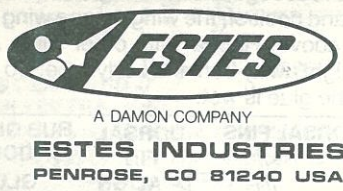
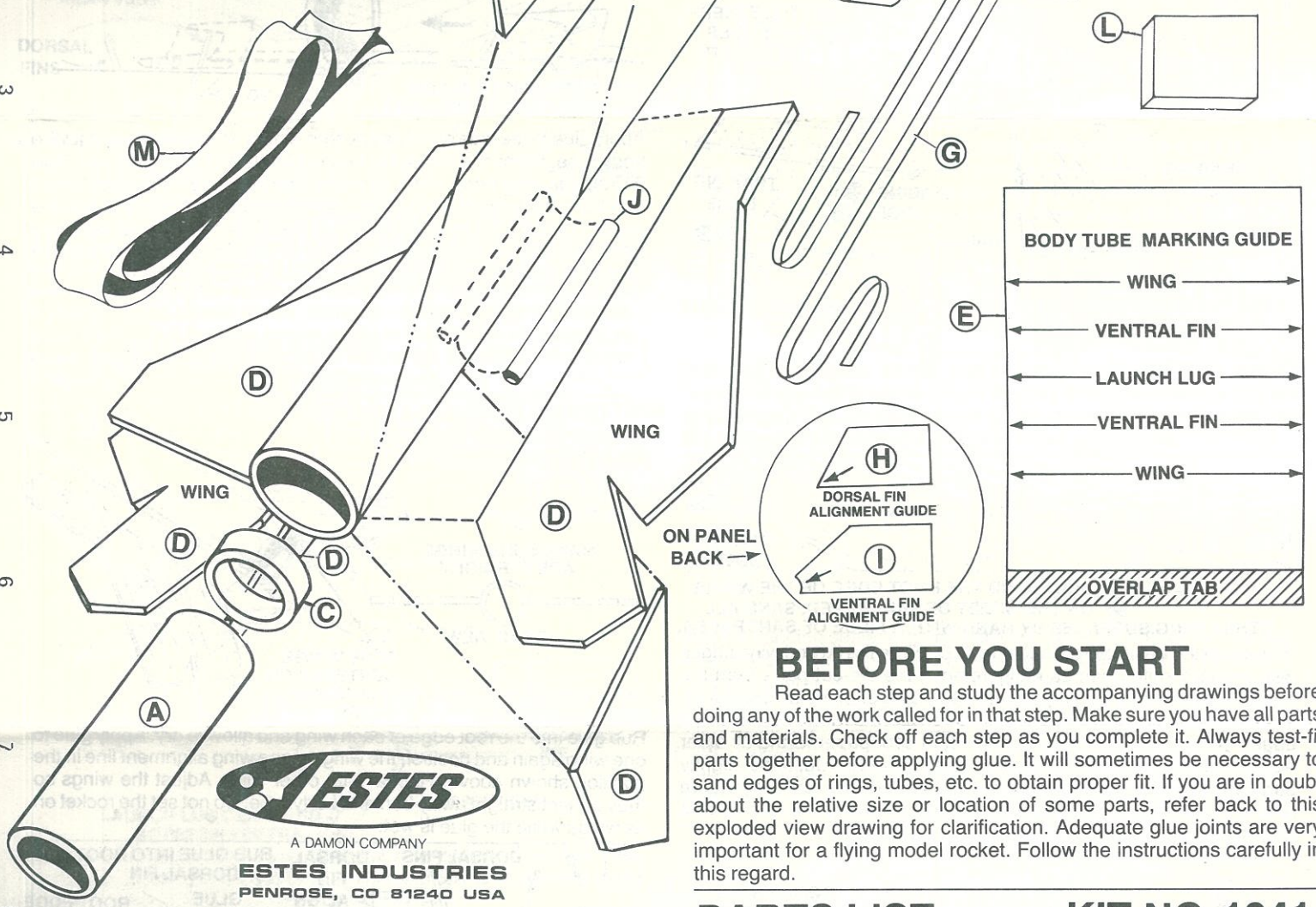
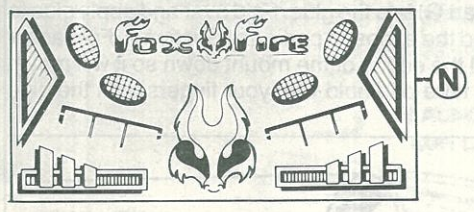


