COUGAR

SKILL LEVEL 1: Recommended for Beginning Rocketeers

RECOMMENDED ENGINES:
A8-3 (First Flight), B4-4, B6-4, B8-5, C6-5

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 respect.

TOOLS AND MATERIALS

In addition to the parts included in this kit you will need: Scissors, pencil, ruler, fine or extra-fine grit sandpaper, sanding sealer, a medium-size modeling paint brush, masking tape, modeling knife with sharp blade, gloss white and gloss blue enamel spray paints, and household white glue or resin glue (Elmer’s, Titebond, or similar). Other types of glue are not recommended.

For easy and positive alignment of the fins on your model, we recommend the use of Estes’ Fin Alignment Guide, Part No. 2231.

PARTS LIST

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KIT #1923

ESTES INDUSTRIES
PENROSE, CO 81240 USA
ASSEMBLY INSTRUCTIONS

1. Mark the engine mount tube (part A) at 1", 2-1/4" and 2-1/2" from one end. Cut a 1/8" long slit at the 2-1/2" mark. Gently bend the engine hook (part B) so that it bows upward very slightly in the middle. (Study the drawing. Don't bend the wrong way.) Insert one end of the engine hook into the slit in the tube.

2. Sand inside edges of the two centering rings (part C) to remove burrs. The rings should slide easily onto the engine mount tube. Cut a very shallow 1/8" wide slot inside the two centering rings so they will fit over the engine hook. Slip one ring onto the front end of the engine mount tube and slide it down to the 1" mark. Make sure the engine hook runs straight down the tube, then apply glue to both sides of this ring. Apply glue around the tube at the 2-1/4" mark and slide the remaining centering ring into place down to the 2-1/4" mark.

3. The engine mount unit will be pushed into place so that the rear of the engine mount unit (end with engine hook projecting) is even with the rear, of the body tube. Test-fit the engine mount unit several times by smoothly inserting and removing it. Sand if necessary to assure a smooth fit. Once this can be smoothly and easily done, remove the engine mount unit. Apply a ring of glue around the inside of the rear of the main body tube (part D) about 2" to 2-1/2" from the end of the tube. Make certain that the engine hook is to the rear and insert the engine mount unit with one smooth motion. Do not pause, or the glue may "lock" with the engine mount unit in the wrong position.

4. Stack fins together and sand all edges smooth. Fine sand the balsa die-cut sheet (part E), then carefully remove the die-cut fins from the sheet. Free the edges with a sharp knife. Sand all edges of the fins round. Leave root edges square.

5. Apply 2 coats of sanding sealer. Lightly sand all fins after sealer has dried. Do not apply sealer to root edge. Apply a coat of sanding sealer to each fin. Apply sealer to all edges except the root edge. When sealer is dry, lightly sand all the sealed surfaces. Repeat sealing and sanding process until balsa grain no longer shows. Resand root edge, lightly, to remove any trace of sealer.

6. Align launch lug alignment line with engine hook. Mark tube at arrows. Draw lines 6" forward. Cut out the tube marking guide from the front page of the instructions and wrap it around the body tube. Place the tube marking guide so that the engine hook will line up with the launch lug placement line (arrow point). 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 6" forward from the rear of the tube.

7. Make sure fins are straight. Rub glue into the root edge of each fin and allow to dry. Apply glue to the fins again and position fins on the alignment lines in positions shown. Adjust the fins so they project straight away from the body tube. DO NOT set the rocket on its fins while the glue is wet.
Glue launch lug (part F) to rocket body tube on the launch lug line. The rear of the launch lug should be 2" from the rear of the rocket body tube. Align the launch lug straight along the body.

Cut out the shock cord mount from the first page of the 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 up so it will match the contour of the body tube and hold with your fingers until the glue sets.

Use a finger or stick to apply glue to the inside of the front of the body tube 1" to 2" from the front of the tube. Press the shock cord mount firmly into position in glue far enough from the front edge of the tube to allow clearance for the nose cone to fit into place. 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.

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—Support rocket on table edge as shown until the glue dries.

Trim or sand any excess plastic from around the sides of the nose cone (part H). 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.

Using a double knot, tie the shock cord around the middle of the plastic streamer (part I) about 2" from the end of the shock cord. Attach the free end of the shock cord to the nose cone with a firm knot.

After the sanding sealer and glue are completely dry, paint the entire model gloss white. Follow instructions on spray can for best results. We recommend spray enamel. Do not paint the model with lacquer paint. Shake can before spraying. Hold 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. Let the paint dry overnight. Apply masking tape and paper 4-1/2" from the rear of the rocket to cover and protect the areas which will remain white. Paint the fins and the rear of the body tube gloss blue. Carefully remove the masking tape and paper as soon as the paint is dry.

Apply the decal (part J) in the position shown. Cut out decal, dip in lukewarm water for 10-20 seconds, and hold it until it starts to uncurl. Slip decal onto front portion of rocket body tube and rotate rocket while slipping backing paper out from under decal. Match up ends of decal and blot away excess water. For best results, let the model dry overnight and apply a coat of clear spray to protect the decal.
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, B4-4, B6-4, B8-5, and C6-5 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 of America
*NAR—National Association of Rocketry

COUNTDOWN CHECKLIST T-13

Pack 3 or 4 squares of loosely crumpled recovery wadding into the rocket body.

T-12

FOLD IN HALF TWICE

ROLL

SHOULD FIT LOOSELY INTO BODY TUBE

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

T-11

INSERT IGNITER IN NOZZLE

FOLD

TAMP MASKING TAPE FIRMLY WITH FINGER OR ERASER END OF PENCIL

HOLD IGNITER PRESSING AGAINST NOZZLE

Select an engine and install an igniter as directed in the engine instructions. Use an A8-3 engine for your first flight.

T-10

MAKE SURE ENGINE HOOK LATCHES SECURELY

Insert engine into rocket engine mount. Engine hook must latch securely over end of the engine.

T-9

Disarm the launch panel—REMOVE SAFETY KEY!

T-8

LAUNCH ROD

LAUNCH LUG

STAND OFF

MICRO-CLIPS

BLAST DEFLECTOR PLATE

Slide the 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.