ESTES INDUSTRIES
1295 H Street
Penrose, CO 81240

BIG DADDY™

Flying Model Rocket Kit Instructions

EXPLORER SERIES
Skill Level 2

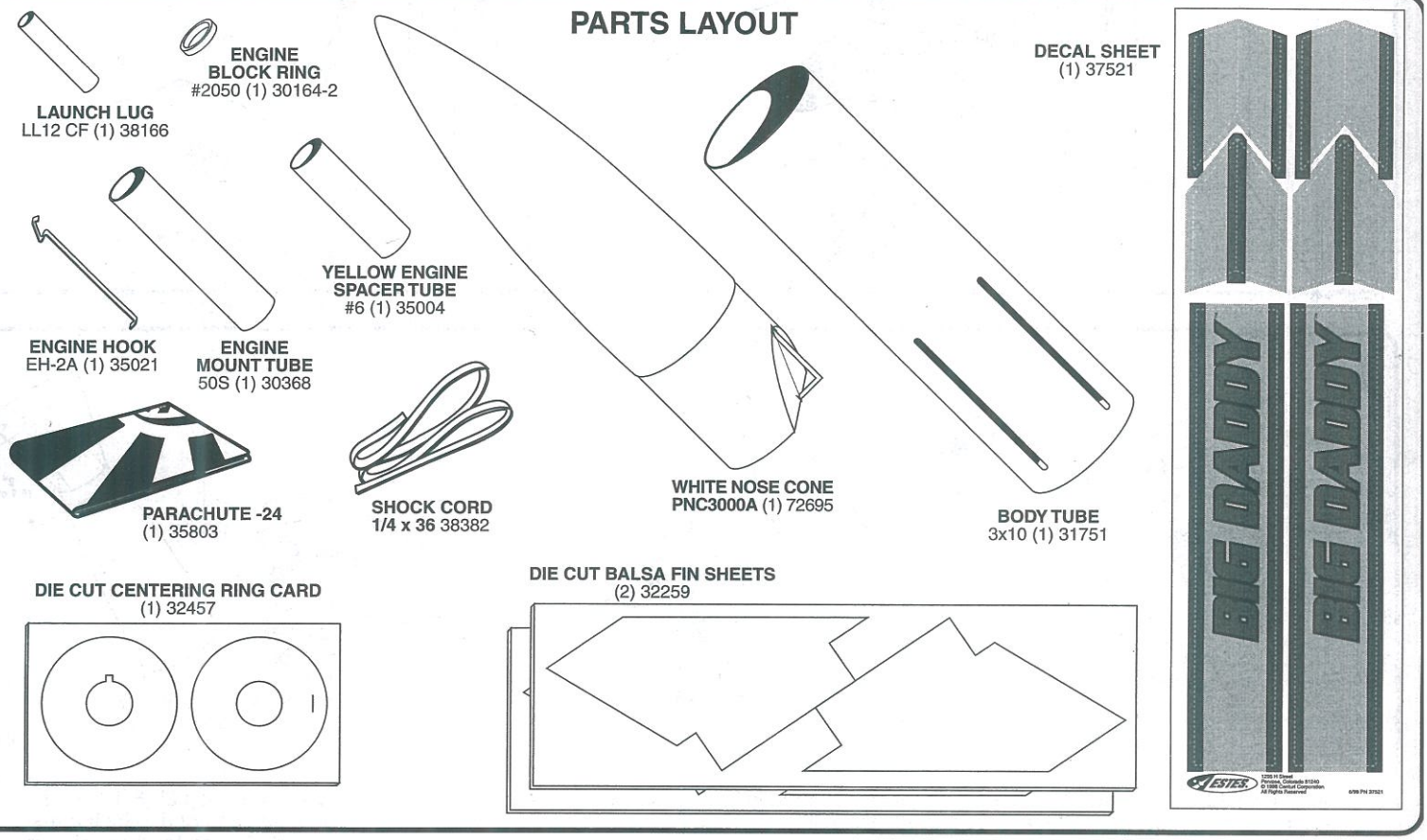
MATERIALS REQUIRED: HOBBY KNIFE, SCISSORS, PENCIL, MASKING TAPE, GLOSS BLACK AND YELLOW SPRAY PAINTS, AUTOMOTIVE PRIMER, WHITE OR YELLOW GLUE, SANDPAPER

ALL GLUED AREAS ARE SHADED IN GRAY

Be sure to read all instructions, test fit all parts, and sand if necessary before gluing.

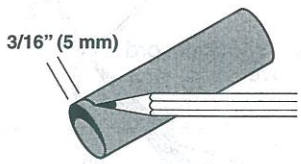
EST 2162 (9-98) 82277

PARTS LAYOUT

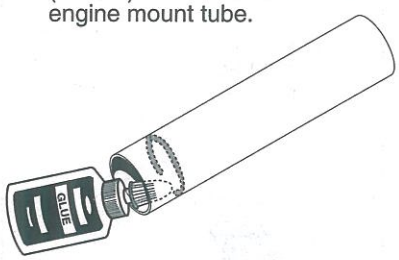


1.

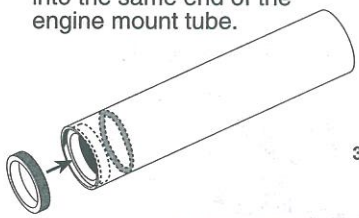
A. Mark the yellow engine spacer tube at 3/16" (5 mm) from one end.



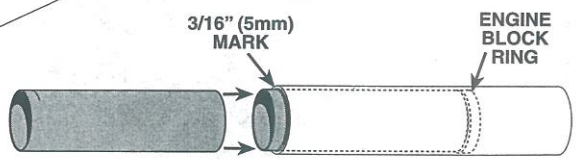
B. Place a ring of glue about 1" (2.5 cm) inside one end of the engine mount tube.



