
ALPHA

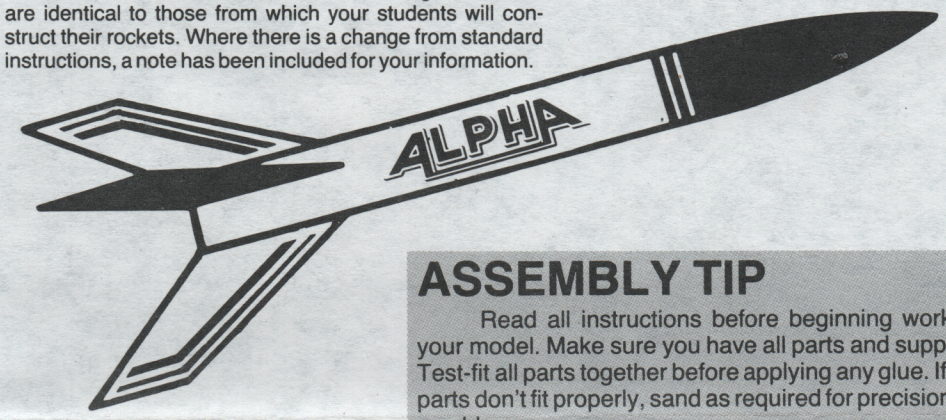
ESTES INDUSTRIES
PENROSE, CO 81240 USA

TEACHER'S VERSION

ALPHA II™

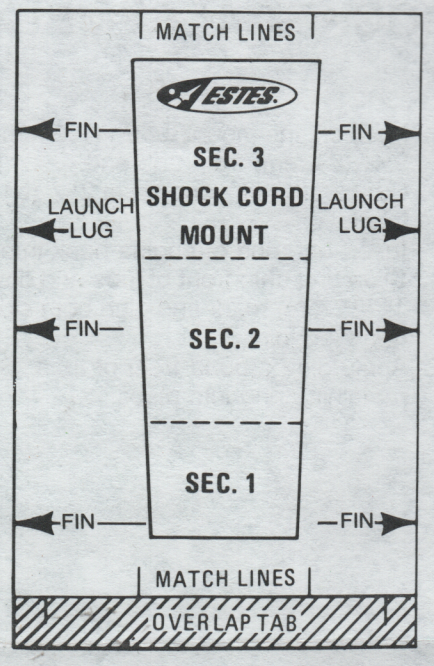
#1421

TEACHER'S NOTE: The following instructions are identical to those from which your students will construct their rockets. Where there is a change from standard instructions, a note has been included for your information.



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.

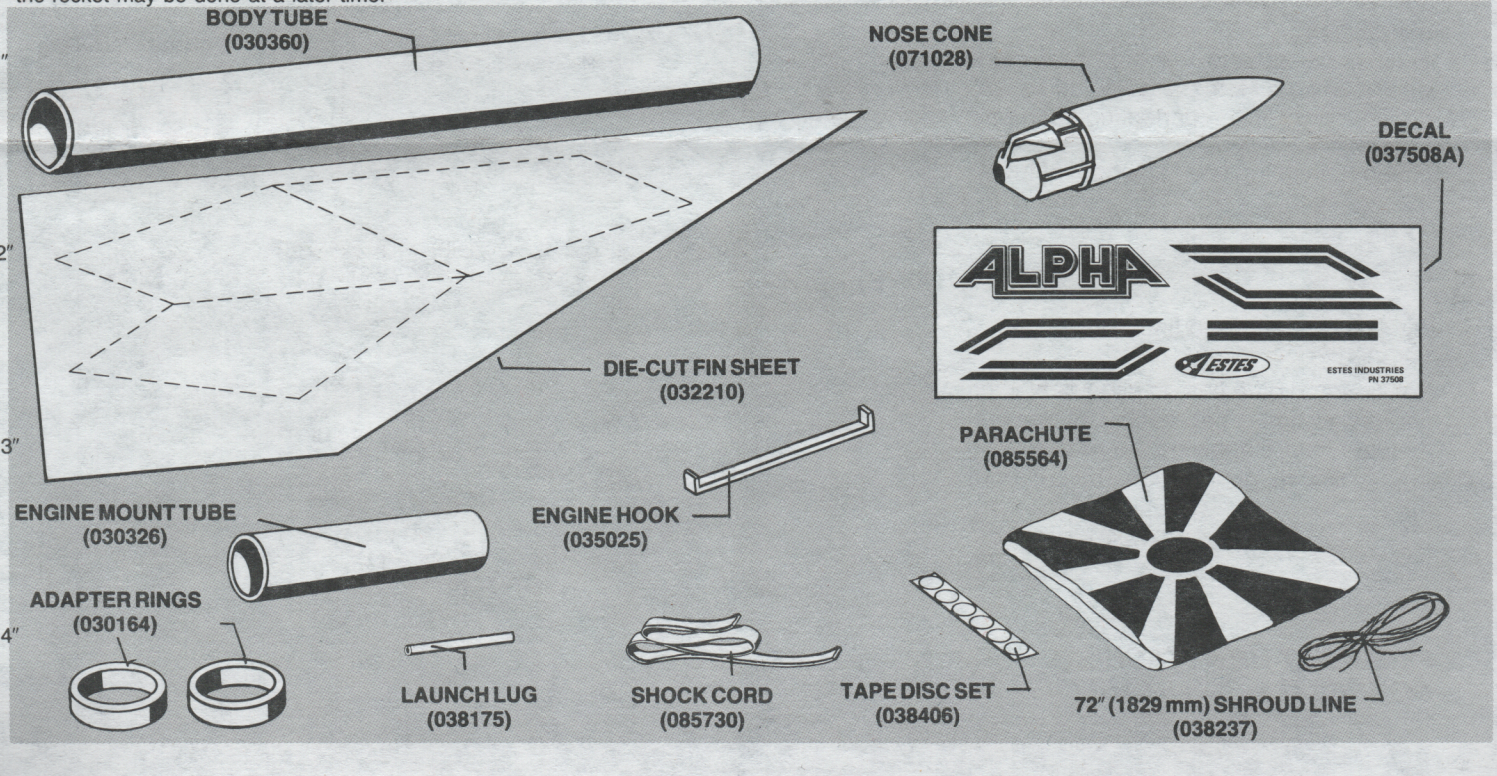


TUBE MARKING GUIDE

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:

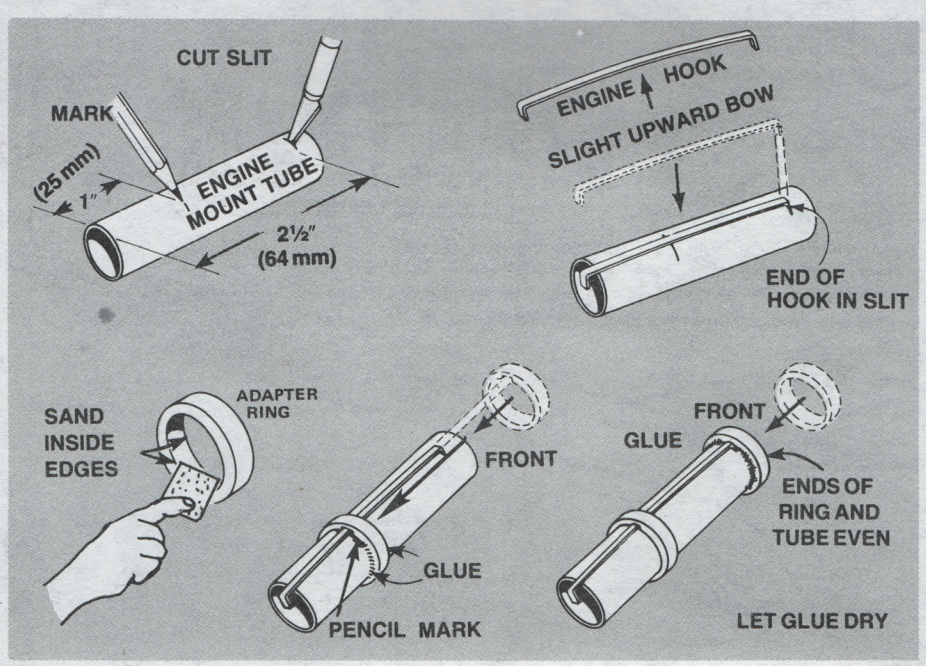
TEACHER'S NOTE: In the above parts list, paint brush, enamel spray paint, and sanding sealer are not required for basic construction of rocket. Finishing the rocket may be done at a later time.



ROCKET ASSEMBLY

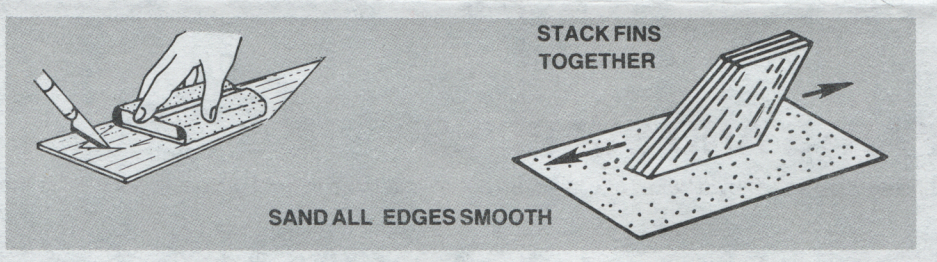
1

A. Mark engine mount tube 1″ (25 mm) and 2½″ (64 mm) from one end.
B. Cut 1/8″ (3 mm) long slit at 2½″ (64 mm) mark.
C. Insert one end of engine hook into slit.
D. Slide ring onto front of tube and down to 1″ (25 mm) mark and glue both sides of ring/tube joint.
E. Apply glue around front of tube. Slide remaining ring into place.



2

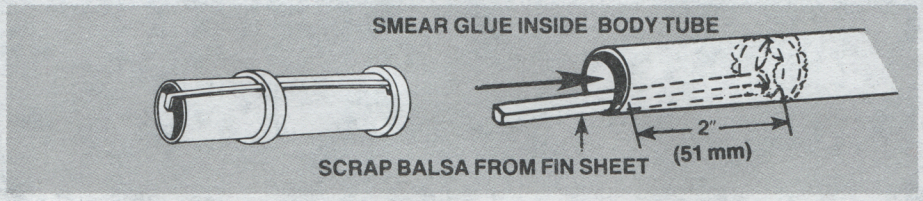
A. Fine sand balsa die-cut sheet. Carefully remove fins by freeing edges with sharp knife.
B. Stack fins together. Sand all edges smooth.



