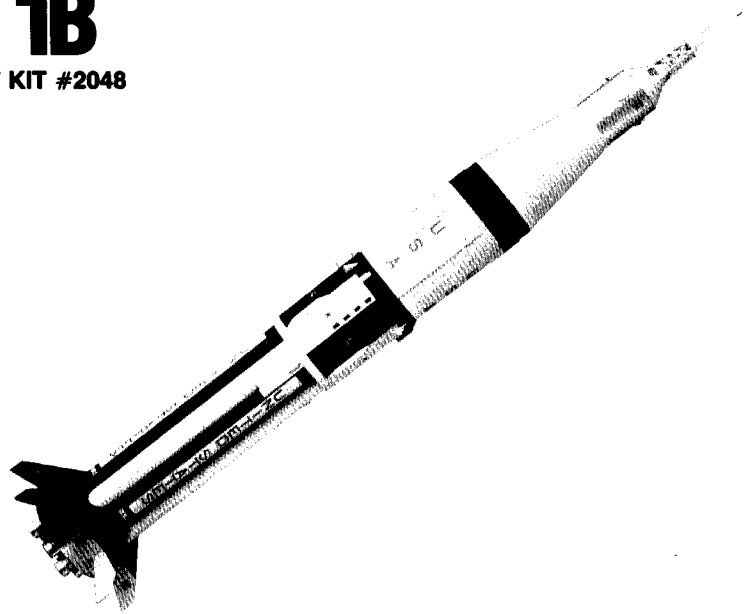




ESTES INDUSTRIES
1295 H Street
Genrose, CO 81240

SATURN 1B™

FLYING MODEL ROCKET KIT #2048

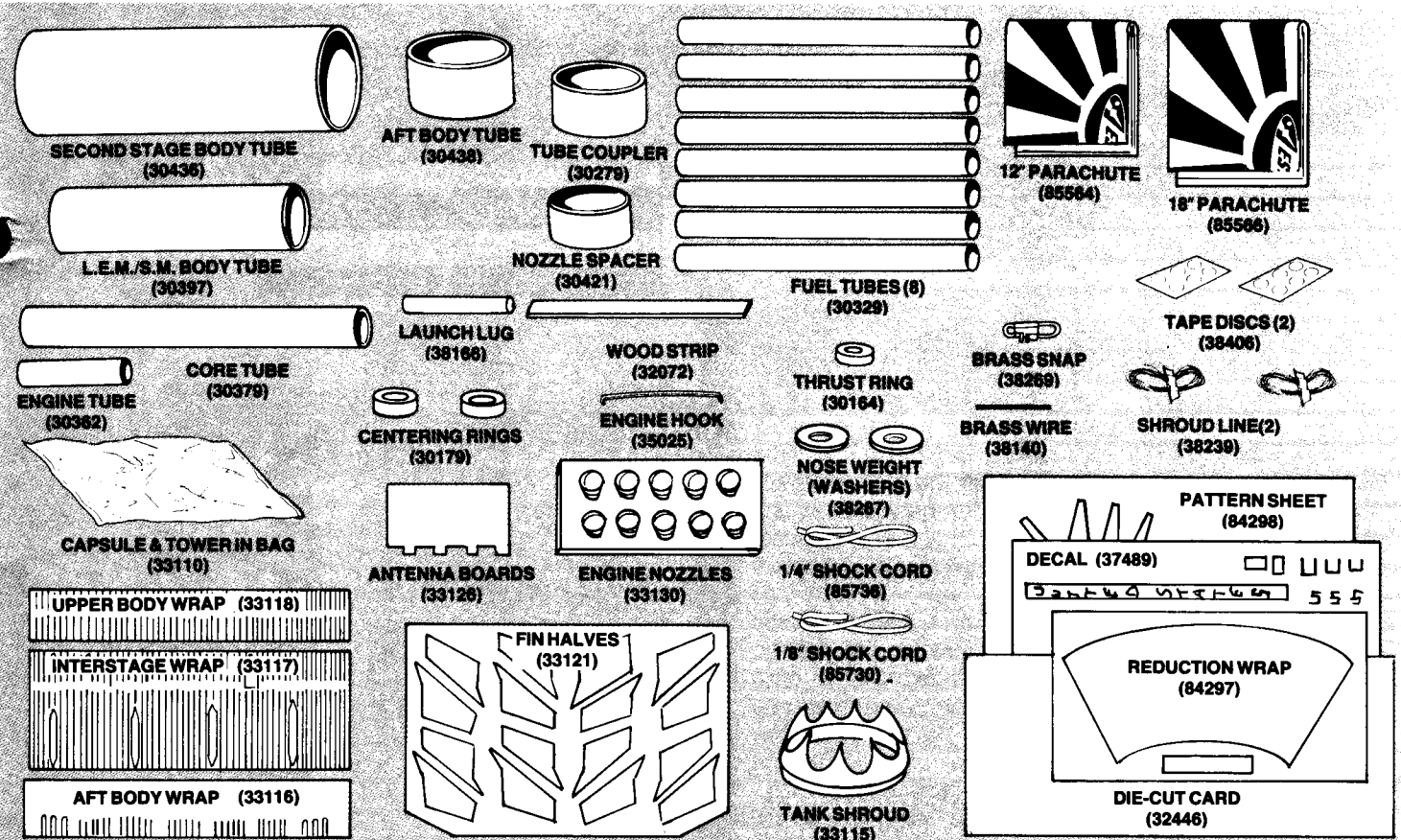


This is a 1/100th scale flying model rocket kit of the Saturn 1-B, specifically number SA-205. Launched in October of 1968, the 205 put the first men into space in an Apollo spacecraft. The Saturn 1-B program was part of an overall effort to send men to the moon. This program included the development of big brother Saturn V which eventually carried men to the surface of the moon.

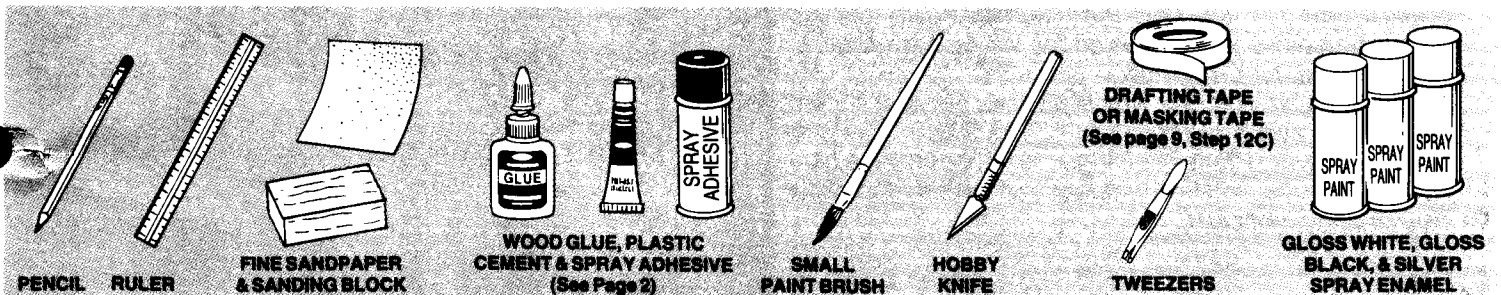
Estes produces two other Apollo rockets which should appeal to the scale enthusiast. Both are in the same scale as the Saturn 1-B (1/100th of full size). One is the Little Joe II which was designed to test the escape mechanism of the Apollo capsule during a low level emergency abort. Standing 10½" (26.5 cm) tall, the Little Joe is somewhat dwarfed by the 26¾" (68 cm) height of the Saturn 1-B. When these are placed next to the massive Estes Saturn V, the tremendous size of the moon rocket is graphically demonstrated. The Saturn V stands 43¼" (110 cm) above the table top.

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 need the following:



CONSTRUCTION NOTES - READ BEFORE STARTING CONSTRUCTION

GLUE:

Several types of glue are required. Pay careful attention to type of glue called for in each assembly step. You will need the following types of glue:

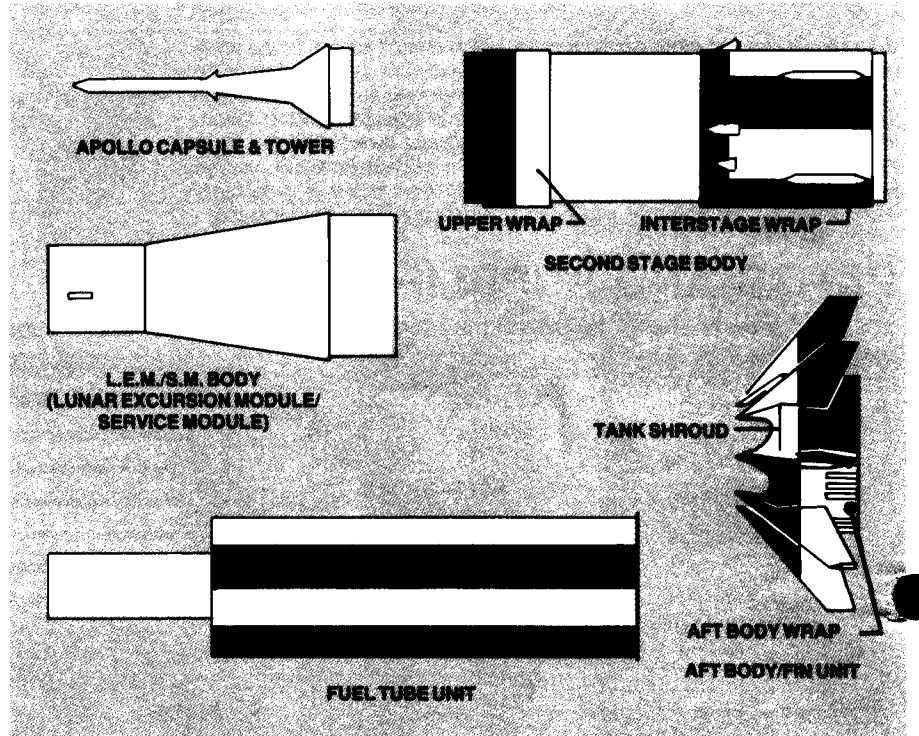
SPRAY ADHESIVE - This adhesive, available in an aerosol spray can is used to attach the plastic body wraps to the body tubes. **IMPORTANT** - On the spray can, it should state that it is a permanent adhesive. There are spray adhesives available that are called "artist's" or "repositionable" adhesives. These will not provide a permanent bond.

WOOD GLUE - Used for wood and paper glue joints. The recommended type is called "resin glue" or "carpenter's glue". It is pale yellow in color and is available in small bottles. "White glue" will also work well, but it takes longer to set than resin glue. Other types such as "school glue" or "model airplane cement" will not work as a substitute.

PLASTIC MODEL CEMENT - Tube type plastic cement is used for assembly of plastic to plastic and plastic to paper joints.

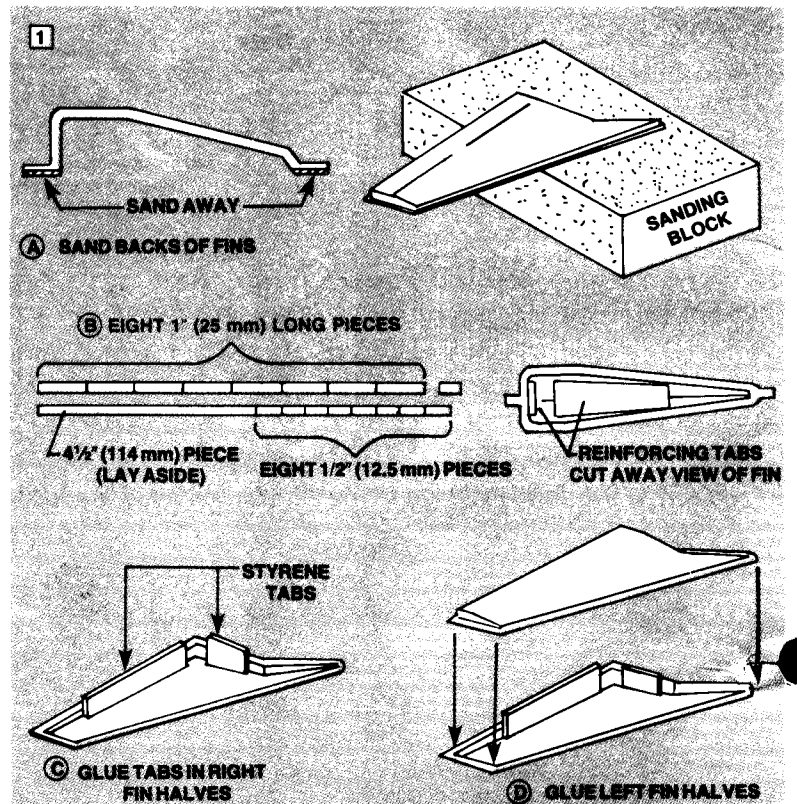
PRE-PAINTING SUB-ASSEMBLIES

This model is designed to be constructed in five sub-assemblies which are painted and, in most cases, decaled before final assembly (see right). As you proceed with assembly, you will understand the reason for this. In a couple of instances, it would be almost impossible to mask for the second color if the model were assembled prior to painting. Allow sufficient time for paint to dry completely before masking for second color and before final assembly.