C. Insert the engine block ring into the same end of the engine mount tube.

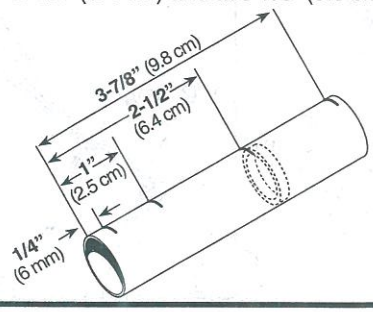


D. Use the yellow engine spacer tube to push the adapter ring into the engine mount tube up to the 3/16" (5 mm) mark and **IMMEDIATELY REMOVE YELLOW SPACER TUBE!**

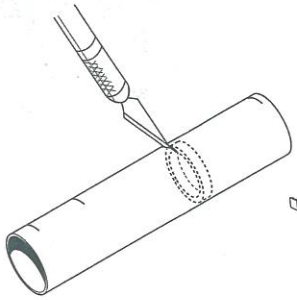


2.

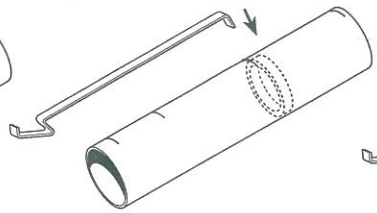
A. Measure the engine mount tube from the same end that you inserted the engine block ring and mark the tube at 1/4" (6 mm), at 1" (2.5 cm), at 2-1/2" (6.4 cm) and at 3-7/8" (9.8 cm).



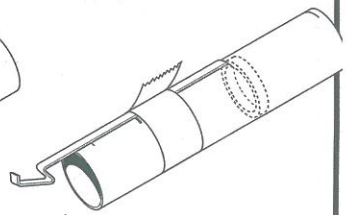
B. Use a hobby knife to make a 1/8" (3 mm) wide slit at the 2-1/2" (6.4 cm) mark only.



C. Insert the engine hook into the slit as shown.

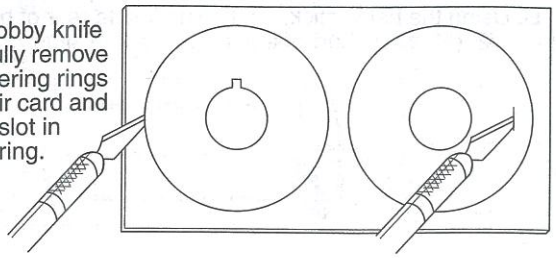


D. Hold the engine hook straight and wrap two layers of masking tape at the 1" (2.5 cm) mark to secure hook.

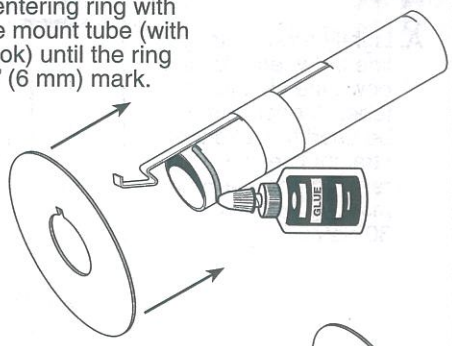


3.

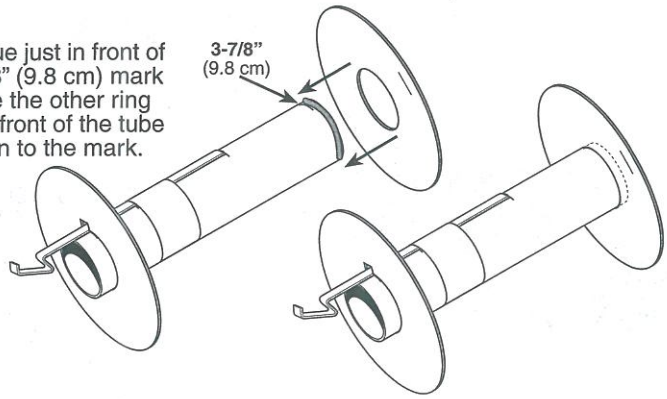
A. Use a hobby knife to carefully remove the centering rings from their card and to clear slot in forward ring.



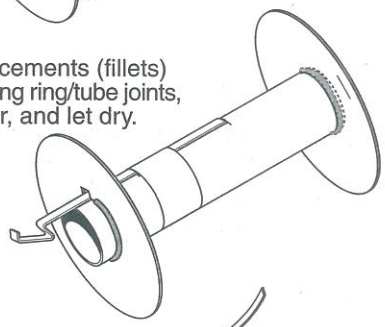
B. Apply glue just behind the 1/4" (6mm) mark and slide the centering ring with notch onto the engine mount tube (with notch over engine hook) until the ring sits evenly at the 1/4" (6 mm) mark.



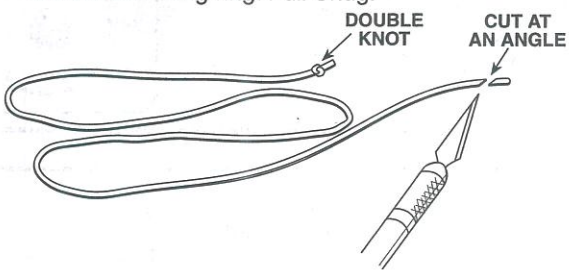
C. Apply glue just in front of the 3-7/8" (9.8 cm) mark and slide the other ring onto the front of the tube and down to the mark. Let dry.

