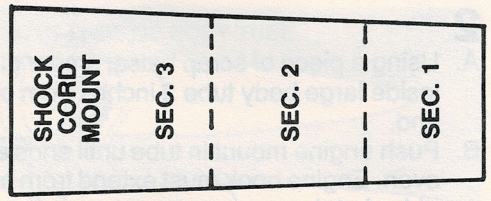
PathFinder™

FLYING MODEL ROCKET #1997

ESTES INDUSTRIES
1295 H Street
Penrose, CO 81240 USA



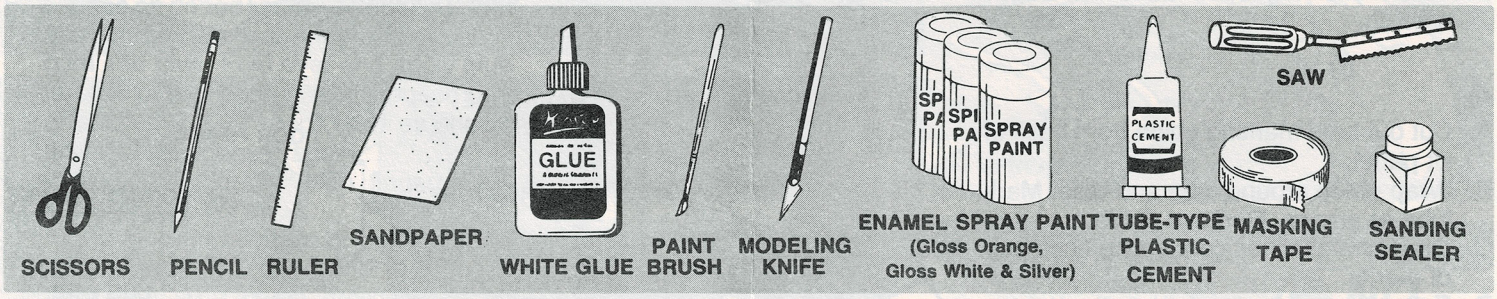
CUT OUT FOR STEP 9

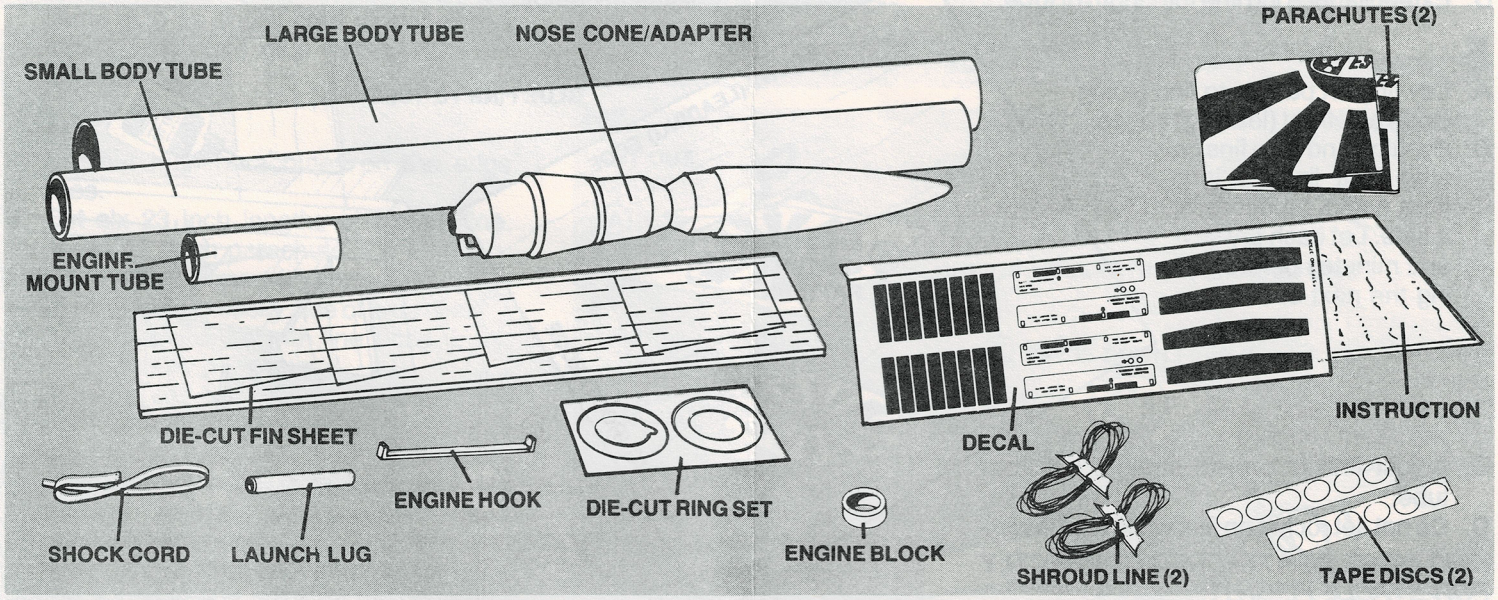
ASSEMBLY TIP

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.

