
Ecordon

Scorpion #1333

ESTES
A DAMON COMPANY
ESTES INDUSTRIES
1295 H STREET
PENROSE, COLORADO 81240 USA

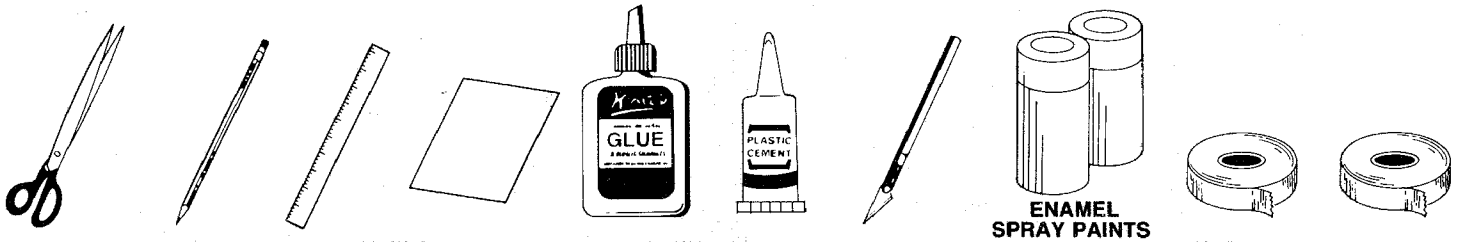
SHOCK CORD MOUNT
SEC. 3
SEC. 2
SEC. 1

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.

SUPPLIES

You will need the items below to assemble your rocket.



SCISSORS | PENCIL | RULER | FINE SANDPAPER | WHITE GLUE | PLASTIC CEMENT | MODELING KNIFE | ENAMEL SPRAY PAINTS (Gloss Orange & Gloss Black) | MASKING TAPE | CELLOPHANE TAPE

PARTS

Locate the parts shown below and lay them out on the table in front of you.

DECAL

BODY TUBE

BT-50 18"

BT-20 2.75"

ENGINE MOUNT TUBES

BT-20 2.75"

BOOSTER BODY TUBE

BT-50 1.5"

LAUNCH LUGS

Empty Casing

YELLOW SPACER TUBE

PNC-50Y

NOSE CONE INSERT

NOSE CONE

AR-2050 CENTERING RINGS

EB-20

ENGINE BLOCK (Blue)

TAPE DISC SET

PRP-1G

FIN UNITS

SHOCK CORD

SHROUD LINE

12"

PARACHUTE

ROCKET ASSEMBLY

1

A. Mark both engine mount tubes 3/8 inch from one end.
B. Slide one centering ring onto each engine mount tube up to 3/8 inch mark.
C. Apply glue to both sides of both centering rings where they meet the tube as shown.

2

A. Slide one of the engine mount tubes into one of the plastic fin units from rear until snug.
B. Apply glue around engine mount tube 1/4 inch in front of fin unit. Slide centering ring onto engine mount tube up to fin unit as shown. The engine mount tube should protrude at least 1/8 inch from end of fin unit as shown.
C. Repeat procedure with other engine mount tube, centering ring and fin unit.

3

A. Apply glue to inside edge of booster body tube about 1/4 inch from end. Slide booster body tube onto front of one fin unit as shown.
B. Booster body tube should fit flush to fins as shown. Set booster unit aside.

4

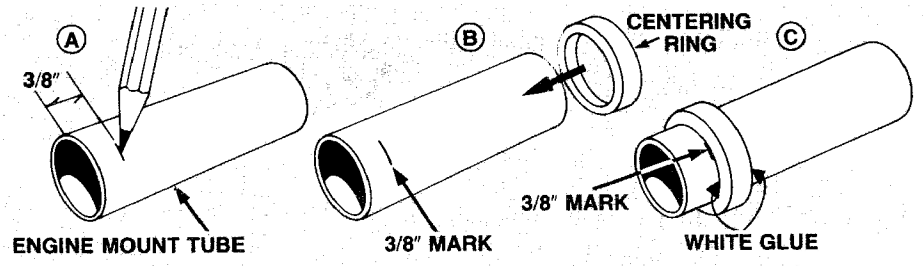
A. Mark the yellow spacer tube 1/4 inch from one end.
B. Slide the engine block into the forward end of the remaining fin unit/engine mount assembly. Position the block 1/2 inch in from the front end of the tube as shown.

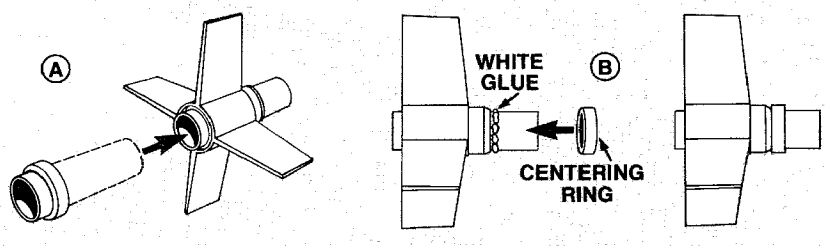
THE FOLLOWING PROCEDURE MUST BE DONE QUICKLY.

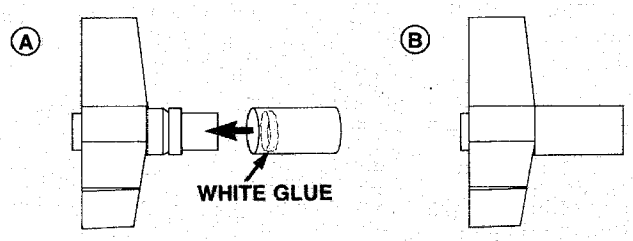
C. Apply glue to the inside edge of the front end of the tube, just in front of the engine block.
D. Insert yellow spacer tube with the mark to the rear into the rear of the fin unit/ engine mount as shown.
E. Push the yellow spacer tube forward until the mark on the yellow spacer is even with the end of the tube as shown. The engine block is now in its proper position. Remove the yellow spacer tube immediately and discard it.

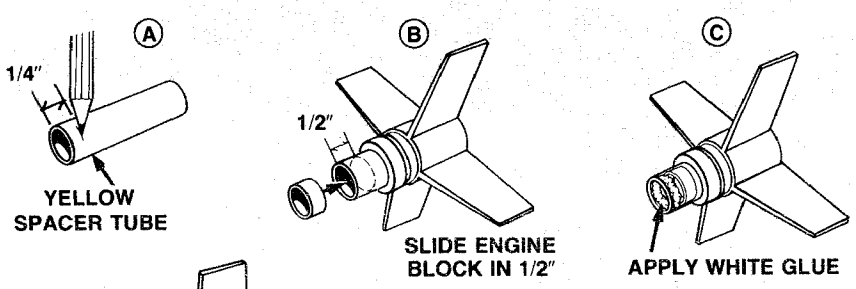
5

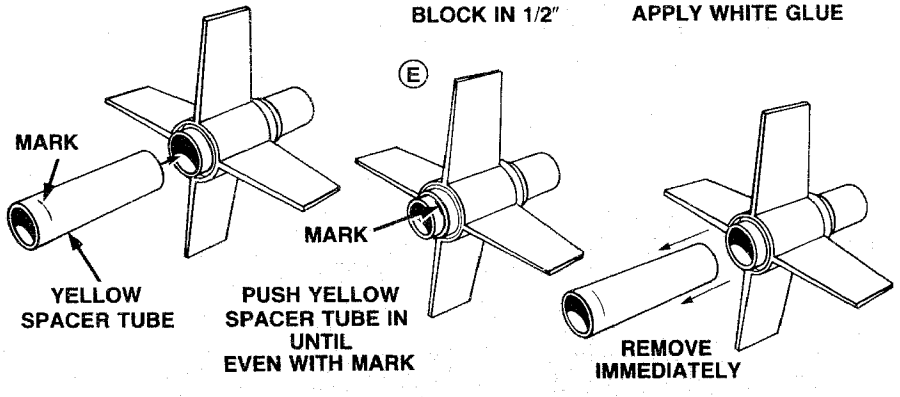
A. Draw a straight line along entire length of the main body tube.
B. Apply glue around inside edge of body tube and insert fin unit (completed in Step 4) into body tube. Make sure line on body tube is between fins and tube is seated evenly.

