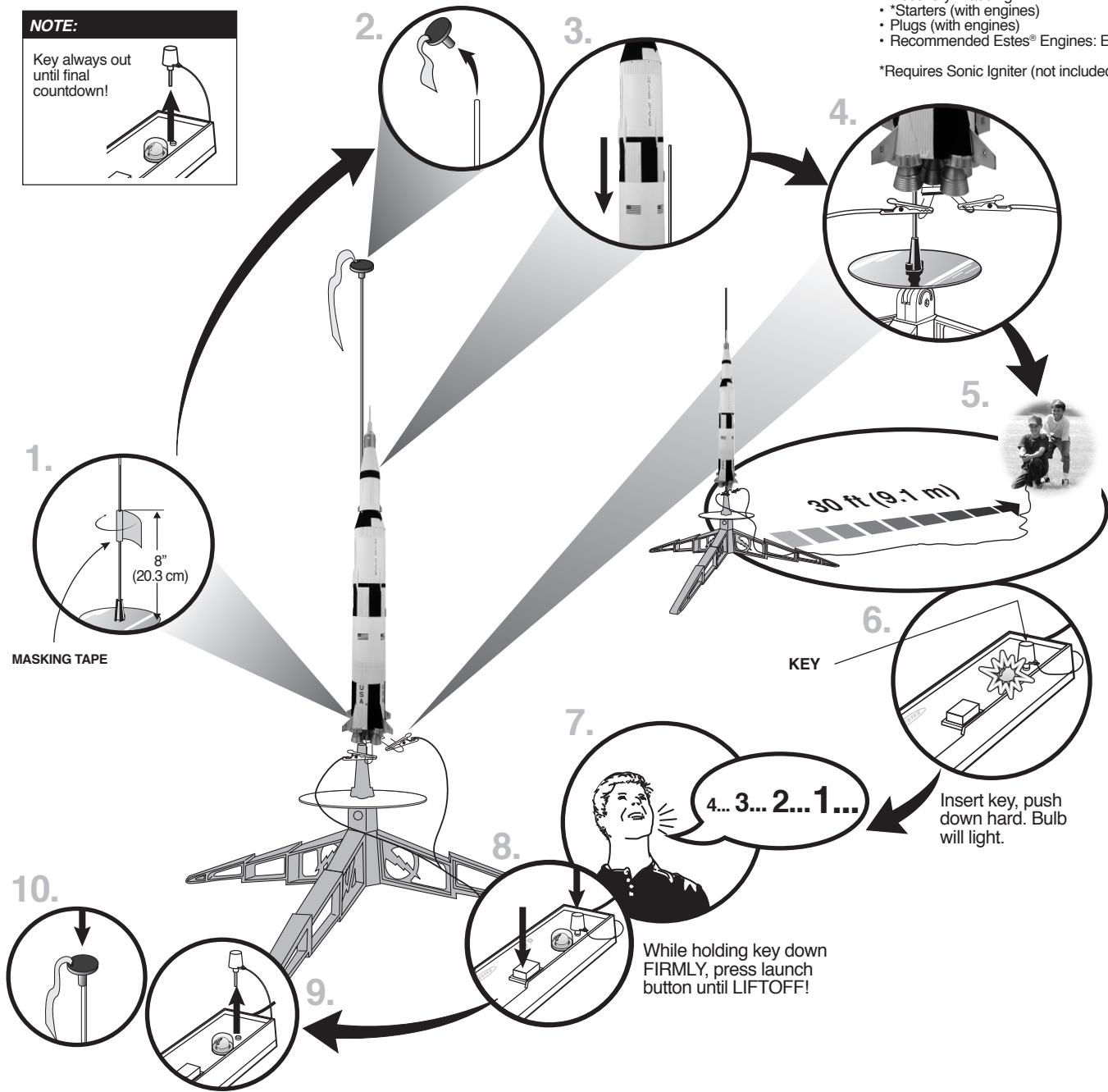


FULLY EXTEND YOUR LAUNCH CONTROLLER WIRE BEFORE LAUNCHING.

**NOTE:**

Key always out until final countdown!



**ESTES LAUNCH SUPPLIES NEEDED (Sold Separately)**

- Porta-Pad E Launch Pad
- Requires 3/16 in (5 mm) Maxi™ Rod
- E Launch Controller
- Recovery Wadding
- \*Starters (with engines)
- Plugs (with engines)
- Recommended Estes® Engines: E12-4, \*E30-4

\*Requires Sonic Igniter (not included with engine)



estesrockets.com

# APOLLO 11 SATURN V

1969



## MODEL ROCKET INSTRUCTIONS

KEEP FOR FUTURE REFERENCE

**IMPORTANT:** Please record date found on decal and keep for future reference. \_\_\_\_\_

**READ ALL INSTRUCTIONS.** Make sure you have all parts and supplies. Test fit all parts before applying glue. Sand as necessary for precision assembly. Product color and shape may vary.

On May 25th, 1961 President John F. Kennedy issued a challenge to Congress that he felt would "... hold the key to our future on Earth." The call to put a man on the moon was sounded, and the answer still resounds throughout the world today. It is hard to imagine the incredible effort it took to make "... one small step for man, one giant leap for mankind." At the time the decision was made to undertake a manned lunar landing, nothing even close to a rocket with the necessary capabilities existed. After an intensive evaluation and development process, the Saturn V was ultimately chosen as the best course of action.

On July 16th, 1969 the Saturn V launched Apollo 11 into space and history. It is truly mind boggling to attempt to conceive the influences still apparent in everyday life thanks to that mission, and even harder to believe that it was over 50 years ago. Here at Estes, we have decided to take a look back in order to imagine the future. The Saturn V has remained a much sought after kit throughout the years. We believe this is because the Saturn V ignites the imagination. Having accomplished putting a man on the moon reminds us all that the possibilities are endless. Enjoy building your Apollo 11 Saturn V, and all the dreams it may inspire.

**SUPPLIES:**

- #220, #320, #400 AND #600 SANDPAPER
- PENCIL
- TWEEZERS
- HOBBY KNIFE AND SEVERAL SHARP BLADES
- YELLOW GLUE
- TUBE-TYPE PLASTIC CEMENT
- LIQUID PLASTIC CEMENT
- PERMANENT SPRAY ADHESIVE (NOT ARTIST'S OR REPOSITIONABLE)
- CA
- CA FOR PLASTICS
- CA ACCELERATOR

- CA ACCELERATOR FOR PLASTICS
- SANDING SEALER (OR SANDABLE AUTO PRIMER)
- SQUADRON GREEN OR WHITE PUTTY
- MASKING TAPE
- SMALL PAINT BRUSH
- FLAT BLACK ENAMEL BOTTLE PAINT
- FLAT BLACK ENAMEL SPRAY PAINT
- FLAT WHITE ENAMEL BOTTLE PAINT
- FLAT WHITE ENAMEL SPRAY PAINT
- ENAMEL SILVER SPRAY PAINT
- 3/16" (5 MM) MAXI™ LAUNCH ROD

**OPTION:**

You may want bottle silver or enamel gunmetal spray paint instead of silver, "dull cote" spray paint. (Be sure to follow instructions and cautions.)

Do not use lacquer based paints! They can melt the surface of the plastic parts.

**CAUTION**

Please be extremely careful using cyanoacrylate adhesive (CA). Avoid getting in your eyes or on your skin. Safety glasses are recommended. Use adhesives and paint only in areas with adequate ventilation. Read all instructions.

**Before beginning to build with vac-formed plastic parts, read the following carefully.**

**Cutting Vac-Formed Parts**

Cutting vac-formed plastic parts requires patience. Applying light pressure, make repeated passes with the blade to cut through the plastic. Be sure to keep the blade in the same cut line each time; too much pressure will cause the blade to move and not cut cleanly.

**Sanding and Trimming Vac-Formed Parts**

Once the part is free of excess plastic, sand the edges to remove any flash and to provide a smooth, flat bonding surface. Secure a sheet of #220 or #320 grit sandpaper to a flat surface. (You may want to use wet-or-dry sandpaper with a little water to avoid clogging or loading the sandpaper with plastic dust.) Move each part in a circle against the sandpaper with pressure evenly distributed to avoid uneven sanding. Applying too much pressure can cause uneven edges. When working with thin edges, be careful not to remove too much plastic or generate too much heat that may warp and destroy the part.

**NOTE:** Double sided tape may be used to hold small parts. Use a file to remove excess plastic on hard to hold small parts.

**Adhesives for Vac-Formed Parts**

Because vac-formed parts are thinner than injection molded parts, different adhesives should be used. Two basic types give good results and you should have both on hand when building this model.

First is liquid plastic cement. Our preferred brands are Plastic Weld Cement (Plastruct), Testor's Plastic Cement #3502, Tenax 7R, and Testor's or Tamiya glue pens. Liquid cements work on styrene by dissolving the plastic and creating a chemically welded bond. As a result, a little bit goes a long way! Liquid

cements are usually applied with an artists brush. The trick to using plastic cement is to take advantage of the liquid flowing out from the brush by allowing cement to bleed into close fitting parts and then squeezing the parts together to bond. Work on a small area at one time as plastic cement sets quickly.

The second adhesive to have on hand is a super glue or cyanoacrylate for plastics. We recommend Plasti-Zap. You'll also want to use CA accelerators for plastics for these, but use a toothpick or a pipette to apply accelerator one drop at a time. When sprayed from their normal applicators, most regular CA accelerators will soften and stain plastic surfaces.

**Filling the Seams**

This is a necessary step in constructing vac-formed models. Because these models have seams, they need to be filled and smoothed. The putties we recommend are 3M Accyl-Blue (Usually found at auto body supply shops - one tube will last a long time.) and Squadron Green or White Putty (usually found in hobby shops.)

When working with putty or filler use as little as possible. Excess putty in a seam creates extra work in sanding it away, as well as the possibility of a "sinkhole" (where the putty collapses the skin of the plastic and eats it away.) Use masking tape along seams to minimize excess putty from adhering to the work area. Use multiple layers when building up low areas, rather than one thick layer of putty. Doing so will reduce shrinkage, cracking, and the risk of sinkholes. Let the putty dry overnight before attempting to sand it away. Wet-or-dry sandpaper, used wet, works best. Start with #220 grit and work your way through #320 to #400. Then polish the area with #600.

