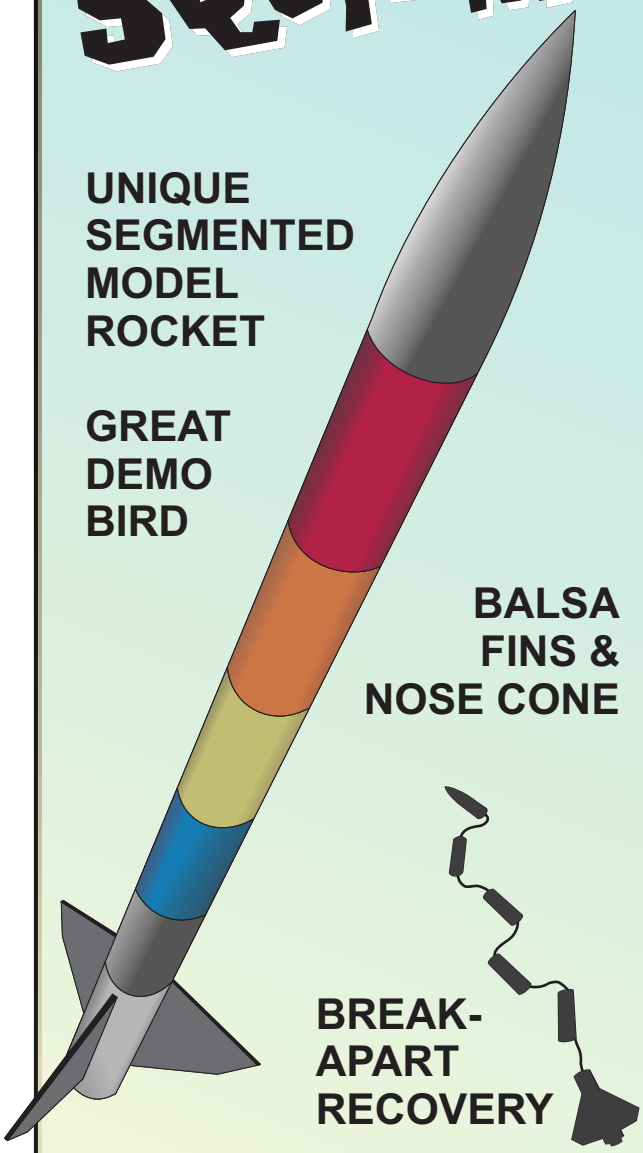
Insert NAR Safety Code here:

SQUIRM!

UNIQUE SEGMENTED MODEL ROCKET

GREAT DEMO BIRD

BALSA FINS & NOSE CONE



BREAK-APART RECOVERY

Another reason to fly from:

ODD'L ROCKETS!

Made in the USA, Orlando, FL 32812

SPECIFICATIONS:

Body Diameter	1.04” (2.6 cm.)
Fin Span	4.25” (11.0 cm.)
Length	20.0” (51.0 cm.)
Weight	

ENGINES:

A8-3 B6-4 C6-5

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About ***ODD'L ROCKETS***:

"I've always enjoyed building and flying rockets that were a little out of the ordinary. Something that may make the Range Safety Officer call for a "HEADS UP!"

Chris Michielssen is president of ODD'L ROCKETS. He has won national awards for his rocketry designs and innovations. Chris is a former graphic artist and now a professional entertainer.

"There are plenty of manufacturers making the standard 3F & a NC (3 Fins and a Nose Cone) rockets. Our designs play tribute to the great "Odd-Ball" models. All have been tested and in some cases, improved!" It's a small hands-on company dedicated to bringing you "Rocketry - Thinking Outside the Box!"

BEFORE YOU START:

Be sure you have all the parts to build your rocket. Check all included kit parts with the parts list in the instructions.

Read over the instructions before you start construction.

Test fit all parts before gluing. Some pieces may require trimming or light sanding for a better fit.

