



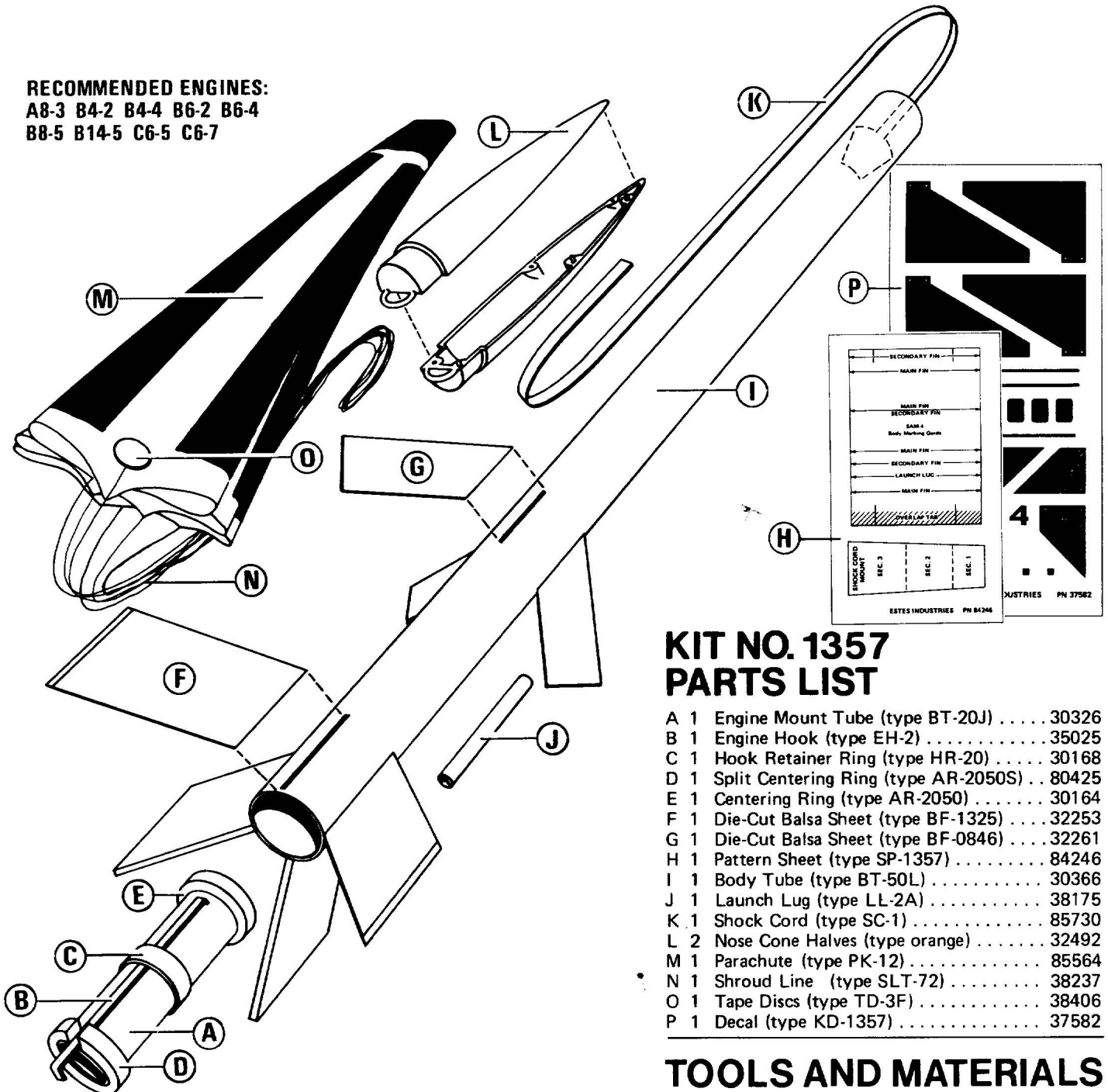
SAM-1

BEFORE YOU START

Read all instructions before beginning construction on your model. Make sure you have all parts and materials. When you are thoroughly familiar with the assembly procedure, begin construction. Check off each step as you complete it. In each step, test-fit the parts together before applying any glue. If some part doesn't fit properly sand lightly or build up as required for precision assembly.

SKILL LEVEL 2 – Recommended for Intermediate Rocketeers.

