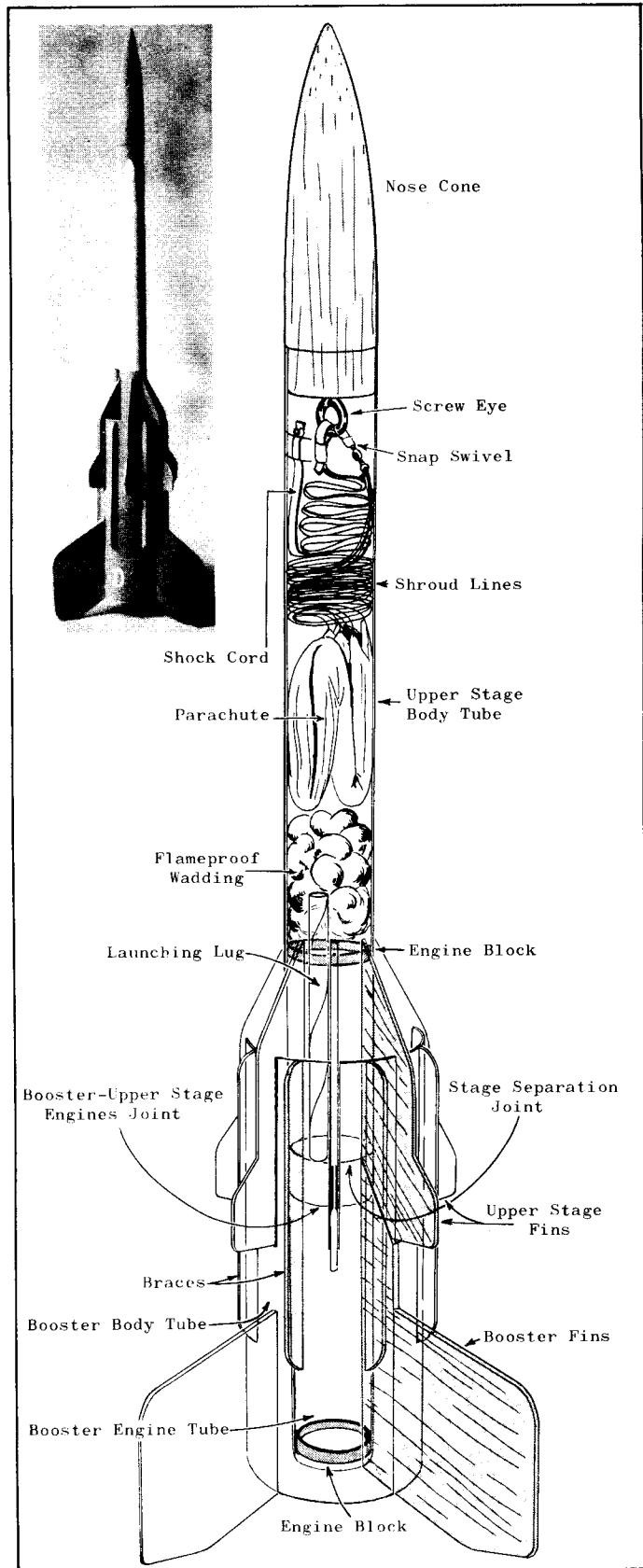


# Estes Industries Rocket Plan No. 30

## DOUBLE TROUBLE A Two Stage Rocket - With a Difference

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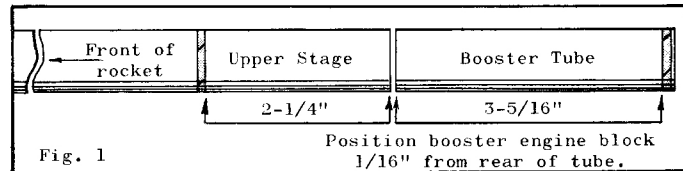


