

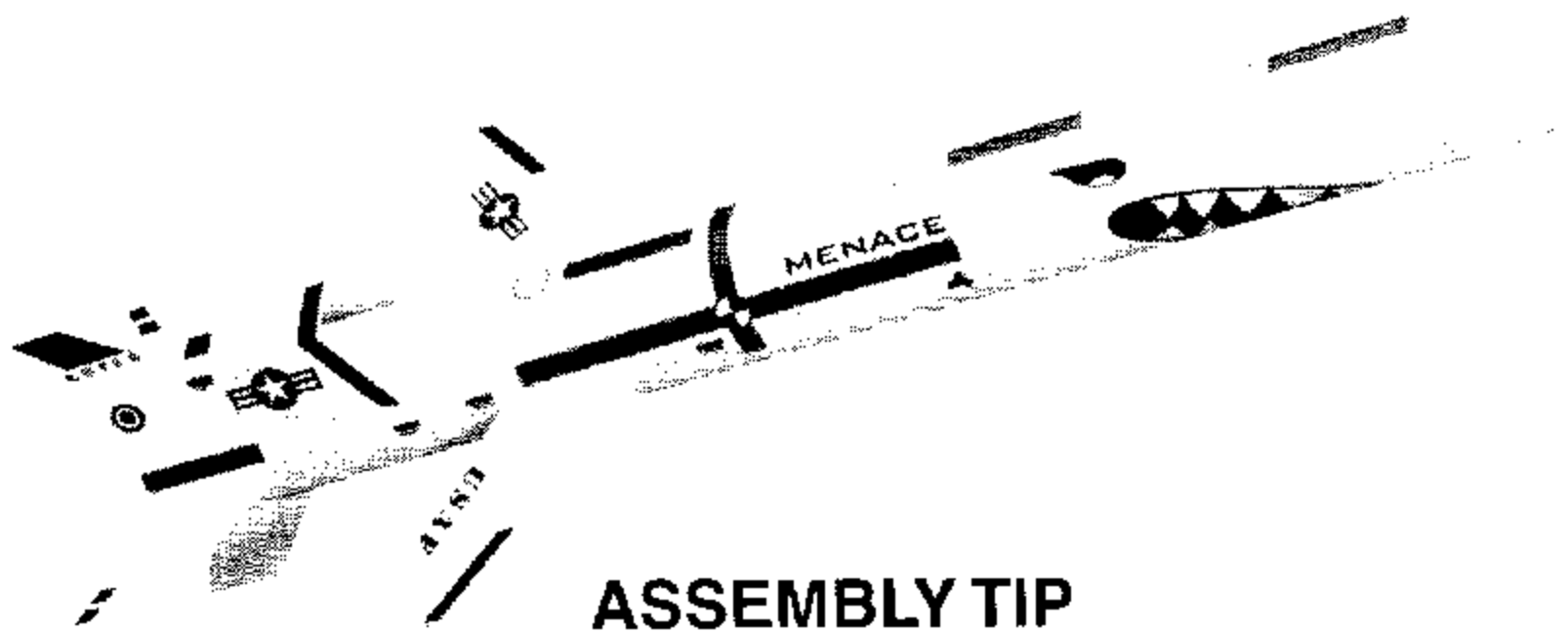


www.estesrockets.com

Estes Industries  
1295 H Street  
Penrose, CO 81240

# MENACE™

FLYING MODEL ROCKET KIT EST 2173

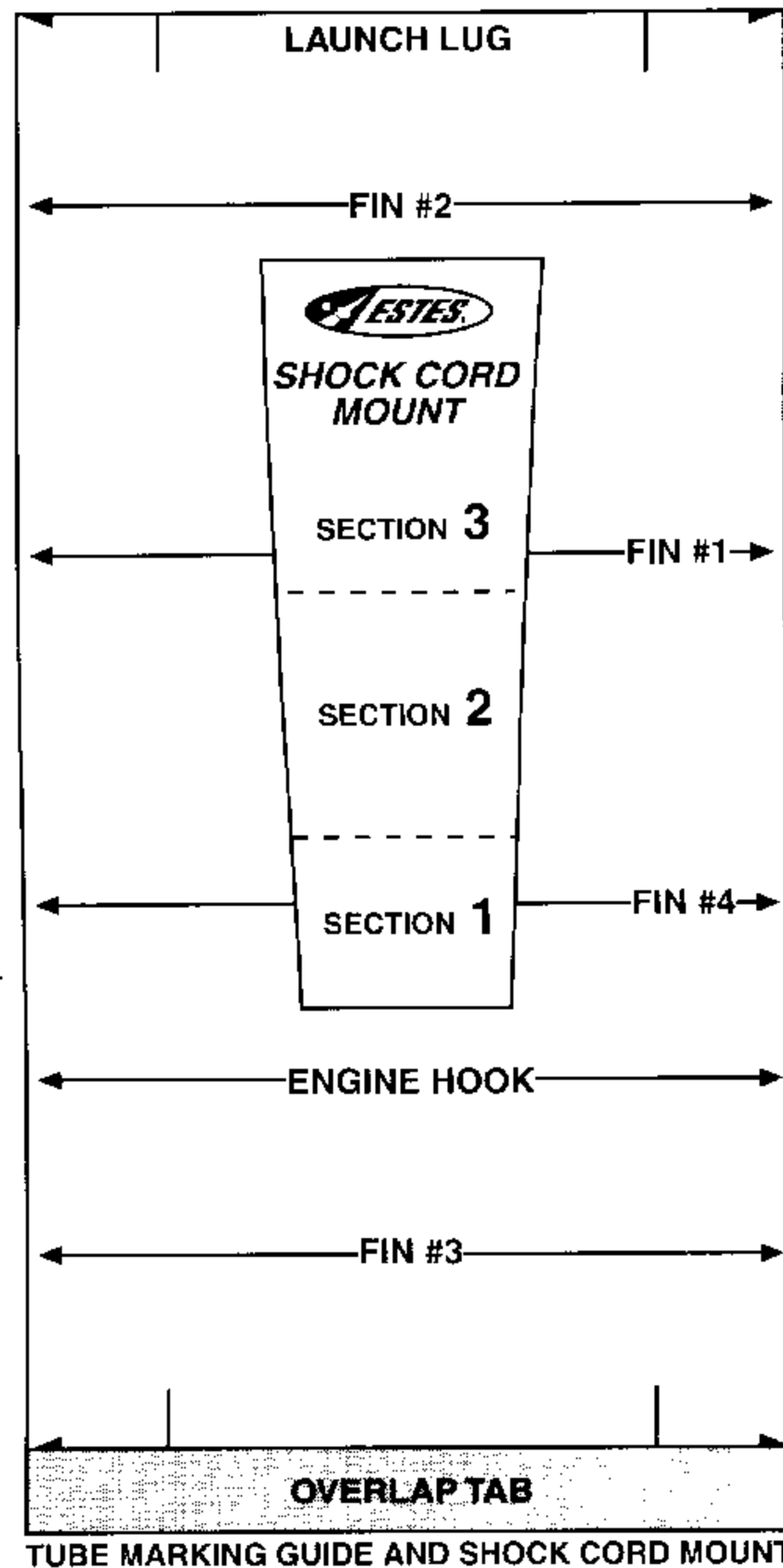


## ASSEMBLY TIP

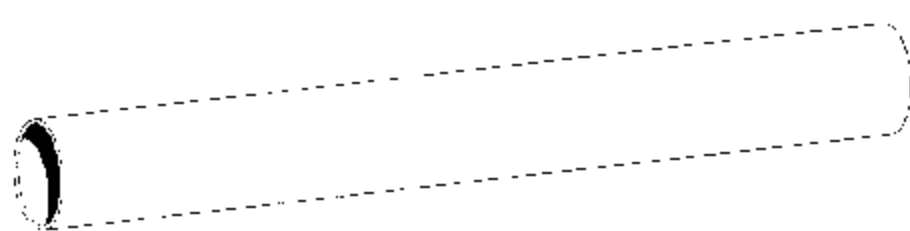
Read all instructions before beginning work on your model. Make sure you have all parts and supplies.  
**TEST-FIT ALL PARTS TOGETHER BEFORE APPLYING ANY GLUE.** If any parts don't fit properly, sand as required for precision assembly.

