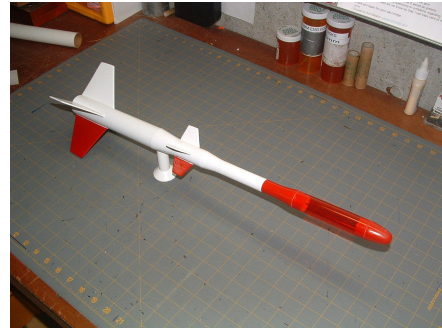


Star Hauler



Instructions for Building and Flying the "Star Hauler" *Please read through all instructions first!*

Parts List

- | | |
|--|--|
| 1.....Balsa Nose Cone (1) (BNC50J) | 10... Engine Hook |
| 2.....Balsa Transitions (2) (TA2050A) | 11... Upper Body Tube 4" (1-BT20) |
| 3.....Body Tube (Mid) (1- 2" BT50) | 12... Lower Body Tube 8" (1-BT55) |
| 4.....Lower Balsa Transition (1- TA5055) | 13... Engine Tube (2.75" BT20) |
| 5.....Engine Centering Rings (2) (CR2055F) | 14... Clear Payload Section (4" Clear BT50) |
| 6.....Engine Block Ring (1) (CR520P) | 15... Fin Stock 14" x 3/32 (1 Sheet) |
| 7.....Nose Weight Washer (1) | 16...Shock Cord Kit (Kevlar and Elastic) |
| 8.....Screw Eye (1) | 17... Mylar Chute Kit (12 inch) |
| 9.....Launch Lug (1) (1/8) | |



This Rocket was designed by me in July of 2003. I wanted to design a rocket that looked a lot like a vehicle that might have delivered high altitude instruments or even low orbit satellites! The payload section offers a way of carrying all kinds of fun experiments! If you have any questions, feel free to e-mail me at rocketman1959@netzero.com

Engine Mount Assembly-

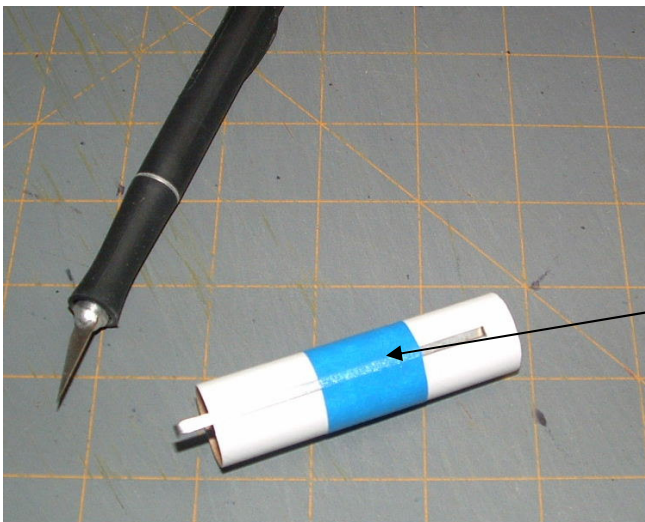
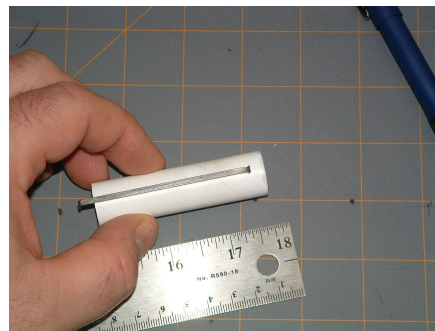
1- Glue engine block ring so that it is flush with the end of engine tube.



2- At the same end as the engine block in the previous step, make a mark $\frac{1}{4}$ " from that end of the engine tube with a pen or pencil. Make a slit with a sharp Xacto knife about $\frac{1}{8}$ " wide on this mark. See illustration below.



