

Estes Industries Rocket Plan No. 28

AUGIE II ONE PIECE TWO STAGE ROCKET

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ASSEMBLY

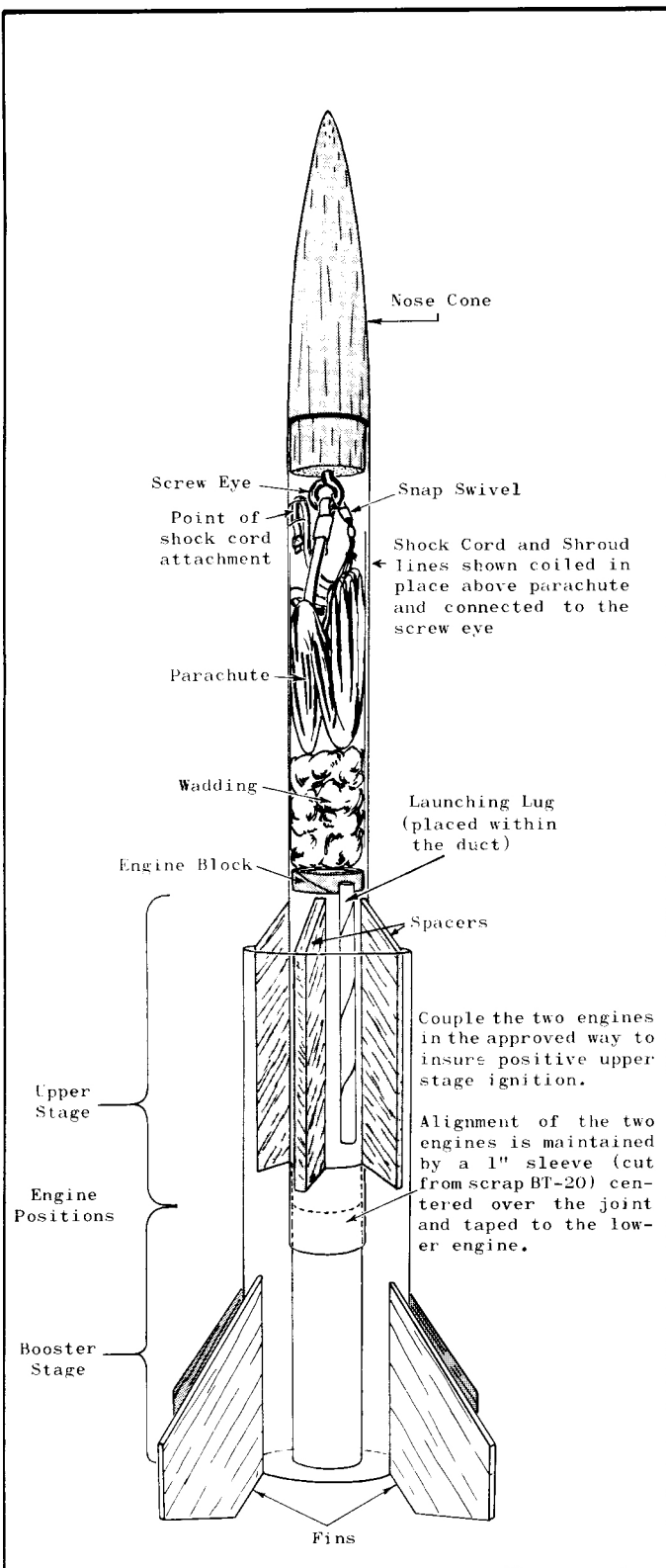
Augie II is a novelty rocket combining techniques of multi-staging and ducted propulsion. The Augie II takes off in a conventional manner, but after stage separation the upper stage engine fires down through the lower body tube, accelerating the gases in the tube and drawing in more air through the front of the tube. Since the lower stage consists only of an engine, there is only one piece to recover after the flight.

The first step in building the Augie II is to cut the body tubes to length, cut out the fins and make the four spacers. After marking the upper body tube the spacers are glued to it and the assembly is set aside to dry. Next the fins are glued to the lower body tube. The launching lug is glued to the upper body tube between two of the spacers.