## PARTS

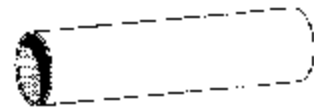
Locate the parts shown below and lay them out on the table in front of you. **DO NOT USE THIS DRAWING TO ASSEMBLE YOUR ROCKET.**



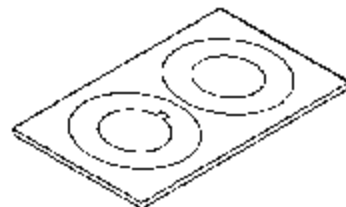
TUBE MARKING GUIDE AND SHOCK CORD MOUNT



Body Tube (1)  
(030395)



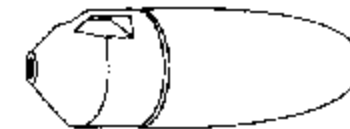
Blue Engine Mount Tube (1)  
(030326-1)



Ring Adapter Card (1)  
(030128)



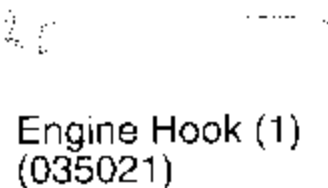
Shock Cord (1)  
(038383)



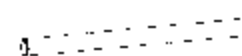
Nose Cone (1)  
(071020)



Scoop (Die-cut paper) (1)  
(030130)



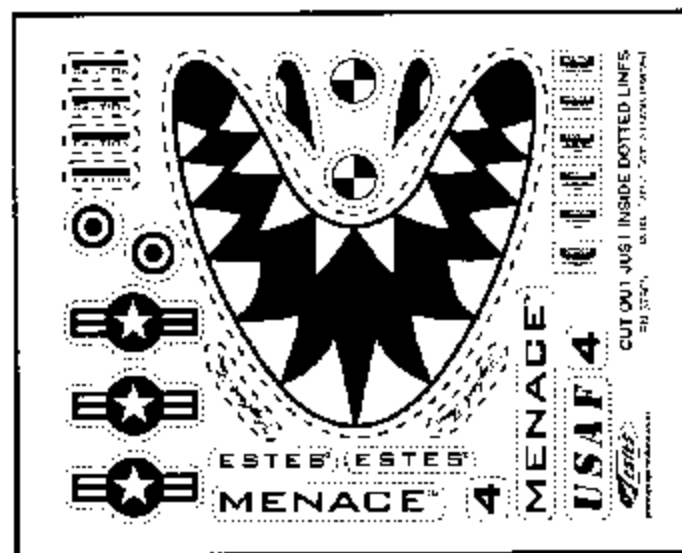
Engine Hook (1)  
(035021)



Launch Lug (1)  
(038178)



Die-cut Balsa Sheet (1)  
(032243)



Decal Sheet (1) (037505)



Assembled Parachute  
18" (46 cm) (1)  
(035802)

## SUPPLIES

 In addition to the parts included in the kit you will also need:

SCISSORS



PENCIL



RULER



FINE SAND PAPER (#400-600 GRIT)



CARPENTER'S MODELING GLUE



KNIFE



SPRAY PAINT: (WHITE)



OR  
SPRAY PAINT: (OLIVE, ANTIQUE WHITE, BROWN & BLACK)



SPRAY CLEAR COAT



OR  
RED, YELLOW & BLACK PAINT PEN



OR  
RED, YELLOW & BLACK 1/4" (6.4 mm) PIN STRIPE

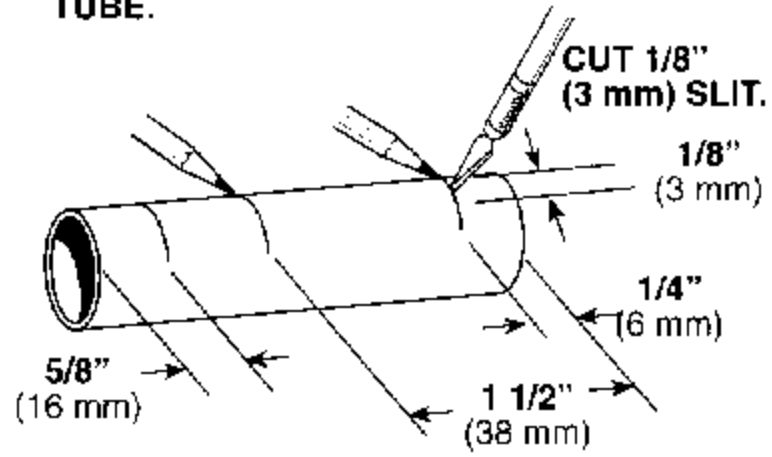


MASKING TAPE

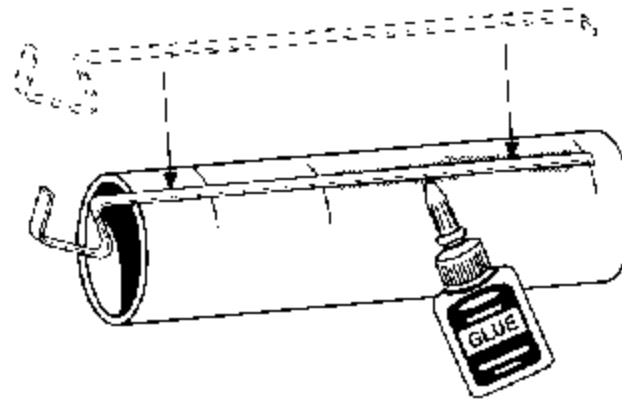


PRIMER (WHITE)

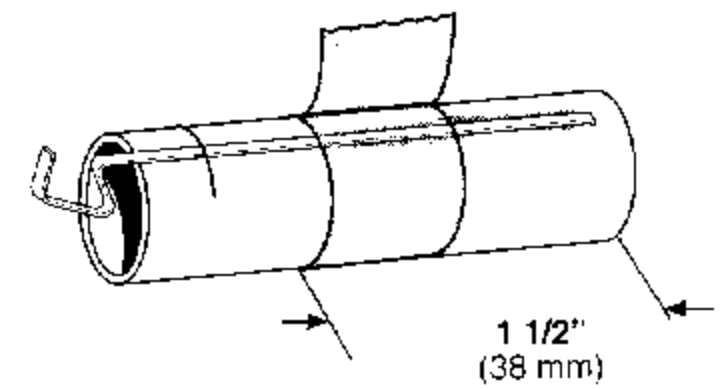
**1. A. MARK ENGINE TUBE.**



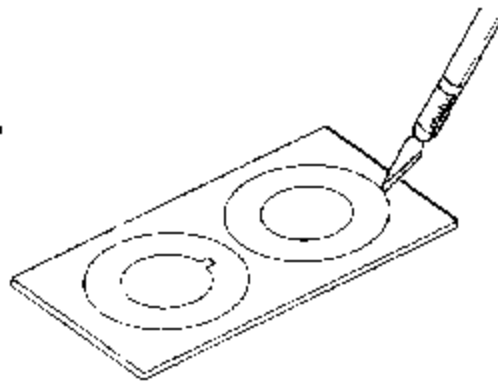
**B. POSITION HOOK.**



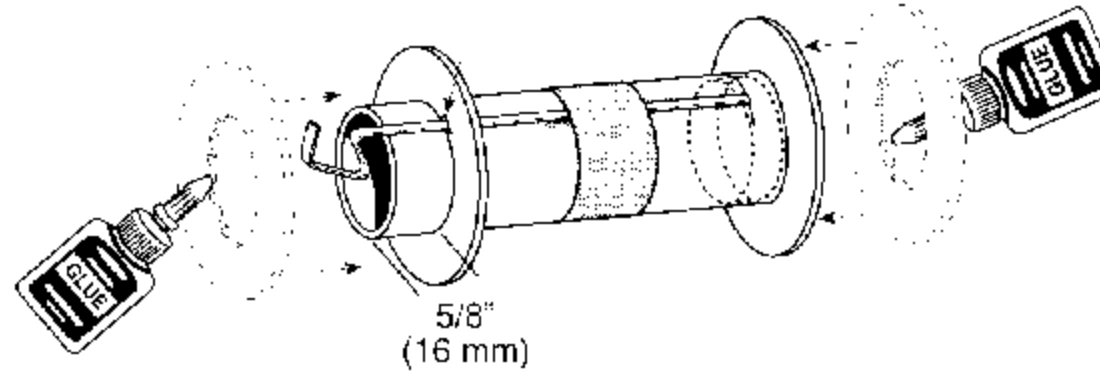
**C. WRAP MASKING TAPE 3 TIMES AROUND TUBE & HOOK AT 1 1/2\"/>**