INCHES



SKILL LEVEL 2 - Recommended For Intermediate Rocketeers.



RECOMMENDED ENGINES:
 A8-3, (1st Flt.), A8-5, B4-4, B4-6, B6-4,
 B6-6, B8-5, C6-3, C6-5, and C6-7.

TOOLS AND MATERIALS

In addition to the parts included in this kit you will need: scissors, household white glue (Elmer's, Titebond, or similar), pencil, ruler, fine or extra-fine sandpaper, sanding sealer, a medium-size modeling paint brush, modeling knife with sharp blade, gloss white and gloss black spray enamels, and Gloss-Cote spray. For easy and positive alignment of the wings on your model, we recommend the use of Estes Fin Alignment Guide, Part. No. 2231.

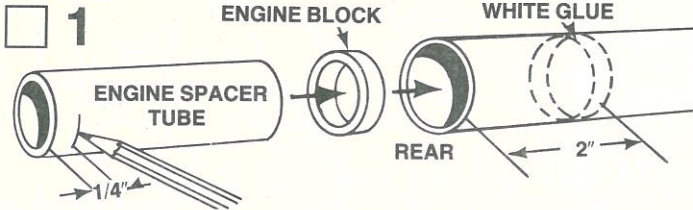
BEFORE YOU START

Read each step and study the accompanying drawings before doing any of the work called for in that step. Make sure you have all parts and materials. Check off each step as you complete it. Always test-fit parts together before applying glue. It will sometimes be necessary to sand edges of rings, tubes, etc. to obtain proper fit. If you are in doubt about the relative size or location of some parts, refer back to this exploded view drawing for clarification. Adequate glue joints are very important for a flying model rocket. Follow the instructions carefully in this regard.