TOOLS NEEDED FOR CONSTRUCTION:

Pencil



Metal Straight Edge Ruler

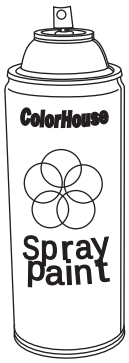


X-Acto Style #1Knife with #11 Blade

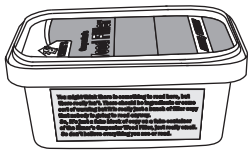


400 Grit Sandpaper on a Sanding Block





Spray Enamel



Fill 'N Finish or Sanding Sealer



White Glue and Super Glue

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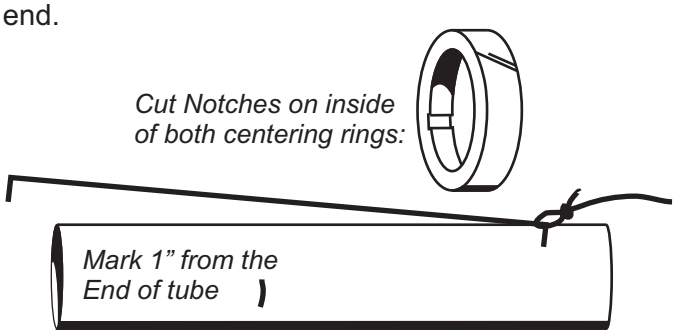
ASSEMBLY INSTRUCTIONS

1. ❒ These instructions are arranged in a logical order for easy assembly. Check off each step as you assemble the model.

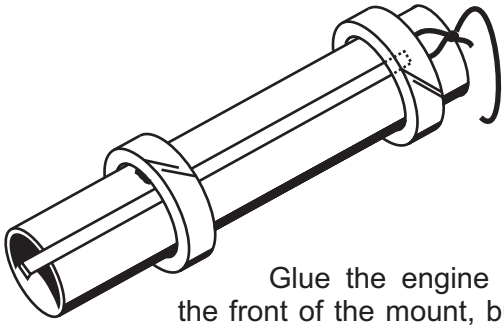
2. ❒ Tie one end of the 6' Kevlar line to the end of the engine hook. Put a small drop of white glue on the knot to prevent it from loosening.



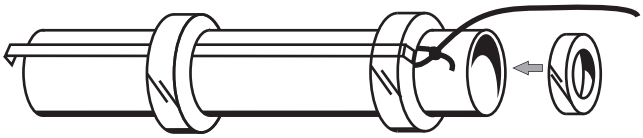
3. ❒ Cut a 1/8" wide slot on the inside both centering rings, deep enough to clear the engine hook thickness. Lay the bent end of the engine lock (with the Kevlar cord tied on) in the pre-cut slot in the engine tube. Mark the engine tube 1" from the other end.



4. ❒ Slide one notched centering ring over the engine tube and engine hook up to the 1" line. Slide the other centering ring (over the Kevlar tied engine hook end) on the front end of the tube. Center the ring over the top of the engine hook's (upper bent) end. Fillet both sides of the centering rings. Let dry.



Glue the engine block in the front of the mount, butted up against the engine hook's bent end.



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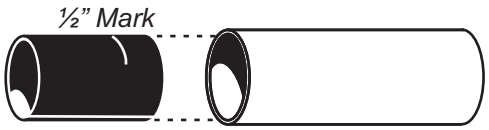
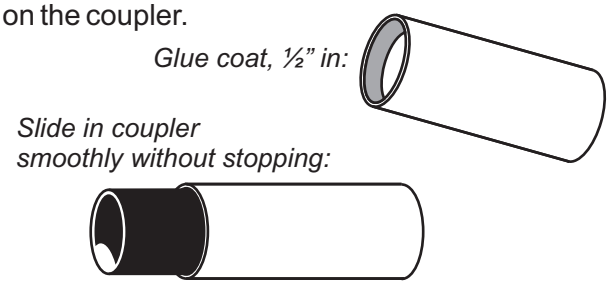
5. ❒ Take one black coupler and one of the 2 1/2" body tube sections. Test the fit of the coupler in the body tube section. If it is too tight, sand the coupler using 400 grit sandpaper on a sanding block. Mark the coupler ½" from one end.

