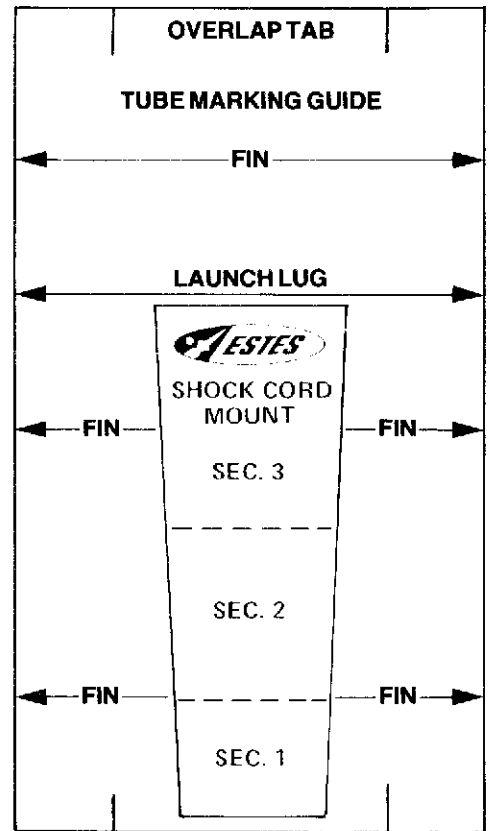
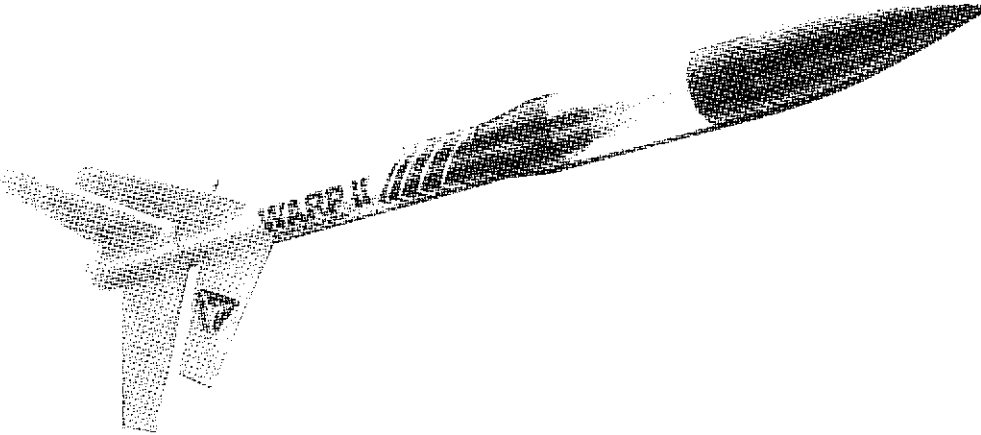


