

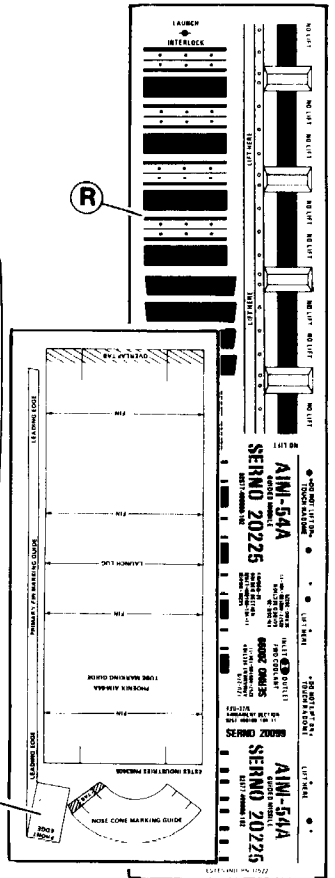
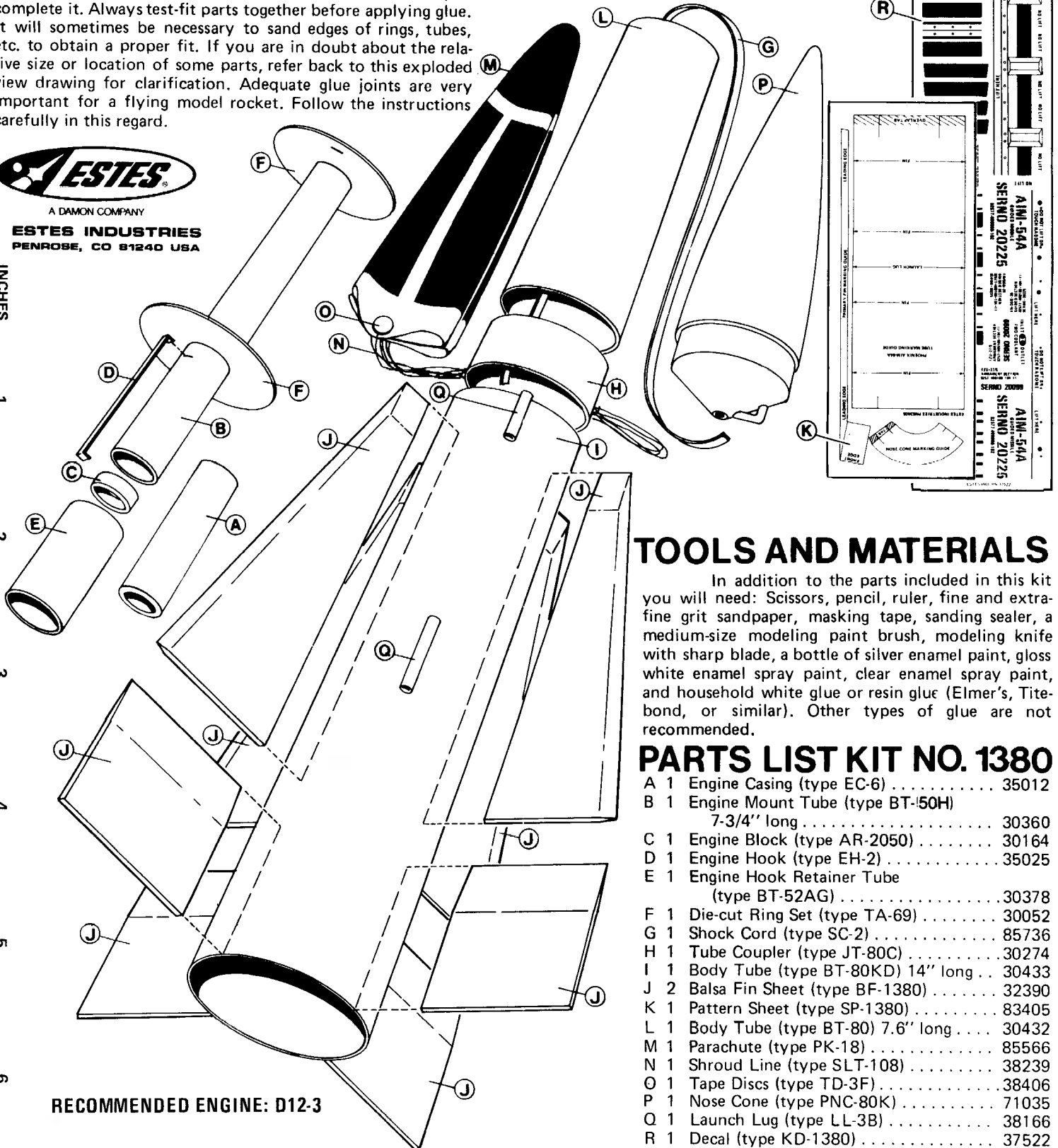
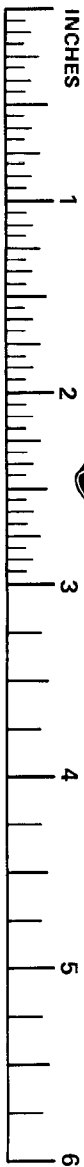


# PHOENIX

SKILL LEVEL 3 –  
Recommended for the Experienced  
Model Builder

## BEFORE YOU START

Read each step and study the accompanying drawings before doing any of the work called for in that step. Make sure you have all parts and materials. Check off each step as you complete it. Always test-fit parts together before applying glue. It will sometimes be necessary to sand edges of rings, tubes, etc. to obtain a proper fit. If you are in doubt about the relative size or location of some parts, refer back to this exploded view drawing for clarification. Adequate glue joints are very important for a flying model rocket. Follow the instructions carefully in this regard.



RECOMMENDED ENGINE: D12-3

## TOOLS AND MATERIALS

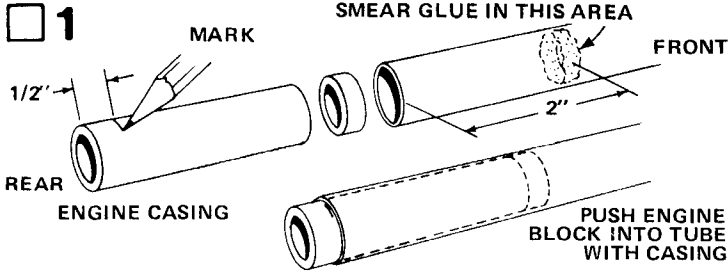
In addition to the parts included in this kit you will need: Scissors, pencil, ruler, fine and extra-fine grit sandpaper, masking tape, sanding sealer, a medium-size modeling paint brush, modeling knife with sharp blade, a bottle of silver enamel paint, gloss white enamel spray paint, clear enamel spray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

## PARTS LIST KIT NO. 1380

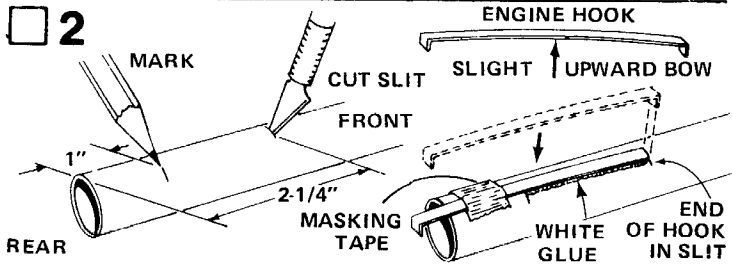
A	1 Engine Casing (type EC-6)	35012
B	1 Engine Mount Tube (type BT-50H) 7-3/4" long	30360
C	1 Engine Block (type AR-2050)	30164
D	1 Engine Hook (type EH-2)	35025
E	1 Engine Hook Retainer Tube (type BT-52AG)	30378
F	1 Die-cut Ring Set (type TA-69)	30052
G	1 Shock Cord (type SC-2)	85736
H	1 Tube Coupler (type JT-80C)	30274
I	1 Body Tube (type BT-80KD) 14" long	30433
J	2 Balsa Fin Sheet (type BF-1380)	32390
K	1 Pattern Sheet (type SP-1380)	83405
L	1 Body Tube (type BT-80) 7.6" long	30432
M	1 Parachute (type PK-18)	85566
N	1 Shroud Line (type SLT-108)	38239
O	1 Tape Discs (type TD-3F)	38406
P	1 Nose Cone (type PNC-80K)	71035
Q	1 Launch Lug (type LL-3B)	38166
R	1 Decal (type KD-1380)	37522



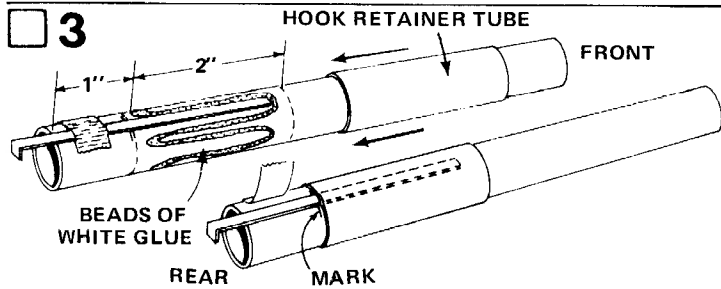
# ASSEMBLY INSTRUCTIONS



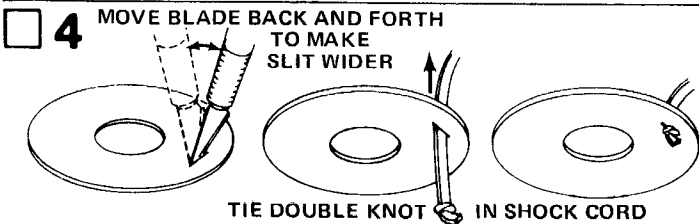
Mark engine casing (part A) 1/2" from one end. Use your finger or a stick to smear a band of glue inside engine mount/stuffer tube (part B) about 2" from one end. Insert engine block (part C) into end with glue. Use casing to push engine block into place until mark on casing is even with end of tube. Remove casing immediately.



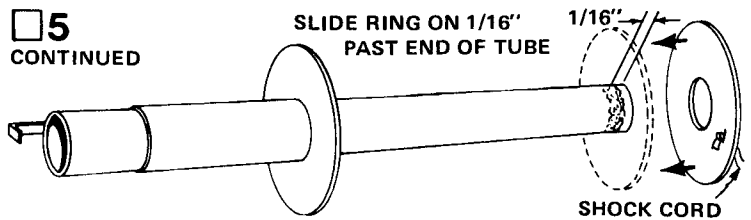
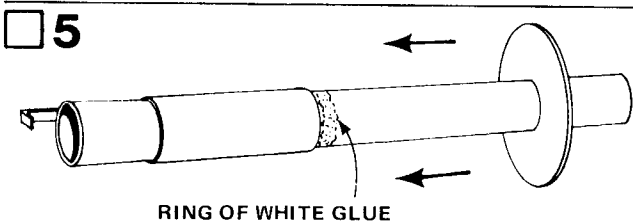
Cut a 1/8" slit into engine tube 2-1/4" from the rear of the tube. Mark tube 1" from rear as shown. Apply a line of glue between the slit and 1" mark. Push engine hook end (part D) into slit and align hook so that it runs straight along tube. Temporarily tape engine hook into place.



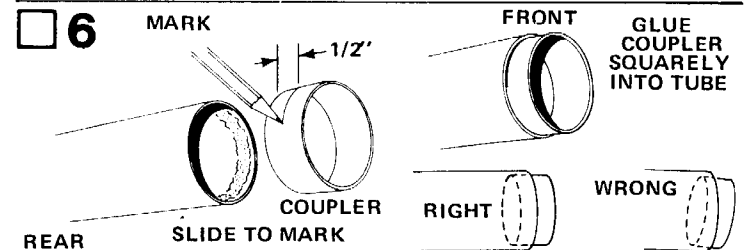
Smear a film of glue around the tube above the 1" mark for a distance of 2". Make sure you have glue all around the tube. Slide the engine hook retainer tube (part E) onto the front of the tube. Push the retainer down over the glue until it reaches the 1" mark. Wipe away any excess glue.



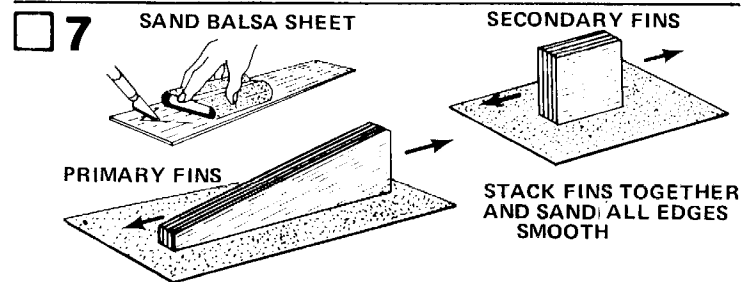
Remove centering rings from ring set (part F). Use a knife blade to slightly widen the slit in the die-cut ring. Insert one end of the shock cord (part G) through the slit. Tie a double knot in the end of the shock cord and pull it tight against the ring. Smear glue over the knot to secure it in place.



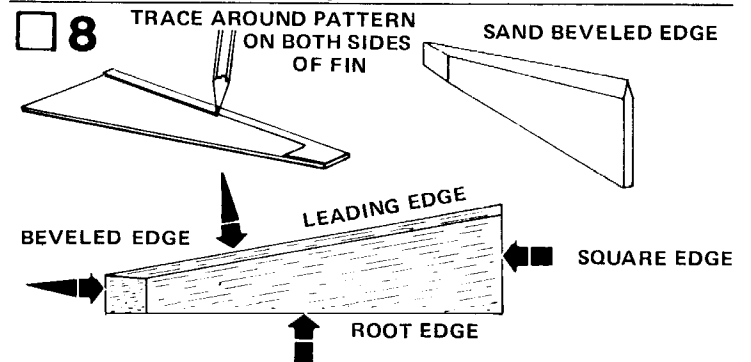
Apply a line of glue around front edge of the hook retainer tube as shown. Slide the other die-cut ring (the ring without the shock cord) onto the front of the engine tube. Push ring down until it stops firmly against the retainer tube. Apply a line of glue around the front end of the engine tube. Slip die-cut ring with shock cord attached onto tube end so tube extends 1/16" past ring. Smooth out glue around tube/ring joint with your finger. Apply glue to front side of both rings and smooth with finger again. Set aside to dry.



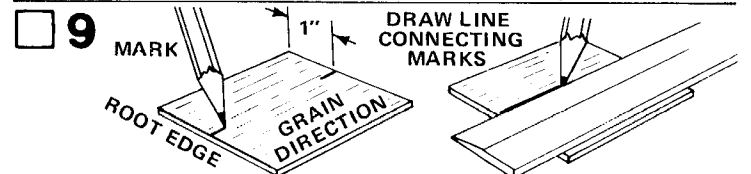
Mark the tube coupler (part H) 1/2" from one edge. Smear a band of glue inside one end of long body tube (part I). Insert the tube coupler and push until the mark on coupler is even with the end of the tube. Be sure the tube coupler is installed squarely as shown.

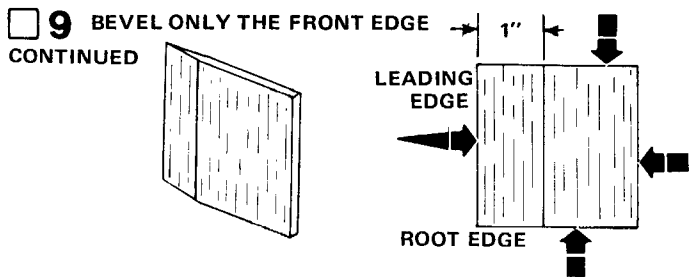


Fine-sand both sides of each balsa fin sheet (part J). Carefully remove fins from sheet. Use a sharp knife to cut free the corners and edges of each fin. Stack fins together as shown. Sand fins until all edges are smooth and straight.