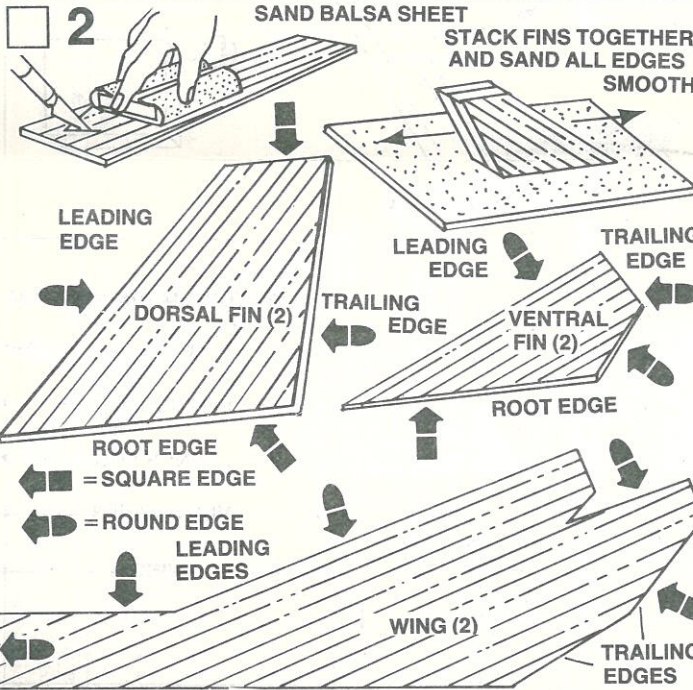
PARTS LIST KIT NO. 1941

A	1	Engine Spacer Tube (ET-2)	35003
B	1	Body Tube (BT-20N)	30336
C	1	Engine Block (AR-520)	30162
D	1	Balsa Fin Sheet (BF-1941)	32641
E	1	Body Tube Marking Guide	on page 1
F	1	Shock Cord Mount	on page 1
G	1	Shock Cord (SC-1B)	85734
H	1	Dorsal Fin Alignment Guide	on panel back
I	1	Ventral Fin Alignment Guide	on panel back
J	1	Launch Lug (LL-2A)	38175
K	1	Nose Cone (PNC-20)	71095
L	1	Clay Balance Weight (3 1/4 grams)	85263
M	1	Plastic Streamer (RS-20)	38272
N	1	Decal (KD-1941)	37258

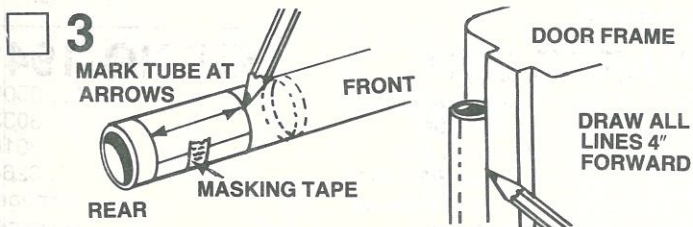
ASSEMBLY INSTRUCTIONS



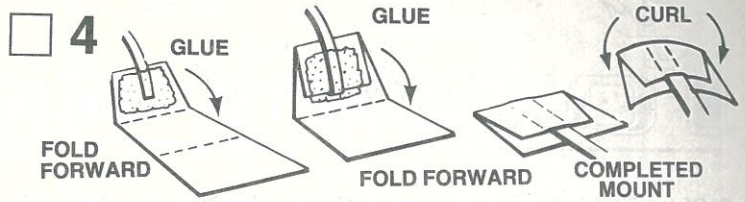
Mark the engine spacer tube (part A) 1/4" from one end. Spread a 1/2" wide band of glue around the inside of the body tube (part B) about 2" in from one end. Insert the engine block (part C) into this end. Push the engine block into place with the engine spacer until the mark on it is even with the end of the body tube. CAUTION: Once you have started to push the block forward, DO NOT STOP until it is in place, and THEN REMOVE THE SPACER IMMEDIATELY!



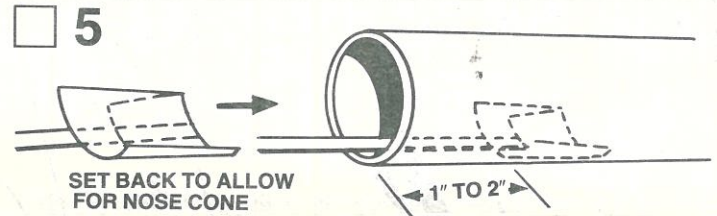
OTHER WING SURFACES BY HAND WITH A PIECE OF SANDPAPER. Fine-sand the balsa die-cut sheet (part D). Free the fin and wing edges with a sharp knife, then carefully remove the die-cut parts from the sheet. Stack the dorsal fin pair and sand all four sides as illustrated. Repeat this procedure with the pair of ventral fins. Sand only the root edges of the pair of wings on the sheet of sandpaper. Sand all other edges of the wings with a piece of sandpaper held in your hand. Lightly sand both sides of each fin and wing. Sand all edges round or square after comparing each piece with the above drawings. Leave all root (body) edges flat.