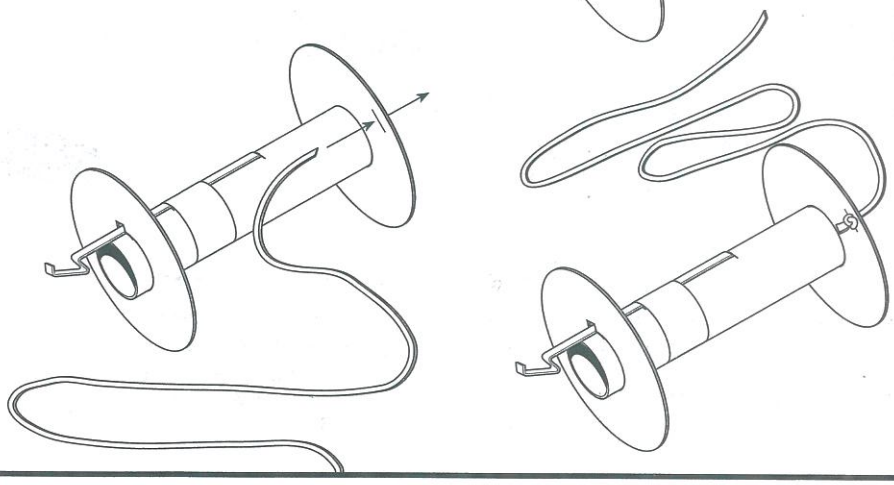


D. Apply glue reinforcements (fillets) to the outer centering ring/tube joints, smooth with finger, and let dry.

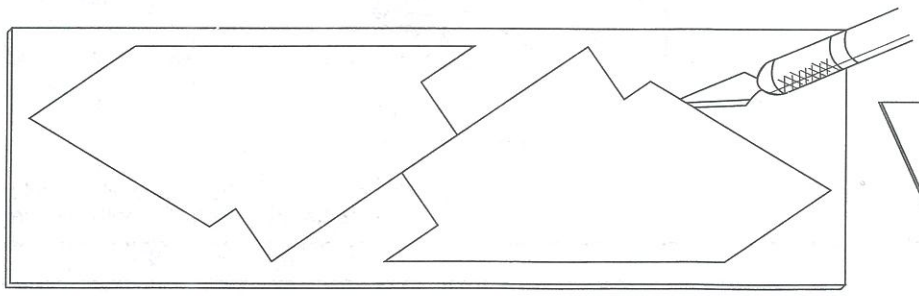


E. Tie a double knot at one end of the shock cord. Cut the other end of the shock cord at an angle as shown and thread through the slot in the forward centering ring. Pull Snug.





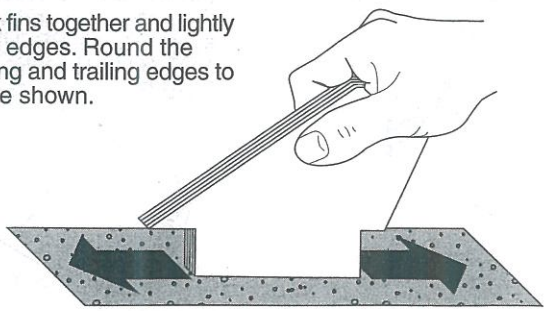
4.

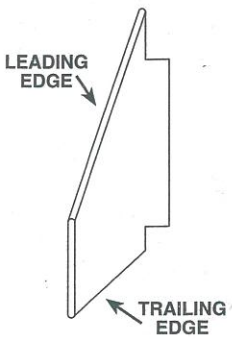


A. Use a hobby knife to carefully cut fins out of balsa sheet. Be sure that cuts go completely through the balsa.
NOTE: AS YOU CUT EACH FIN, CUT AWAY FROM ADJACENT FINS SO YOU WON'T DAMAGE THEM.

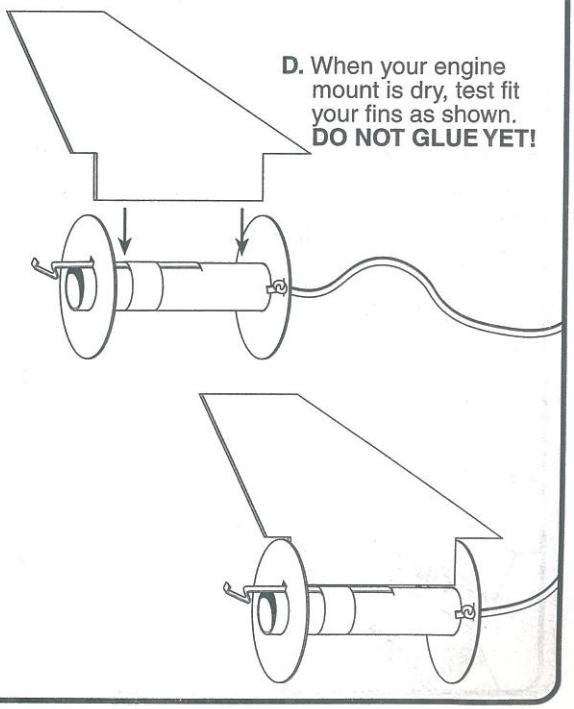
B. Keep a scrap piece of balsa for a glue applicator.

C. Stack fins together and lightly sand edges. Round the leading and trailing edges to shape shown.



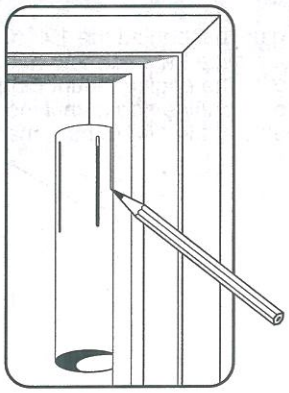


D. When your engine mount is dry, test fit your fins as shown. **DO NOT GLUE YET!**

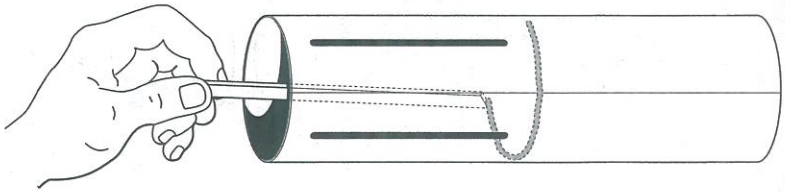


5.

