1/2A Shrike

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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1/2A SHRIKE

BUILDING INSTRUCTIONS

The Shrike is a fun and exciting airplane, enjoyable to fly and will provide you thrills with its Jet like platform and speed. It can easily be carried without disassembly and the minute you arrive at the flying field it's ready to go. A good change of pace airplane to have in your hangar when you desire to switch stress levels from your daily work or, when you are tired of flying the same old airplane all the time. We know you will enjoy the Shrike.

Before starting to build, we urge you to read through these instructions while reviewing the plans. They contain some important building sequence as well as instructions and warnings concerning the assembly and use of the model. Some building tips have been included along the way to help you out. Or, if you have your own way of building , which some modelers have, so be it. At least read what we have to say then make your own determination. It will save you some time. We expect that you have some building experience to take on a built-up model however, every minute detail is not covered. This is not a basic trainer. The plans and instructions together with the laser cut parts, and the simplicity of this kit will allow you to produce a first class model.

FUSELAGE CONSTRUCTION

The fuselage is most likely different than anything you have ever built before. We suggest you build it completely before adding the wings and tail. This will allow you to round off the nose with complete freedom. It will go together quite fast with the exact cutting of the laser cut parts and this simplified building method.

1. Locate the two sheets with the **FS1** sides. We have purposely left them in the sheet with micro joints. Rather than pop them out like die cutting, lay them on a flat surface and cut each micro joint with a razor or ex-acto knife. The part will fall out. Note how crisp and exact the parts are cut.

2. Lay both sides on a flat surface with the top side up, (it's noted) and with **FS1** visible. Locate **F3** and **F4** formers. Place **F3** in the slot, as called out on the plans, with the top side up. Place it against a square and CA glue it in place. Now, slip **F4** in its slot and glue it in place using a square to make sure it is perpendicular to the side. It is important that both of these formers be installed as described.

3. Place the other side with its slots in each former, with the top side up. Using a square on a flat surface, make sure the side edges are in line with each other. Check all the way around. Now tack CA glue in place. Hopefully you glued the formers perpendicular to the sides. When satisfied, final glue them in place. **This is an important step.**

4. Next install the stab trailing edge which must be notched for the fuselage sides. Locate the 1/4" sq. x 24" stick. Cut a length 6-1/2". Find the center and mark it. Now measure out, each way7/8". Cut two notches, 1/8" wide and 1/8" deep. The outside edge of each notch should fall on the 7/8" mark. Now align by laying the rear end of the fuselage on a flat surface. Sight from the back aligning with top edge of former F4 for squareness. Now glue in place. This is somewhat like gluing on a stab. Get it on straight.

5. Locate the 3/32" sheet 1 and cut the micro joints on the two **H1** parts. Lightly sand the curved edges.

6. Building the hatch next, cut two strips of wax paper, 1" wide, the approx. length of **H1**. Lay the fuselage on its side. Lay one strip on the inside top edge of the fuselage with the end against **F4**. Now locate **H1**, with the small end against **F4**, and pin in place over the wax paper. Align the top curved edges and pin in place several places to keep aligned.

7. Fold and crease the wax paper and trim off, holding the razor against the side, leaving a 3/16" flange. Crease it down good. Now install the other **H1** and wax paper on the other side. Make sure the pins do not extend above the top surface, angle them down.

8. Cut a piece from the 1/16" x 3" x 24" sheet, 1-3/4" x 9-1/4". Apply a bead of thick Ca glue along the top edge of each **H1**. Align the rear edge with the front edge of **F4** and flush on both sides. Tape in place until cured.

