

#10028

DEEP SURFACE PROBE

Skill Level 2

A unique cone-stabilized rocket!
Recommended Engines: B6-2, C6-3



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A E R O S P A C E

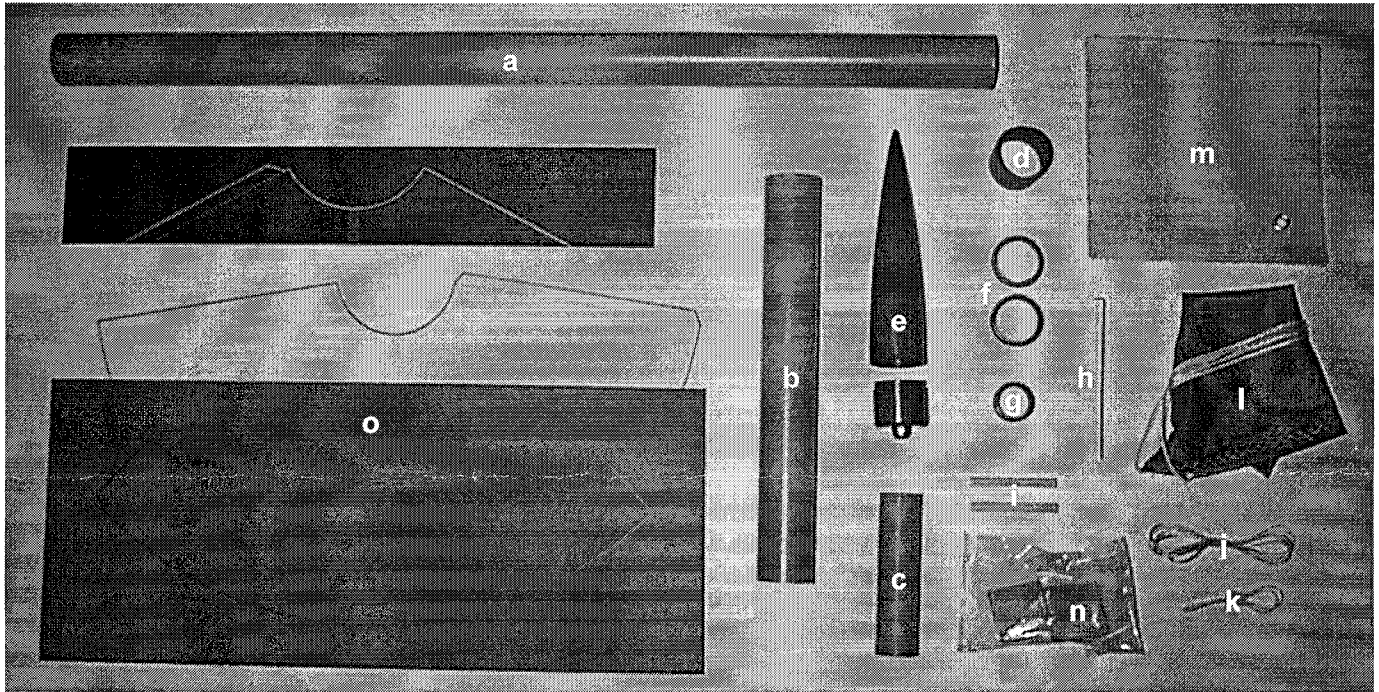
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Rogue Aerospace Corporation has exercised reasonable care in the design and manufacture of this kit, and warrants it to be free from manufacturing defects for 1 year from the date of purchase. If your kit is missing a part, please call or e-mail us for a replacement.

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Materials Included in This Kit

- a T-25 brown paper tube (43.2cm [17"] long)
- b T-25 brown paper tube (17.8cm [7"] long)
- c T-19E green paper engine mount tube (7cm [2.75"] long)
- d SC-25S paper tube coupler
- e PNC-25P plastic nose cone and shoulder
- f Two CR-1925 centering rings
- g TR-18 green thrust ring
- h EC-7 engine clip
- i Two 3mm (1/8") launch lugs (3.8cm [1 1/2"] long)
- j KC-4 Kevlar tether (1.25m [49"] long)
- k ESC-1 elastic cord (60cm [24"] long)
- l PP-30 nylon parachute (30cm [12"] diameter)
- m PW-25 Perma-Wadding (10cm [4"] x 10cm [4"])
- n Clay (20g [0.7 oz])
- o Three paper cone stabilizers
- p Decal sheet (not pictured)