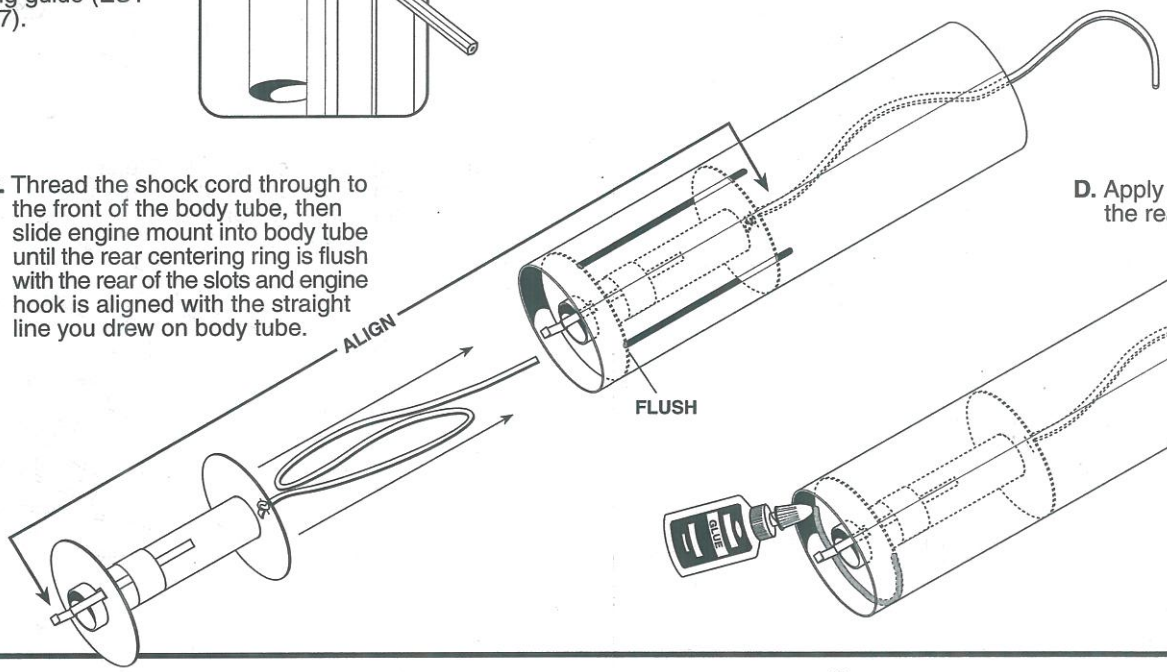
A. Lightly draw a straight line between two slots down the slotted body tube. A door frame can be used to make the straight line, we recommend the Estes marking guide (EST 302227).



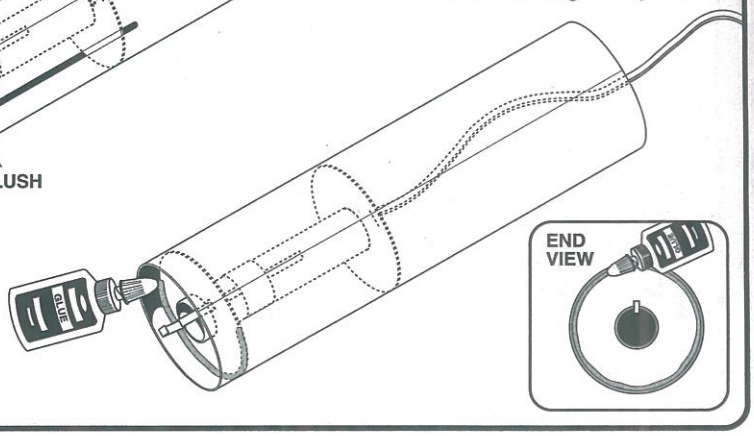
B. Using the balsa stick, apply glue inside rear of body tube about 1/2" (13 mm) short of the front of the fin slots.



C. Thread the shock cord through to the front of the body tube, then slide engine mount into body tube until the rear centering ring is flush with the rear of the slots and engine hook is aligned with the straight line you drew on body tube.

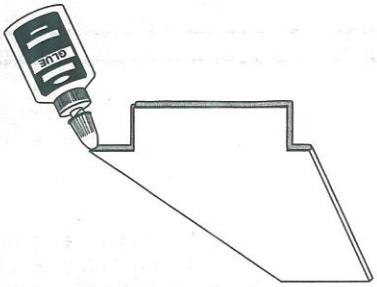


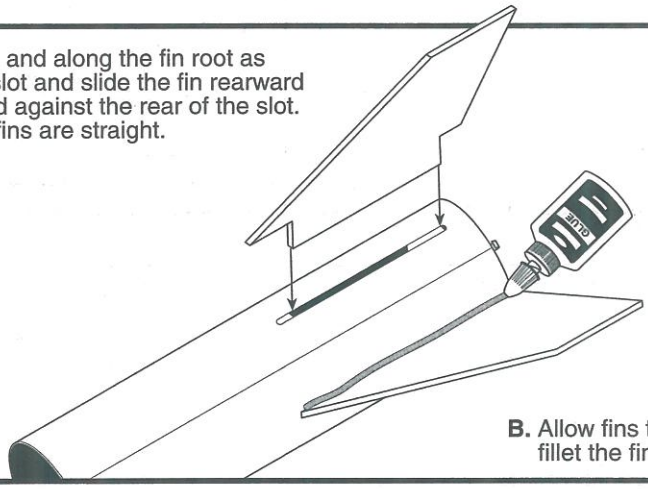
D. Apply a glue fillet around the rear ring/tube joint.

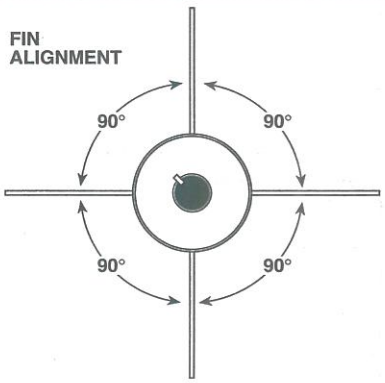


6.

A. Apply glue to the tab on the fins and along the fin root as shown. Insert the fins into the slot and slide the fin rearward until the rear of the tab is seated against the rear of the slot. Check alignment to make sure fins are straight.