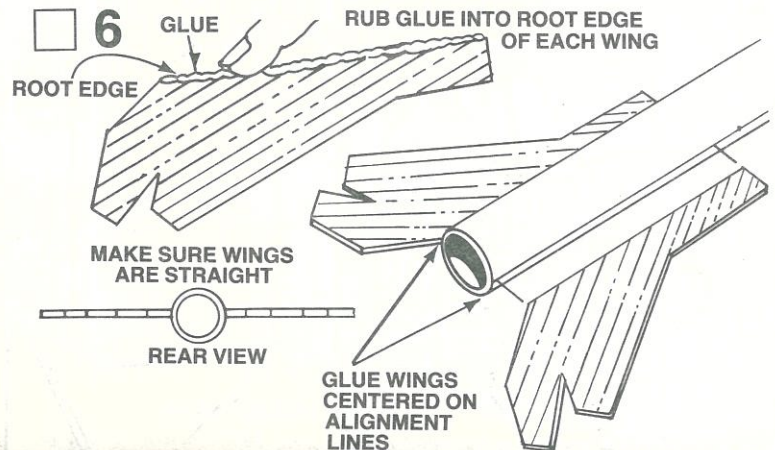
Cut out the body tube marking guide (part E) found on page 1 of the instructions. WRAP THE GUIDE TIGHTLY AROUND THE END OF THE BODY TUBE IN WHICH YOU INSTALLED THE ENGINE BLOCK. Mark the body tube at each of the arrow points. Draw straight lines connecting each pair of marks. A door frame inside edge can be used as a guide as shown. Extend the lines about 4" forward from the rear of the tube. Label each line so that you know which lines are for the wings, ventral fins, and launch lug.



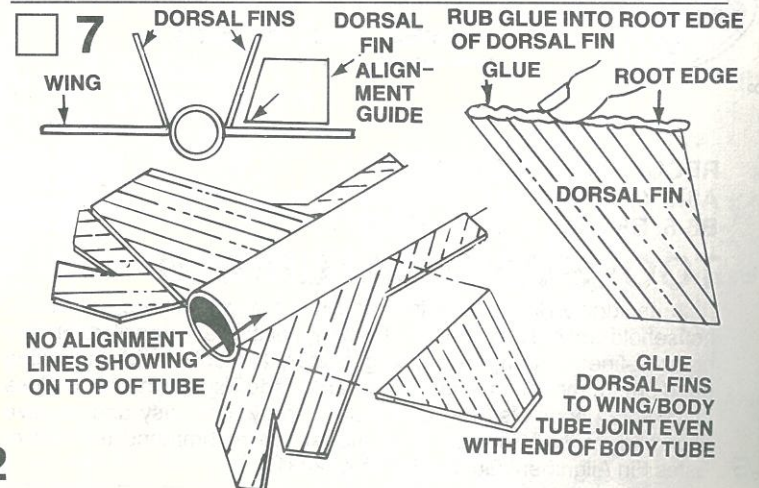
Cut out the shock cord mount (part F) found on page 1 of instructions. Fold on dotted lines, then unfold and apply glue to Section 1. Lay the end of the shock cord (part G) into the glue. Fold over and apply glue to the back of Section 1 and the exposed portion of Section 2. Fold again to complete mount. Curl the edges of the mount down so it will match the contour of the body tube and hold with your fingers until the glue sets.



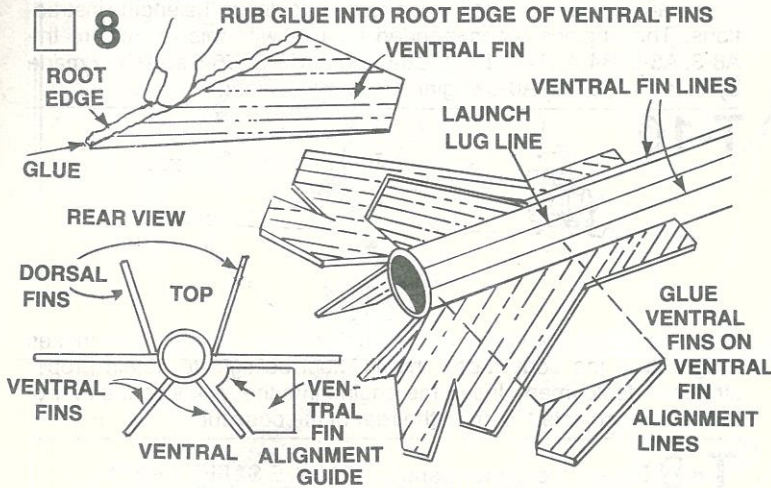
Apply glue to the side of the shock cord mount which will go against the body tube. Press the shock cord mount firmly into position about 1" to 2" from the front edge of the tube (the end opposite the engine block) to allow clearance for the nose cone to socket into place. Slide the shock cord mount into the tube and press it firmly against the body tube. To insure a good bond use a stick or your finger to smear a film of glue over the mount and surrounding area in the body tube.