Materials You Must Supply

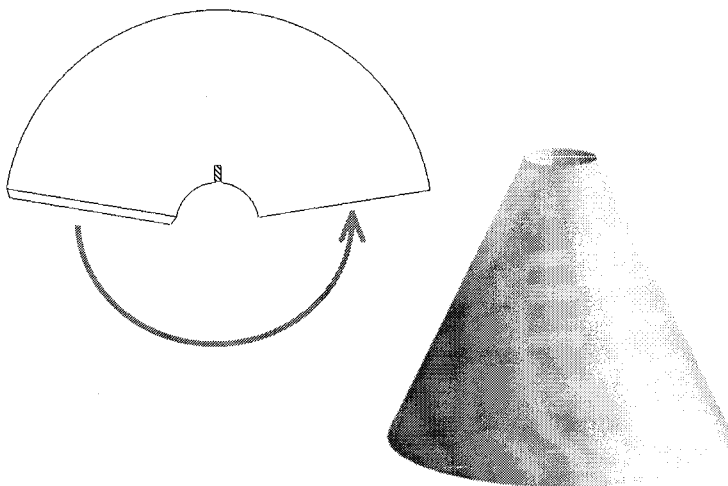
- Adhesives
 - White glue ("school" glue or craft glue such as "Allene's Tacky")
 - Plastic cement or cyanoacrylate (CA)
- Pencil
- Scissors
- Hobby knife
- Ruler
- Fine sandpaper
- Paint

Rules to Live By

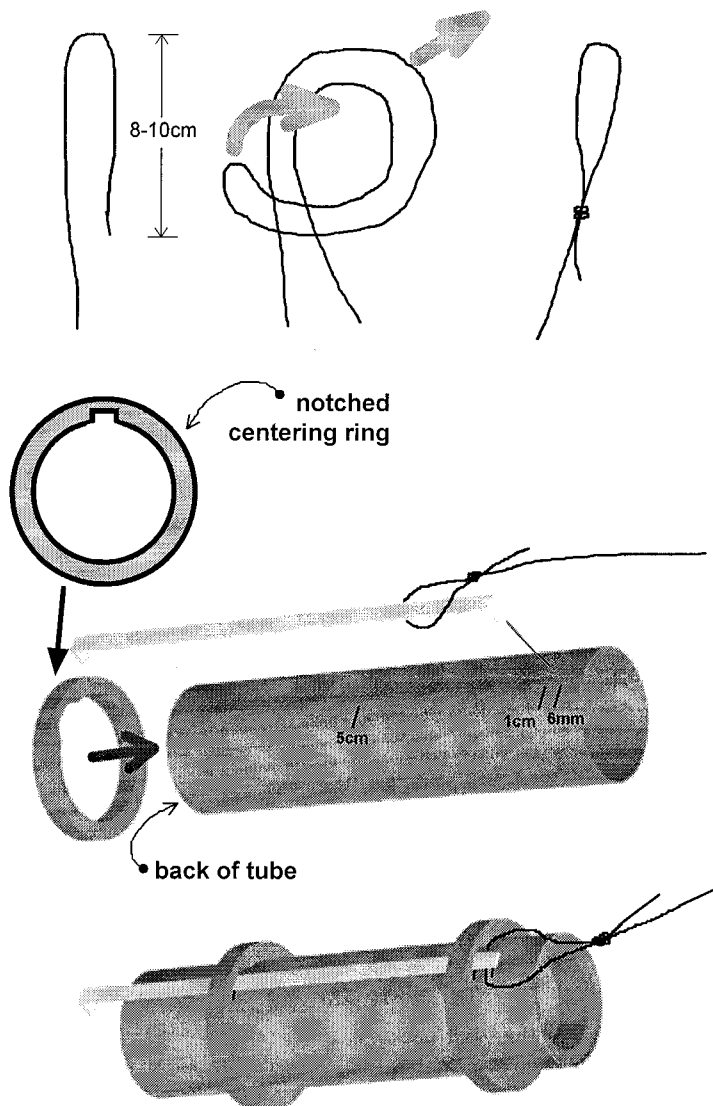
- 1** Before you begin to build your model, **make sure you have read and understood all steps in these instructions.** It's much better to spend a few minutes becoming familiar with these instructions now, than a few hours trying to correct a major mistake later. A good rocketeer is a careful modeller. Do not proceed with any step until you are certain you know what to do. Make all measurements twice before cutting or gluing.
- 2 Do not alter the basic design of this model rocket in any way.** Most importantly, do not reduce the number or size of fins, shorten the body tube, use a different nose, or add fins to the rocket. Any of these changes would affect the stability of the rocket and could cause it to lose the ability to fly straight. An unstable rocket is less than worthless and is no fun for anyone. Of course, you can change the color scheme, decals, and so forth as you wish.
- 3** Once you've finished your rocket, **launch it only in accordance with the Model Rocket Safety Code** created by the National Association of Rocketry. A copy of the Code is included with your model. If you don't follow the Code, you could jeopardize the future of model rocketry... and make every other model rocketeer in the world angry. Follow the Code.