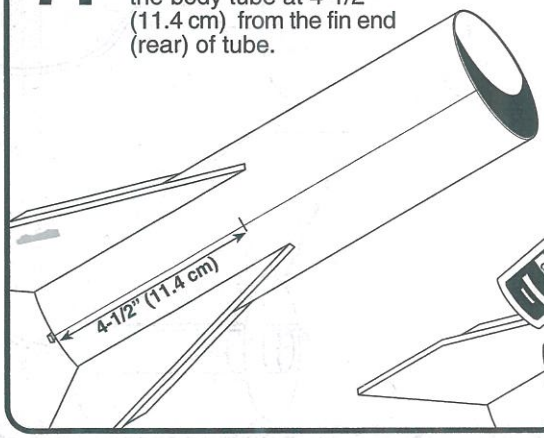




B. Allow fins to dry, then use white or yellow glue to fillet the fin/tube joints. Smooth with finger.

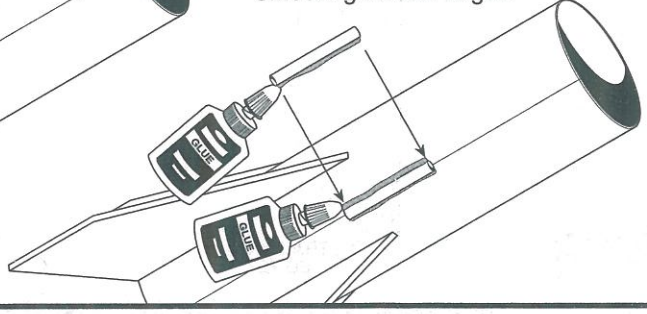
7.

A. Mark the straight line on the body tube at 4-1/2" (11.4 cm) from the fin end (rear) of tube.

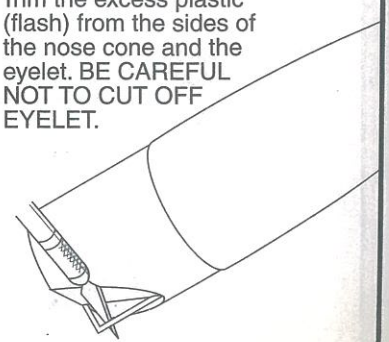


B. Apply glue to launch lug and apply to alignment line in front of mark. Make sure lug is perfectly aligned before glue sets.

C. After glue is completely dry, apply glue fillets to both sides of launch lug and fins. Smooth glue with finger.

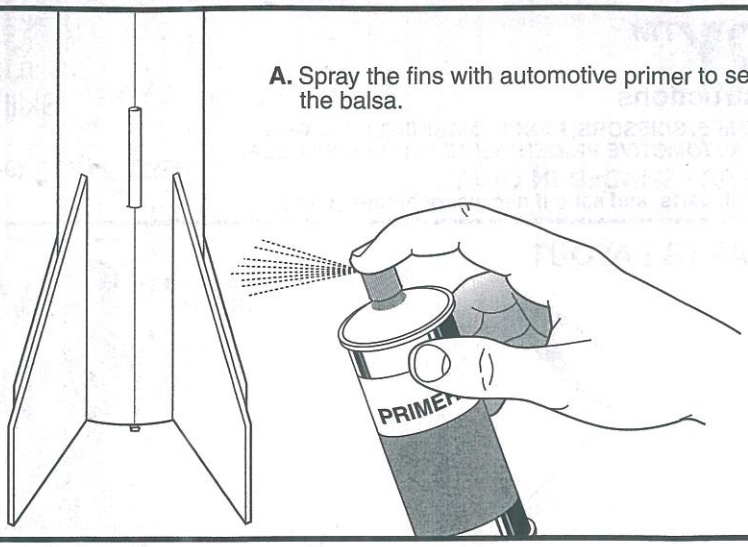


D. Trim the excess plastic (flash) from the sides of the nose cone and the eyelet. BE CAREFUL NOT TO CUT OFF EYELET.

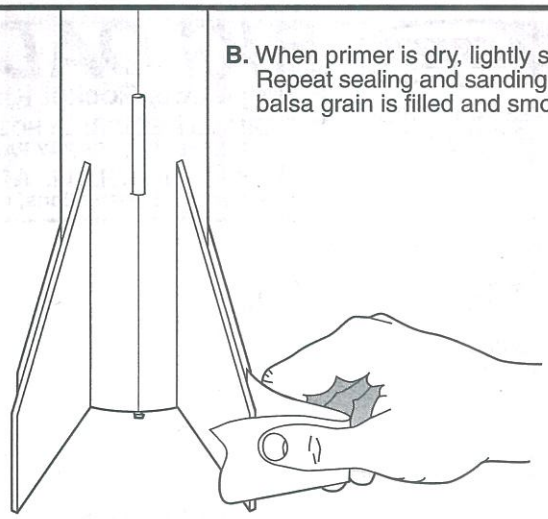


8.

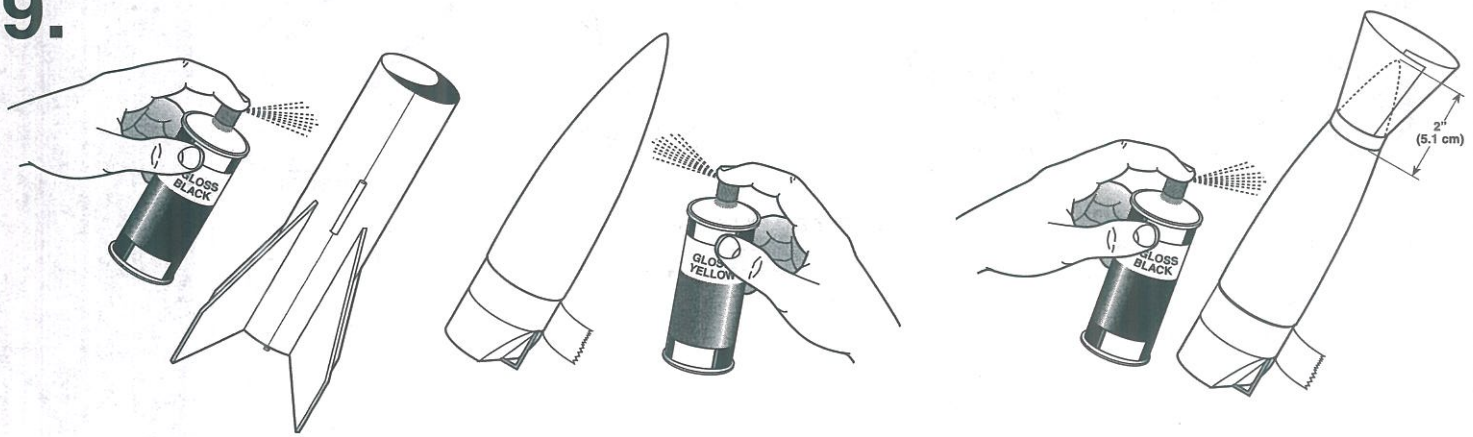
A. Spray the fins with automotive primer to seal the balsa.