RECOMMENDED ENGINES:
A8-3 B4-2 B4-4 B6-2 B6-4
B8-5 B14-5 C6-5 C6-7



KIT NO. 1357 PARTS LIST

A	1	Engine Mount Tube (type BT-20J)	30326
B	1	Engine Hook (type EH-2)	35025
C	1	Hook Retainer Ring (type HR-20)	30168
D	1	Split Centering Ring (type AR-2050S)	80425
E	1	Centering Ring (type AR-2050)	30164
F	1	Die-Cut Balsa Sheet (type BF-1325)	32253
G	1	Die-Cut Balsa Sheet (type BF-0846)	32261
H	1	Pattern Sheet (type SP-1357)	84246
I	1	Body Tube (type BT-50L)	30366
J	1	Launch Lug (type LL-2A)	38175
K	1	Shock Cord (type SC-1)	85730
L	2	Nose Cone Halves (type orange)	32492
M	1	Parachute (type PK-12)	85564
N	1	Shroud Line (type SLT-72)	38237
O	1	Tape Discs (type TD-3F)	38406
P	1	Decal (type KD-1357)	37582

TOOLS AND MATERIALS

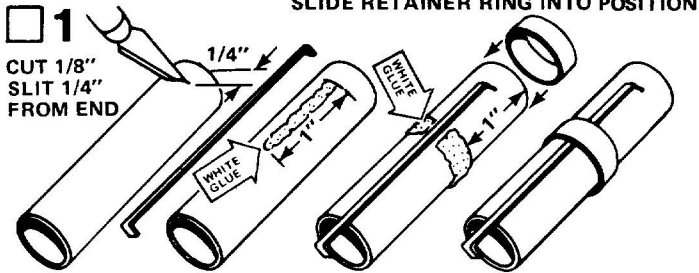
In addition to the parts included in this kit you will need: Scissors, tube-type plastic cement, household white glue (Elmer's, Titebond, or similar), pencil, ruler, fine or extra-fine grit sandpaper, sanding sealer, masking tape, a medium-size modeling paint brush, modeling knife with sharp blade, white enamel spray paint, gray enamel spray paint, light blue enamel spray paint, and a bottle of copper enamel paint.



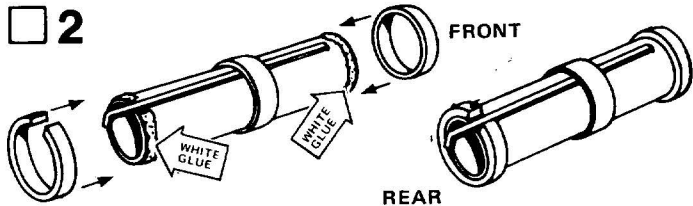
A DAMON COMPANY

ESTES INDUSTRIES
PENROSE, CO 81240 USA

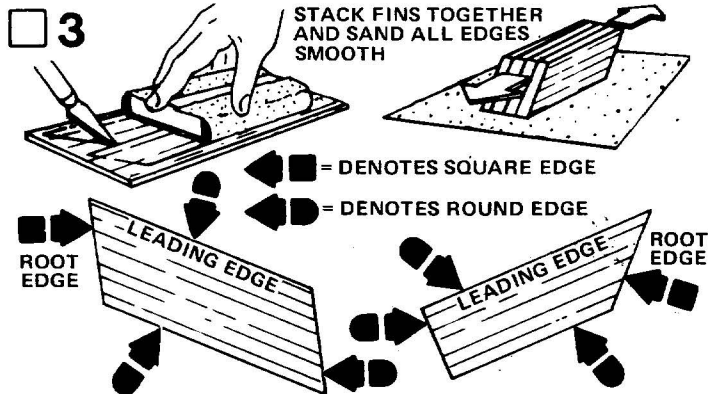
ASSEMBLY INSTRUCTIONS



Cut a 1/8" slit in the engine mount tube (part A), 1/4" from one end as shown. Apply a 1" long line of glue to the tube. Push one end of the engine hook (part B) into the slit and press the main part of the hook into the glue. Apply a line of glue around the middle of the tube and slide the hook retainer ring (part C) over tube and hook, onto the glue.



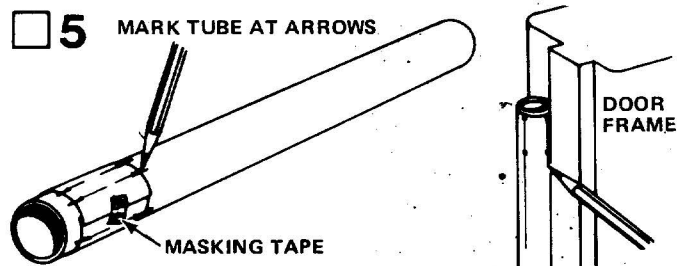
Glue the split centering ring (part D) to the engine mount tube so the engine hook is centered between slot in ring and even with rear of tube. Avoid getting glue into the slot. Glue the other ring (part E) to the front of the engine tube against the end of the hook as shown.



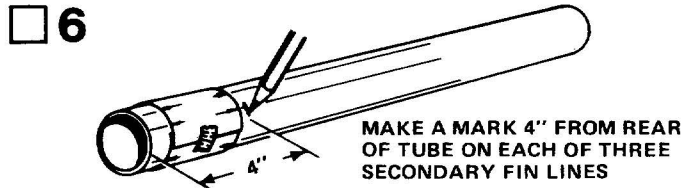
Fine-sand the balsa die-cut sheets (parts F & G), then carefully remove the die-cut fins from the sheets. Free the edges with a sharp knife. Sand the leading and trailing edges of the fins round. Leave other edges square.



