

PARTS LIST

A.	1 Engine Block	EB-5B	I.	1 Fin Stock	BFS-20
B.	2 Engine Mount Tubes	BT-5T	J.	1 Launch Lug	LL-2A
C.	4 Adapter Rings	AR-520	K.	1 Shock Cord	SC-1
D.	1 Booster Body Tube	BT-20AE	L.	1 Screw Eye	SE-2
E.	1 Stage Coupler	JT-20C	M.	1 Nose Cone	BNC-20N
F.	1 Dummy Engine Casing	EC-8	N.	1 Parachute	PK-10R
G.	1 Upper Stage Body Tube	BT-20B	O.	1 Decal Sheet	KD-T45
H.	1 Pattern Sheet (Not shown)	SP-T45	P.	1 Shock Cord Mount (Not shown)	SCM-30

In addition to the parts included in this kit you will need scissors, white glue, a sharp model knife (or single edge razor blade), masking tape and paint or dope.

Check to be sure your kit is complete, then read the entire instructions before beginning to assemble your rocket. Check off each step as you complete it.

INSTRUCTIONS

1 Glue the engine block in one end of one of the engine mount tubes. Smear glue around the inside of one end of the tube and insert the block until its end is even with the end of the tube.

2 Mark the engine mount tubes as shown. The one with the block is marked $5/16''$ from the end opposite the block; the other tube is marked $1/4''$ from each end. Glue three adapter rings on these tubes so the outer edges of the rings are on the marks. The fourth adapter ring glues to the tube with the engine block so it is even with the same end as the block.

3 Glue the stage coupler halfway in one end of the booster body tube. Mark the coupler $3/8''$ from one end. Smear glue around the inside of one end of the booster body and insert the coupler to the mark. Make sure the coupler is straight in the tube.

4 Install the engine mounts in the body tubes. Mark the dummy engine casing $1/4''$ from one end. Insert the unmarked end into the engine mount which has the engine block. Smear glue around the inside of one end of the upper stage body tube and insert the engine mount until the mark on the casing is even with the end of the body. Glue the remaining engine mount in the booster body so the end of one adapter ring is even with the end opposite the stage coupler.

5 Cut out the marking guide and wrap it around the upper stage body tube at the same end as the engine mount. Mark the tube at each of the arrow points. Remove the guide and draw a straight line passing over each matching front and rear mark. Draw the launch lug line along the entire tube length. Mark the short lower stage (booster) body tube in the same manner, but omit the launch lug line.

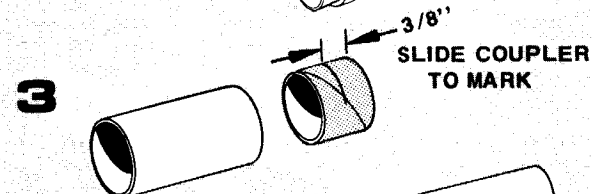
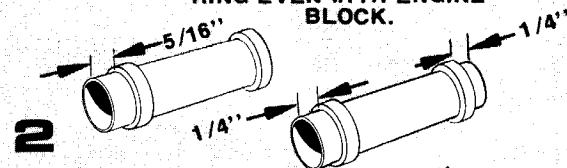
6 Cut out the fin patterns and trace their outlines onto the balsa fin stock sheet exactly as shown. Cut out the fins carefully and sand the edges as shown.

7 Run a line of glue along the root edge of one upper stage fin. Center it on one of the upper stage fin alignment lines at the rear of the body tube. Make sure that it projects straight out from the body tube. Allow the glue to set. Attach the two remaining fins in the same manner and set aside. Following the same procedure, glue the three lower stage fins to the booster body tube. Apply a glue fillet to both sides of each fin joint after the glue is completely dry.

GLUE ENGINE BLOCK EVEN WITH THE END OF TUBE

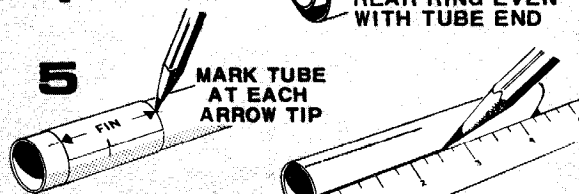


GLUE FOURTH ADAPTER RING EVEN WITH ENGINE BLOCK.