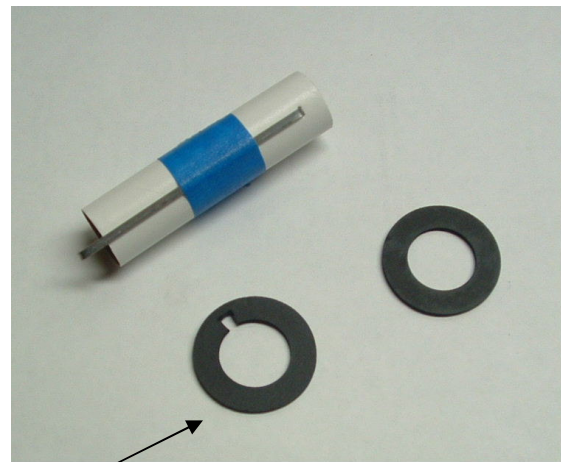
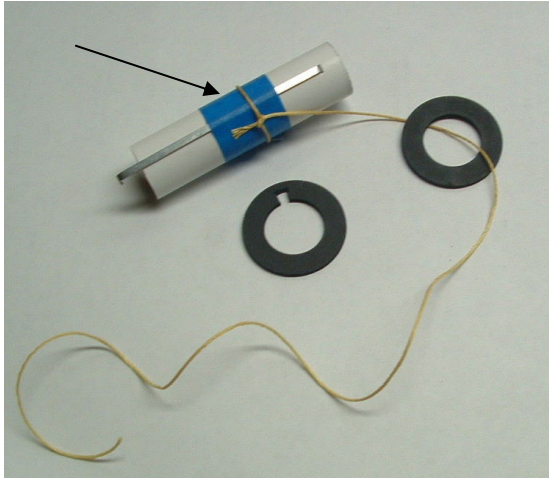
3- Insert engine hook into place as shown. Place a small section of masking tape around tube to hold clip in place. (See photo for reference)



The masking tape should be placed in the center as shown to allow for some movement of the engine clip.

4- Notch one of the centering rings as shown. This will allow for movement of the engine clip.

4a. Tie one end of the yellow Kevlar cord around the engine tube with a double knot. Trim off smaller end excess.



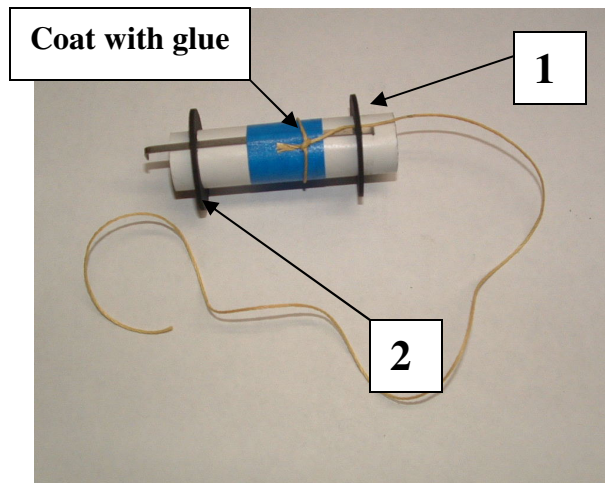
Notch

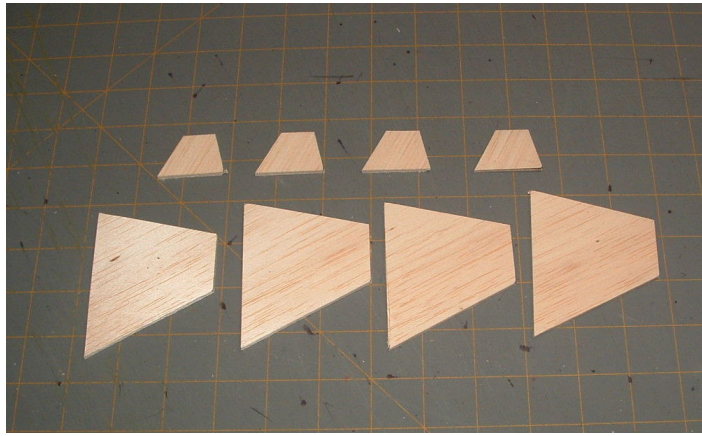
4b. Thread long end of Kevlar Cord through forward centering ring and glue ring into place so that it just covers the forward clip as shown. (Arrow 1)

