



18mm Four Stage RackRocket

Tom Desmarais LUNAR #1477

Parts List

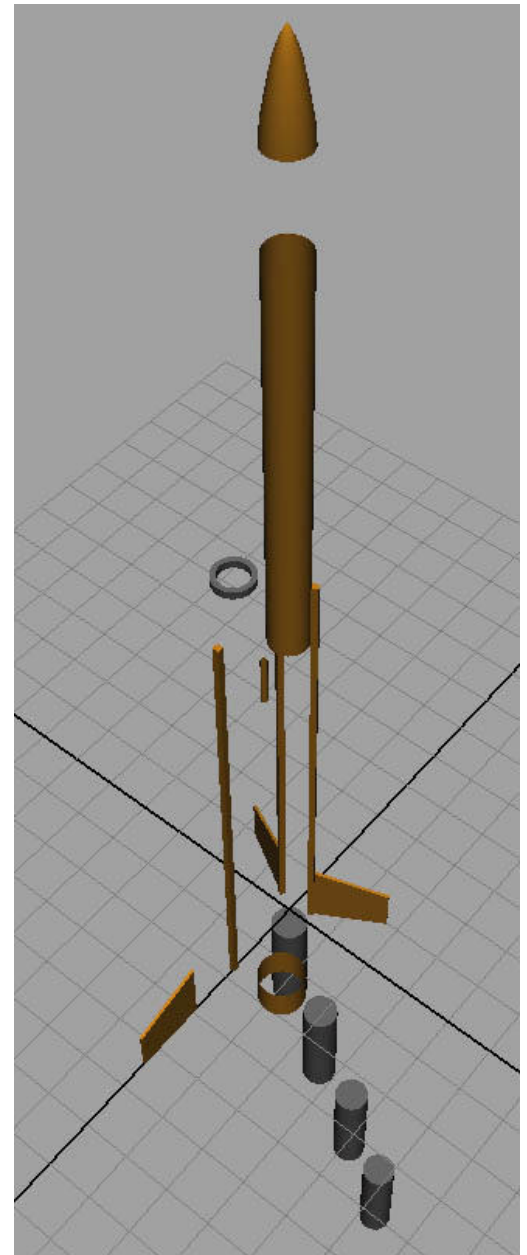
- 3 1/8"x1/8"x10" basswood rails
- 1/16"x3"x1.5" balsa for fins
- 6" BT-20 body tube
- 3/4" BT-50 body tube for support ring
- BT-20 nose cone
- Screw eye
- 1/8"x1" launch lug
- BT-20 Engine thrust ring
- 36" streamer
- 24" 40lb kevlar cord
- 3 1/8"x8.5" aluminum tape strip
- 3 3/4"x3/4" aluminum tape pieces for support ring

Supplies List

- Yellow glue
- CA glue
- Xacto knife
- Scissors
- Scotch tape
- Masking tape
- 4 spent 18mm engines
- Ruler
- Sandpaper
- Sanding Sealer
- Paint

Build Instructions

1. Figure 1 shows the basic dimensions and layout of the rackrocket.
2. Cut V Slot in outside of motor ring. Tie Kevlar cord around motor ring at slot. CA the knot in the Kevlar cord.
3. Put Glue inside the sustainer 2.5" from the rear and push motor ring up to the glue with a spent engine.
4. Use the fin guide to make lines for the fins on the sustainer.
5. Sand the rear 3/4" of the rails down so the BT-50 support ring will sit flush. Test this by taping the three rails onto the sustainer aligned with the fin guide lines, such that the rear of the rails are over the sustainer (figure 2). Test fit the BT-50 and sand until it fits well.



6. Using 4 used engines taped together and pushed into the sustainer to help keep the rails aligned, glue the 3 rails to the sustainer. Be careful about alignment with the fin guide lines. Using tape to hold the rails to the engines can make this process easier. You can use CA, as long as you make good filets with yellow glue later.
7. Glue the BT-50 support to the rear of the rails. You may need to put a spare piece of BT-20 over the rear of the last engine to get proper spacing for the BT-50.
8. Cut out and sand the fins. Where the fin will glue to the BT-50, there may be a slight gap. You may want to sand the root edge of the fin so that it sits flush against both the rail and the BT-50. Use CA to initially glue the fin, ensuring it is aligned correctly.
9. Glue the launch lug against one of the rails. The launch rod will slip between the BT-50 and the engine, and up through the launch lug.
10. Put the screw eye into the balsa cone. Tie the kevlar cord to the screw eye. Put a drop of CA on the knot to secure it. Attach the streamer to the cord.
11. Cut an 8.5" length of foil tape. Cut three 3/8" strips and apply them to the inside of the rails. You can wait until after painting for this step if you desire.
12. Optionally, apply epoxy to the BT-50 to protect it from the exhaust.
13. Cut 3 1"x3/4" pieces of foil tape, and apply them to the inside of the BT-50 between the rails.
14. Use yellow glue to filet where the rails contact the sustainer and the fins contact the rails and BT-50.
15. Seal the wood before painting.
16. Optionally, Use High temperature paint on the rails and the BT-50.
17. Paint, make it bright, so you can see it from far away.

Flight Instructions

To Fly, Pick your motor combination, tape the four motors together using clear tape, ensuring the back to front arrangement. Use masking tape on the sustainer engine to ensure it stays in the sustainer, or tape it to the outside of the body at its end. Put wadding then the streamer and nose before launching. Run the launch rod between the engine and the BT-50 and through the launch lug.

Motor combination	Altitude
B6-0/B6-0/B6-0/B6-6	1900ft
C6-0/B6-0/B6-0/B6-6	2300ft
C6-0/C6-0/C6-0/C6-7	3700ft

You can also fly it with fewer than 4 engines, just be careful to run the igniter wires down the middle in a way that they don't catch on the BT-50.

You may need to replace the foil tape every couple of flights.