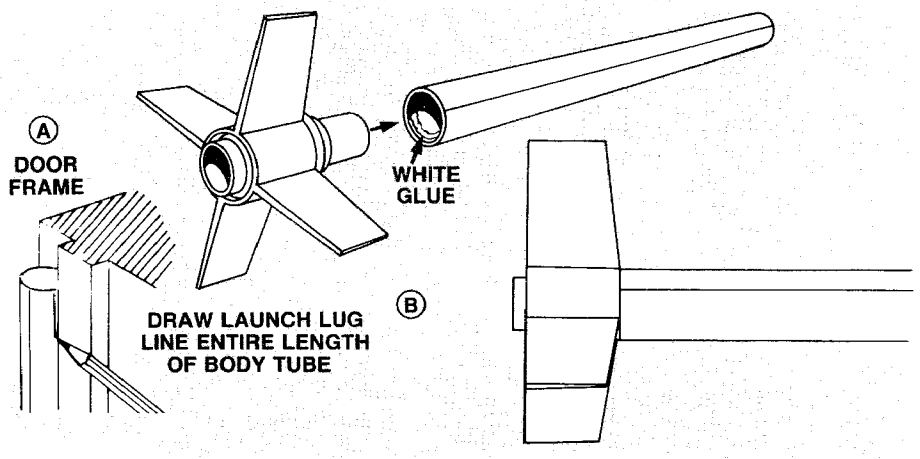






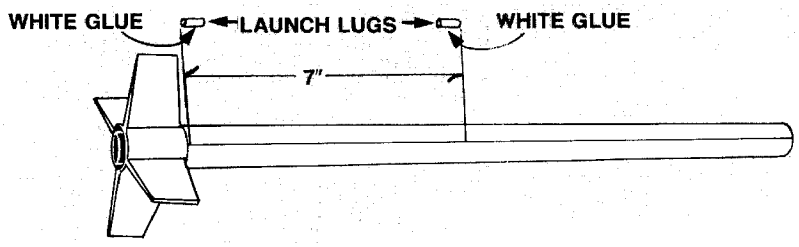






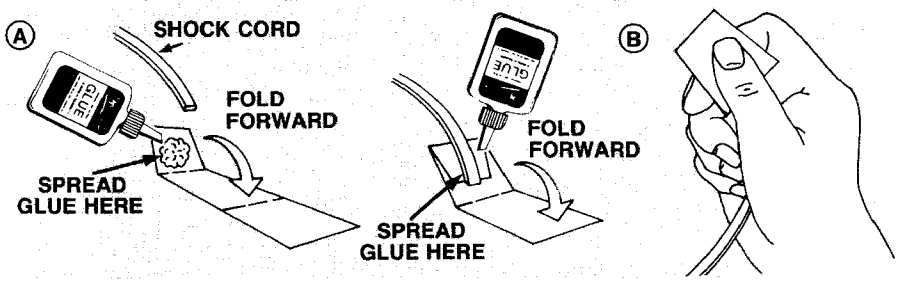
6

Glue launch lugs on launch line line as shown. The first launch lug is at the front of fin unit and the second launch lug is 7 inches from the front of fin unit.



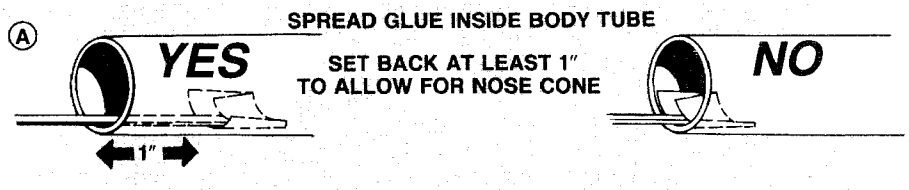
7

A. Cut shock cord mount from front of instructions and fold on dotted lines. 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.
B. Clamp unit together with fingers until glue sets.



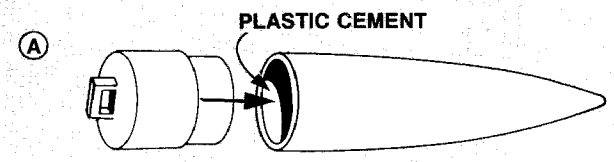
8

A. Apply glue to inside front of body tube to cover an area at least 1 inch to 2 inches from end. The glue area should be the same size as the shock cord mount. Press mount firmly into glue and hold until glue sets.