Glue the aft notched centering ring $\frac{1}{4}$ inch from the aft end of the engine tube. (Arrow 2)

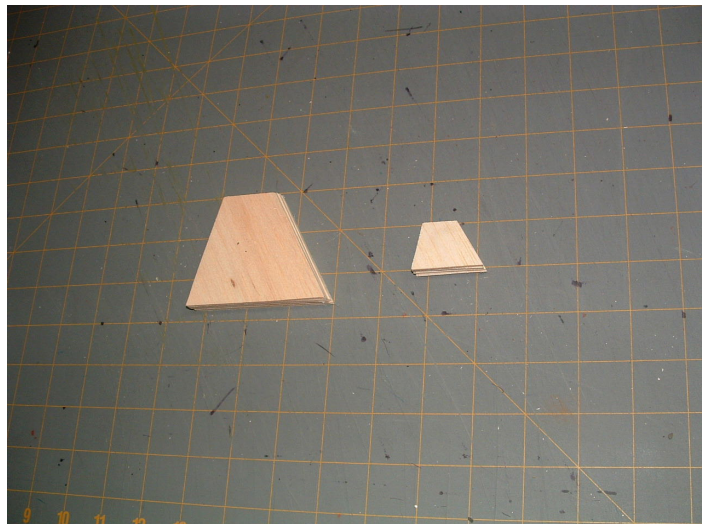
Also coat the Kevlar cord where it wraps around the motor mount liberally with glue. Remember, this acts as the anchor point for your recovery system. You can set this assembly aside to dry.

5- With a pair of scissors or a Xacto knife and straight edge, cut the fin pattern from the fin pattern sheets supplied with these instructions. Trace out the fins noting the direction of the grain. The grain of balsa always runs parallel with the leading edge of the fin. If you trace like the illustration shows, there should be plenty of balsa for the fins. Once your done tracing, cut them out!





6. Stack the fins together and sand them until they are all uniform.



7. Sand all of the edges round except the root edge or that edge which will be glued to the rocket. At this time, you can seal them with sanding sealer or wood filler such as Elmer's Fill and Sand. This makes for a nice finish when the rocket is finally painted.

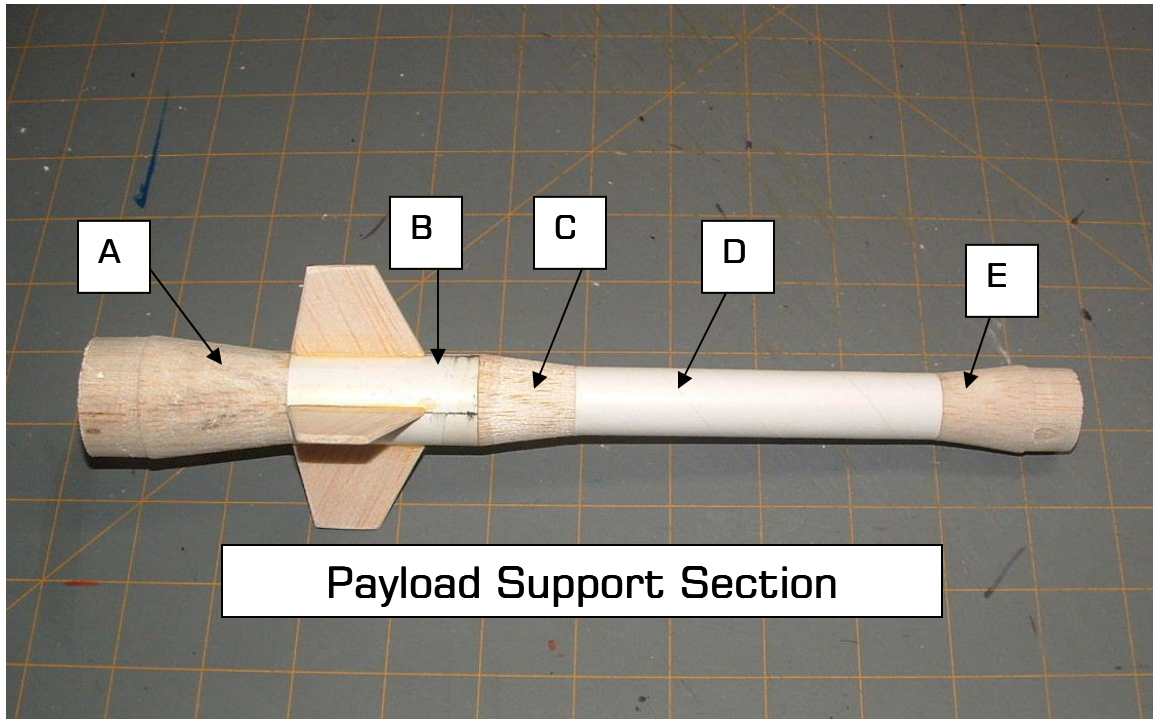
8. There are two fin wrap around guides. The smaller of the two is for the smaller, mid-body tube while the larger is for the larger, lower body tube. Cut out the fin positioning wrap pattern sheets from the instructions and wrap them around the lower and mid body tubes. Mark the fin and launch lug positions (Only the lower tube has launch lug lines). Now using a piece of triangular stock or even a door jamb, draw the fin and launch lug lines on the mid and lower body tubes.