WARP II™



PAYLOADER FLYING MODEL ROCKET #2022

ESTES INDUSTRIES, 1295 H STREET, PENROSE, CO 81240



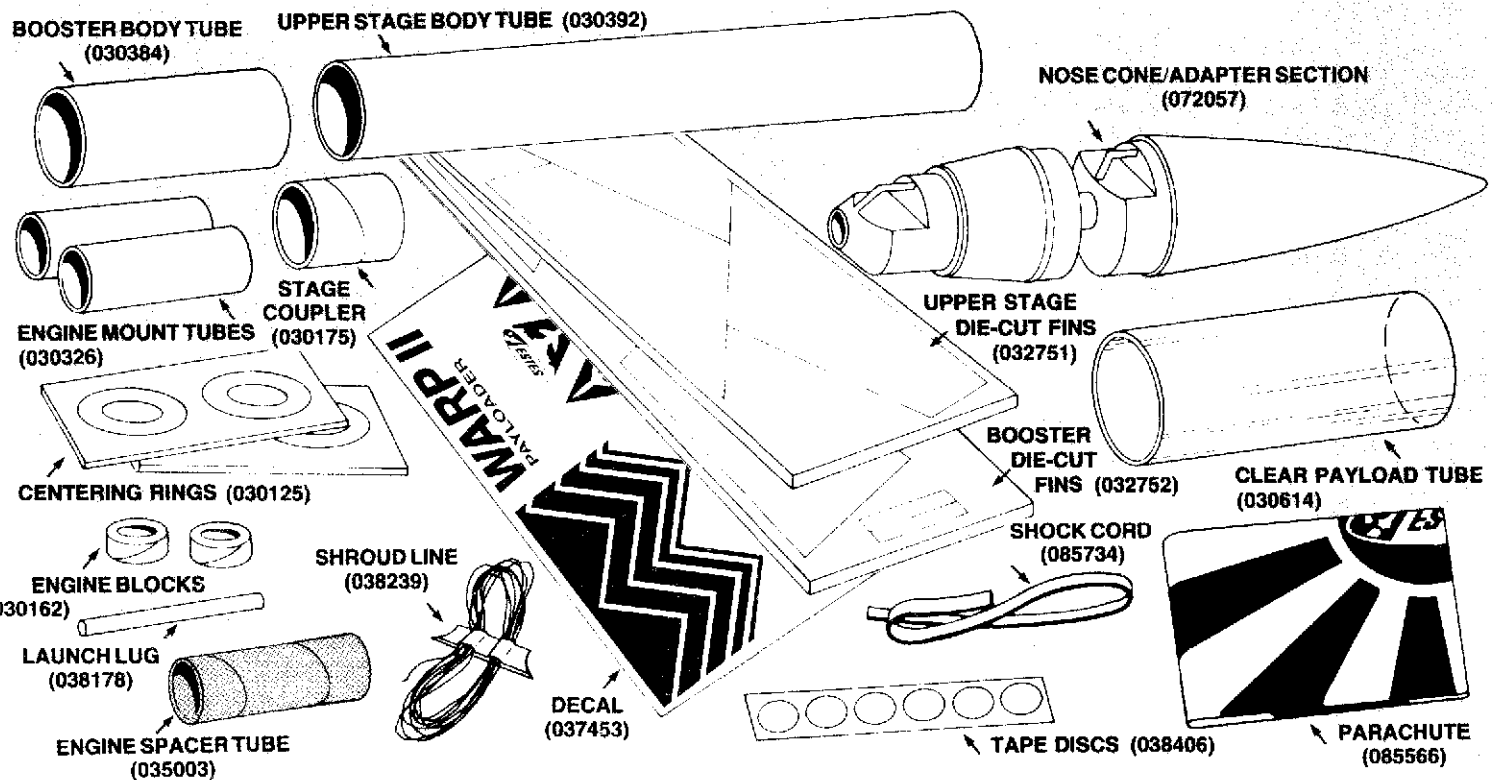
PARTS AND SUPPLIES

Locate the parts shown below and lay them out on the table in front of you. In addition to the parts included in the kit you will also need:



ASSEMBLY TIP

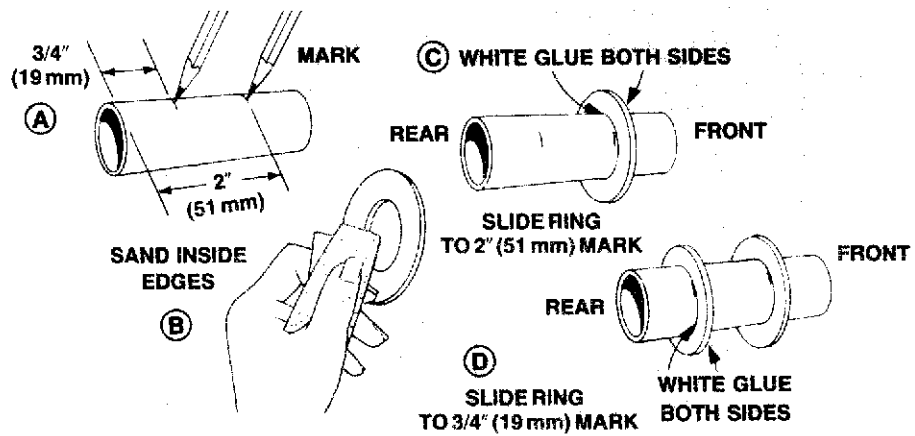
Read all instructions before beginning work on your model. Make sure you have all parts and supplies. Test-fit all parts together before applying any glue. If any parts don't fit properly, sand as required for precision assembly.



BOOSTER ASSEMBLY

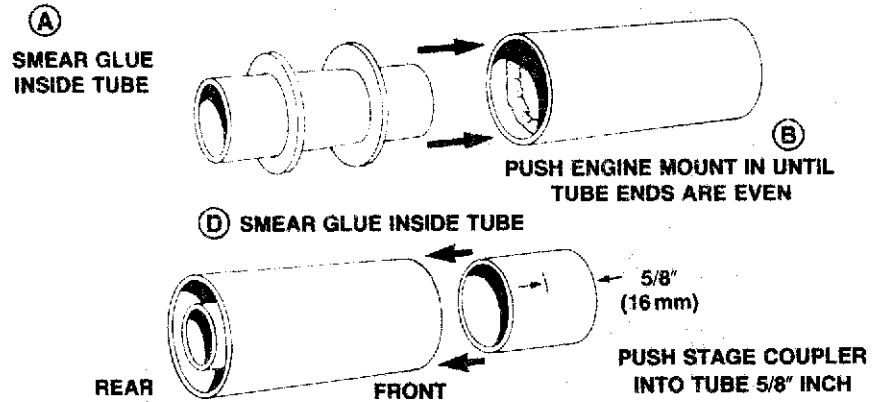
1.

- Mark one of the engine mount tubes $3/4$ " (19 mm) and 2" (51 mm) from one end.
- Remove the centering rings from one of the die-cut cards. Sand inside edges of rings if necessary for proper fit.
- Slide rings over end of tube and up to 2" (51 mm) mark. Apply a bead of glue to both sides of the ring/tube joint.
- Slide second ring onto tube up to $3/4$ " (19 mm) mark and apply a bead of glue to both sides of this ring/tube joint. Set assembly aside to dry.