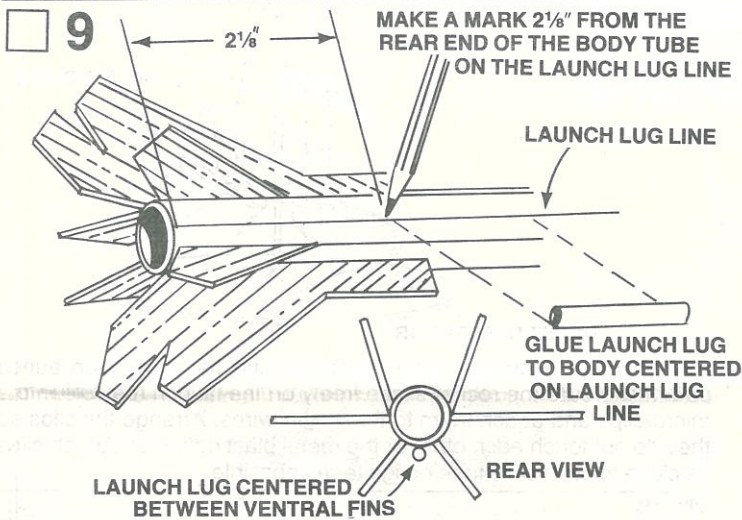
Rub glue into the root edge of each wing and allow to dry. Apply glue to one wing again and position the wing on one wing alignment line in the position shown above. Repeat with other wing. Adjust the wings so they project straight away from the body tube. Do not set the rocket on its wings while the glue is wet.



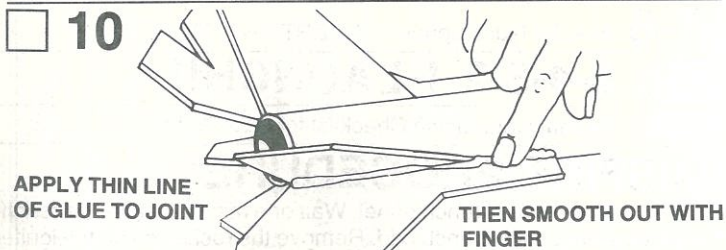
Cut out the dorsal fin alignment guide (part H) found on the panel back. Rub glue into the root edge of each dorsal fin and allow to dry. Apply glue to one dorsal fin again and position the fin at one wing/body tube joint. Using the alignment guide, adjust the fin so it is at the proper angle to the top of the wing as shown above. **BE SURE THE LAUNCH LUG & VENTRAL FIN ALIGNMENT LINES ARE NOT ON THE TOP OF THE TUBE DURING THIS ASSEMBLY PROCEDURE!** Repeat with other dorsal fin. Do not set the rocket on its wing/fin assemblies while the glue is wet.



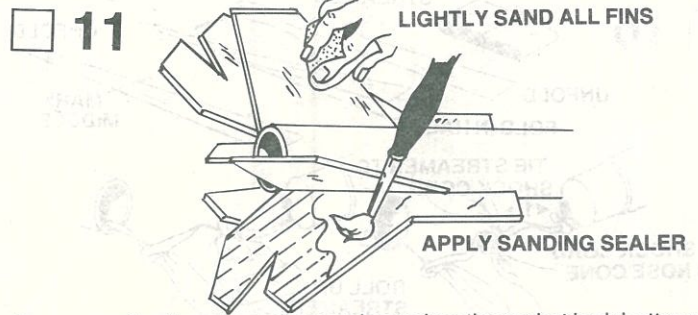
Cut out the ventral fin alignment guide (part I) found on the panel back. Rub glue into the root edge of both ventral fins and allow to dry. Apply glue to one ventral fin again and position the fin on one ventral fin alignment line as shown above. Using the ventral fin alignment guide, adjust the fin so it is at the proper angle to the bottom of the wing as shown. Repeat operation with other ventral fin. Do not set the rocket on its wing/fin assemblies while the glue is wet.



