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EST 2138

BEGA SERIES

FIREBIRD™

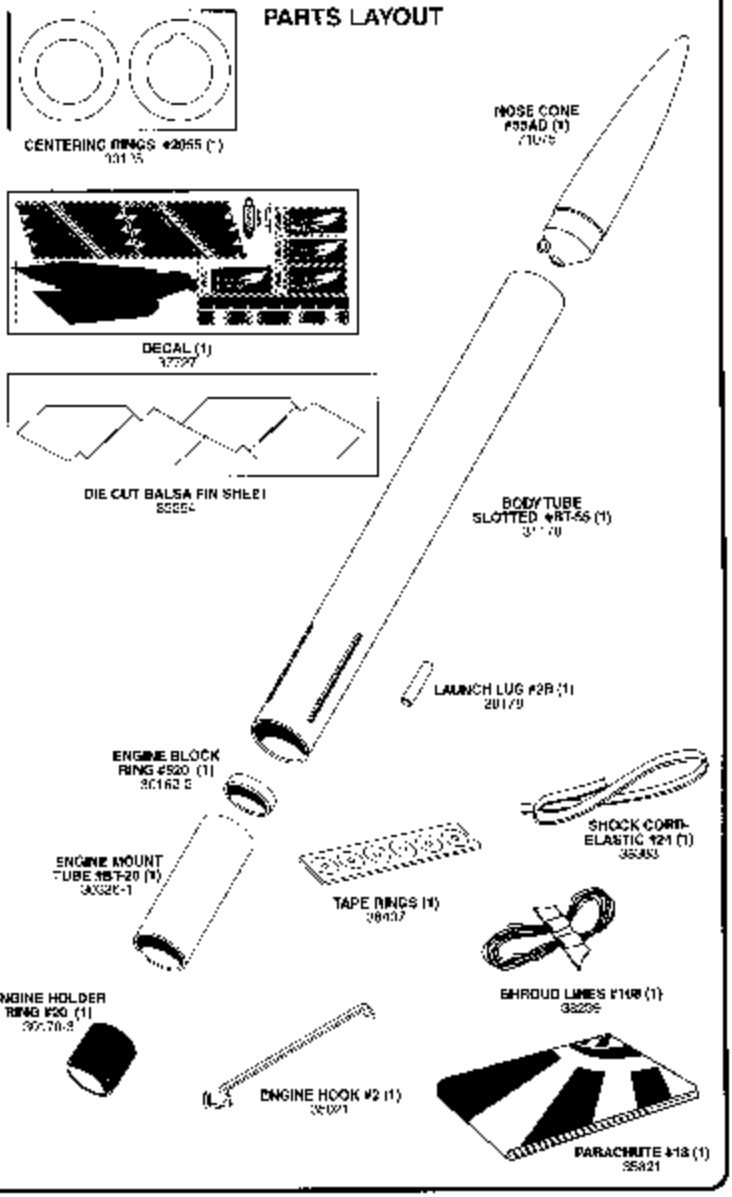
FLYING MODEL ROCKET KIT INSTRUCTIONS

TOOLS REQUIRED:

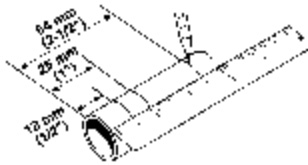
SCISSORS, PENCIL, RULER, HOBBY KNIFE, GLUE

ALL GLUED AREAS ARE SHADED IN GRAY

PARTS LAYOUT

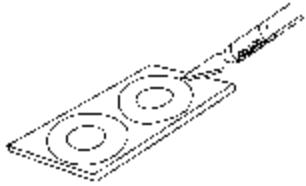


1.



A. Lay one end of engine mount tube (light blue zero mark of ruler.

B. Use a pencil to make three marks on the engi tube at 13 mm (1/2"), 25 mm (1") and 64 mm



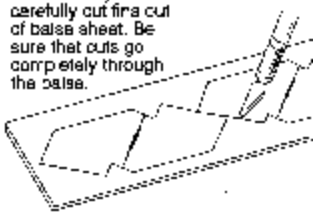
F. Carefully remove the centering rings from their card. Use a hobby knife to finish the cuts.