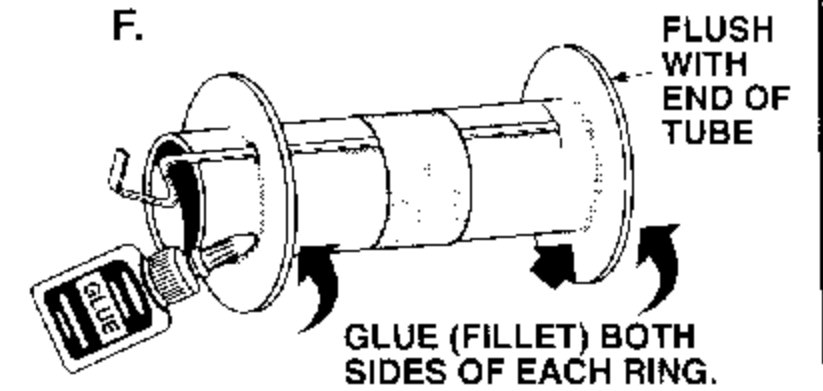
**D.**



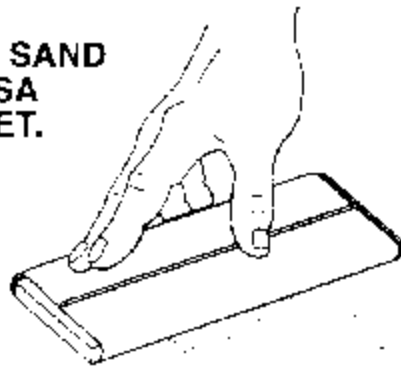
**E. ALIGN NOTCH OVER ENGINE HOOK.**



**F.**



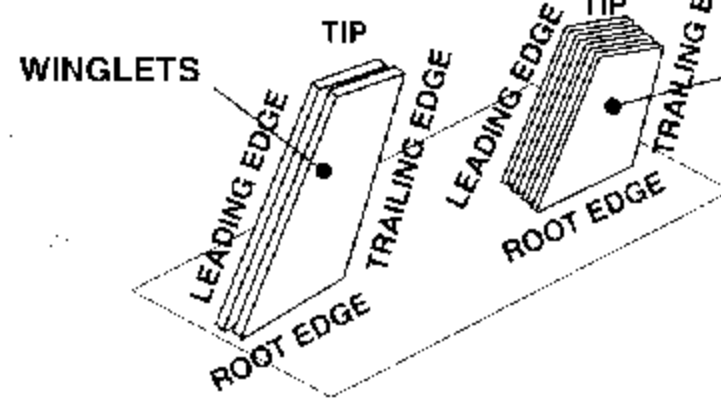
**2. A. FINE SAND Balsa SHEET.**



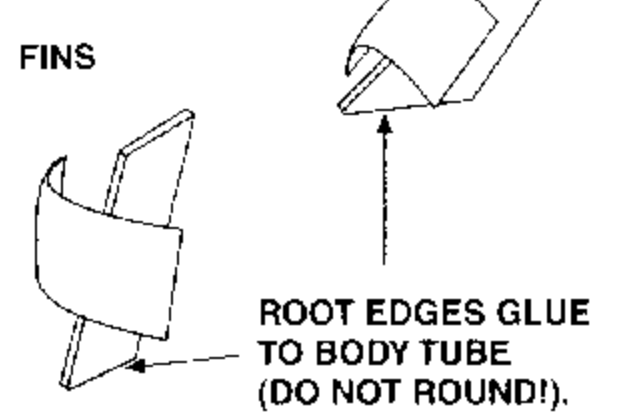
**B. CUT FINS & WINGLETS FREE WITH KNIFE.**



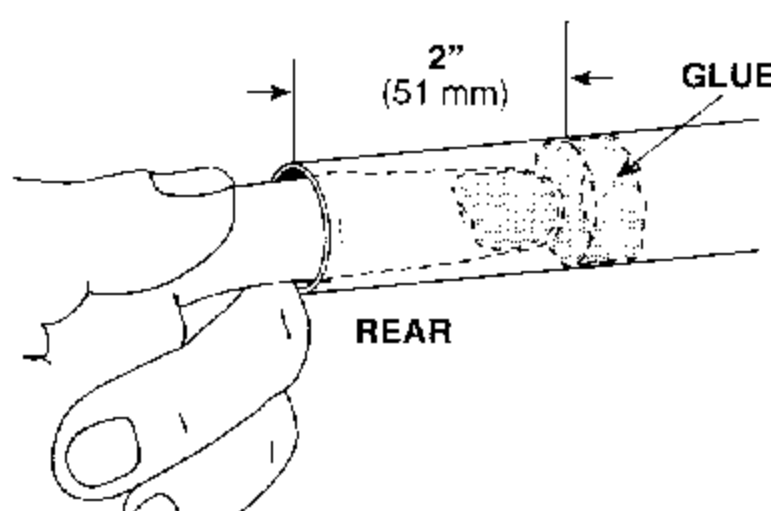
**C. STACK LIKE PARTS TOGETHER & SAND EDGES SMOOTH.**



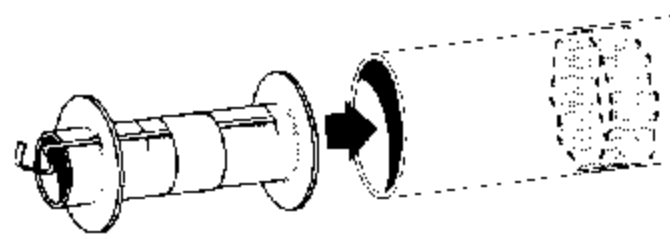
**D. ROUND LEADING EDGES.**



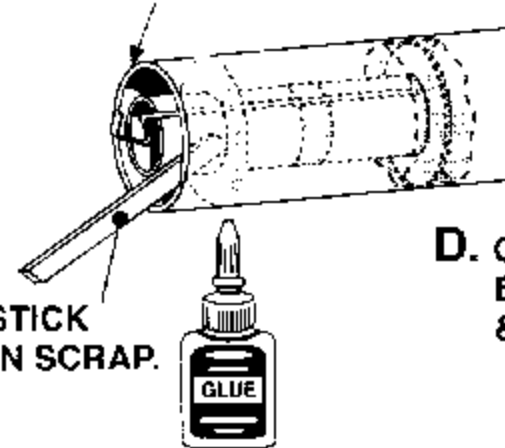
**3. A. USE FINGER TO SMEAR GLUE 2\"/>**