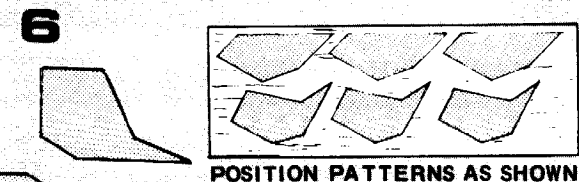


MARK DUMMY ENGINE CASING 1/4'' AT ONE END

REAR RING EVEN WITH TUBE END

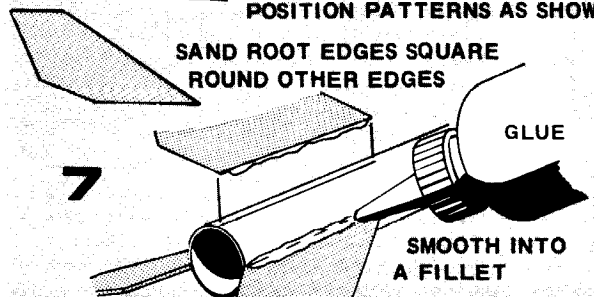


CONNECT EACH MATCHING FRONT AND REAR MARK WITH A STRAIGHT LINE



POSITION PATTERNS AS SHOWN

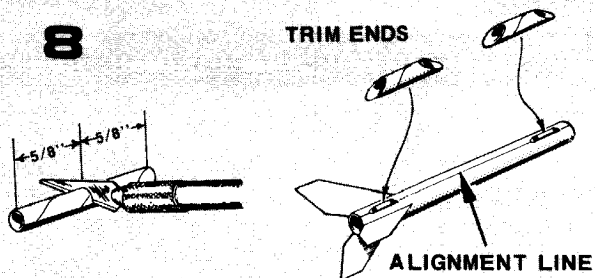
SAND ROOT EDGES SQUARE ROUND OTHER EDGES



GLUE

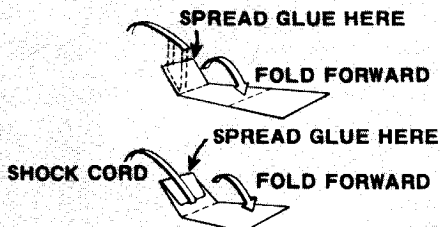
SMOOTH INTO A FILLET

8 Cut the launch lug in half and trim the ends as shown. Glue one to each end of the long body tube, centering them exactly on the launch lug alignment line.



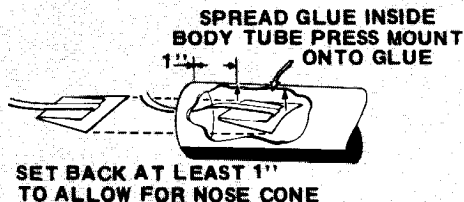
9 Cut out the shock cord mount (part P) Apply glue to section 1 and lay the shock cord end into the glue. Fold this first section over. Spread glue over the back of the first section and the exposed part of section 2. Lay the shock cord as shown and fold over again. Clamp the unit together with your fingers until the glue sets.

9



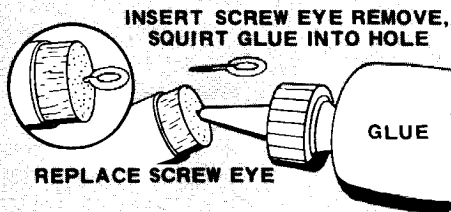
10 Apply glue to the inside of the upper stage body tube at the front (the end opposite the fins) over an area about 1" from the end. The glued area should be the same size as the shock cord mount. Press the mount into the glue and hold it until the glue sets.

10



11 Insert the screw eye into the base of the nose cone. Remove the screw eye and squirt a small amount of glue into the hole. Replace the screw eye.

11

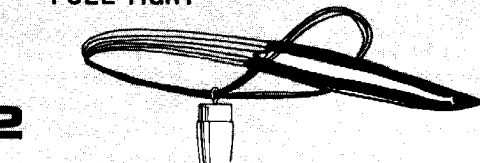


The nose cone should separate easily from the rocket body tube, but not be extremely loose. If fit is too tight, sand inside of body tube end and shoulder of nose cone with fine sandpaper.

If nose cone is too loose add a wrapping of transparent tape or masking tape to the shoulder of the nose cone.

12 Locate the center of each shroud line on the parachute. Fold the shroud lines at this center and poke them through the screw eye for about three inches. Open the lines up into a loop on the other side of the screw eye, pass the parachute through this loop, and pull tight. Apply a spot of glue to the lines where they knot around the screw eye. Tie the free end of the shock cord to the screw eye. Make sure the tape discs hold the shroud lines securely on the parachute.

12



13 Apply two or more coats of sanding sealer to all balsa surfaces. Sand lightly with extra fine sandpaper between coats. Repeat until smooth. Give the rocket a spray base coat of white and follow with your choice of colors.

14 Cut out the selected decals from the decal sheet. To transfer, dip the decal in luke-warm water for about 30 seconds or until it slides easily on the backing paper. Slide the decal off the paper onto the desired surface and blot dry carefully. Allow the decals to dry for about 24 hours.