**PRECAUTIONS**



NAR SAFETY CODE



NO DRY GRASS OR WEEDS

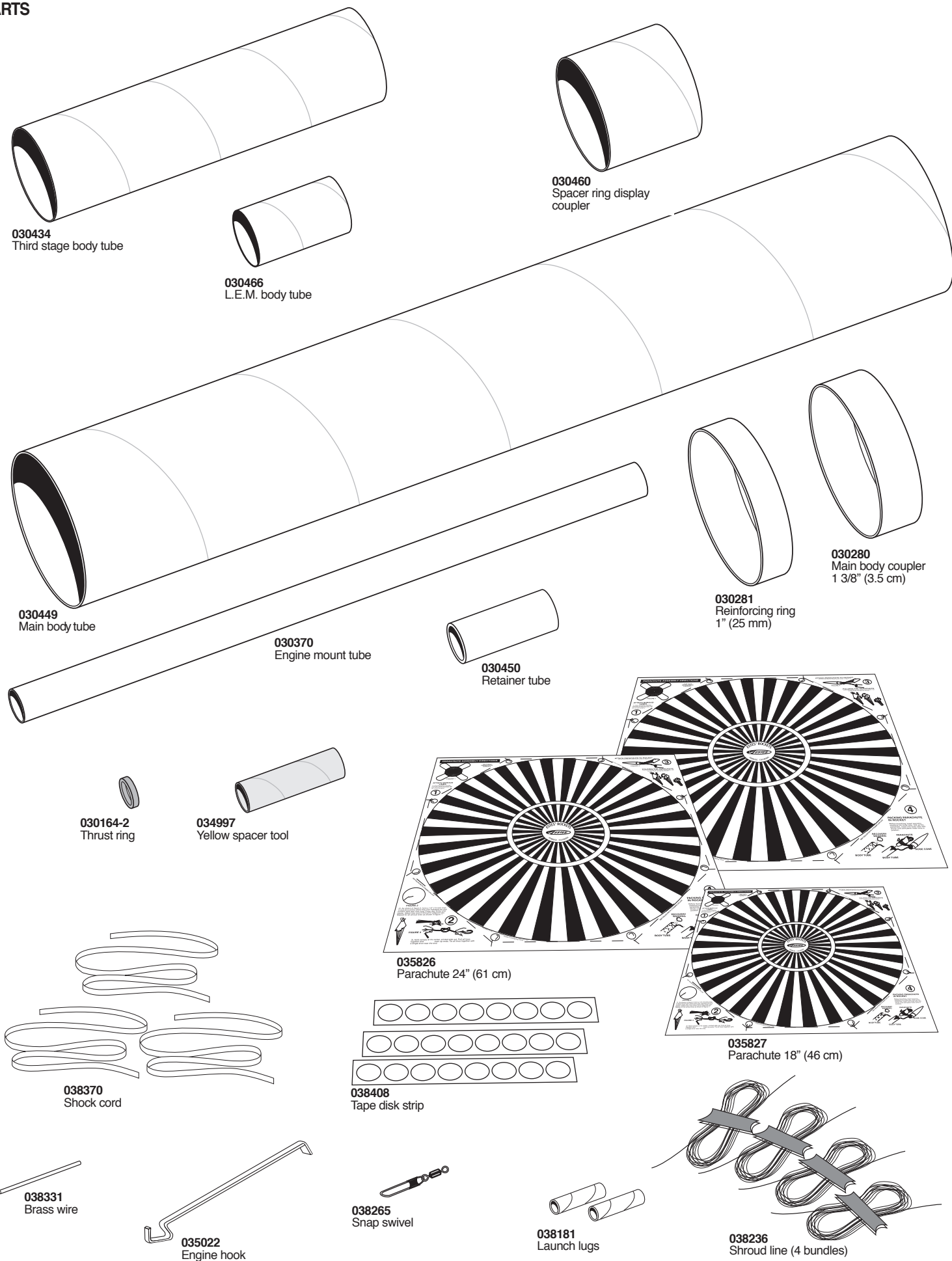
**PRE-LAUNCH CHECK** For safety, never launch a damaged rocket. Check the rocket's body, nose cone and fins. Also, check the engine mount, recovery system and launch lug(s). Repair any damage before launching the rocket.

**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.

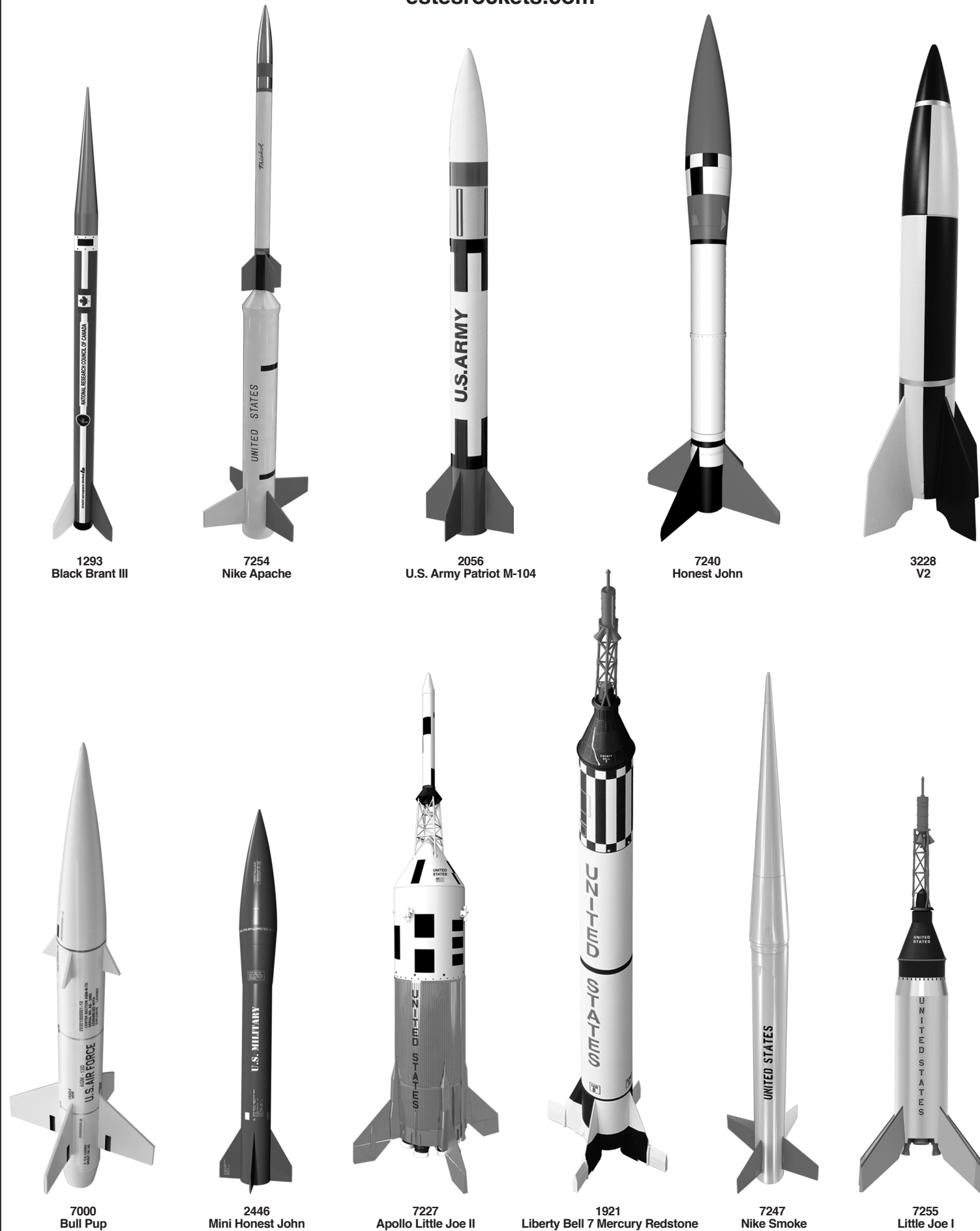
**MISFIRES TAKE THE KEY OUT OF THE CONTROLLER. WAIT ONE MINUTE BEFORE GOING NEAR THE ROCKET!** Disconnect the starter clips and remove the engine. Take the plug and starter out of the engine. If the starter has burned, it worked but did not ignite the engine because it was not touching the propellant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



**PARTS**



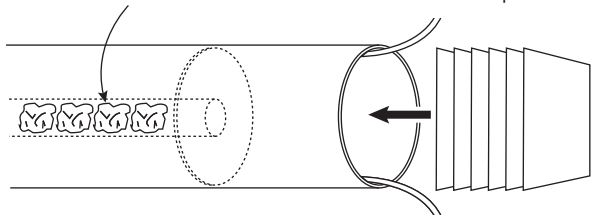
**SEE OUR ENTIRE FLEET OF SCALE KITS AT [estesrockets.com](http://estesrockets.com)**



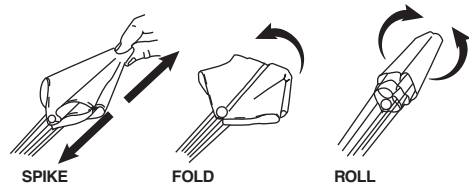


**PREPARE FLIGHT RECOVERY**

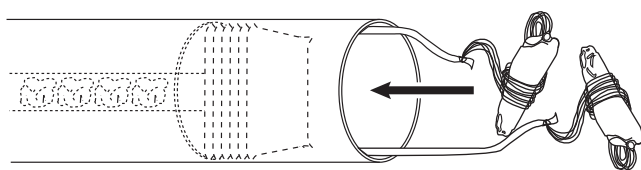
1. Crumple and place four squares of recovery wadding into the front of engine mount tube.
2. Lay six squares of wadding flat in the bottom of parachute compartment.



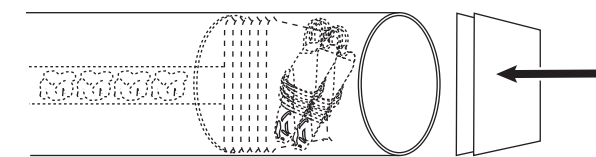
3. Spike, fold, and roll the 24" (61 cm) parachutes and insert into parachute compartment.