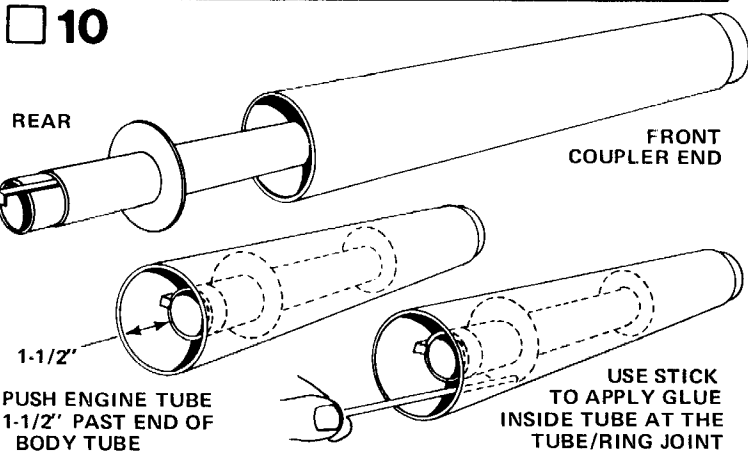


Cut out the primary fin marking guide from the pattern sheet (part K). Place pattern on top of primary fin as shown. Trace pattern with pencil. Trace both sides of each fin. Sand each fin to match illustrations. Begin sanding with fine sandpaper. Sand from lines out to the fin edges. Use extra-fine sandpaper to complete, shaping smooth, flat surfaces on both sides of each fin. Both body edge (root edge) and rear edge must remain square. For best results use a small wood sanding block to shape the fin edges.

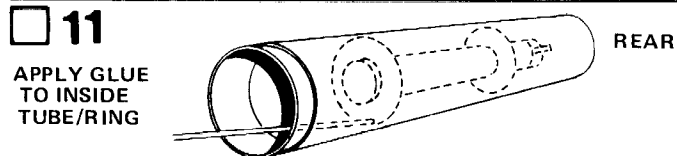




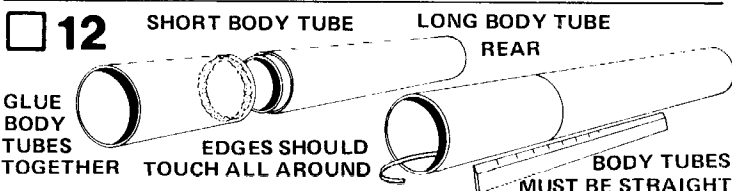
Arrange the secondary fins as shown below. Make a mark 1" from one edge in two places on both sides of each fin and connect the marks with a line as shown. Sand from lines out to the edge of each fin in the same manner as in previous step. Sand each fin to match illustrations.



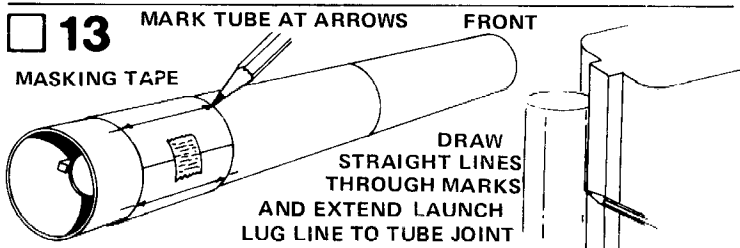
When the glue on the engine tube assembly is completely dry, temporarily stuff shock cord inside engine tube. Slide engine mount into rear of long tube with tube coupler at front. Push it inside until engine tube end is 1-1/2" inside tube. Using a stick or dowel, apply a line of glue around the rear body tube/ring joint.



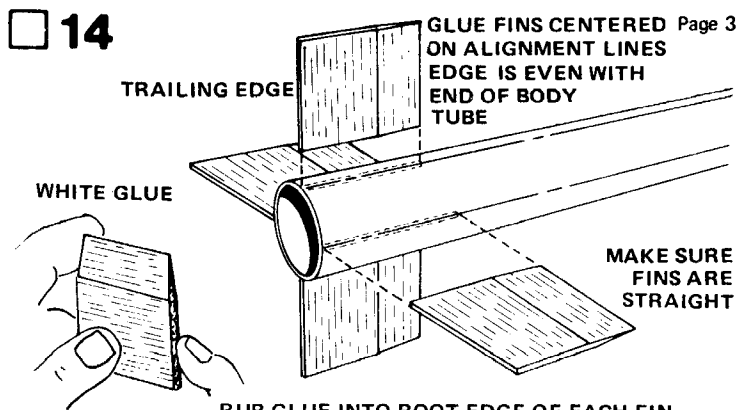
Apply a line of glue around the forward tube/ring joint in the same way as in previous step. Stand tube upright while glue dries.



Smear a band of glue around the inside of the short body tube (part L). Slide this end of the tube over the tube coupler attached to the main body tube in one smooth movement. The edges of the two body tubes should touch all around. The alignment should be perfectly straight. After glue has set, pull shock cord out of engine mount tube.

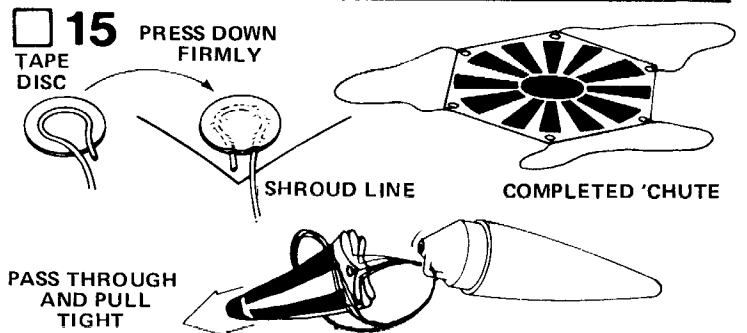


Cut out the tube marking guide from the pattern sheet. Wrap it around the rear of the body. Mark the tube at each arrow point, front and rear. Draw a straight line connecting each matching front and rear mark. (Use a ruler when drawing lines.) Extend the launch lug line forward 14".

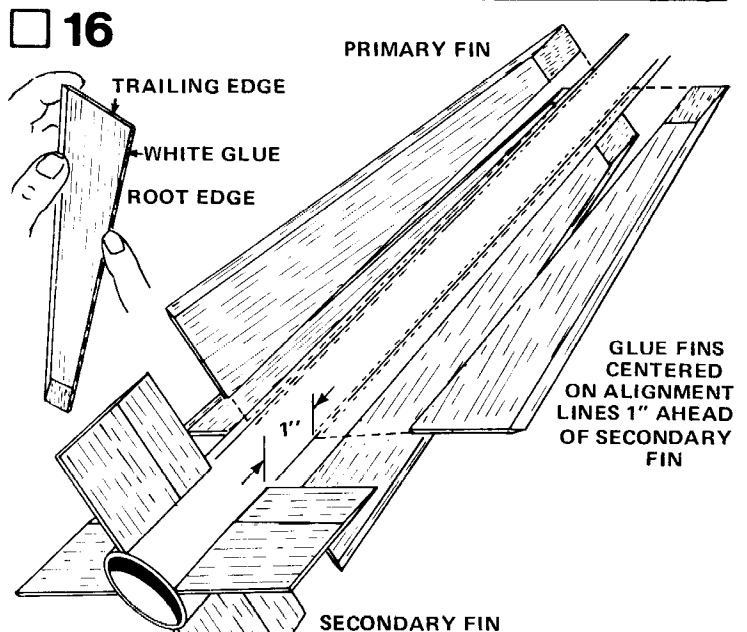


RUB GLUE INTO ROOT EDGE OF EACH FIN

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

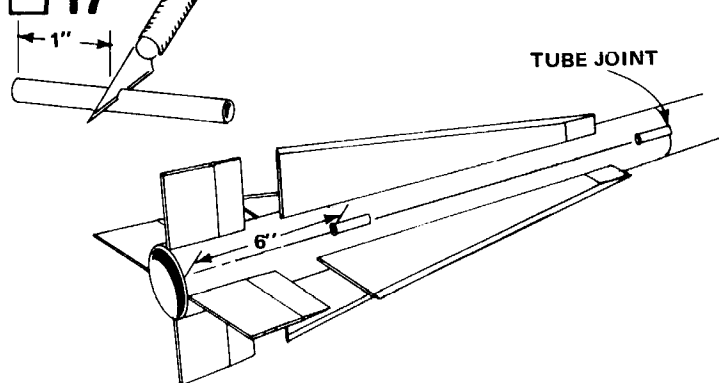


Cut out the parachute (part M) on its edge lines. Cut three lengths of shroud line (part N). Attach line ends to the top of the parachute with tape discs (part O) as shown. Form a small loop in the end of a shroud line. Holding loop, gently center loop inside tape disc on the sticky side. Then carefully press tape disc onto its proper place on the top of the parachute. Firmly press the tape disc into place until both tape disc and parachute material are molded around the shroud line loop. Repeat for other shroud line ends and tape discs. Pass the shroud line loops through the loop on the nose cone (part P). Pass the parachute through the loop ends and pull the lines tight against the nose cone.

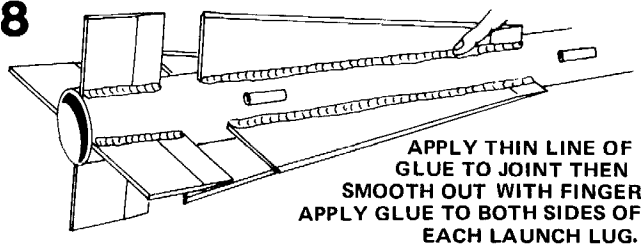


Make sure glue has set on secondary fins before proceeding to next step. Rub a line of glue into the root edge of each primary fin and allow to dry. Apply glue to the fins again and position fins on the alignment lines 1" ahead of the secondary fins as shown. Adjust the fins so they project straight away from the body tube and in line with the secondary fins.

17

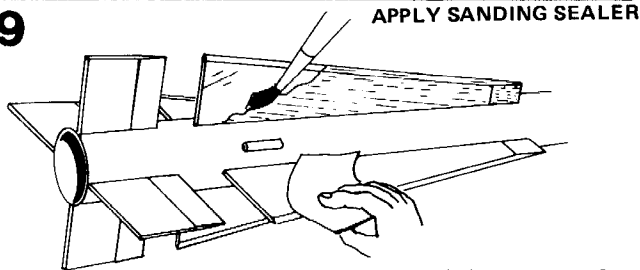
**CUT LAUNCH LUG INTO TWO 1" LENGTHS**


Cut the launch lug (part Q) into two 1" lengths. Glue one of these lugs on the launch lug alignment line 6" from rear of rocket. Glue the remaining lug on the launch lug alignment line with the front of the lug even with the joint where the two body tubes meet. Align the launch lugs straight on the body tube.

 18


**APPLY THIN LINE OF GLUE TO JOINT THEN SMOOTH OUT WITH FINGER. APPLY GLUE TO BOTH SIDES OF EACH LAUNCH LUG.**

Reinforce the fin joints with glue. Holding the rocket horizontally (level), apply a line of glue to both sides of each joint. Smooth out the glue with your finger. Keep the rocket level until the glue dries.

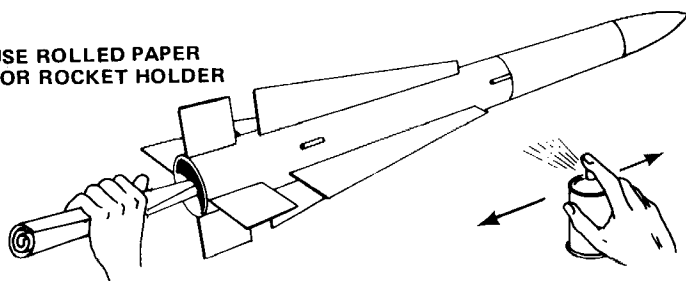
 19


**LIGHTLY SAND ALL FINS**

When all glue on the outside of the model is dry, prepare the balsa parts for painting. Apply at least two coats of sanding sealer to the fins. Let dry and sand lightly between coats. Do this until the tiny holes in the wood are filled and everything looks and feels smooth.

 20

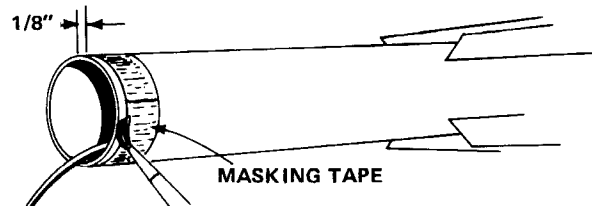
**USE ROLLED PAPER FOR ROCKET HOLDER**



After the sanding sealer is completely dry, pack 'chute and shock cord into rocket body and slide nose cone into place. Paint the entire model with gloss white enamel spray paint. Follow instructions on spray can for best results. Do not paint the model with a lacquer paint. Lacquer will mar the finish of the plastic nose cone. Spray the model with several light coats of paint to avoid "runs". Let paint dry overnight.

 21

**APPLY A COAT OF SILVER ENAMEL PAINT**

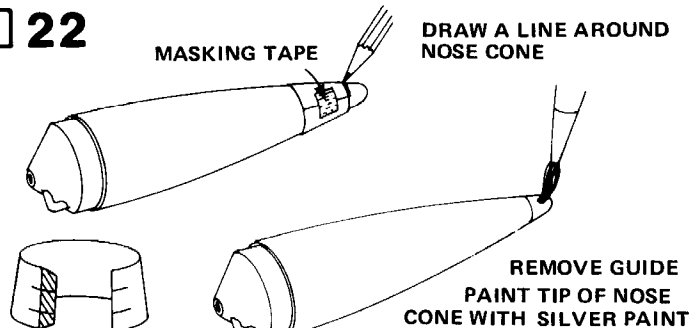


Apply masking tape to cover and protect the areas which will remain white. Paint the front 1/8" of the body tube with silver enamel paint.

 22

**MASKING TAPE**

**DRAW A LINE AROUND NOSE CONE**

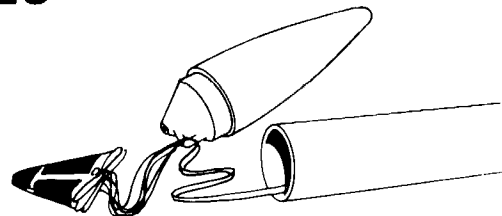


**REMOVE GUIDE PAINT TIP OF NOSE CONE WITH SILVER PAINT**

Cut out the nose cone marking guide from the pattern sheet. Match the alignment marks and apply a piece of masking tape to hold guide together. Slip guide over nose cone tip. Hold guide centered in place while tracing with a pencil a line around the top portion of the guide. Remove guide and apply a coat of silver enamel paint from the line to the tip of the nose cone.

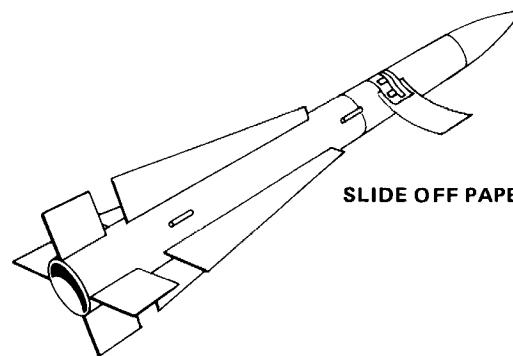
 23

**OPEN EYELET ON NOSE CONE WITH KNIFE.**



**TIE SHOCK CORD FIRMLY TO NOSE CONE**

Tie shock cord end to nose cone eyelet with a double knot. Pack 'chute and shock cord into rocket body. Slide nose cone into place.

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**SLIDE OFF PAPER BACKING**

When all paint is dry, apply the decals (part R) in the positions shown. (A) Cut only one decal at a time from sheet. (B) Submerge decal in lukewarm water until decal slides on backing paper (usually 15 to 30 seconds). (C) Gently slide decal from backing paper onto model. (D) Move decal into exact position and carefully blot away excess water with a soft cloth. (E) If the decal "sticks" before you have it in position, apply water over the decal with a brush. This will permit the decal to be moved. (F) Smooth out all wrinkles and air bubbles before the decal dries. We recommend that the completed model be sprayed with Testor's "Gloss Cote" to protect the decals and retain the shine.



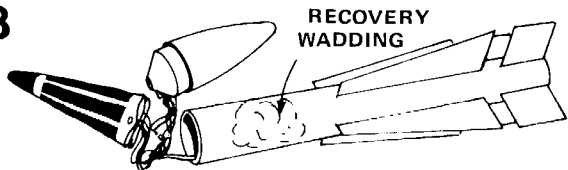
# LAUNCHING COMPONENTS

- To launch your rocket you will need the following items:
- An Estes model rocket launching system with a Maxi Rod
  - Flameproof recovery wadding (Estes Cat. No. 2274)
  - Estes D12-3 model rocket engine

Be sure to follow the HIAA-NAR\* Model Rocket Safety Code when carrying out your model rocket activities.  
 \*HIAA - Hobby Industry Association of America  
 NAR - National Association of Rocketry

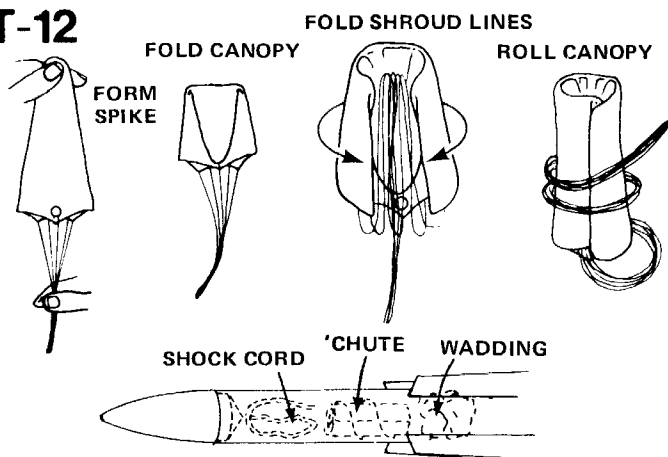
## COUNTDOWN CHECKLIST

### T-13



Pack 12 or 14 squares of loosely crumpled recovery wadding into the body tube. Usually this will fill the body tube for a distance equal to about 1-1/2 times its diameter.