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:

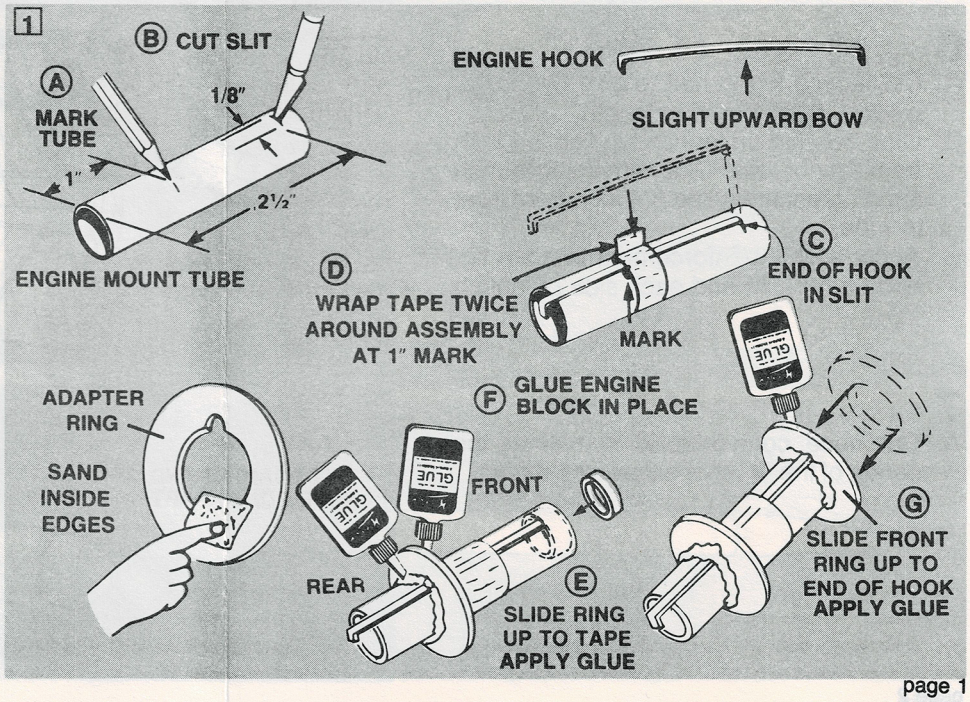




ROCKET ASSEMBLY

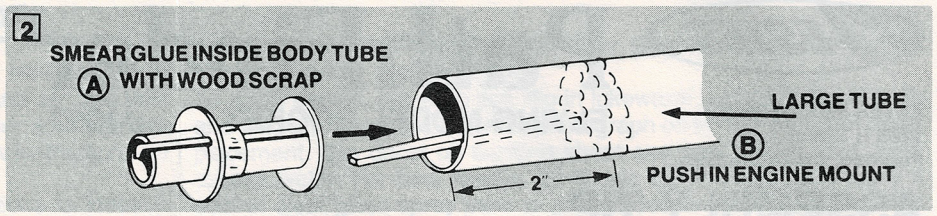
1

A. Mark engine mount tube 1 inch and 2½ inches from one end.
B. Cut 1/8 inch long slit at 2½ inch mark.
C. Insert one end of engine hook into slit.
D. Wrap masking tape around assembly twice at 1 inch mark.
E. Slide slotted adapter ring onto rear of tube and up to masking tape. Slot fits over engine hook. Glue both sides of ring/tube joint.
F. Run white glue in front end of tube & slide engine block into tube until it seats against engine hook.
G. Slide remaining ring over front of tube and down to end of engine hook. Glue both sides of ring/tube joint. Set assembly aside to dry.



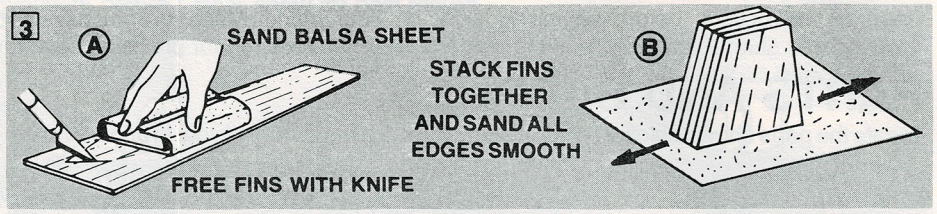
2

A. Using a piece of scrap balsa, smear glue inside large body tube 2 inches from one end.
B. Push engine mount in tube until ends are even. Engine hook must extend from end of body tube.



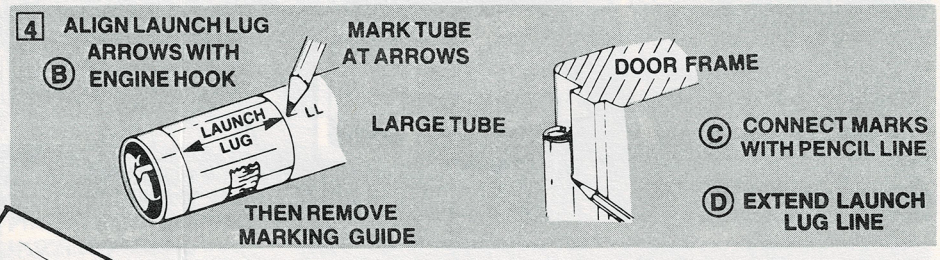
3

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



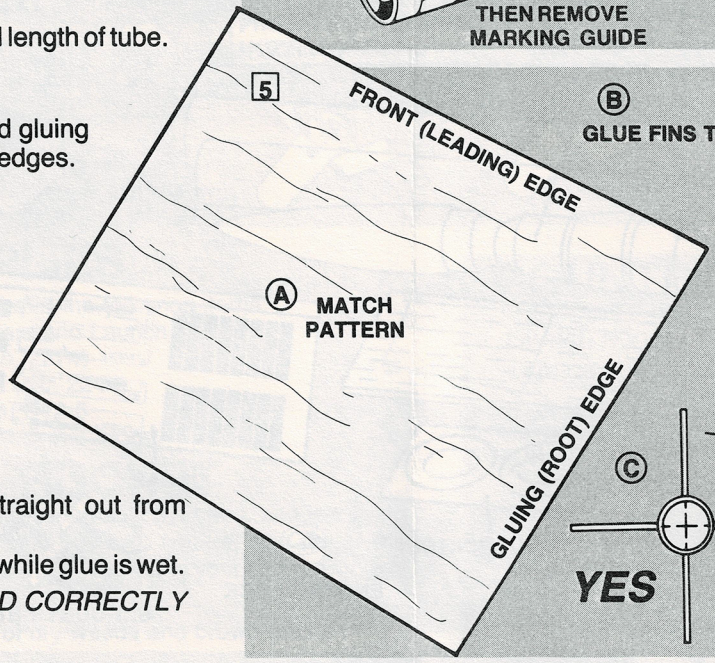
4

A. Cut out tube marking guide from back of kit panel.
B. Wrap guide around tube and tape. Mark tube at arrows. Remove guide.
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 gluing (root) and front (leading) edges.
B. Position and glue fins on alignment lines 1 inch from end of tube, one at a time. Let each dry several minutes before gluing the next one.