**B. INSERT ENGINE MOUNT.**



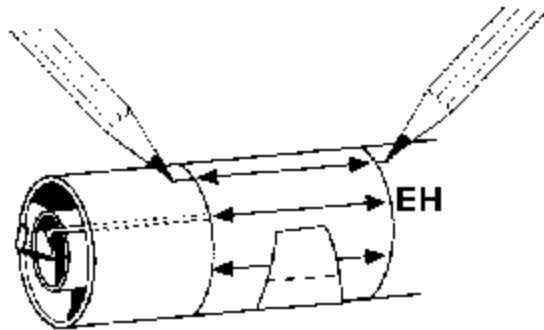
**C. ENGINE MOUNT TUBE IS EVEN WITH END OF BODY TUBE.**



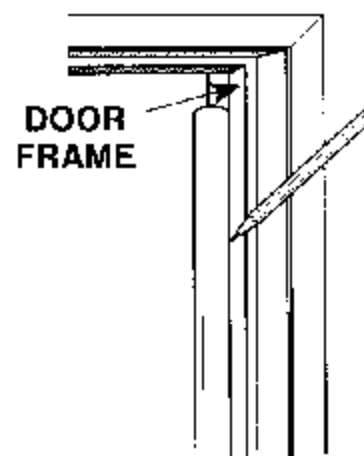
**D. GLUE JOINT BETWEEN BODY TUBE & RING ADAPTOR.**

BALSA STICK FROM FIN SCRAP.

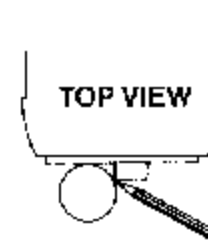
**4. A. CUT OUT TUBE MARKING GUIDE FROM FRONT PAGE. ALIGN ENGINE HOOK (EH) LINE WITH ENGINE HOOK. TAPE GUIDE AROUND END OF TUBE, MARK AT ARROWS.**



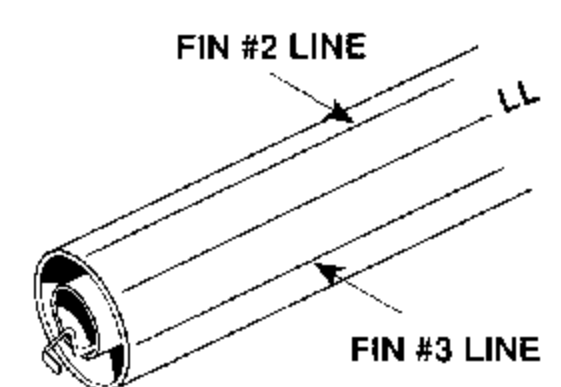
MARK LAUNCH LUG LINE "LL" AND ENGINE HOOK LINE "EH". REMOVE GUIDE AND SAVE FOR STEP 8.



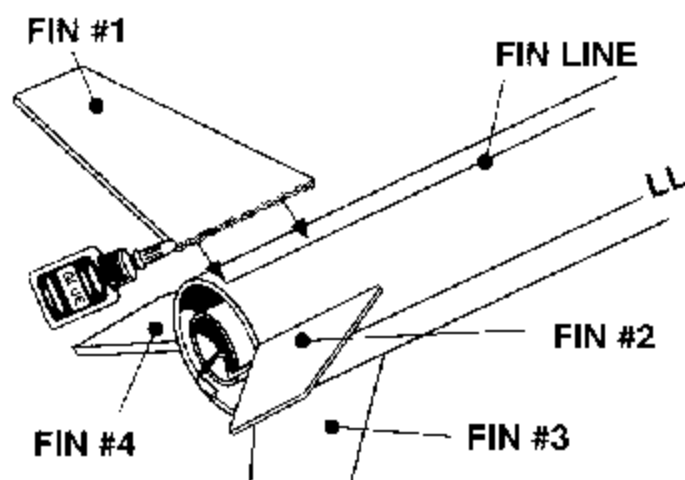
**B. CONNECT FIN LINES AND EXTEND 8\"/>**



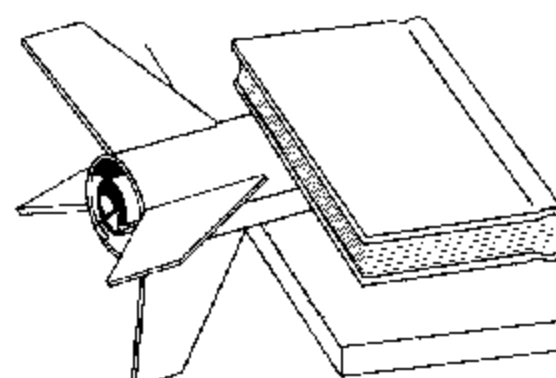
**C. EXTEND LAUNCH LUG LINE 8\"/>**



**5. A. APPLY THIN LAYER OF GLUE. WAIT 1 MINUTE. APPLY 2ND THIN LAYER AND ATTACH FIN CENTERED ON FIN LINE. REPEAT FOR OTHER FINS.**



**B. SUPPORT ROCKET UNTIL GLUE DRIES.**

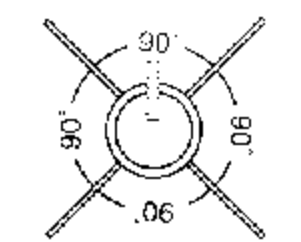


**C. NOTE: PROCEED WITH THIS STEP ONLY AFTER THE GLUE ON FINS IS THOROUGHLY DRY.**

1. APPLY GLUE FILLETS TO 4 FIN/BODY TUBE JOINTS.

2. SMOOTH WITH FINGER TIP.

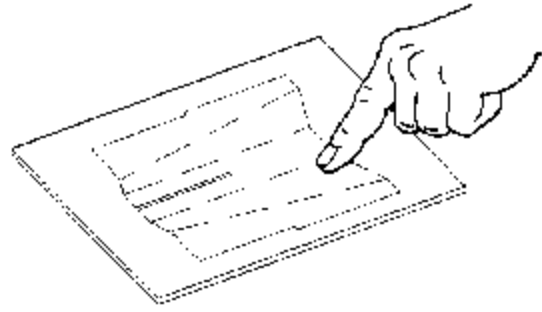
3. ALLOW GLUE TO DRY.



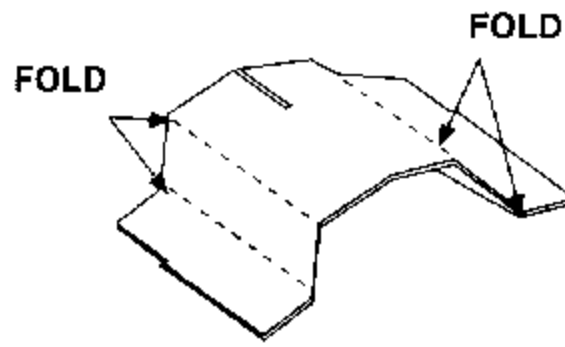
FINS PROJECT STRAIGHT FROM THE BODY.

NOTE: FINS MUST BE ATTACHED CORRECTLY FOR A STABLE FLIGHT.