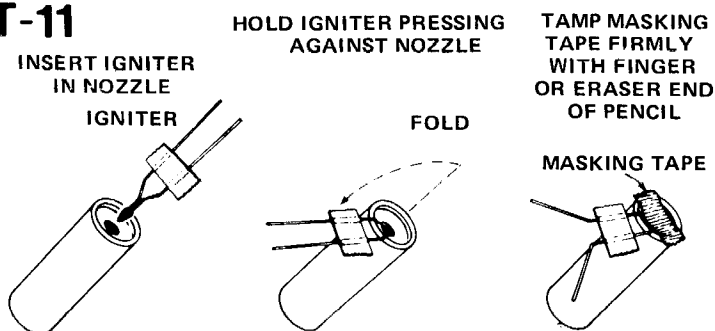
### T-12



Hold the parachute at its center and pass the other hand down it to form a "spike" shape. Fold this spike in half. Fold shroud lines back along parachute and then back down to lower edge of parachute to reduce length of shroud line "left over". Roll parachute into tube shape to fit easily into body. Any remaining shroud line should be loosely wrapped around parachute. Pack 'chute into the body tube on top of the wadding. Pack the shroud lines and shock cord in on top of the parachute and slip the nose cone into place.

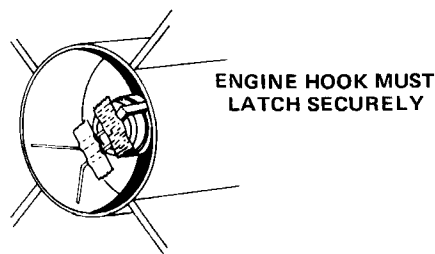
**NOTE:** DO NOT pack parachute until you are actually ready to launch. For maximum parachute reliability, lightly dust the 'chute with ordinary talcum powder before each flight, especially in cold weather.

### T-11



Select an engine and install an igniter as directed in the engine instructions. The engine recommended for use with this rocket is the D12-3 made by Estes.

### T-10

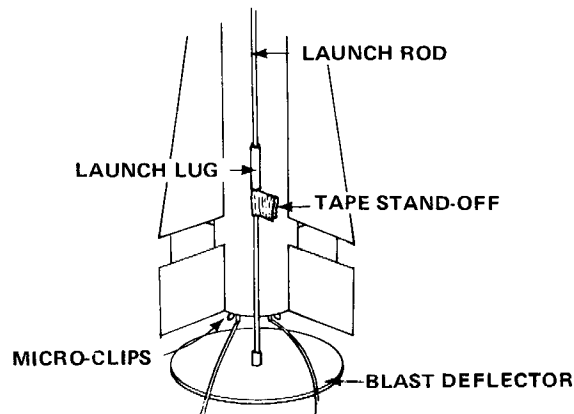


Insert engine into rocket engine mount. Engine hook must latch securely over end of the engine.

### 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 protective tape on igniter as possible.

### T-7

Clear the launch area. Alert recovery crew and trackers. Check for low flying aircraft and unauthorized persons in the recovery area.

### T-6

Arm the launch panel -- INSERT SAFETY KEY!

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

Repeat Countdown Checklist for each flight.

## MISFIRE PROCEDURE

Disarm the launch panel. Wait one minute before approaching the rocket on the launch pad. Remove the rocket, clean the igniter residue from the nozzle of the engine, and carefully install a new igniter. Repeat the Countdown Checklist.

Failure of the rocket engine to function properly is nearly always caused by a failure to install the igniter correctly. This failure permits the igniter to heat and burn into two pieces without igniting the engine.



A DAMON COMPANY

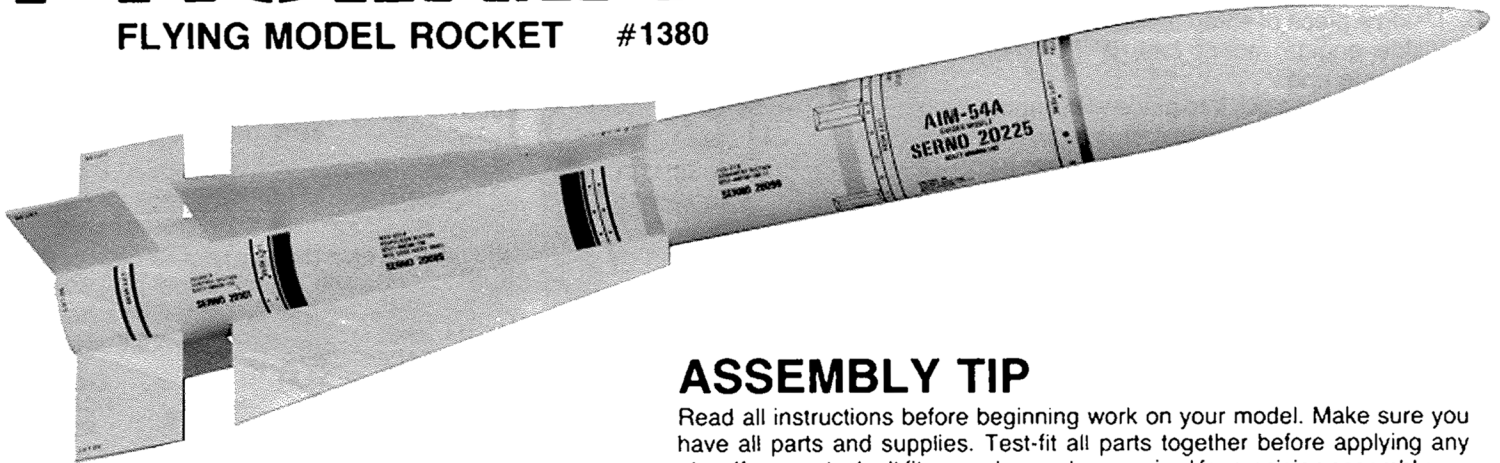
**ESTES INDUSTRIES**  
 PENROSE, CO 81240 USA

# PHOENIX™

FLYING MODEL ROCKET #1380



ESTES INDUSTRIES  
1295 H STREET  
PENROSE, CO 81240 USA

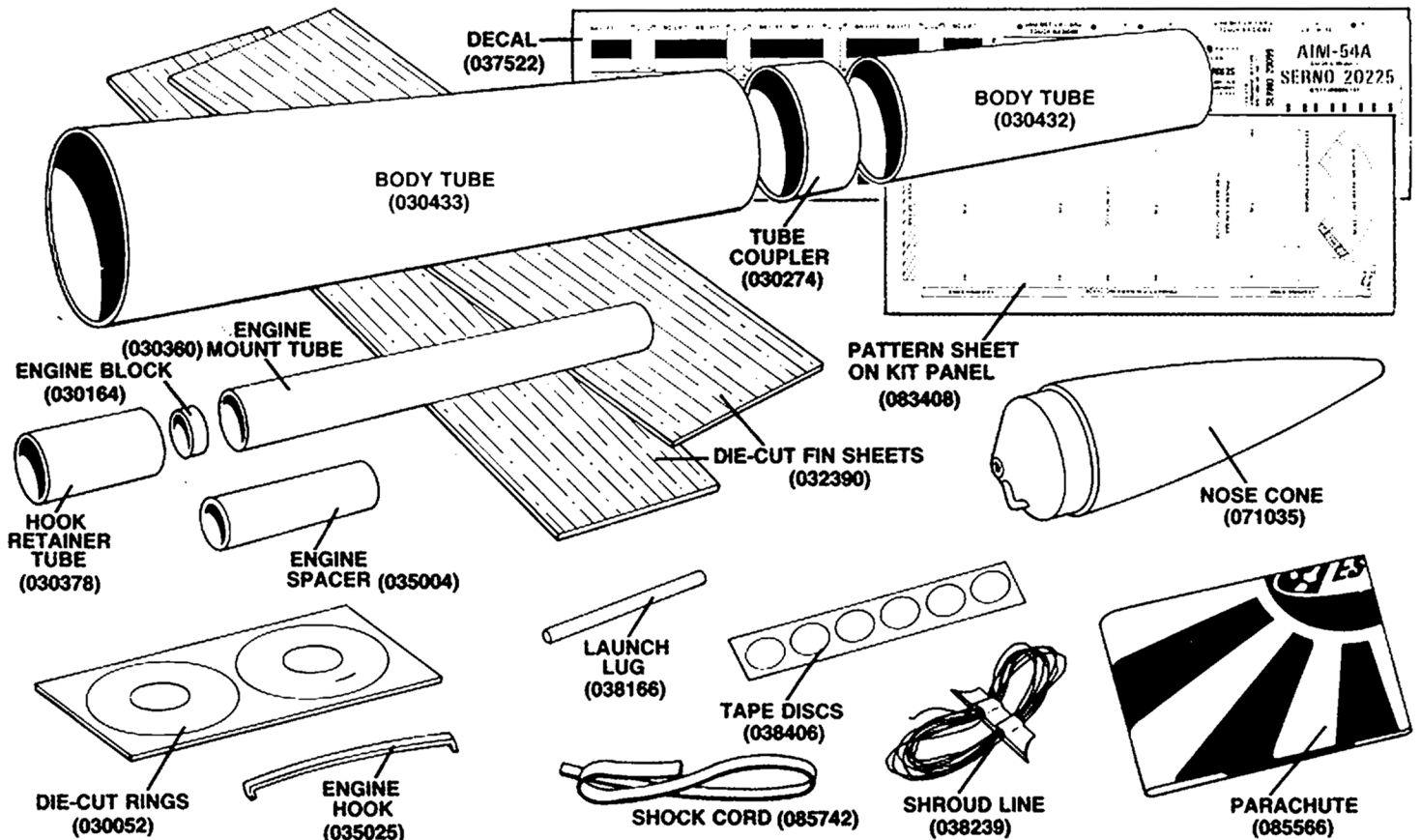


## ASSEMBLY TIP

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

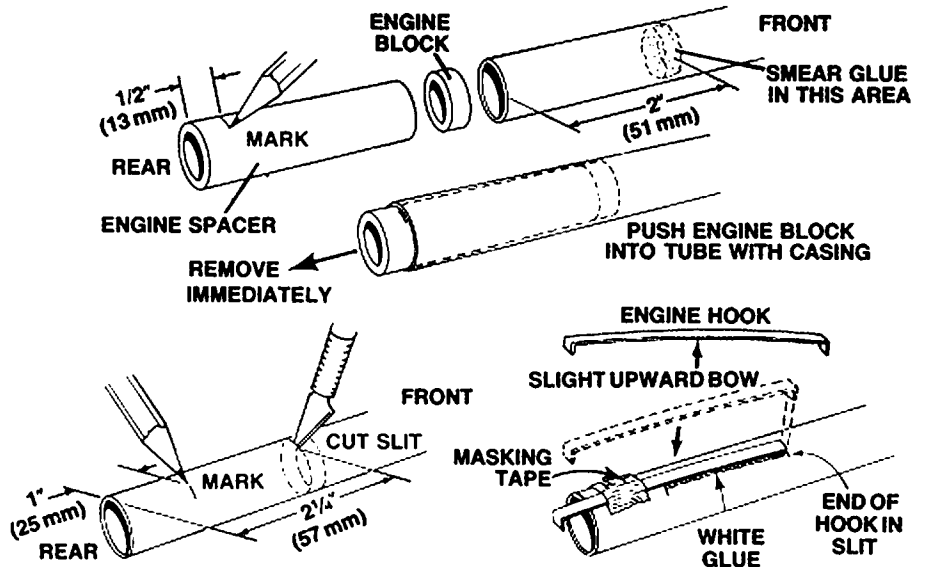
Locate the parts shown below and lay them out on the table in front of you. In addition to the parts included in the kit you will also need:



# ROCKET ASSEMBLY

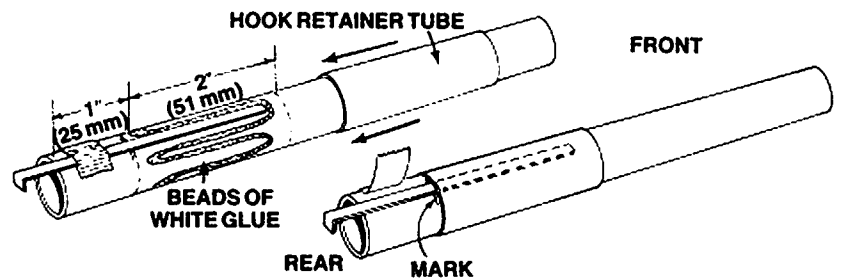
## 1

- Mark yellow engine spacer tube  $1/2"$  (13 mm) from one end.
- Using a piece of scrap balsa, smear glue inside engine mount tube  $2"$  (51 mm) from one end.
- Push engine block into place with engine spacer until mark on spacer is even with end of tube. Remove engine spacer immediately.
- Mark engine mount tube  $1"$  (25 mm) and  $2 1/4"$  (57 mm) from rear end.
- Cut  $1/8"$  (3 mm) long slit at  $2 1/4"$  (57 mm) mark. Apply a line of glue between slit and  $1"$  (25 mm) mark.
- Insert one end of engine hook into slit. Align hook straight along tube and temporarily tape hook into place.



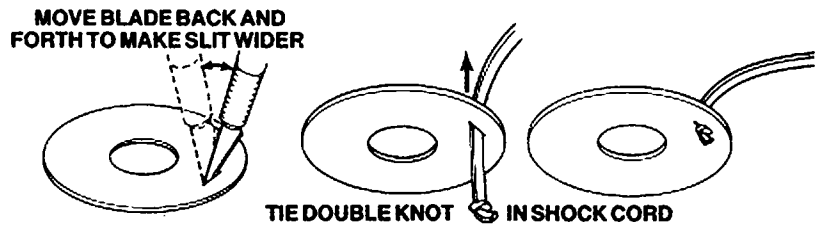
## 2

- Apply glue around tube about  $2"$  (51 mm) above  $1"$  (25 mm) mark as show.
- Slide hook retainer tube from front of engine tube down over glue to  $1"$  (25 mm) mark.
- Wipe away excess glue. Remove tape.



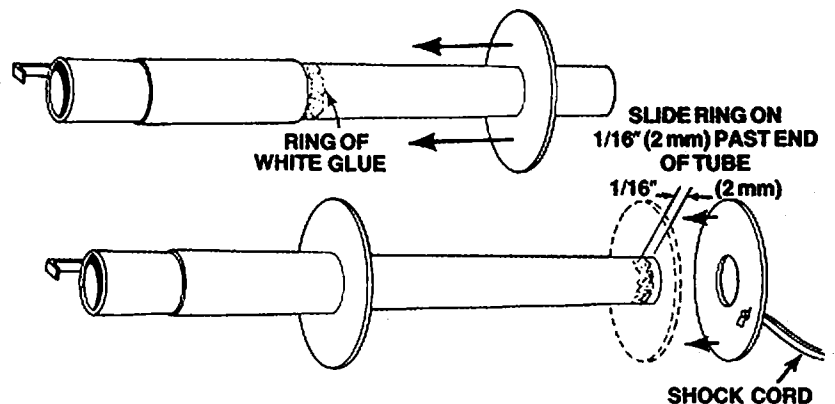
## 3

- Remove centering rings from die-cut card.
- Slightly widen slit in die-cut ring.
- Insert shock cord through slit and tie double knot in one end of shock cord.
- Pull knot tight against ring and apply glue over knot.