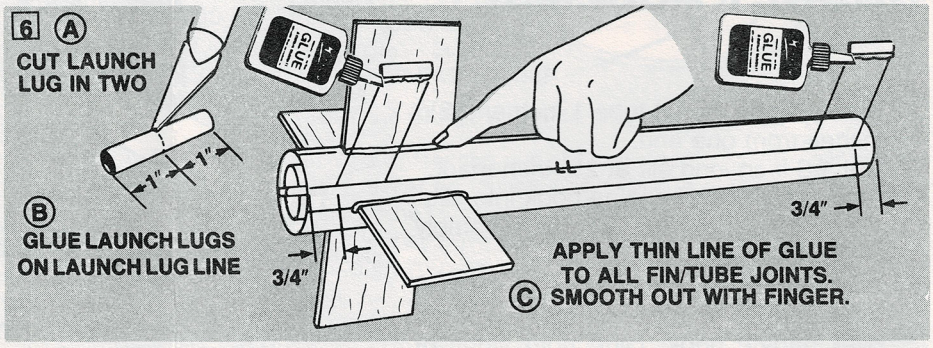


C. Adjust fins to project straight out from tube.
D. Do not set rocket on fins while glue is wet.

FINS MUST BE ATTACHED CORRECTLY FOR STABLE FLIGHT!

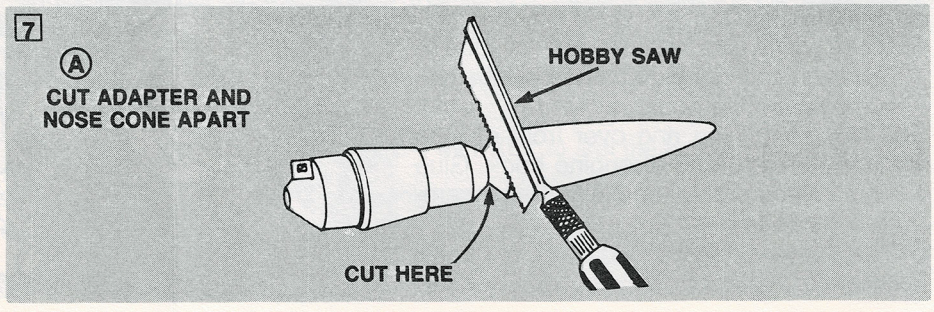
6

A. Cut launch lug in half to give two equal pieces, each 1 inch in length.
B. Glue one lug on launch lug line 3/4 inch from rear of tube. Glue remaining launch lug on launch lug line 3/4 inch from front of tube.
C. Apply a glue reinforcement to each fin/body tube joint and each side of launch lug.



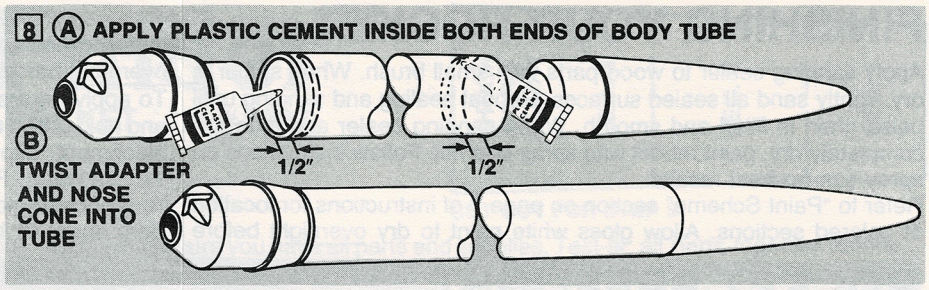
7

A. Cut nose cone/adapter in half at the center of the "V" shaped area as shown.



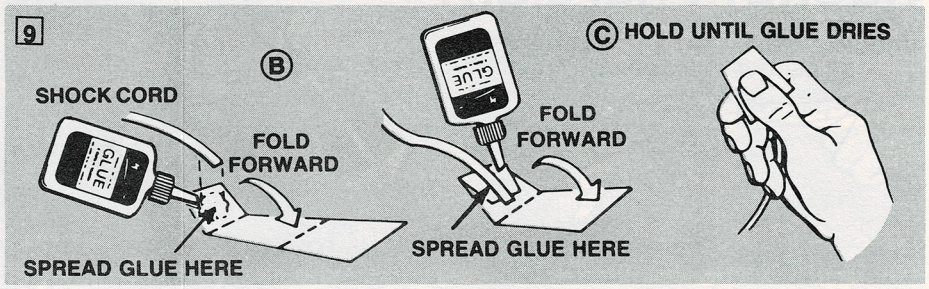
8

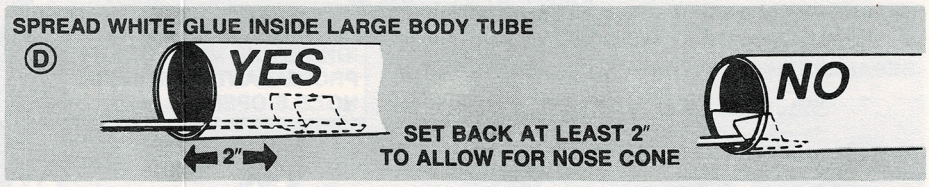
A. Apply plastic cement around the inside of both ends of the remaining body tube.
B. Insert plastic nose cone and adapter sections into tube with a twisting motion.