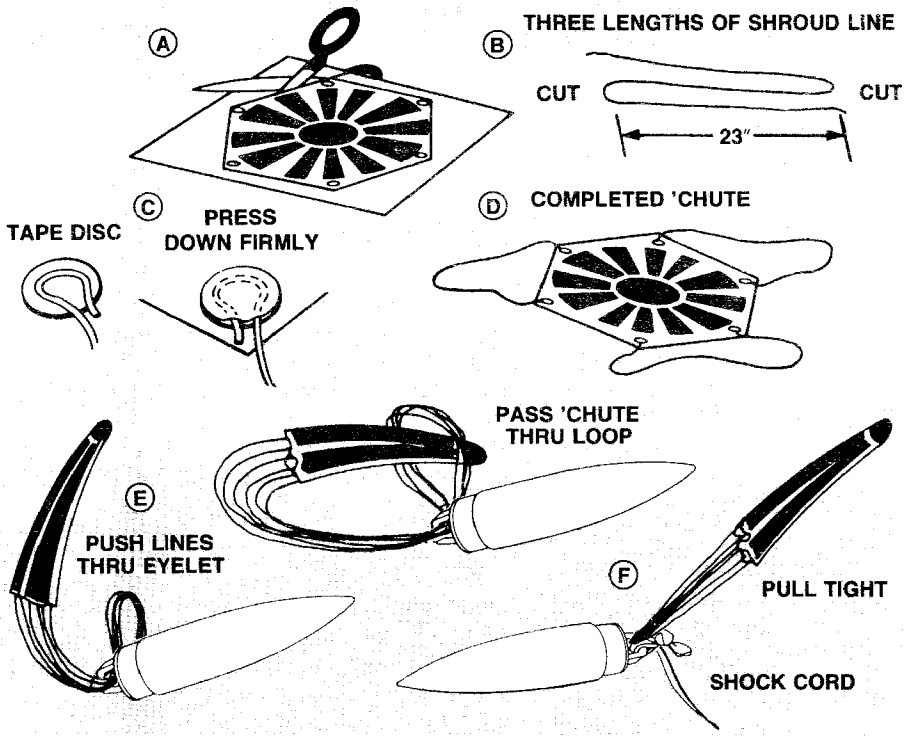
9

A. Apply plastic cement to inside edge of nose cone and then insert nose cone insert as shown.



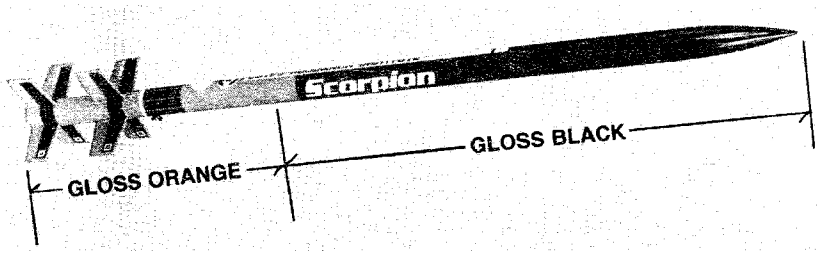
10

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

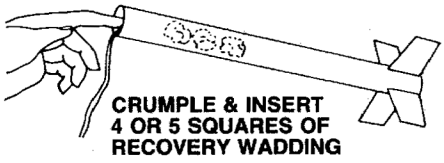


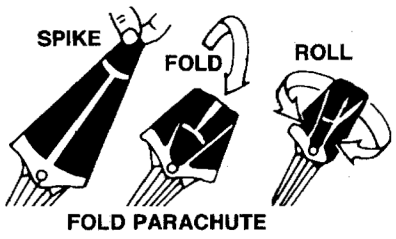
11

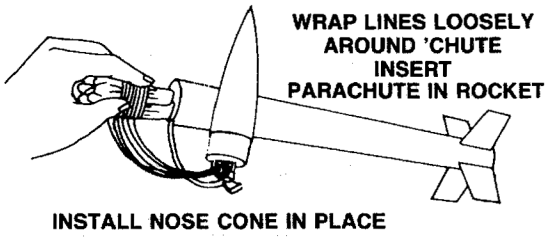
Paint entire model gloss orange. From front launch lug forward, paint gloss black. Decal: To apply decals, cut each out, dip in water for 20 seconds, and hold until it uncurls. Slip decal off backing sheet and onto model. Refer to photograph for decal placement.



ROCKET PREFLIGHT







PREPARE ROCKET

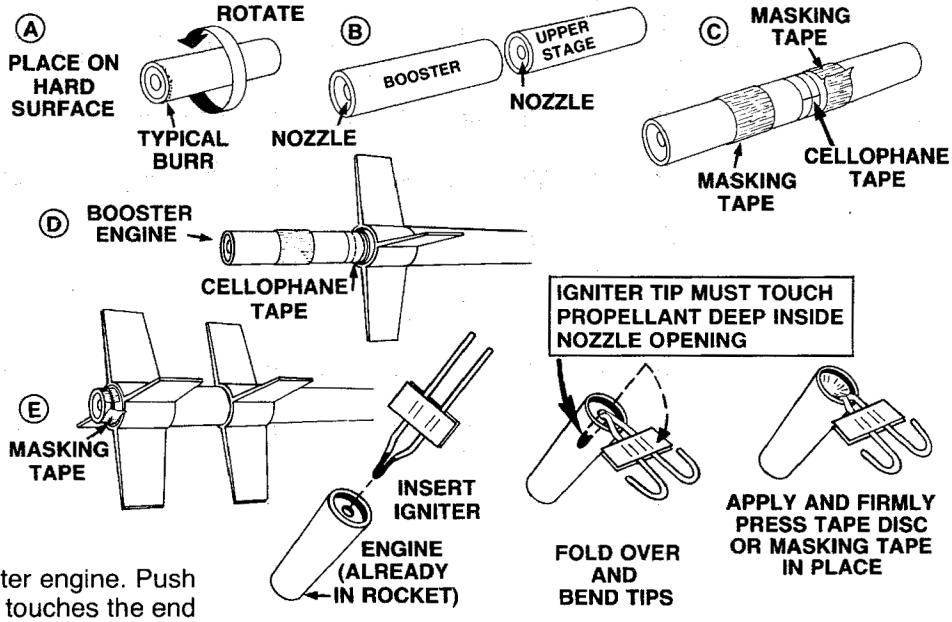
A. Select an upper stage engine and a booster engine. Remove any burrs from ends of engine as shown.

B. Position the engines with the nozzle of the upper stage engine against the top end of the booster engine. Wrap a layer of cellophane tape tightly around the joint as shown.

C. Wrap masking tape around the upper stage engine 1/4 inch up from the engine joint. Wrap one layer of masking tape around the mid section of booster engine.

D. Insert the upper stage end of the engine unit into the upper stage engine mount. If the engine won't go in, remove a bit of masking tape. If the engine does not fit tightly, add more tape.

E. Slide the first stage booster unit onto booster engine. Push the booster unit forward until its body tube touches the end of the upper stage fin unit. Align the fins on the booster unit with those on the upper stage unit. Secure the booster unit by wrapping masking tape around end of engine mount tube and the end of the engine as shown.



LAUNCH SUPPLIES

To launch your rocket you will need the following items:
—An Estes model rocket launching system
—Estes Recovery Wadding (No. 2274)
—Recommended Engines: **Single Stage:** A8-3 (First Flight), B4-4, B4-6, B6-4, B6-6, C6-5, C6-7
Upper Stage: A8-5 (First Flight), B4-6, B6-6, C6-7
Booster Stage: A8-0 (First Flight), B6-0, C6-0

FLYING YOUR SCORPION

Your Scorpion model has been designed as a high performance, two-stage, sport model. The upper-stage may also be flown by itself as single-stage model. When flying as a single-stage model, make sure the engine is securely held in place.

Obtain a copy of Estes Industries Classic Collection and study it before flying two-stage models.

Use care when installing engines. Make sure they face the correct direction for proper staging. Secure the engines tightly in place to insure proper recovery operation.

Launch in calm weather. The upper-stage will drift a long way in wind.

MISFIRES

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.

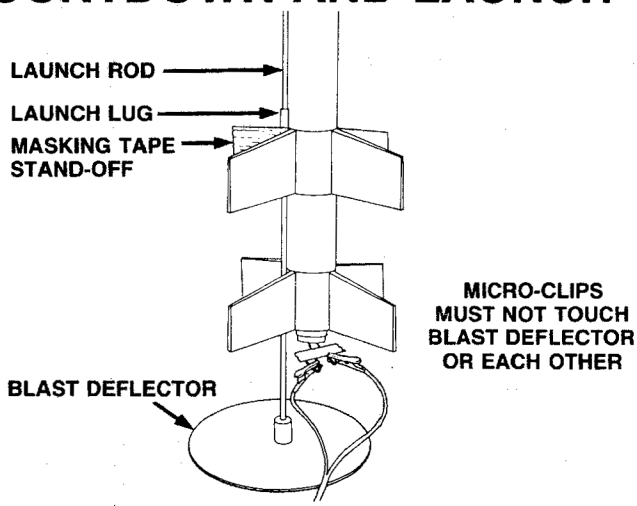
Always follow the Countdown and Launch Procedure.

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



(5) REMOVE SAFETY KEY to disarm the launch controller.

(4) Remove safety cap and slide launch lugs over launch rod to place rocket on launch pad. Make sure the rocket slides freely on the launch rod.

(3) 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.

(2) Move back from your rocket as far as launch wire will permit (at least 15 feet).

(1) INSERT SAFETY KEY to arm the launch controller.