9. Install engine mount assembly so that engine tube is flush with bottom of body tube and let dry.

10. Glue fins onto lower body tube guidelines. Don't glue the upper fins to the upper body tube until the transitions are in place (See next step) The lower and upper fins trailing edges are flush with their respective body tube aft ends. When glue joints are

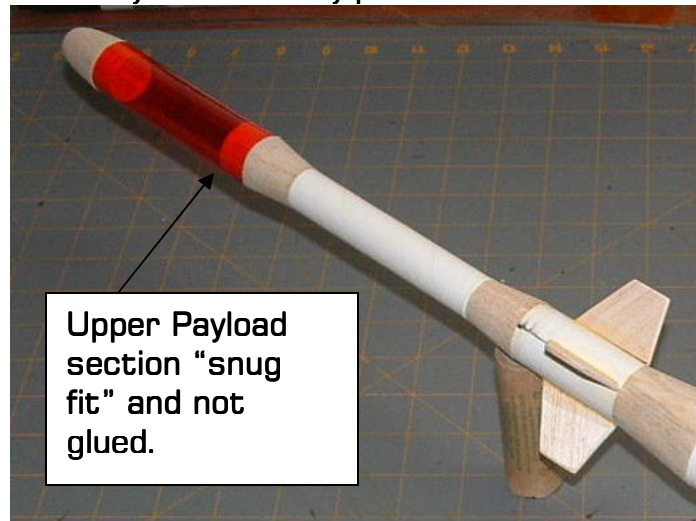
11. Glue large balsa transition (A) into bottom of mid body tube (B). Glue one of the smaller transitions (C) to the top of the mid body tube (B). Glue the last of the 4" upper body tube (D) to the top of the smaller transition (C). Finally, glue the last of the smaller transitions (E) to the top of the upper body tube (D). Refer to photo below for proper positioning. Set aside and let dry.



11a. Once the Payload Support section has dried, glue the fins as illustrated above on the guidelines that you marked before. Notice the aft root of all of the fins are flush with the bottom of the Mid Body tube (B). Let dry. For extra strength, give ALL 8 fin joints one last coat of glue to form a nice strong fillet.

12. At this point you do not want to glue the clear payload section to the payload support section. The reason is the paint would not have a chance to get to that part of that transition that would show through. I actually don't glue it at all but rather make sure that it has a tight fit. You use either masking tape or white paper strips with an adhesive backing (like mailing labels.) This way, I change around the configuration of the top of my model! Also make sure that

the nose cone has a snug fit as well. Remember, during ejection there is a lot of "kick" so we don't want you to lose any pieces!