9

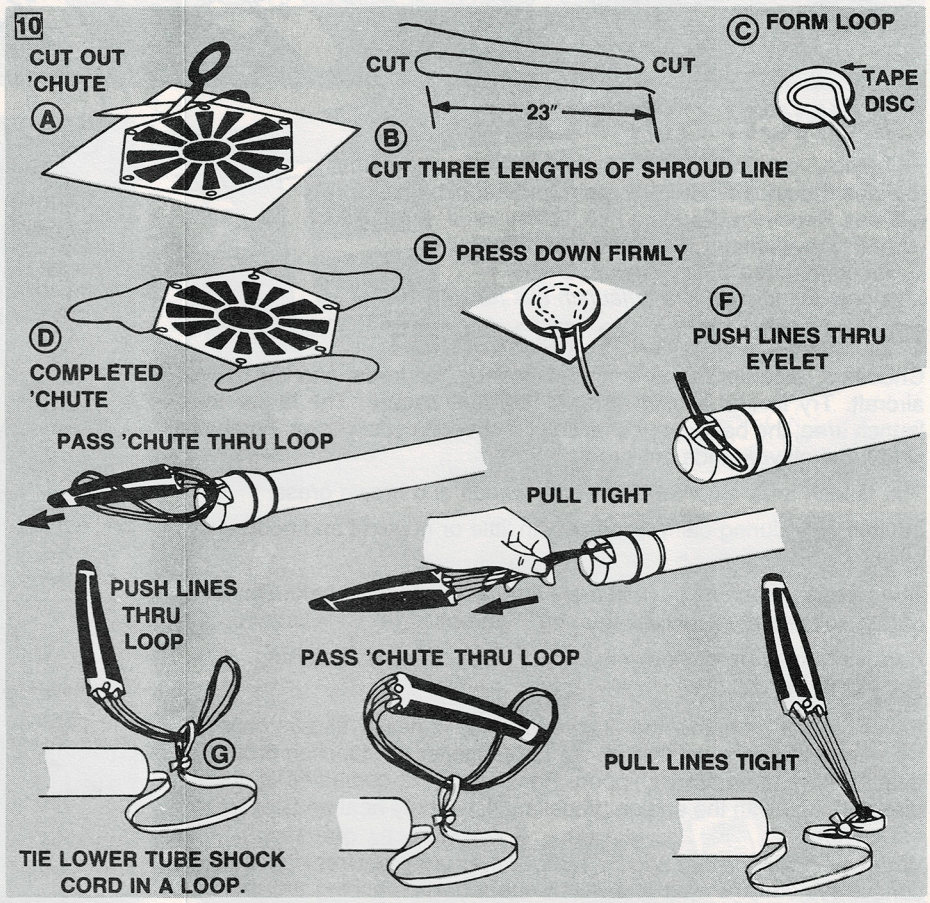
A. Cut shock cord mount from top of page 1.
B. Crease on dotted lines by folding. Spread glue on section 1 and lay end of shock cord into glue. Fold over and apply glue to back of first section and exposed part of section 2. Lay shock cord as shown and fold mount over again.
C. Clamp unit together with fingers until glue sets.
D. Apply glue inside front of body tube to cover an area no less than 2 to 3 inches from end. The glued area should be same size as shock cord mount. Press mount firmly into glue as shown. Hold until glue sets.



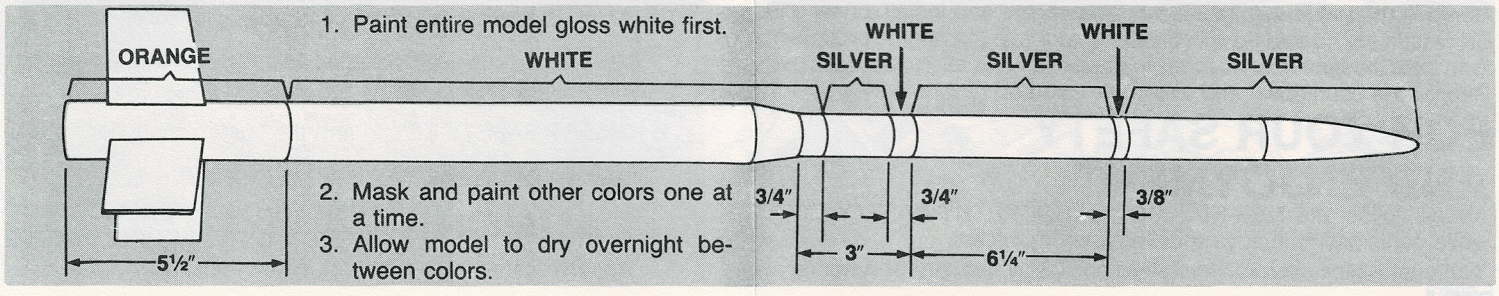


10

A. Cut out both parachutes on the edge lines.
B. Cut six 23 inch lengths of shroud line. Three for each parachute.
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 of one parachute through eyelet on adapter. Pass parachute through loop ends and pull lines tight against adapter.
G. Tie a loop in end of shock cord on lower section of rocket. Repeat process for attaching second parachute to loop in shock cord.