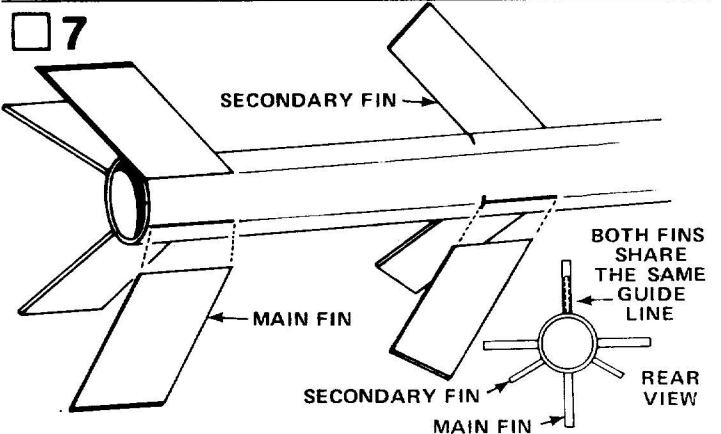
Apply a coat of sanding sealer to each fin. Apply sealer to all edges except the root edge. When sealer is dry, lightly sand all the sealed surfaces. Repeat sealing and sanding process until balsa grain no longer shows.



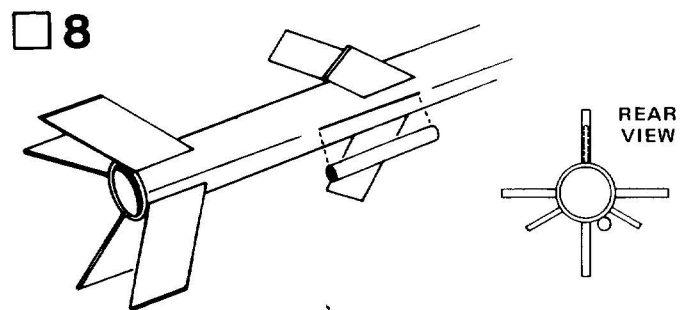
Cut out the tube marking guide from pattern sheet (part H) and wrap it around the body tube (part I). Mark the body tube at each of the arrow points. Draw straight lines connecting each mark. A door frame inside edge can be used as a guide as shown. Extend the lines about 6" up from the rear of the tube.



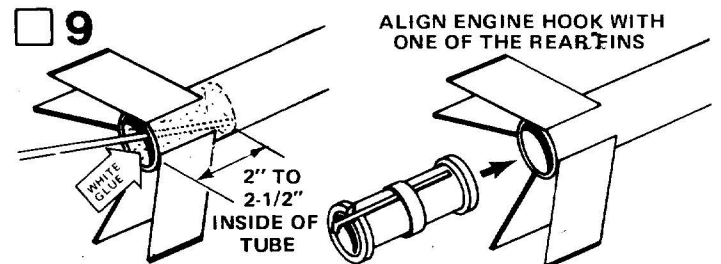
Re-wrap the tube marking guide around the tube. Locate arrow points to correspond with the lines drawn in the previous step. Locate the lines labeled "secondary fin" and make a mark 4" from the rear of the tube on each of these three lines.



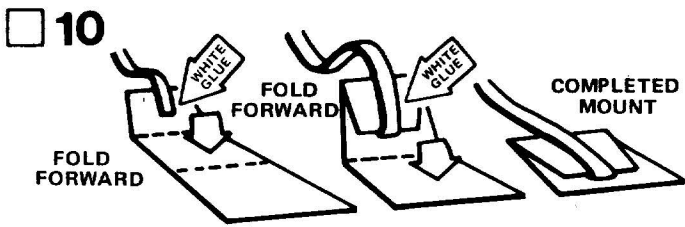
Rub a line of glue into the root edge of each fin and allow to dry. Apply glue to the fins and position fins on the alignment lines in their correct positions on the tube. Refer to the illustration to be sure of these positions. Adjust the fins so they project straight away from the body tube. Do not set the rocket on its fins while the glue is wet.



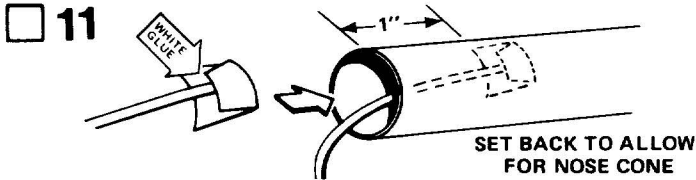
Glue the launch lug (part J) to rocket body tube on the launch lug line. The front of the lug should be even with the front of the secondary fin. Align the launch lug straight along the body.



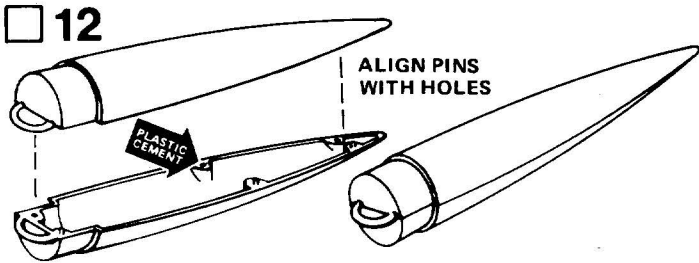
Smear glue around the inside of rear end of the assembled rocket body to cover an area about 2" to 2-1/2" from the end of the tube. Use a stick or dowel as shown. Immediately insert the engine mount unit, being careful to position it so the engine hook will stick out of the end of the tube. Push engine mount in with one smooth motion until the split ring on the engine mount and the end of the body tubes are even.