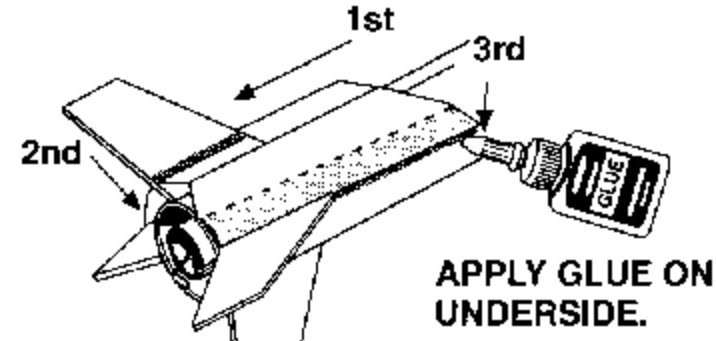
**6. A. PUSH SCOOP FREE. IF NEEDED, USE KNIFE TO HELP CUT FREE.**



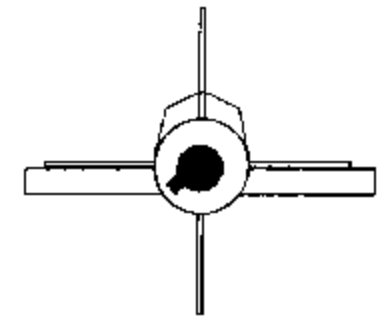
**B. FOLD ON ALL DOTTED LINES.**



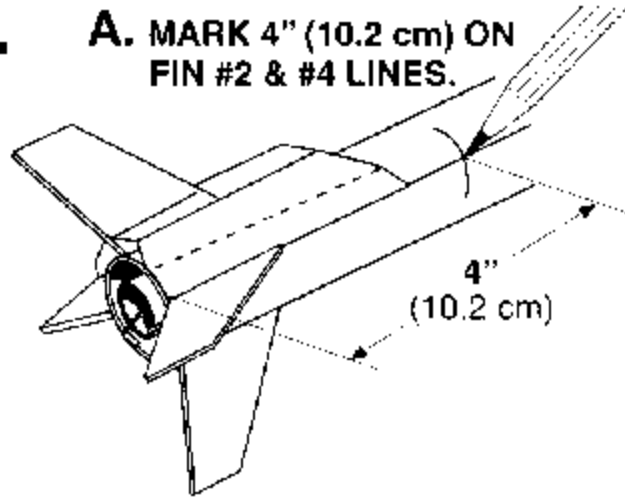
**C. ATTACH SCOOP SO THAT EDGES ARE FLUSH WITH FINS #2 & #4.**



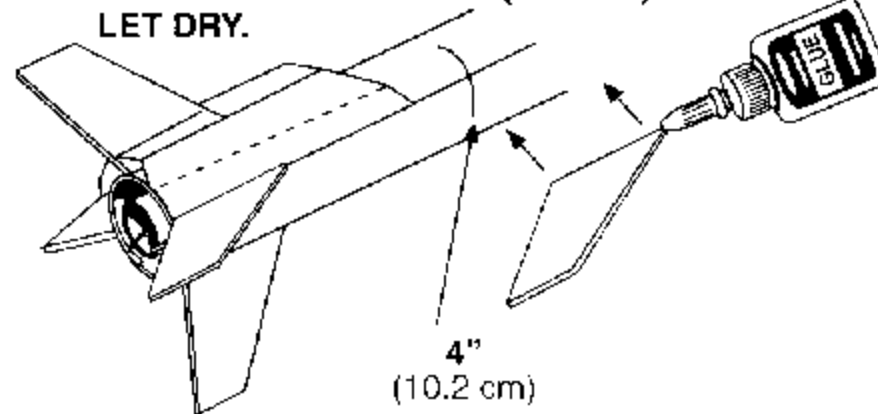
**D. ALLOW GLUE TO DRY.**



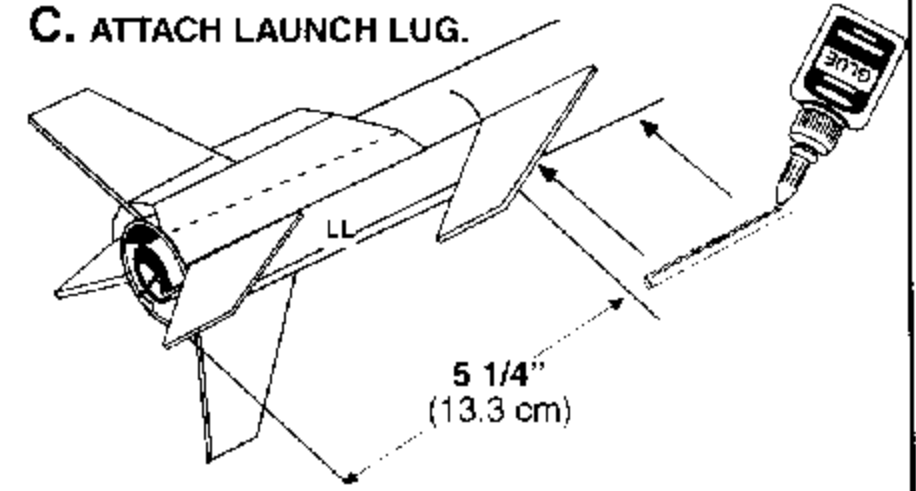
**7. A. MARK 4" (10.2 cm) ON FIN #2 & #4 LINES.**



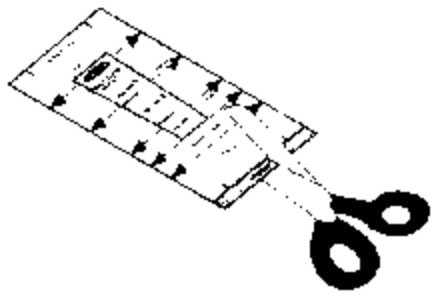
**B. USE STEP 5A. TO ATTACH WINGLETS ON FIN #2 & #4 LINES AT 4" (10.2 cm) MARK. LET DRY.**



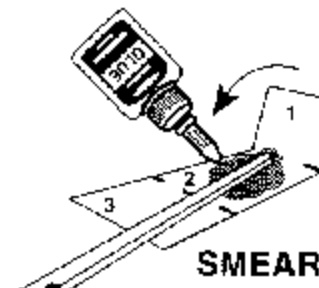
**C. ATTACH LAUNCH LUG.**



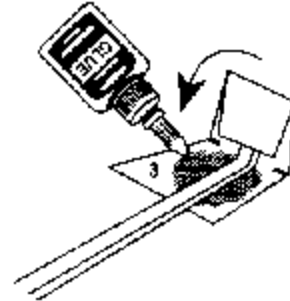
**8. A. CUT OUT SHOCK CORD MOUNT FROM TUBE MARKING GUIDE.**