PAINT SCHEME



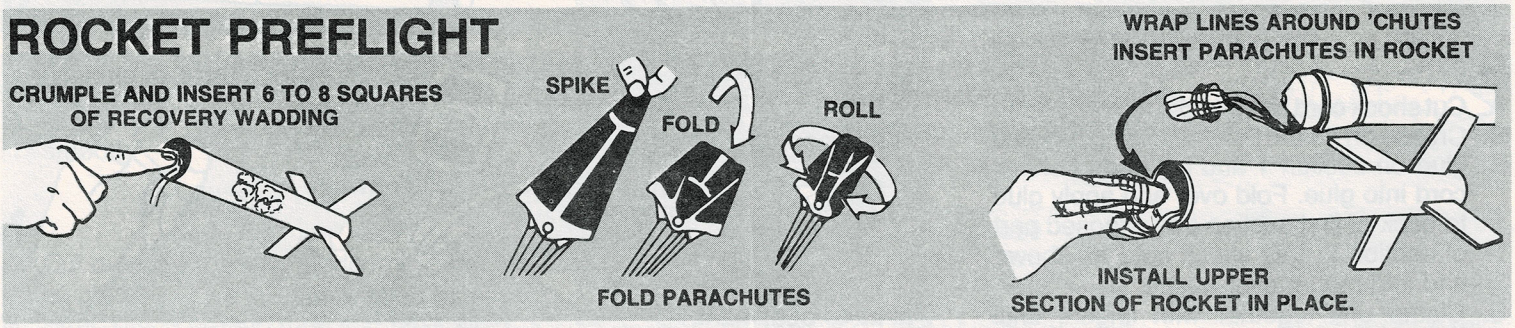
FINISHING YOUR ROCKET

Apply sanding sealer to wood parts with small brush. 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.

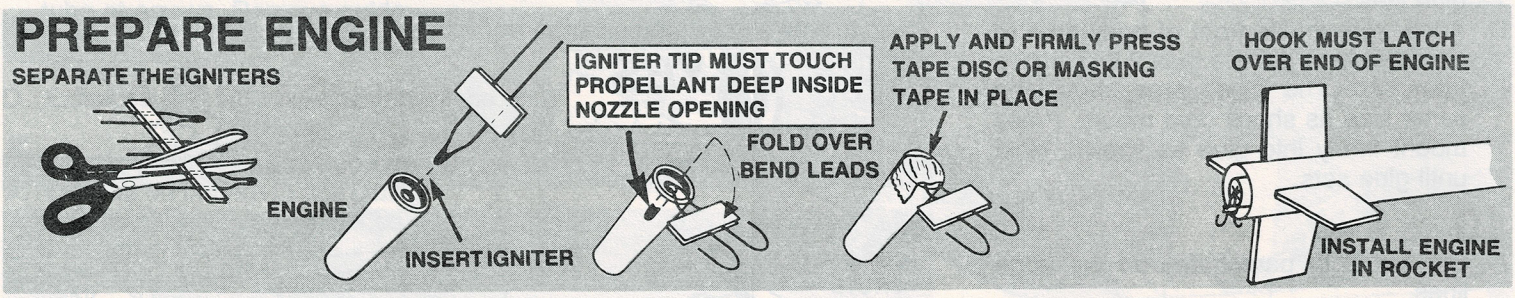
Refer to "Paint Scheme" section on page 3 of instructions for location of colored sections. Allow gloss white paint to dry overnight before masking and painting orange and silver areas. Allow all paint to dry overnight before applying decals.

To apply decals, cut each out, dip in lukewarm water for 20 seconds and hold until it uncurls. Refer to photograph 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 gloss spray paint to protect decals. Use a "light" coat of clear spray for best results.

ROCKET PREFLIGHT



PREPARE ENGINE



LAUNCH SUPPLIES

To launch your rocket you will need the following items:
—Estes Electrical Launch System and Launch Pad
—Estes Recovery Wadding (No. 2274)
—3/16 inch diameter Maxi-Rod (No. 2244)
—Recommended Estes Engine: D12-5
Use only Estes products to launch this rocket.

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 square. The larger the launch area, the better your chance of recovering your rocket. Football fields and playgrounds are great.

The launch area must be free of dry weeds and brown grass.

Launch only during calm weather with little or no wind and good visibility.

Don't leave parachute packed more than a minute or so before launch during cold weather, [colder than 40° Fahrenheit (4° Celsius)].

Parachute may be dusted with talcum powder to avoid sticking.

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.

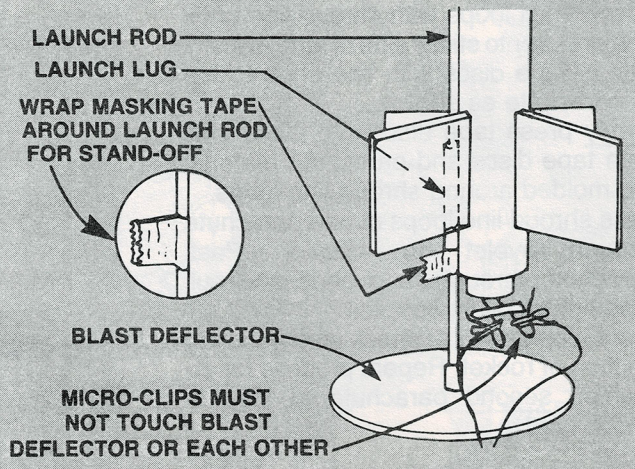
When an ignition failure occurs, remove the safety key from the launch control system and wait one minute before approaching the rocket. Remove the expended igniter from the engine and install a new one. Be certain the coated tip is in direct contact with the engine propellant, then tape the igniter leads firmly to base of engine as illustrated above. Repeat the countdown and launch procedure.

FOR YOUR SAFETY AND ENJOYMENT

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

*National Association of Rocketry-The Hobby Industry of America

COUNTDOWN AND LAUNCH



(10) REMOVE SAFETY KEY to disarm the 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. You will neet to use a rocket stand-off. One may have come with your launcher. If you do not have one, you can make a stand-off by wrapping masking tape around the rod as shown.