3

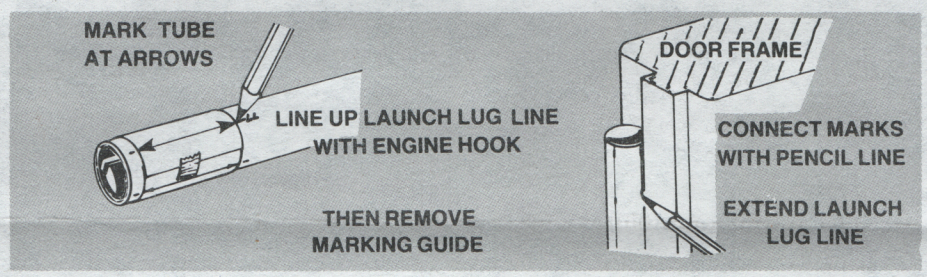
A. Using a piece of scrap balsa, smear glue inside body tube 2″ (51 mm) from one end.
B. Push engine mount in until tube ends are even.

TEACHER'S NOTE: The body tube in your kit has been pre-marked at the factory. Students must mark their body tubes according to following instructions.



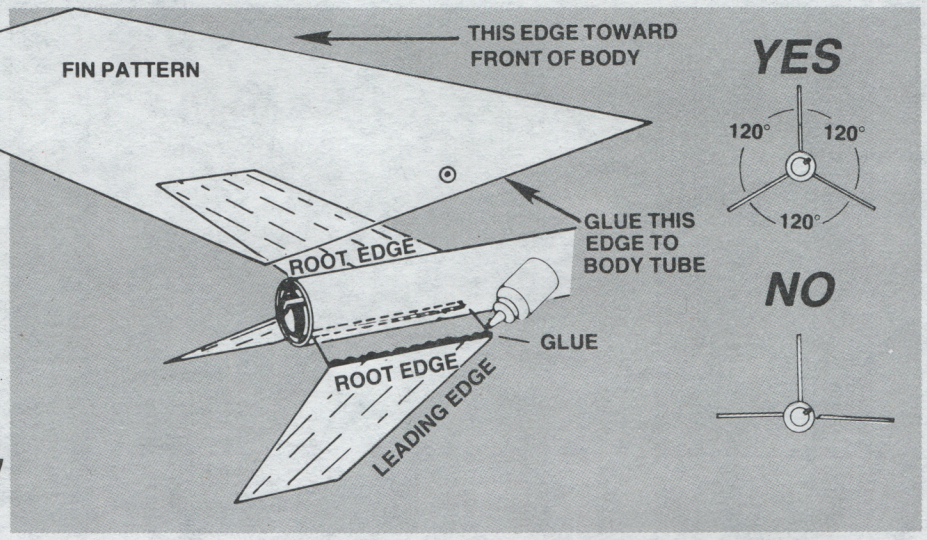
4

A. Cut out tube marking guide from front of instructions.
B. Wrap guide around the tube and mark tube at arrows. Remove guide and save.
C. Draw straight lines connecting each pair of marks.
D. Extend launch lug line full length of tube.



5

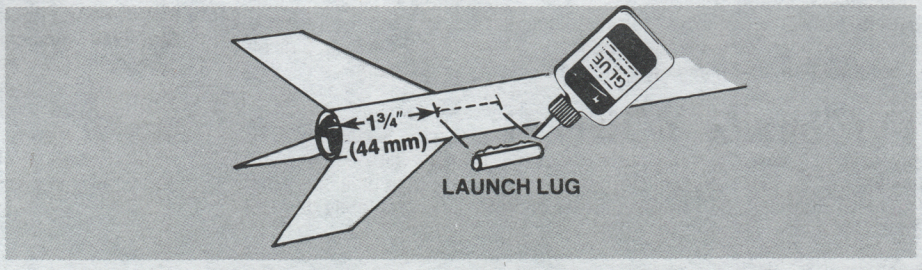
A. Lay fins on pattern to find front (leading)
B. Position and glue fins on alignment lines one at a time. Let each dry several minutes before applying the next one.
C. Adjust fins to project straight out from tube.
D. Do not set rocket on fins while glue is wet.



FINS MUST BE ATTACHED CORRECTLY FOR STABLE FLIGHT!

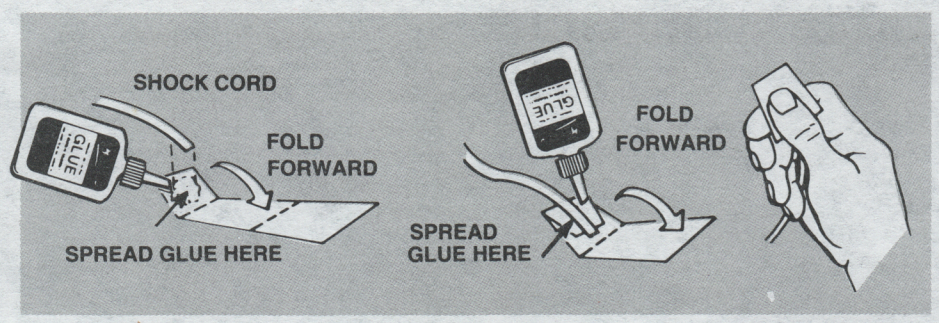
6

Glue launch lug straight on launch lug line 1¾″ (44 mm) from rear of tube.



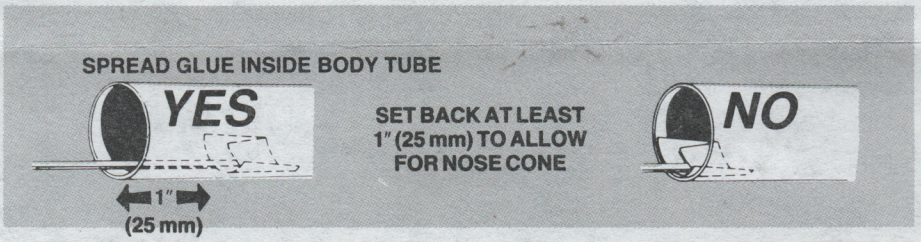
7

A. Cut shock cord mount from tube marking guide.
B. 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 with fingers and fold mount over again.
C. Clamp unit together with fingers until glue sets.