Glue launch lug (part J) to rocket body tube on the launch lug line. The rear of the launch lug should be $2\frac{1}{8}$ " from the rear of the rocket body tube. Align the launch lug straight along the body.



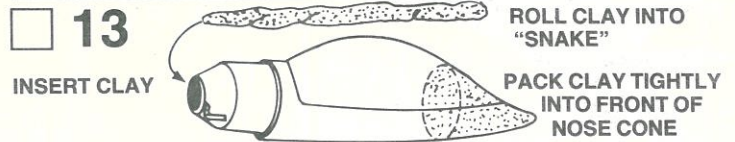
When the glue on the fin joints has dried, apply a glue reinforcement to each fin/body tube joint. Holding the model level, apply a line of glue to both sides of each fin joint and on both sides of the launch lug. Smooth out the glue with your finger. **IMPORTANT** — Keep the model level until the glue dries.



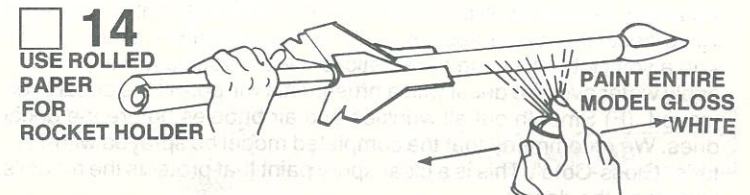
Proper application of sanding sealer makes the rocket look better and reduces drag so that the rocket will fly higher. However, this step is not essential to make a safe, attractive rocket. Apply a coat of sanding sealer to each fin. When sealer is dry, lightly sand all the sealed surfaces. Repeat sealing and sanding process until balsa grain no longer shows.



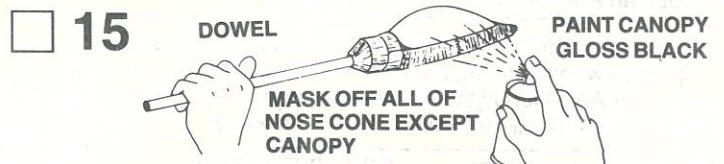
Trim or sand any excess plastic from around the sides of the nose cone (part K). Use a sharp knife to remove any excess plastic from the inside of the molded eyelet at the rear of the nose cone. Wash the nose cone with lukewarm soapy water, rinse well, and dry.



Roll the clay balance weight (part L) between your hands to make a "snake" about $1/8$ " diameter. Poke the clay through the hole in the rear of the nose cone. Use a pencil or dowel to push the clay forward into the cone until it is packed tightly in the front of the cone.



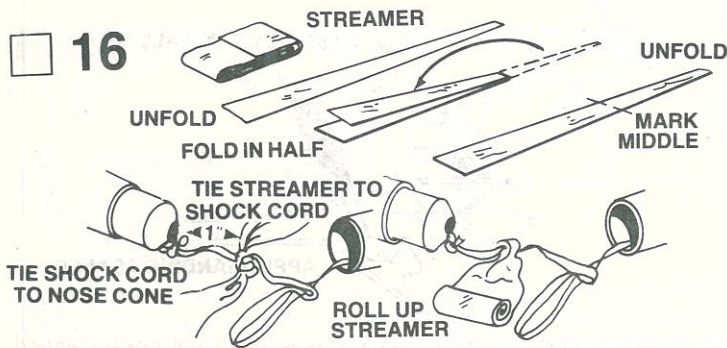
After the sanding sealer is completely dry, paint the entire model gloss white. Follow instructions on the spray can for best results. We recommend spray enamel. Do not paint the model with lacquer paint. Shake can before spraying. Hold the can straight up and spray in long, smooth "strokes". Spray the model with several light, dry mist coats of paint to avoid "runs". Shake can periodically. To obtain a gloss finish, final coat should be applied slightly heavier. Let this coat dry overnight. Be sure paint is completely dry before proceeding to next step.



