This paper rocket kit is designed to help you build a 1:150 scale model of the Vulcan Centaur rocket with your printer and basic tools. As with all paper model kits, your level of success will depend on your precision and the time you take. It is recommended to let the glue fully dry in each step before the next. Please take care not to cut yourself and do not leave children unattended with sharp tools.

Your Vulcan Centaur paper model kit will require:
• 8.5” x 11” cardstock prints of the 4 pages at the end of this document, (save paper and ink by only printing the pattern pages 13-16 and view the instructions online)
• A cutting mat
• Scissors and/or an x-acto knife (children should not use x-acto or be left unattended with cutting tools and anyone attempting this kit should take care to avoid injury from cuts)
• Glue (super glue or other adhesive is not necessary)
• A straight edge or ruler

Optional supplies:
• A few toothpicks for applying glue to small areas
• A small dish to hold a dollop of glue while building
• A long wooden dowel or chopstick to help you apply pressure to glued areas far into the rocket body
• A sharpened pencil
**STEP 1**
Mark the booster (A) for solid rocket boosters before cutting

Vulcan Centaur has the capability of using 0, 2, 4 or 6 solid rocket boosters (SRBs) for added performance. You will mark the locations for the SRBs first.

Determine how many SRBs your model will have. This example shows six. If you decide to have none, skip to the next step.

The numbers show the location lines for the quantity of SRBs you choose to use. Use a ruler across the blue marks at the top and bottom of the booster (A), to lightly draw the SRBs location lines, using the blue arrow as a guide. Do not go past the blue arrow with your marks or the pencil will show on the final model.

**STEP 2**
Trim out the booster (A)

Trim out piece A. Apply glue to the white strip on the side of the piece.

Gently curl the booster to make a tube and hold the glue until it dries in place.

You can use a wooden dowel or chopstick to put pressure on the inside of the tube where your fingers may not reach.
**STEP 3**

Make the heatshield (B)

Trim out part B, the heatshield, and apply glue to the white end.

Next, roll it around to form a ring. The ring may warp because of the two semi-circular notches out of it, but we’ll fix that in step 4.

**STEP 4**

Trim and attach the base of the heatshield

Trim out parts C and D. Bend the tabs back just a bit and apply glue to the tabs on the circular side of the piece. Do not add glue to the straight portion, yet.

Set the glued tabs into the inside of the heatshield ring and line up the circular section to match the circular holes. Do both sides.

**STEP 5**

Attach the bottom of the heatshield (G)

Trim part G, which will be the base of the heatshield. Remove the portions in black, leaving the triangles in place. Bend the triangles and the rectangles back to shape the piece.

Add glue to the rectangles on part G, and the straight edges of parts C and D, from the last step, and glue the base into the heatshield as shown.
STEP 6
Attach the heatshield to the booster (A)

Apply glue to the rectangular tabs of the heatshield. Line up the seam of the heatshield with the side of the booster:
- If you drew lines for the SRBs, the seam is lined up with the middle booster line.
- If you did not use SRBs, you can carefully align the seam of the heatshield to the side of the booster so the flat, circular sections face forward. Carefully tip the part into the bottom of the rocket body (part A).

STEP 7
Make the BE-4 engine nozzle (E & F)

Trim out part E and F and slowly curl them into a cone shape. Glue each end together and hold until the glue dries to create two engine nozzles.

Once dry, apply glue to the triangular tabs on the heatshield and insert each engine into the hole in the heatshield as shown. The glue will dry and hold the engine in place. Take care to center and level the two cone shapes to each other before the glue dries.
STEP 8
Make the Centaur upper stage (H) and the bottom of the payload fairing (I)

Trim out part H and I, and wrap them gently into tubes, gluing the long ends together to make two tubes, one with a flag (interstage adapter + Centaur V upper stage) and one with a ULA logo (the bottom of the payload fairing).

Let’s finish the payload fairing before we assemble our pieces.

STEP 9
Finish the payload fairing (I, J & K)

Cut out parts J and K which will be the nosecone on the payload fairing. Slightly bend all the triangles back, then glue the ends and wrap them into their shape shown to the left.

Next, take the cone, part K, and add glue to the triangles. Line up the seams from both parts so they match up and drop the tip of the cone into the wider side of part J, to make a full nosecone. Center the top of the nosecone (K) and press the triangles down on the inside until they dry.