Assembly Instructions

- 1** Construct cone stabilizers.
- Carefully cut out each of the three cone stabilizers along the heavy solid lines.
 - Using the edge of a table, gently curl each cone, being careful not to make any sharp folds or creases.
 - Smear glue on the tab at one end of one of the cones (the area between the dotted line and the edge of the paper). Lay the other end of the cone across the tab and hold the ends together until the glue sets.
 - Repeat step c for the other two cone stabilizers.
 - Set the cone stabilizers aside to dry completely.



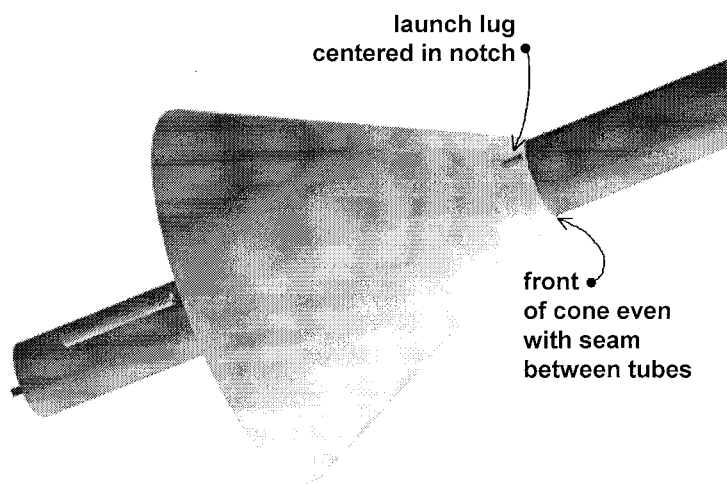
- 2** Assemble engine mount.
- Grasp one end of the yellow Kevlar tether and double it back on itself, making a loop about 8-10cm (3-4") long. Tie an overhand knot in the loop as shown.
 - Using a hobby knife, make a small notch on the inside of each centering ring as shown, about the width of the engine clip.
 - Make 3 marks on the green engine mount tube: at 6mm ($\frac{1}{4}$ "), 1cm ($\frac{3}{8}$ "), and 5cm (2") from one end (the "front" of the tube).
 - At the 6mm ($\frac{1}{4}$ ") mark, cut a slit about 3mm ($\frac{1}{8}$ ") wide. Note that one end of the engine clip is shorter than the other. Insert this shorter end into the slit. Place the loop you made in the end of the Kevlar tether around the free end of the engine clip, and slide it towards the front of the engine tube.
 - Apply glue around the engine mount tube at the 1cm ($\frac{3}{8}$ ") mark. Slide one centering ring on from the back of the tube until it meets the mark. Make sure the engine clip lies straight down the tube, held in place by the centering ring.
 - Apply glue around the tube at the 5cm (2") mark. Slide the remaining centering ring on from the back of the tube until it meets the mark, making sure the notch you made is centered around the engine clip.
 - Apply glue around the inside of the front of the engine tube. Slide the green thrust ring into the tube until it rests against the end of the engine clip.