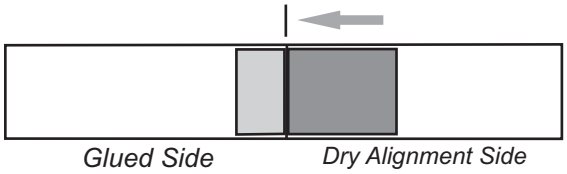


6. ❒ Lay a bead of glue ½" inside the 2 1/2" body tube section. while the glue is still wet, slide the coupler into the tube up to the ½" line marked on the coupler.



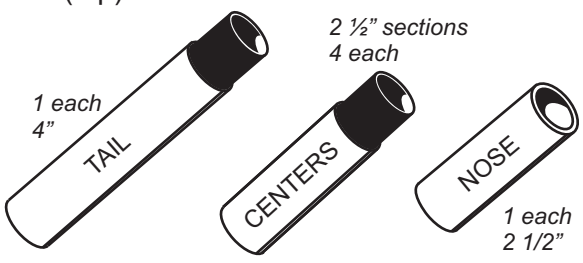
7. ❒ Before the glue dries, check for the straight alignment of the coupler. Slide one of the remaining body tubes over the coupler (no glue!) and butt it up against the body tube edge.

Don't glue the dry alignment tube to the glued coupler side! You are only checking to be sure the coupler is straight in the glued side of the tubing. Carefully remove the dry alignment tube without moving the coupler. Let dry.



8. ❒ Repeat this coupler gluing step with the other remaining body tube pieces. Only one of the 4" pieces gets a coupler. The other 4" piece is the nose cone section. When the rocket is assembled, all the couplers will be extending up to the nose of the rocket.

You should now have three - 3" sections with glued in couplers and one 4" section (engine mount tube) with a glued in coupler. The remaining 4" tube (without a coupler) is reserved for the (top) nose cone section.



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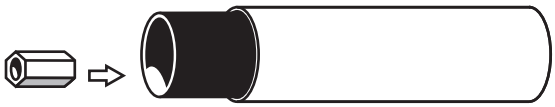
9. ❒ Find the five, 3/8" long clear plastic pieces. These will be glued into the inside of the couplers. The long Kevlar cord will be tied to these connectors.



10. ❒ You will temporarily glue the clear tie down connectors inside each coupler with white glue. Put glue on one flat side of the connector. Set the connector 1/4" inside the black couplers. Let dry.



Clear connector inside of coupler - cutaway side view

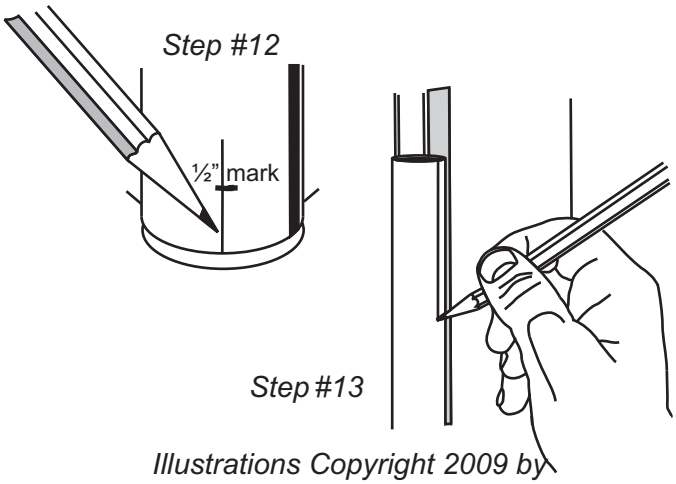
11. ❒ Gluing the clear tie down connector with white glue lets you reposition and move it into the correct position. The white glue is only to hold it in place. Be sure it is straight as the white glue dries.

After the white glue has dried - *NOW* - use Super Glue (CA) on both sides of the connector to permanently set it into the coupler. Repeat this gluing step in all couplers and the 4" nose cone tubing (with no coupler).

12. ❒ Set the 4" long engine mount tube (with coupler facing up) over the fin marking guide found in the center page Assembly View. Mark the tube with the pencil ticks at the three 120 degree marks.

13. ❒ Extend the marks up the entire length of the 4" tube up to the coupler. Set the tube in a drawer sill or a door jamb to draw the lines.