G.

H.

2.

A. Use a hobby knife to carefully cut fins out of balsa sheet. Be sure that cuts go completely through the balsa.

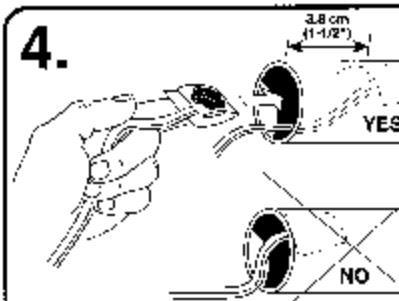


B. As you cut each fin, cut away from adjacen fins so you won't damage them.

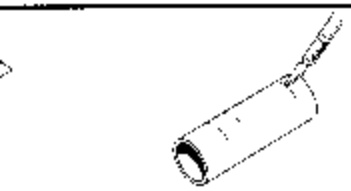
C. Carefully remove fins from sheet.

D. Keep a stick of balsa wood to use as a glue

4.

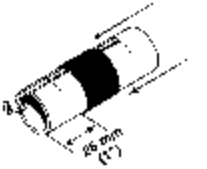


Push the shock cord mount about 1-1/2" (3.8 cr inside the unslotted end of the body tube and p in place against the inside wall of the tube. Be su securely in place.

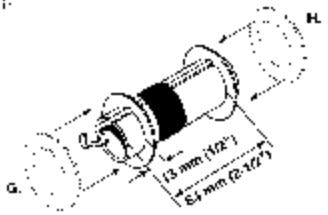


C. Cut a 3 mm (1/8") wide slit as shown at the 64 mm (2-1/2") mark only.

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



E. Slide the engine holder ring (black) onto the engine mount tube and over the engine hook to the 25 mm (1") mark. This will secure the engine hook.

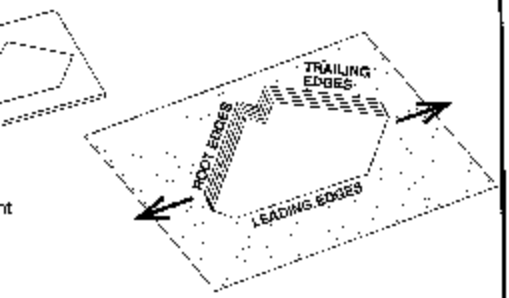


. Slide the notched centering ring to the 13 mm (1/2") mark on the rear of the engine mount tube with the notch over the engine hook.

. Slide the remaining centering ring over the front of the engine mount tube to the 64 mm (2-1/2") mark.

I. Place glue around outside of engine block ring and insert into front of engine mount tube until it hits the engine hook.

J. Once the rings are in place, bead glue around both sides of rings and set assembly aside to set.

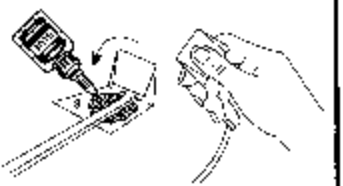


E. Lay sandpaper, rough side up, on table. Stack fins together and lightly sand the edges smooth and flat.

3.

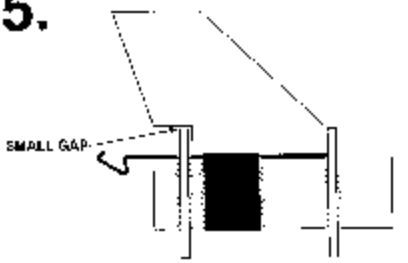
A. Cut out shock cord mount on page 3 along solid lines. Crease dotted lines.

B. Spread glue on section 2 and lay shock cord into glue at a slight angle as shown.



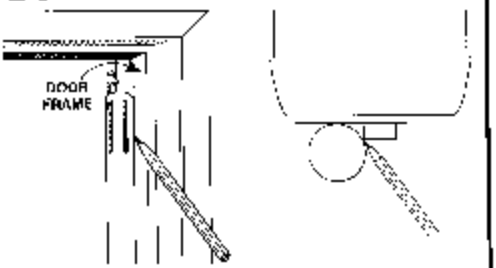
C. Apply glue to section 3. Fold forward again. Clamp firmly until glue sets.