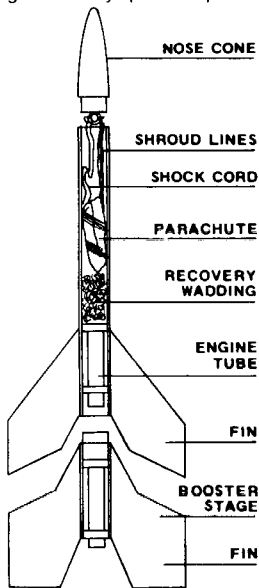
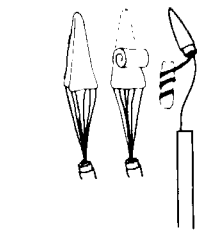
COUNTDOWN CHECKLIST

16 Pack three squares of loosely crumpled Estes RP-1A recovery wadding into body tube.

Fold the parachute into a triangular shape. Roll 'chute tightly as shown and wrap shroud lines around it. If 'chute is too large, unroll and repack until it slides easily into the rocket. A very tight fit may prevent parachute from ejecting properly.

Pack shock cord neatly into rocket and slide nose cone into place. NOTE: DO NOT pack parachute until you are actually ready to launch. For maximum parachute reliability, lightly dust the 'chute with ordinary talcum powder before each flight, especially in colder weather.

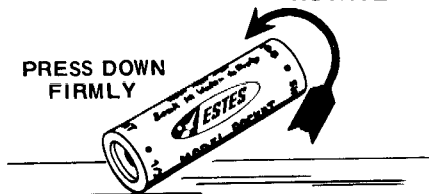
FOLD AND WRAP SHROUD LINES AROUND PARACHUTE



INSERT AFTER WADDING

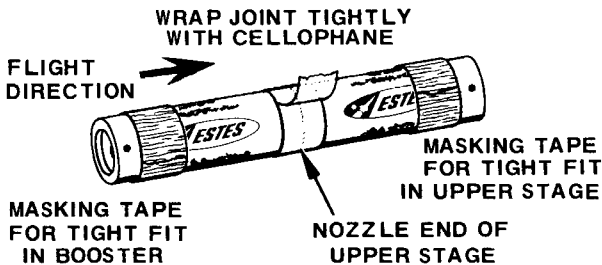
ROTATE

PRESS DOWN FIRMLY



PLACE ON HARD SURFACE

15 Select an upper stage engine and a booster engine. Remove any burrs from the ends of the engines by holding them against a smooth surface and turning as illustrated.



WRAP JOINT TIGHTLY WITH CELLOPHANE

FLIGHT DIRECTION

MASKING TAPE FOR TIGHT FIT IN BOOSTER

MASKING TAPE FOR TIGHT FIT IN UPPER STAGE

14 Position the engines with the nozzle of the upper stage engine against the top end of the booster engine and wrap a layer of cellophane tape tightly around the joint as shown. Check to be sure the engines are in their proper relative positions.

13 Wrap masking tape around the middle of the upper stage engine so it makes a tight friction fit in the engine mount tube. Insert the upper stage engine into the upper engine mount until the end of the engine is against the engine block.

12 Slide the booster into place on the engine unit from the bottom, positioning it so the stage coupler fits all the way into the upper stage and so the fins are in line. Secure the booster in place by wrapping a layer of masking tape around the end of the engine mount tube and the engine and pressing the tape down tightly.

11 Install an igniter in the booster engine as directed in the instructions which came with the engine.

10 Disarm the launch panel.

9 Lower the rocket into position on the launch rod or rail. Clean the micro clips, then clip one to each lead of the igniter. The clips must not touch each other and the igniter leads must not cross. The rocket may be supported with a scrap of wood or an empty engine casing to make it easier to attach the clips and to keep the clips from touching the blast deflector plate and short circuiting.

8 Clear the launch area, alert recovery crew and trackers.

7 Check for low flying aircraft and unauthorized persons into recovery area.

6 Arm the launch panel.

-5 -4 -3 -2 -1 LAUNCH!!

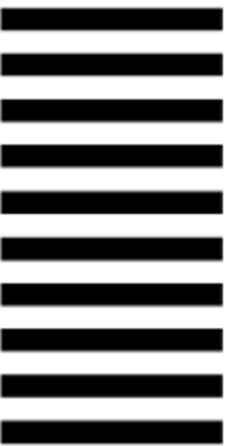
MISFIRE PROCEDURE

Occasionally the igniter will heat and burn in two without igniting the engine. This is almost always caused by a failure to install it correctly. Disarm the launch panel, remove the model, clean the igniter residue from the nozzle, and install a new igniter. Follow the launching procedure again.

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USA

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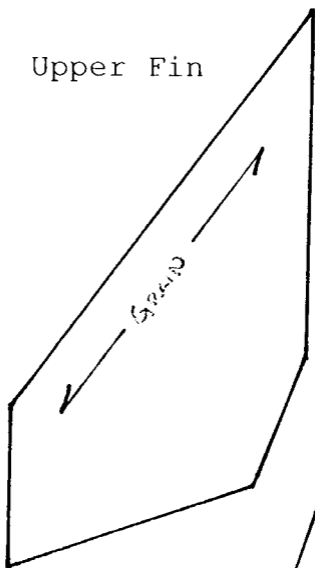
ESTES INDUSTRIES, INC.

KD-45

Beta

Kit #0845

Upper Fin



Lower Fin