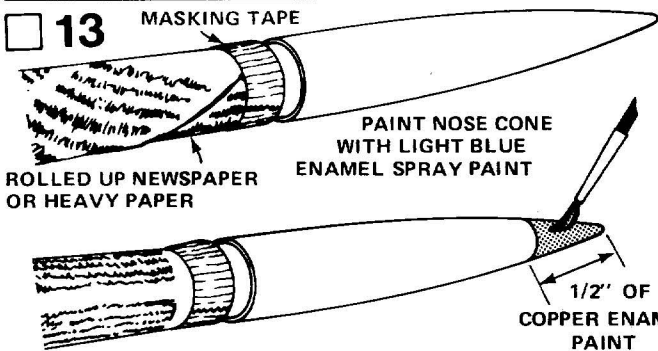
Cut out the shock cord mount from the pattern sheet. Crease it on the dotted lines by folding. Spread glue on the first section (1) and lay the end of the shock cord (part K) into the glue. Fold over and apply glue to the back of the first section and the exposed part of section (2). Lay the shock cord as shown and fold over again. Clamp the unit together with your fingers until the glue sets.



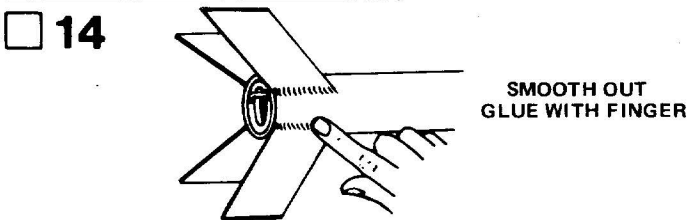
Smear glue over the back of the shock cord mount. Hold the mount as shown and press it into place at least 1" from the tube front end to allow for the nose cone. Hold the mount in place until glue sets.



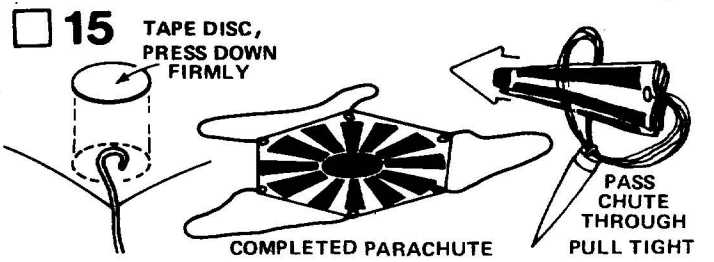
Cement the two nose cone halves (part L) together using tube-type plastic cement. Be careful not to use too much or you will have a sloppy looking joint. Make sure the alignment pins on the inside of the cone fit completely into their matching alignment holes.



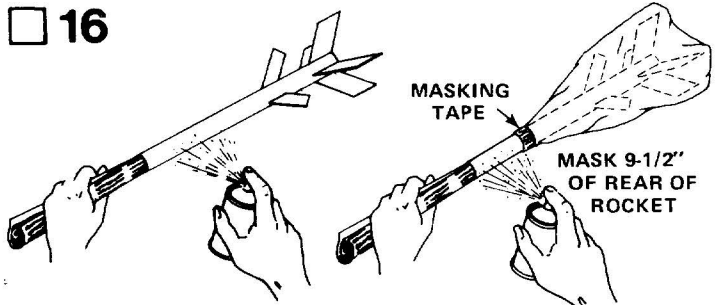
Trim or sand any excess plastic from around the sides of the nose cone. Apply two or three coats of light blue spray enamel. Allow each coat of paint to dry completely before applying the next coat. Allow the nose cone to dry thoroughly. Using a paint brush, and a bottle of copper enamel paint, paint about 1/2" of the tip of the nose cone. Set the nose cone aside to dry thoroughly.



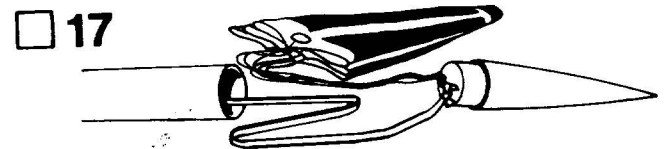
When the glue on the fin joints has dried, apply a glue reinforcement to each fin body tube joint. Holding the model level, apply a line of glue to both sides of each fin joint. Smooth out the glue with your finger. **IMPORTANT** -- Keep the model level until the glue dries.