Make a mark on those lines ½"up from the bottom. The fins trailing edge will be ½"from the bottom of the engine tube.



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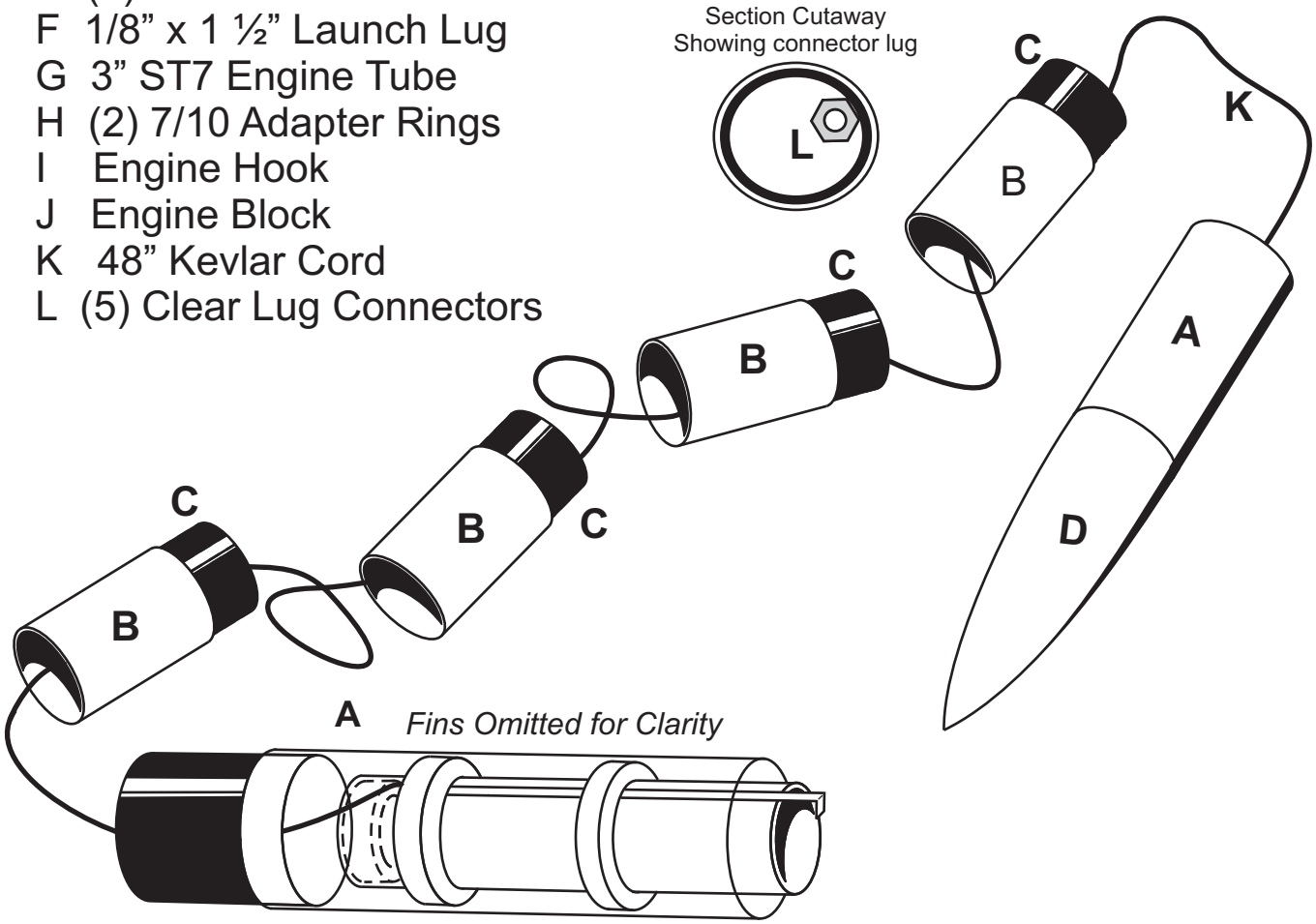
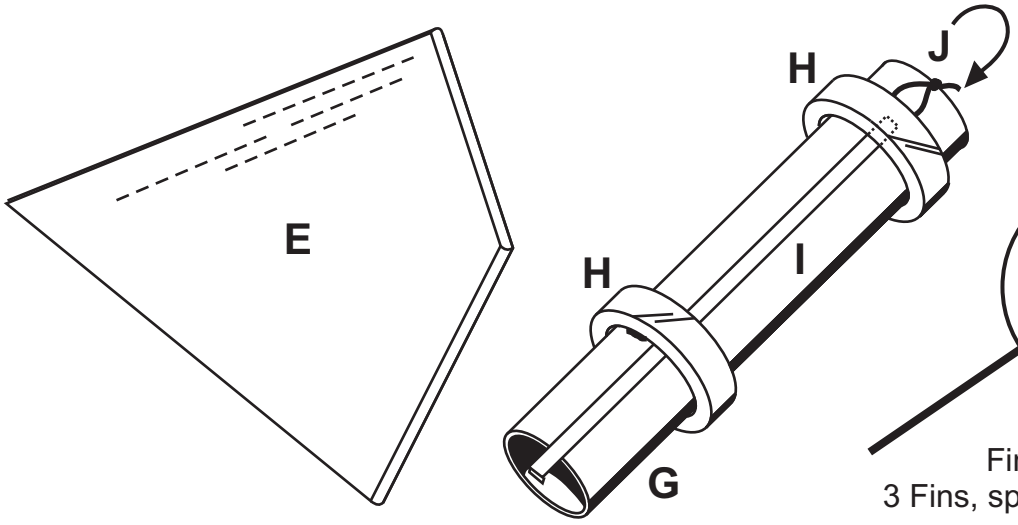
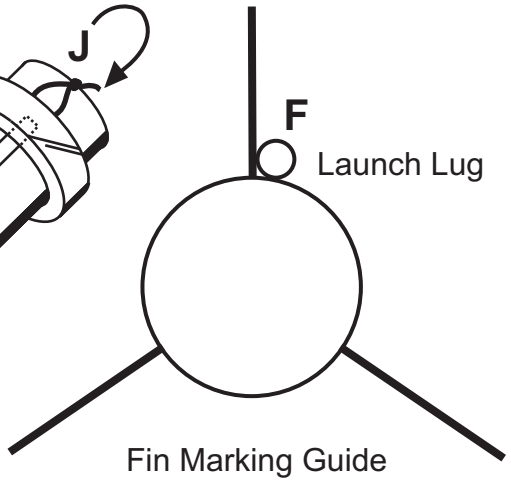
ASSEMBLY VIEW