13. Glue Screw Eye to the large transition through the nose weight (washer) that's included. I usually screw in the eyelet half way, back it out and then place thick CA into the hole.

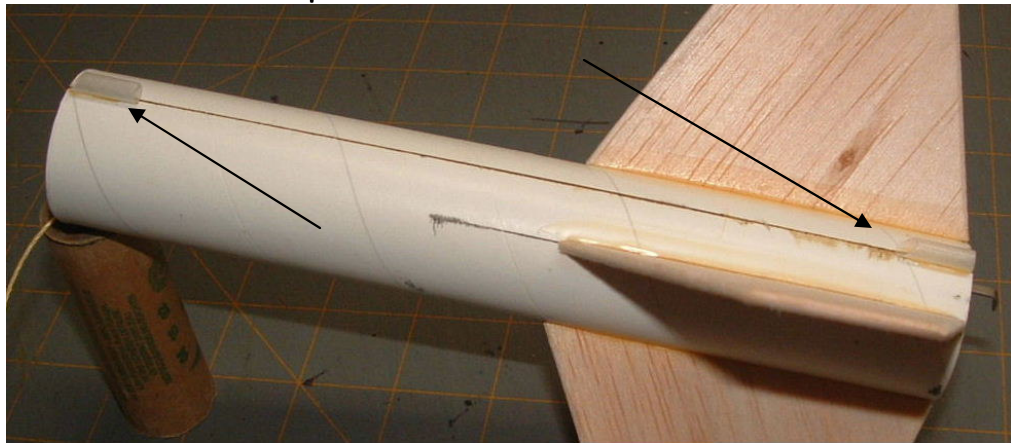
Once the screw eye and washer are attached (with eyelet screwed all the way down this time, I soak the surrounding area balsa with thin CA for extra strength.



14. If you haven't done so already, thread the free end of the Kevlar thread through the front end of the body tube and tie a loop in the end.

Then tie the elastic shock cord to the end of the Kevlar thread and the other end to the eyelet of the upper payload section. Put a dab of glue on each of the knots, this will keep them from coming loose. After assembling your parachute, attach the chute, by way of the swivel, to the eyelet on the payload section. Pack the chute only when you are ready to fly.

15. Cut launch in half and taper each end with razor or Xacto knife. On the launch lug line glue one at the top edge of the lower body tube, and the other at the upper end. See photo.



Fill all areas with wood filler as necessary. I usually do my fillets first, sand, and then coat the fins and nose cone and other balsa sections and sand again. Apply a small length of tape around the shoulder of the payload transition. This will help from having any filler or paint from ending up where it's not supposed to be!

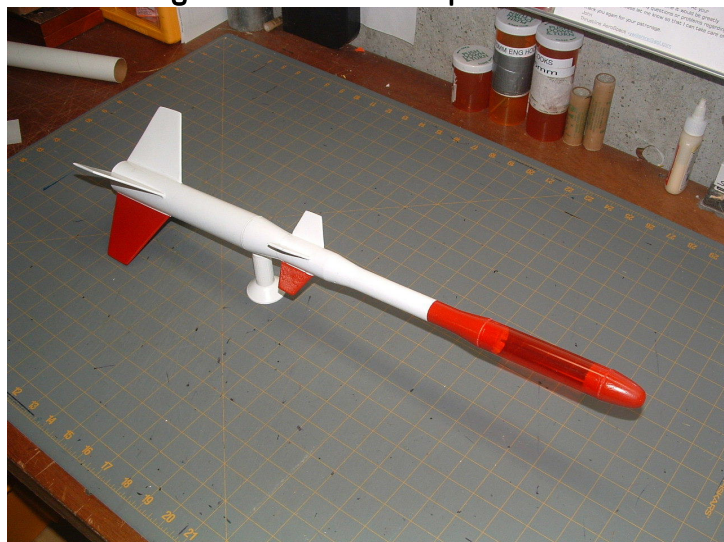
Once sanded this will give everything a really smooth surface to be painted! Also fill in any spiral lines on the tube the same way. Sand using a medium, then fine sandpaper. You will want to coat the rocket with at least 2-3 coats of a good sandable primer, again sanding in between coats.