B. When primer is dry, lightly sand. Repeat sealing and sanding until balsa grain is filled and smooth.



9.



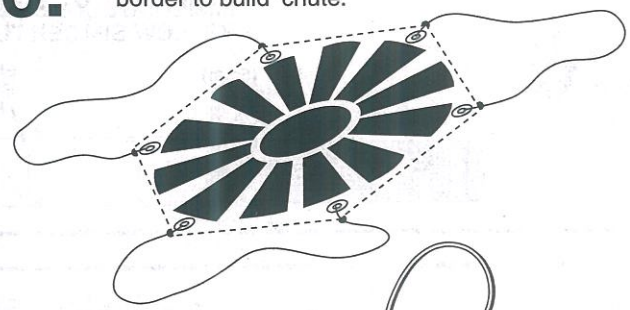
A. Use gloss black spray paint to paint the rocket body and fins. Mask off the nose cone shoulder and paint the nose cone gloss yellow.

B. Allow paint to thoroughly dry.

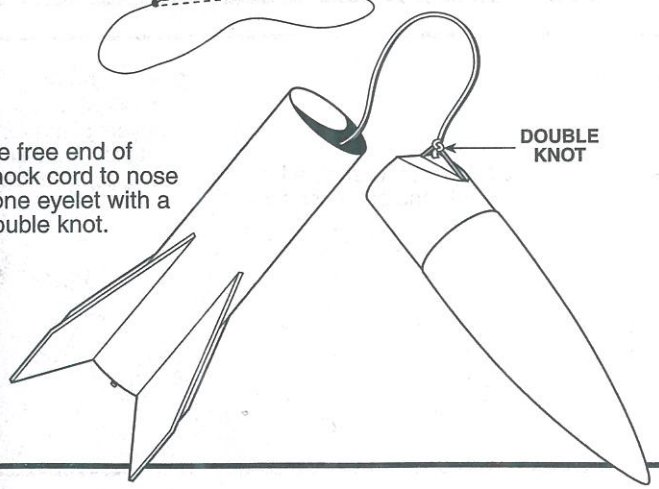
C. Mask off the top 2" (5.1 cm) of the nose cone and paint the rest gloss black. Let dry, then remove masking tape.

10.

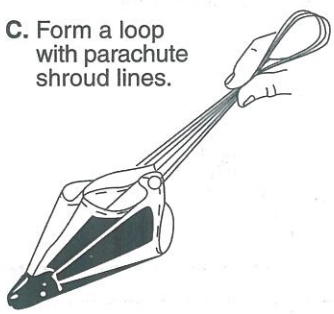
A. Follow instructions printed on parachute border to build 'chute.



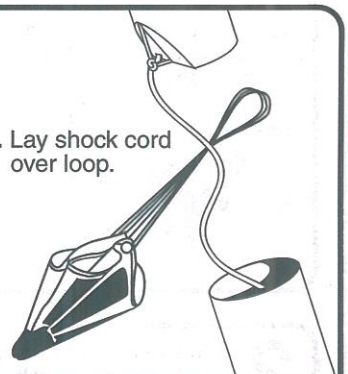
B. Tie free end of shock cord to nose cone eyelet with a double knot.



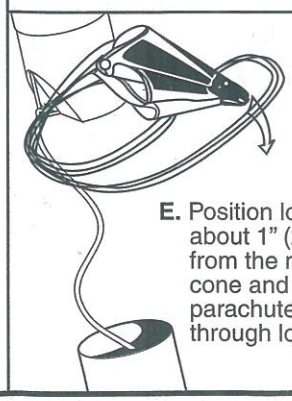
C. Form a loop with parachute shroud lines.



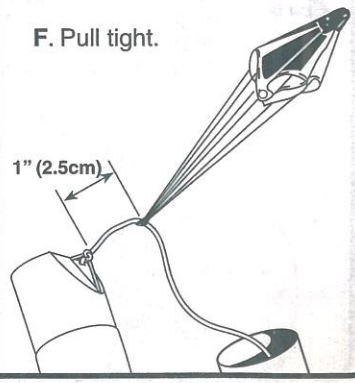
D. Lay shock cord over loop.