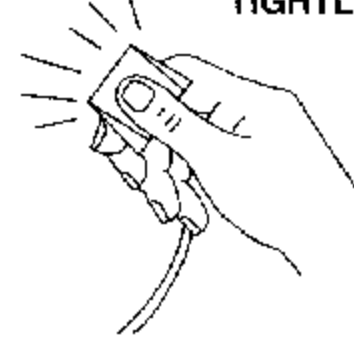
**B. FOLD FORWARD.**



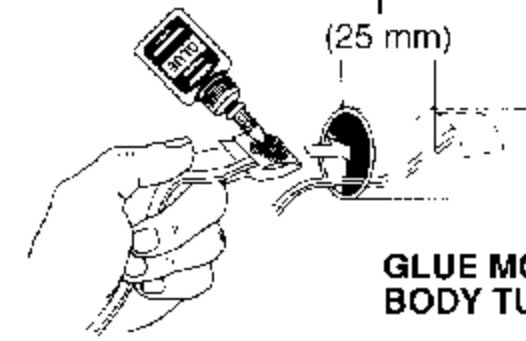
**C. FOLD FORWARD.**



**D. SQUEEZE TIGHTLY.**

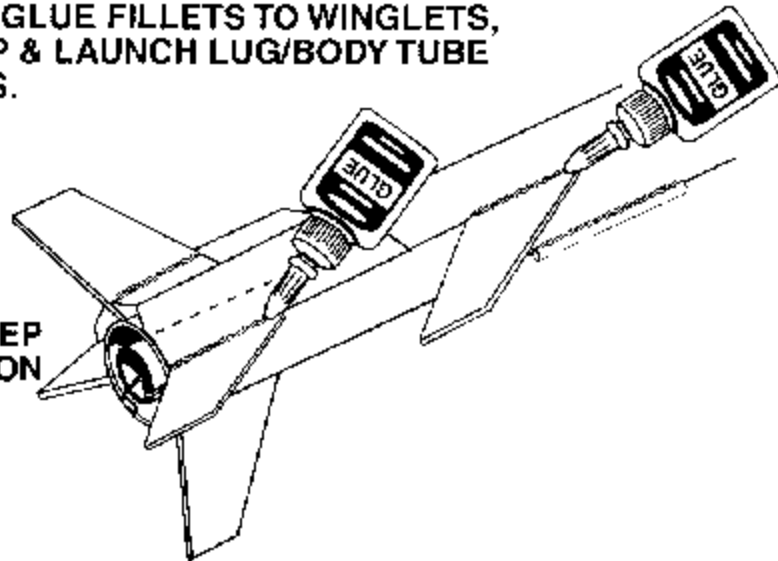


**E. 1" (25 mm)**

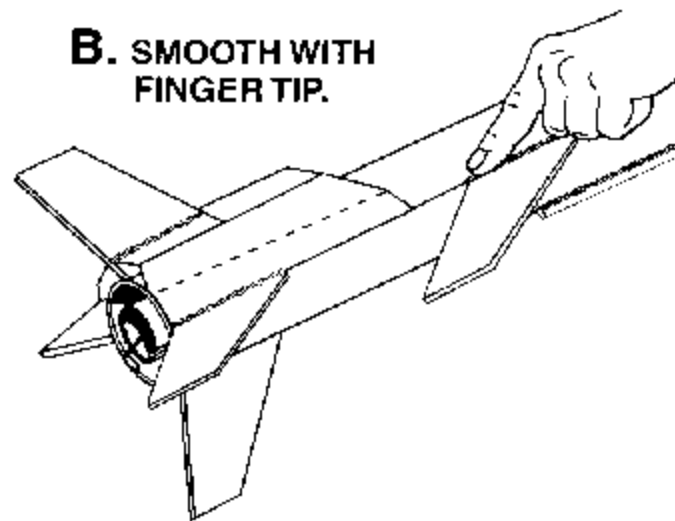


**GLUE MOUNT INSIDE BODY TUBE. HOLD UNTIL GLUE DRIES.**

**9. A. APPLY GLUE FILLETS TO WINGLETS, SCOOP & LAUNCH LUG/BODY TUBE JOINTS.**



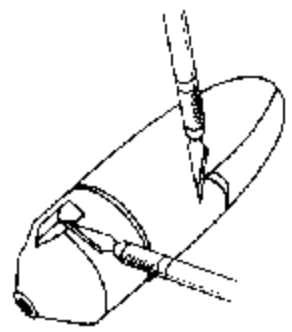
**B. SMOOTH WITH FINGER TIP.**



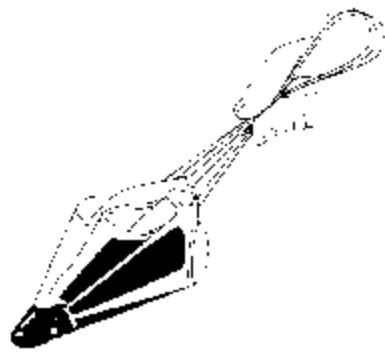
**C. ALLOW GLUE TO DRY.**

**NOTE:** PROCEED WITH THIS STEP ONLY AFTER THE GLUE ON WINGLETS, SCOOP & LAUNCH LUG IS THOROUGHLY DRY.

**10. A. REMOVE EXCESS FLASH.**



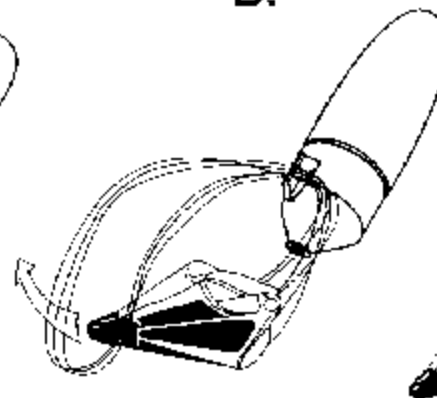
**B.**



**C.**



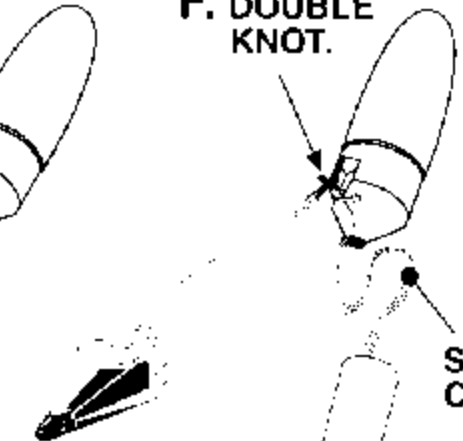
**D.**



**E.**



**F. DOUBLE KNOT.**

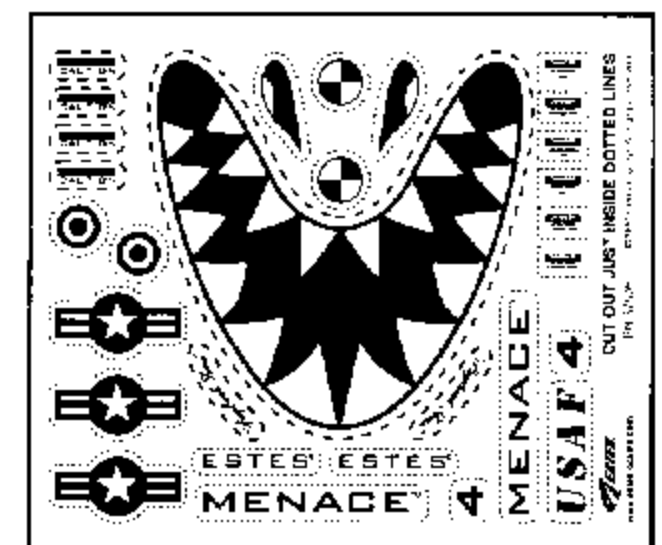
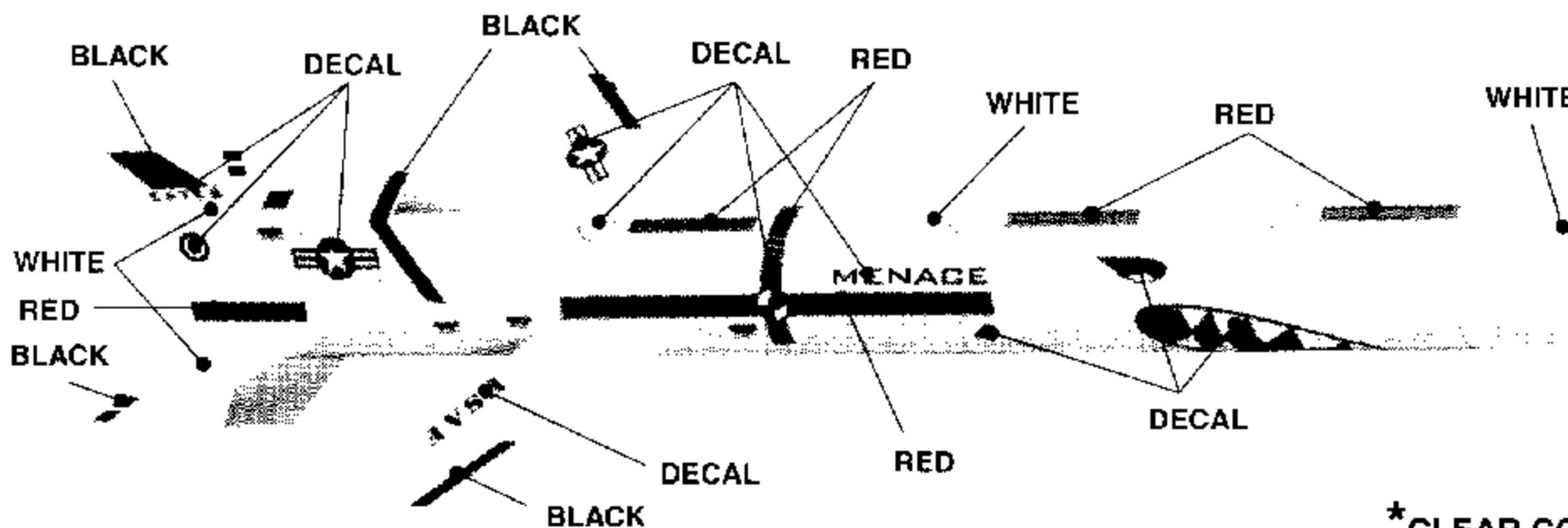


**SHOCK CORD**

**"CONVENTIONAL" PAINT SCHEME**

FIRST SPRAY ROCKET WITH WHITE PRIMER, DRY AND SAND. REPEAT UNTIL ROCKET IS SMOOTH.