5.



Test fit each fin to make sure they fit between the centering rings on your engine mount. Sand tabs as necessary.

6.



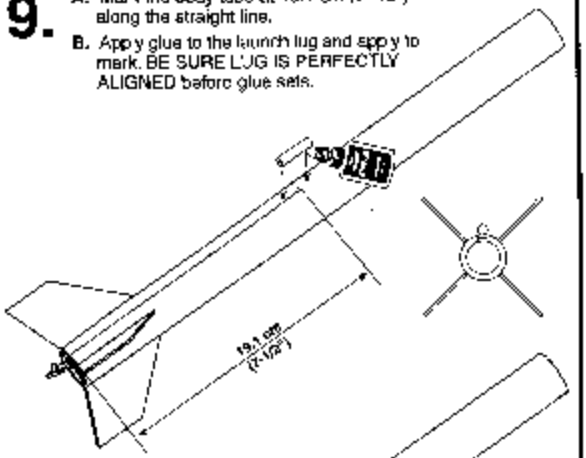
Lightly draw a straight line between two slots down the body tube.

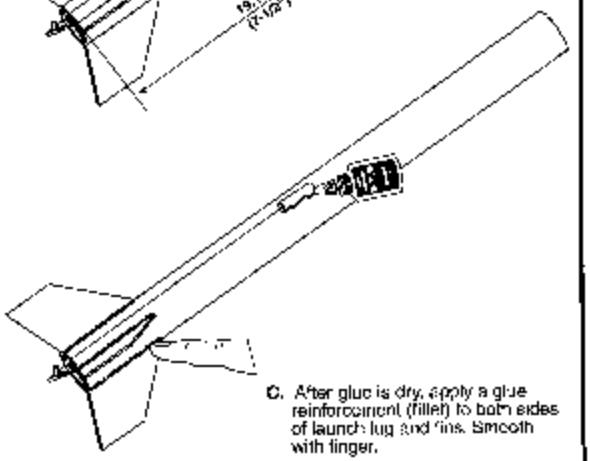
NOTE: A door frame can be used to do this, but we recommend the Estes® Rocket Builder's Marking Guide (EST 302227).

9.

A. Mark the body tube at 19.1 cm (7-1/2") along the straight line.

B. Apply glue to the launch lug and apply to mark. BE SURE LUG IS PERFECTLY ALIGNED before glue sets.

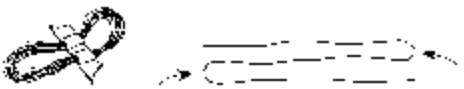




C. After glue is dry, apply a glue reinforcement (fillet) to both sides of launch lug and fins. Smooth with finger.

10.

A. Cut out parachute on dotted line.



B. Find shroud line material. Remove tape. Using all of the string, fold and cut into three equal lengths.

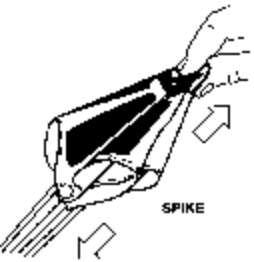
C. Press tape rings onto marks on corners.

D. Punch holes with sharp pencil.

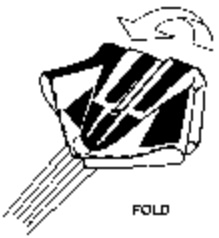
E. Tie lines off.

COMPLETED PARACHUTE

2. PACKING PARACHUTE

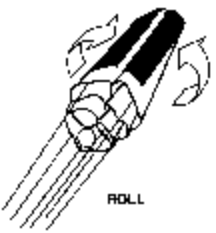


SPIKE



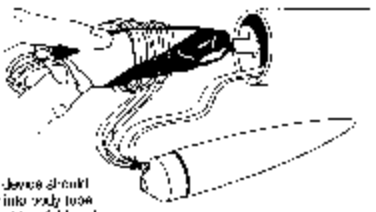
FOLD

DO NOT FORGET TO PACK RECOVERY WADDING IN THE ROCKET BEFORE FLYING - SEE STEP 14

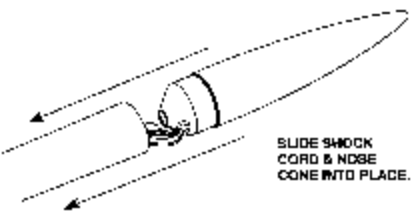


ROLL

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

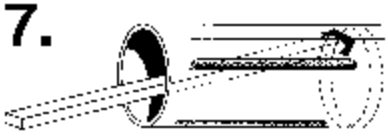


Recovery device should slide easily into body tube. If it is too tight, unfold and repack again