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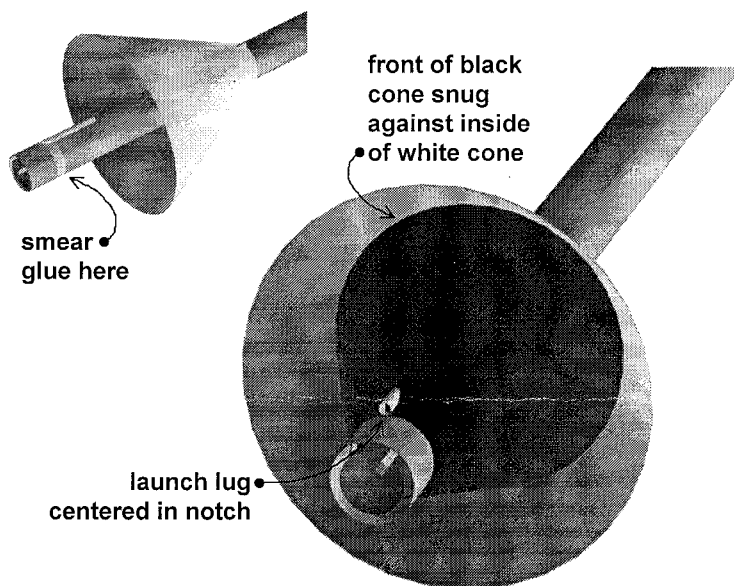
Attach white cone stabilizer.

- a) Check the shape of each cone stabilizer. Each end of each cone should be as close to a perfect circle as possible. Adjust each cone as necessary by gently squeezing it into the proper shape.
- b) Lightly sand the ends of each cone to even up the cut edges, and to remove any traces of the outlines you cut along in step 1a.
- c) Using a hobby knife, cut out the rectangular shaded notch at the small end of the white cone.
- d) Smear glue on the outside of the fuselage just aft of the seam between the two fuselage tubes.
- e) Slide the white cone on from the front end of the fuselage, and push it back until its forward end lines up with the seam. Make sure the launch lug is centered in the notch you cut. Also make certain the end of the cone is even with the seam all the way around the fuselage.
- f) Stand the rocket on its forward end and allow to dry.

**7**

Attach black cone stabilizer.

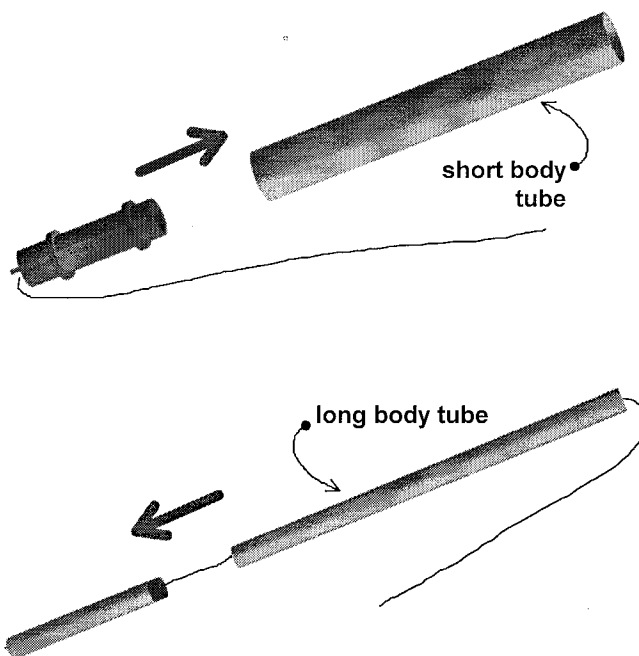
- a) Using a hobby knife, cut out the rectangular shaded notch at the small end of the black cone.
- b) Smear glue on the outside of the fuselage even with the aft end of the aft launch lug, all the way around the tube as shown.
- c) Slide the black cone on from the aft end of the fuselage, and push it forward until its forward end rests snugly against the inside of the white cone. Make sure the aft launch lug is centered in the notch you cut.
- d) Use your finger or the corner of a folded paper towel to smear glue all around the front end of the black cone where it meets the white cone.
- e) Stand the rocket on its forward end and allow to dry.



3

Assemble fuselage.