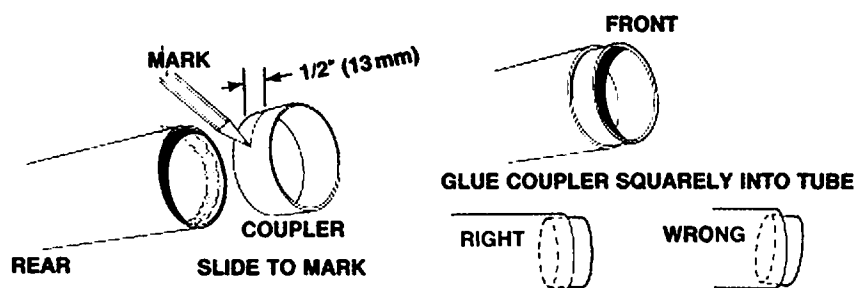
## 4

- Slide ring without shock cord over front end of tube, down to hook retainer tube. Apply glue to both sides of ring/tube joint.
- Slide second ring onto front of tube about  $1/16"$  (2 mm) from end of tube. Apply glue to both sides of ring/tube join. Set aside to dry.



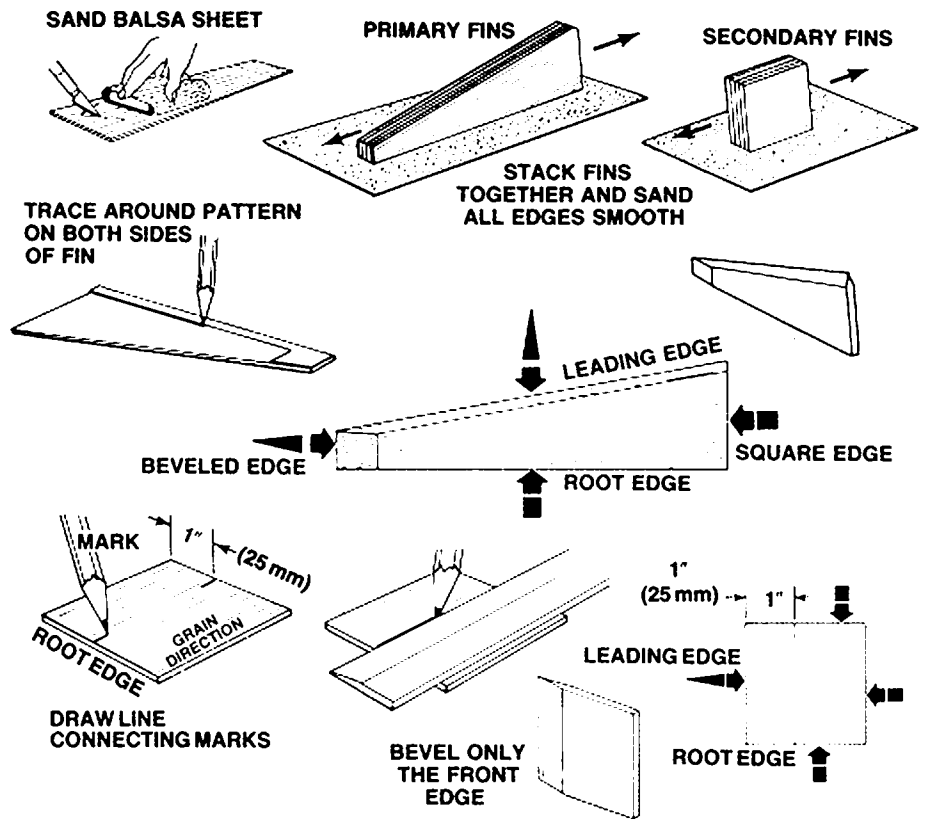
## 5

- Mark tube coupler  $1/2"$  (13 mm) from one edge. Apply glue inside one end of long body tube.
- Push tube coupler into tube until mark on coupler is even with end of tube.
- Adjust tube coupler alignment as shown.



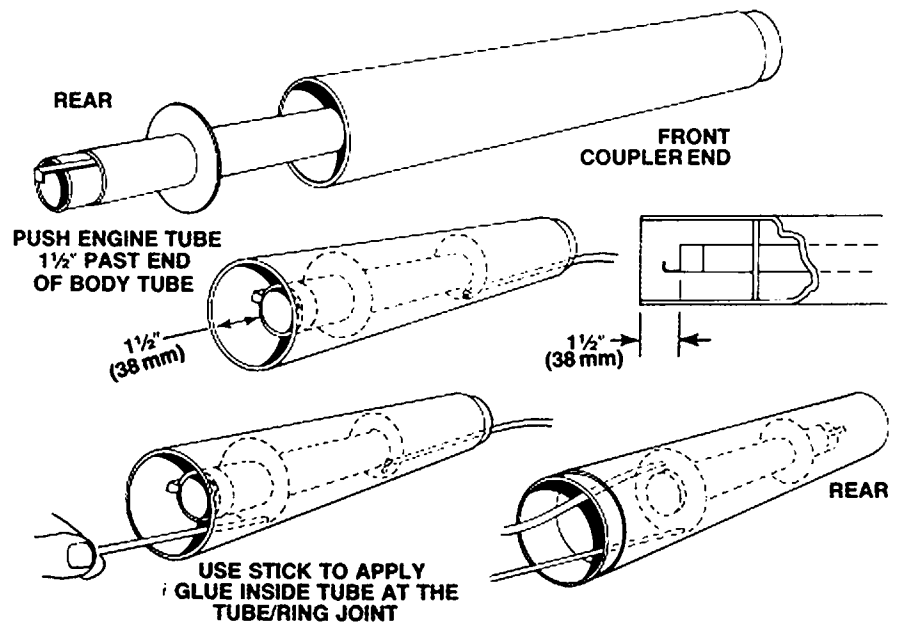
## 6

- Fine sand balsa die-cut sheet. Carefully remove fins by freeing edges with sharp knife.
- Stack alike fins together. Sand all edges smooth.
- Cut out primary fin marking guide from pattern sheet. Place pattern on fins as shown. Trace pattern with pencil on both sides of each fin.
- Sand bevel edge into each fin. For best results sand from pencil line to center of fin with sanding block.
- Mark 1" (25 mm) from one edge both sides of each fin as shown. Connect marks with straight line.
- Sand each fin as shown.



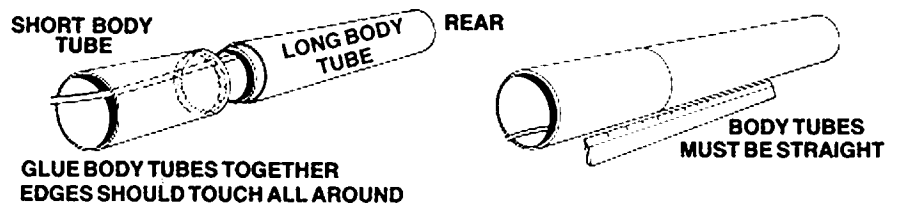
## 7

- Slide engine mount into rear of large body tube.
- Push mount in 1½" (38 mm) from end of body tube.
- Using a piece of scrap balsa or dowel, apply a bead of glue around the front and rear ring/body tube joints.



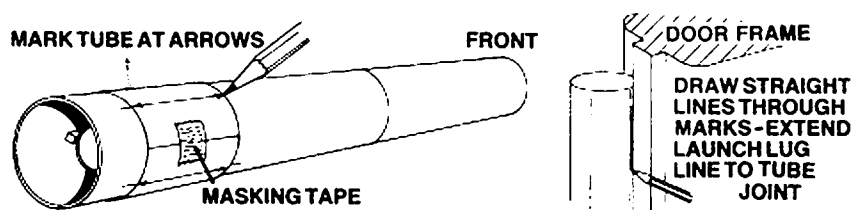
## 8

- Apply glue around inside end of short body tube. Slide this end of tube over tube coupler of large body tube in smooth motion.
- Edge of body tubes should touch all around. Align tubes perfectly straight.



## 9

- Cut out tube marking guide from Pattern Sheet. Wrap guide around the tube and tape.
- Mark tube at arrows. Mark launch lug line with "LL". Remove guide.
- Draw straight lines connecting each pair of marks.
- Extend lines the length of tube.

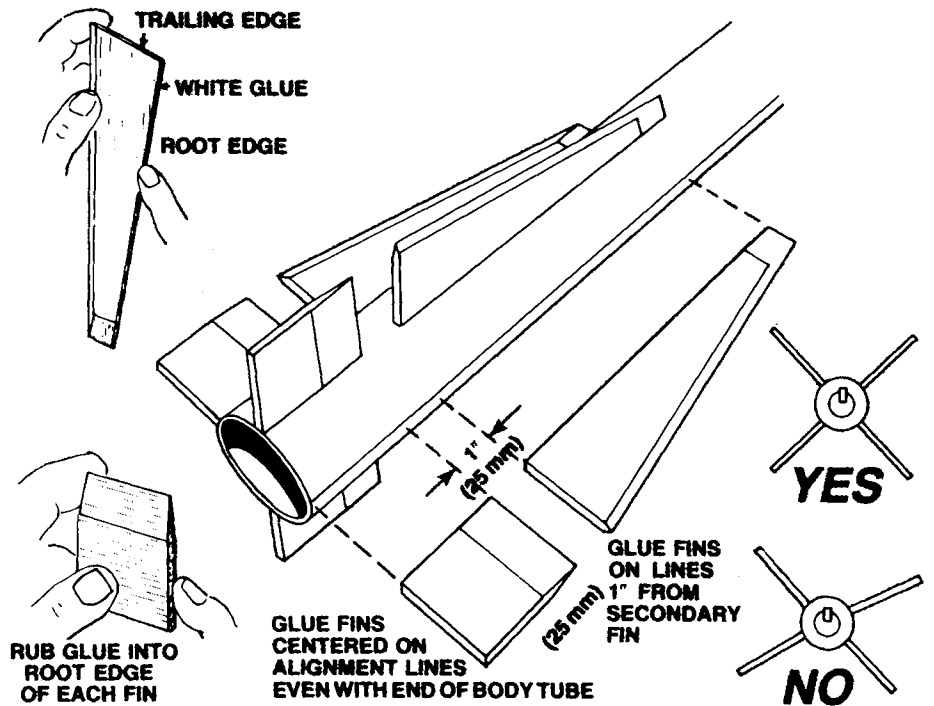




# 10

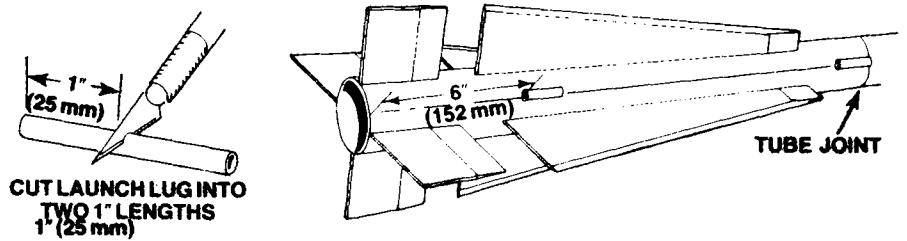
- Compare fins to drawing in Step 6 to find gluing (Root) and Front (Leading) edges of fins.
- Apply a bead of glue to the root edge of each fin. Attach the fins to the body tube with fins centered on alignment lines. Attach lower fins even with edge of tube and primary or upper fins 1" (25 mm) from lower fins.
- Adjust fins to project straight out from tube and aligned with bottom fins.

**FINS MUST BE ATTACHED CORRECTLY FOR STABLE FLIGHT.**



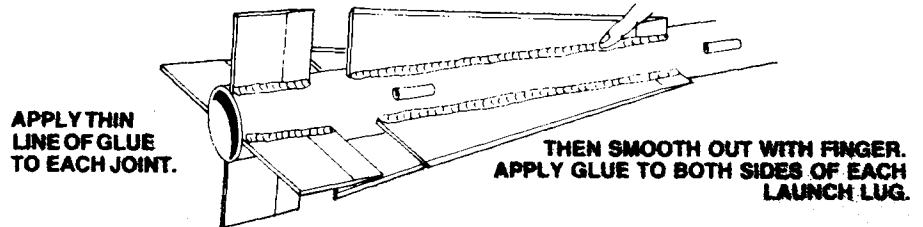
# 11

- Cut launch lug into two 1" (25 mm) lengths.
- Glue one lug on alignment line 6" (152 mm) from rear of tube. Glue remaining lug even with body tube joint. Align launch lugs straight on body tube.



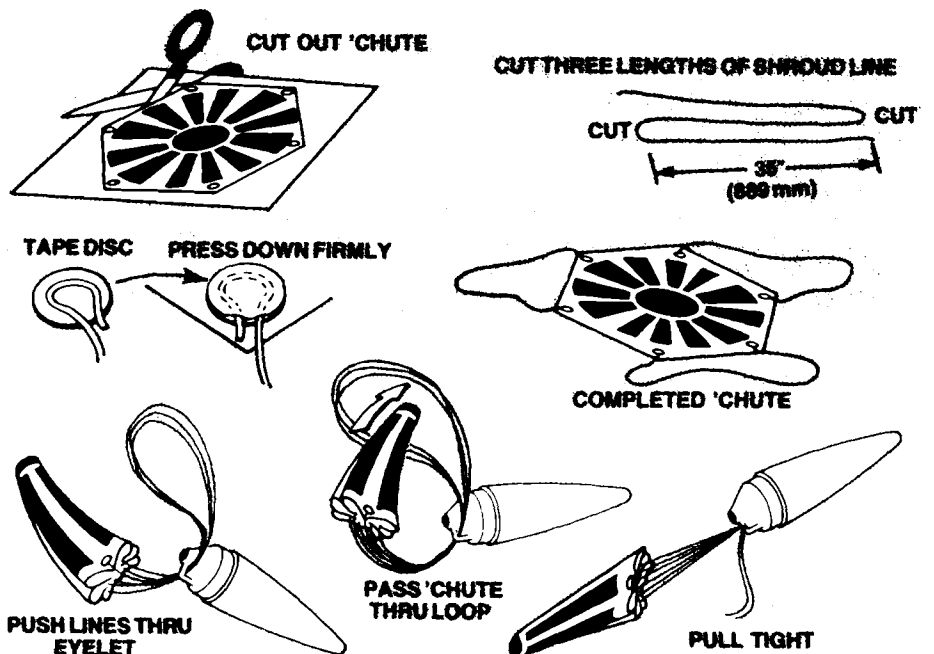
# 12

- Apply a glue reinforcement to each fin/body tube joint and each side of launch lug.
- Support rocket horizontally (level) until glue dries.



# 13

- Cut out parachute on edge lines.
- Cut three 35" (889 mm) lengths of shroud line.
- 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.
- Firmly press tape discs into place until both tape discs and parachute material are molded around shroud line loops.
- Pass shroud line loops through eyelet on nose cone. Pass parachute through loop ends and pull lines against the nose cone.
- Tie free end of shock cord to nose cone eyelet.



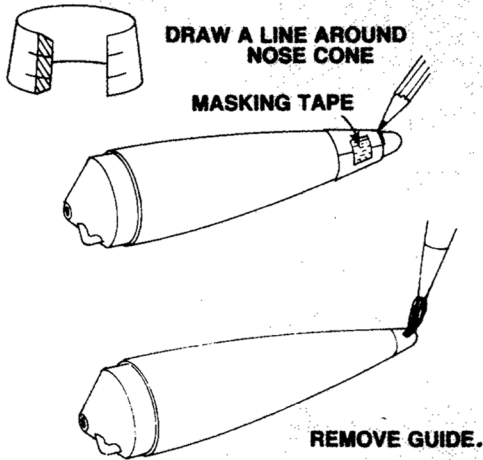
## 14

- Apply sanding sealer to all wood parts with small brush.
- When sealer is dry, lightly sand all sealed surfaces.
- Repeat sealing and sanding until wood grain is filled and smooth.

## 15

- When sanding sealer and glue are completely dry, paint model with gloss white enamel.
- Follow instructions on spray can for best results.
- Let dry overnight. Mask off rocket and paint top 1/8" (3 mm) of body tube with silver enamel.
- Remove mask from rocket as soon as paint has set.