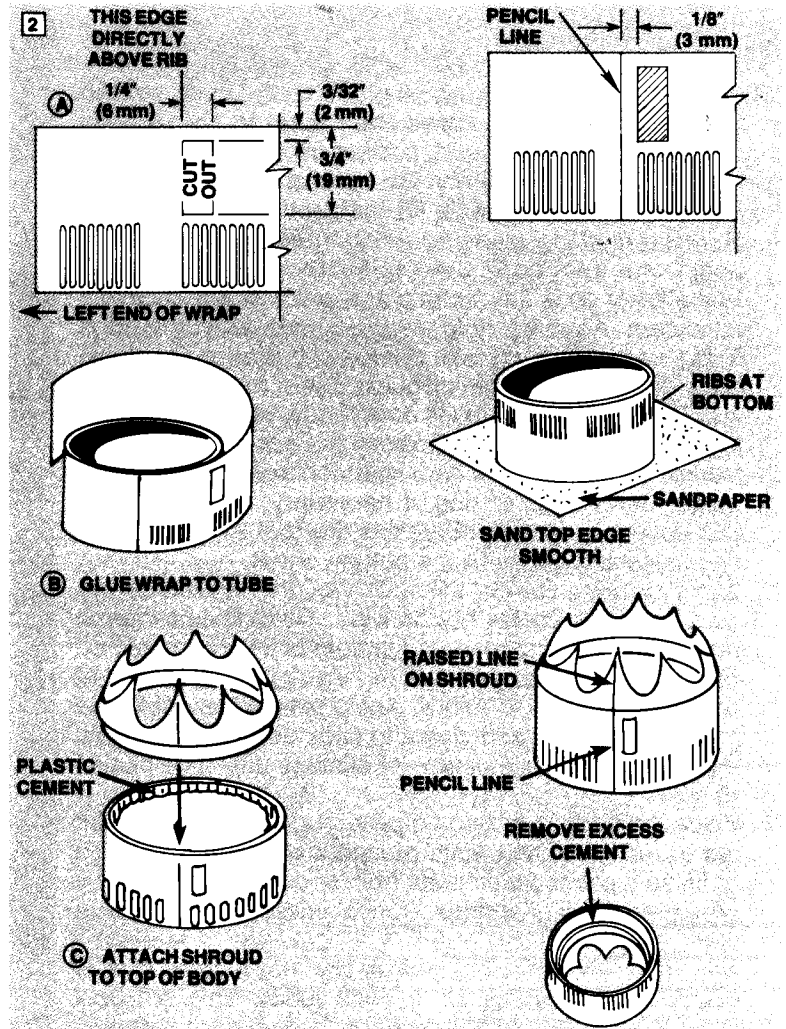
1.

- Use a knife to free the fin halves from the die-cut plastic sheet. Using a sanding block, sand the back side of fins until flanges are about one third of original thickness. Check periodically while sanding to insure that flange is the same thickness all around part.
- The aft body wrap has a 1/4" (6 mm) strip of plastic attached to it by several tabs. Cut through the tabs to free the plastic strip. Cut the strip into two 1/8" (3 mm) wide strips. Cut a 4 1/2" (114 mm) long piece from one strip and lay aside for use in step 5D. Cut the remainder of this strip into eight 1/2" (12.5 mm) pieces. Cut the remaining long strip into eight 1" (25 mm) pieces.
- Separate the left and right fin halves. Using plastic cement, glue a 1" (25 mm) long plastic tab into the bottom and a 1/2" (12.5 mm) long tab into the end (root edge) of each **right** fin half. After the glue has dried, trim the exposed portions of the tabs so the left fin halves will fit in place (see cut away view).
- Apply plastic glue to the flange and tab sides of a right fin half and attach a left half to it. The tabs will help to align the halves. Press the flanges together until the glue sets. Glue remaining fins together and set aside to allow glue to dry completely.