Cut narrow strips of masking tape and mask off all of the nose cone except the canopy. The nose cone can be supported by a dowel or stick inserted in the center opening in the nose cone while being painted and drying. A layer of masking tape around nose cone shoulder works well to protect the nose cone shoulder from "overspray" while painting. Lightly cut around edges of canopy with a sharp knife. Paint canopy gloss black. Then carefully remove all of the masking tape.

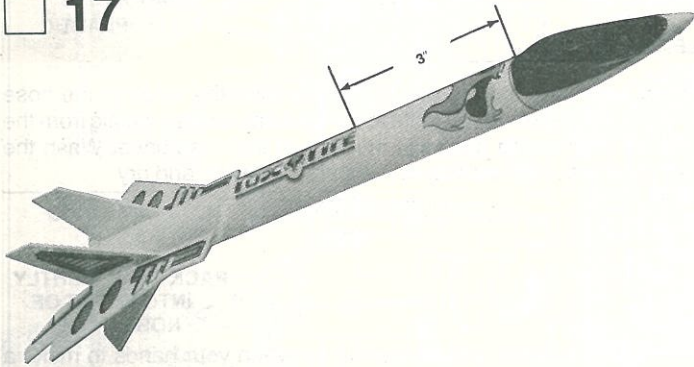
NOTE: Nose cone should separate easily from rocket body tube, but should not be extremely loose. If fit is too tight, sand inside of body tube and shoulder of nose cone with fine sandpaper. If fit is too loose, add a wrapping of masking tape to the shoulder of the nose cone.

16



Tie the free end of the shock cord to the nose cone. Unfold the streamer (part M) and refold lengthwise to find its center. The streamer should be secured to the shock cord about 1" from the nose cone, as shown. Lay the shock cord across the center of the streamer and tie them together. Fold the streamer twice lengthwise and roll until it fits into the body tube. Place the remainder of the shock cord and the nose cone into the body tube while completing the model.

17



When all paint is dry, apply the decals (part N) in the positions shown. (A) Cut only one decal at a time from sheet. (B) Submerge decal in lukewarm water until decal slides on backing paper (usually 15 to 30 seconds). (C) Gently slide decal from backing paper onto model. (D) Move decal into exact position and carefully blot away excess water with a soft cloth. (E) If the decal "sticks" before you have it in position, apply water over the decal with a brush. This will permit the decal to be moved. (F) Smooth out all wrinkles and air bubbles before the decal dries. We recommend that the completed model be sprayed with Tesor's "Gloss-Cote". This is a clear spray paint that protects the model's finish and the decals.

LAUNCHING COMPONENTS

To launch your rocket you will need the following items:

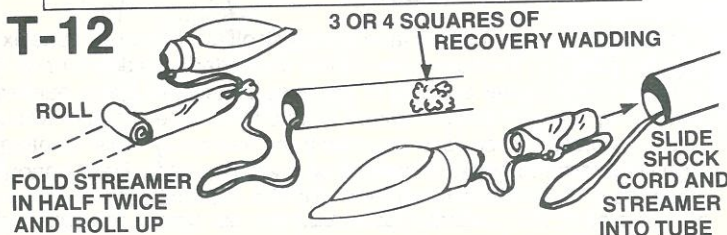
- An Estes model rocket launching system
- Flame resistant recovery wadding (Estes Cat. No. 2274)
- Estes A8-3, A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-3, C6-5, and C6-7 model rocket engines.

Use an A8-3 engine for your first flight.

Be sure to follow the HIAA-NAR* Model Rocket Safety Code when carrying out your model rocket activities.