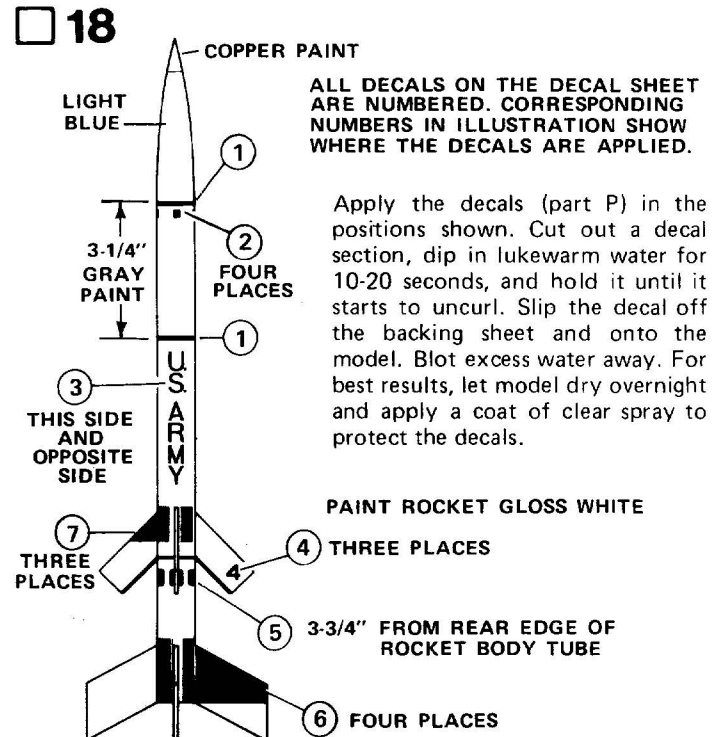
Cut out the parachute (part M) on its edge lines. Cut three 24" lengths of shroud line (part N). Attach line ends to top surface of parachute with tape discs (part O) as shown. Pass shroud line loops through ring on nose cone. Pass parachute through loop ends and draw lines tight against ring. Set parachute and nose cone assembly aside.



When all glue on the outside of the body is dry, insert a sheet of rolled-up newspaper or heavy paper into front of rocket body as shown. **THE PAPER MUST FIT TIGHTLY.** Apply two or three light coats of gloss white spray enamel to the fins and entire body section. Allow each coat of paint to dry completely. When paint is dry, mask off the rear 9-1/2" of the rocket as shown and apply at least two coats of flat gray spray paint to front of rocket, allowing each coat to dry completely. Remove masking tape after painting.



When all paint is dry, tie free end of shock cord to nose cone. Pack parachute and shock cord into rocket body. Slide nose cone into place.



ALL DECALS ON THE DECAL SHEET ARE NUMBERED. CORRESPONDING NUMBERS IN ILLUSTRATION SHOW WHERE THE DECALS ARE APPLIED.

Apply the decals (part P) in the positions shown. Cut out a decal section, dip in lukewarm water for 10-20 seconds, and hold it until it starts to uncurl. Slip the decal off the backing sheet and onto the model. Blot excess water away. For best results, let model dry overnight and apply a coat of clear spray to protect the decals.

PAINT ROCKET GLOSS WHITE

1 LIGHT BLUE
2 3-1/4" GRAY PAINT
3 THIS SIDE AND OPPOSITE SIDE
4 THREE PLACES
5 3-3/4" FROM REAR EDGE OF ROCKET BODY TUBE
6 FOUR PLACES
7 THREE PLACES

LAUNCHING COMPONENTS

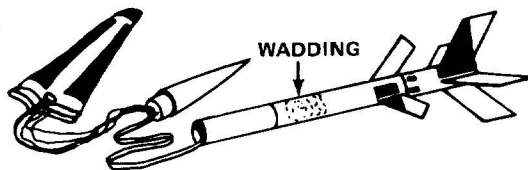
To launch your rocket, you will need the following items:
 An Estes model rocket launch system
 Parachute recovery wadding (Estes Cat. No. 2274)
 Recommended engines: A8-3, B4-2, B4-4, B6-2,
 B6-4 (First Flight), B8-5, B14-5, C6-5, and C6-7.

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

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

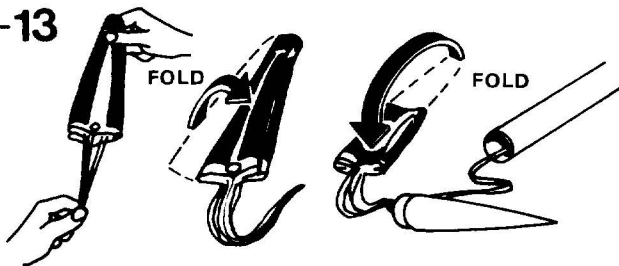
COUNTDOWN CHECKLIST

T-14



Pack 4 or 5 squares of loosely crumpled recovery wadding into the body tube.

T-13



Gather the parachute as shown, then fold into a triangular shape. Fold again and insert into rocket body.

NOTE: DO NOT pack parachute until you are actually ready to launch. For maximum parachute reliability, lightly dust the chute with ordinary talcum powder before each flight, especially in cold weather.

