3. Spring Keeper, Du-Bro #331 (2) (aileron pushrod)
4. Robart Super Hinge Point, #310 (10) (aileron)
5. Fiberglass Cloth (2 oz)

### **Glue**

1. White glue
2. Zap-a-gap
3. 30 minute Z-Poxy

# LANIER R/C

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Fax: 770-532-2163

Shipping Address  
4460 Oakwood Rd.  
Oakwood, GA 30566



## Parts List-Giant Stinger

Wing Kit, Complete.....	.69.95
Wing Panels, pr., foam only .....	39.95
Fuselage Sides, pr .....	.24.95
Fuselage Kit (Wood, Turtledeck, Tank Cover) .....	69.95
Turtledeck .....	19.95
Tank Cover .....	9.95
Wing Cover .....	14.95
Front Bulkhead .....	2.95
Rear Bulkhead .....	2.95
Canopy .....	12.95
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Instructions & Plans .....	19.95

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