PARTS LIST:

A (2) 4” ST10 Body Tubes
B (4) 2 ½” ST10 Body Tubes
C (5) 1 ½” ST10 Couplers
D Balsa Nose Cone
E (3) Balsa Fins
F 1/8” x 1 ½” Launch Lug
G 3” ST7 Engine Tube
H (2) 7/10 Adapter Rings
I Engine Hook
J Engine Block
K 48” Kevlar Cord
L (5) Clear Lug Connectors







Fin Marking Guide
3 Fins, spaced 120 degrees apart

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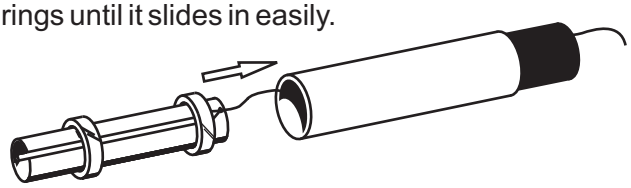
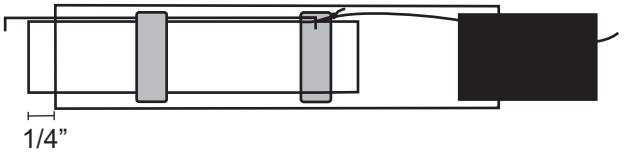
12. ❒ Test fit the mount in the tube end, opposite the coupler. If necessary, lightly sand the adapter rings until it slides in easily.