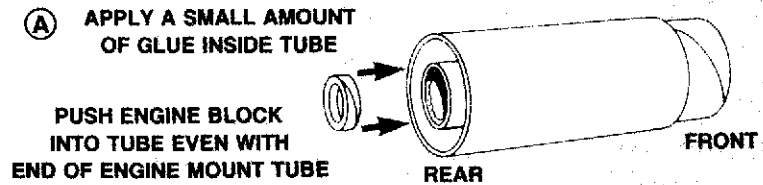
2.

- When engine mount is dry, apply a bead of glue around inside of booster body tube.
- Slide engine mount into body tube. Push forward until end of engine mount tube is even with end of body tube. Stand body upright and allow glue to dry.
- Using a piece of scrap balsa for an applicator, apply a bead of glue around the ring/body tube joints.
- Apply glue around inside front end of booster body tube assembly. Slide stage coupler into booster body assembly $5/8$ " (16 mm) into body.



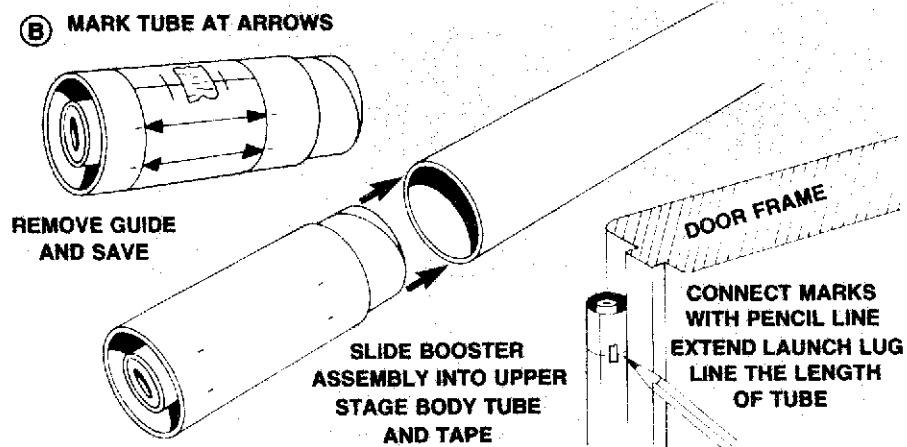
3.

- Apply a small bead of glue around inside rear of engine mount tube. Slide one of the engine blocks into the tube until it is even with end of tube. Remove any excess glue from around tube/block with scrap balsa.



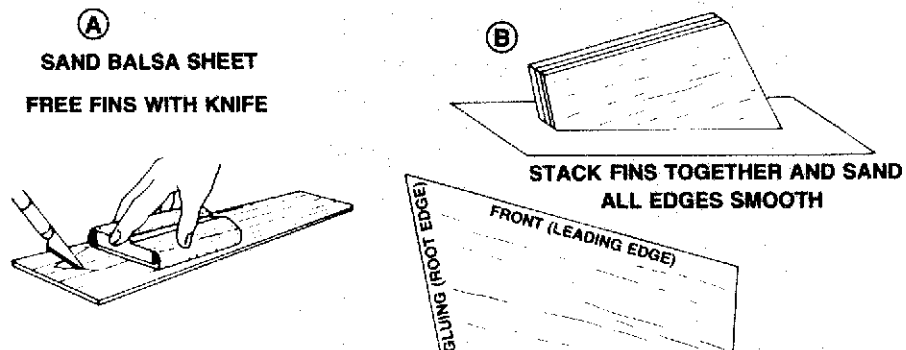
4.

- Cut out tube marking guide from front of instructions.
- Wrap the guide around the booster body section and tape. Mark tube at arrows. Remove guide and save.
- Slide booster assembly into upper stage body tube and tape tubes together.
- Draw straight lines connecting each pair of marks. Extend lines at least 6" (152 mm) up the length of upper stage body. Extend launch lug line the length of tube. Remove tape and upper stage from booster. Set aside upper stage for later assembly.



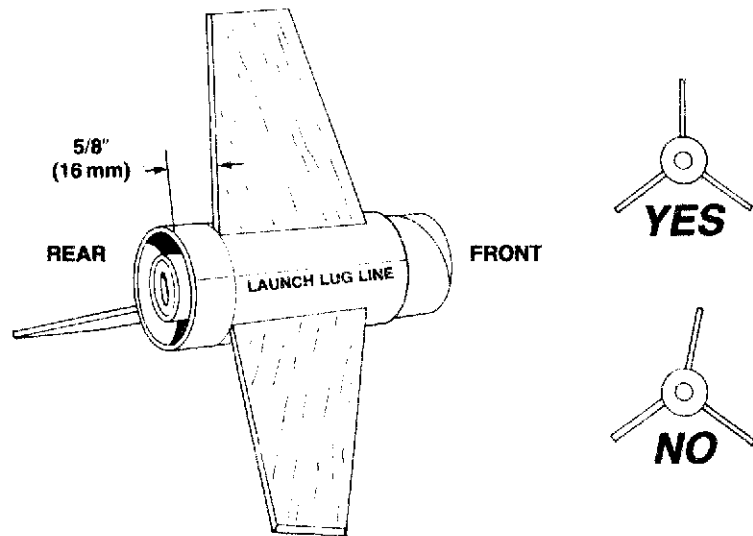
5.