(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).

(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—Replace cap on rod. 83938A

FIN

FIN

PathFinder™

BODY TUBE MARKING GUIDE

FIN

FIN

LUG

LUG

FIN

FIN

FIN

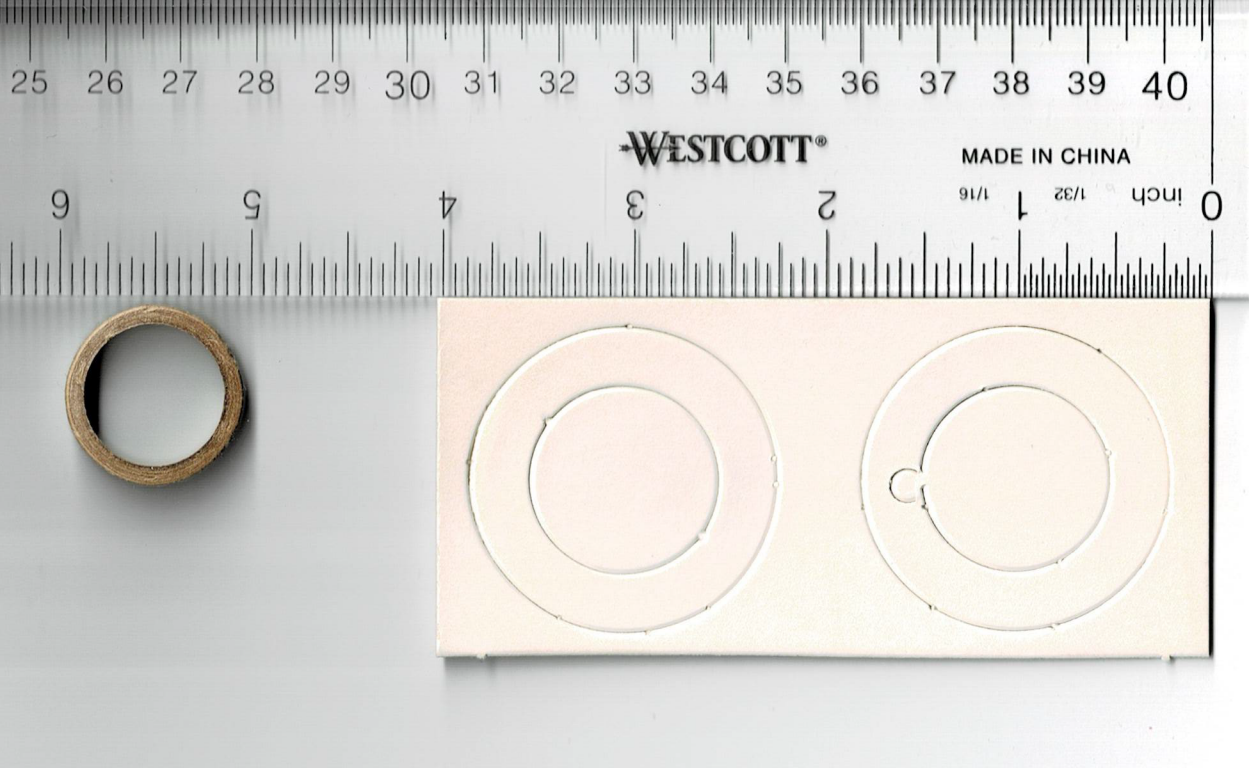
FIN

Wrap the marking guide around the body tube and align the joint in the guide by matching side marks.

Mark the body tube at each arrow point.

Remove the guide and connect each pair of marks with a straight line.

OVERLAP TAB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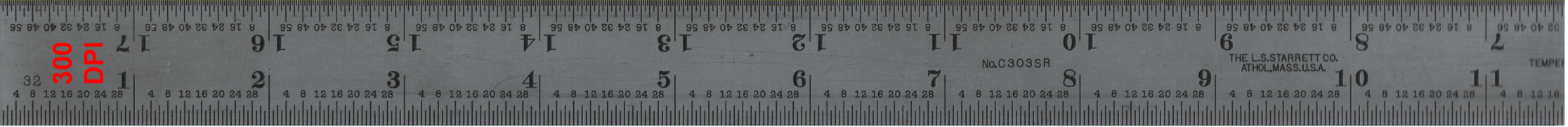
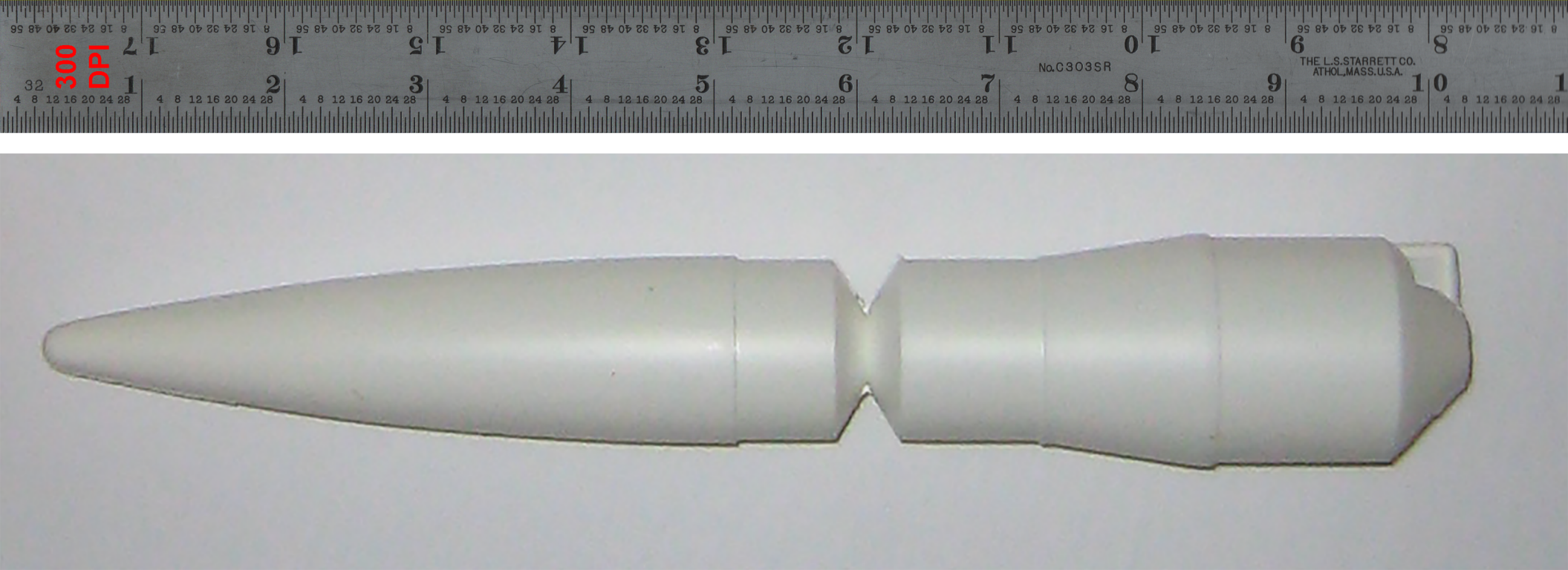
WESTCOTT®
MADE IN CHINA
6 5 4 3 2 1 0
inch 1/32 1/16