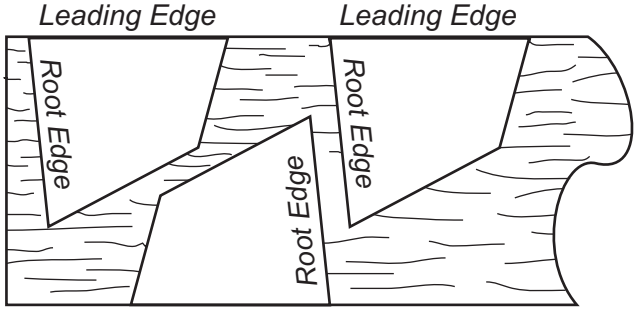


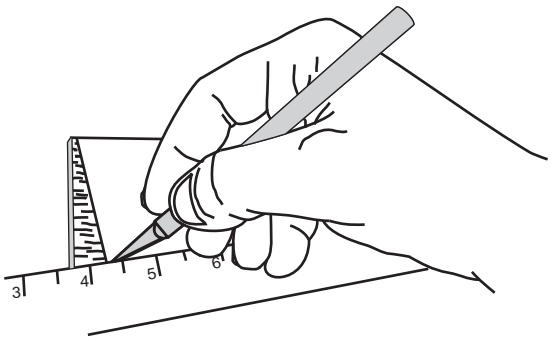
13. ❒ The engine mount tube will extend beyond the back end of the 4" tube by 1/4". Mark the engine tube 1/4" from the end. Drop the long Kevlar line through the tube.

Apply a bead of glue 2" inside the 4" body tube. Without waiting, smoothly slide the engine mount into the 4" tube. Stop when the 1/4" mark lines up with the outside body tube. Don't hesitate, or the mount could "freeze" in the wrong position.



14. Cut out the fin template from the pattern sheet. Trace onto the sheet balsa paying attention to the indicated balsa grain. Cut out the fins with your hobby knife against a metal straightedge.





15. ❒ After three fins are cut, line up the sides. Hold them tightly together and square up the edges by sanding against a sheet of sandpaper or on a sanding block.

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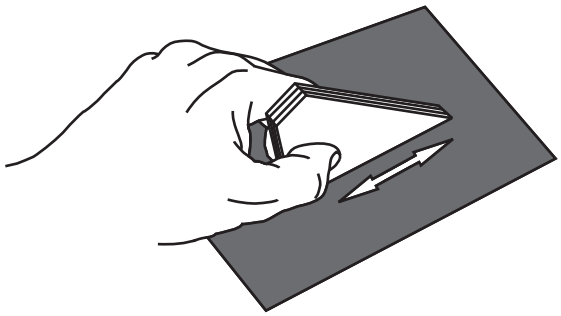
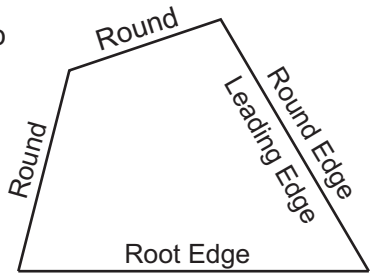


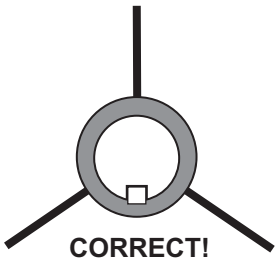
After squaring up the fins, round all edges ***EXCEPT*** the Root Edge. The root edge must remain square to glue to the motor mount assembly.



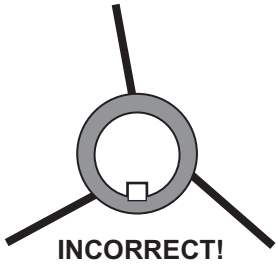
16. ❒ To attach the fins, I recommend using the "double glue" method explained here.

Apply white glue to the root edge of a fin and place on one of the fin lines drawn on the motor mount tube section. The trailing edge of the fin is ½" from the rear of tube. Remove the fin leaving glue on the tube.

Let the root edge dry for a minute and re-apply glue again to the same edge of the fin. Reset the fin on the body tube again, over the same (dried) fin alignment line. Let dry.