## 16



**PAINT TIP OF NOSE CONE WITH SILVER PAINT.**

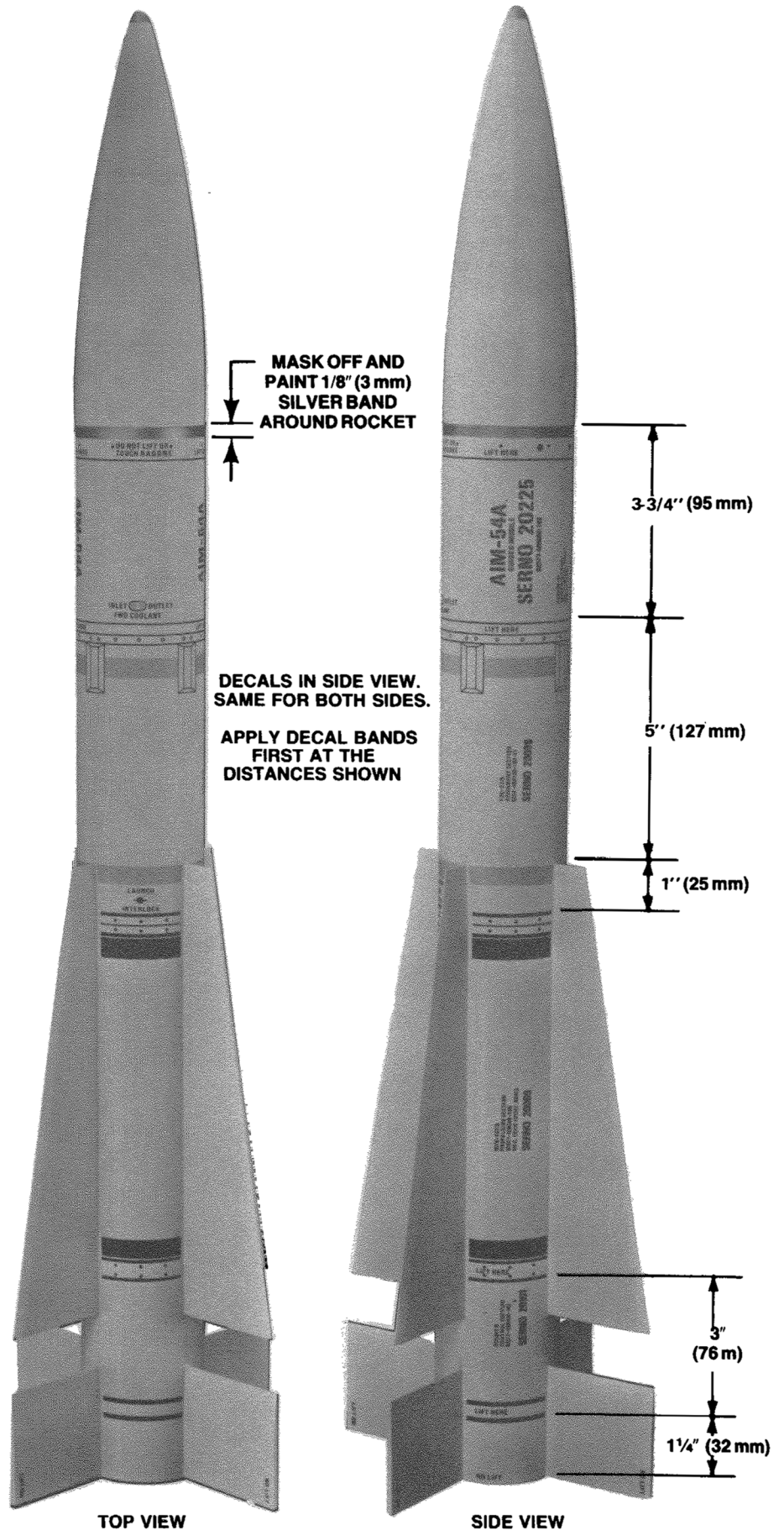
- Cut out nose cone marking guide from pattern sheet.
- Match alignment marks. Hold guide together with masking tape.
- Slip guide over nose tip. Trace around guide with pencil.
- Remove guide and paint tip of nose with silver enamel.

## FINISHING YOUR ROCKET

Apply decals in position shown. To apply decals, cut out each decal, dip in lukewarm water for 20 seconds, and hold until it uncurls. Slip decal off backing sheet and onto model. Blot away excess water.

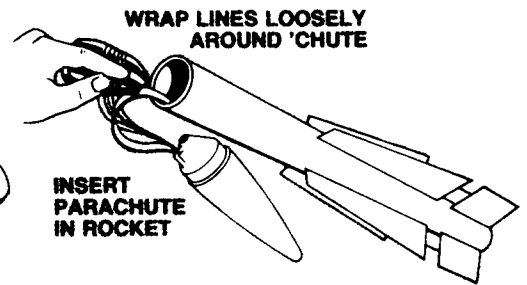
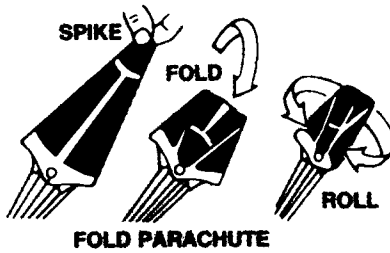
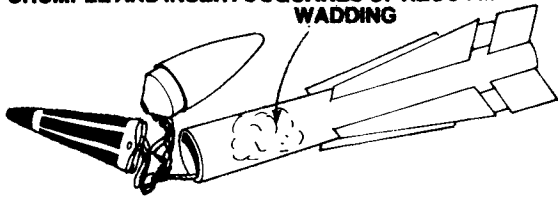
## DECAL PLACEMENT

REFER TO PANEL FOR FURTHER DECOR PHOTO INFORMATION

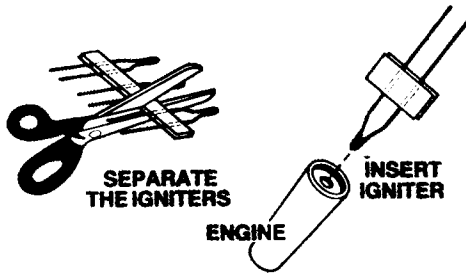


# ROCKET PREFLIGHT

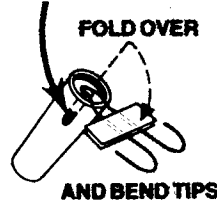
CRUMPLE AND INSERT 3 SQUARES OF RECOVERY WADDING



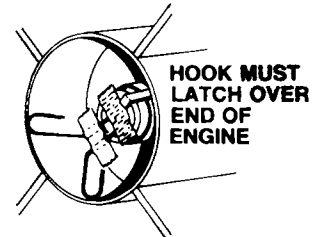
# PREPARE ENGINE



IGNITER TIP MUST TOUCH PROPELLANT DEEP INSIDE NOZZLE OPENING



APPLY AND FIRMLY PRESS TAPE DISC OR MASKING TAPE IN PLACE



INSTALL ENGINE IN ROCKET

# LAUNCH SUPPLIES

To launch your rocket you will need the following items:

- Estes Electrical Launch System and Launch Pad
  - 3/16" (2 mm) diameter Maxi-Rod No. 2244
  - Estes Recovery Wadding No. 2274
  - Recommended Estes Engines: D12-3 or D12-5
- 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 500 feet (152 meters) square. The larger the launch area, the better your chance of recovering your rocket. Football fields and playgrounds are great.

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

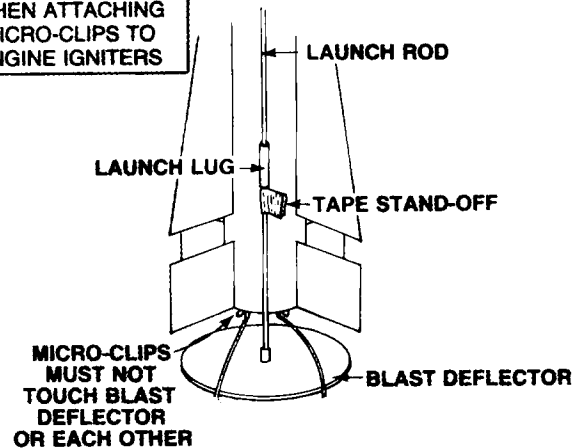
Always follow the NAR\* MODEL ROCKETRY SAFETY CODE while participating in any model rocketry activities.

\*National Association of Rocketry

83407B

# COUNTDOWN AND LAUNCH

SAFETY KEY MUST NOT BE IN LAUNCH CONTROLLER WHEN ATTACHING MICRO-CLIPS TO ENGINE IGNITERS



- 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

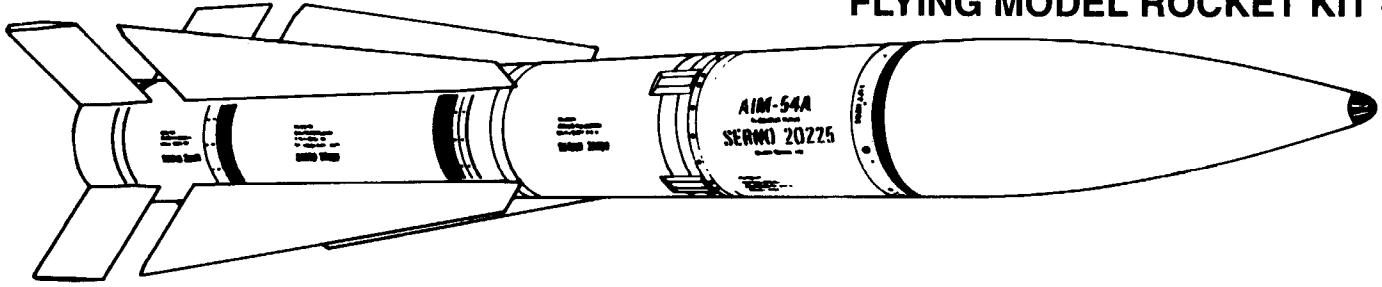
REMOVE SAFETY KEY FROM LAUNCH CONTROLLER. REPLACE SAFETY KEY AND SAFETY CAP ON LAUNCH ROD.



ESTES INDUSTRIES  
1295 H STREET  
PENROSE, CO 81240 USA

# PHOENIX™

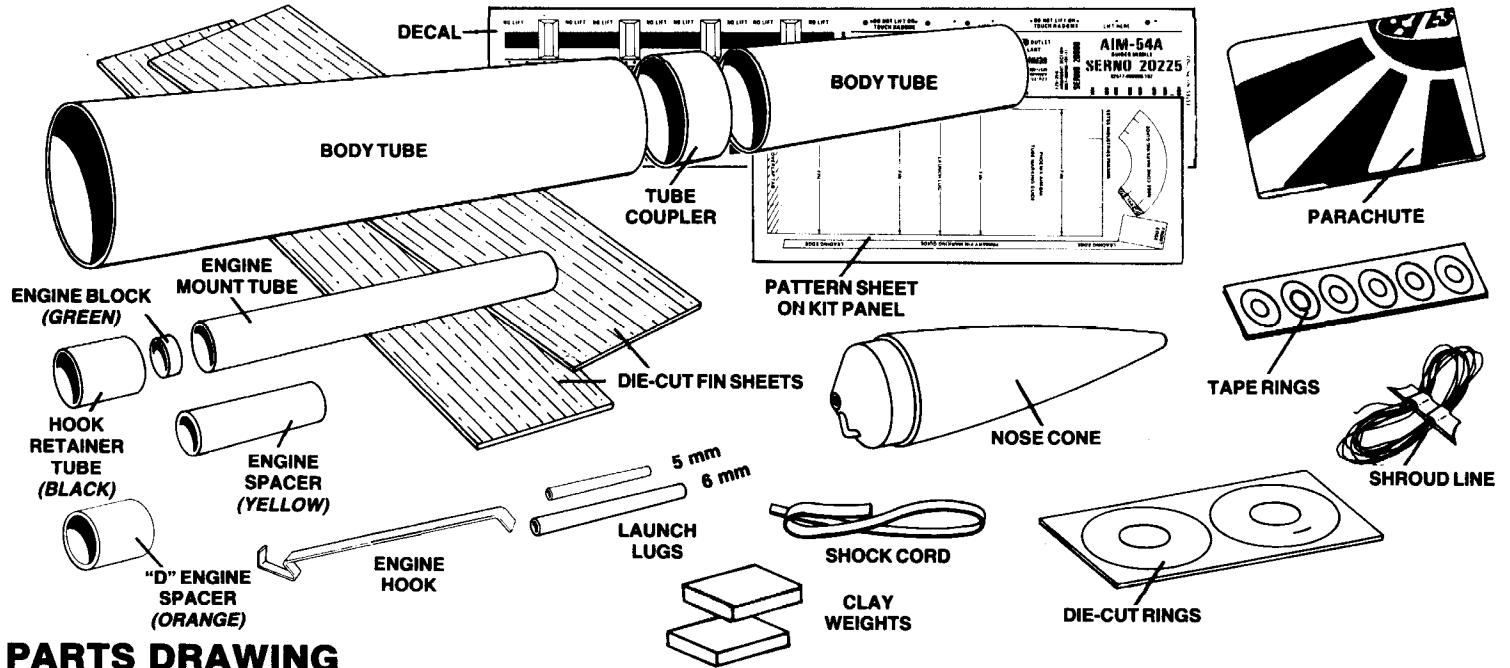
FLYING MODEL ROCKET KIT #1380



## HOW TO USE THESE INSTRUCTIONS:

### READ ALL INSTRUCTIONS BEFORE STARTING WORK ON THIS MODEL

- A. This rocket, incorporating basic model rocketry construction techniques, will help you in the continuing development of your rocketry modeling skills.
- B. Read each step first and visualize the procedure thoroughly in your mind before starting construction.
- C. Lay parts out on the table in front of you. (Check inside tubes for any small parts.)
- D. Use parts drawing to match all parts contained in kit.
- E. Collect all construction supplies that are not included in the kit.
- F. Fin marking guide and shock cord mount are printed in the pattern sheet.
- G. Test fit parts before applying any glue.
- H. Sand parts as necessary for proper fit.
- I. The construction supplies required for each step are listed at the beginning of each step.
- J. Check off each step as you complete it.



## PARTS DRAWING

**EXTREMELY IMPORTANT: THE PARTS DRAWING IS FOR REFERENCE ONLY! DO NOT USE THIS DRAWING ALONE TO ASSEMBLE THIS MODEL.**

The parts drawing is only intended to assist you in locating the parts included in this kit. Refer back to this parts drawing as you build your model step by step. This method will help you to put the parts into perspective as you progress through the construction.

## CONSTRUCTION SUPPLIES

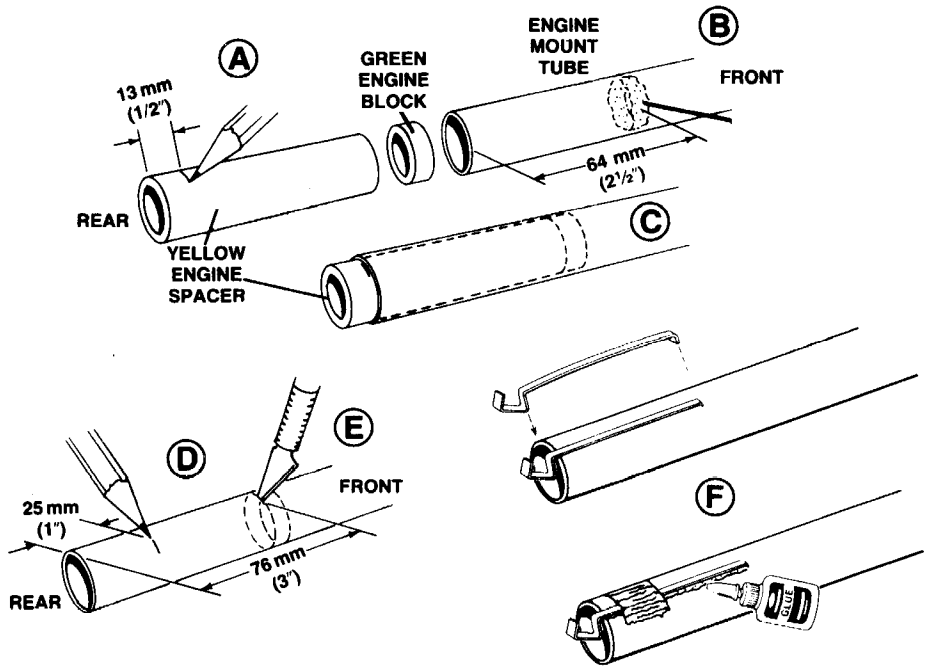
In addition to the parts included in your kit, you will need these construction supplies. Each step shows which supplies will be required.