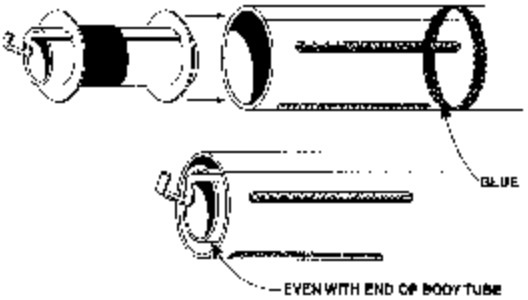


SLIDE SHOCK CORD & NOSE CONE INTO PLACE.

7.



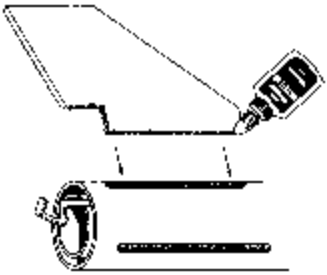
A. Using your wood stick, apply glue inside the body tube just in front of the slots as shown.



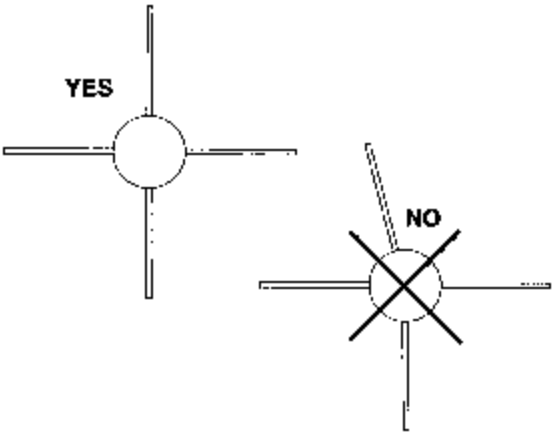
B. Slide engine mount into the body tube so that the end of the engine mount tube is even with the end of the body tube and the engine hook is aligned with the line you drew between the two slots.

C. Enforce the joint between the body tube and rear centering ring by applying a bead of glue (fillet) around it.

8.

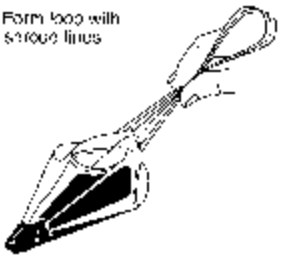


A. Apply glue to the tab on the fins and along the fin root as shown. Insert the fins into slots, checking alignment to make sure fins are straight.

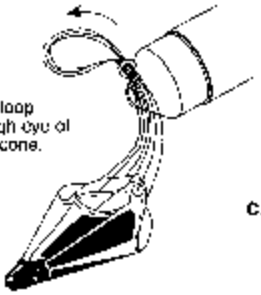


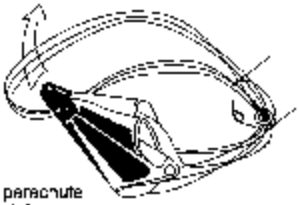
11.