- Fine sand booster fin balsa die-cut sheet. Carefully remove fins by freeing edges with sharp knife.
- Stack fins together. Sand all edges smooth.



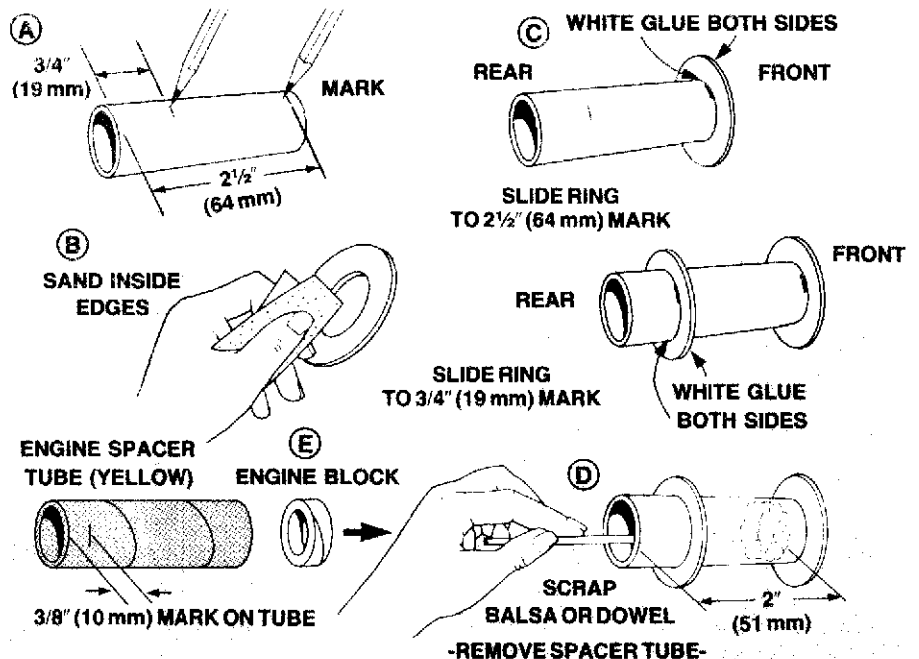
- 6.**
- Compare fins to drawing in previous step, to find gluing (root) and front (leading) edges of fins.
 - Apply a bead of glue to root edge of each fin. Attach the fin to the booster assembly with fin centered on alignment line and positioned 5/8" (16 mm) from end of tube. Repeat for each of the other two fins.
 - Adjust fins to project straight out from tube. Set assembly aside to dry. Fins must be attached correctly for stable flight!

FINS MUST BE ATTACHED CORRECTLY FOR STABLE FLIGHT!

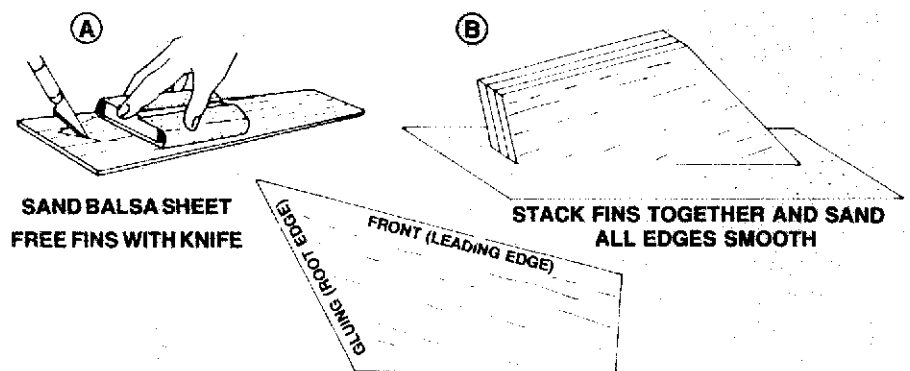


UPPER STAGE ASSEMBLY

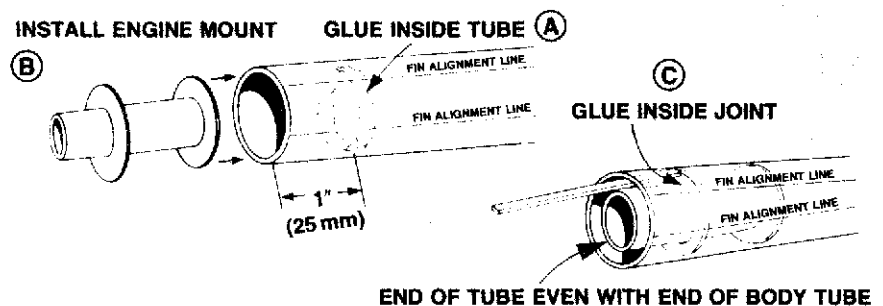
- 1.**
- Mark remaining engine mount tube 3/4" (19 mm) and 2 1/2" (64 mm) from one end.
 - Remove the centering rings from upper stage die-cut card. Sand inside edges of rings if necessary for proper fit.
 - Slide rings over end of tube up to 2 1/2" (64 mm) and 3/4" (19 mm) marks. Apply a bead of glue to both sides of the ring/tube joints.
 - Mark yellow engine spacer tube 3/8" (10 mm) from one end. Apply glue inside of tube about 2" (51 mm) from end of tube.
 - Push engine block into tube until the mark on spacer tube is even with end of engine mount tube. Immediately remove spacer tube. Set assembly aside to dry.