To install the engine block first mark an empty engine casing 1/2 inch from one end. Using your little finger or a brush, smear glue around the inside of the upper tube about 2" from the spacer end. Insert the engine block into the tube and push it forward with the engine casing until the mark is even with the end of the tube (so only 1/2" of the casing projects from the end of the body). Remove the casing immediately.

Check the fit of the spacers in the forward end of the lower tube. If they are too tight sand them carefully and evenly until a smooth, snug fit is achieved. If the spacers are loose apply a line of glue along the tip of each, let dry and check for fit again. Position the upper body tube at the forward end of the lower body and mark the lower tube at each of the four spacers. Remove the upper tube and apply a 2" long line of glue to the inside of the lower tube at each of the marks so the glue runs straight back from the mark. Slide the rear of the upper body into the front of the lower body so the spacers are halfway between the glue lines and rotate the upper tube to bring all four spacers into contact with the glue. Sight down the two tubes from the bottom and adjust them so they are aligned perfectly. Set the unit aside to dry.

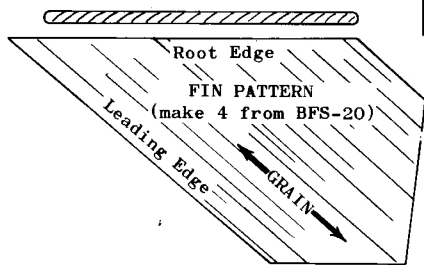
Insert the screw eye into the nose cone, remove it, squirt glue into the hole and reinsert the screw eye. Assemble the parachute as shown and attach a snap swivel to the free end of the shroud lines. Cut two slits in the upper body, 3/4" and 1" from the front of the tube, the one directly over the other. Cave in the section between the slits and hook the end of the shock



Parts List

1	Balsa Nose Cone	Part Number	BNC-20N
1	Body Tube	"	BT-20D
1	Body Tube	"	BT-60R
1	Sheet Balsa Fin Stock	"	BFS-20
1	" " Fin Stock	"	BFS-40
1	Paper Engine Block	"	EB-20A
1	Screw Eye	"	SE-2
1	Shock Cord	"	SC-1
1	Parachute Kit	"	PK-12
1	Snap Swivel	"	SV-12
1	Launching Lug	"	LL-1B

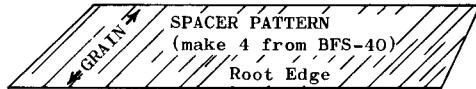
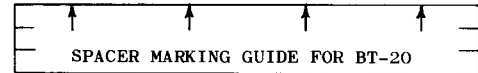
Typical cross-section of Fin and Spacer



FIN MARKING GUIDE FOR BT-60

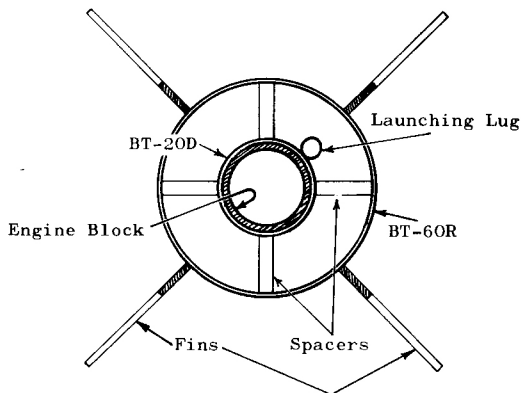
Sanding Instructions:

Fins: All but root edge round.
Spacers: Leading and trailing edges only.



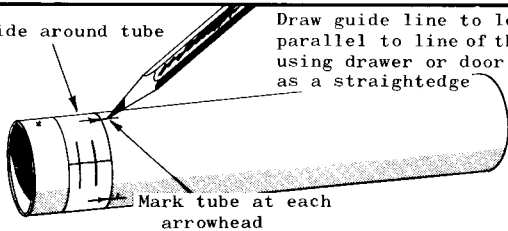
Carefully cut out the patterns above and wrap around the proper tube aligning the twin lines at each end. Mark the tube at the point of each arrowhead.