9. Remove the pins by reaching through the bottom of the fuselage. Now remove the hatch and strip off the wax paper on both sides. Square off the forward end flush with the ends of the two **H1's**. Glue in a piece of 1/4" sq. at the forward end between the two **H1** rails. Square up the aft end if necessary. Cut out **H2** and glue in between the rails at the aft end, the wide side against the hatch top

10. Locate the piece of 3/16" sq. x 12" spruce. Cut four pieces 1-11/16" long. These are the servo mounting rails. **Be careful not to squeeze the sides together when installing them. Place one in the upper part of the slot** , aft of **F3**, and glue in place. Install one in the next 3/16" hole however, only one side of this rail is glued. Check the motor you are using to determine which side the throttle arm is on (if it has throttle control). This is the side that will be glued.**.** If your motor does not have throttle control, this rail is not needed. Now locate

the gusset **G2** on sheet 1 and cut out. Glue in under servo rail as shown on the plans. Using a razor saw, cut the rail allowing 5/8" to protrude from the right side. Remove the cut off piece from the hole. Now glue in the remaining two servo mounting rails. **Note: Gluing in the servo rails at this time will prevent the sides from bowing out when pulling them together at the front.**

11. Locate the firewall **F2** and layout the holes for the engine mount. Center the engine mount on the lines, mark the hole locations, and drill a 5/32" hole in each for a 2-56 blind nut. CA the nuts in place.

12. Using epoxy, glue the firewall into the slots provided in the **FS1** sides. Use a rubber band to hold the sides against the firewall while the epoxy is curing.

13. Locate the upper and lower front blocks. Note the templates on the plans. Cut them out and lightly contact glue to their respective blocks. Now, carefully cut and sand them to the template. They will require some sanding to fit perfect however, if you are careful you should encounter no trouble. Do not remove the cutout for the engine until the block is glued in place. Locate them as shown on the plans. The upper block will rest against the top edge of **F2**

14. Cut four pieces of 1/4" tri-stock from the 24" piece. Glue them in the nose as shown on the plans. Two on top and two on the bottom. These are required to provide material when you round the nose to former **F1.**

15. Cut two more pieces 2-7/8" long. Glue these in between **F2** and **F3** flush with the bottom edge of the fuselage. It will be necessary to add some razor saw kerfs on each one to help them make the bend. Careful not to cut them in two.

16. Locate a 1/16" x 3 x 24" sheet and cover the entire bottom with the balsa running cross grain. If you manage the waste carefully, one sheet will do it. So try, or you'll buy.

17. Using the remainder of the 1/16" sheet you used to make the hatch, sheet the top of the fuselage from the front edge of **F4** aft to the trailing edge of the stab. Also from the forward edge of the hatch to the end of the nose. The grain can run length ways in both cases. Cut out the access hole for the engine. A Dremel Motor with a drum sander will do the job.

18. Block sand the fuselage sides to trim the top and bottom sheeting flush with them.

19. Install the engine in the mount as far as it will slide to the back leaving just a slight clearance. Locate and drill the engine mounting holes. Also drill the holes for the fuel lines and throttle pushrod. Now install the engine on the mount. Bolt in the engine and mount it to the firewall. Check the distance between the front

edge of the prop washer and the end of the fuselage. Remove enough from the nose so there will be a 1/16" clearance between the back of the spinner plate and **F1** with the engine mounted. Keep it square. Now centrally locate **F1** with the engine crankshaft, with the spinner backplate mounted on the engine, and glue in place.

20. Now round off the nose to **F1**. So that you don't round off too far back it is a good idea to lay rib **R1** in position and trace around it with a ball point pen. This will give you an idea where the wing leading edge starts. Provide room for the muffler and needle valve after rounding off and shaping.

21. Locate front hatch hold-down H3. Glue in place on the bottom of the ¼" square cross piece at the front of the hatch, leaving approx. ¼" protruding.

Note: Before starting wing construction, you may wish to cover the fuselage now. Then you can cut away the covering material in the locations where the R1 ribs and the inside stab formers are located.

WING CONSTRUCTION

In order to ensure a straight wing with no warps, build the wing panels the following way. The wing spars are installed in the fuselage, the ribs slid in place and then the sheeting and cap strips applied. Began by taping the wing plans down at the edge of the work bench. The wing root , next to the fuselage, should be flush with the edge of the work bench. Using a square, check to see that the spars or trailing edge of the wing on the plans are perpendicular to the edge. The side of the fuselage will be aligned with the work bench edge so it is important that things are square.

