2. A. Insert the engine hook into the slit as shown.

B. Apply a 3/4" (19 mm) wide slit at the mark. Be sure to read all instructions, test fit all parts, and sand if necessary before gluing.

C. Apply glue to the edges of the rings. Fit all parts to the body tube. Test fit all fins to make sure the centering rings are set correctly. Contact the engine motor to the fins necessary for a proper fit.

D. Test fit all fins to make sure the centering rings are set correctly. Contact the engine motor to the fins necessary for a proper fit.

3. A. Use a hobby knife to carefully cut fins out of the sheet. (Always cut away from other fins to avoid damage.) Be sure cuts go all the way through the balsa, then remove fins.

B. Test fit the two red tube couplers at 3/4" (19 mm) of glue into the slots. Be sure cuts go all the way through the balsa, then remove fins.

C. Test fit all fins to make sure the centering rings are set correctly. Contact the engine motor to the fins necessary for a proper fit.

D. Test fit all fins to make sure the centering rings are set correctly. Contact the engine motor to the fins necessary for a proper fit.

4. A. Mark the two red tube couplers at 3/4" (19 mm) of glue into the slots. Be sure cuts go all the way through the balsa, then remove fins.

B. Test fit all fins to make sure the centering rings are set correctly. Contact the engine motor to the fins necessary for a proper fit.

C. Test fit all fins to make sure the centering rings are set correctly. Contact the engine motor to the fins necessary for a proper fit.

D. Test fit all fins to make sure the centering rings are set correctly. Contact the engine motor to the fins necessary for a proper fit.

E. Test fit all fins to make sure the centering rings are set correctly. Contact the engine motor to the fins necessary for a proper fit.

F. Test fit all fins to make sure the centering rings are set correctly. Contact the engine motor to the fins necessary for a proper fit.

G. Test fit all fins to make sure the centering rings are set correctly. Contact the engine motor to the fins necessary for a proper fit.

H. Test fit all fins to make sure the centering rings are set correctly. Contact the engine motor to the fins necessary for a proper fit.

I. Test fit all fins to make sure the centering rings are set correctly. Contact the engine motor to the fins necessary for a proper fit.

J. Test fit all fins to make sure the centering rings are set correctly. Contact the engine motor to the fins necessary for a proper fit.

K. Test fit all fins to make sure the centering rings are set correctly. Contact the engine motor to the fins necessary for a proper fit.

L. Test fit all fins to make sure the centering rings are set correctly. Contact the engine motor to the fins necessary for a proper fit.

M. Test fit all fins to make sure the centering rings are set correctly. Contact the engine motor to the fins necessary for a proper fit.

N. Test fit all fins to make sure the centering rings are set correctly. Contact the engine motor to the fins necessary for a proper fit.

O. Test fit all fins to make sure the centering rings are set correctly. Contact the engine motor to the fins necessary for a proper fit.

P. Test fit all fins to make sure the centering rings are set correctly. Contact the engine motor to the fins necessary for a proper fit.

Q. Test fit all fins to make sure the centering rings are set correctly. Contact the engine motor to the fins necessary for a proper fit.

R. Test fit all fins to make sure the centering rings are set correctly. Contact the engine motor to the fins necessary for a proper fit.

S. Test fit all fins to make sure the centering rings are set correctly. Contact the engine motor to the fins necessary for a proper fit.

T. Test fit all fins to make sure the centering rings are set correctly. Contact the engine motor to the fins necessary for a proper fit.

U. Test fit all fins to make sure the centering rings are set correctly. Contact the engine motor to the fins necessary for a proper fit.

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W. Test fit all fins to make sure the centering rings are set correctly. Contact the engine motor to the fins necessary for a proper fit.

X. Test fit all fins to make sure the centering rings are set correctly. Contact the engine motor to the fins necessary for a proper fit.

Y. Test fit all fins to make sure the centering rings are set correctly. Contact the engine motor to the fins necessary for a proper fit.

Z. Test fit all fins to make sure the centering rings are set correctly. Contact the engine motor to the fins necessary for a proper fit.
B. Keep a stick of scrap balsa to use as a glue applicator.

C. Lay sandpaper, rough side up, on table. Stack fins together and lightly sand the edges smooth and flat. **DO NOT SAND AWAY TABS ON ROOT EDGES.** Note: Identify the root, leading, and trailing edges of your fins.

D. Apply a small amount of glue inside each end of the remaining non-slotted body tube, and slide red tube couplers into each end until the tubes are perfectly joined.

E. While glue is still wet, roll the joined tubes on a flat surface. Allow to dry. (This will ensure the body of your rocket is straight.)

F. Use a twisting motion to insert a red tube coupler into each tube up to their 3/4" (1.9 cm) marks. Let glue dry.

G. Slide the notched centering ring (with notch over the engine hook) onto the rear of the engine mount tube until it fully contacts the black retainer ring.

H. Slide the remaining centering ring over the front of the engine mount tube to the 4-5/8" (11.7 cm) mark.

I. Use a hobby knife to carefully remove the centering rings from their card.

J. Place in place, round both sides with finger, dry thoroughly.

K. **NOTE**: YOU MAY NEED TO SAND RINGS FOR PROPER FIT.
5. Use a door frame to lightly draw a straight line down the length of the body tube assembly between two fin slots. This is your launch lug line.