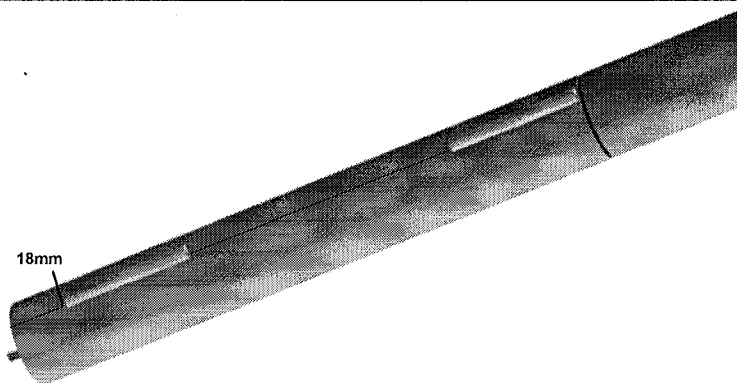
- Smear glue inside one end of the short brown body tube.
- Thread the Kevlar tether back through the engine mount, then slide the engine mount into the body tube until the back of the green tube is even with the back of the body tube. Make certain the Kevlar tether is not trapped by glue or by the engine mount.
- Make a mark 13mm ($\frac{1}{2}$ ") from one end of the tube coupler. Smear glue just inside the other end of the short body tube, and slide the coupler into the tube until the end of the tube meets the mark. Allow the glue to dry.
- Smear glue inside one end of the long brown body tube, and slide it onto the exposed end of the tube coupler to form one long fuselage tube.
- Feed the tether back through the engine mount and out the front of the fuselage. (An easy way to do this is to tape the end of the tether to a pencil, and push the pencil through the tube.)



4

Attach launch lugs.

- Measure 18mm ($\frac{3}{4}$ ") along the pre-drawn guideline from the aft end of the fuselage (the end with the engine mount). Make a mark at this point.
- Glue one launch lug to the fuselage along the pre-drawn guideline, with the aft end of the launch lug even with the mark you made in step a.
- Glue the other launch lug along the guideline, with its forward end even with the seam between the two fuselage tubes.
- Ensure the launch lugs are lined up with the guideline and with each other. Allow the glue to dry.



5

Assemble nose cone.

- Roll all the clay together into a ball and insert it into the nose cone. Use your finger or the eraser end of a pencil to press the clay firmly into the point of the nose.
- Using cyanoacrylate (CA) or plastic cement, glue the nose cone shoulder into the base of the nose cone. Allow the adhesive to dry.
- Thread one end of the elastic shock cord through the hole in the nose cone shoulder and tie it **securely** to the nose cone. You may wish to use a drop of white glue to "set" the knot.

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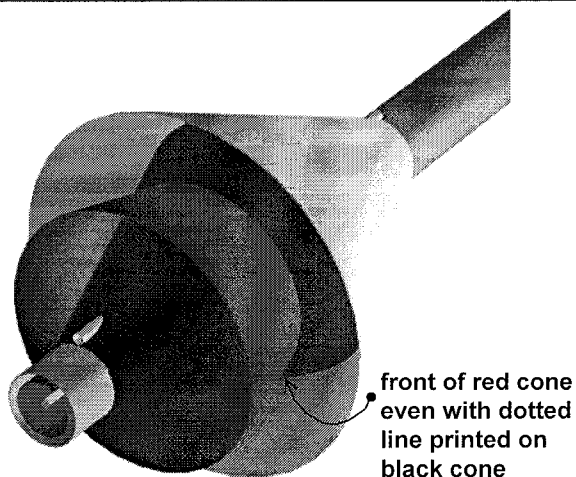
Prepare for launch.

- a) To launch your rocket, first make certain it is assembled as described in step 11. Note that *no recovery wadding is required*, as the reusable Perma-Wadding serves to protect the parachute from the hot ejection charge.
- b) Slide an engine of the recommended type into the rear of the rocket so the nozzle is pointing outward. Slide the engine in until the engine clip snaps into place around it.
- c) Install an electrical igniter into the engine as recommended by the engine manufacturer.
- d) Mount a 1/8" launch rod on your launch pad. Slide the rocket onto the launch rod by carefully guiding the rod through both launch lugs.
- e) Connect the igniter to your electrical ignition system. (Launch systems are available from your local hobby store.)
- f) Launch your rocket! Remember to follow the National Association of Rocketry Model Rocket Safety Code whenever you launch.
- g) Let us know how you like the design! Write to us or e-mail us at the addresses listed on the front of these instructions, and tell us what you did or didn't like about this kit. You can help us better the hobby by sharing your opinions and ideas!

8

Attach red cone stabilizer.

- a) Smear glue on the front (smaller) edge of the red cone stabilizer.
- b) Glue the red cone onto the black cone, with its forward edge even with the white dotted line that circles the black cone.
- c) Stand the rocket on its forward end and allow to dry.