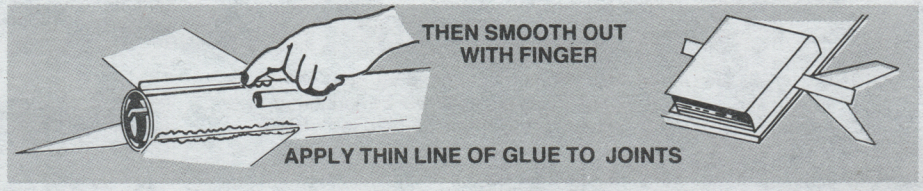
8

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



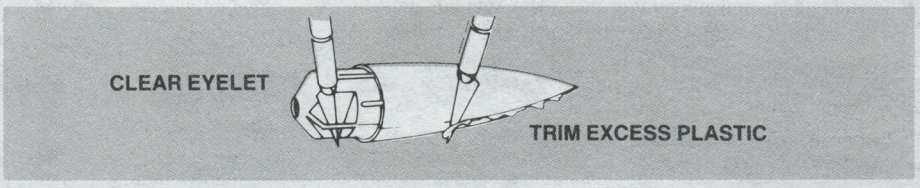
9

A. Apply a glue reinforcement to each fin/body tube joint and each side of launch lug.
B. Support rocket as shown until glue dries.



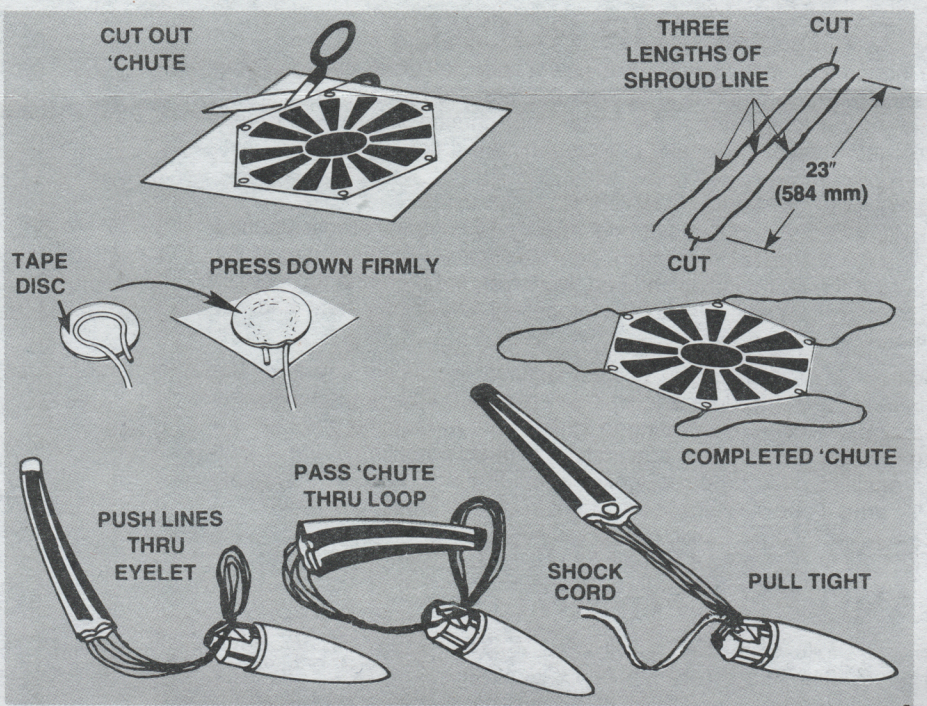
10

Trim excess plastic from around sides of nose cone with a sharp knife. Also remove any excess plastic from inside molded eyelet. Wipe nose cone with damp cloth to remove oil and dirt.



11

A. Cut out parachute on edge lines.
B. Cut three 23″ (584 mm) lengths of shroud line.
C. Form small loops with shroud line ends and press onto sticky side of tape discs.
D. Attach tape discs with line ends to top of parachute as shown.
E. Firmly press tape discs into place until both tape discs and parachute material are molded around shroud line loops.
F. Pass shroud line loops through eyelet on nose cone. Pass parachute through loop ends and pull lines against the nose cone.
G. Tie free end of shock cord to nose cone loop.

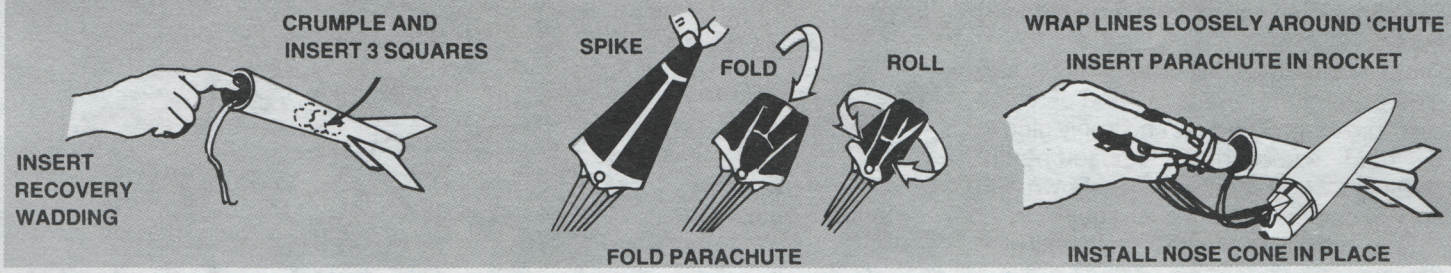


TEACHER'S NOTE: Sealing the fins, painting, and decaling the rocket are things that do not have to be completed before launching the rocket. Finishing can be done in a later class or completed individually by students.