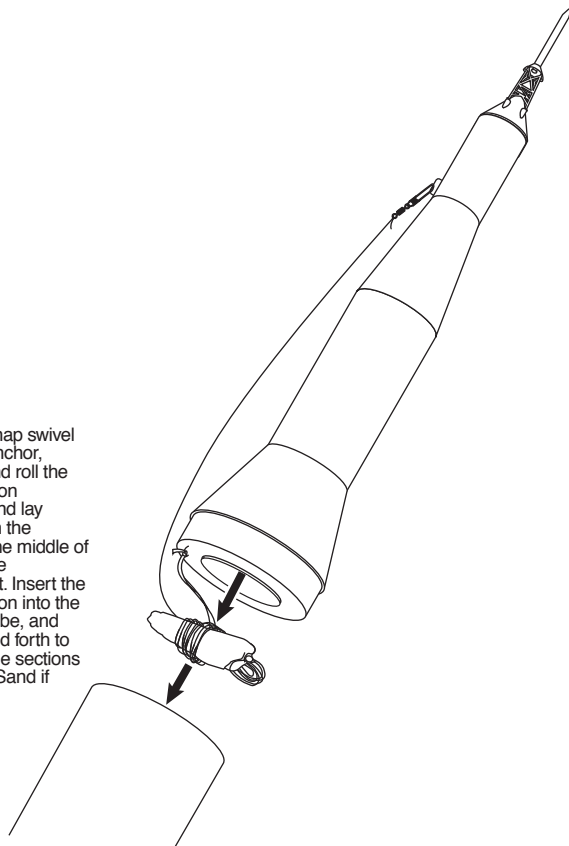
SPIKE FOLD ROLL



4. Lay two flat squares of wadding on top of parachutes.

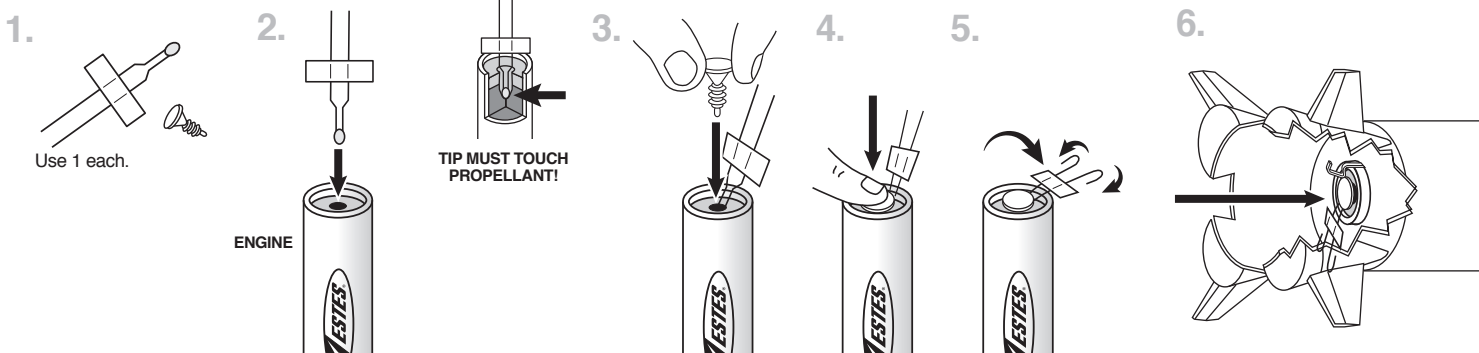


5. Attach the snap swivel to the wire anchor, spike, fold and roll the forward section parachute, and lay parachute on the wadding in the middle of the parachute compartment. Insert the forward section into the main body tube, and twist back and forth to make sure the sections do not bind. Sand if necessary.



**PREPARE ENGINE**

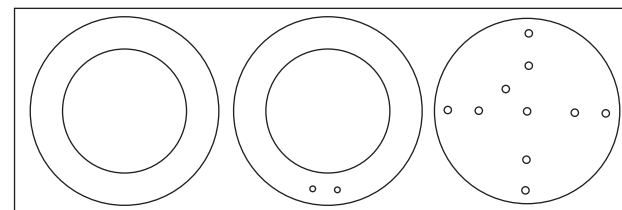
1. Use 1 each.
2. TIP MUST TOUCH PROPELLANT!
- 3.
- 4.
- 5.
- 6.



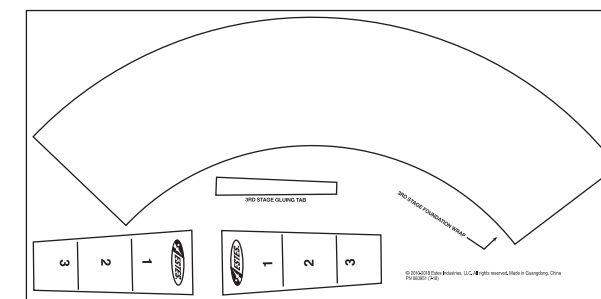
**WARNING: FLAMMABLE**

To avoid serious injury, 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 starter before storing your engine.

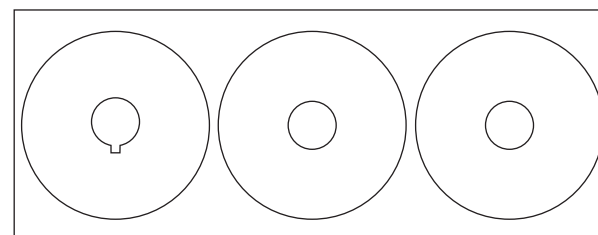
**LASER-CUT CARDS**



032471 L/C centering rings

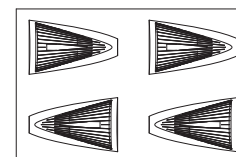


083591 Printed card (shock cord mounts, 3rd stage foundation wrap)

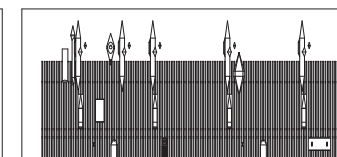


032473 L/C engine mount centering rings

**087090 VACUUM FORMED PARTS**



Fairing sheet



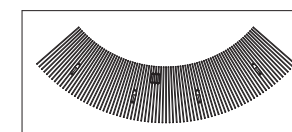
Inter stage wrap



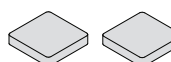
3rd stage wrap



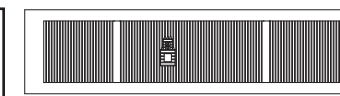
Upper 2nd stage wrap



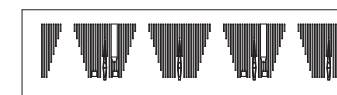
BODY WRAP REDUCTION



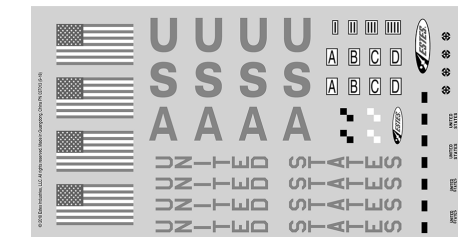
085705 Clay



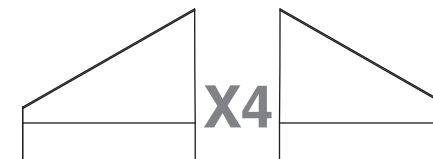
Inter tank wrap



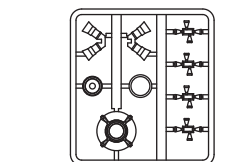
1st stage wrap



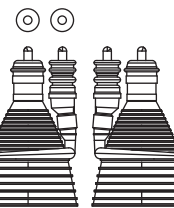
037013 Waterslide decal



073156 Injected molded fins



033201 Plastic parts set

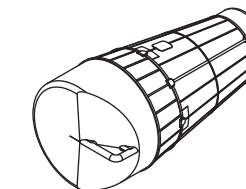


X5

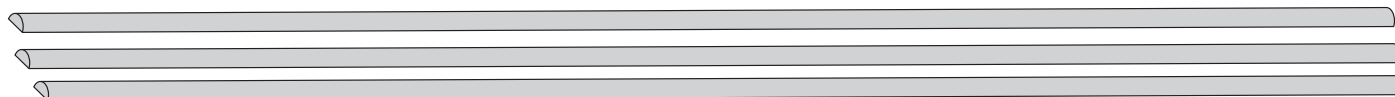
033200 Engine nozzles



030442 Escape motor body



072400 LEM shroud



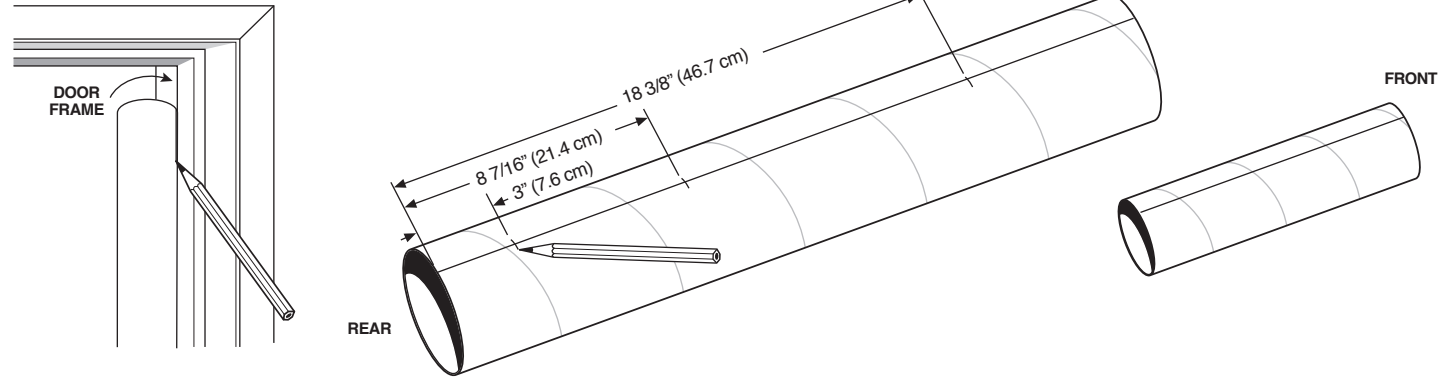
032071 Half round wood dowels 9" (22.9 cm)