- 2.**
- Fine sand upper stage balsa die-cut sheet. Carefully remove fins by freeing edges with sharp knife.
 - Stack like fins together. Sand all edges smooth.



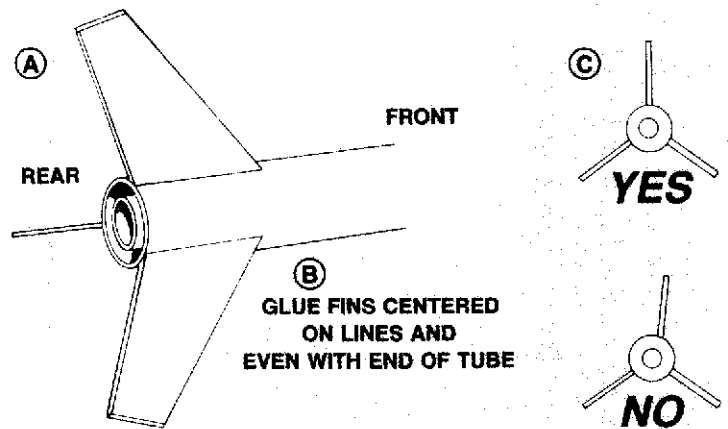
- 3.**
- When engine mount is dry, apply a bead of glue around inside of upper stage body tube.
 - Slide engine mount into body tube. Push forward until end of engine mount tube is even with end of body tube. Stand body upright and allow glue to dry.
 - Using a piece of scrap balsa for an applicator, apply a bead of glue around the ring/body tube joints.



4.

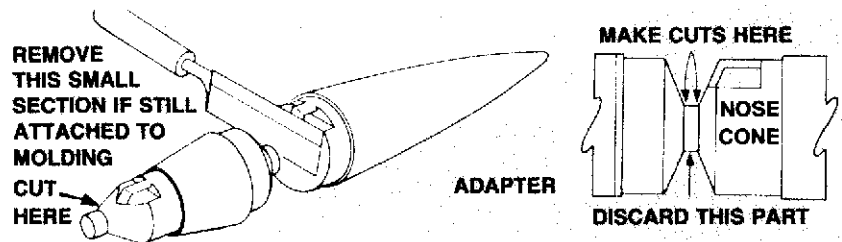
- Compare fins to drawing in Step 2 to find gluing (root) and front (leading) edges of fins.
- Apply a bead of glue to root edge of each fin. Attach the fin to the upper stage with fin centered on alignment line and even with bottom of tube. Repeat for each of the other two fins.
- Adjust fins to project straight out from tube. Set assembly aside to dry.

FINS MUST BE ATTACHED CORRECTLY FOR STABLE FLIGHT!



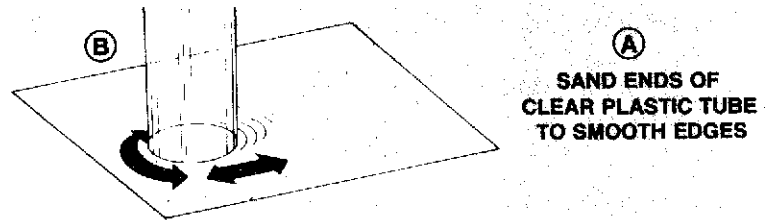
5.

- Separate nose cone/adaptor with a modeler's saw. Use the grooves molded into the part as cutting guide.
- Trim excess plastic from around sides of nose cone and adaptor. Lightly sand seams.



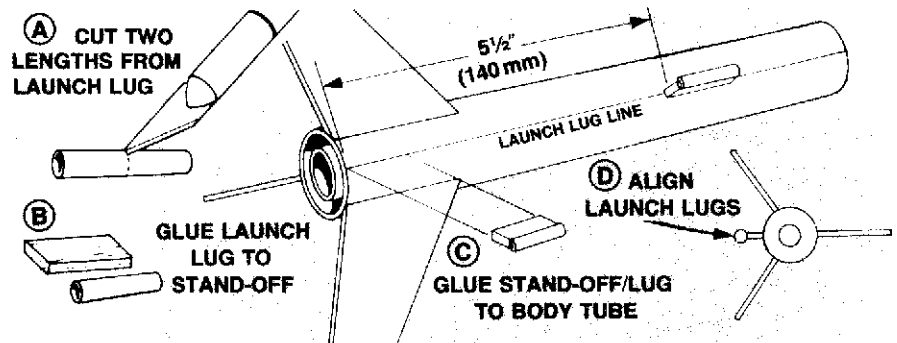
6.

- Remove any excess plastic with modeling knife or fine sandpaper from around ends of clear payload tube.
- Sand both ends of payload tube flat. Wash part in warm soapy water. Rinse. Allow to dry thoroughly.