**DECALS**

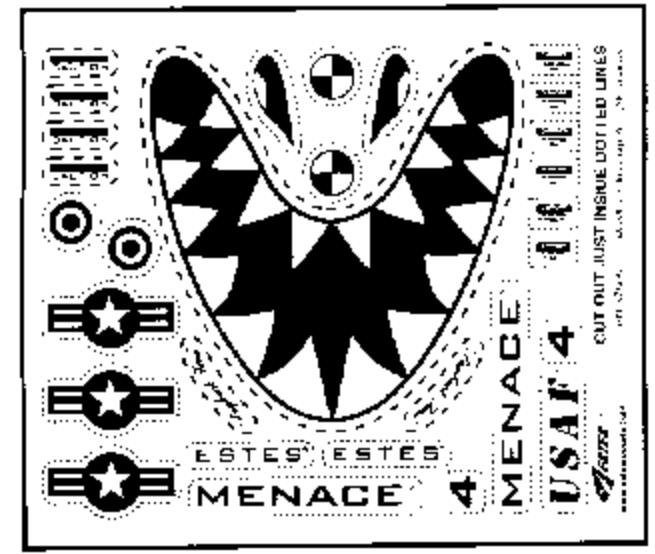
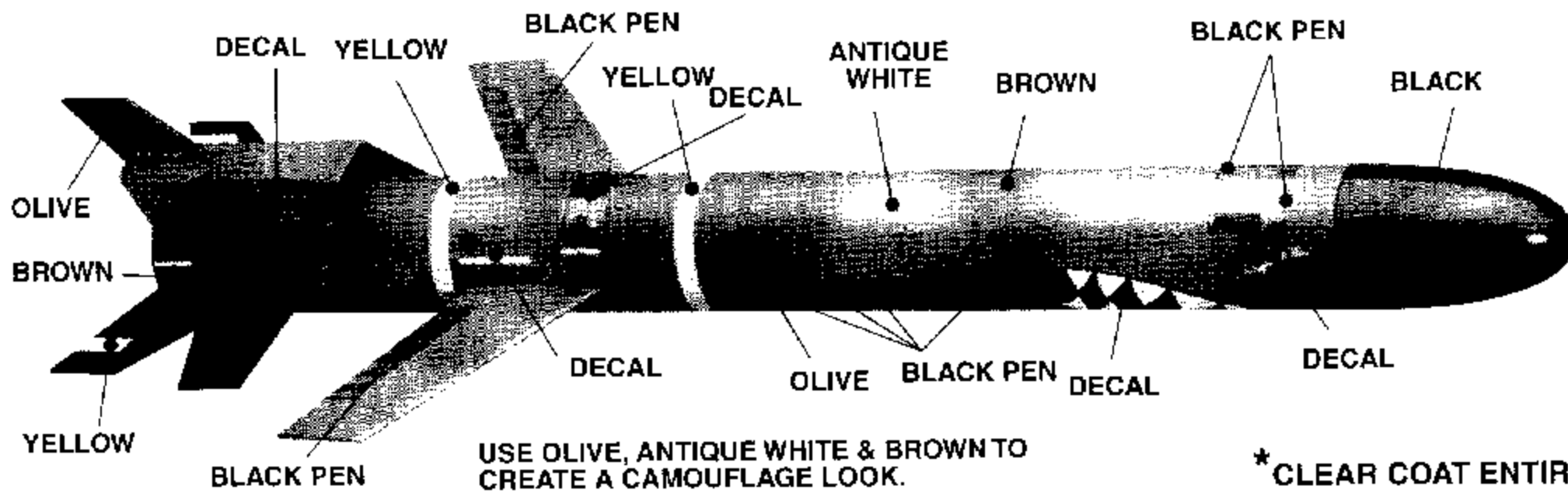


**\* CLEAR COAT ENTIRE ROCKET WHEN PAINT DRIES.**

# "WILD" PAINT SCHEME

FIRST SPRAY ROCKET WITH WHITE PRIMER, DRY AND SAND. REPEAT UNTIL ROCKET IS SMOOTH.

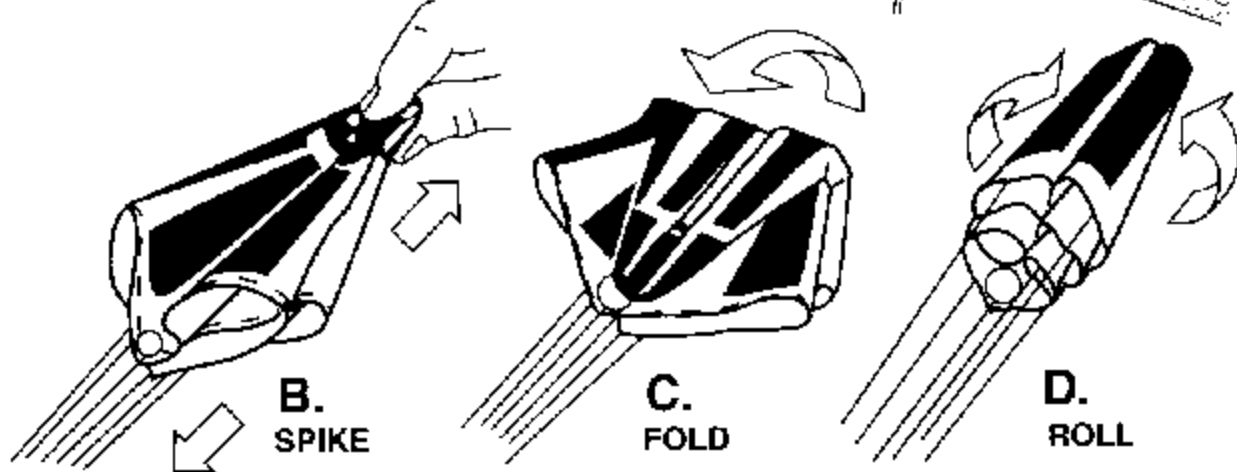
DECALS



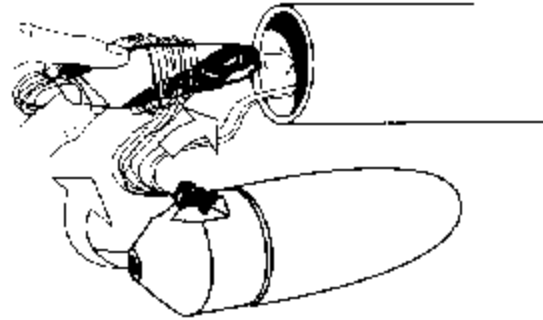
\* CLEAR COAT ENTIRE ROCKET WHEN PAINT DRIES.

## ROCKET PREFLIGHT

**A.** INSERT 3 OR 4 LOOSELY CRUMPLED SQUARES OF RECOVERY WADDING.



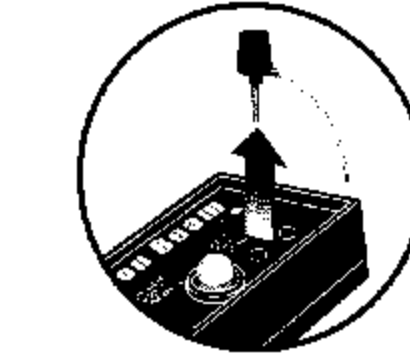
**E.** WRAP LINES LOOSELY, INSERT CHUTE, SHOCK CORD AND NOSE CONE.