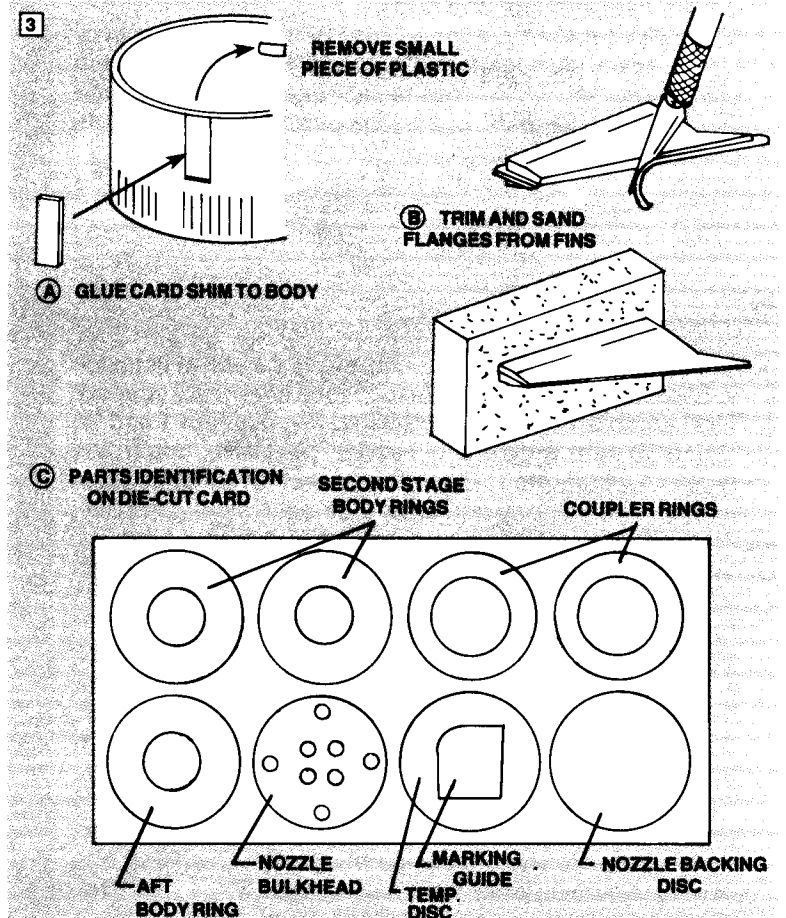
2.

- A. Mark the launch lug location on the aft body wrap as shown in the drawing. Cut out the rectangle of plastic. Draw a pencil line on the wrap $1/8''$ (3 mm) to the left of launch lug location. This line will be used to locate the tank shroud.
- B. Locate the aft body tube. Test fit the tank shroud into it to make sure you have the right tube. Spray an even coat of spray adhesive to the back of the aft body wrap. Carefully attach the wrap to the tube, making sure the edges remaining even. Press the wrap firmly against the tube. If you get any adhesive on the outside of the wrap, it may be removed with a tissue dipped in a very small amount of enamel thinner. **DON'T USE LACQUER THINNER** (it will melt the plastic). Lightly sand top of body on a sheet of sand paper.
- C. The plastic tank shroud has eight raised lines on it which are locators for attaching the fins. Use one of these lines for positioning shroud on aft body. Apply a light bead of plastic cement around the inside of the top of the aft body (NOTE: Ribs are at bottom of body) and socket the tank shroud in place. Align a raised line on shroud exactly with the pencil line on body (line drawn in step 2A). Use a stick to remove any excess cement from the bottom of the shroud inside the body.



3.