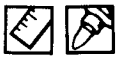
# 1. INSTALL ENGINE BLOCK AND ENGINE HOOK



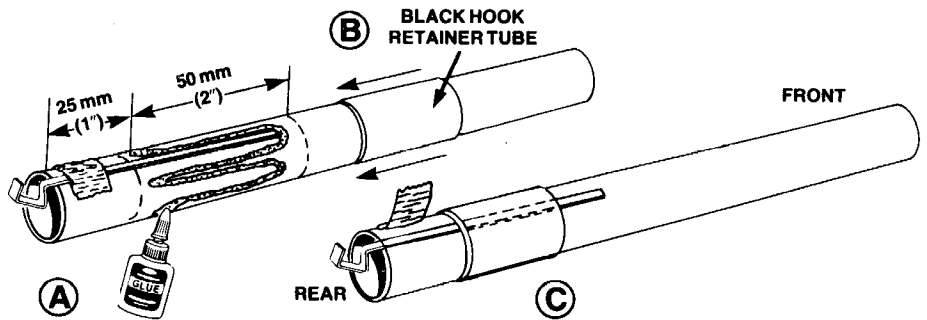
- A.  Mark yellow engine spacer tube 13 mm (1/2") from one end.
- B.  Using a piece of scrap balsa, apply glue inside engine mount tube 64 mm (2 1/2") from one end.
- C.  Push green engine block into place with yellow engine spacer until mark on spacer is even with end of tube. Remove engine spacer immediately.
- D.  Mark engine mount tube 25 mm (1") and 76 mm (3") from rear end.
- E.  Cut 3 mm (1/8") long slit at 76 mm (3") mark. Apply a line of glue between slit and 25 mm (1") mark.
- F.  Insert one end of engine hook into slit. Align hook straight along tube and temporarily tape hook into place.



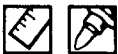
# 2. ATTACH ENGINE HOOK RETAINER



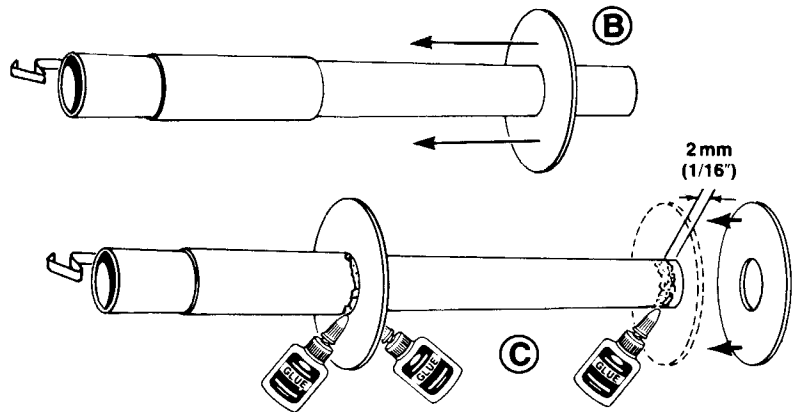
- A.  Apply glue around engine mount tube as shown.
- B.  Slide black hook retainer tube over front of engine tube down over glue to 25 mm (1") mark.
- C.  Wipe away excess glue. Remove tape.



# 3. ATTACH CENTERING RINGS



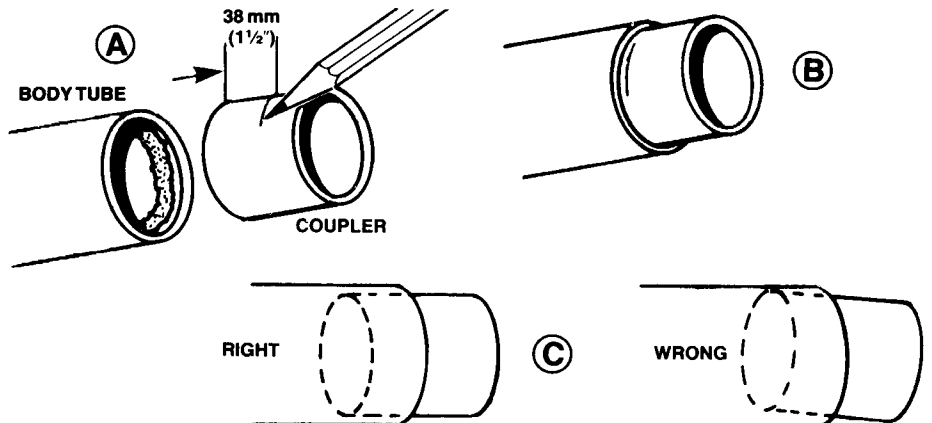
- A.  Remove centering rings from die-cut card.
- B.  Slide one ring over front end of tube, down to hook retainer tube.
- C.  Slide second ring onto front of tube about 2 mm (1/16") from end of tube. Apply glue to both sides of both ring/tube joints. Set aside to dry.



# 4. INSTALL TUBE COUPLER



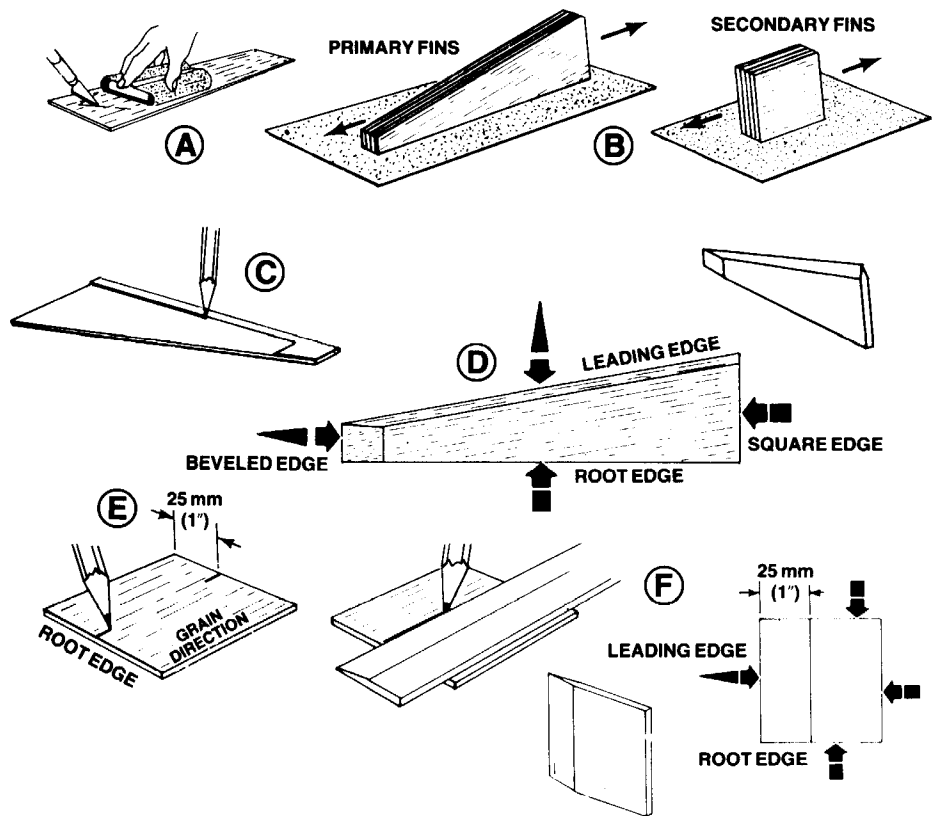
- A.  Mark tube coupler 38 mm (1 1/2") from one edge. Apply glue inside one end of one body tube.
- B.  Push tube coupler into tube until mark on coupler is even with end of tube.
- C.  Adjust tube coupler alignment as shown.



## 5. PREPARE BALSA FINS



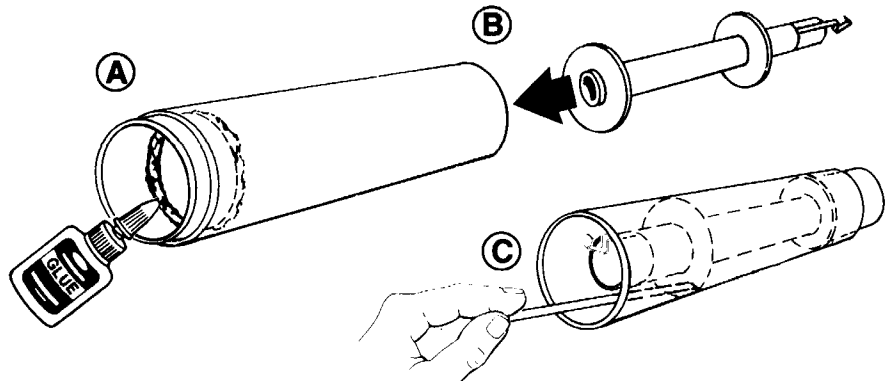
- A. Fine sand balsa die-cut sheet. Carefully remove fins by freeing edges with knife.
- B. Stack alike fins together. Sand all edges smooth.
- C. Cut out primary fin marking guide from pattern sheet. Place pattern on fins as shown. Trace pattern with pencil on both sides of each fin.
- D. Sand bevel edge into each fin. For best results, sand from pencil line to center of fin with sanding block.
- E. Mark 25 mm (1") from one edge both sides of each fin as shown. Connect marks with straight line.
- F. Sand each fin as shown.



## 6. INSTALL ENGINE MOUNT ASSEMBLY



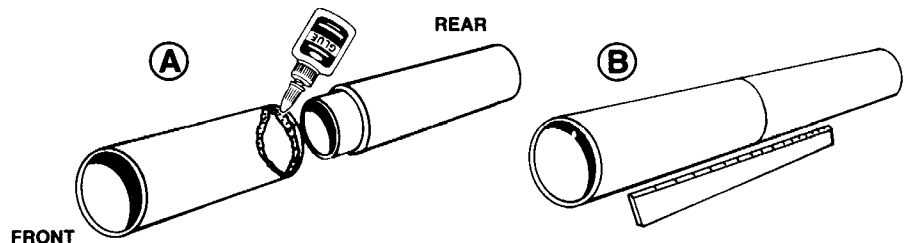
- A. Apply glue around inside of the body tube just behind the tube coupler.
- B. Slide the completed engine mount into the body tube and up against the tube coupler as shown.
- C. Using scrap balsa from the die-cut sheet, apply glue around the inside of the rear of the body tube where it touches the die-cut ring.



## 7. JOIN BODY TUBES



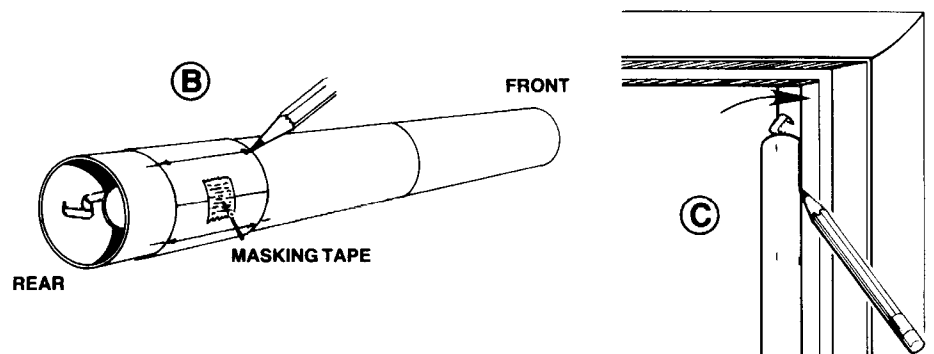
- A. Apply glue around inside end of remaining body tube. Slide this end of tube over tube coupler of large body tube in smooth motion.
- B. Edge of body tubes should touch all around. Align tubes perfectly straight.



## 8. MARK FIN ATTACHMENT LOCATIONS



- A. Cut out tube marking guide from pattern sheet. Wrap guide around the tube and tape.
- B. Mark tube at arrows. Mark launch lug line with "LL". Remove guide.
- C. Draw straight lines connecting each pair of marks and extend lines the length of tube.

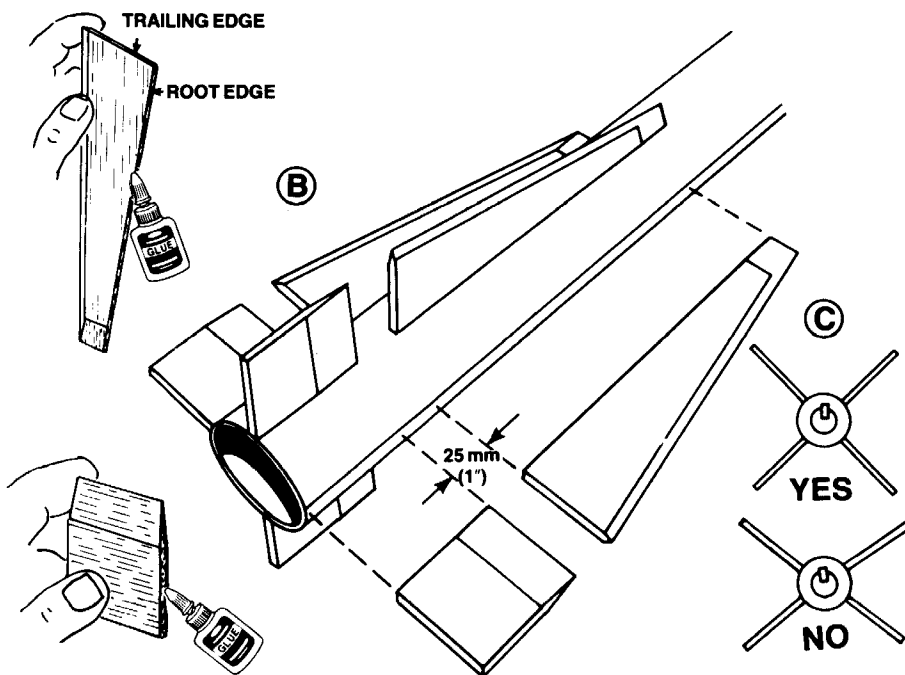


## 9. ATTACH FINS



- Compare fins to drawing in step 5 to find gluing (root) and front (leading) edges of fins.
- Apply a bead of glue to the root edge of each fin. Attach the fins to the body tube with fins centered on alignment lines. Attach lower fins even with edge of tube and primary or upper fins 25 mm (1") from lower fins.
- Adjust fins to project straight out from tube and aligned with bottom fins.

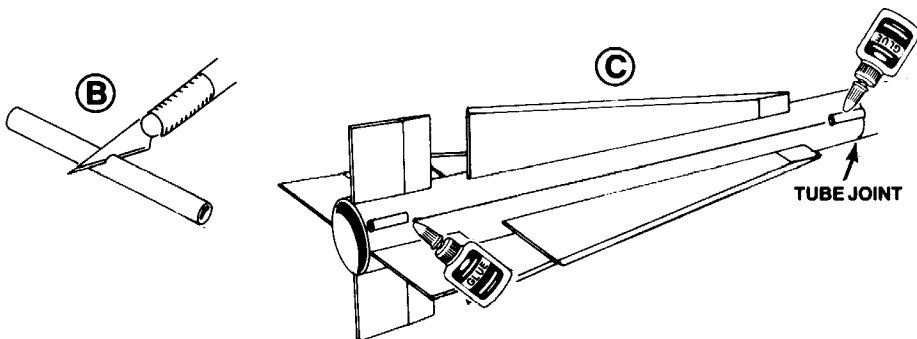
**FINS MUST BE ATTACHED CORRECTLY FOR STABLE FLIGHT**



## 10. ATTACH LAUNCH LUGS



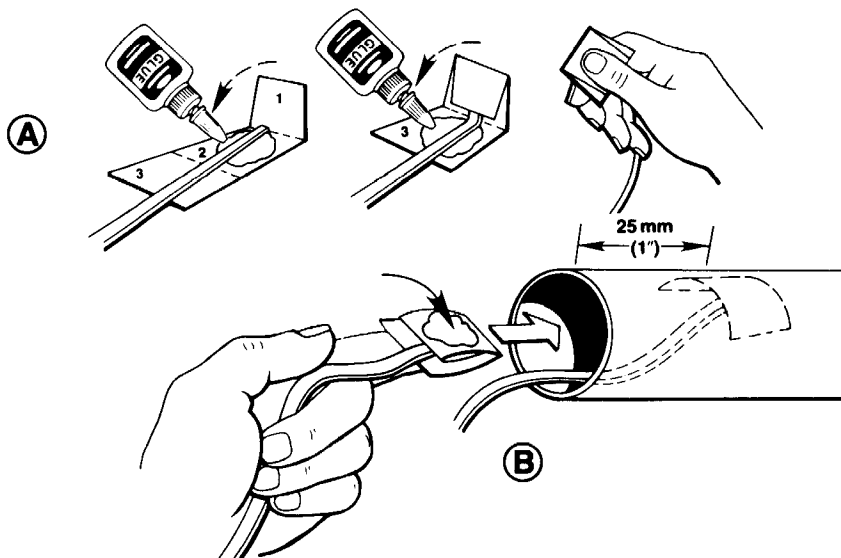
- Select 5 mm (3/16") or 6 mm (1/4") launch lug to match your launch rod.
- Cut launch lug into two equal lengths.
- Glue one lug on alignment line even with rear of tube. Glue remaining lug even with body tube joint. Align launch lugs straight on body tube.