Once you're ready, paint the rocket with your with a good quality enamel. Remember, if you are going to apply decals or trim to consider your color choices first!

FLYING THE STAR HAULER-

Flying this rocket is a breeze. Your Engine choice will depend on a number of variables including wind conditions and field size.

My suggestion here is to start out with an A8-3 and work your way up. Although the Mylar chute that was included in your kit is very heat resistant, it will melt if you don't use enough wadding.



If you have any questions, feel free to e-mail me a rocketman1959@netzero.com

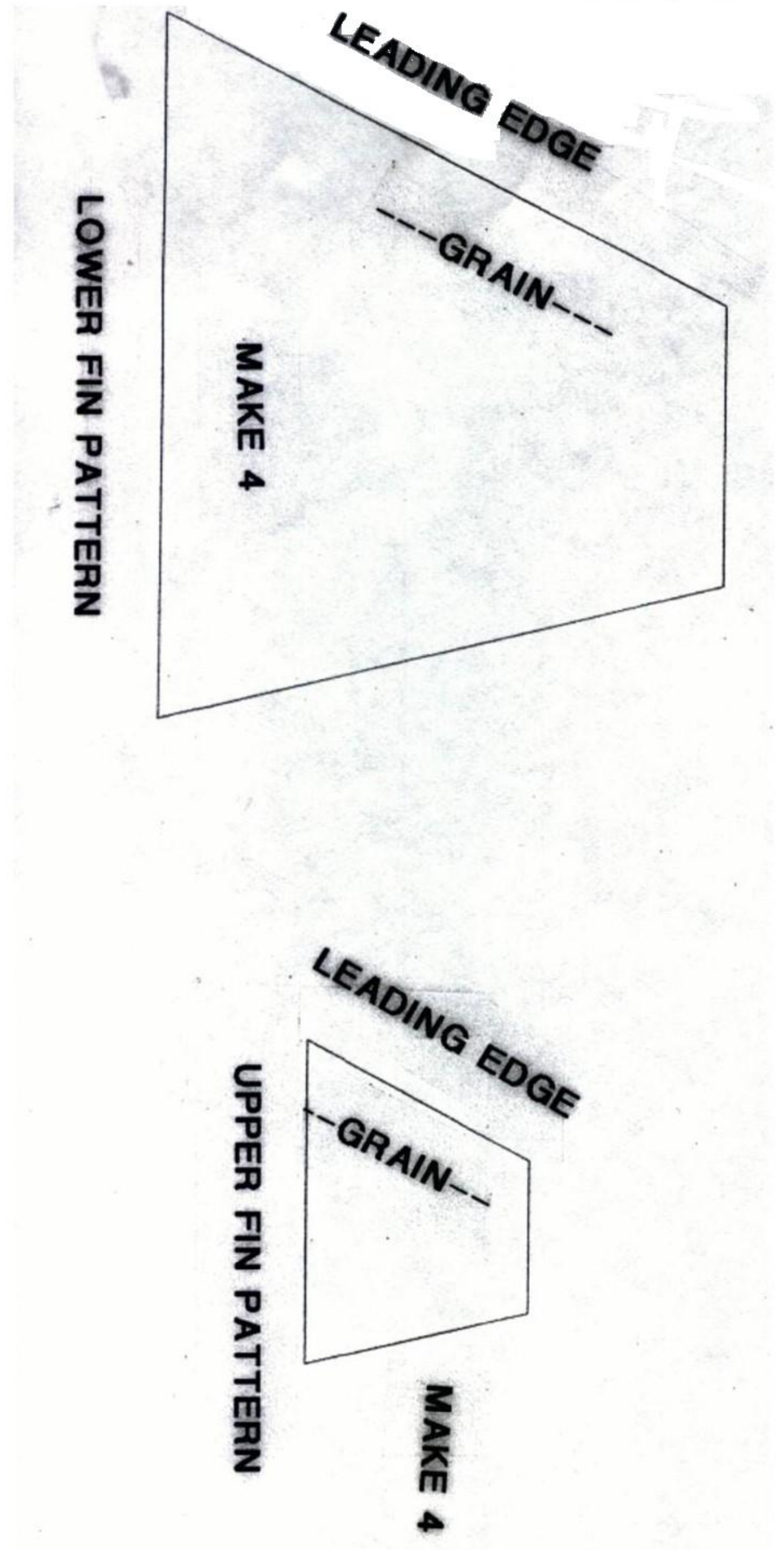
Star Hauler Fin Pattern Sheet

1- Cut fin patterns outside of black line.