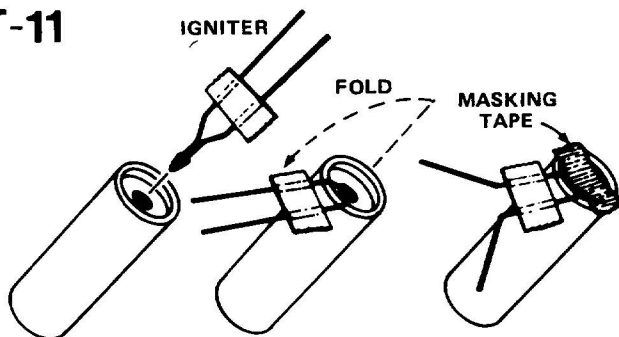
T-12



Pack parachute, shroud lines, and shock cord neatly into rocket body.

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 transparent tape or masking tape to the shoulder of the nose cone.

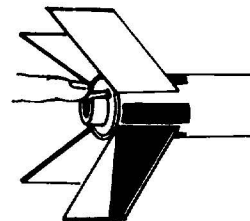
T-11



Select an engine and install an igniter as directed in the engine instructions. Use a B6-4 engine for your first flight.

T-10

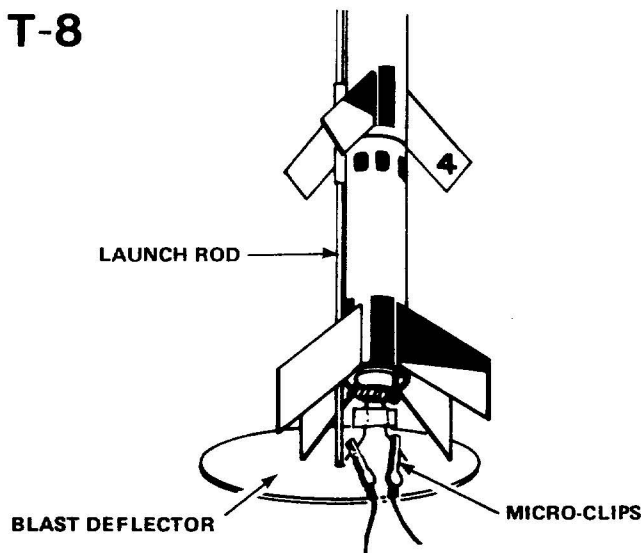
MAKE SURE ENGINE HOOK LATCHES SECURELY



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



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 engine 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!

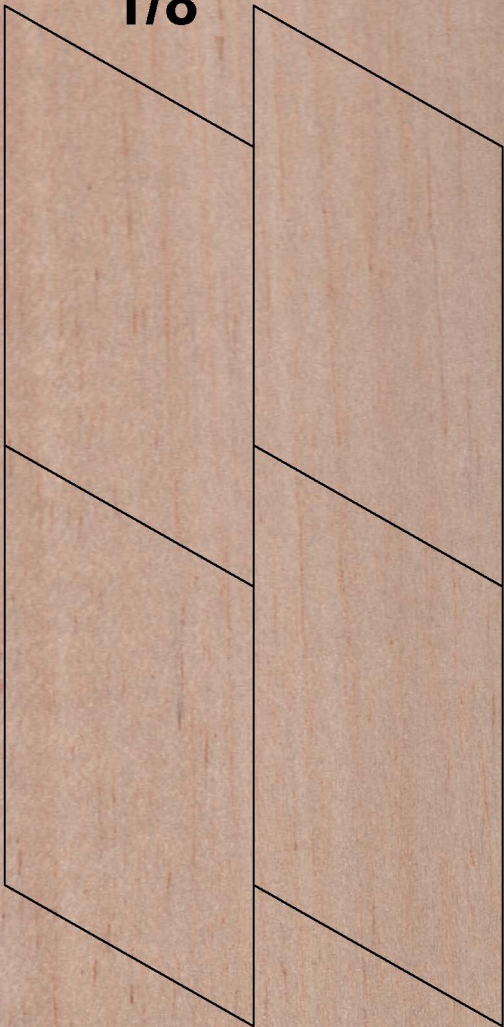
-5-4-3-2-1-LAUNCH!!

Repeat Countdown Checklist for each flight.

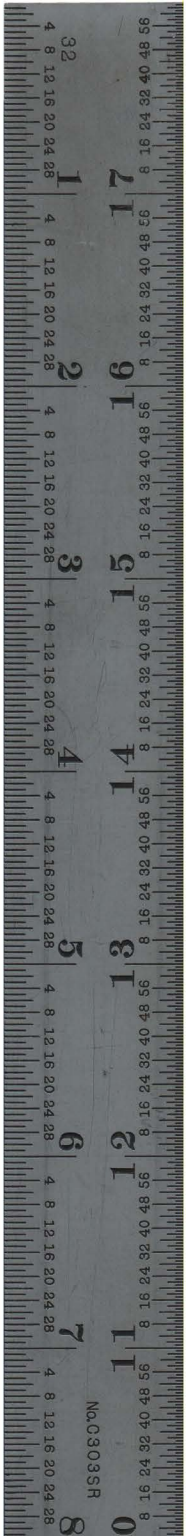
MISFIRE PROCEDURE

Occasionally the igniter will heat and burn into two pieces without igniting the engine. This is almost always caused by a failure to install it correctly. REMOVE SAFETY KEY from launch panel, remove the model, clean the igniter residue from the engine nozzle, and install a new igniter. Repeat the Countdown Checklist.