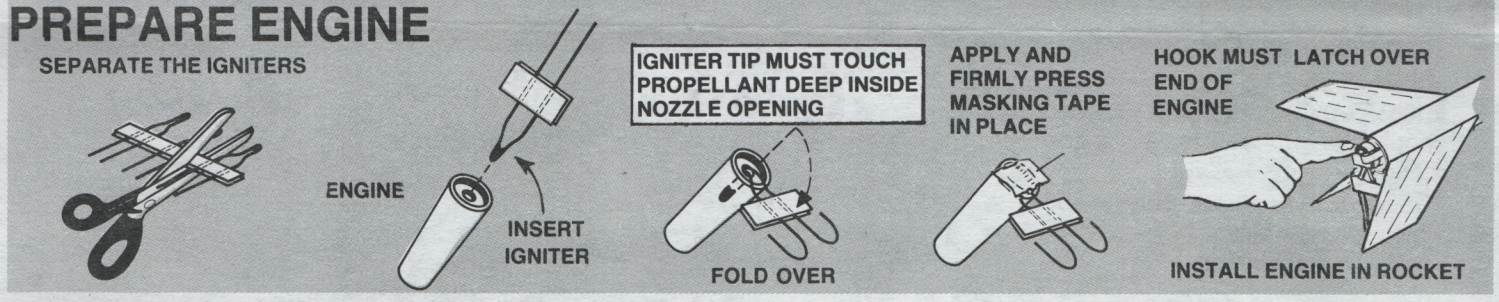
FINISHING YOUR ROCKET

Apply sanding sealer to wood parts with small bursh. When sealer is dry, lightly sand all sealed surfaces. Repeat sealing and sanding until balsa grain is filled and smooth. When sanding sealer and glue are completely dry, paint model with spray enamel. Follow instructions on spray can for best results. Spray body and fins white. Paint nose cone red. Paint one fin black. Let body tube paint dry overnight before masking to paint one fin black. To apply decals, cut each out, dip lukewarm water for 20 seconds and hold until it uncurls. Refer to photograph on front page and/or on front of panel for decal placement. Slip decal off backing sheet and onto model. Blot away excess water. For best results, let decals dry overnight and apply a coat of clear spray paint to protect decals.

ROCKET PREFLIGHT



PREPARE ENGINE



TEACHER'S NOTE: The Alpha instructions recommend an A8-3 engine for first flight. In a class situation where many rockets will be launched, it is recommended that a lower power rated 1/2A6-2 engine be used FIRST.

LAUNCH SUPPLIES

To launch your rocket you will need the following items:
—Estes Electrical Launch System and Launch Pad
—Estes Recovery Wadding No. 2274
—Recommended Estes Engines: 1/2A6-2, A8-3, A8-5, B4-4, B6-4, B8-5, C6-5, or C6-7.
To become familiar with your rocket's flight pattern, use a 1/2A6-2 engine for your first flight.
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 250 feet (76 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.

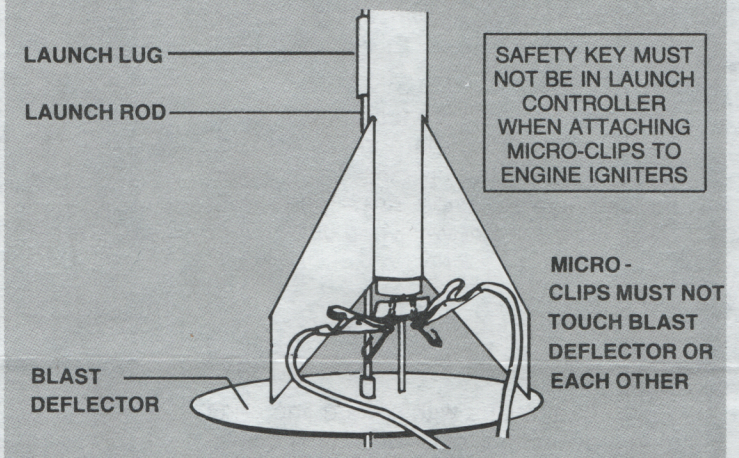
When an ignition failure occurs, remove the safety key from the launch control system and wait one minute before approaching the rocket. Remove the expended igniter from the engine and install a new one. Be certain the coated tip is in direct contact with the engine propellant, then tape the igniter 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



(10) BE CERTAIN SAFETY KEY IS NOT IN LAUNCH CONTROLLER.

(9) 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.

(8) 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.

(7) Move back from your rocket as far as launch wire will permit (at least 15 feet - 5 meters).

(6) 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.