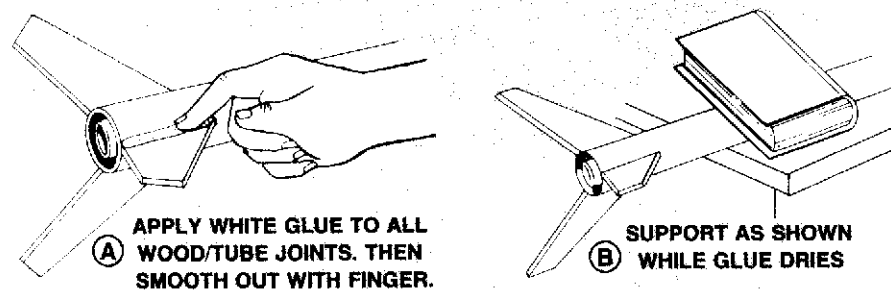
7.

- Cut launch lug into two equal lengths.
- Glue launch lugs centered on stand-off parts from die-cut balsa sheet. Let dry.
- Glue launch lugs centered on launch lug line on upper stage body, one at 5 1/2" (140 mm) and other even with rear of body tube.
- Check alignment of launch lugs.



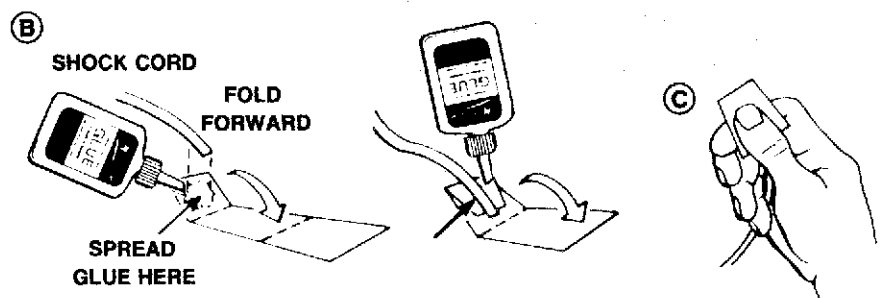
8.

- Apply a bead of glue to both sides of each fin/body tube joint on upper stage and booster. Pull your finger along joint to smooth the glue into an even fillet. Fillet the sides of each launch lug.
- Support rocket as shown until glue dries.



9.

- Cut shock cord mount from tube marking guide.
- Crease on dotted lines by folding. Spread glue on section 1 and lay end of shock cord into glue. Fold over and apply glue to back of first section and exposed part of section 2. Lay shock cord as shown and fold mount over again.
- Clamp unit together with fingers until glue sets.



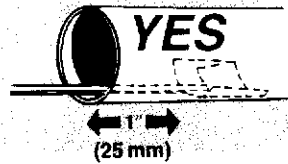
10.

- Apply glue to inside front of large body tube to cover an area no less than 1" (25 mm) to 2" (51 mm) from end. The glue area should be same size as shock cord mount.
- Press mount firmly into glue as shown.
- Hold until glue sets.

11.

- Cut out parachute on edge lines.
- Cut three 35" (889 mm) lengths of shroud line.
- Form small loops with shroud line ends and press onto sticky side of tape discs.
- Attach tape discs with line ends to top of parachute as shown.
- Firmly press tape discs into place until both tape discs and parachute material are molded around shroud line loops.
- Assemble payload section, adapter and nose cone. Pass shroud line loops through eyelet on nose block. Pass parachute through loop ends and pull lines against the nose block.
- Tie free end of shock cord to nose block eyelet.

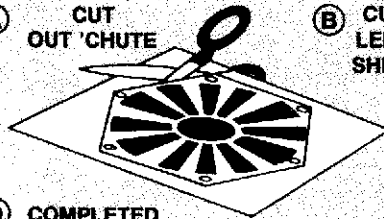
A SPREAD WHITE GLUE INSIDE BODY TUBE



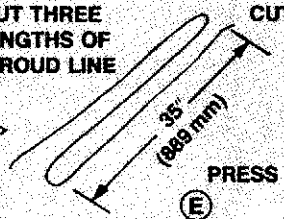
SET BACK AT LEAST
1" (25 mm) TO ALLOW
FOR NOSE CONE



A CUT OUT 'CHUTE



B CUT THREE LENGTHS OF SHROUD LINE

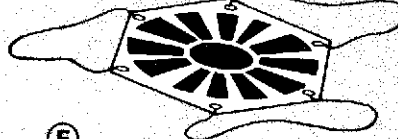


CUT TAPE DISC

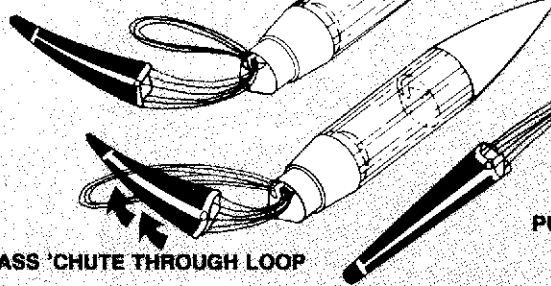


PRESS DOWN FIRMLY

D COMPLETED 'CHUTE



F PUSH LINES THRU EYELET



PULL TIGHT

PASS 'CHUTE THROUGH LOOP

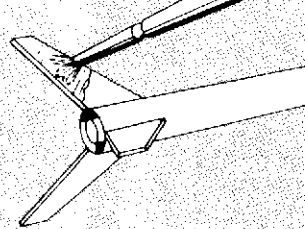
12.