## 11. ASSEMBLE AND INSTALL SHOCK CORD MOUNT



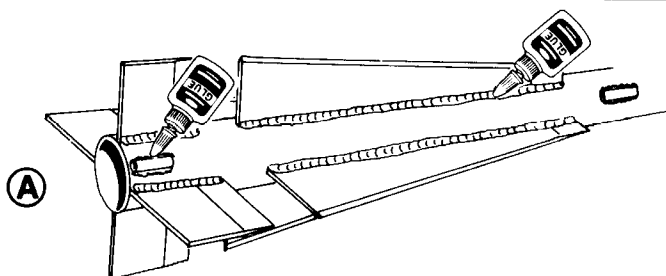
- Cut out the shock cord mount from the pattern sheet. Crease on dotted lines by folding. Spread glue on section 2 and lay shock cord end into glue at slight diagonal as shown. Fold section 1 forward. Fold forward again. Clamp tightly with your fingers for two minutes until glue dries.
- Apply glue to the shock cord mount and insert into the body tube at least 50 mm (2") back to allow for nose cone clearance and press mount firmly into place as shown. Hold until glue sets.



## 12. STRENGTHEN FIN ATTACHMENT



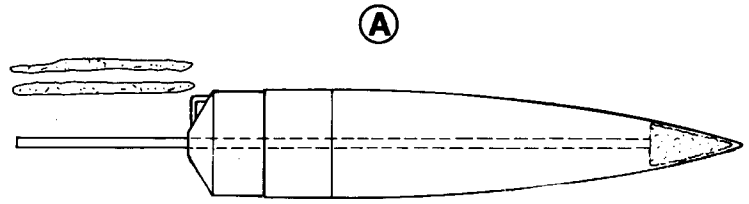
- Apply glue reinforcement to each fin/body tube joint and each side of launch lug. Smooth out with your finger.
- Support rocket horizontally (level) until glue dries.



### 13. INSTALL NOSE WEIGHT



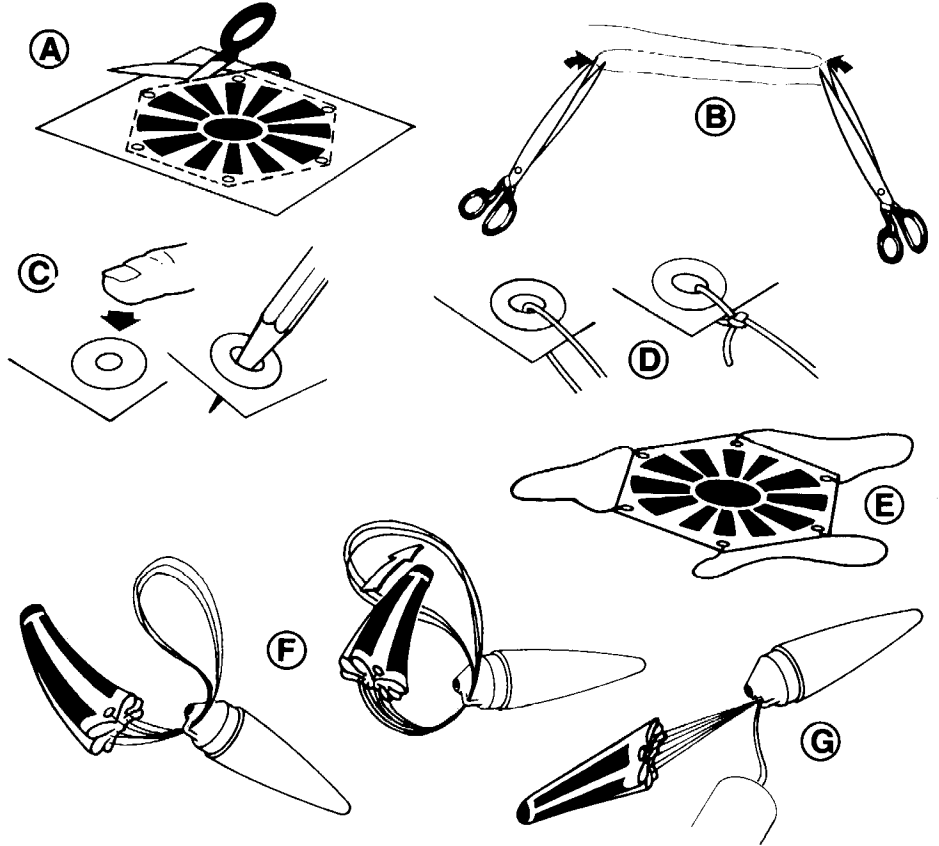
- A.  Locate the clay weights and one at a time, form clay into thin "worms". Insert one into the open end of the nose cone. Use a long wooden pencil to tamp the clay into the front of nose cone as far as possible. Tamp all the clay into the nose cone.



### 14. ASSEMBLE PARACHUTE



- A.  Cut out parachute on printed edge lines.  
 B.  Remove tape from shroud lines, fold and cut into three equal lengths.  
 C.  Attach tape rings to top of parachute and press firmly into place. Punch hole through the parachute material with the point of a sharp pencil (do not use a dull pencil or ballpoint pen).  
 D.  Pass shroud line through hole in parachute and tape disk. Tie lines together with a double knot.  
 E.  Attach remaining lines to other corners to complete parachute.  
 F.  Pass shroud lines 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 eyelet.



See the next page for painting and decorating your rocket.



# PAINING AND DECORING YOUR PHOENIX™ ROCKET

## 1.

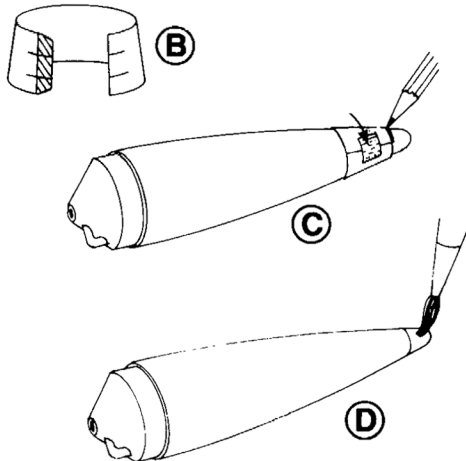
- A.  After all glue is dry, brush on sanding sealer to all wood parts.
- B.  When sealer is dry, lightly sand all sealed surfaces.
- C.  Repeat sealing and sanding until wood grain is filled and smooth.

## 2.

- A.  When sanding sealer is completely dry, paint entire model with gloss white.
- B.  Follow instructions on spray can for best results.
- C.  Let paint dry. Mask off rocket and paint top 3 mm (1/8") of body tube with silver.
- D.  Remove mask from rocket as soon as paint has set.

## 3.

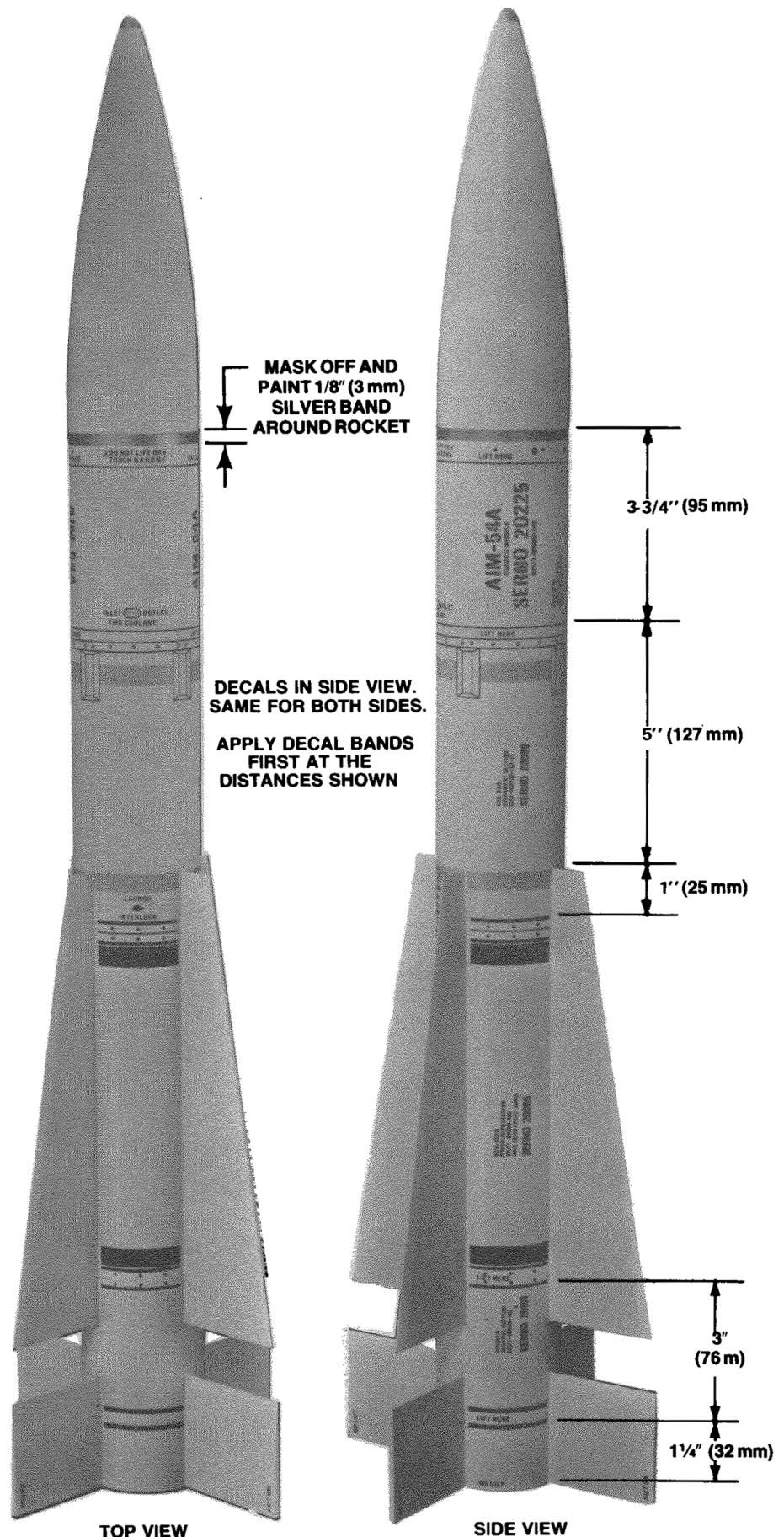
- A.  Cut out nose cone marking guide from pattern sheet.
- B.  Match alignment marks. Hold guide together with masking tape.
- C.  Slip guide over nose tip. Trace around guide with pencil.
- D.  Remove guide and paint tip of nose with silver enamel.



## FINISHING YOUR ROCKET

Apply decals in position shown. To apply decals, cut out each decal, dip in lukewarm water for 20 to 30 seconds and hold until it uncurls. Slip decal off backing sheet and onto model. Blot away excess water.

**IMPORTANT:** After your Phoenix™ kit is completely finished, install an engine in the engine mount and check to be sure the model has a balance point no further back from the nose than the joint where the body tubes meet.

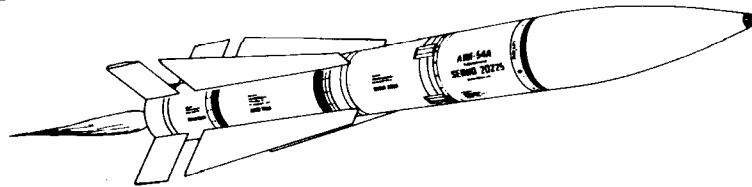


TOP VIEW

SIDE VIEW

# WHAT TO EXPECT WHEN FLYING YOUR PHOENIX™ ROCKET

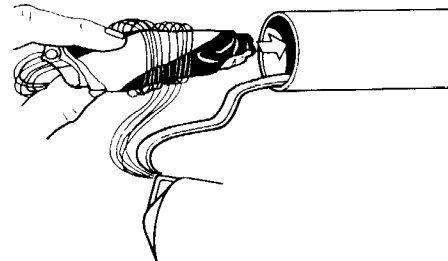
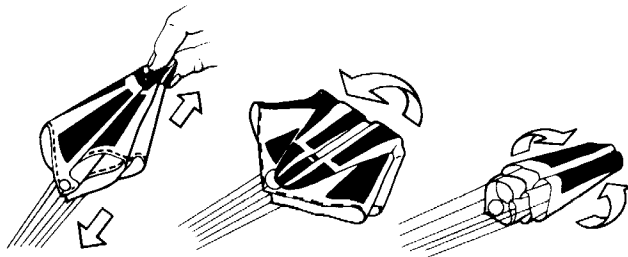
The sleek and classic Phoenix™ with parachute recovery is perfect for flying any time. With an Estes D12-3, the Phoenix™ will fly to nearly 100 meters (325 feet). With an Estes E15-4, the Phoenix™'s altitude will almost double! Don't fly it with this engine on a breezy day or it will drift away. Watch for the brightly colored parachute as it's ejected at the apogee (the highest point in the rocket's flight). The 'chute will also help you find the rocket once it has landed.



## PREPARE ROCKET FOR FLIGHT

1. Hold the recovery system shock cord to one side of the inside of the body tube. Insert six to ten squares of recovery wadding into the rocket body. The wadding should remain loose. NEVER tamp the wadding tightly into the tube.

2. Fold the parachute and wrap the shroud lines around it as shown. The lines should be just tight enough so that the parachute will slide easily inside the rocket body. Insert the parachute into the rocket onto the top of the recovery wadding. Then insert the shock cord into the rocket on top of the parachute.



3. Install the nose cone into the forward end of the rocket body. Be certain the fit is neither too loose or too tight. If the nose cone falls out of the rocket body when the model is pointed downward, the fit is too loose. If while pointed downward, the nose cone can't be shaken out of the tube, the fit is too tight. If too loose, wrap tape around shoulder for snug fit. If too tight, lightly sand shoulder for looser fit.

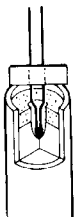
## PREPARE ENGINE

NOTE: Igniter plugs come with rocket engines. If your engines did not come with plugs, follow the instructions that came with the engines.

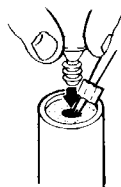


SEPARATE IGNITER AND IGNITER PLUG

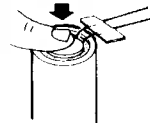
IGNITER MUST TOUCH PROPELLANT



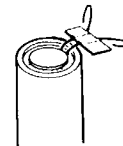
HOLD ENGINE UPRIGHT, DROP IN IGNITER



INSERT IGNITER PLUG



FIRMLY PUSH ALL THE WAY IN



BEND IGNITER WIRES BACK

When flying with a D engine, slide the orange engine spacer into the engine tube in front of the engine. For E engine flights, the orange spacer is not needed.

## LAUNCH SUPPLIES

To launch your rocket you will need the following items:

- Estes launch controller and launch pad with a 5 mm (3/16") or 6 mm (1/4") launch rod
- Estes recovery wadding No. 2274
- Recommended Estes Engines: D12-3 (First Flight), E15-4,

To become familiar with your rocket's flight pattern, use a D12-3 engine for your first flight. When using an E engine, you must be 10 meters (30 feet) from your rocket at launch so make certain your controller has 10 meters (30 feet) of cable. We recommend the Estes Command Control™ launch controller and the Estes Power Plex™ launch pad to launch this rocket. **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 150 meters (500 feet) square. The larger the launch area, the better your chance of recovering your rocket. Football fields and playgrounds are great.

Launch area must be free of dry weeds and brown grass.

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

## MISFIRES

If the igniter functions properly but the propellant does not ignite, keep in mind the following: 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.