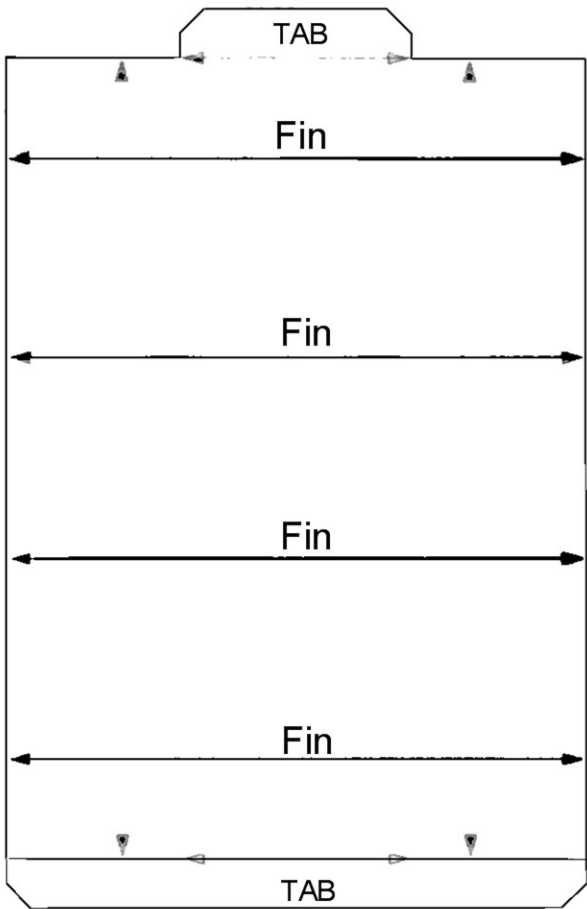
2- Trace pattern on balsa be careful to keep the grain direction of the wood as specified on the pattern.

3- Stack all fins and sand until uniform

Tip- When the fins are almost finish sanded, I use thin CA on the fin surface to help make them stronger and to help close off any pores in the wood prior to sealing. I then use Elmers fill and sand to finish the fins.

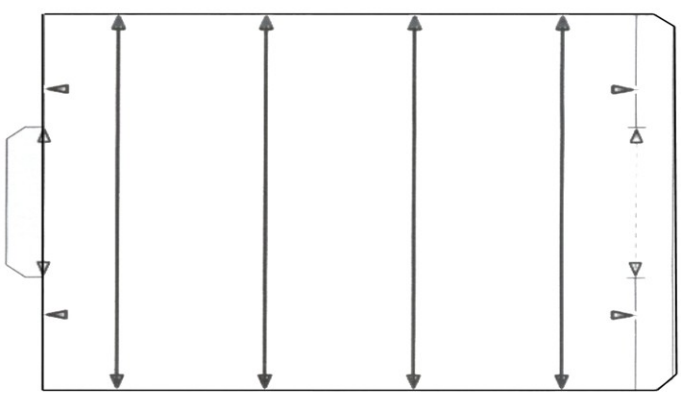


Star Hauler fin guide sheet



Fin Marking Guide

Cut out each fin guide wrap and wrap around body tube using a small piece of tape to help anchor in place. Mark as usual and use rule to extend fin lines. Launch lug line can be drawn in where needed.



Fiin guide for smaller tube