### PARTS LIST

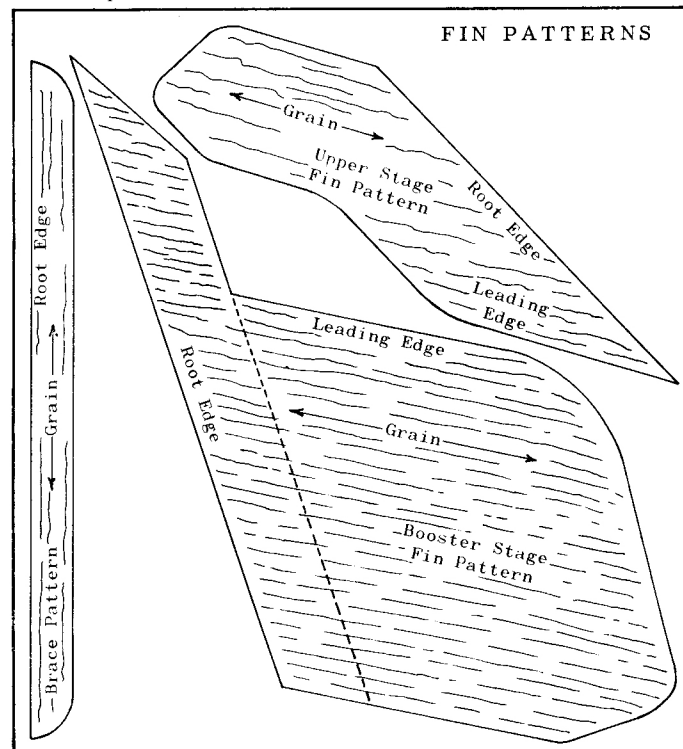
1	Nose Cone	BNC-20N
1	Upper Stage Body Tube	BT-20B
1	Booster Engine Tube	BT-20G
1	Booster Body Tube	BT-60R
2	Engine Block; thin, paper	EB-20B
2	Balsa Fin Stock 3"x9"x1/16" Sheet	BFS-20
1	Launching Lug 2-3/8"	LL-1B
1	Screw Eye	SE-1
1	Shock Cord	SC-1
1	12" Parachute Kit	PK-12
1	Snap Swivel	SV-12

### ASSEMBLY

1. The engine block should be 1-1/4" from the rear of the body for Series III engines or 2-1/4" for Series I engines so that 1/2" of the engine projects for stage coupling. Position the engine block by smearing glue on the inside of the upper stage tube with a brush or little finger at about the correct distance in from the rear. Push the engine block into place with an engine casing on which you have marked the proper distance. See figure 1 for this and for the position of the engine block in the booster engine tube. Use the spacing guide to mark the booster engine tube for 3 fins.



2. Figure 2 is the cutting and positioning guide for the booster parts. Leave it intact until you have traced all of



the fins and brace patterns onto your balsa fin stock or a separate sheet of paper. After tracing all the patterns cut the booster guide on the outside lines and tape it around the outside of the booster body tube (BT-60R) as shown in figure 3. CAREFULLY cut through the guide and the body tube to form the slots shown. After all the cuts have been made there should be six slots on the forward end and three slots on the rear of the booster body tube.