1. Locate a 3/16" sq. x 24" spruce stick and find the center. From the center measure out 7/8" each way and mark. Align marks with outside edges of fuselage. This is the aft spar in the wing. Install it in the aft 3/16" sq. hole in the fuselage, making sure it is centered, and CA in place.

2. Locate a 3/16" sq. x 24" stick and cut off a 13" length. Find the center, measure out 7/8" each way and mark. Slide this spar in the forward 3/16" square hole in the fuselage, under the servo rail, making sure the marks are aligned with the outside fuselage sides. CA in place.

3. Find the two sheets with the ribs. Carefully cut them out so as not to break off the tabs. If you do break one off, CA it back on. These tabs are required to space the ribs parallel to the work surface during wing construction. Lightly sand edges of each. **Note: When we say cut them out, we mean cut the micro joints that hold them in the sheet. These joints keep the parts in tact on the sheet.**

4. Carefully slide **R1** rib on the spars and up against the fuselage. If you previously covered the fuselage, use the rib as a template to carefully cut the covering away. Glue it in place with CA but, do not glue the tabs to the sides. These must be removed later.

5. Now slide ribs **R2**, **R3**, **R4** and **R5** on the spars of one wing, roughly positioning them.

6. Place the fuselage against the side of the work bench with the rib tabs resting on the surface over the plans. Some small weights on the spars should hold it while you position the ribs to location. Align the back edge of each rib tab with the trailing edge of the wing on the plans. Pin them in place if necessary.

7. Once the ribs are located over the plans, CA them in place on the spars.

8. Locate the 1/8"sq. x 24" trailing edge stick.. Carefully slide it through the 1/8" sq. holes in the fuselage and center it. Now glue it in place on the notch provided at the end of each rib. Tack it the ends of the ribs, keeping as much glue off the tab as possible. The sheeting over the ribs will hold them in place securely

9. Locate the four, 1/16" x 1" x 12", trailing edge sheeting. Apply glue to the ribs and trailing edge. Install flush with the trailing edge and against the fuselage allowing it to over-hang the tip.

10. Next find a 3/16"sq. x 15" stick. Glue one into the notches provided in the ribs along the leading edge. It will be necessary to provide an angled cut on one end to mate flush with the inside of the fuselage side.

11. Locate the four, 1/16" x 3 x 15" sheets. These will have to be cut to size and shape before gluing in place. Using the plans as a guide, cut the four sheets to match the leading edge sheeting.

12. Locate one of the leading edge sheets on the wing and check the angle with the fuselage. It should be very close. Sand slightly if necessary. Bevel and trial fit the front edge of the sheet to fit snugly against the fuselage and 3/16" sq. leading edge. Apply CA to the beveled edge of the sheet only and glue in place along the leading edge with the sheet resting on the ribs and against the leading edge. Next, apply CA to each rib. Bend the sheet down to ribs and hold until cured. It may be necessary to slightly dampen the outside of the sheeting to get it to bend easily.

13. Break off the tabs on the bottom side on all the ribs and install the trailing and leading edge sheeting on the bottom side. Trim off any rib tab balsa which might have been glued on at the trailing edge. Take care not to twist the wing building in a warp.

14. Find the two, 1/16" x 1/4" x 24" rib capping. Cap each rib on both sides of the wing. A cap is centered on each rib. Glue them in place carefully.

15. Locate the1/4" x 3/4" x 8" block and cut in half. Stand the wing tip on end and trace the airfoil on one of the blocks. Cut it out and glue on the tip. Sand to shape at final sanding before covering.

16. Now build the other wing panel as described above.

17. Locate the two 1/4" x 1" x 10" aileron stock. Cut and taper them to the configuration shown on the plans, Sand the trailing edge uniform on each. Locate and install the hinges but do not glue them in until the covering has been applied.

STAB CONSTRUCTION

Building the stab is very straight forward and easy. Make sure the joints fit tight and flush with each other. Very few parts are required.