LAUNCH!!! **PUSH AND HOLD LAUNCH BUTTON UNTIL ENGINE IGNITES**

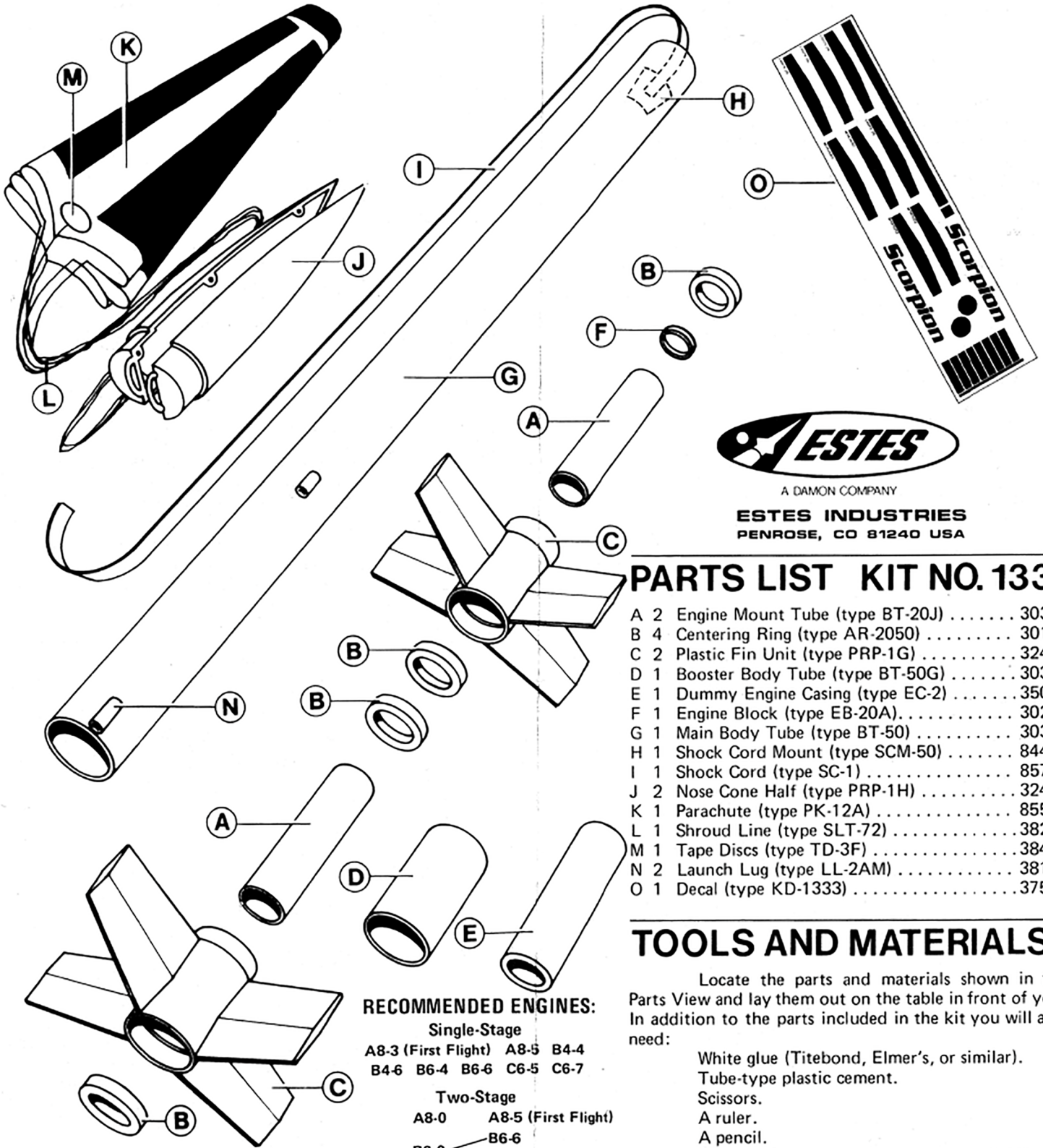
Remove safety key—Replace cap on rod.

Scorpion

SKILL LEVEL 2 — Recommended for Intermediate Rocketeers.

BEFORE YOU START

Read all instructions before beginning work 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.



ESTES
A DAMON COMPANY
ESTES INDUSTRIES
PENROSE, CO 81240 USA

PARTS LIST KIT NO. 1333

A	2	Engine Mount Tube (type BT-20J)	30326
B	4	Centering Ring (type AR-2050)	30164
C	2	Plastic Fin Unit (type PRP-1G)	32493
D	1	Booster Body Tube (type BT-50G)	30361
E	1	Dummy Engine Casing (type EC-2)	35010
F	1	Engine Block (type EB-20A)	30224
G	1	Main Body Tube (type BT-50)	30352
H	1	Shock Cord Mount (type SCM-50)	84444
I	1	Shock Cord (type SC-1)	85730
J	2	Nose Cone Half (type PRP-1H)	32492
K	1	Parachute (type PK-12A)	85564
L	1	Shroud Line (type SLT-72)	38237
M	1	Tape Discs (type TD-3F)	38406
N	2	Launch Lug (type LL-2AM)	38176
O	1	Decal (type KD-1333)	37563

RECOMMENDED ENGINES:

Single-Stage

A8-3 (First Flight) A8-5 B4-4
B4-6 B6-4 B6-6 C6-5 C6-7

Two-Stage

A8-0 — A8-5 (First Flight)
B6-0 — B6-6, B4-6
B14-0 — B14-7
C6-0 — C6-7

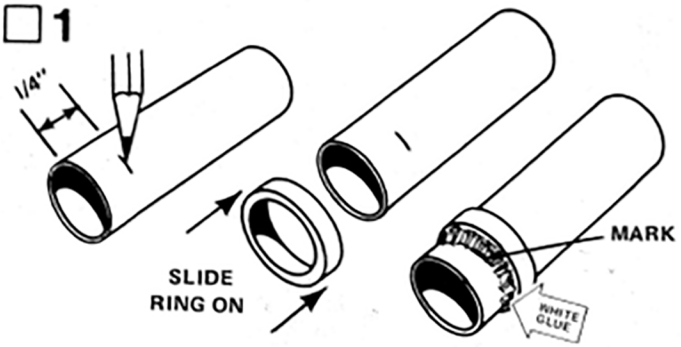
TOOLS AND MATERIALS

Locate the parts and materials shown in the Parts View and lay them out on the table in front of you. In addition to the parts included in the kit you will also need:

White glue (Titebond, Elmer's, or similar).
Tube-type plastic cement.
Scissors.
A ruler.
A pencil.
Gloss orange or red paint and black paint (Spray paint is recommended.)

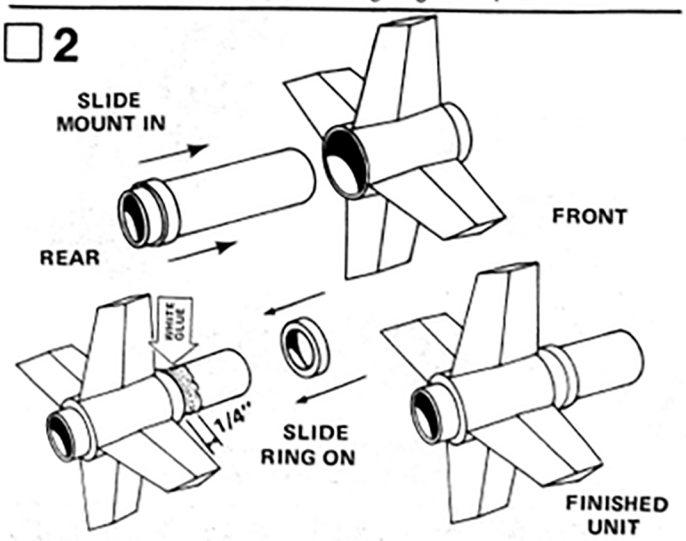
ASSEMBLY INSTRUCTIONS

☐1



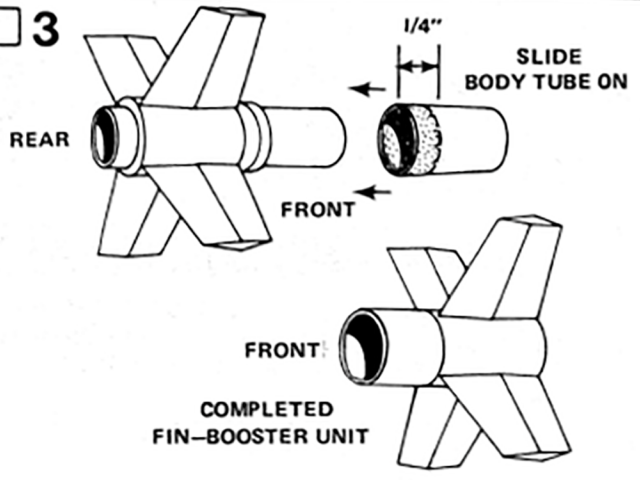
Mark both engine mount tubes (part A) 1/4" from one end. Slide one centering ring (part B) onto each engine mount tube so that one edge is on the 1/4" mark as shown. Apply a line of glue around both sides of each ring where they touch the tube. Wait a few moments before going to step 2.