E. Position loop about 1" (2.5 cm) from the nose cone and pass parachute through loop.

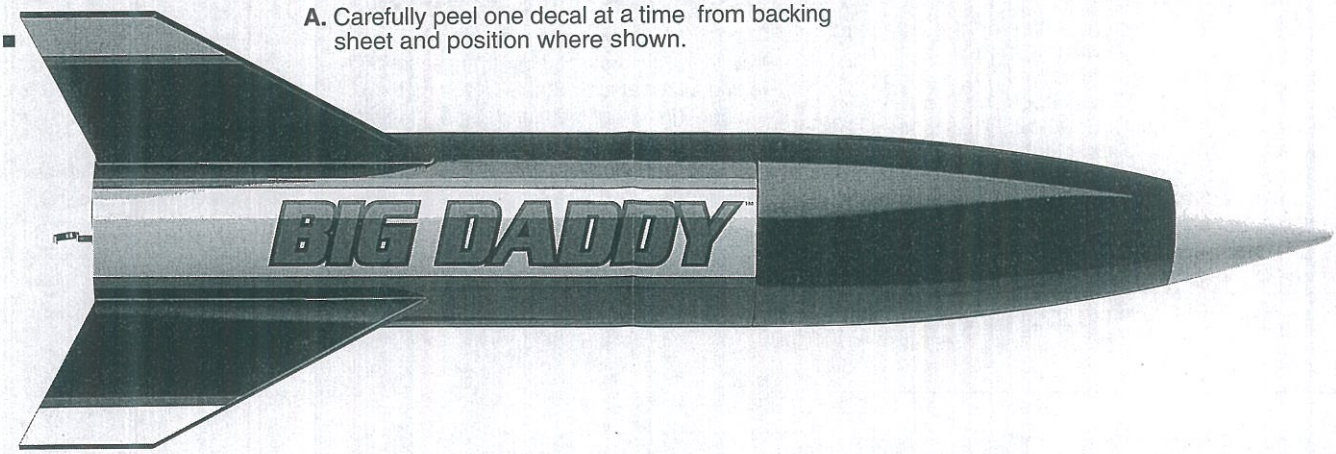


F. Pull tight.



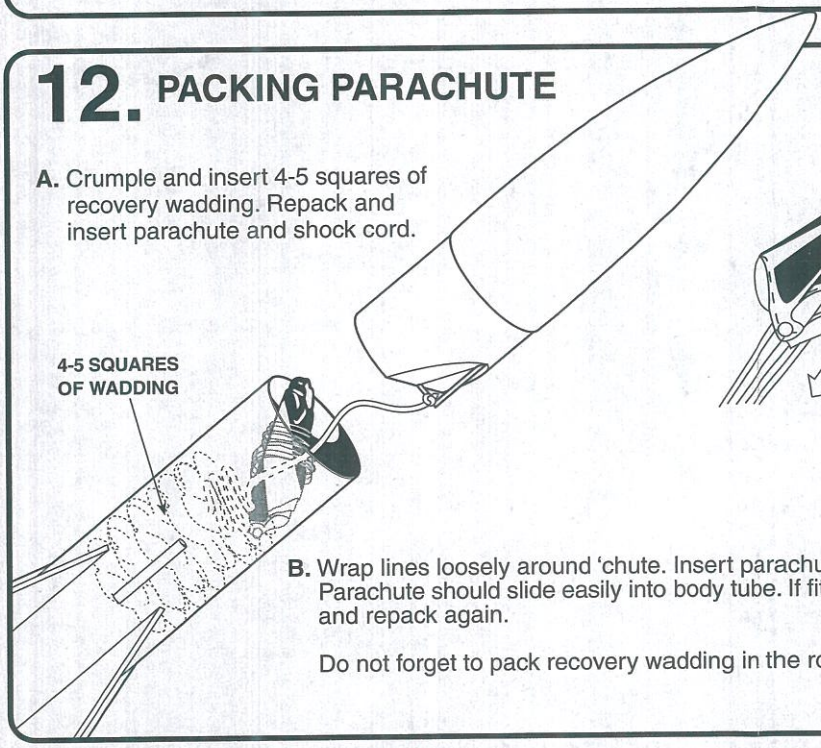
11.

A. Carefully peel one decal at a time from backing sheet and position where shown.

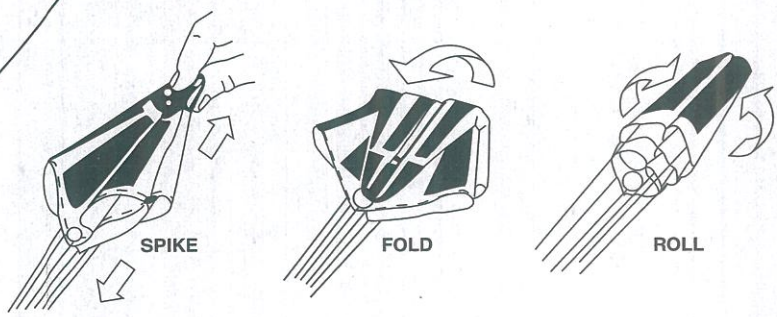


12. PACKING PARACHUTE

A. Crumple and insert 4-5 squares of recovery wadding. Repack and insert parachute and shock cord.

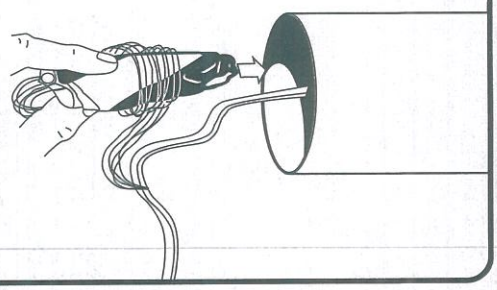


A. Spike, fold and roll parachute.



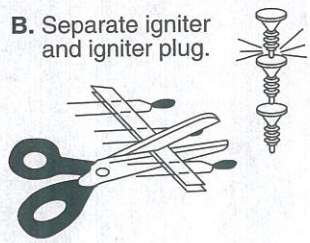
B. Wrap lines loosely around 'chute. Insert parachute into lower tube. Parachute should slide easily into body tube. If fit is too tight, unfold and repack again.

Do not forget to pack recovery wadding in the rocket before flying.

