

# Lil' Smoke

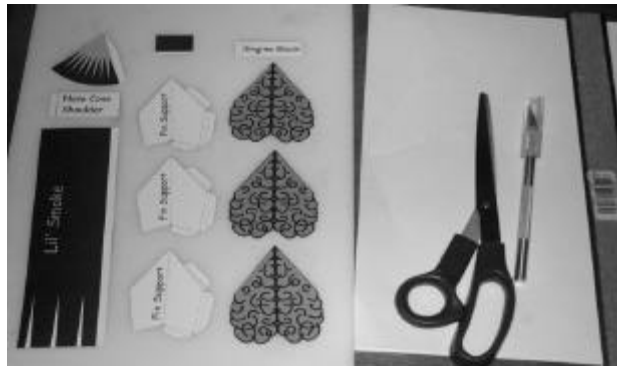
13mm "paper" rocket designed by Tim Breland

To build your very own Lil' Smoke model rocket, simply follow the directions below. If you have built Fliskits' Midnight Express free paper rocket, you will notice the Lil' Smoke is very similar in construction, with the addition of fin coverings.

## Step 1

Print the rocket pattern out on a sheet of card stock or photo paper.

Glossy photo paper will provide a glossy paint like finish, however, I find card stock a bit easier to work with. To make sure you have printed to the correct scale, the body tube should measure 6" long by 1 3/4" wide, *not* including the glue tab.



## Step 2

Cut out the body tube piece, and using some spent motor cases, roll the tube to shape.

Then apply glue to the glue tab, roll the tube together, and set aside to dry. Be careful not to glue the motor cases inside the body tube.



## Step 3

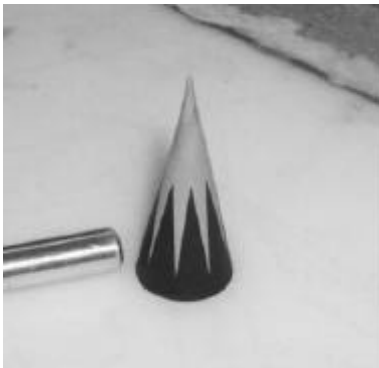
Cut out the Fin Support pieces. Then, using a straight edge and hobby knife, lightly score along the dashed lines and fold to form the fin support. Apply glue to the 3 glue tabs, fold together, and set aside to dry. Repeat for the other 2 fin supports.



#### Step 4

Cut out the nose cone. Roll into a cone shape. There are many things you can use to help shape the cone such as: pen or pencil, spare plastic or balsa nose cone, toothpick, etc.

Once the cone is shaped, apply glue to the tab, roll to shape, and hold until the glue sets.



#### Step 5

Cut out the Nose Cone Shoulder and Engine Block pieces. Roll them to shape, apply glue to the tabs, hold together while the glue sets, then set aside to dry.

#### Step 6

Apply glue to the inside of the nose cone at the edge, then insert the Nose Cone Shoulder. Make sure the Nose Cone shoulder is set straight, then set aside to dry.



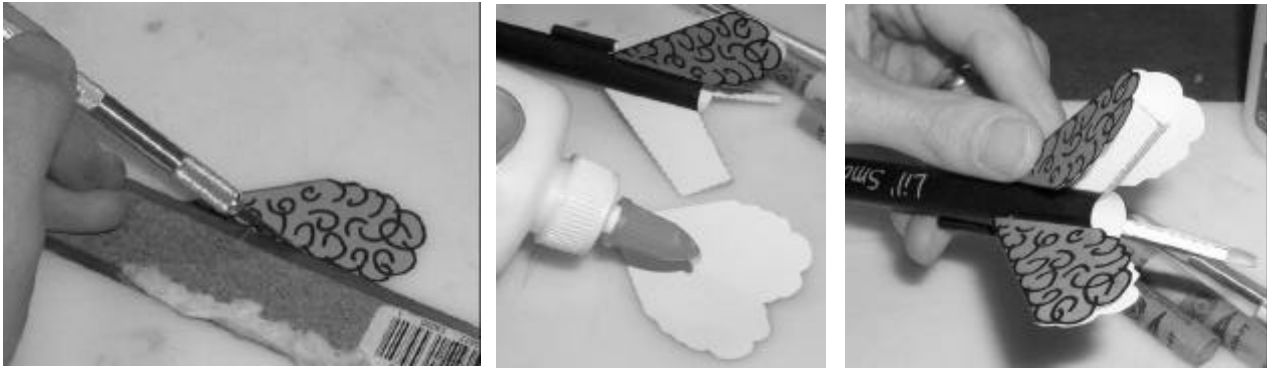
#### Step 7

Once the Body Tube and Fin Supports are dry, reinsert a motor casing into the aft end of the Body Tube

for support. On the fin supports, find the edge that is dotted. This is the edge that will be glued to the Body Tube. Apply glue to this edge, then attach the Fin Support to the Body Tube on one of the three spaces marked on the tube. Repeat for the other 2 Fin Supports. Set aside to dry. Once they are dry, you may want to apply a light glue fillet to each Fin Support.