B. Mark the launch lug line at 1" (2.5 cm) and 18" (45.7 cm) from the REAR (slotted) end of the body tube assembly.

7. Test fit the fins into the slots. Apply glue to the tab on each fin and along the fin root as shown. Insert the fins into slots. Check alignment to make sure fins are straight. Let glue set. REMEMBER: Fins must be attached correctly for stable flight.

B. Apply a glue fillet (reinforcement) to each fin/tube joint and smooth with finger. Let dry.

9. Cut out shock cord mount below along solid lines. Crease dotted lines.

A. Snap the adapter to the nose cone. Or save the adapter for a custom design.

C. Apply glue to section 3. Fold forward again. Clamp firmly until glue sets.

D. Glue the shock cord mount about 1-1/2" (3.8 cm) down inside the front end of the body tube assembly, and press firmly into place. Let dry.

F. Pull tight
Align launch lug line and engine hook.

B. Slide the engine mount into the body tube until the rear ends of tubes are even. BE SURE TO ALIGN THE ENGINE HOOK WITH THE LAUNCH LUG LINE!

C. Apply a glue fillet (reinforcement) around the joint between the body tube and rear centering ring to reinforce it.

G. Tie shock cord to nose cone eyelet with a double knot.

D. Push loop through nose cone eyelet.

E. Pass parachute through loop.

D. Wrap lines loosely around chute. Insert parachute into rocket.

E. Slide shock cord and nose cone into place.

Do not forget to pack recovery wadding in the rocket before flying - see Step 13

11. PACKING PARACHUTE

B. Use your hobby knife to carefully remove any excess plastic (flash) from the nose cone. BE CAREFUL NOT TO CUT OFF EYELET.

A. Spike.

B. Fold twice.

C. Roll.
12. FINISHING YOUR ROCKET

A. Use automotive primer to smooth and fill balsa fins and body tube. If necessary, sand with 400 grit sandpaper and reapply primer until a smooth finish is achieved.

B. Paint the entire rocket a dark glossy blue.

C. When paint is thoroughly dry, carefully cut out one decal at a time just inside the dotted lines. Remove from backing paper and position on rocket, as shown on box.

D. Once in position, rub decal with finger to remove air bubbles and secure decal to rocket.

CAUTION: The glow-in-the-dark decals provided in this model rocket kit are intended for display purposes ONLY! DO NOT LAUNCH IN THE DARK! You could be seriously injured by tripping over or running into unseen objects during recovery!

13. FLIGHT PREPARATION

PARACHUTE PREPARATION

A. Insert four squares of loosely crumpled recovery wadding into rocket body tube. Repack 'chute and nose cone.

ENGINE PREPARATION

- Separate igniter and igniter plug.
- Hold engine upright, drop in igniter, igniter must touch propellant.
- Firmly push all the way in.
- Insert engine into rocket.
- Insert igniter plug.
- Bend igniter wires back.

IMPORTANT: Wadding must be in place and slide easily for rocket to work properly!

LAUNCH SUPPLIES

To launch your rocket, you will need the following:

- Launch Pad (Estes Porta- pad® II)
- Launch Controller (Estes Electron Beam®)
- Recommended Estes Engines: B4-2, B6-2, C5-3 or C6-3.

Use a B6-2 for your first flight to become familiar with your rocket's flight pattern. Use only Estes products to launch this rocket.

PROJECTED ALTITUDES

<table>
<thead>
<tr>
<th>ENGINE</th>
<th>FEET</th>
<th>METERS</th>
</tr>
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<tbody>
<tr>
<td>B4-2</td>
<td>105</td>
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<tr>
<td>B6-2</td>
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<td>C5-3</td>
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<td>110</td>
</tr>
<tr>
<td>C6-3</td>
<td>334</td>
<td>102</td>
</tr>
</tbody>
</table>

TIPS FOR FLYING YOUR ROCKET

- Choose a large field away from power lines, buildings, tall trees, and low flying aircraft. Try to find a field at least 250 feet (76 meters) square. The larger the launch area, the better your chance of recovering your rocket.
- Launch area must be free of dry weeds and brown grass.
- Launch only during calm weather with little or no wind and good visibility.
- Don't leave parachutes or streamer packed more than a minute or so before launch during cold weather (colder than 40° Fahrenheit [4° Celsius])
- Always follow the National Association of Rocketry (NAR) MODEL ROCKETRY SAFETY CODE while participating in any model rocketry activities. The safety code is enclosed with this kit.
COUNTDOWN AND LAUNCH

10... Safety key must not be in launch controller. The safety cap with safety key attached should already be on the launch rod.

9... Remove safety cap from launch rod, slide launch lugs over rod. Make sure rocket slides freely and micro-clips are clean for good electrical contact.

8... Attach micro-clips to the igniter wires. Arrange the micro-clips so they do not touch each other or the metal blast deflector. Attach micro-clips as close to protective tape on igniter as possible.

7... Move everyone back from your rocket as far as launch wire will permit (at least 15 feet - 5 meters).

6... Insert safety key to arm the launch controller.

5... Start audible countdown.

4...3...2...1......

LAUNCH!
Push and hold button until engine ignites.
For safety, immediately remove safety key from launch controller and replace safety cap on launch rod.

MISFIRES
When an ignition failure occurs, remove the safety key from the launch control system and wait one minute before approaching the rocket. Remove the expended igniter from the engine and install a new one. Be certain the coated tip is in direct contact with the engine propellant. Broken or chipped coating will not affect the performance of the igniter. Reinstall the igniter plug as illustrated previously. Repeat the countdown and launch procedure.