032075 Wood strip 2.5" (6.4 cm)

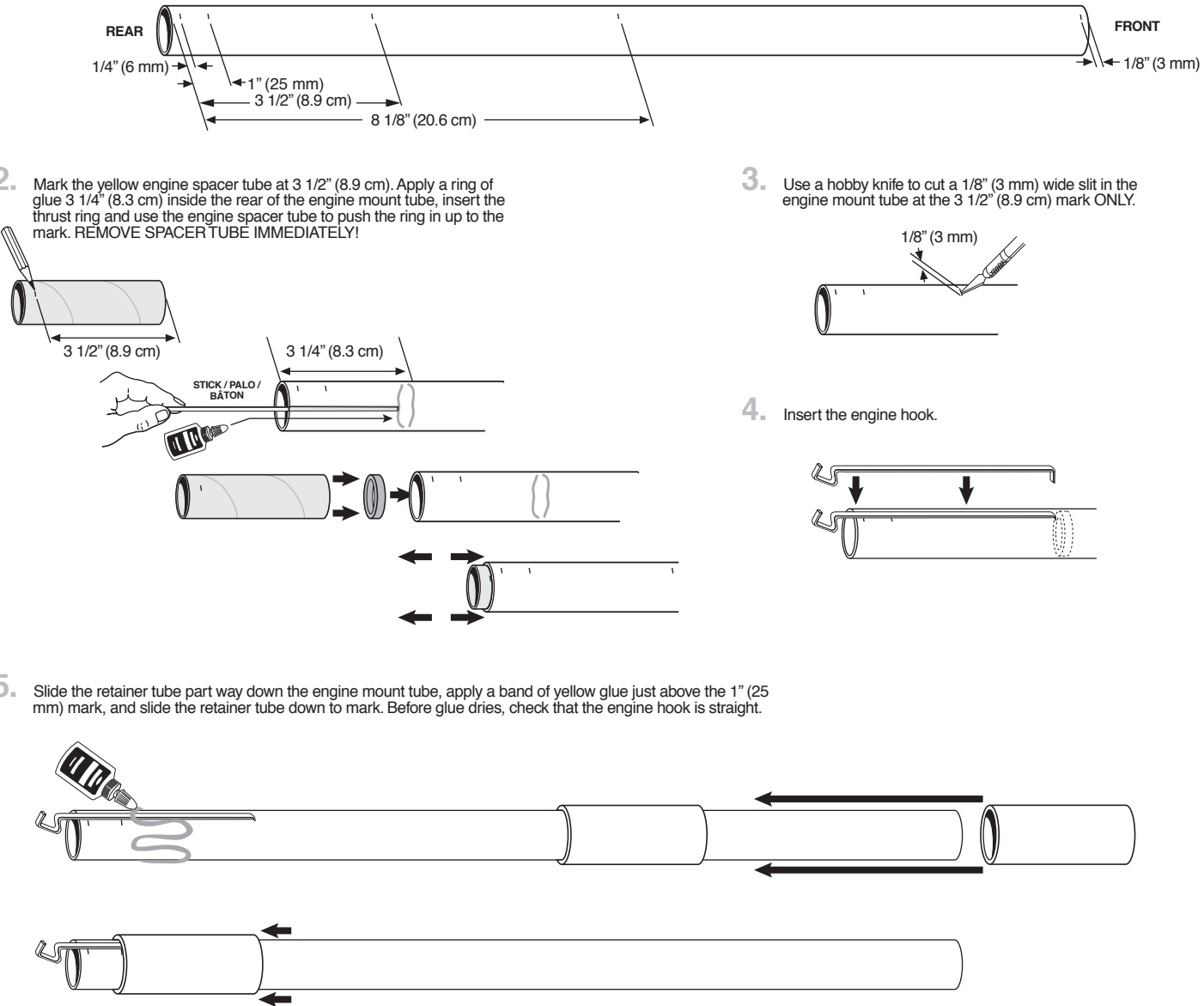
## MARK TUBES

1. Use a door frame as a guide to draw a straight line down the main and third stage body tubes.
2. Mark the alignment line on the main body tube at 3" (7.6 cm), 8 7/16" (21.4 cm), and at 18 3/8" (46.7 cm). The end you measure from is now the REAR of the tube.
3. Mark alignment line as shown. This is now the FRONT of the tube.



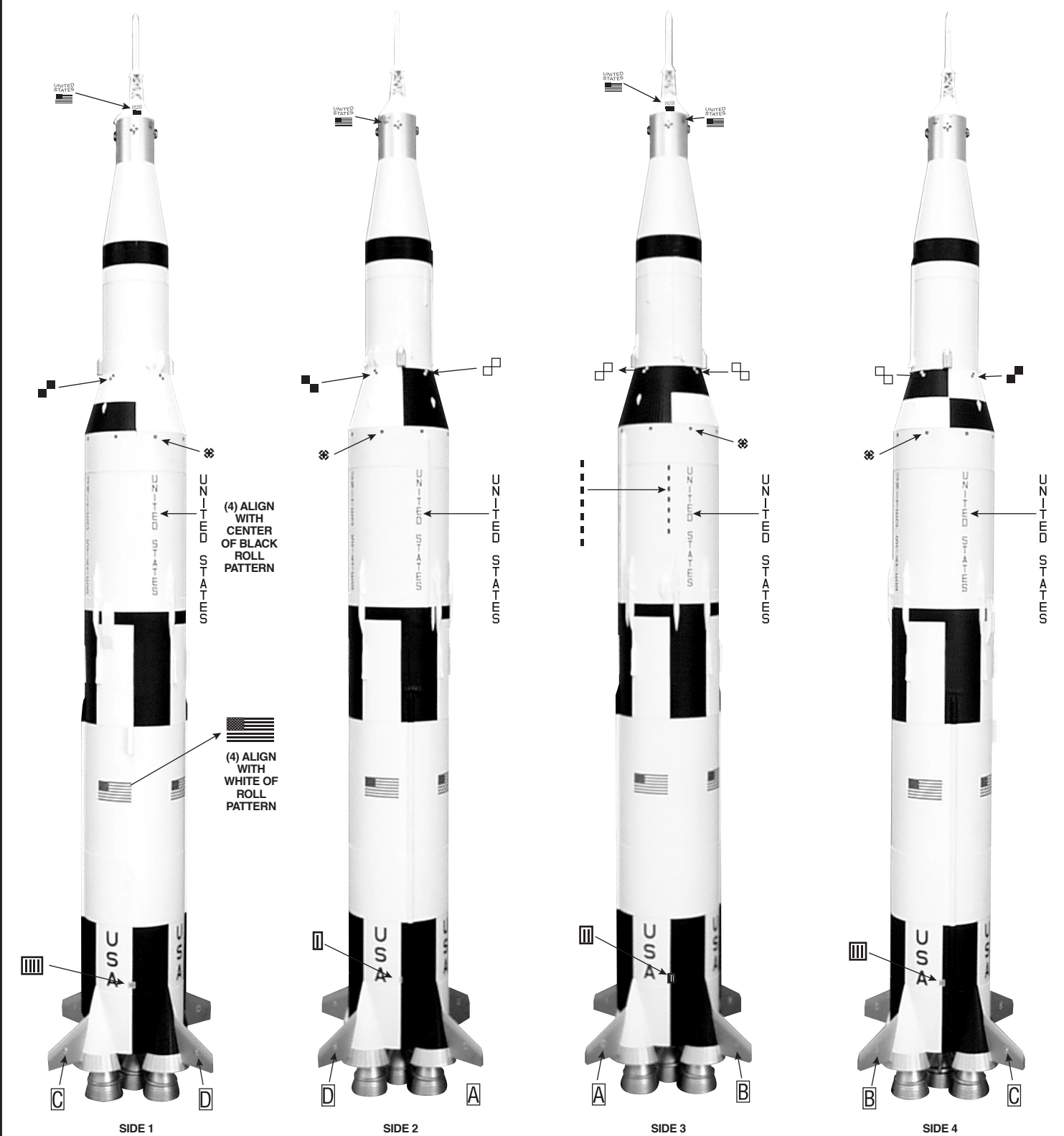
## ASSEMBLE ENGINE MOUNT

1. Measure and mark the engine mount tube at 1/4" (6 mm), 1" (25 mm), 3 1/2" (8.9 cm), and at 8 1/8" (20.6 cm). The end you measured from is now the REAR of the tube. Make a mark at 1/8" (3 mm) from the front of the tube.
2. Mark the yellow engine spacer tube at 3 1/2" (8.9 cm). Apply a ring of glue 3 1/4" (8.3 cm) inside the rear of the engine mount tube, insert the thrust ring and use the engine spacer tube to push the ring in up to the mark. REMOVE SPACERTUBE IMMEDIATELY!
3. Use a hobby knife to cut a 1/8" (3 mm) wide slit in the engine mount tube at the 3 1/2" (8.9 cm) mark ONLY.
4. Insert the engine hook.
5. Slide the retainer tube part way down the engine mount tube, apply a band of yellow glue just above the 1" (25 mm) mark, and slide the retainer tube down to mark. Before glue dries, check that the engine hook is straight.



## APPLY DECALS

1. Cut out one decal at a time from the sheet. Soak the decals, one at a time, in warm water for 15-30 seconds until decal will slide easily from the backing paper. Transfer the decal to the model, and gently blot away excess water and air bubbles with a soft cloth.

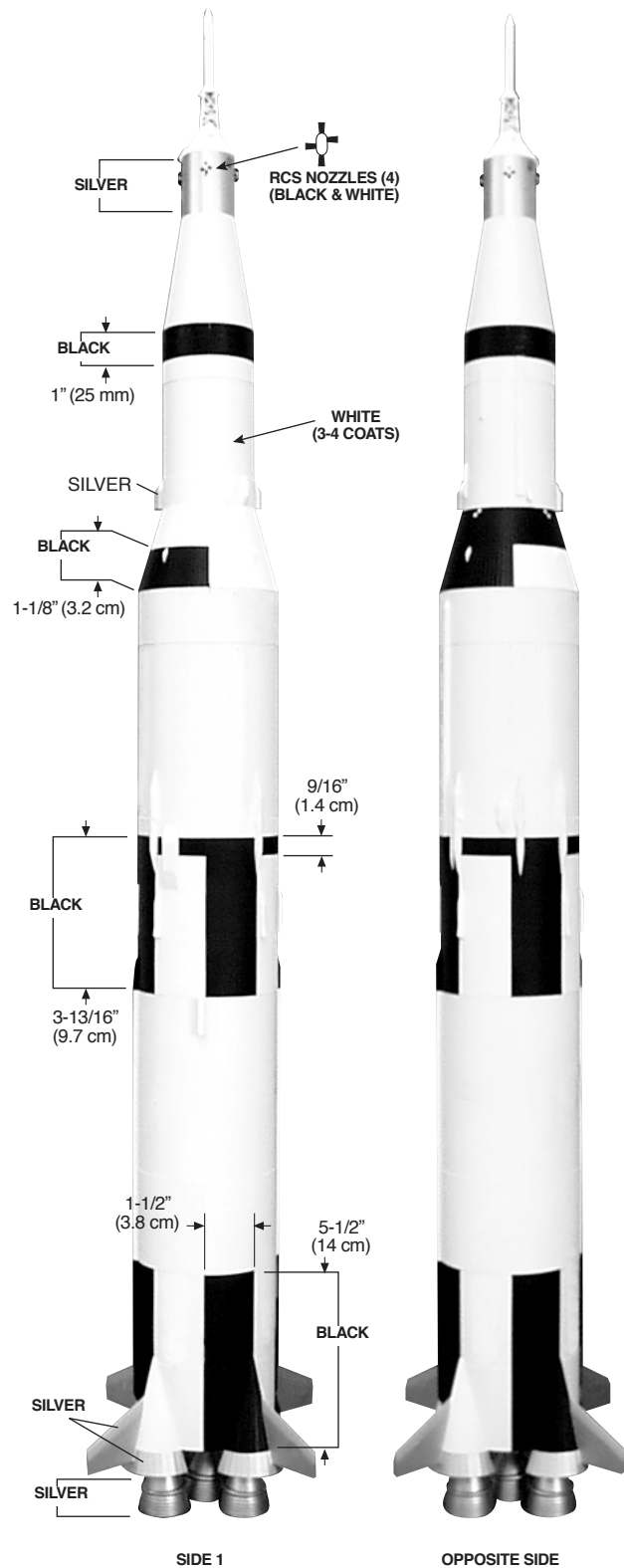


2. The "USA", American flag, and "United States" decals are centered vertically within the paint patterns, and horizontally between the body wraps. Measure and place light tic marks to help you properly orient decals. Raised squares on the second stage and reduction wraps provide locations for the camera and target decals.
3. Finish by painting the entire model with a flat clear coat.



## PAINT ROCKET

Before painting, check that all the grain on wooden parts is filled, that all parts are firmly attached, and that any small gaps have been filled using putty or glue. If you did not fill the spirals in the body tubes earlier, do so now. Spray adhesive can be removed with a tissue dipped in enamel thinner (use sparingly!), and wood glue or CA can be removed using a fine grain sandpaper. If you do not wish to mask off the model, you may spray the entire model white, then use bottle paint for the black and silver (or gunmetal) areas. Again, **DO NOT USE LACQUER BASED PAINTS**. They will attack the plastic parts of your Saturn V. If you have any doubt about the paints you wish to use, use a piece of scrap plastic as a test surface. Follow the instructions in step 25 to pack your parachutes before painting.