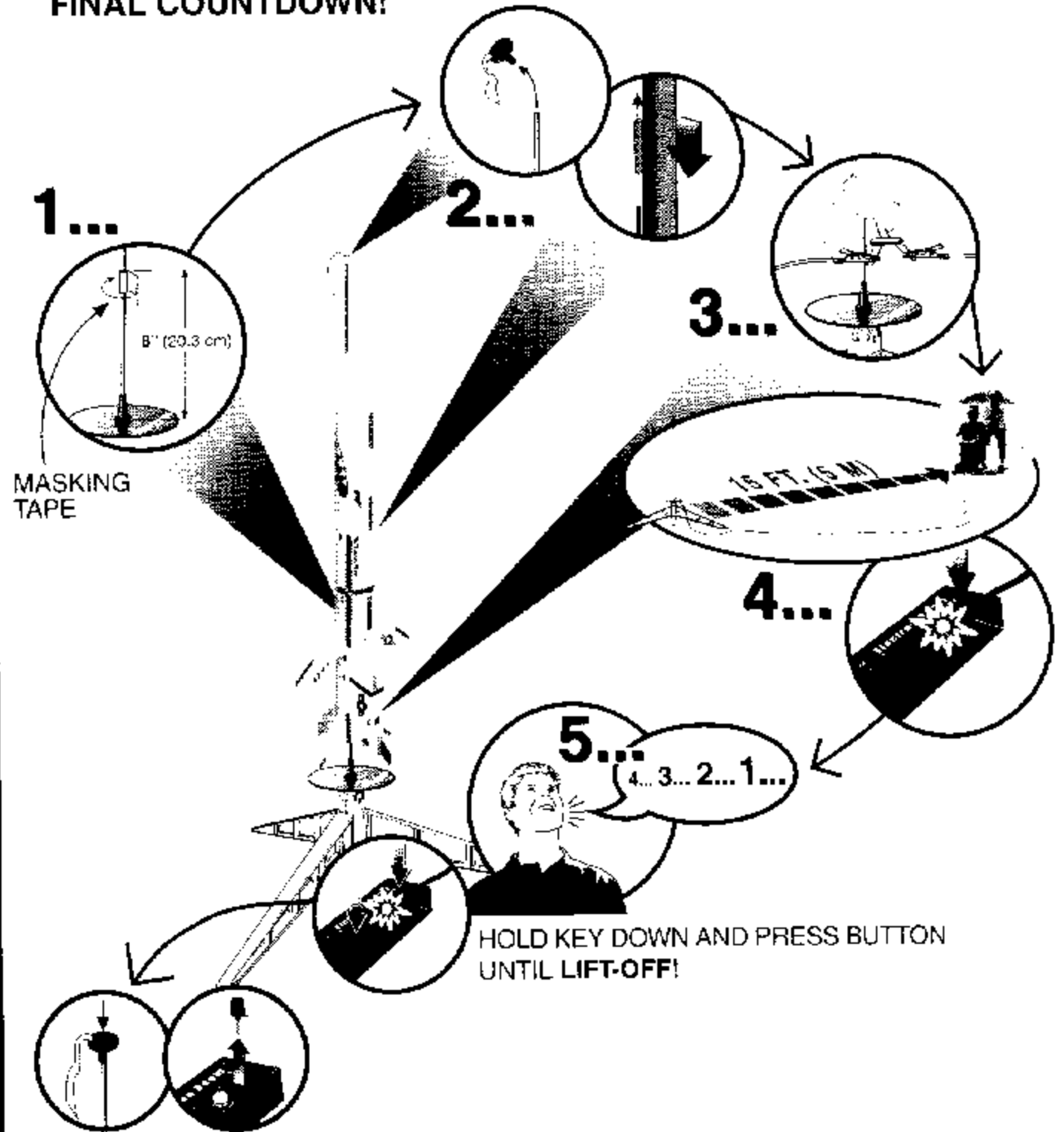
## COUNTDOWN AND LAUNCH

### LAUNCH SUPPLIES

- (Sold Separately)
- Estes® Porta Pad® II Launch Pad and Electron Beam® Controller
  - Recovery Wadding
  - Igniters (with Engines)
  - Igniter Plugs (with Engines)
  - Estes® Engines:
    - A8-3, B4-4 (First Flight)
    - B6-4, C6-5

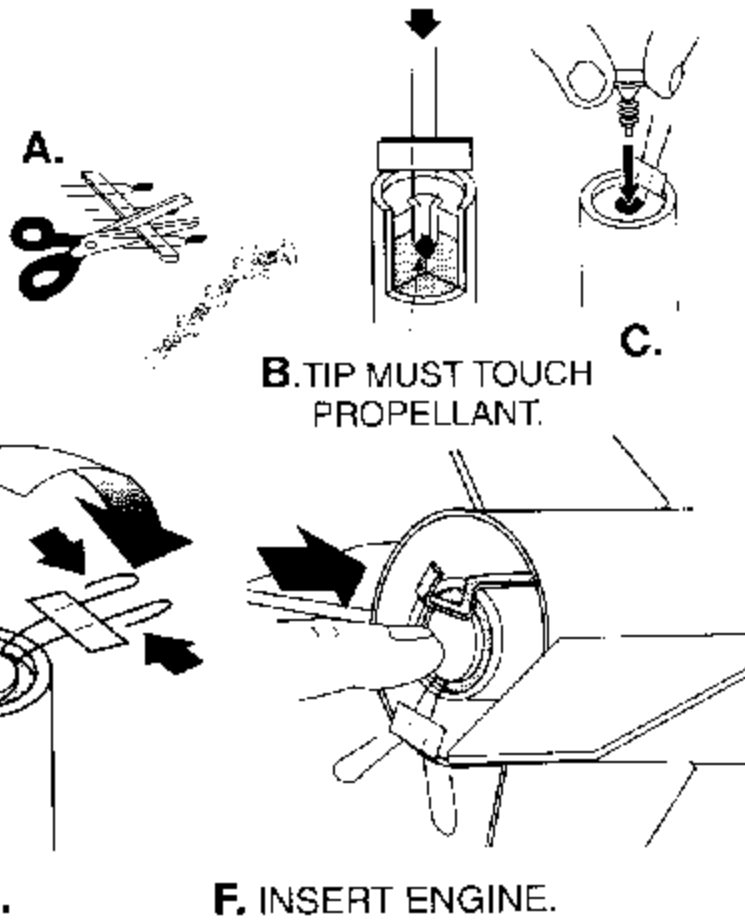


KEY ALWAYS OUT UNTIL FINAL COUNTDOWN!



## ENGINE PREP

**WARNING: FLAMMABLE**  
Before proceeding read instructions & NAR Safety Code included with engines.  
**PREPARE YOUR ENGINE ONLY WHEN YOU ARE OUTSIDE AT THE LAUNCH SITE PREPARING TO LAUNCH!**  
If you do not use your prepared engine, remove the igniter before storing your engine.



## PRECAUTIONS

NAR Safety Code



NO DRY GRASS OR WEEDS

## FLYING YOUR ROCKET

Choose a large field (500 ft. [152 m] square) free of dry weeds and brown grass. The larger the launch area, the better your chance of recovering your rocket. Football fields and playgrounds are great. Launch only with little or no wind and good visibility.

Always follow the National Association of Rocketry (NAR) SAFETY CODE.

## MISFIRES

**TAKE THE KEY OUT OF THE CONTROLLER. WAIT ONE MINUTE BEFORE GOING NEAR THE ROCKET!** Take the plug and igniter out of the engine. If the igniter has burned, it worked but did not ignite the engine because it was not touching the propellant inside the engine. Put a new igniter all the way inside the engine without bending it. Push the plug in place. Repeat the steps under Countdown and Launch.