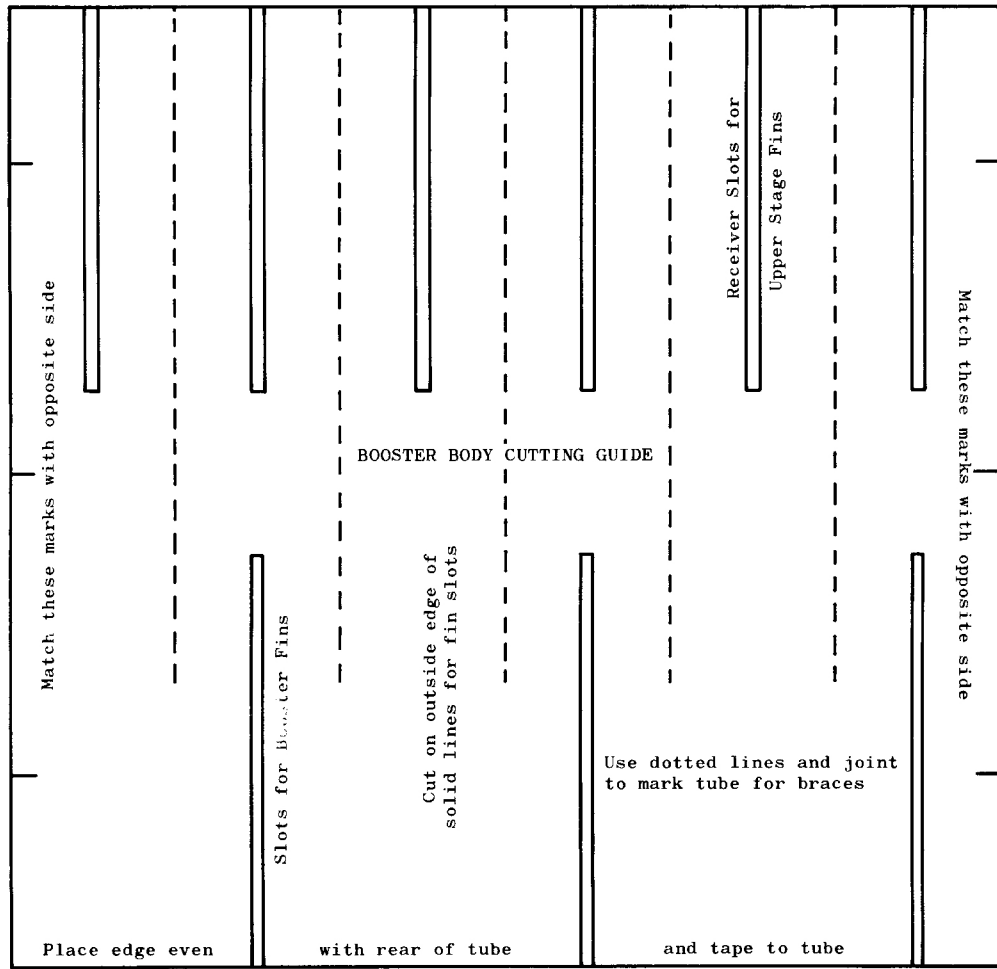
3. Cut out the fins and braces. Position the patterns on the balsa fin stock as shown in figure 4.

4. Glue the braces in place on the booster body. While this dries glue the main booster fins in place on the booster engine tube over the guide lines made in step 1. Make sure each sticks straight out from the tube (fig. 5A). When the glue has set slide the booster body tube into place (fig. 5B) and run glue fillets along both sides of each fin-body joint. Support this assembly horizontally and let it dry completely.

5. Mark the rear of the upper stage for six fins as shown in figure 6A. Glue the fins to the body on the marks so each fin is parallel to the body and projects straight away from it. Tape two engine casings of the correct size together and push them into place in the booster. When the glue on the upper stage fins has set (but before it has hardened completely) slide the upper stage onto the booster so the engine casing fits into the body tube and the fins fit into the slots. Leave the two assemblies together until the glue is hard. Slide the upper stage out of the booster and apply a glue fillet to each fin-body joint. Install the launching lug between any pair of upper stage fins.

6. Insert the screw eye into the base of the nose cone. Remove the screw eye, squirt glue into the hole and replace the screw eye. Cut two 3/8" long slits in the forward end of the upper stage body tube, the one directly ahead of the other, 3/4" and 1" from the end of the tube. Cave in the section between the slits. Hook the end of the shock cord through the slits as shown, press the caved in portion back into its original shape and apply glue to the cord and the cut edges of the body. Tie the free end of the shock cord to the screw eye in the nose cone. Assemble the parachute, attach the

Fig. 2



snap swivel to the shroud lines and hook the swivel on the screw eye.

PAINTING

Paint your model with any bright butyrate dope or enamel color for easy tracking. Paint the booster engine tube and the forward section of the booster fins inside the body tube with heat resistant aluminum paint to protect them from the hot gases at stage separation.

FLYING

Prepare the Double Trouble for two stage flight as described in Technical Report TR-2. Use a 1/4A.8-0 booster engine and a 1/4A.8-4 upper stage engine for the first flight. A streamer may be substituted for the parachute when flying out of small fields or when the wind is blowing slightly. Do not launch in winds of over 5 M.P.H.