1. Remove the display nozzle assembly and paint the visible (rear) section silver or gunmetal gray. Spray a coat of good quality sandable primer (suitable for plastics and paper) over the entire surface of the model. Let dry, then examine the model for flaws. Correct as necessary. Prime and sand the model until you are satisfied with the finish.

2. Spray the entire model with 3-4 coats of flat white and let dry at least 24 hours. While paint is drying, carefully study the diagram for the location of the black, gunmetal gray, and silver areas. Careful masking is required to obtain the correct paint pattern.

**MASKING NOTES:** Special automotive masking or pin-striping tape is preferred for use due to the low tack and flexibility of the material. If using ordinary masking tape, press it against a plate of glass to remove some of the adhesive before applying to the model. When masking surfaces that have a compound curve, use narrow tape or cut your tape into narrow strips so that it will stretch and follow the curve. Carefully mask all paint separation points, then cover the large exposed areas with paper or plastic (the less tape touching the model the better) making sure the edges are taped down to prevent overspray. In all cases, mask off the coupler shoulder to prevent paint from building up on the mating surfaces. Spray another coat of white to seal the masked area and minimize overspray and let dry. Once dry, spray the color onto the masked area. As soon as the paint is dry to the touch, carefully remove the masking.

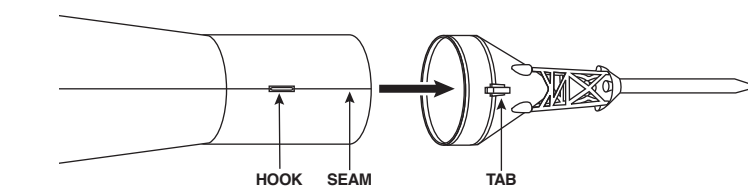
3. Mask off the fins and engine fairings and paint them silver or gun metal gray (be consistent with the color you painted the display nozzle assembly.)

4. Cut out the masking guide for the Service Module (SM), and paint the exposed SM surfaces silver.

5. Paint the plastic RCS nozzles as shown.

6. Use the diagram to mask and paint the roll pattern.

7. Once the roll pattern is complete and dry, use CA to apply the RCS nozzles.

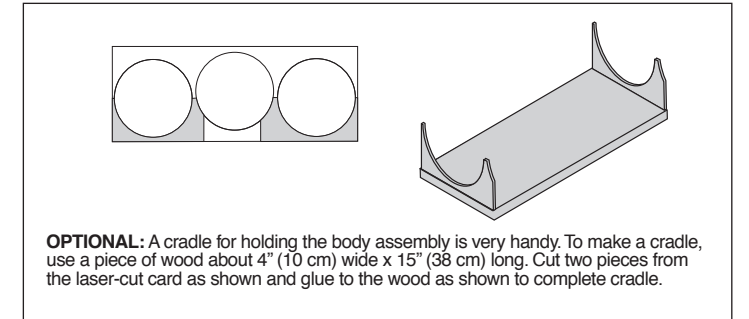
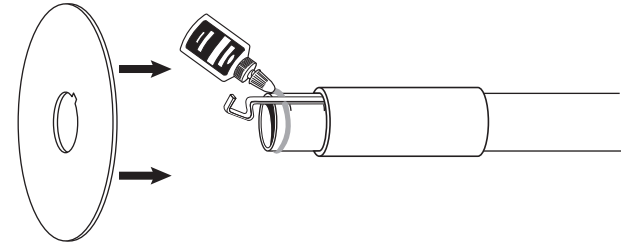


8. Place the capsule on top of the L.E.M. assembly, rotate until plastic tab is aligned with seam and hook, make an alignment mark, and apply with CA.

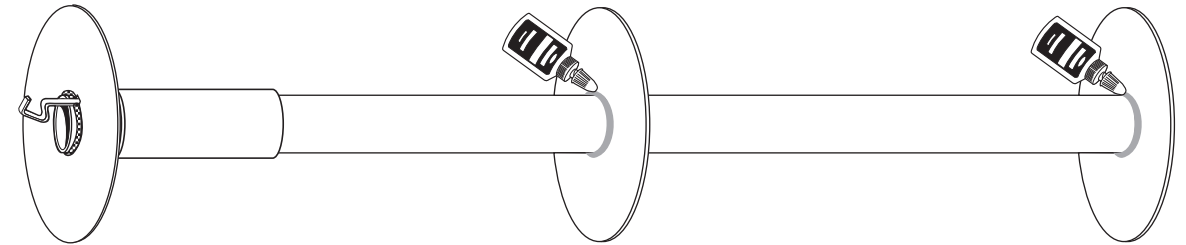
9. Align seams and glue the L.E.M. assembly to the third stage.

## INSTALL ENGINE MOUNT AND CENTERING RINGS

1. Use a hobby knife to carefully remove the centering rings from their laser-cut card, test fit onto engine mount tube, and sand as necessary.

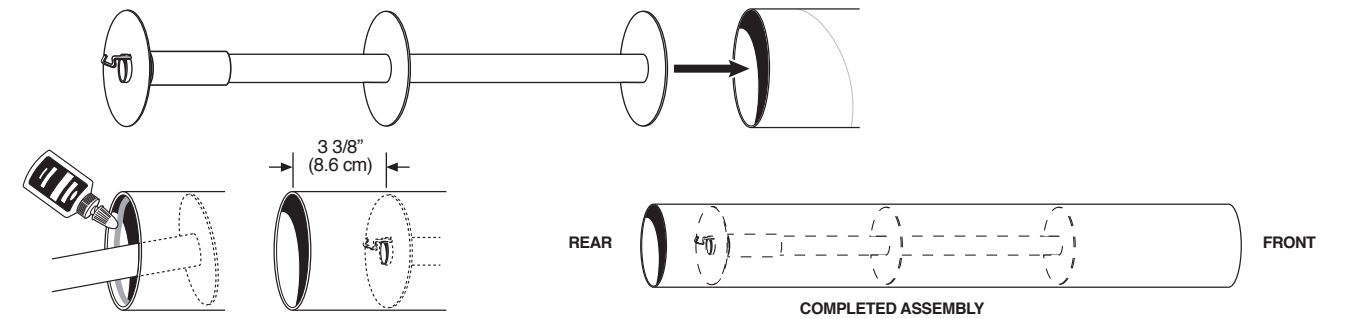


2. Apply a band of yellow glue around the engine mount tube just behind the 1/4" (6 mm) mark (do not get glue on engine hook). Then slide the notched ring over the engine hook and position at the 1/4" (6 mm) mark. Check that the ring is perfectly perpendicular to the tube all the way around and the notch is over the engine hook. Glue the remaining centering rings at the 8-1/8" (20.6 cm) mark and at 1/8" (3 mm) from the front of the tube, making sure the rings are straight. Let dry, then fillet all of the ring/tube joints.



## INSTALL ENGINE MOUNT

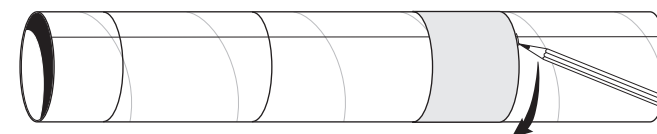
1. Slide the front ring on the engine mount into the rear end of the main body tube, apply a ring of glue just inside the rear of the body tube, then slide the rest of the engine mount in until the rear ring is 3 3/8" (8.6 cm) from the rear end of the body tube. Apply a bead of glue to the ring/tube joints at each end, let dry, then fillet the joints.



2. Apply a bead of glue around inside of tube assembly at rear of tube as shown. Insert reinforcing ring inside of tube assembly leaving 3/4" (19 mm) of tube assembly exposed. Let dry.

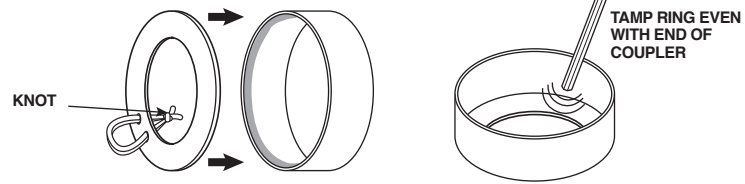


3. Carefully extend the marks you made on the main body tube alignment line all the way around the tube, making sure the rings you draw are straight. (Use a thick piece of paper or masking tape as an aid in drawing the rings.)



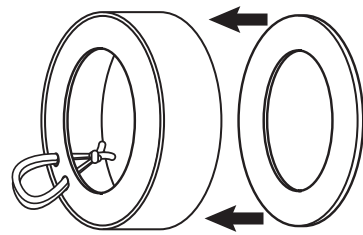
### INSTALL THIRD STAGE CENTERING RINGS

- Carefully remove the third stage centering rings from their laser-cut card.

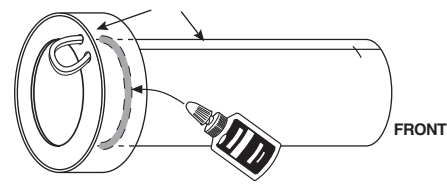


- Cut a piece of line 5" (12.7 cm) long, double it, and thread the ends into the holes in the laser-cut ring as shown. Test fit and glue the ring into the main body coupler so that the knot is on the inside of the coupler and the ring is flush with the coupler edge.

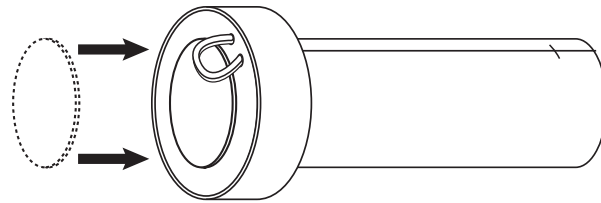
- Glue the other ring into the other end of the coupler so that it is flush with the coupler edge.



- Align the reference line you drew earlier on the third stage body tube with the string loop, and glue the tube into the coupler assembly. (Be sure to note the front of the tube.) Let dry.

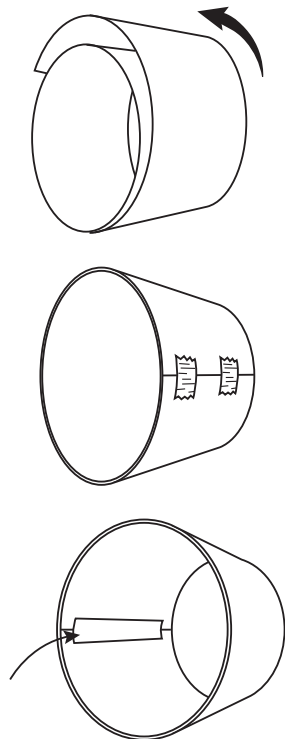


- Glue the center from one of the laser-cut rings onto the bottom of the tube/coupler assembly.