1/8”


300 DPI
No.C303SR
THE L.S.STARRETT CO.
ATHOL,MASS.U.S.A.

A DAMON COMPANY

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.

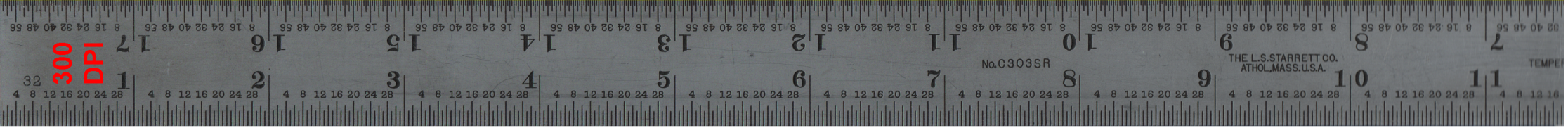
FULL ONE YEAR WARRANTY

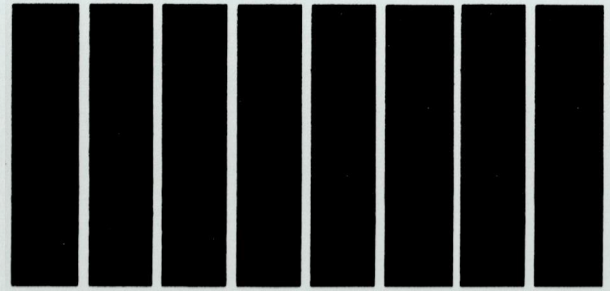
Your Estes product is warranted against defects in materials or workmanship for one year from the date of the original purchase. Any Estes product, except computer software, which, because of a manufacturing mistake, malfunctions or proves to be defective within the one-year warranty period will be repaired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

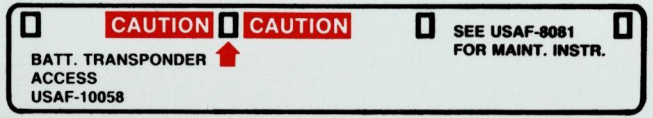
This warranty does not cover incidental or consequential damage to persons or property caused by the use, abuse, misuse, failure to comply with operating instructions or improper storage of the warranted product. Some states do not allow the exclusion or limitation of incidental or consequential damages,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

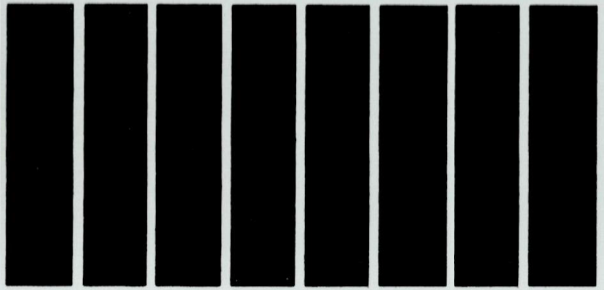
This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

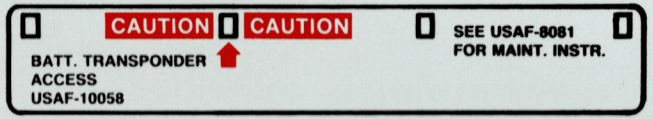
For repair or replacement under this warranty, please return the defective part of your Estes product with proof of purchase to: Estes Industries, Customer Service Department, Penrose, Colorado 81240.