☐2



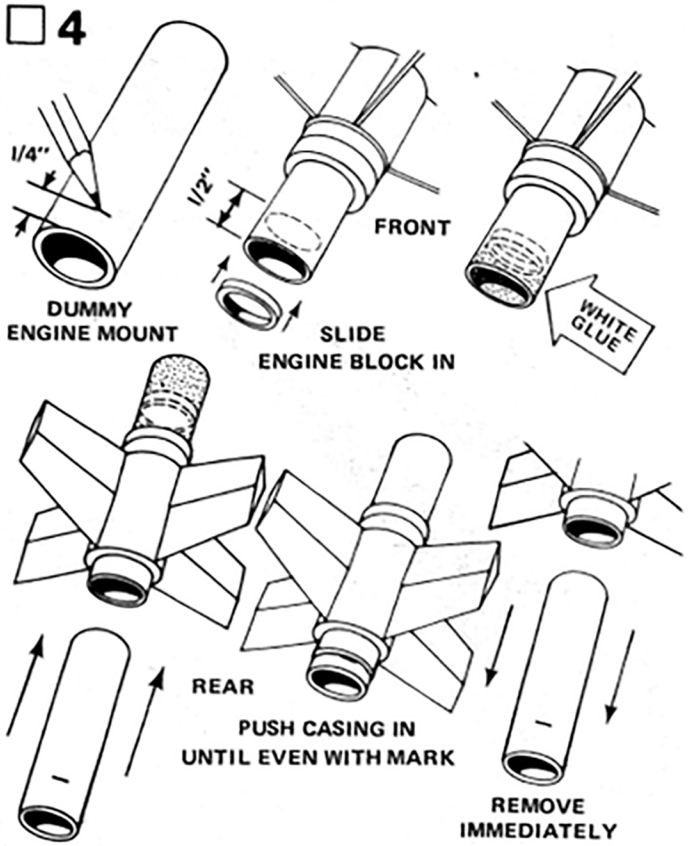
Slide one of the engine mount tubes into one of the plastic fin units (part C) from the rear. Apply a line of glue around the engine tube 1/4" ahead of the front of the fin unit. Slide another centering ring onto the engine tube and back tightly against the fin unit. Do not pause while installing the ring or the glue may "grab" with the ring in the wrong place. Repeat this step with the remaining engine tube, centering ring, and fin unit.

☐3



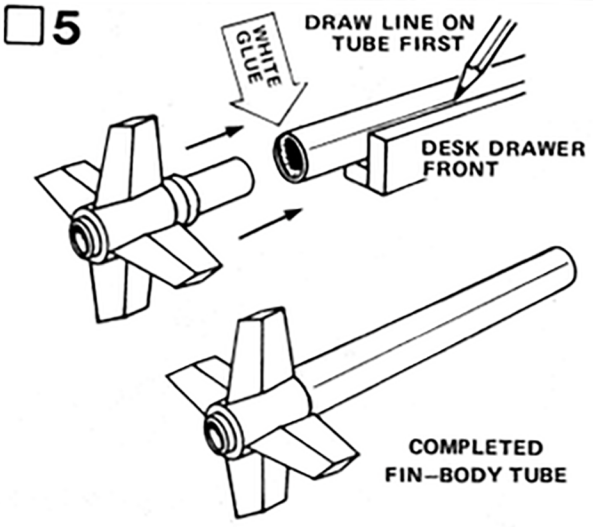
Smear a line of glue around the inside of one end of the booster body tube (part D). The glue should be about 1/4" from the end. Push the body tube onto the forward end of one of the engine mount/fin unit assemblies until the tube is even with the fin edges. Set the unit on end to dry.

☐4



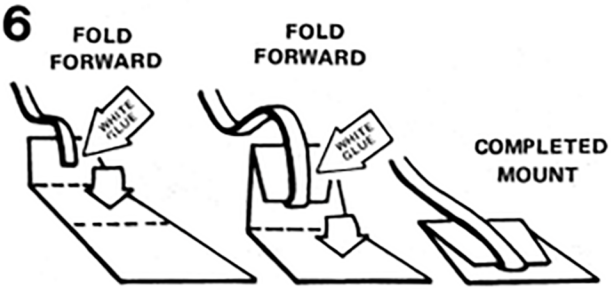
Mark the dummy engine casing (part E) 1/4" from one end. Slide the engine block (part F) into the forward end of the remaining fin unit/engine mount assembly. Position the block about 1/2" from the end of the tube. Smear a line of glue around the inside of the forward end of the tube just in front of the engine block. Insert the dummy engine casing with the mark to the rear into the rear of the fin unit/engine mount assembly. Push the casing forward until the mark on the casing is even with the rear of the tube. The engine block should now be positioned in the tube as shown. Remove the dummy engine casing immediately and discard it.

☐5



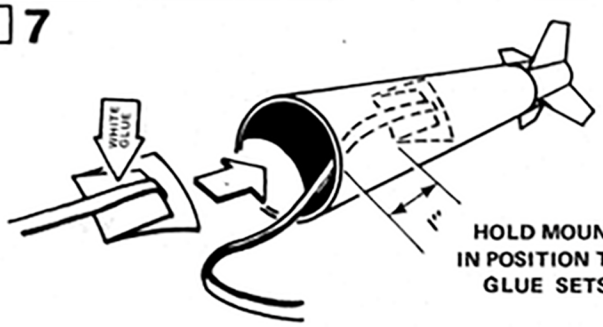
Draw a straight line along the entire length of the main body tube (part G). The edge of a desk drawer or door frame makes a suitable guide for drawing the line. Spread glue around the inside of one end of the tube. The glue should cover an area extending 1/2" into the tube. Line up the tube and the other fin unit so this tube alignment line is between two fins, and insert the front of the fin unit into the tube end with the glue. The tube should seat evenly and tightly against the fins on the fin unit.