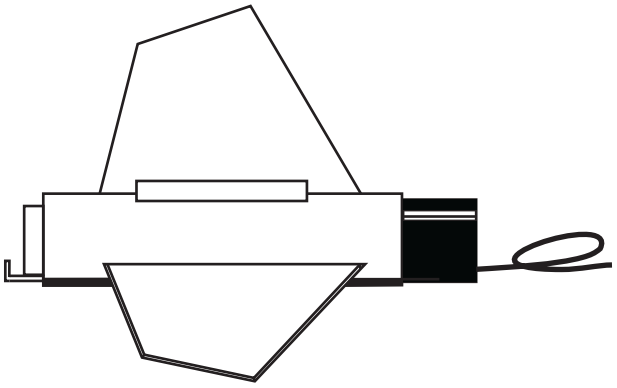


CORRECT!
View from Rear
Fins Equally Spaced



INCORRECT!
View from Rear
Fins Crooked!

17. ❒ Glue the Launch Lug beside and centered down the root edge of one fin.



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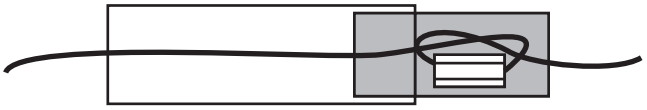
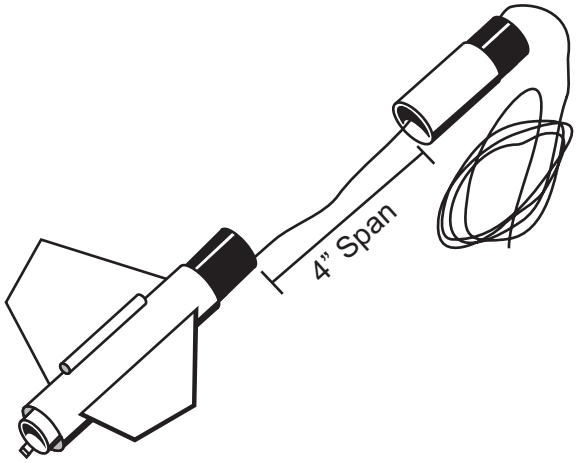


18. ❒ Now - to tie the rocket together. Feed almost all of the Kevlar cord (from the Engine mount assembly) through a plastic connector in one of the short body sections.

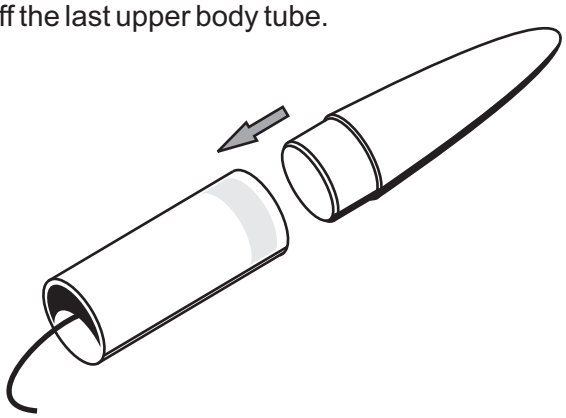
Ideally, you'll want 4" of (free) cord between each section. Tie the cord to itself with an overhand knot at the "top" of the connector.

Tie a *loose* single overhand knot at first. The loose knot will allow you to slide and adjust the length between the sections before making the knot permanent.

When you have 4" between the sec-tions, tie another overhand knot and pull tight. Place a small drop of glue on the double knot.



19. ❒ Continue tying the Kevlar cord to the remaining sections keeping a 4" span between them. The last section tied is the 4" nose cone section. Place a small drop of white glue on every double knot. Cut off any excess Kevlar after tying off the last upper body tube.



20. ❒ Apply glue to the inside of the (final upper) nose cone tube. Slide the nose cone into the front end, gluing it in place.

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FINISHING INSTRUCTIONS

21. ❒ After all glue has dried, you have two choices to fill the balsa grain in the fins and nose cone.