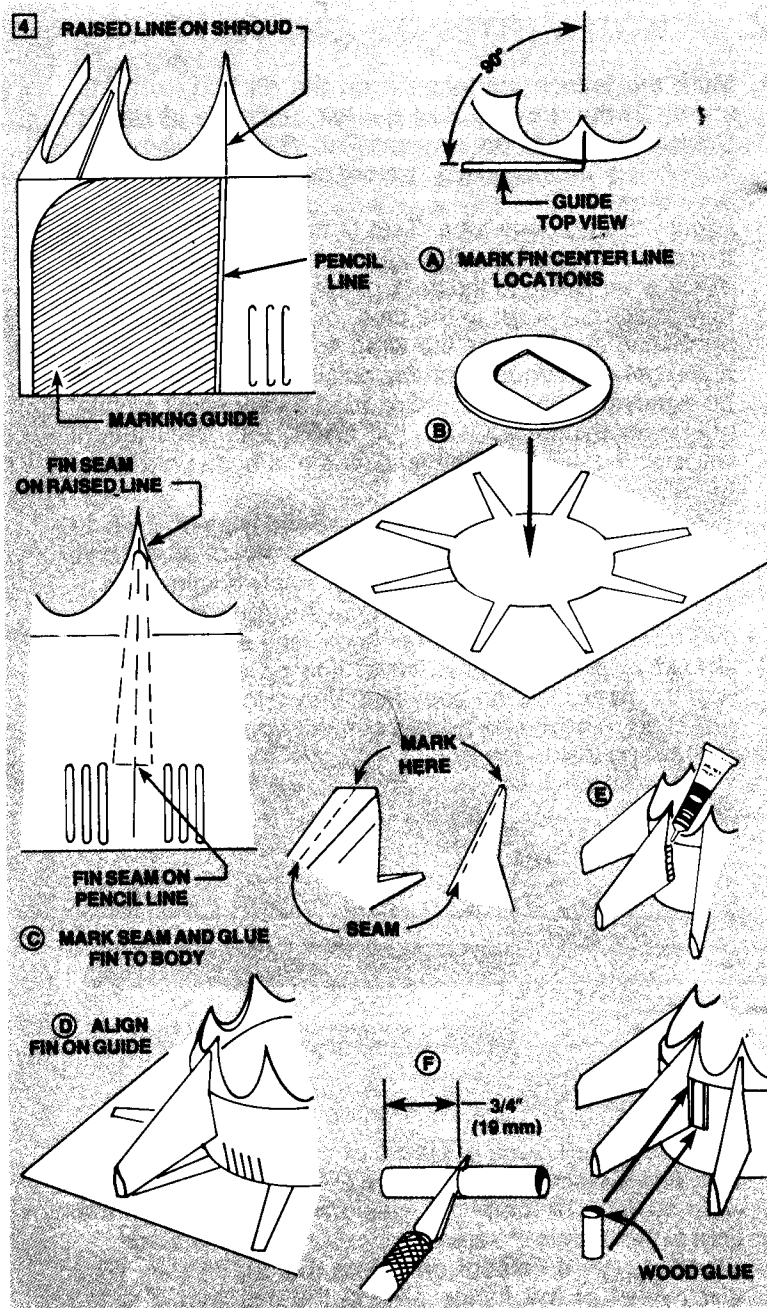
- A. Cut away small piece of plastic at top of launch lug location. Cut a piece from edge of die-cut card, $1/4''$ (6 mm) wide by $3/4''$ (19 mm) long. Using wood glue, attach the card to the body in the area where plastic was removed.
- B. Proceed only if cement on fins is thoroughly dry. Trim away most of the flange around the fins with a knife. Finish up by sanding the seams with a sanding block.
- C. Use this drawing of die-cut card to identify parts required in subsequent assembly steps.



4.

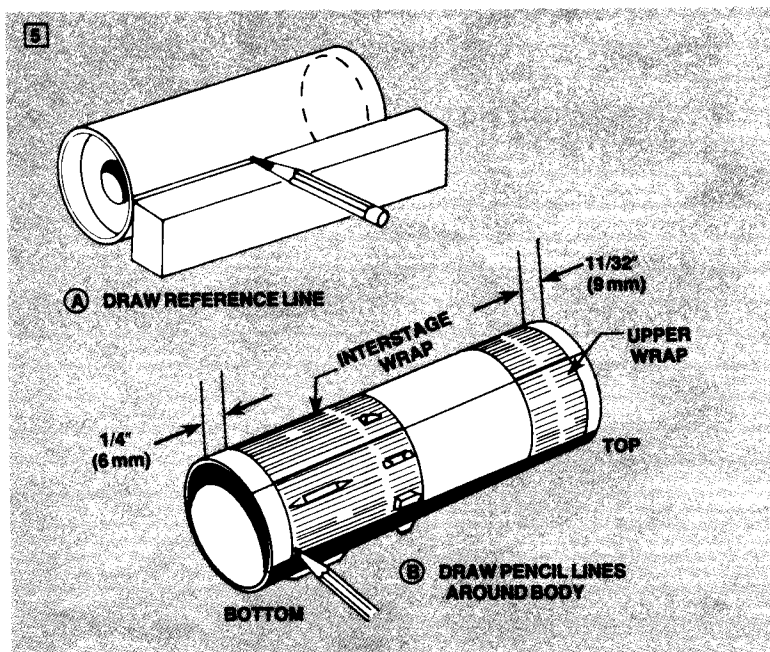
IMPORTANT: The fins must be glued to the body canted at a slight angle. This causes the rocket to spin slowly during boost phase of flight, adding an extra safety margin to the rocket's stability. Be careful and accurate in positioning the fins exactly as instructions describe.