☐ 6



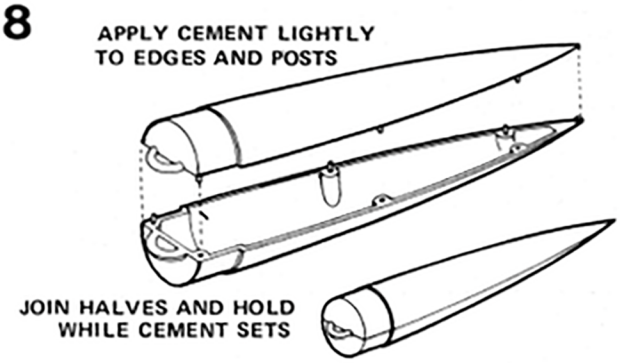
Cut out the shock cord mount (part H). Crease it on the dotted lines by folding. Spread white glue on the first section (1) and lay the end of the shock cord (part I) into the glue. Fold over and apply glue to the back of the first section and the exposed part of section 2. Lay the shock cord as shown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

☐ 7



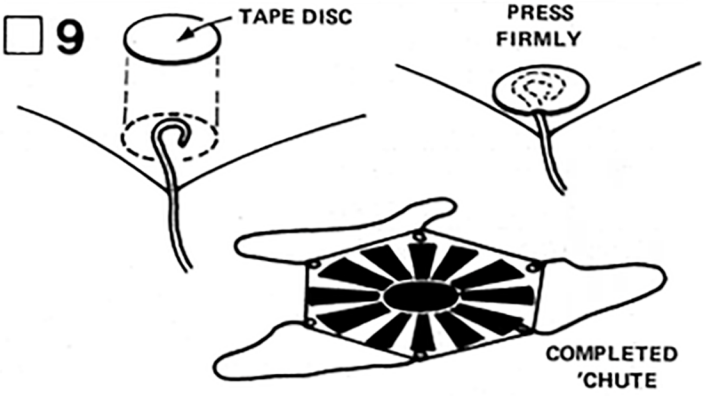
Apply glue liberally to the back side of the shock cord mount and press the mount firmly into the front end of the upper stage body tube at least 1" from the end. Hold the shock cord mount firmly until the glue sets.

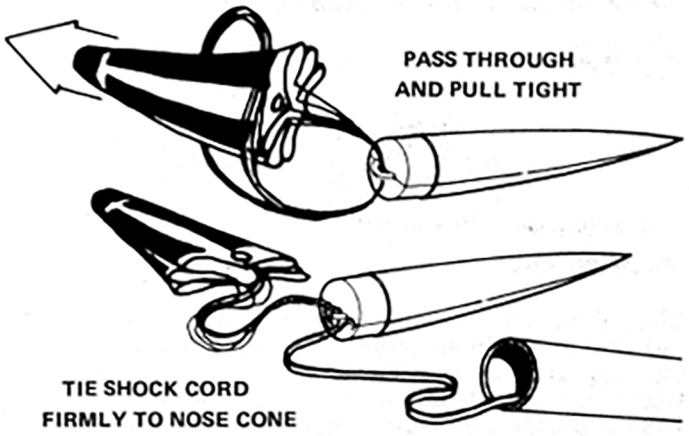
☐ 8



Cement the two nose cone halves (part J) together using tube-type plastic model 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 holes.

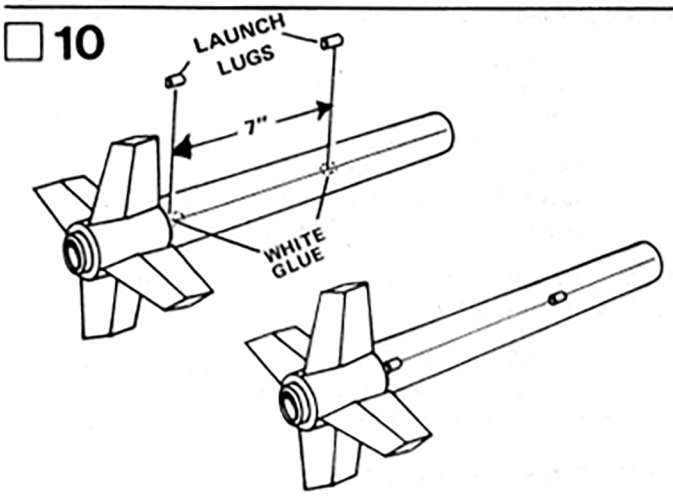
☐ 9





Cut out the parachute (part K) on its edge lines. Cut three 24" lengths of shroud line (part L). Attach line ends to the top of the parachute with tape discs (part M) as shown. Pass the shroud line loops through the nose cone loop on the nose cone. Pass the parachute through the loop ends and pull the lines tight against the nose cone loop. "Set" the knot with a drop of glue. Tie the free end of the shock cord to the nose cone loop.

☐ 10



Mark the line drawn on the body tube in step 5, 7" from the front of the fin unit. Glue one of the launch lugs (part N) on the line with the rear of the lug even with the mark. Glue the remaining lug on the line with rear of the lug even with the front of the fin unit.

PAINTING AND DETAILING

☐ 11

When all glue is dry, insert the parachute, shock cord, and nose cone into the front of the rocket. Paint the entire model with two coats of gloss orange or red enamel spray paint. Let this dry completely. Then, using the rear of the forward launch lug as a dividing line, paint the forward section of the upper stage gloss black. Let the paint dry overnight.

DECAL PLACEMENT

☐12

DIP IN WATER
10–20 SECONDS

HOLD UNTIL IT
STARTS TO CURL

When all paint is completely dry, apply decals (part O) in the positions shown in the photo. To apply the decals, cut out a decal section, dip it in lukewarm water for 10-20 seconds, and hold it until it starts to uncurl. Slip the decal off the backing sheet and onto your model. Blot excess water away with a damp cloth. When all decals are in place, let the model dry overnight. After drying, apply a coat of clear spray to protect the decals.

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).
Estes A8-3, B4-4, B4-6, B6-4, B14-5, or C6-5 model rocket engines for single stage flights.
Estes A8-5, B4-4, B6-6, B14-7, or C6-7 engines for upper stage -- A8-0, B6-0, B14-0, or C6-0 engines for booster stage for two stage flights.

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

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

FLYING YOUR SCORPION

Your Scorpion model has been designed as a high performance, two-stage, sport model. The upper stage may also be flown by itself as a single-stage sport or demonstration model. Here are some suggestions for getting the best results from your model:

Obtain a copy of Estes Industries Technical Report TR-2 and study it before flying two-stage models.

Always be extra careful when installing engines. Make sure they face the correct direction for proper staging. Make sure they are held tightly in place to insure proper recovery operation.

Have an extra person with you when launching to watch the booster stage and retrieve it after flight.

Launch in calm weather. The upper stage will drift a long way in a wind.

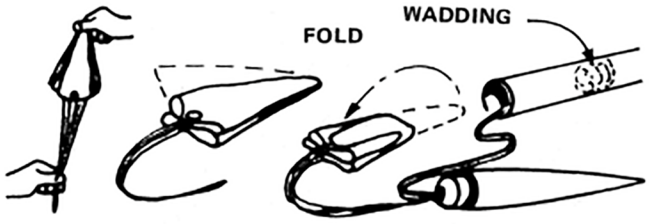
When flying as a single stage model, make sure the engine is securely held in place.

Always follow the Countdown Checklist when launching your model.

COUNTDOWN CHECKLIST

T-17

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



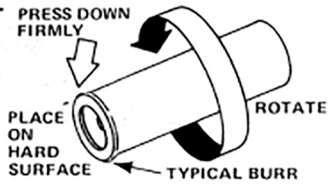
T-16 Fold the parachute into a triangular shape. Roll 'chute tightly as shown and wrap shroud lines around it. If 'chute is too large, unroll it and repack until it slides easily into rocket. A fit that is too tight may prevent parachute from ejecting properly.

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.

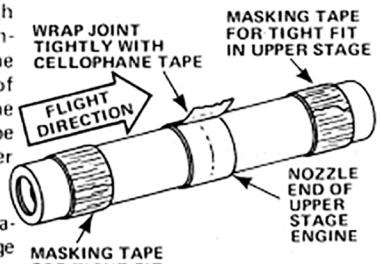
T-15 Pack the shock cord neatly into rocket, then slide the nose cone into place. Nose cone should separate easily from rocket body tube, but should not be extremely loose. If it is too tight, sand inside of body tube end and shoulder of nose cone with extra fine sandpaper.