A. Form loop with shock line.

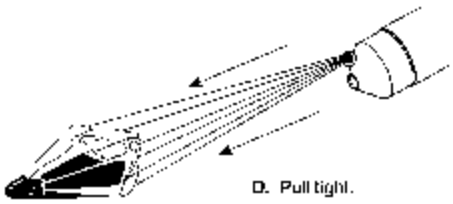


B. Push loop through eye of nose cone.

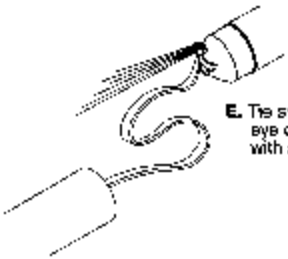




C. Pass parachute through loop.



D. Pull tight.



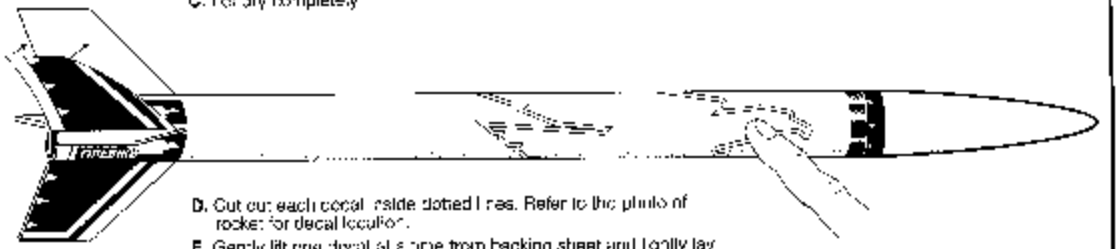
E. Tie shock cord to the eye of the nose cone with a double knot.

13. FINISHING YOUR ROCKET

A. Use sanding sealer to smooth and fill balsa lines. If necessary, sand with 400 grit sandpaper and reapply sanding sealer.

B. Paint entire rocket white.

C. Let dry completely.



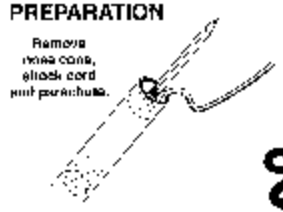
D. Cut out each decal inside dotted lines. Refer to the photo of rocket for decal location.

E. Gently lift one decal at a time from backing sheet and lightly lay it down on rocket in position.

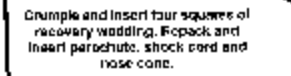
F. When position is correct, rub decal down with your finger to remove bubbles and to secure decal to rocket.

14. FLYING YOUR ROCKET

ROCKET PREPARATION

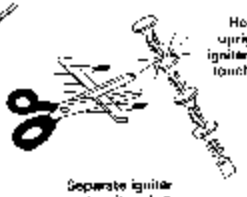


Remove nose cone, shock cord and parachute.



Crumple and insert four squares of recovery wadding. Repack and insert parachute, shock cord and nose cone.

ENGINE PREPARATION



Separate igniter and igniter plug.

Hold engine upright, drop in igniter. Igniter must touch propellant.

Insert igniter plug.

Firmly push all the way in.

Bend igniter wires back.

Insert engine into rocket.

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: A8-3, B4-4, BR-4, C6-5. Use an A8-3 engine for your first flight to become familiar with your rocket.
- Recovery Wadding (EST 3022274)
- Igniters and Igniter Plugs (included with Estes engines)

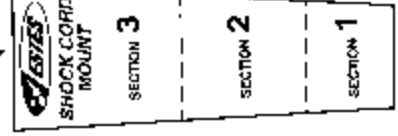
Use only Estes products to launch this rocket.

ENGINE	PROJECTED ALTITUDE	
	Feet	Meters
A8-3	140	34
B4-4	300	99
BR-4	820	67
C6-5	795	215

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 76 meters (250 feet) 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 parachute packed more than a minute or so before launch during cold weather (colder than 4° Celsius (40° Fahrenheit)). 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.

CUT OUT FOR STEP 3



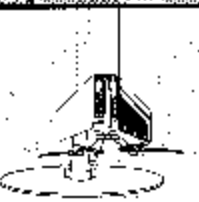
Igniter Plugs - U.S. Patent Nr. 5,509,354

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

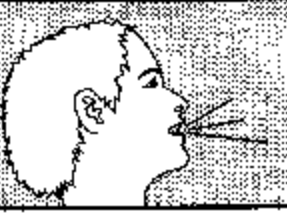


7... Move everyone back from your rocket as far as launch wire will permit (at least 5 meters - 15 feet).

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 pasted 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.