1. Cut a 6-1/2" length from the1/4" sq. stick. Install it in the 1/4" sq. hole in the fuselage side against the wing trailing edge. Center it, leaving a equal amount sticking out on each side. **Note: The aileron horn set must be installed at this time. Slot the 1/4" sq. stick to accept them and glue in place together with the 1/4" stick against the trailing edge of the wing.**

2. Cut four lengths of 1/4" sq. 4-1/4" for the side rails and rails against the fuselage. These are cut purposely long and must be fitted between the stab leading and trailing edge. Before fitting them, one side of two of the stab ends must be cut at a 10 degree angle. Use a band saw or table saw.

3. Now fit the two outer end side rails and glue in place, making sure the angle is on the outside. This will allow the fins to cant outward at the proper angle when glued to this surface. Again, if you have previously covered the fuselage, use the inner rails to mark & cut away the covering. Fit and glue in the two 1/4" sq. inner rails against the fuselage

4. Cut and sand the leading and trailing edge ends to match the angle on the side rail on both sides.

5. Locate the 3/32" sheet **G1** gussets and glue in place as shown on the plans.

6. Cut a piece 6-1/2" from the 1/4" x 1" x 8" trailing edge stock. Shape the ends to the elevator configuration shown on the plans. Sand the angles shown on the leading edge. Install the hinges at the location shown on the plans.

FIN CONSTRUCTION

1. Using the two 3/32" x 1-3/8" x 15" sheets, one sheet per fin, cut out the pieces required to make them. Lay a piece of wax paper over the plans and pin down the parts on the configuration shown. Make good square cuts to promote stronger glue joints.

2. When the glue has cured, block sand each fin on both sides and final sand for covering. Do not glue them in place yet. It is easier to cover them first, cutting away the covering where they are fastened to the stab. Now set them aside until required for gluing in place at final assembly. When glued in place don't forget to add the 1/4" tri-stock on the bottom side for additional stability.

FINAL FINISHING

1. Give the complete airplane a final sanding, depending on how well you want to finish it. Some of the small parts, like the ailerons and elevator, can be painted if you don't like covering. Cover the Shrike with your favorite covering material, the one you feel most comfortable with. Let your imagination go wild on the trim. If you have not previously covered the fuselage, follow this order to cover the airplane. Cover the bottom of the stab, then the top. Next cover the bottom of the wings, and lastly, the tops. Cover the fuselage last as this will try your covering skills. Oh, well, you can always paint it. We covered ours with 21st Century film and 21st Century Fabric. If you want to keep it light go the film route.

2. Fuel proof the engine compartment with epoxy. Melt candle wax into the blind nut holes to keep out the epoxy. When cured use an undersized drill to clean them out. Cool! The threads are lubed and ready.

3. Locate the 1/8" x 1/2" x 1-1/2
4. " spruce block and shape it as shown. Paint this part the color of the fuselage. When cured, cut away the covering at the nose and epoxy it in place on the bottom side.

4.. Assuming that the fuselage is painted or covered, peel off one side of the tape supplied. Locate one end of the tape at the back edge of the nose block. Place the rest down the center of the fuselage towards the tail. Now pull off the rest of the paper and stick down the strip of plastic on it. This skid will protect the bottom when landing.

5. Assemble and prepare the fuel tank for installation. Cut a 1' length of fuel line in two. Place one piece in each of the fuel line holes in the firewall. Pull them through until they can be hooked up to the tank. One on the vent and one on the clunk line. Wrap each line at the tank with thread or string to hold the lines on.

6.. Now grab the two lines at the firewall and pull the tank into position. Mount the tank as high as possible blocking it up with foam.

7. As a start, locate the receiver batteries under the fuel tank. You may find it will be necessary to shift it to another location when balancing at the CG shown on the plans.

8. If you are using an engine with throttle control, mount the throttle servo where shown. Hook up the pushrod using the hardware specified not supplied.