BOTTOM VIEW



Wrap guide around tube

Draw guide line to length parallel to line of thrust using drawer or door sill as a straightedge



cord through from the inside. Apply glue to the shock cord and to the cut edges of the tube and press the caved-in section back out so it matches the original curve of the tube. Tie the free end of the shock cord to the screw eye in the nose cone.

Apply a coat of high-heat aluminum paint to the inside of the lower body tube. The outside of the rocket should be painted with a high visibility color such as fluorescent orange, cerise, etc.

Flying the Augie II

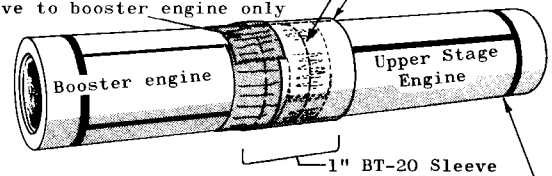
The engines recommended for use in the Augie II are the B 3-0 for the booster and the 1/2A.8-2, A.8-3 and B.8-4 for the upper stage. Place the nozzle end of the upper stage engine against the top end of the booster engine and wrap a layer of cellophane tape around the joint. Check to be sure the engines are in the proper relative positions.

For extra stage separation reliability cut off a 1" piece of BT-20 or BT-30 and center it exactly on the joint between the engines. Wrap a layer of masking tape around the edge of the tube section and the booster engine to hold the tube in place.

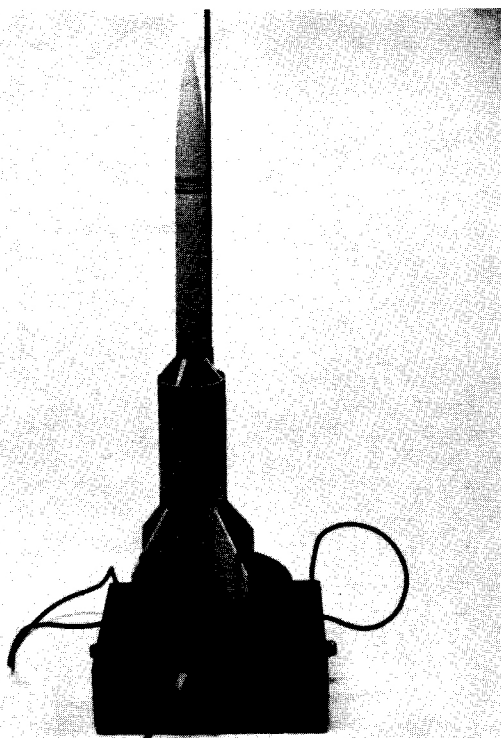
Install an igniter in the booster engine. Wrap the upper engine with masking tape so it will make a tight friction fit in the upper body tube. Insert the engine unit into the rocket until the forward end of the upper stage engine rests against the engine block.

Pack flameproof recovery wadding into the upper body tube from the top so the wadding rests against the engine block and extends forward in the tube for 1-1/4" to 1-1/2". Hook the snap swivel on the parachute onto the screw eye on the nose cone. Fold the parachute, insert it into the tube, pack the shroud lines and shock cord in over it and slide the nose cone into place.

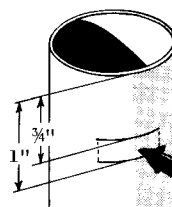
- 1st. Wrap joint with cellophane tape
- 2nd. Slide sleeve into place
- 3rd. Wrap with masking tape to secure sleeve to booster engine only



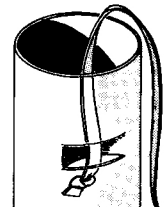
- 4th. Wrap with enough masking tape to give a tight fit in body tube



Slit tube and push in



Knot one end of shock cord and thread into slot as shown



Restore tube shape socking shock cord into place. Seal entire section with white glue