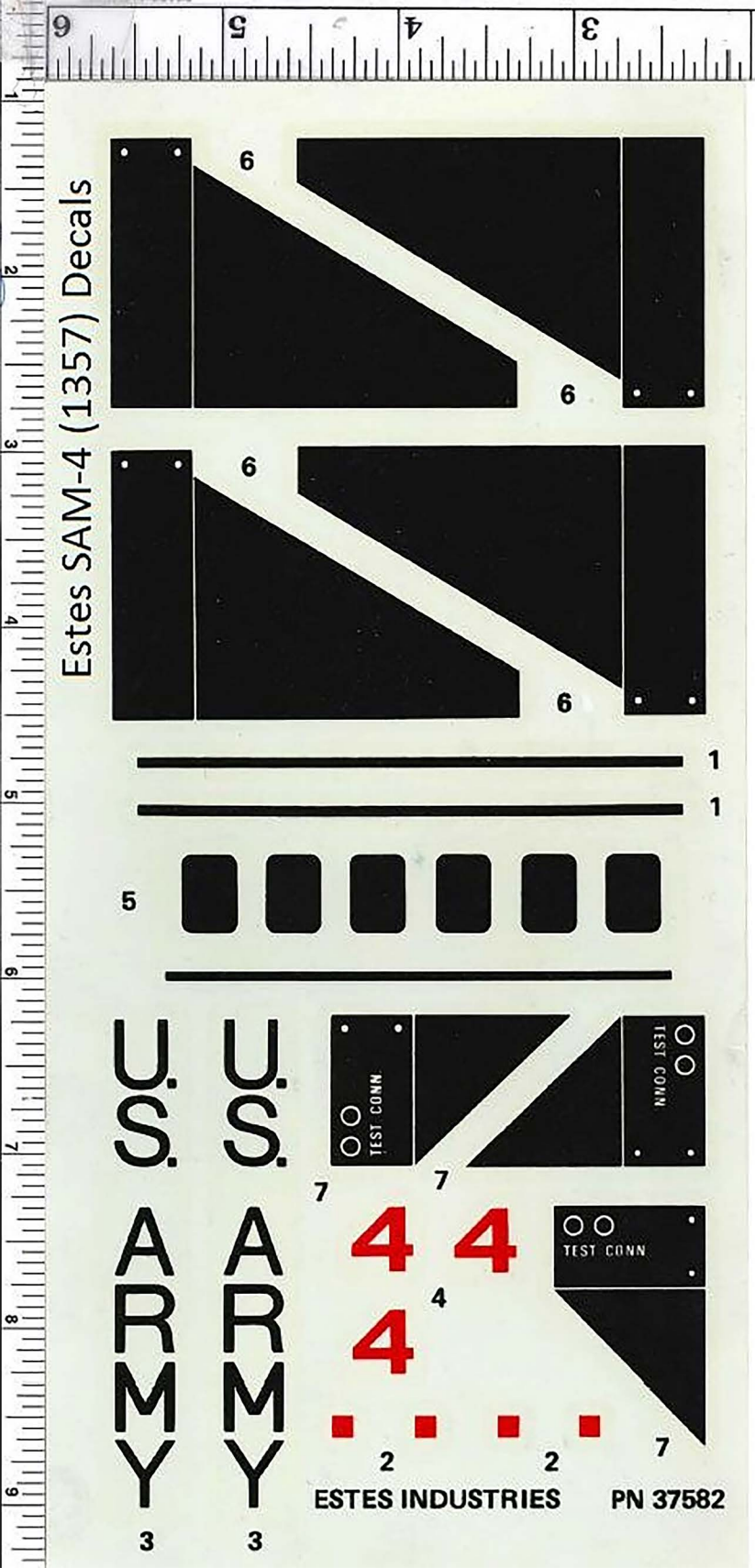
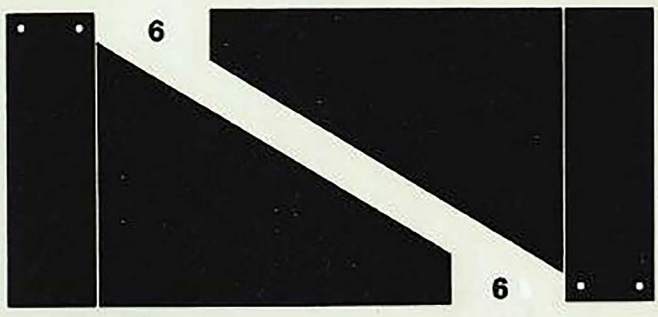
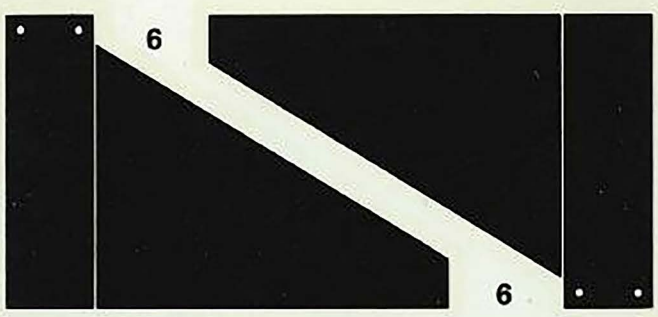
1/8"