If nose cone is too loose, add a wrapping of transparent tape or masking tape to the shoulder of the nose cone.

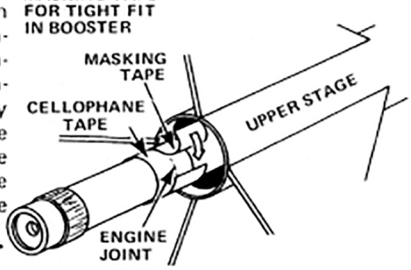
T-14 Select an upper stage engine and a booster engine. Remove any burrs from the ends of the engines by holding them against a smooth surface and turning as at right.



T-13 Position the engines with the nozzle of the upper stage engine against the top end of the booster engine. Wrap a layer of cellophane tape tightly around the joint as shown at right. Check to be sure the engines are in their proper relative positions.



T-12 Wrap masking tape around the top of the upper stage engine so it makes a tight friction fit in the engine mount tube. Insert the upper stage end of the engine unit into the upper stage engine mount. Finish securing it by wrapping a layer of masking tape around the end of the engine mount tube and the end of the engine as shown. Press the tape tight against the engine.



T-11

Slide the booster into place on the engine unit from the bottom. Position it so fins are in line. Secure the booster in place by wrapping a layer of masking tape around the end of the engine mount tube and the engine. Press the tape down tightly.

T-10 Install an igniter in the booster engine as directed in the engine instructions.

T-9 Disarm the launch panel--remove safety key.

T-8 Place rocket on launch pad, making sure rocket slides freely on launch rod. Clean the micro-clips and attach them to the igniter.

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!!

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. Disarm the launch panel, remove the model, clean the igniter residue from the nozzle, and install a new igniter. Follow the launching procedure again.

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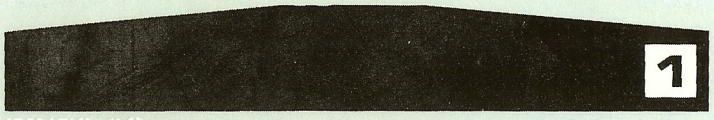

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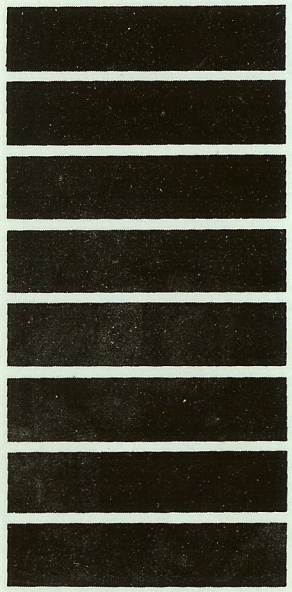

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Scorpion

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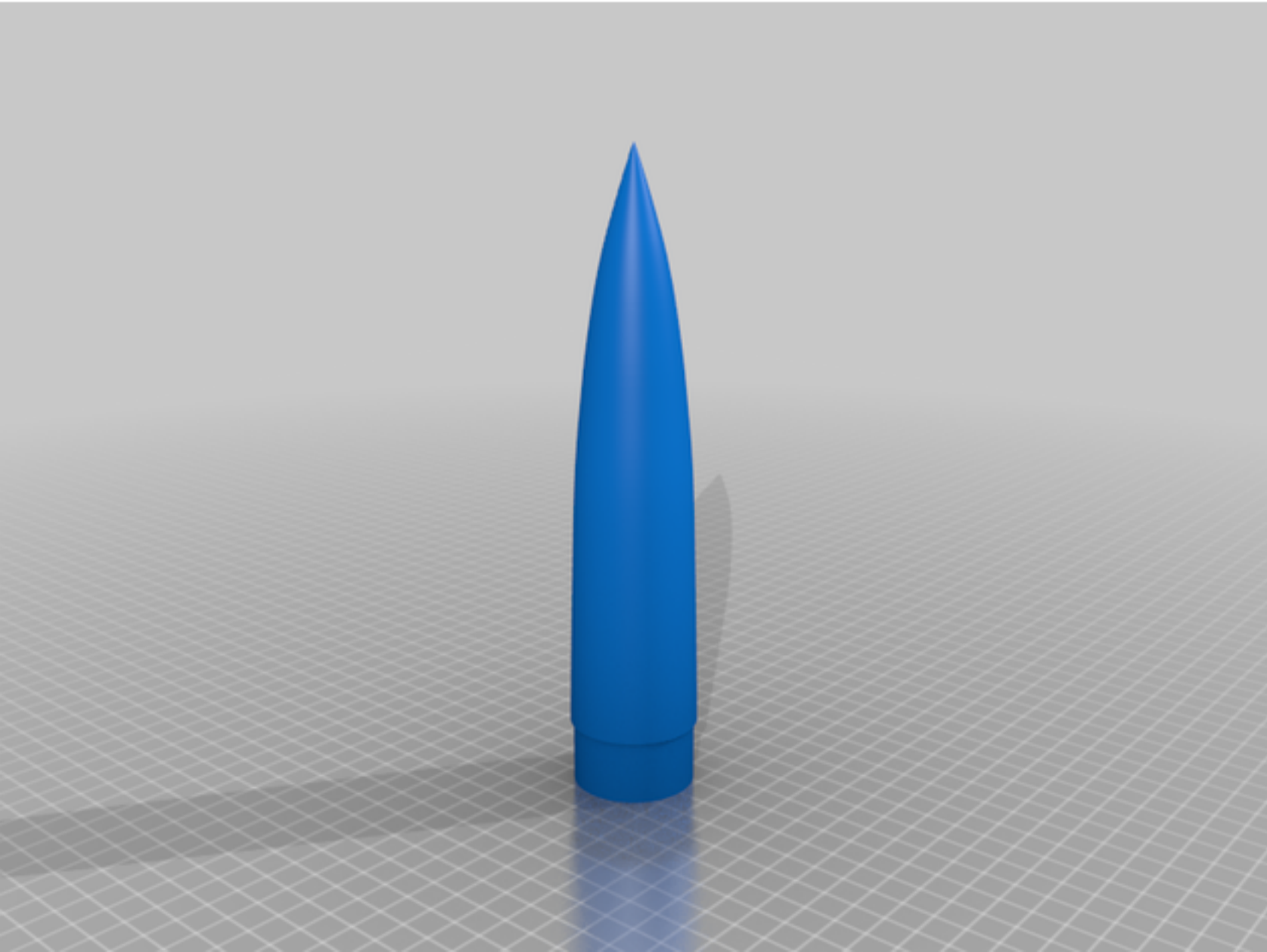