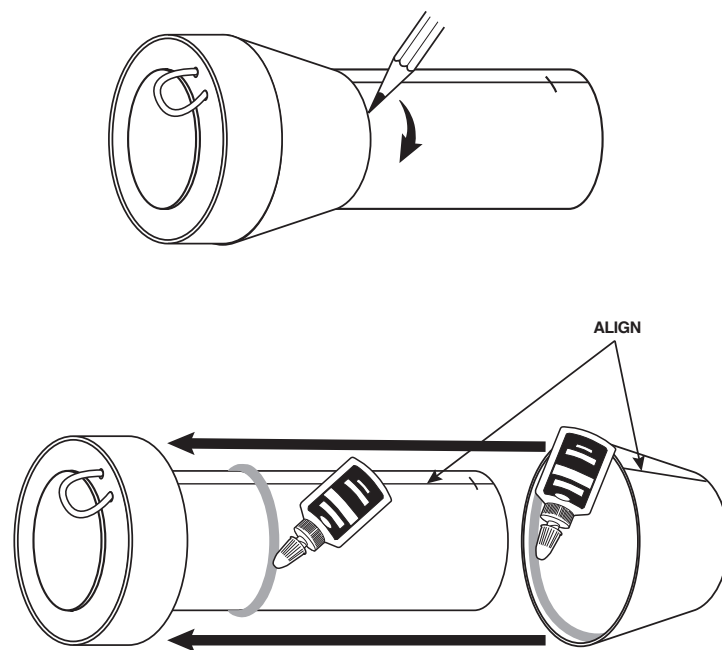


### INSTALL THIRD STAGE FOUNDATION WRAP

- Carefully cut along the outside edges of the third stage foundation wrap and glue tab. Curl the wrap, use low tack masking tape to tape the ends together, and glue the tab to the inside seam leaving about 1/16" (2 mm) of clearance at both the top and bottom as shown. Let dry.



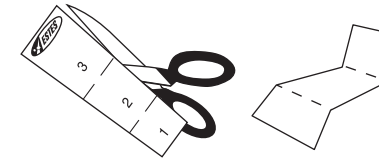
- Slide the wrap onto the coupler, draw a line around the body tube at the front of the wrap, and remove. Apply a ring of glue around the tube at the mark, and slide the wrap back into place making sure to align the seam in the wrap with the alignment line on the tube.



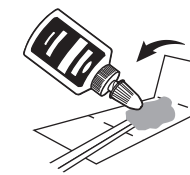
### INSTALL SHOCK CORD MOUNTS

- Test fit the separate sections of the body together, and sand as necessary to achieve a good fit.

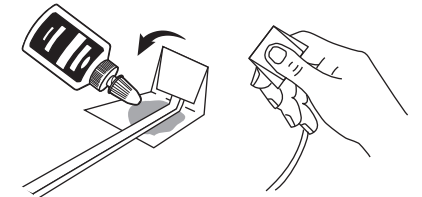
- Cut out the two shock cord mounts on card 083591. Fold.



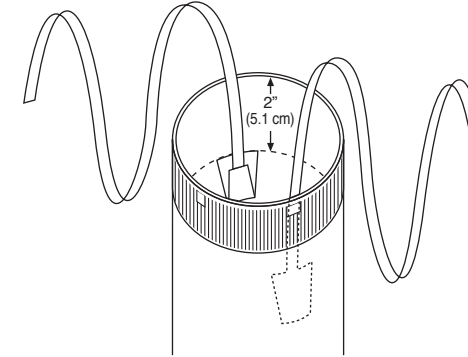
- Lay shock cord onto shock cord mount at an angle as shown and apply glue to section two. Fold section 1 over.



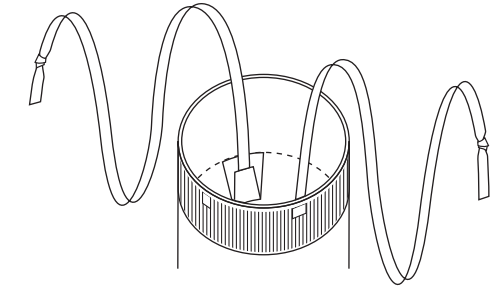
- Apply glue to section 3. Fold forward again. Clamp firmly until glue sets. Repeat for the other shock cord and mount.



- Apply glue to each mount and apply mounts to opposite sides of the main body tube at least 2" (5.1 cm) down.



- Tie a double knot at the free end of each shock cord.

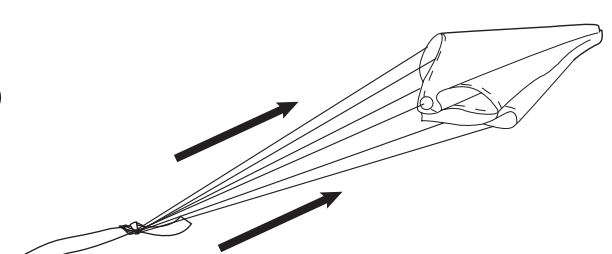
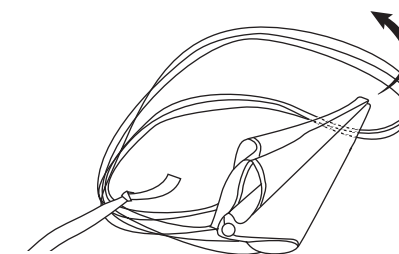
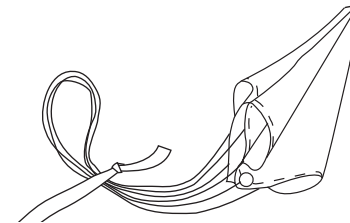


### PREPARE RECOVERY SYSTEM

- Build all three parachutes according to the instructions printed on the parachute borders.

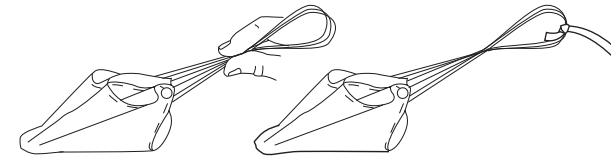
- Form a loop in the shroud lines of one of the 24" (61 cm) parachutes and lay a mounted shock cord over loop.

- Pass parachute through loop and pull tight. Repeat with the other 24" (61 cm) parachute and mounted shock cord.



### PREPARE THIRD STAGE RECOVERY SYSTEM

- Form a loop with the shroud lines on the 18" (46 cm) parachute, and tie the remaining shock cord to the loop with a double knot.



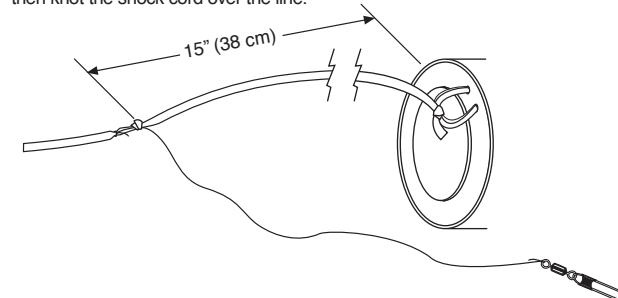
- Tie the free end of the shock cord to the loop at the rear of the third stage.



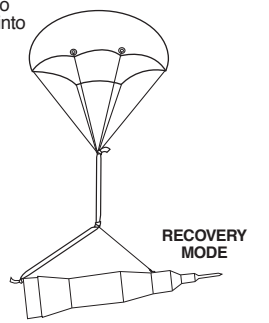
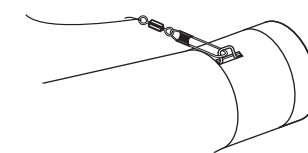
- Measure a 13" (33 cm) piece from the remaining shroud line material and tie one end to the snap swivel.



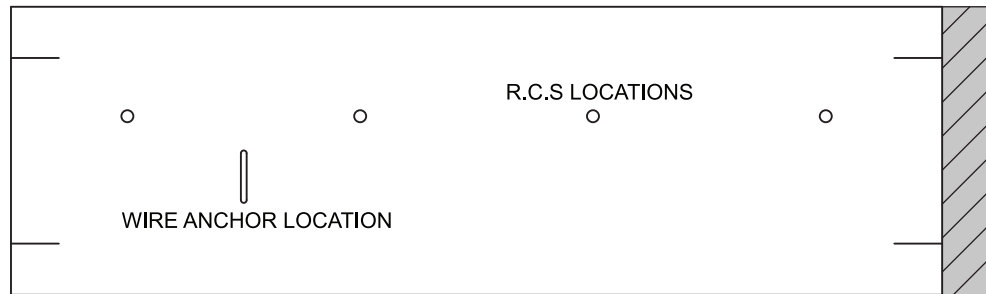
- Tie the other end of the line to the shock cord 15" (38 cm) from the rear of the third stage, then knot the shock cord over the line.



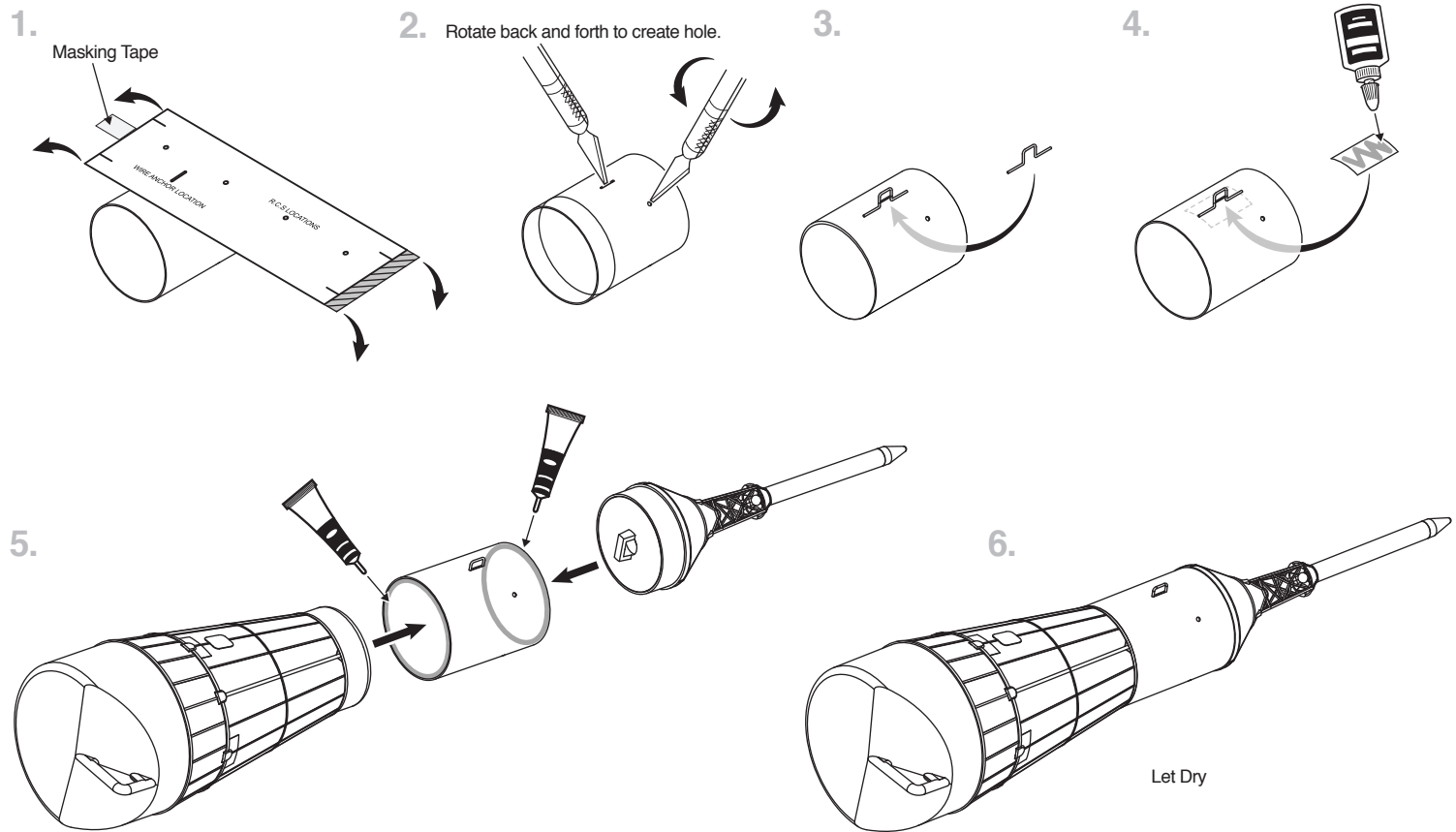
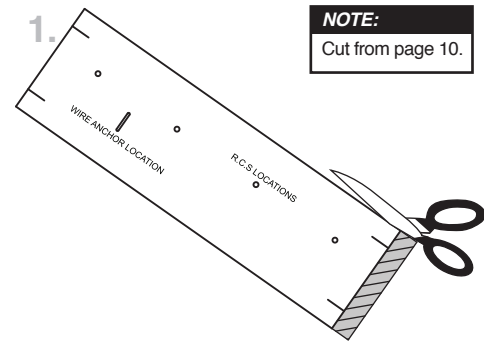
- Snap the front of the snap swivel onto the brass anchor at the top of the L.E.M. (The snap swivel allows you to detach this portion of the recovery system and pack into the body tube for display.) Unhook for painting.