- Apply sanding sealer to all wood parts with brush.
- When sealer is dry, lightly sand all sealed surfaces.
- Repeat sealing and sanding until wood grain is filled and smooth.

13.

- When sanding sealer and glue are completely dry, mask off clear payload section and paint nose cone/payload section gloss black.
- Follow instructions on spray can for best results.
- Paint booster and upper stage gloss yellow. Allow paint to dry thoroughly before applying decals.

A APPLY SANDING SEALER



B LIGHTLY SAND AFTER SEALED PARTS HAVE DRIED

PAINT:
PAYLOAD - ALL BLACK,
CLEAR PAYLOAD SECTION

UPPER/BOOSTER
- ALL YELLOW

WARP II
PAYLOADER
WARP II DECAL
POSITIONED
BELOW BODY WRAP
DECAL

BODY WRAP DECAL
BEGINS AT BODY
TUBE/PAYLOAD
SECTION JUNCTION.



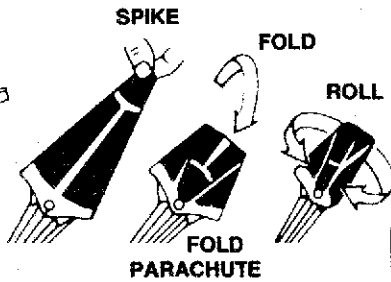
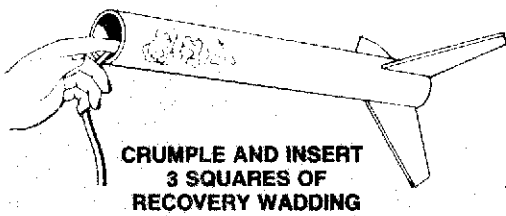
ESTES INSIGNIAS ON
FINS OF UPPER STAGE.



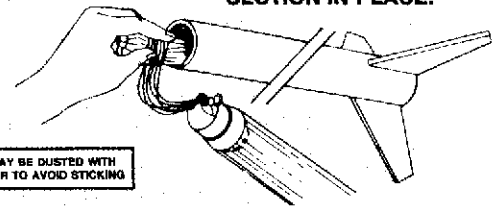
FINISHING YOUR ROCKET

Apply decals in the positions shown. Cut decals apart, trimming excess clear as close to detail as possible. Dip one decal in lukewarm water for 20 seconds and hold until it uncurls. Slip decal off backing sheet and onto model. Move decal into exact position. Carefully blot away excess water. Smooth out any wrinkles or air bubbles with a soft cloth. When decals are completely dry, spray a coat of clear gloss over model to protect the model's finish and decals.

ROCKET PREFLIGHT



WRAP LINES LOOSELY AROUND 'CHUTE. INSERT PARACHUTE IN ROCKET. INSTALL PAYLOAD SECTION IN PLACE.

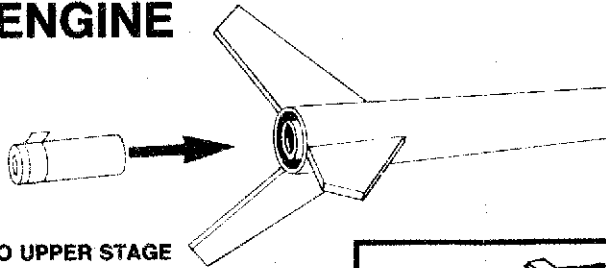


PREPARE ENGINE

UPPER STAGE

(A) WRAP TAPE AROUND REAR OF UPPER STAGE ENGINE FOR FRICTION FIT

(B) PUSH ENGINE INTO UPPER STAGE UNTIL IT IS AGAINST ENGINE BLOCK



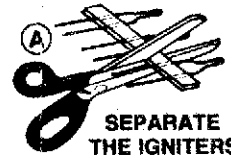
SINGLE STAGE FLIGHT:

- (A) FOLLOW BOOSTER STAGE ENGINE PREPARATION BUT USE RECOMMENDED SINGLE STAGE ENGINE.**
(B) PUSH SINGLE STAGE ENGINE INTO UPPER STAGE UNTIL IT IS AGAINST ENGINE BLOCK.

BOOSTER STAGE

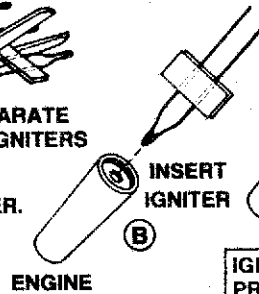
(A) WRAP TAPE AROUND TOP OR FRONT OF BOOSTER ENGINE FOR FRICTION FIT

(B) PUSH ENGINE DOWN INTO BOOSTER UNTIL IT IS AGAINST ENGINE BLOCK



REAR OF BOOSTER. INSERT IGNITER AS SHOWN.

(C) INSERT BOOSTER STAGE INTO UPPER STAGE



FOLD OVER AND BEND TIPS

(D) APPLY AND FIRMLY PRESS TAPE DISC OR MASKING TAPE IN PLACE.

