

Rocket Making and Launch Day Logistics Advice
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Rocket Construction Tips

If you haven't started your rocket kit yet, this may be helpful.

Don't worry if you smush the tube or some other part. Let Paul Guditz, our Rocketmaster, know and he'll work out something.

Rockets can take as little as 20 minutes to do or as much as several hours depending on how much painting and decorating your boy wants to do.

Unfortunately, the 20 minutes needs to take place over 4 days (5 minutes a day.) The steps are (these are in the directions too):

1- Get some sandpaper and some carpenters wood glue, a Q-tip and some masking tape. you will also need some airplane glue, but if you don't have any, don't buy it just for this, try to borrow some first.

2- Lightly sand the last inch of the outside of one end of the tube. (Very lightly.) This is facilitate the glue sticking to the shiny rocket body,

3- Following the directions in the pamphlet, apply some glue inside the tube with a Q-tip. Carefully start the green "stop ring" at the bottom end of the tube and use the yellow tube to push it up to the correct position. One quarter to one half inch of the yellow tube should be sticking out of the rocket body.

3a- Make a stand to hold the rocket vertical while the fins dry. If you have a pencil holder, put a handful of coins in the bottom and 1 long pencil in it, or you can take the yellow tube you just used, glue it to a board and use it for a stand.

4- Help your son push out the 5 tail fins. He should choose a tail configuration. (you can use 3 or 4 or 5 fins and you can glue any edge to the tube in either orientation. Some configurations are less stable than others, though I haven't seen one tumble during launch yet.

5- Have your son lightly sand the edges of the fins to remove the punch-out burr.

6- Help your son mark the fin positions on the rocket tube end using the marking template in the directions. Use a door jam to extend the marks up the tube.

7- Glue (unfortunately, you need to do this, you son can help by being the timer) each fin on to the tube with a small line of carpenters glue. If you're really pressed for time, a hot melt glue gun works well too. You will need to hold the fin straight along the pencil line and keep it pressed in place for about 1 1/2 minutes or until the glue will hold the fin.

It is important that they be straight front to back along the pencil lines (the glued edge of each fin has to be as parallel as possible to the centerline of the rocket). It isn't so important that the fins be perfectly perpendicular to the tube radially. Be very careful to not crush the tube while pressing the fin on

(that's why you have to do this).

8- Put the rocket tube upside down on the pencil in the pencil holder or on the tallow tube stand you made and let it dry for 24 hours. Put it out of reach of siblings and pets if possible.

Next time:

9- Follow the instructions to glue the elastic cord to the piece of paper in the instructions and glue this inside the rocket. it needs to be more than an inch into the top end of the tube and pressed against the rocket tube as well as you can.

10- Stand the rocket tube upright and let the glue dry for 24 hours.

Next time:

11- Tape the visibility streamer to the middle of the elastic cord (follow the directions, masking tape will work) tightly roll the streamer so that it easily fits into the top of the tube, put it in far enough so that there is at least an inch of clearance above it for the rest of the cord and the nose cone.

12- Put a "fingertip" fillet on the glue of each fin (the directions explain this.) Glue the "straw tube" into one fin joint. Stand the rocket upside down on the pencil in the pencil holder again. Be careful to not crush the straw or have a bead of glue partially blocking one end. this straw keeps the rocket upright during the first 3 feet of its flight, if it is crushed or partially blocked it will keep the rocket from launching.

13- This step can be done anytime, it is first in the directions only so that you don't lose the parts. Using the plastic model cement, glue the cap into the nose cone. (follow the directions.) let it sit for 24 hours.

At this point, you could fly the rocket as is (after tying the nose cone to the shock cord) or decorate/ paint it.

14- I suggest buying a spray can of fast drying automobile primer and priming the rocket. One easy way to paint it is to use cans of spray paint, though this limits how much your son can do. To prime, I tie a string to the nose cone and hand it from a tree branch or my swing set. Mask off the mating surface of the nose cone before any painting. I stand the rocket tube upright an a rolled cone of newspaper, taped to still more newspaper on the floor of the basement or garage. The primer if you use it, should be lightly applied in several coats, each one dries in 15 minutes. If you use spray paint for the finish coat, use Krylon spray paint you can get at Ace Hardware, Kmart, or Walmart. Krylon takes about 15 minutes to dry. You may want to use craft paint of poster paint if you are tight for time. A quick coat of white spray paint (to make it water resistant) and magic markers also works well.

15 - Tie the nose cone to the shock cord last. Your rocket is ready to launch.

Launch Day Logistics

The launch site is on Wetherbee street, this is the street that meets up with route 2 in the open fields at the east end of Acton. (on the westbound side of rt 2. You can also get to Wetherbee street from great road (rt 2a) we have to park on the west side of Wetherbee street. (someone fusses if we park on both sides, I don't know why) there will be people there to help install the engine and ejection wadding (this is a fibrous material that goes above the engine and pushes the nose cone and streamer out.) The engine is the same size as the yellow tube that you have in the kit, it pushes in (this is a tight fit) and stops against the green ring that you glued in the rocket. The engines we use are A engines, though these rockets could be flown with "b" or "c" engines (B engines have 2 times as much total thrust, c engines 4 times, These give the rockets more altitude and makes it harder to find them when they come down.) for more on this check <http://www.estesrockets.com> The engines are pretty stable before launch (the igniter gets up to 1500 deg.F to light the engine) After they fire, the engine parts are cardboard and clay and will degrade into the soil if left there. We do try to pick up as many engines as possible at the end of the day.

We launch several rockets at a time. The igniter power for the rockets comes from a car battery. We disconnect the battery while the boys put their rockets on the launch rod and hook up the igniter wires. They need to be careful that these don't both touch the launch disk (which will prevent the igniter from heating up. After all the rockets are ready, and all the people are behind a rope "safety line" that we lay on the ground, the battery is hooked up. The boys each launch their rocket with a switch. (a doorbell switch) that connects their rocket to the battery line. You should stand back and watch the rocket go up and come down, since typically, the boys lose sight of the rockets during launch. The engines sometimes come out of the rockets, and sometimes don't. Sometimes the nose cones get stuck (hence my cautions above about masking the nose cone mating surface when painting, pressing the shock cord mount flush to the tube and rolling the streamer tightly.) and the rockets come back down just as they went up. Please be careful with your younger children during launch and landing.