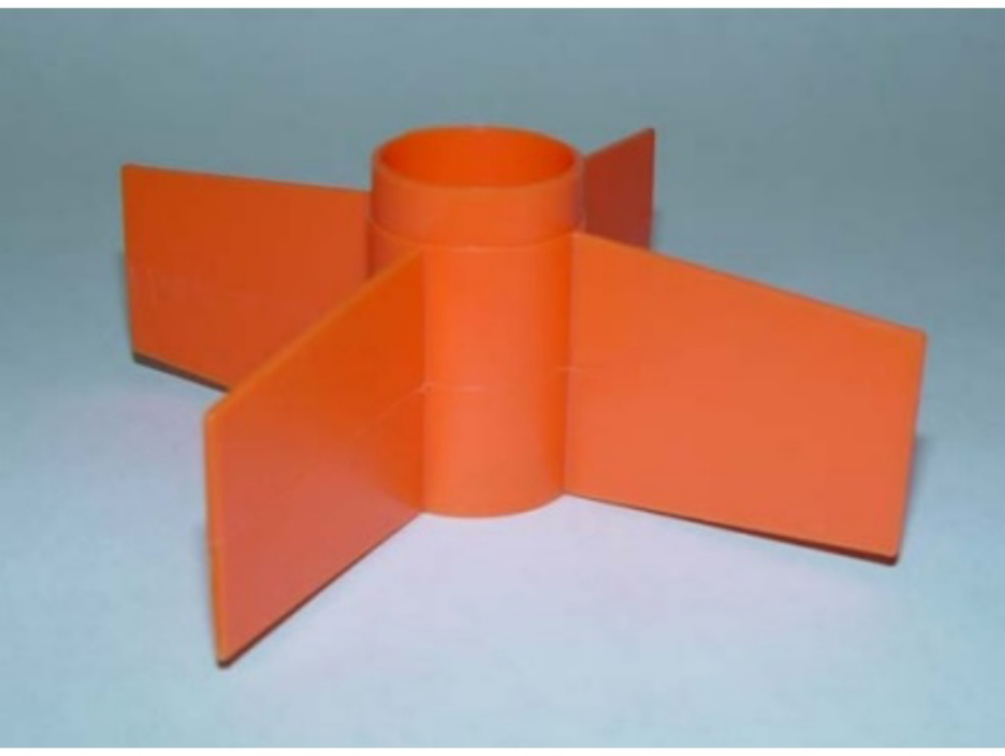

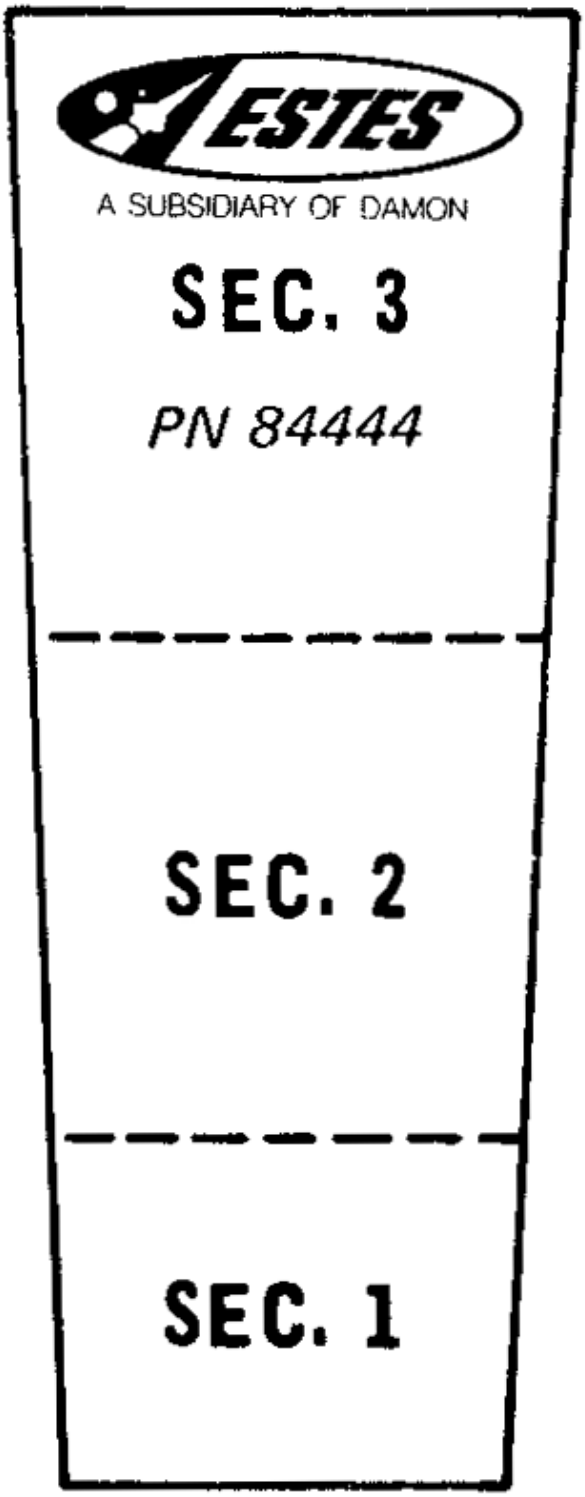

SHOCK CORD MOUNT

SCM-50

PARTS LIST KIT N0. 1333 - Scorpion								
Quantity	Description	Type	Number	Details1	Details2	Details3	Details4	Comment
2	PAPER BODY TUBE	BT-20J	30326	2.75" long	0.710" ID	0.736" OD	0.013" wall	Glassine
4	CENTERING RINGS	AR-2050	30164	0.25" long	0.737" ID	0.949" OD	0.106" wall	Green
2	PLASTIC FIN UNIT	PRP-1G	32493	Old Style			* See note	3D print file
1	PAPER BODY TUBE	BT-50G	30361	1.5" long	0.950" ID	0.976" OD	0.013" wall	Glassine
1	Dummy Engine	EC-2	35010	.690" OD	2.75" long			Yellow
1	ENGINE BLOCK	EB-20A	30224	.708" OD	.65" ID	.25" thick	0.058" wall	Black
1	PAPER BODY TUBE	BT-50	30352	18" long	0.950" ID	0.976" OD	0.013" wall	Glassine
1	Shock Cord Mount	SCM-50	84444	1.5" wide	3.5" long		Index card stock	Scan
1	Shock Cord	SC-1	85730	18" long	1/8" wide			Rubber
2	PLASTIC NOSE CONE	PRP-1H	32492	4.25" long	.974" dia.	.5" shoulder	White - PNC-50Y is a close	2 parts
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	Tape Disc	TD-3F	38406	1/2" dia.	Paper	Self-Stick	WO/Center Hole	Set of 6
2	LAUNCH LUG	LL-2AM	38176	5/32" ID	1/8" rod	3/8" long		Mylar
1	Decal	KD-1333	37563	4" wide	17" long	Blk, Wht	Waterslide	Scan

* Other kits using the PRP-1G Fin Unit
Kit# 1328, Kadet
Kit# 1333, Scorpion (used 2 fin units) (early production kits)
Kit# 1416, Challenger-1 (starter set)
Kit# 1418, Star Trek (starter set)
Kit# 1420, Star Wars Proton Torpedo (starter set)
Kit# 1438, Dune Guild Heighliner (starter set)
Kit# 1447, America (starter set)

Flying Model Rocket

Scorpion

FLYING MODEL ROCKET

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ASSEMBLY TIP

SUPPLIES

PARTS

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FLYING MODEL ROCKET

SKILL LEVEL 2

1-Beginner 2-Intermediate 3-Craftsman
4- Advanced 5- Expert

High flying two-stage sport model with research vehicle styling. Easy-to-build and exciting to fly with all plastic fin units, plastic nose, realistic two-color decals, and 12" recovery parachute. Booster employs tumble recovery while upper stage streaks skyward to altitudes over 1,000 feet.

Specifications
Length 26.5" (67.3 cm)
Diameter .976" (24.8 mm)
Weight 1.8 oz. (52 g)
12" Parachute Recovery

Recommended Engines
SINGLE STAGE
A8-3 (First Flight)
A8-5 B4-4 B4-6
B6-4 B6-6 C6-5
C6-7

TWO-STAGE
A8-5 A8-0
(First Flight)
B6-0 < B6-6 / B4-6
B14-0 B14-7
C6-0 C6-7

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 suggested for those under 12 years of age when flying model rockets.

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