After the nosecone is dry, glue the triangles of the nosecone into the top of the payload fairing piece with the ULA logo (part I), as shown on the right. Let these parts dry completely to complete the full Vulcan Centaur payload fairing.
**STEP 10**
Assemble the rocket

Add glue to the rectangular tabs on the Centaur section (with U.S. flag), then tip this into the booster of the rocket, lining up the seams of the Centaur with the seams of the booster.

After the glue is dried on the Centaur, do the same with the payload fairing section. If the seams are lined up on the back of the rocket (with the exception of the heat-shield), the logos and rocket will line up accurately to the final vehicle.

If you chose not to add SRBs to the rocket, you are done here and can skip to the model base section of these instructions.

**STEP 11**
Trim out the solid rocket boosters (SRBs) from page 15

Each SRB will require one each of parts L, M, N and O. Cut out as many of each part as you have selected for your rocket. This example will show all six SRBs for our final rocket.

Part M requires the most patience and precision. Cut out each section slowly, and remove the black portion in the center to leave a hole and four triangular points, then fold them back. Be careful not to cut yourself, as these parts are tricky and tiny.
**STEP 12**

Assemble the GEM-63XL SRBs

Nosecone (part N): Wrap this part around and glue it into a cone.

SRB tank (part O): roll this and glue the ends together to form a tube. Try using a pencil to roll the part around. Let dry.

SRB Base (part M): will be glued into the bottom of the SRB tank to hold the engine.

Engine nozzle (part L): wrap around and glue the end to make a cone.

Assemble the SRBs one at a time, making sure the glue dries on each part before proceeding.

Once each part is formed, glue the nosecone into the top of the SRB tank by adding glue to the rectangles and sliding it into the tank tube (either end is the same). Then glue the base (part M) into the opposite side of the tank.

Lastly, add glue to the triangles in the hole of part M, the base, and attach the engine nozzle (part N) by pushing it into the hole with the triangles sticking to the engine. Center the part before the glue dries.

Make as many SRBs as you need for your model.
STEP 13
Glue the SRBs to the rocket

Remember those lines you drew on the rocket tank on step 1? You will now add glue to the seamed side of each SRB (this hides the seams) and stick them to the lines, one at a time, letting each one dry and assuring they are straight and lined up to each other.

COMPLETED VULCAN CENTAUR ROCKET
MODEL STAND

STEP 1
Make the base of the stand (P)

Trim out part P, as shown, and be sure to score all fold lines in this stand model. Score the lines by using the back side of the x-acto knife or cutting very lightly so the blade doesn’t go through the line. The folds need to be crisp and 90 degrees to provide a sturdy stand for the rocket.

Remove the black section marked “cut out and remove.” The white portion of this area can be scored and the corners cut to allow each tab to fold down. See photos on the right.

Add glue to corners of the box to make the base for the stand. Allow glue to fully dry.
**STEP 2**

Make the support tower (S)

Trim out part S from the pattern, and again, score all the fold lines for a clean fold. Add glue to corners to make the shape in the photo, a tall, thin box.

Insert the support tower (S) into the base (P) and even the length with the side walls of the base. This will ensure that the support tower is touching the ground or table when it stands and will provide further support. You can also add glue to the folded tabs to secure the base to the tower, once you have the positioning correct.

**STEP 3**

Make the support arms (Q & R)

Trim out parts Q and R, scoring the fold lines, then fold and glue together to make small boxes.

Next, glue the support arms to the sides of the support tower, at the very top, so that the widest surface is attached to the tower. See the photo for reference.

Let glue dry.

Add the rocket! The support arms should fit nicely around the booster, just above the SRBs.
VULCAN CENTAUR
ROCKET
With Model Base
Locators for Solid Rocket Boosters (SRB)

Determine the number of SRBs you want (0, 2, 4 or 6) and lightly draw guides from bottom to this blue line. Zero SRBs would have no lines or SRBs needed.

B

C

D

E

F

G

**Note:** The diagram and text are related to the design and configuration of solid rocket boosters. The process involves determining the number of SRBs needed and marking them on the diagram.
MODEL BASE
Score all folding lines on this page

VULCAN CENTAUR
1:150 Scale