**9**

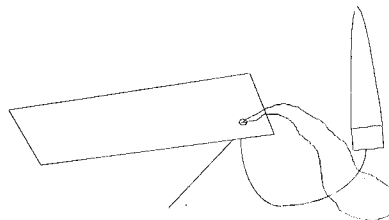
Attach parachute.

- a) Make loops in the free ends of the yellow Kevlar tether and elastic cord similar to the loop you made in step 2a.
- b) Gather the parachute shroud lines together and pass them through the loops you made.
- c) Pass the parachute canopy through the loop formed by the shroud lines and pull tight to secure the parachute.

10

Attach Perma-Wadding to model.

- a) Form a loop in the Kevlar tether and pass it through the eyelet in the sheet of Perma-Wadding.
- b) Pass the nose and parachute through this loop. The Perma-Wadding is now attached to the tether, but can be moved up and down it or removed if necessary.

**11**

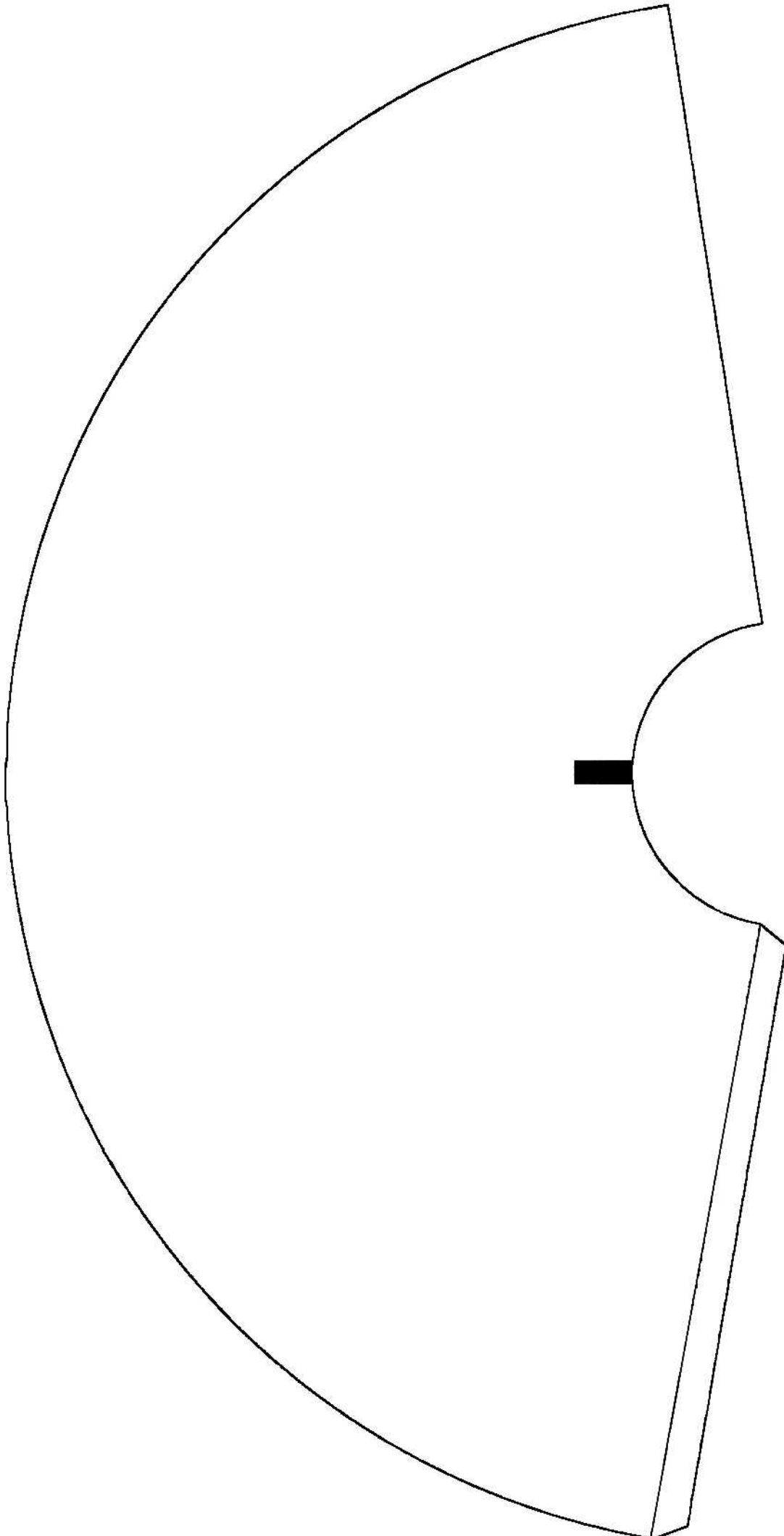
Assemble rocket into flight configuration.