IGNITER TIP MUST TOUCH PROPELLANT DEEP INSIDE NOZZLE OPENING

LAUNCH SUPPLIES

To launch your rocket you will need the following items:

- An Estes Model Rocket Launch System
- Estes Recovery Wadding No. 2274
- Recommended Estes Engines: BOOSTER: B6-0 and C6-0
- UPPER STAGE: A8-5, B4-6, B6-6, C6-5, and C6-7
- SINGLE STAGE: A8-3, B4-4, B6-4, and C6-5

Use B6-0 or A8-5 engines for your first booster flight or B4-4 engine for your first single stage flight to become familiar with your rocket's flight pattern.

Use only with Estes products

FLYING YOUR ROCKET

Choose a large field away from power lines, 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. Football fields and playgrounds are great.

MISFIRES

Failure of the model rocket engine to ignite is nearly always caused by incorrect igniter installation. An Estes igniter will function properly even if the coated tip is chipped. However, if the coated tip is not in direct contact with the engine propellant, it will only heat and not ignite the engine.

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, then tape the igniter leads firmly to base of engine as illustrated above. Repeat the countdown and launch procedure.

FOR YOUR SAFETY AND ENJOYMENT

Always follow the NAR* MODEL ROCKETRY SAFETY CODE while participating in any model rocketry activities.

*National Association of Rocketry

COUNTDOWN AND LAUNCH

LAUNCH ROD

MASKING TAPE STAND-OFF

BLAST DEFLECTOR

SAFETY KEY MUST NOT BE IN LAUNCH CONTROLLER WHEN ATTACHING MICRO-CLIPS TO ENGINE IGNITERS

LAUNCH LUG

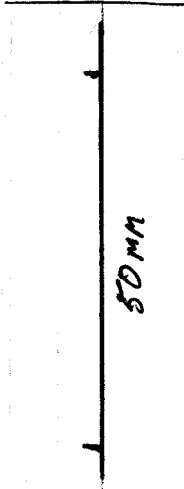
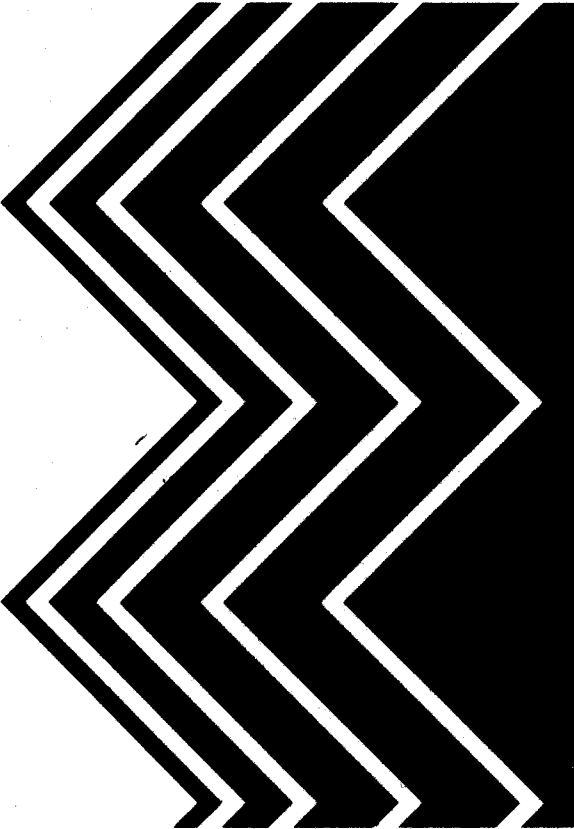
MICRO-CLIPS MUST NOT TOUCH BLAST DEFLECTOR OR EACH OTHER

- BE CERTAIN SAFETY KEY IS NOT IN LAUNCH CONTROLLER.
- Remove safety cap and slide launch lug over launch rod to place rocket on launch pad. Make sure the rocket slides freely on the launch rod.
- 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.
- Move back from your rocket as far as launch wire will permit (at least 15 feet - 5 meters).
- INSERT SAFETY KEY to arm the launch controller.

Give audible countdown 5...4...3...2...1

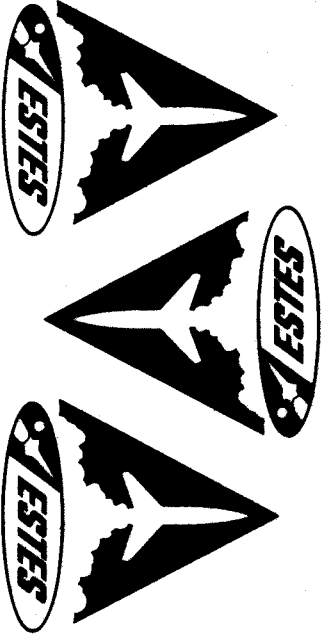
LAUNCH!! PUSH AND HOLD LAUNCH BUTTON UNTIL ENGINE IGNITES

REMOVE SAFETY KEY FROM LAUNCH CONTROLLER. REPLACE SAFETY KEY AND SAFETY CAP ON LAUNCH ROD.



WARPP IITM

PAYLOADER



ESTES INDUSTRIES PN37453

INCHES



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