10. Mount the aileron and elevator servos. Hook them up with the hardware specified. It will be necessary to make a slot in the section behind the aft edge of the hatch to accept the elevator pushrod. You will have to put a slight bend in the rod to clear the hatch.

11. Trim and install the canopy where shown on the hatch. Use Zap New Formula 560 Canopy Glue to hold it in place. If desirable install a pilot of your choice.

PRE-FLIGHT NOTES

Before the first flight, and to ensure some longevity in your Shrike, you will do well to check out a few things before heading to the flying field.

1. Balance the Shrike at the indicated CG point shown on the plans with the fuel tank empty. Depending on your type of flying you may want to adjust it forward some.

2. Check the control surface travels. We have given you a starting point however, they need to be fine tuned to meet your flying needs.

3. Run the engine and check the idle. Have it ready so you don't encounter any problems at the field.

4. Turn on the radio with the engine running to make sure there are no intermittent glitches. Give it a good range check.

5. Check all hardware to be sure it is secure. There is nothing worse than losing an airplane on the first flight because of a lose nut or clevis

6. Always launch with up elevator for reflex action.

7. Hopefully by now you are ready. We know you will be thrilled with your first flight and that it was most successful. From now on - Happy Fly'in!

HARDWARE AND MATERIAL LIST FOR 1/2A SHRIKE

GENERAL

2-4 channel radio, with 2 or 3 micro or mini servos (micro servo required for throttle)
engine, .049 to .061
muffler to suit engine
fuel tank- 1 oz Sullivan SS1
fuel line, small
propeller suitable for engine size
spinner, 1-1/4" or Dubro 1/2A spinner to suit engine
covering, trim, or paint of your choice

FUSELAGE

engine mount- Dave Brown # 0506
engine mounting bolt set- Dubro # 133 blind nuts, Dubro # 310 bolts (2-56)
control horn set-Dubro # 107
(Optional) throttle pushrod- Dubro # 113
aileron horn set- Dubro # 231
hinges- Dubro # 537 (aileron and elevator)

Misc.

masking tape
straight pins
sandpaper- 80, 120, and 220 grit
Ex-acto knife with #11 blade
CA glue- thick & thin, or white glue
Zap New Formula 560 Canopy Glue
Zap 30 minute Zpoxy
wax paper
straight edge

Kit Contents

Laser Cut Sheets
1/8” x 4” x 24” balsa- Fuselage sides, F3, F4
3/32” x 3” x 12” balsa- Hatch parts, gussets
1/16” x 3” x 18” balsa- Ribs R1, R4, & R5
1/16” x 3” x 15” balsa- Ribs R2 & R3
1/8” Lite Ply - Nose ring & F2 former

Sheet Balsa
1/16” x 3” x 15” balsa (4pcs) Wing leading edge sheeting
1/16” x 1” x 12” balsa (4pcs) Wing trailing edge sheeting
1/16” x3” x 24” balsa (1pc) Fuselage sheeting
¼” x 2” x 6” balsa (1 pc) Fuselage nose blocks
¼” x ¾” x 8” balsa (1 pc) Wing tips
3/32” x 1-3/8” x 15” balsa (2pcs) Fins

Stick Wood
1/8” square x 24” balsa (1pc) Wing Trailing edge
3/16” square x 15” balsa (3pcs) Wing leading edges & front spar
3/16” square x 24” spruce (1pc) Wing main spar
¼” square x 24” balsa (2pcs) Stab formers
1/16” x ¼” x 24” balsa (2pcs) Wing cap strips
3/16” square x 12” spruce (1pc) Servo rails
¼” x 24” balsa tri-stock (1pc) Bracing

Special Wood
¼” x 12” balsa TE stock (2pcs) Ailerons
¼” x 8” balsa TE stock (1pc) Elevator

Misc. Parts
½” x 18” abs plastic strip (1pc) skid
½” x 18” double sided sticky foam (1pc) For plastic skid
1/8” x½” x 1-1/2” spruce (1pc) Nose skid
Instruction Booklet
CAD-generated rolled plans
ABS plastic canopy

LANIER R/C