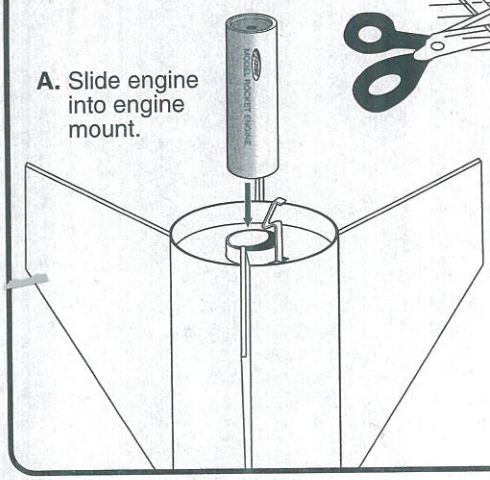


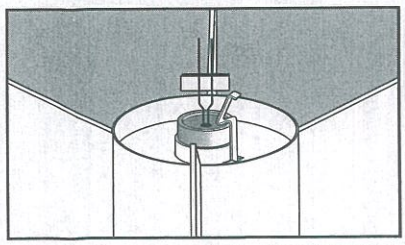
13. ENGINE PREPARATION

B. Separate igniter and igniter plug.

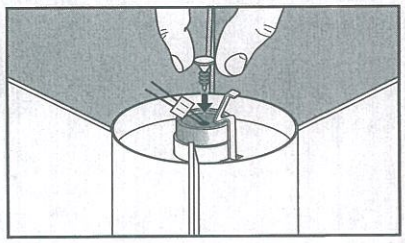


A. Slide engine into engine mount.

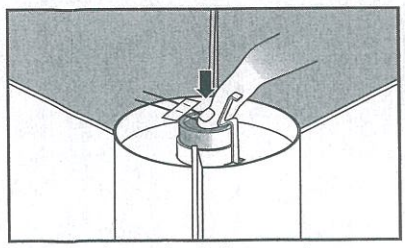




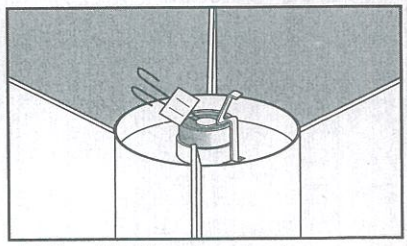
C. Hold rocket upright, drop in igniter. Igniter must touch propellant.



D. Insert igniter plug.



E. Firmly push all the way in.



F. Bend igniter wires back.

LAUNCH SUPPLIES

To launch your rocket, you will need the following:

- Launch Pad (Estes Porta-Pad® II)
- 3/16" (5 mm) diameter Maxi™ Launch Rod
- Launch Controller (Estes Electron Beam®)
- Recommended Estes Engines: D12-3, or a D12-5 Use a D12-5 for your first flight to become familiar with your rocket's flight pattern.
- Recovery Wadding (EST 302274)
- Igniters and Igniter Plugs (included with all Estes engines)

Use only Estes products to launch this rocket.

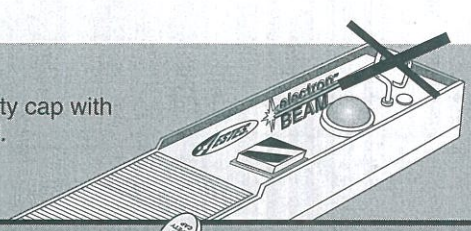
ENGINE	PROJECTED ALTITUDE	
	FEET	METERS
D12-3/ D12-5	350	107

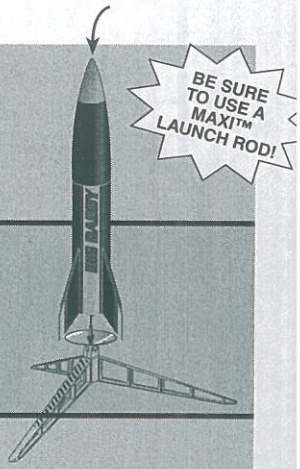
TIPS FOR FLYING YOUR ROCKET

- Choose a large field away from power lines, buildings, tall trees, and low flying aircraft. Try to find a field at least 500 feet (152 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 (wind speed less than 20 mph - 30 kph) and good visibility.
- Don't leave parachute packed more than a minute or so before launch during cold weather (colder than 40° Fahrenheit [4° Celsius]). Parachute may be dusted with talcum or baby powder to avoid sticking.
- 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.

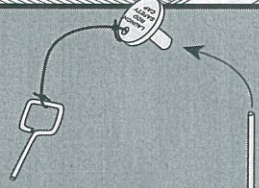
COUNTDOWN AND LAUNCH

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

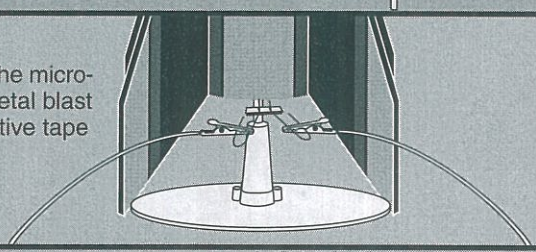




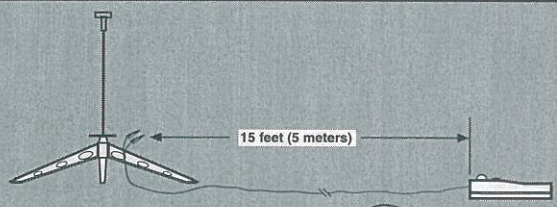
9... Remove safety cap from launch rod, slide launch lug over rod. Make sure rocket slides freely and micro-clips are clean for good electrical contact.



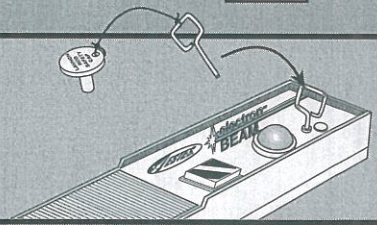
8... Attach micro-clips to the igniter wires. Arrange the micro-clips so they do not touch each other or the metal blast deflector. Attach micro-clips as close to protective tape on igniter as possible.



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

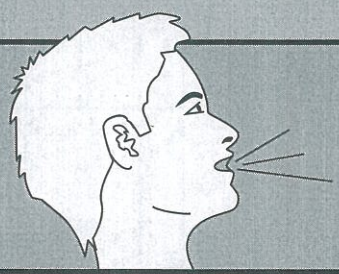


6... Insert safety key to arm the launch controller.



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.

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