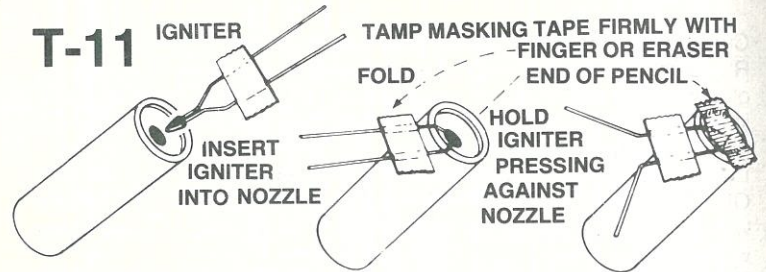
- *HIAA—Hobby Industry Association of America
- *NAR—National Association of Rocketry

T-12



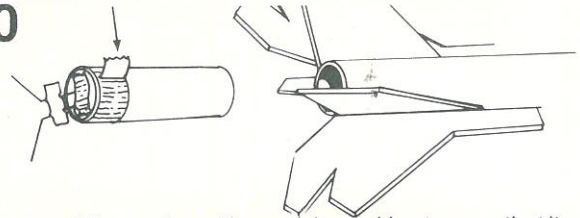
Slide 3 or 4 squares of recovery wadding into the shock cord end of the body tube. Fold the streamer in half lengthwise. Fold again, then roll streamer tightly until the streamer fits loosely into the rocket body. Slide the shock cord neatly into the rocket body. Slide nose cone into place.

T-11



Select an engine and install an igniter as directed in the engine instructions. The engines recommended for use with this rocket are the A8-3, A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-3, C6-5 and C6-7 made by Estes. Use an A8-3 engine for your first flight.

T-10

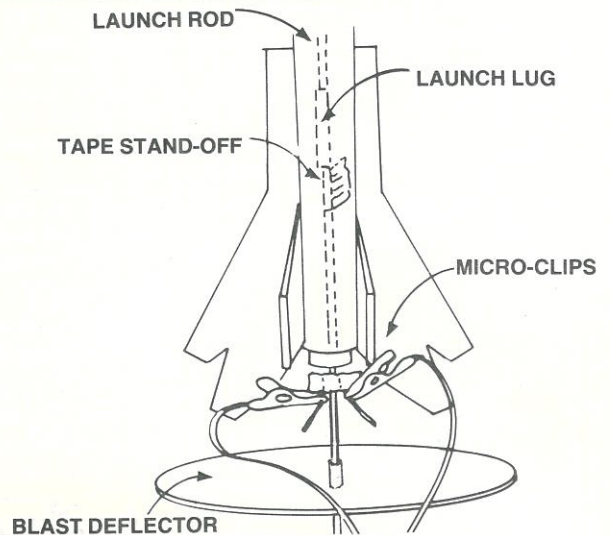


Wrap the rear of the engine with enough masking tape so that it makes a tight fit in the body tube. This fit must be tight to obtain proper streamer deployment. Insert the engine into the rocket so the rear of the engine projects 1/4" from the rear of the body tube.

T-9

Disarm the launch panel---REMOVE SAFETY KEY!

T-8



Slide launch rod through rocket launch lug and place rocket on launch pad. Make sure the rocket slides freely on the launch rod. Clean the micro-clips and attach them 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.

T-7

Clear the launch area. Alert recovery crew and trackers. Check for low flying aircraft and unauthorized persons in the recovery area.

T-6

Arm the launch panel—INSERT SAFETY KEY!

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

Repeat Countdown Checklist for each flight.

MISFIRE PROCEDURE

Disarm the launch panel. Wait one minute before approaching the rocket on the launch pad. Remove the rocket, clean the igniter residue from the nozzle of the engine, and carefully install a new igniter. Repeat the Countdown Checklist.

Failure of the rocket engine to function properly is nearly always caused by a failure to install the igniter correctly. This failure permits the igniter to heat and burn into two pieces without igniting the engine.