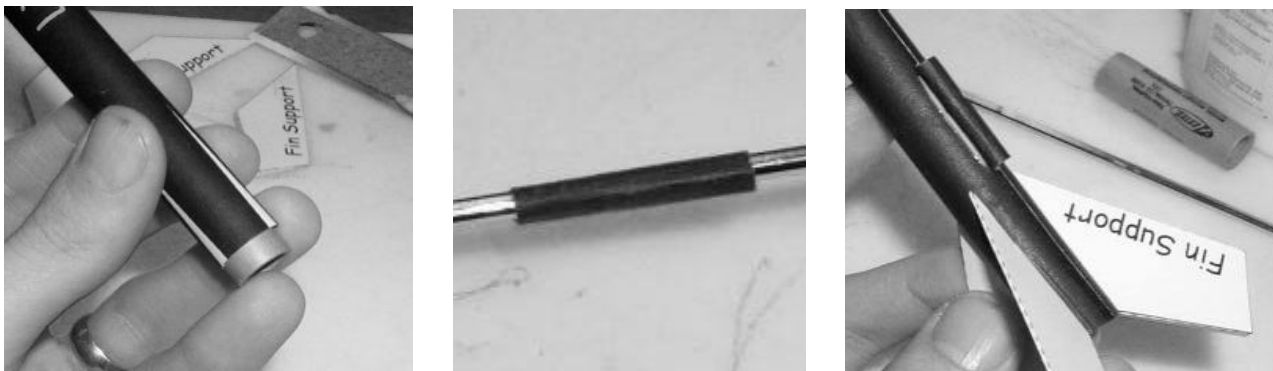
### Step 8

Cut out the Fin Coverings. Trim out along the smoke outline. Then lightly score and fold along the center line. Smear a thin film of glue over the inside of the Fin Covering, then attach to a Fin Support. The Covering is a bit larger than the Support, so it is correct for some of the Covering to hang over the end of the Support. Be careful not to use too much glue on this step, so as not to cause any warping. Repeat for the other 2 Fin Coverings.



### Step 9

Once all the fins are dry, apply glue to the inside of the Body Tube. (you may want to use a toothpick or scrap piece of balsa). Then, insert the Engine Block, and using a spent motor case push the Engine Block up into the Body Tube until only about 1/4" of the motor is hanging out the back. Quickly remove the motor case so as not to glue it in place.



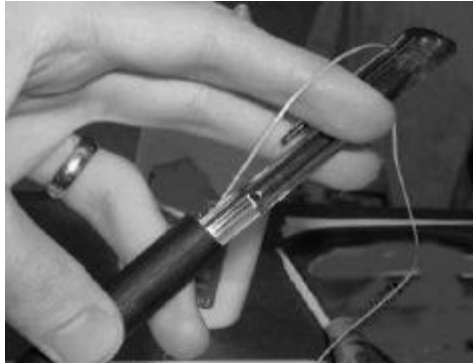
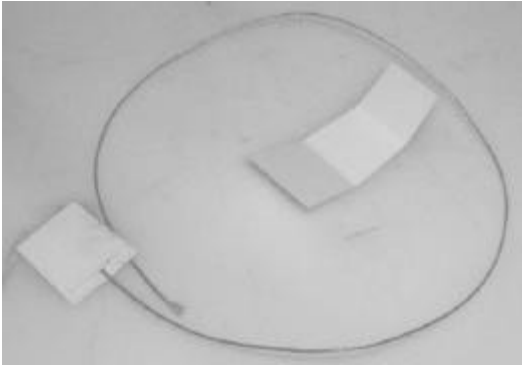
### Step 10

Cut out the Launch Lug. Using a 1/8" dowel or launch rod, roll the Launch Lug to shape. Then apply glue to the tab, roll into shape, and set aside to dry. Once dry, glue the Launch Lug to the Body Tube at the line already printed on the Body Tube.

### Step 11

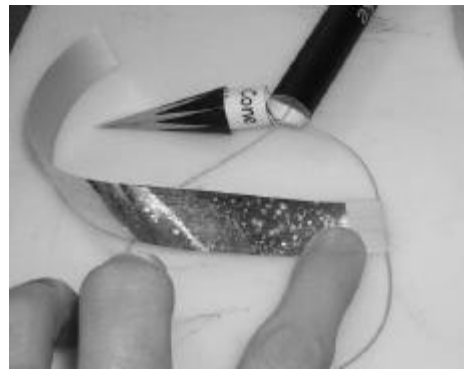
Using some scrap Card Stock or paper, cut out 2 pieces to use for Tri-Fold shock cord mounts. Cut a piece of elastic, kevlar, or whatever you prefer to use as a shock cord to your desired length. (12-18") Glue the ends to the Tri-Fold mounts, then glue the mounts into the Body Tube and Nose Cone.

A pen or pencil will help get the mounts into shape and in place. Be sure to push the mount into the BT far enough for the Nose Cone to be inserted.



### Step 12

Attach a streamer to the shock cord for recovery. The rocket will be so light that it should fall slowly, but the streamer will help with tracking as well as recovery. A 6" streamer will do fine, but choose a material that is easy to see, and cut it to your desired length to aid in recovery.



### Step 13

Add a small amount of clay inside the nose cone for stability. Insert a new motor into the rocket, and add enough clay to the nose to get the rocket to balance near the middle of the launch lug. Smear a little glue over the clay to secure it.

That's it! Prep and launch your Lil' Smoke the same as you would any other 13mm rocket.

You'll be surprised at what you can do with a sheet of paper and a little creativity!

The Lil' Smoke really gets out of sight on an A10 or A3, so you may want to start with a 1/2A and then move up to the larger motors.