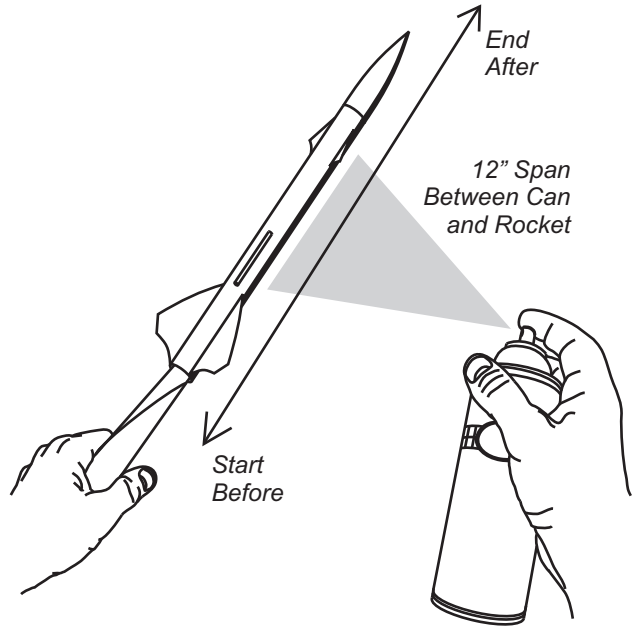
Choice 1: Sanding Sealer Or Balsa Fillercoat:

Paint the fins with coat of either Sanding Sealer or Balsa Fillercoat. Lightly sand to the surface with 400 grit (dry) sandpaper. Repeat (painting and sanding) three more times or until grain pores are filled.

Choice 2: Elmer's Fill N' Finish (now re-named) Elmer's Carpenters Wood Filler

Mix a small amount of the filler with water to a 50/50 "thick cream" consistency. Paint on balsa surfaces and let dry. Lightly sand to the surface with 400 grit (dry) sandpaper. Repeat if necessary to fill grain.

You can also fill the body tube seams using the thinned wood filler. Dab the thinned filler into the seams then "squeegee" off the excess using a razor blade. Sand to the surface using 400 grit sandpaper.



22. ❒ To spray the model use a handle made of rolled paper. Roll the paper into a narrow cone and insert it into the engine mount.

Hold the spray can about 8" - 10" from the model. Start spraying an inch below and finish above the model. Use light coats. Let dry between coats. Don't forget the ends and edges.

Your final coat can be sprayed thicker to give it that ""wet" glossy look.

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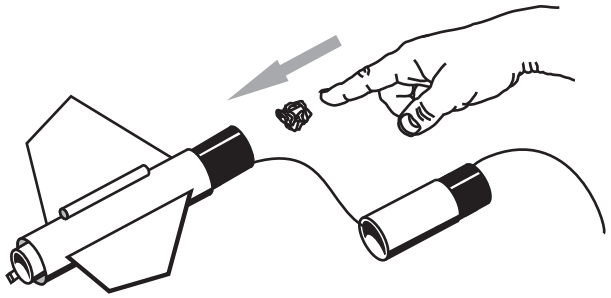
PREPARE FOR FLIGHT

23. Pick an appropriate engine: A8-3, B6-4 or C6-5. An A8-3 is recommended for the first flight. Pull back the engine lock and slide the engine into position.



24. Wadd-up and pack one square of wadding above the engine in the lowest (finned) section. The wadding will help catch any burning ejection charge, and protect the connecting cord.

25. Refer to your engine directions to install the ignitor. Different manufacturers have different ignitors and methods for electric ignition.

26. Loosely roll the cord inside each section and "socket" the rocket together.

FLYING YOUR ROCKET

27. Fly from a large field away from trees, power lines and low flying aircraft. Your launch area should be clear of dry grass and weeds.

29. Use a 1/8" x 36" launch rod to launch your Squirm rocket. Remove safety key to disarm launch controller. Remove Safety Cap from top of launch rod. Slide rocket launch lug over and down launch rod. Be sure all body sections are joined (butted tightly together) after the rocket is in place on the launcher.

30. Attach micro clips to igniter wires. To prevent shorts, the clips should not touch each other, or the metal blast deflector.

31. Move back at least 15 feet from the rocket. Insert the safety key into your launch controller.

32. ***COUNTDOWN*** **- 5, 4, 3, 2, 1 . . .**

LAUNCH !!!

Remove Safety Key - Replace Cap on Rod.

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