3/32"



Estes SAM-4 (1357) Decals



PARTS LIST KIT NO. 1357 - Sam-4								
Quantity	Description	Type	Number	Details1	Details2	Details3	Details4	Comment
1	PAPER BODY TUBE	BT-20J	30326	2.75" long	0.710" ID	0.736" OD	0.013" wall	Glassine
1	ENGINE HOLDER	EH-2	3141/35025	2.8" long	.100" wide	.025" thick		Reg. & D
1	MYLAR RETAINER RING	HR-20	3340/30168	.774" ID	.25" wide			Strapdown ring
1	CENTERING RING	AR-2050S	80425	1/4" long	.737" ID	.949" OD	0.106" wall	Split for EH
1	CENTERING RING	AR-2050	30164-2	1/4" long	.737" ID	.949" OD	0.106" wall	Green
1	BALSA FIN STOCK	BFS-40	32253	1/8" thick	3" wide	6" long	BF-1325	Scan
1	BALSA FIN STOCK	BFS-30	32261	3/32" thick	1.5" wide	8" long	BF-0846	Scan
1	Pattern Sheet	SP-1357	84246					3&4 fin for BT-50
1	PAPER BODY TUBE	BT-50L	30366	12.7" long	0.950" ID	0.976" OD	0.013" wall	
1	LAUNCH LUG	LL-2A	2321/38175	5/32" ID	1/8" rod	1-1/4" long		
1	Shock Cord	SC-1	5730/38367	18 " long	1/8" wide			Rubber
2	Nose Cone Halves	PRP-1H	32492	4.25" long	.974" dia.	.5" shoulder	Orange	Injection Molded
1	Parachute	PK-12	2263/85564	12" dia.				
1	Shroud Line	SLT-72	38237	72"				
6	Tape Disc	TD-3F	38406	1/2" dia.				6x
1	Decal	KD-1357	37582	4" wide	8.5" long	Black/Red	waterslide	Scan
P/N 032492 is a 2 piece nose cone 4-1/4" L. Very similar to the PNC-50Y (4-3/8"L)								

ESTES

ESTES INDUSTRIES
Flying Model Rocket

SAM-4 FLYING MODEL ROCKET

SKILL LEVEL 2

- Scale-Like Surface-To-Air Missile
- Flights To 900'
- Two-Stage Appearance
- Excellent Performance
- Two-Color U.S. Army Decals
- Plastic Nose Cone
- Die-Cut Balsa Fins
- 12" Parachute

Length
13.7" (348.2 mm)

Diameter
2.0" (50.8 mm)

Weight
3.5 oz. (99.2 g)

Engine Types
A6.5, A6.5-2
B6.4, B6.4-2
B6.2, B6.4, B6.5
C6.5, C6.5-2, C6.5-3

This is a hobby kit requiring assembly. Recommended for ages 10 to adult. Engines, launch system, glue and finishing supplies are not included. Adult supervision is required for those under 12 years of age when flying model rockets.

#1357

ESTES

ESTES INDUSTRIES
SPRINGFIELD, MA 01103 USA

ESTES INDUSTRIES
FLY ESTES
Model Rockets

YOU START

1. Read the instructions carefully before starting to assemble the rocket. 2. Assemble the rocket according to the instructions. 3. Check the rocket for proper balance and stability. 4. Launch the rocket in a safe, open area. 5. Recover the rocket and inspect it for damage. 6. Repeat the launch process as often as you like.



SAM-4

FLYING MODEL ROCKET

SKILL LEVEL 2

1-Beginner 2-Intermediate 3-Collector

4-Advanced 5-Expert

- Scale-Like Surface-To-Air Missile
- Flights To 900'
- Two-Stage Appearance
- Excellent Performance
- Two-Color U.S. Army Decals
- Plastic Nose Cone
- Die-Cut Balsa Firm
- 12" Parachute

Length
18.7" (47.8 cm)

Weight
2.0" (50.8 g)

Wingspan
1.7" (43.0 mm)

Engine Type
A6-2 (A6-2)
A6-2 (A6-2)
A6-2 (A6-2)
A6-2 (A6-2)
A6-2 (A6-2)

Model SAM-4 is a scale-like surface-to-air missile. It is a two-stage rocket with a plastic nose cone and a 12" parachute. The rocket is made of die-cut balsa wood and is painted in two colors to resemble a U.S. Army missile. It is a great model for collectors and for those who enjoy flying rockets.

#1357

ESTES

10000 W. CENTRAL
EXPO. BLDG. #1000