- Remove marking guide from ring in die-cut card. Erase pencil line from body used to locate shroud in step 2. Place body on a flat surface and place guide against it as shown. Align top right edge of guide exactly on one of the raised lines on tank shroud and draw a line down body along right edge of guide. Note that line angles slightly to the left as it goes down body. Mark the remaining seven fin locations in exactly the same manner.
- Remove the ring from card that contained the marking guide. Sand edge of ring, if necessary, so it fits easily into bottom of aft body. Glue this ring to the middle of the fin positioning guide on the pattern sheet.
- Study drawing C. The seam between fin halves serves as a locator to center fins on lines. Tip of fin is centered on raised line on shroud and bottom of fin is centered on pencil line. So the seam will be easier to see, mark it at points shown with a pencil. Apply plastic cement to the root edge of a fin and glue it to body as described. Hold the fin in place for a couple of minutes until glue begins to set.
- Place the body over ring on pattern sheet. Being careful not to move the root edge of fin out of position, align tip of fin so it points straight out from body. Leave assembly on pattern until glue dries. Repeat with seven remaining fins.
- After glue on fins is completely dry, run a small fillet of plastic cement along all fin/body joints. This not only strengthens joints but also serves as a filler to hide any cracks between fins and body.
- Mark and cut the launch lug $\frac{3}{4}$ " (19 mm) from one end. Using wood glue, glue this piece of launch lug to card shim (step 3A). Make sure launch lug is straight up and down. After glue dries, use a toothpick to apply glue fillets to both sides of joint.



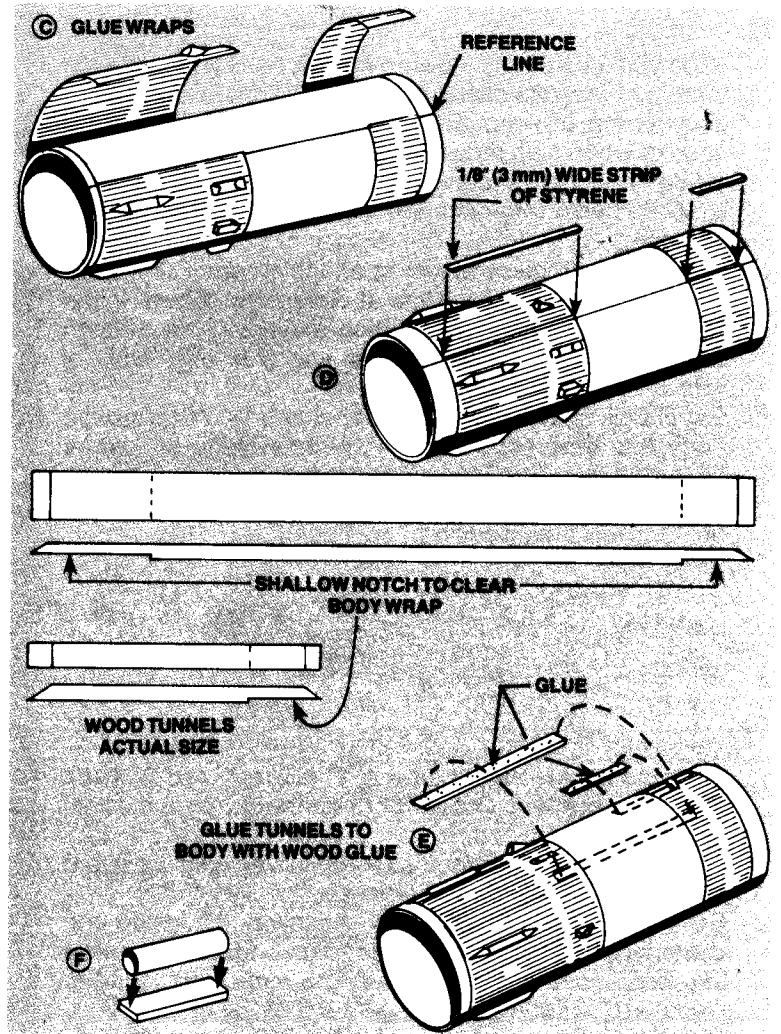
5.