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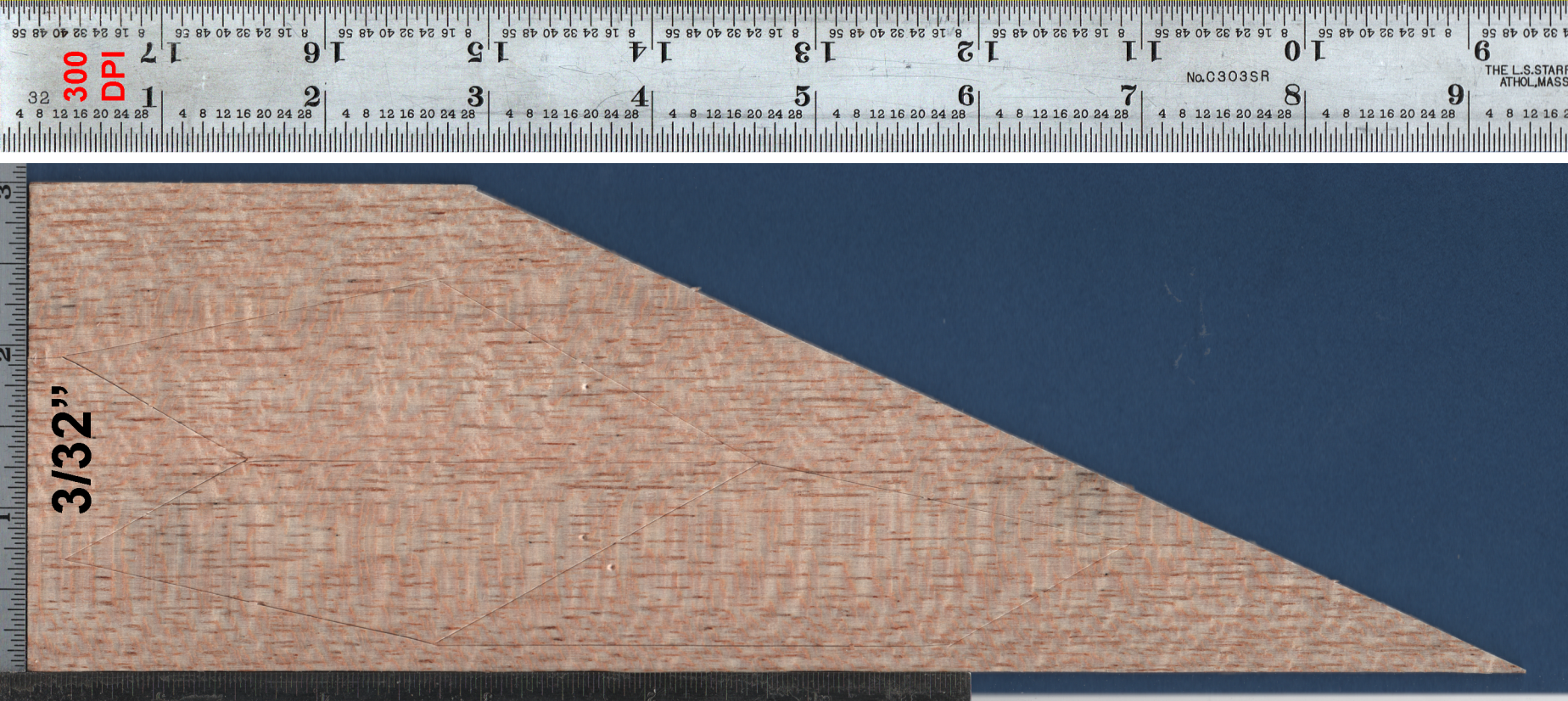
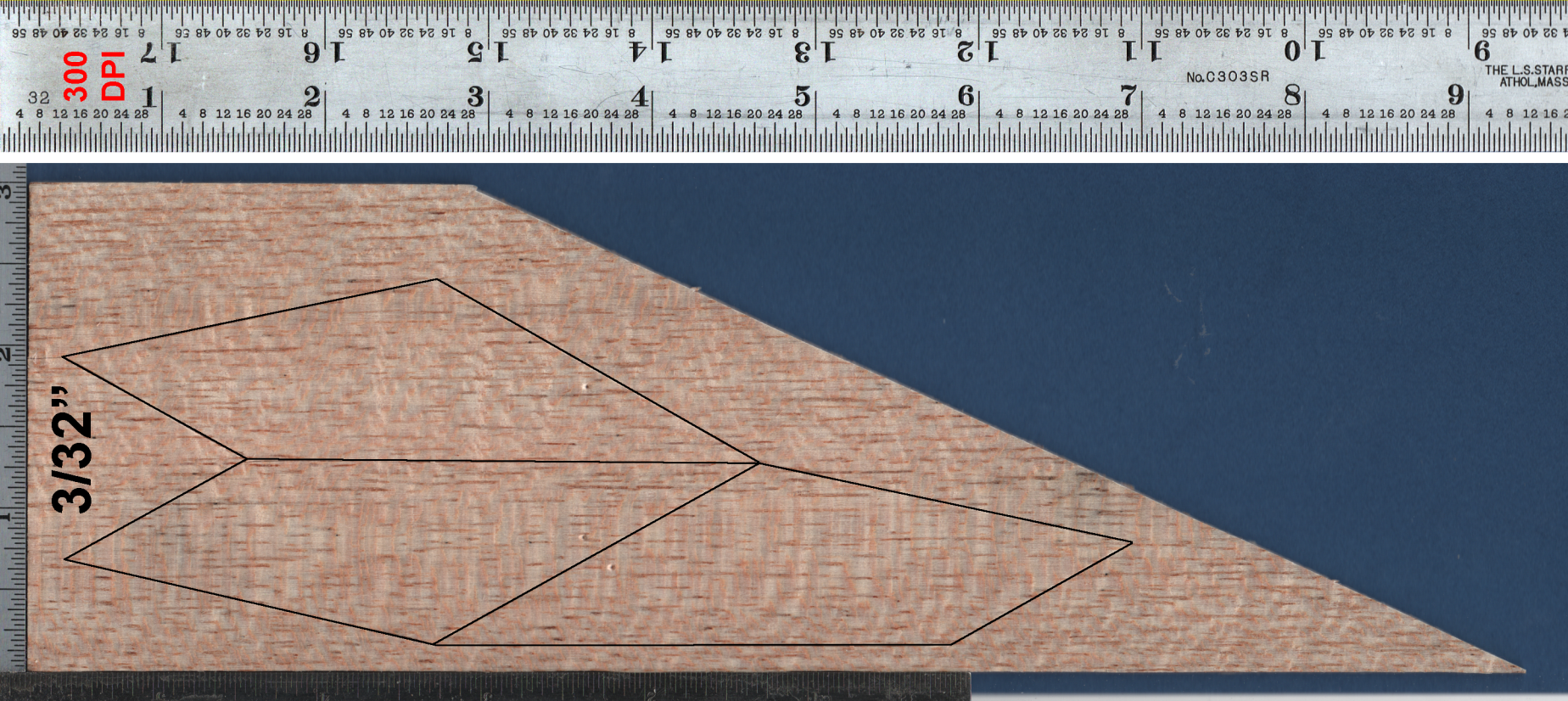