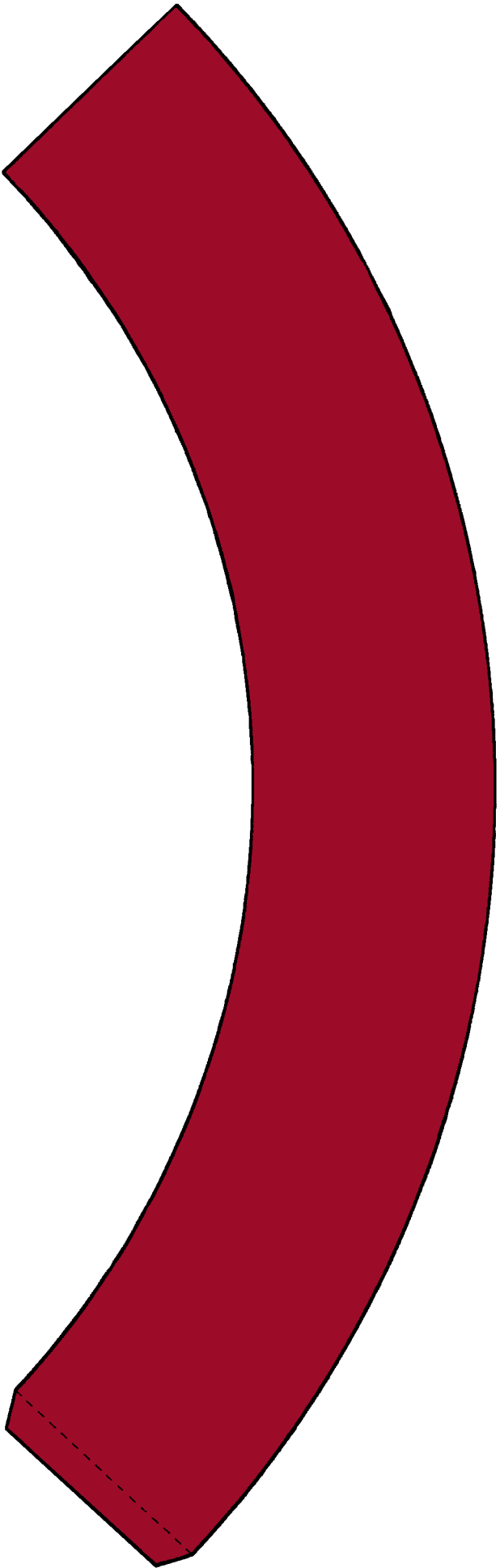
- a) Slide the Perma-Wadding as far down the Kevlar tether towards the fuselage as possible. Center it over the mouth of the tube, and use your finger to push the middle down into the tube, then the edges. Fold the parachute and shroud lines together, and loosely wrap the Kevlar tether around them a few times. Insert the folded parachute into the body tube.
- b) Pack any remaining length of Kevlar tether on top of the parachute, and insert the nose cone into the tube. Adjust the fit of the nose cone, if necessary, by sanding if it is too tight, or by applying transparent tape to the shoulder if it is too loose.