### INSTALL WIRE ANCHOR

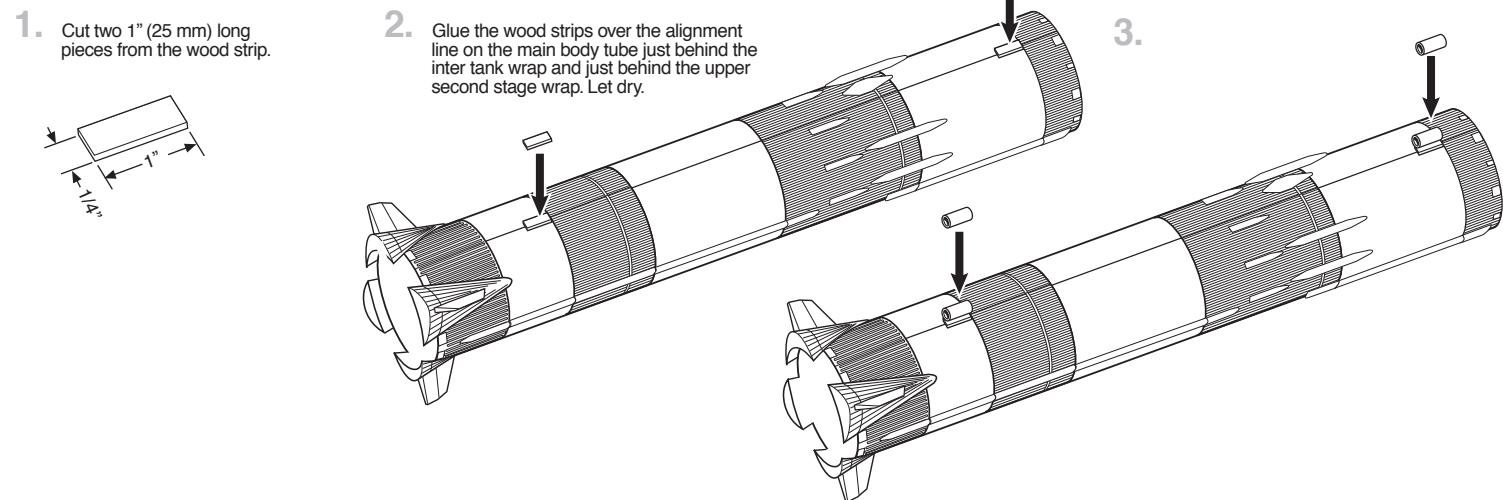


**NOTE:**  
Make a copy if you want to keep instructions.

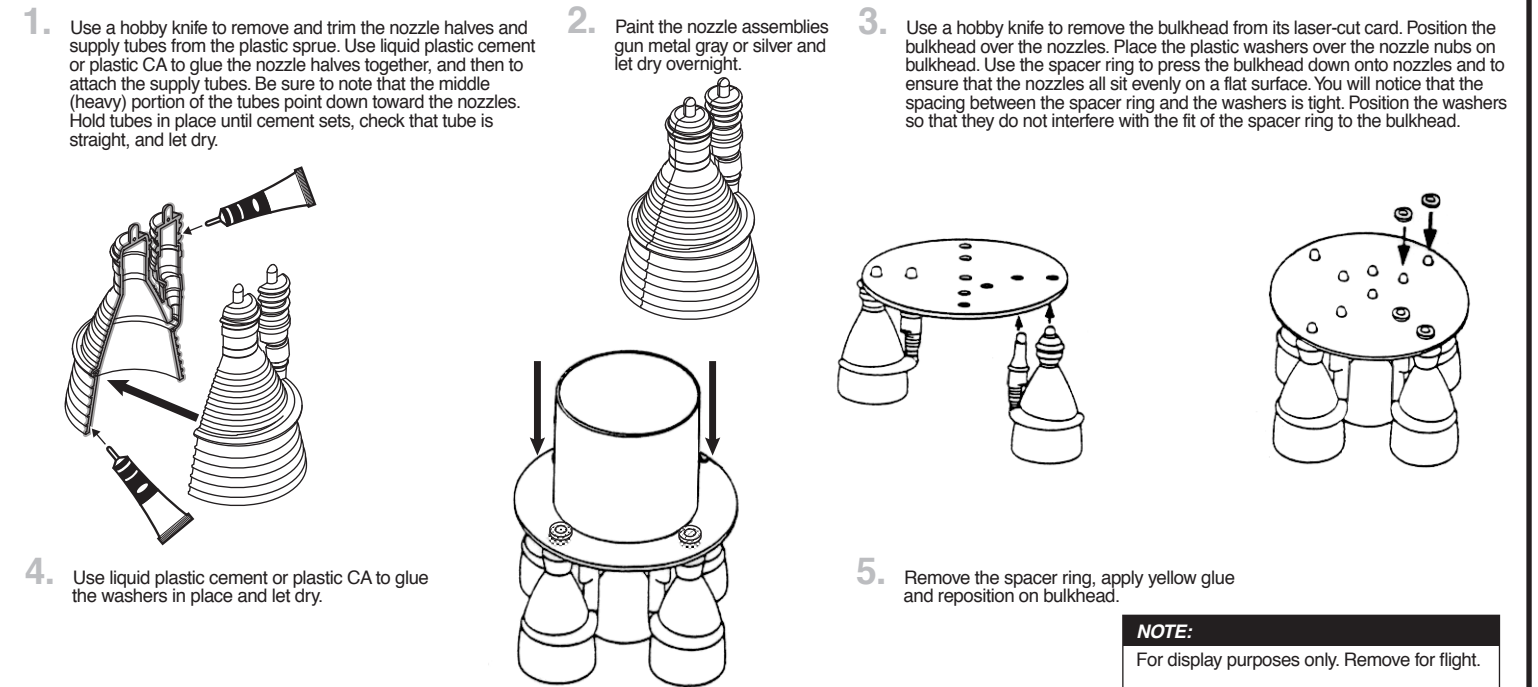


### INSTALL LAUNCH LUGS

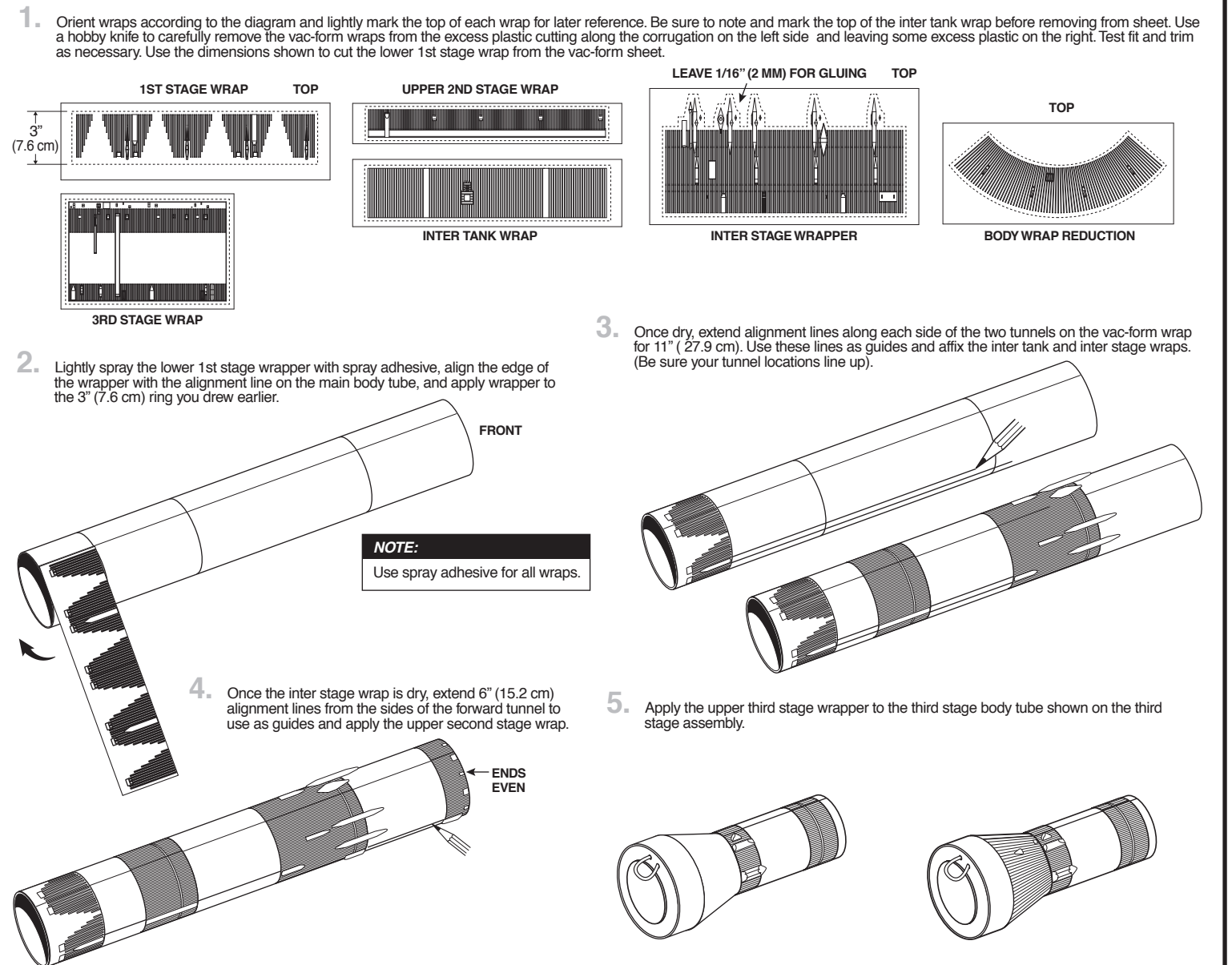
**NOTE:**  
If you do not intend to fly your Saturn V, you may wish to skip this step as launch lugs are only necessary on a flight model.