300 DPI
No.C303SR
THE L.S.STARR
ATHOL,MASS
3/32”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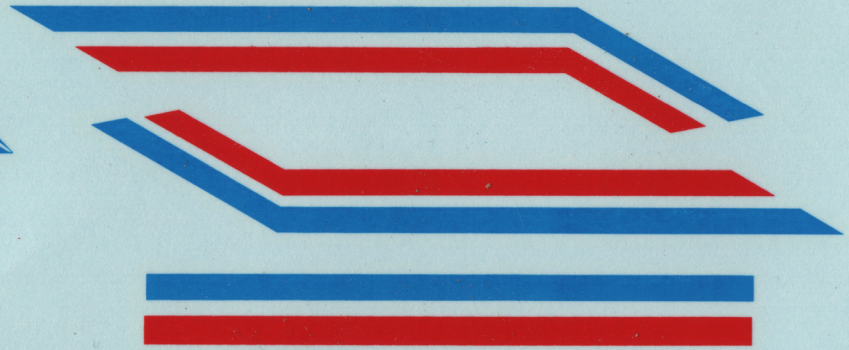
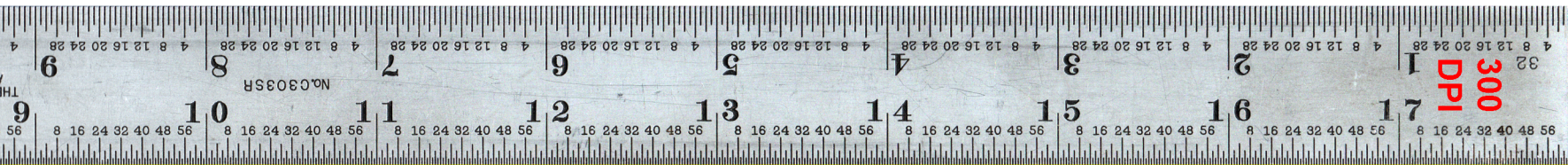


ESTES INDUSTRIES
PN 37508A



PARTS LIST KIT N0. 1421 - Alpha II								
Quantity	Description	Type	Number	Details1	Details2	Details3	Details4	Comment
1	PAPER BODY TUBE	BT-50H	30360	7.75" long	0.950" ID	0.976" OD	0.013" wall	Glassine
1	PLASTIC NOSE CONE	PNC-50KA	71028	2.75" long	.974" dia.	0.75." shoulder	BT-50 - Ogive	Blow Molded
1	BALSA FIN STOCK	BFS-30	32108	3" wide	9" long	3/32" thick	0.09375	Die-cut #32210 - See Scan
1	ENGINE HOLDER	EH-2	35025	2.8" long	.100" wide	.025" thick		Reg. & D
1	PAPER BODY TUBE	BT-20J	30326	2.75" long	0.710" ID	0.736" OD	0.013" wall	Blue
2	CENTERING RINGS	AR-2050	30164	0.25" long	0.737" ID	0.949" OD	0.106" wall	Green
1	LAUNCH LUG	LL-2A	38175	5/32" ID	1/8" rod	1.25" long		Mylar
1	Shock Cord	SC-1	85730	18" long	1/8" wide			Elastic
1	Tape Disc	TD-3F	38406	1/2" dia.	Paper	Self-Stick	WO/Center Hole	Set of 6
1	Parachute	PK-12	85564	12" hexagon	1.25 mil thick	LDPE plastic	Red/Wht	Damon Logo
1	Shroud Line	SLT-72	38237	72"	.020" diameter	Twisted cotton	3 x 24" shrouds	
1	Decal	KD-1421	37508A	3" wide	9" long	Red, Blu	Waterslide	Scan
Note: #1421 is a teacher's kit that was included in the Estes Educator's package. It included a small pot of white glue and a piece of sandpaper. The body tube was also pre marked.								

ALPHA II™

FLYING MODEL ROCKET

SKILL LEVEL 1
Recommended for the Beginning Modeler

FLIGHTS TO 1200 FEET WITH A "C" ENGINE

- GREAT FOR SCHOOL DEMONSTRATIONS
- Easy To Build
- High Performance
- Die-Cut Balsa Fins
- 12 inch Parachute Recovery

Length: 12.25 in. (31.1 cm)
Dia: 0.976 in. (24.8 mm)
Weight: .81 oz. (23. g)

Recommended Engines:
1/2A8-2 (First Flight), A8-3, A8-5, B4-4, B4-6, B6-4, B6-6, B8-5, C6-5, or C6-7

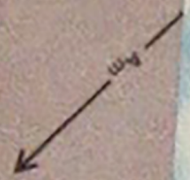
ESTIES

MADE IN USA

This is a model kit requiring assembly. Finishing supplies and launch system are not included.