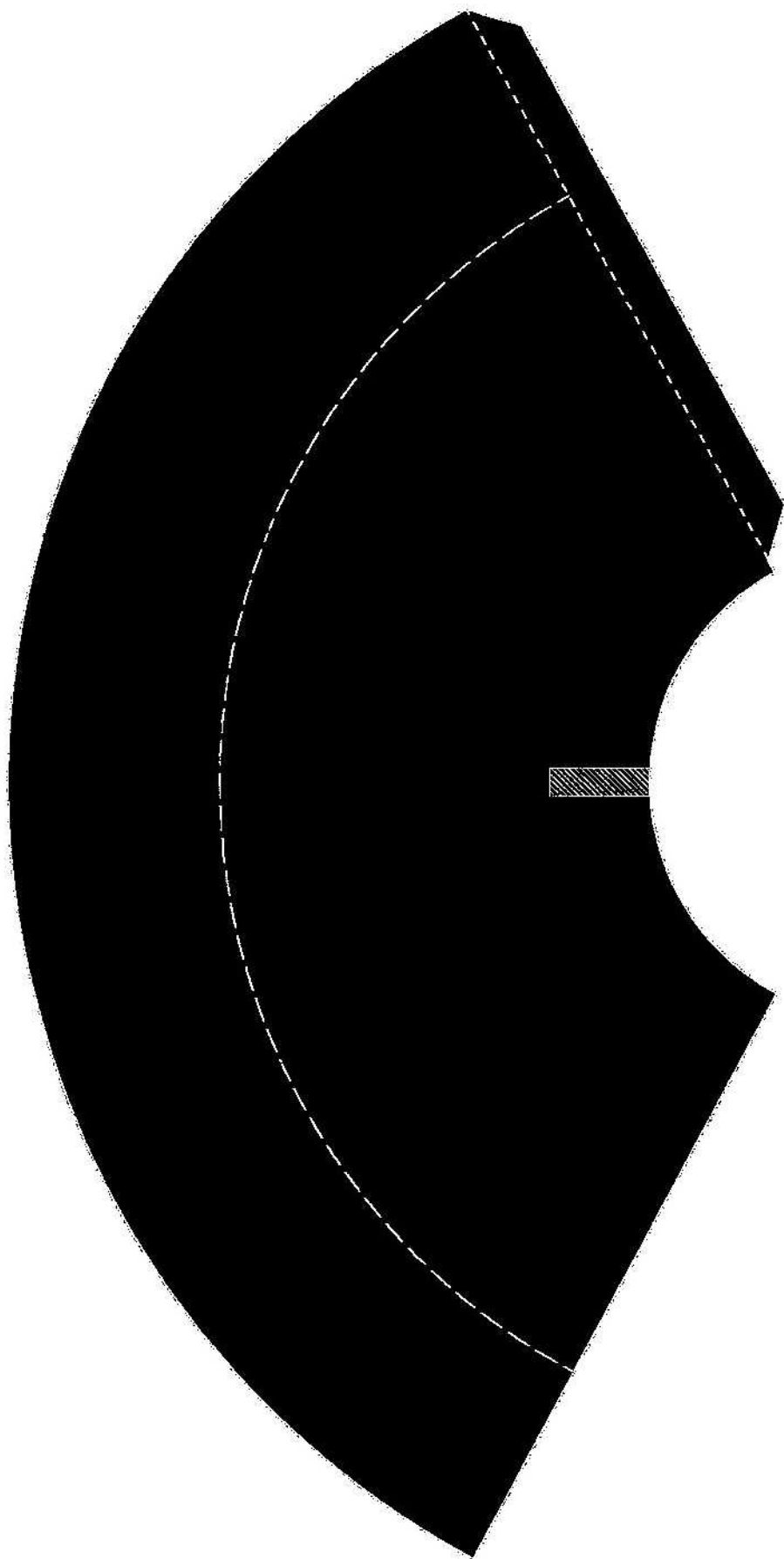
12

Paint rocket and apply decals.

- a) Painting your rocket improves its appearance as well as its performance. For best results, use enamel-type spray or bottle paints, and use several light coats of paint rather than one heavy one.
- b) It is recommended that you **do not paint the cone stabilizers**. They have been pre-colored for you, so no paint is required. Heavy coats of paint on the stabilizers could adversely affect the stability of the rocket, and cause the rocket to become unstable in flight!
- c) To duplicate the paint scheme shown on the front of this package, mask off (cover up) the cone stabilizers using masking tape and pieces of newspaper. Also cover up the nose of the rocket. Using spray paint, paint the body tube in front of the stabilizers gloss white, and paint the short piece of tube behind the stabilizers flat black. Once this paint has dried, mask off the entire rocket except the nose, and paint the nose red. (If you wish, you can simply leave the nose cone unpainted, since it is molded in red plastic.)
- d) After the paint has dried, apply the decals as desired.







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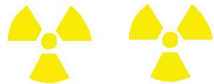
WARNING: SEVERE SHOCKWAVE

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PULSEJET EXHAUST

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RADIATION HAZARD



RADIATION HAZARD

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