### ASSEMBLE AND INSTALL NOZZLES



### APPLY TUBE WRAPS



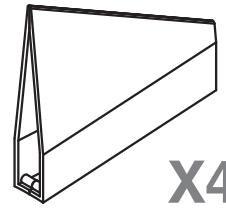


### ASSEMBLE FINS

1.

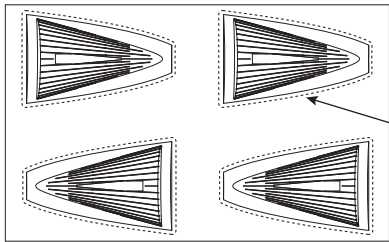


2. Let dry.



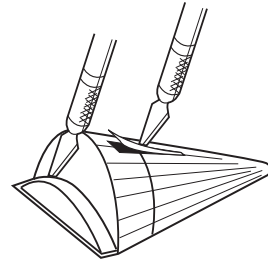
### PREPARE FAIRINGS

1. Use a hobby knife to carefully remove the fairings from their vac-form sheet leaving 1/16" (2 mm) of flash.

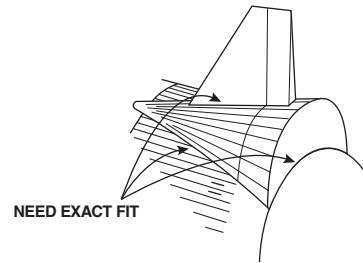


1/16" (2 mm)

2. Remove the fin slot indentations and bottom ledge from each fairing.

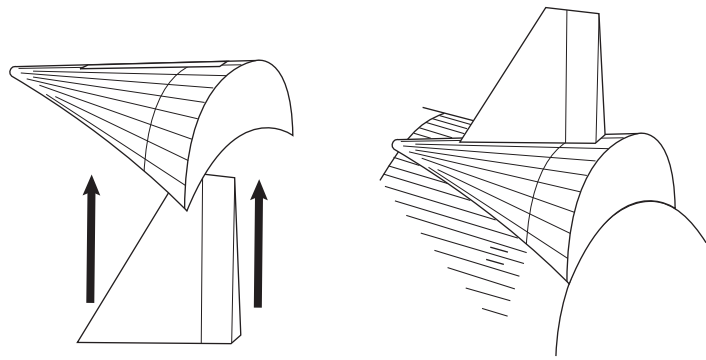


3. Test fit, trim, and sand each fin to fit each fairing and each fairing to fit on the lower first stage wrap.

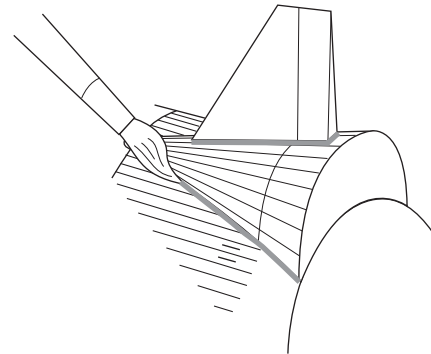


### INSTALL FINS AND FAIRINGS

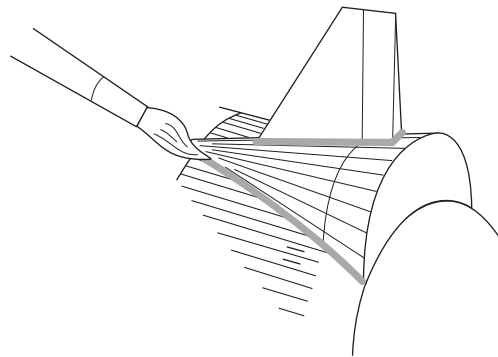
1. Slide one of the fins into the cut-out in one of the fairings, from the back, and position the fairing on the lower stage wrapper.



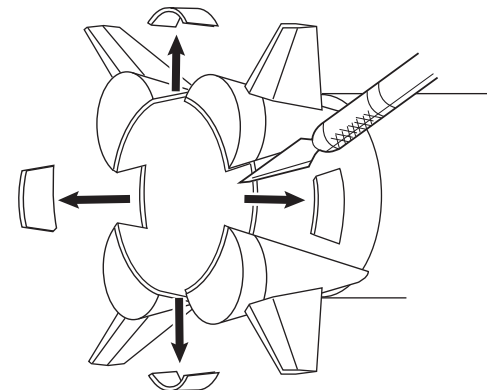
2. Check that the fin projects straight out from the tube, and cement fin and fairing into place using liquid plastic cement or plastic CA. Repeat for other three fins.



3. When fins and fairings are dry, apply a reinforcing coating of liquid cement to the fin, fairing, and wrap joints. Let dry. Fill any holes with putty and sand flush.

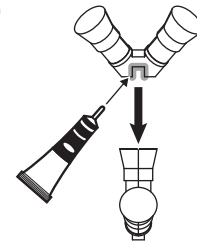


4. Once the fairings are permanently affixed, cut away the areas on the tube where shown.

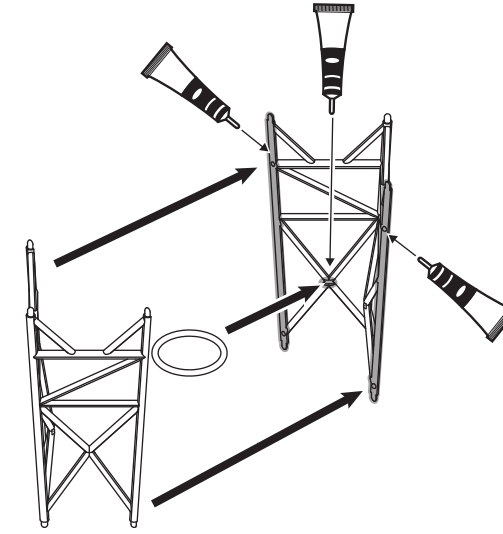


### ASSEMBLE TOWER

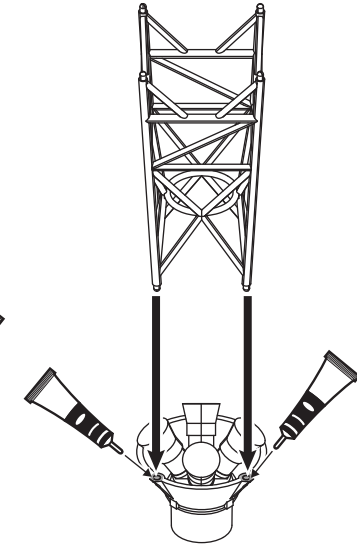
1.



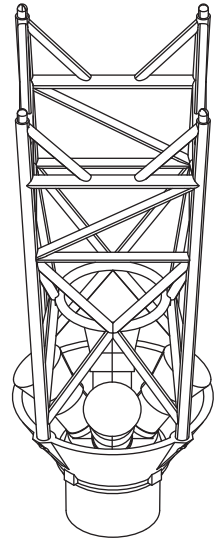
2.



3.

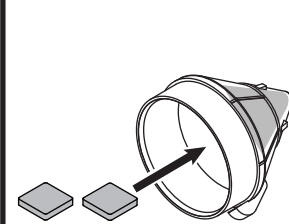


4.

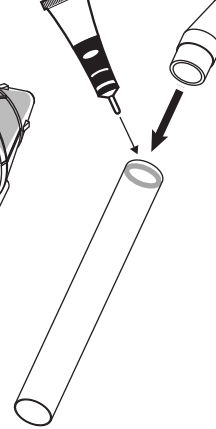


### ASSEMBLE CAPSULE

1.

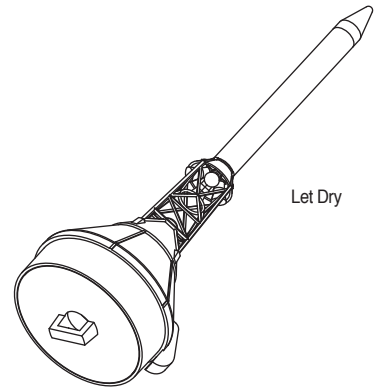


2.



3. Glue the capsule base into the bottom of the capsule. Set the capsule on a flat surface, drop liquid plastic cement into the tower leg holes, and insert tower. Be sure tower is straight before cement dries.

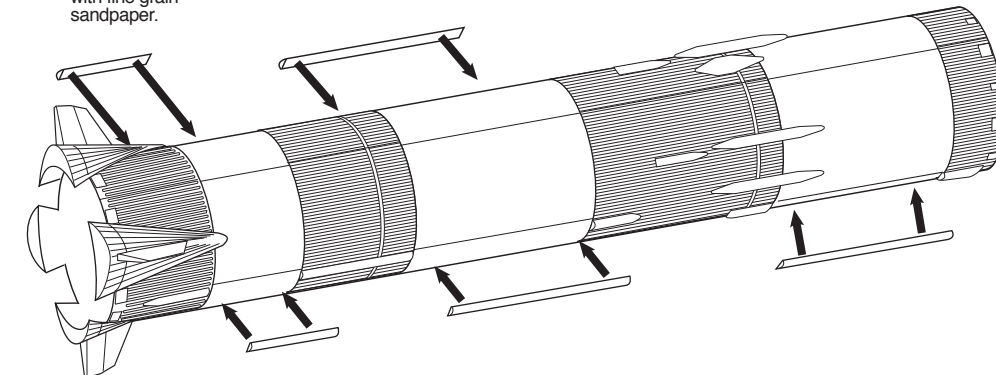
4.



**NOTE:**  
If you plan to fly your Saturn V, you may not want to cement the legs of the tower into the holes in the capsule. This will allow you the option of removing the fragile tower before flight.

### ATTACH WOOD TUNNELS

1. Lightly sand the pieces of half-round wood dowel material with fine grain sandpaper.



2. Mark and cut the wood to continue the "tunnels" between the 1st stage wrapper and inter tank wrapper (both sides), between the inter tank and inter stage (both sides), and between the inter stage and upper 2nd stage (one side), then use wood glue to apply to body tube. **NOTE:** You may want to fill and sand the rounded surfaces of the wood dowels before applying them.