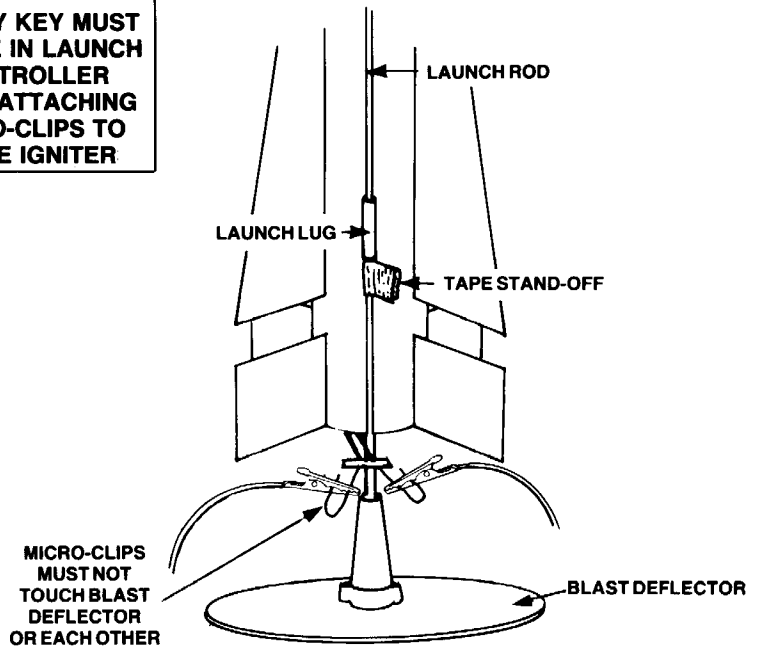
When an ignition failure occurs, remove the safety key from the launch control system and wait one minute before approaching the rocket. Remove the expended igniter from the engine and install a new one. Be certain the coated tip is in direct contact with the engine propellant, then reinstall the igniter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

**SAFETY KEY MUST NOT BE IN LAUNCH CONTROLLER WHEN ATTACHING MICRO-CLIPS TO ENGINE IGNITER**



## 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 5 meters - 15 feet for a D engine or 10 meters - 30 feet for an E engine).
- 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**

**When using an E2™ or Command Control™ Launch Controller to fly your models, use the following launch steps.**

- A. After attaching micro-clips and moving away from the rocket, etc., insert the safety key into the controller receptacle. If the igniter clips have been attached properly to the igniter, the audio continuity indicator will beep on and off.
- B. Hold the yellow (left) arm button down. The audio indicator will produce a steady tone.
- C. Verbally count down from five to zero loud enough for the bystanders to hear. Still holding the yellow arm button down, push and hold the orange (right) button down until the rocket ignites and lifts off.

**REMOVE SAFETY KEY FROM LAUNCH CONTROLLER. KEEP SAFETY KEY WITH YOU OR REPLACE SAFETY KEY AND SAFETY CAP ON LAUNCH ROD.**





**1 Inch**

**1/8" Balsa**



**1 Inch**  
**1/8" Balsa**





**1 Inch**

**1/8" Balsa**

**1 Inch**

**1/8" Balsa**

32

**300  
DPI**

1

2

1

4

8

12

16

20

24

28

4

8

12

16

20

24

28

3

4

8

12

16

20

24

28

4

8

12

16

20

24

28

4

8

12

16

2

1

5

6

1

5

1

5

6

1

4

1

5

6

1

3

1

5

6

1

32 40 48 56

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32 40 48 56

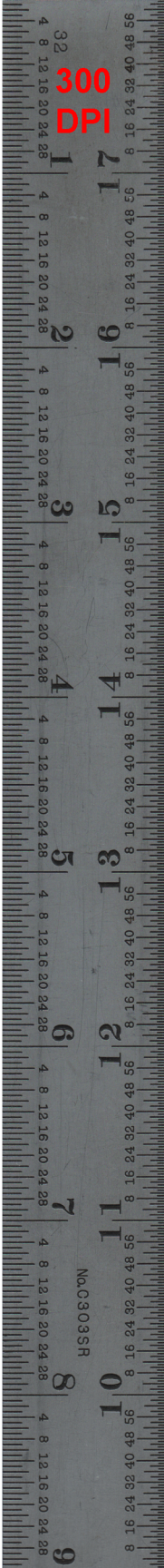
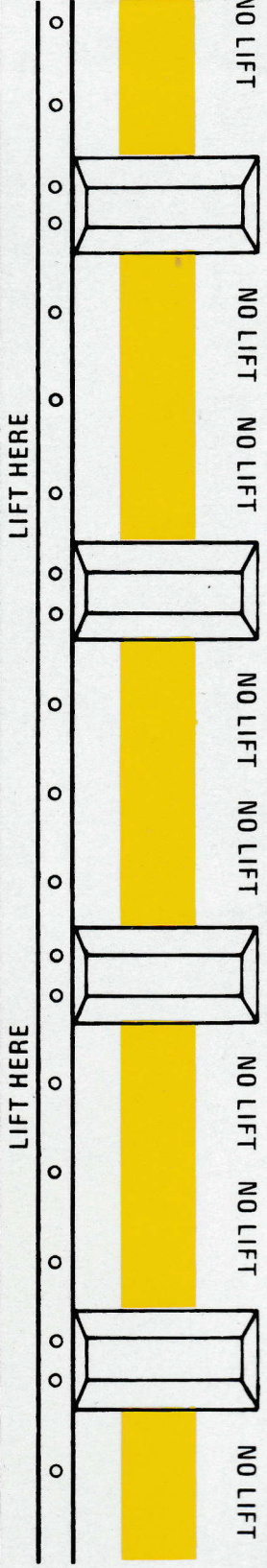
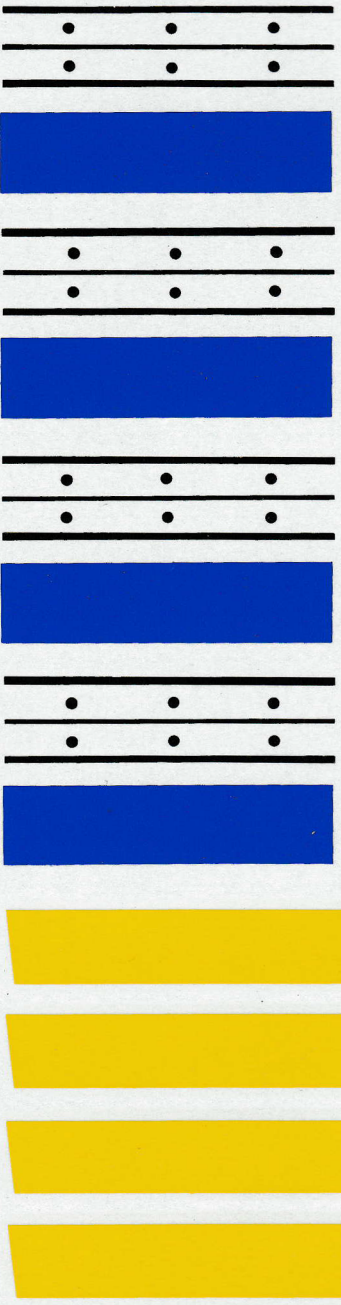
32 40 48 56



LAUNCH

NO LIFT

INTERLOCK



300 DPI

1

2

3

4

5

6

7

8

9

21

91

51

41

31

21

11

01

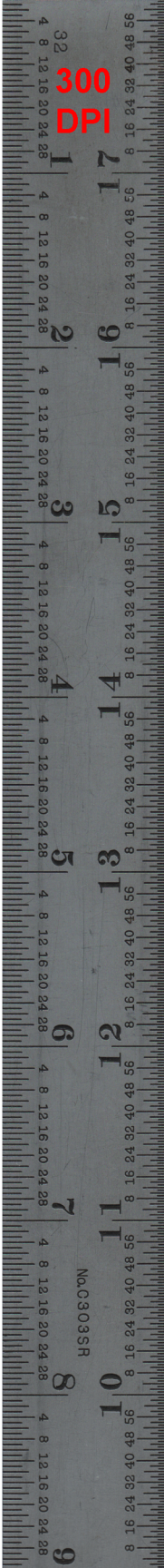
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**SERNO 20089**

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 MFG. CODE IDENT. 00403

00400 IDENT. CODE 00403  
 82577-499300-100  
 PROPULSION SECTION  
 8/LE9-NXM





NO LIFT

● DO NOT LIFT OR TOUCH RADOME

● LIFT HERE

● DO NOT LIFT OR TOUCH RADOME

● LIFT HERE

**AIMI-54A**  
GUIDED MISSILE

**SERNO 20225**  
82577-499000-102

52202-0NRS  
11-401-001667-7528  
NO1133S DEDING  
92-DSO/AN

AN/OSO-26  
GUIDED SECTION  
82577-499100-104-11  
SERNO-20225

INLET  OUTLET  
FWD COOLANT

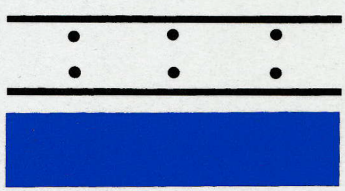
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11-401-001667-7528  
NO1133S INEWAWV  
8/7Z-UZF

FZU-27/8  
ARMAMENT SECTION  
82577-499100-104-11

**SERNO 20099**

**AIMI-54A**  
GUIDED MISSILE

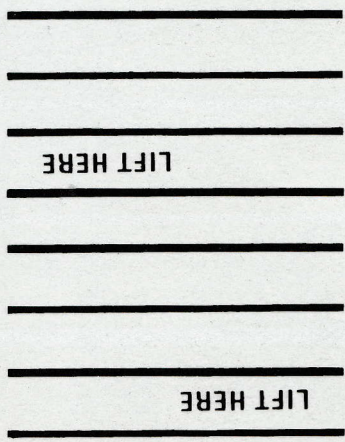
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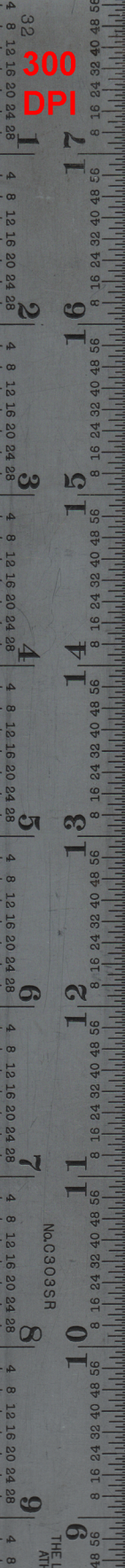


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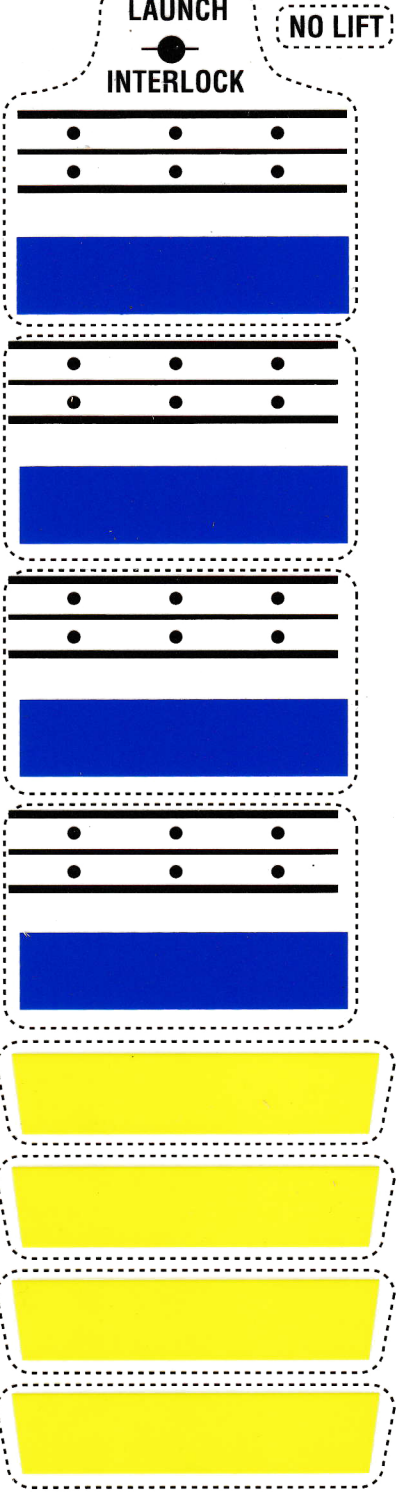
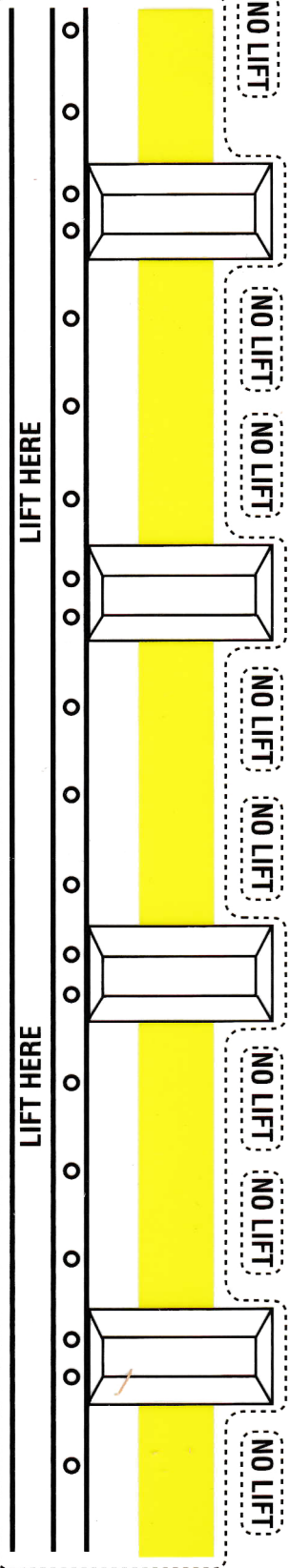
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8/749N3D  
DCU647/8  
CONTROL SECTION  
82577-499400-102

**SERNO 20101**





CUT JUST INSIDE DOTTED LINES



**SERNO 20089**  
MFG. CODE IDENT. 00403

**SERNO 20089**  
MFG. CODE IDENT. 00403

MXU-637/8  
PROPULSION SECTION  
82577-499300-100

PROPULSION SECTION  
82577-499300-100  
MFG. CODE IDENT. 00403

8/269-U-XW









## PARTS LIST KIT NO. 1380 - Phoenix

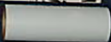
Quantity	Description	Type	Number	Detail1	Detail2	Detail3	Detail4	Comment
1	Dummy Engine Casing - "D"	EC-6	35012	.945" OD	2.75" long			
1	PAPER BODY TUBE	BT-50H	30360	7.75" long	0.950" ID	0.976" OD	0.013" wall	Glassine
1	CENTERING RINGS	AR-2050	30164	0.25" long	0.737" ID	0.949" OD	0.106" wall	Green
1	ENGINE HOLDER	EH-2	35025	2.8" long	.100" wide	.025" thick		Reg. & D
1	PAPER BODY TUBE	BT-52AG	30378	2.1" long	0.988" ID	1.114" OD	0.063" wall	Glassine
1	PAPER ADAPTER	TA-69	30052	.977" ID	2.559" OD	.05" thick	Set of 2	One ring slit.
1	Shock Cord	SC-2	85736	18" long	1/4" wide			
1	STAGE COUPLER	JT-80C	30274	2.50" ID	2.55" OD	4" long	fits BT-80	
1	PAPER BODY TUBE	BT-80KD	30433	14" long	2.560" ID	2.600" OD	0.021" wall	Glassine
2	BALSA FIN STOCK	BFS-40	N/A	3" wide	24" long	1/8" thick	0.09375	Scan
1	Pattern Sheet	SP-1380	83404	4" wide	11" long	Heavy card		Scan
1	PAPER BODY TUBE	BT-80	30432	7.6" long	2.560" ID	2.600" OD	0.021" wall	Glassine
1	Parachute	PK-18A	85566	18" dia.	18" x 6 Shrouds	LDPE plastic	Org/Wht	
1	Shroud Line	SLT-108	38239	108"	.020" diameter	Twisted cotton		
1	Tape Disc	TD-3F	38406	1/2" dia.	Paper	Self-Stick		Set of 6
1	PLASTIC NOSE CONE	PNC-80K	71035	8" long	2.600" dia.	1" shoulder	Secant-Ogive	Blow molded
1	LAUNCH LUG	LL-3B	38166	7/32" ID	3/16" rod	2" long		Mylar
1	Decal	KD-1380	37522	4" wide	18" long	Blk, Blu, Yel	Waterslide	Scan











ESTES  
**Challenge**  
series

# PHOENIX

FLYING MODEL ROCKET

SKILL LEVEL III

- DRAMATIC  
1:9 SEMI-  
SCALE AIR-  
TO-AIR  
MISSILE
- IMPRESSIVE  
30" TALL  
DISPLAY  
MODEL
- REALISTIC  
3-COLOR  
DECALS
- D OR E  
ENGINE  
POWERED



Length:  
76.2 cm (30")

Diameter:  
88 mm (3.5")

Weight:  
270 g (7.64 oz.)

Recommended:  
Engines: D12-2 (Fwd)  
F105-4

Requires a 3 mm (3/16")  
Main Rod or 28 mm (1.1")  
Launch Rod

This model kit requires  
assembly. Glue, launch  
system and engines not  
included.

Recommended for ages 10  
and up with adult supervi-  
sion for those under 12.

USE ONLY WITH  
ESTES PRODUCTS.



**ESTES**

ESTES INDUSTRIES  
1000 W. 2700 E.  
PHOENIX, AZ 85008



EST 1380