PLEASE ORDER
ALPHA #1225
FOR STUDENT USE

#1421




ROCKETRY SAFETY CODE IN ALL YOUR
MODEL ROCKETRY ACTIVITIES.
RECOVERY WADDING INSTRUCTIONS
Recovery wadding is used to protect
your rocket's recovery system from the
heat of the engine's ejection charge.
Estes Recovery Wadding is both flame-
resistant and biodegradable.
Shock Cord
Shroud Lines
Parachute
Recovery System
Recovery Wadding
ESTES
1295 H Street, Penrose, CO 81240 USA

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ESTES

MADE IN USA

This is a model kit requiring assembly. Finishing supplies and launch system are not included.

PLEASE ORDER
ALPHA #1225
FOR STUDENT USE

#1421

NAR/HIA Model Rocketry Safety Code

(Eff. 1-1-87)

1. Construction—My model rockets will be made of lightweight materials such as paper, wood, rubber, and plastic, without any metal as structural parts.

2. Engines—I will use only pre-loaded factory-made NAR Certified model rocket engines in the manner recommended by the manufacturer. I will not alter or dismantle model rocket engines or their ingredients in any way or attempt to reload these engines.

3. Recovery—I will always use a recovery system in my rockets that will return them safely to the ground so that they may be flown again. I will use only flame-resistant recovery wadding in my rockets.

4. Weight Limits—My model rocket will weigh no more than 1500 grams (53 oz.) at lift-off, and the engines will contain a total of no more than 125 grams (4.4 oz.) of propellant. My model rockets will weigh no more than the engine manufacturer's recommended maximum lift-off weight for the engines used or will use the engines recommended by the manufacturer for my rocket.

5. Stability—I will check the stability of my model rockets before their first flight, except when launching models of already proven stability.

6. Payloads—My model rockets will never carry live animals or payloads that are intended to be flammable or explosive.

7. Launch Area—I will launch my model rockets outdoors in a cleared area, free of tall trees, power lines, and buildings. I will ensure that people in the vicinity are aware of the pending rocket launch and are in a position to see the rocket's lift-off before I begin my audible 5-second countdown.

8. Launcher—I will launch my model rockets from a rod or other device which provides rigid guidance until the rocket has reached a speed adequate to ensure a safe flight path. To prevent accidental eye injury, I will always place the launcher so that the end of the rod is above eye level or will cap the end of the launch rod when approaching it. I will cap or disassemble my launch rod when not in use and will never store it in an upright position. The launch device will have a jet deflector to prevent the engine exhaust from hitting the ground directly. I will always clear the area around my launch device of brown grass, dry weeds, and other easy-to-burn materials.

9. Ignition System—The system I use to launch my model rockets will be remotely controlled and electrically operated and will contain a launching switch that will return to "off" when released. The system will contain a removable safety interlock in series with this firing switch. When launching, all persons will remain at least 15 feet away from any model rocket when igniting engines totalling 30 N-sec of total impulse or less and at least 30 feet when igniting engines totalling more than 30 N-sec total impulse. I will use only electrical igniters which will ignite my rocket engine within one second of actuation of the launching switch.

10. Launch Safety—I will not let anyone approach a model rocket on a launcher until I have made sure that the safety interlock has been removed or the battery has been disconnected from the launcher. In the event of a misfire, I will wait one minute before allowing anyone to approach the launcher.

11. Flying Conditions—I will launch my model rocket only when the wind is less than 20 miles per hour, and under conditions where the model will not fly into clouds, fly near aircraft in flight, or be hazardous to people or property.

12. Pre-Launch Test—When conducting research activities with unproven designs or methods I will, when possible, determine their reliability through pre-launch tests. I will conduct launchings of unproven designs in complete isolation from persons not participating in the actual launching.

13. Launch Angle—I will not launch rockets so their flight path will carry them against targets. My launch device will be pointed within 30 degrees of vertical. I will never use model rocket engines to propel any device horizontally.

14. Recovery Hazards—If a model rocket becomes entangled in a power line or other dangerous place, I will not attempt to retrieve it.

As a member of the Estes Model Rocketry Program, I promise to faithfully follow all rules of safe conduct as established in the above code.

Signature _____

This Model Rocketry Safety Code is Approved by the National Association of Rocketry and the Hobby Industry of America.

IMPORTANT!

PLEASE READ AND BECOME FAMILIAR WITH THE MODEL ROCKETRY SAFETY CODE ON THIS CARD. PLEASE SIGN WHERE INDICATED AND KEEP THIS CODE WITH YOU DURING ALL YOUR MODEL ROCKET ACTIVITIES.

FULL ONE YEAR WARRANTY

Your Estes product is warranted against defects in materials or workmanship for one year from the date of the original purchase. Any Estes product, except computer software, which, because of a manufacturing mistake, malfunctions or proves to be defective within the one-year warranty period will be repaired or replaced, at Estes' option and at no charge to you, provided it is returned to Estes with proof of purchase.

This warranty does not cover incidental or consequential damage to persons or property caused by the use, abuse, misuse, failure to comply with operating instructions or improper storage of the warranted product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

For repair or replacement under this warranty, please return the defective part of your Estes product with proof of purchase to: Estes Industries, Customer Service Department, Penrose, Colorado 81240.