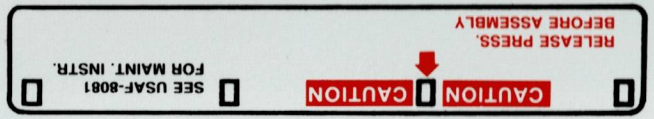








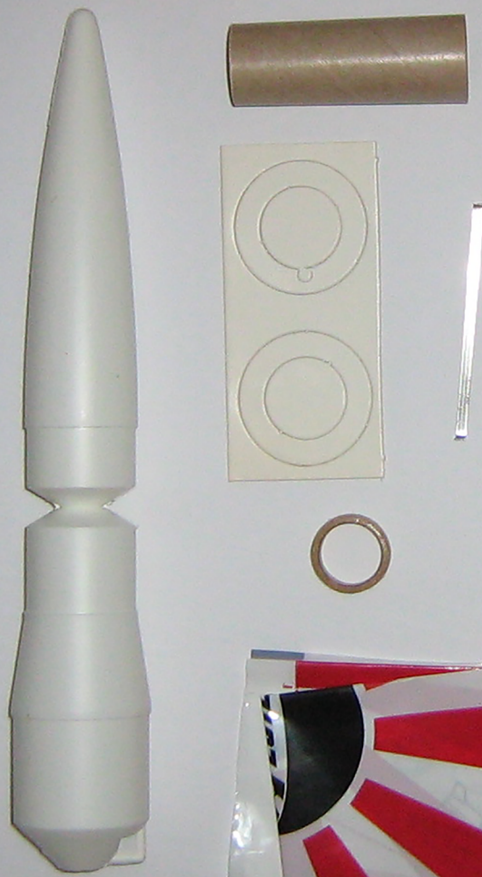


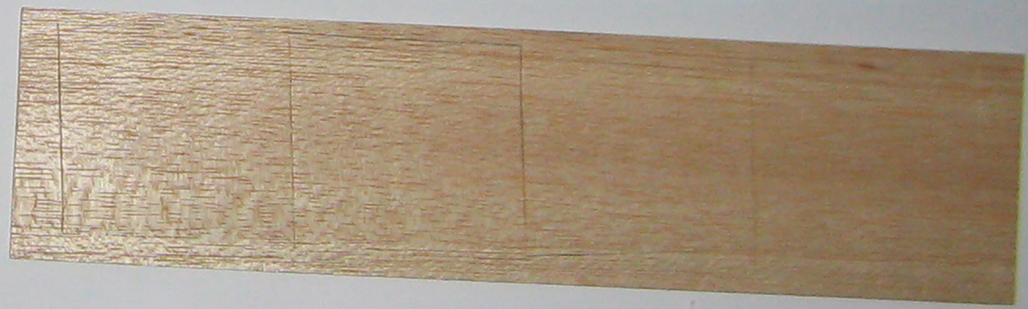


ESTES IND. 37326

PARTS LIST KIT N0. 1997 - Pathfinder								
Quantity	Description	Type	Number	Details1	Details2	Details3	Details4	Comment
1	BALSA FIN STOCK	BFS-40L	3174	3" wide	12" long	1/8" thick	Diecut	Scan
1	PLASTIC NOSE CONE	*PNC-55AO	71075	5.0" long	1.325" dia.	.5" shoulder	BT-55	Blow molded
1	PLASTIC ADAPTER	*TA-5560(P)	72617	3.5" long	1.25" taper	1" front	1.25" back	BT-55 to BT-60
1	PAPER BODY TUBE	BT-60	30396	18" long	1.595" ID	1.637" OD	0.021" wall	Glassine
1	PAPER BODY TUBE	BT-55	30382	18" long	1.283" ID	1.325" OD	0.021" wall	Glassine
1	PAPER BODY TUBE	BT-50J	30362	2.75" long	0.950" ID	0.976" OD	0.013" wall	Glassine
1	LAUNCH LUG	LL-3?	38181	7/32" ID	3/16" rod	2-3/8" long		Mylar
1	Shock Cord	SC-1	38367	18" long	1/8" wide			Rubber
1	ENGINE HOLDER	EH-2	35025	2.8" long	.100" wide	.025" thick		Reg. & D
1	ENGINE BLOCK	EB-50-2	30164-2	0.93" OD	0.74" ID	0.24" long	fits BT-50	Green
1	PAPER ADAPTER	RA-5060	30132	.977" ID	1.594" OD	.05" thick	One ring notched.	Set of 2
2	Parachute	PK-12	85564	12" hexagon	1.25 mil thick	LDPE plastic	Red/Wht	
2	Shroud Line	SLT-72	38237	72"	.020" diameter	Twisted cotton		
2	Tape Disc	TD-3F	38406	1/2" dia.	Paper	Self-Stick		Set of 6
1	Shock Cord Mount	SCM-50	84444	1.5" wide	3" long	Heavy paper	On page 1	Scan
1	Decal	KD-1997	37326	4" wide	12" long	Blk/Red	Waterslide	Scan
*Nose Cone and Adapter together are part PNC-55AD #71076								


PATHFINDER
FLYING MODEL ROCKET
SKILL LEVEL 3
SOUNDING ROCKET APPEARANCE
Die-Cut Balsa Fins
Plastic Nose Cone & Adapter
Two 12" Parachutes
Quick-Release Engine Mount
REACHES ALTITUDES OF 800 FEET!
#1997
ESTES






CUT OUT CAREFULLY ALONG


MODEL ROCKETRY--
THE SPORT OF FUTURE ASTRONAUTS!


ESTES
Flying Model Rocket
FLYING
MODEL
ROCKET
REACHES
ALTITUDES OF
800 FEET!
ESTES

PATHFINDER™

FLYING MODEL ROCKET

SKILL LEVEL 3
Recommended for the Advanced Modeler.

- **SOUNDING ROCKET APPEARANCE**
- **Die-Cut Balsa Fins**
- **Plastic Nose Cone & Adapter**
- **Two 12″ Parachutes**
- **Quick-Release Engine Mount**

Length: 42.25 in. (107.3 cm)
Dia: 1.637 in. (41.6 mm)
Weight: 3.18 oz. (90 g)
Recommended Engine: D12-5

REACHES ALTITUDES OF 800 FEET!

This is a model kit requiring assembly. Glue and finishing supplies, launch system and engines for flight are not included.

This kit has been designed specifically for use only with Estes model rocket engines.

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