- Locate second stage body and two rings which fit inside it. Slip a ring into each end of tube for a temporary support. Find an object that has parallel edges, is about 1 to $1\frac{1}{2}$ " (25 to 38 mm) wide and at least 8" (200 mm) long (ruler, block of wood, etc.). Place this object on a flat surface, against side of body and draw a straight line along body. This will be a reference line for locating body wraps.
- Wrap the interstage wrap around one end of body, square up ends, and tape them together. Position wrap $\frac{1}{4}$ " (6 mm) from end of body and draw a line around body at end of wrap. Tape the upper wrap to other end of body, position $\frac{11}{32}$ " (9 mm) from end and draw a line around that end of body. Remove wraps.
- Compare interstage wrap to drawing to identify which end is the bottom. Apply spray adhesive to back of wrap. Attach left end of wrap to body with end of wrap on reference line and bottom of wrap on line drawn around body. Work slowly. If wrap is not straight, it will begin to overlap or move away from bottom line. If this happens, carefully remove wrap and start over. Once wrap is



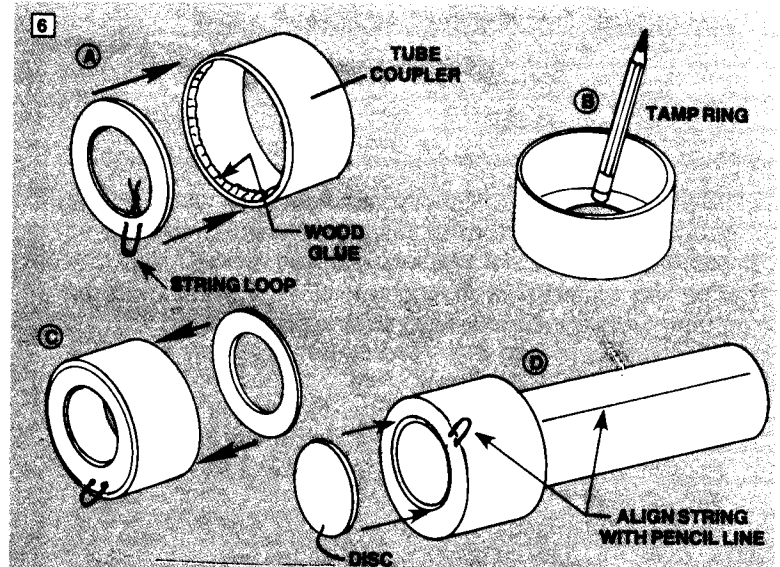
applied, press it firmly against body. The upper wrap has two flat places at the bottom where systems tunnels are attached. Study drawing E to make sure it is correctly oriented, then glue to body in same manner.

- D. Place plastic strip (cut in step 1B) on seam in interstage wrap, mark and cut to length. Use plastic cement to glue this strip over gap in ends of wrap. Cut remaining strip to length and glue over seam in upper wrap.
- E. From the 1/4" (6 mm) wide strip of wood, cut and shape two tunnels to match the plan views shown at right. Use wood glue to attach these to body with end(s) in flat spots in wrap(s). Remove rings from body.
- F. Glue remaining piece of launch lug to a 1 1/4" (32 mm) long piece of the wood strip. Lay aside. It will be attached to body after final assembly.



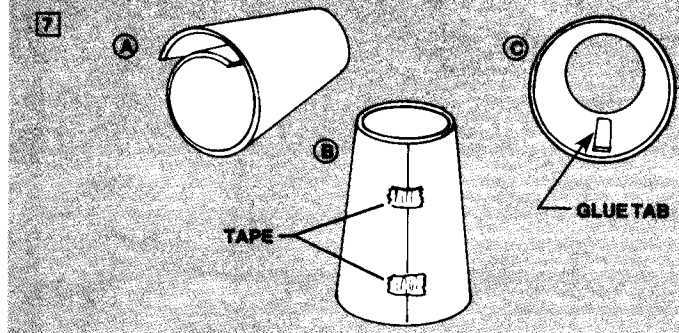
6.

- A. Cut a piece of shroud line 2" (51 mm) long. Loop the line through two holes in one of the coupler rings and tie ends together. Apply a bead of wood glue around inside of one end of tube coupler. Push ring into that end of tube.
- B. Place on a flat surface and push down on ring so it is even with end of tube. Apply another bead of glue around inside of ring/tube joint.
- C. Attach remaining ring to other end of tube coupler in the same manner.
- D. Draw a reference line on the L.E.M./S.M. body in a similar manner in which the second stage body was marked. Slide the body into coupler until end of body is even with bottom (string) end of coupler. Rotate body to align reference line with string loop and glue body to coupler. Glue a disc (from center of one ring) to bottom of body.



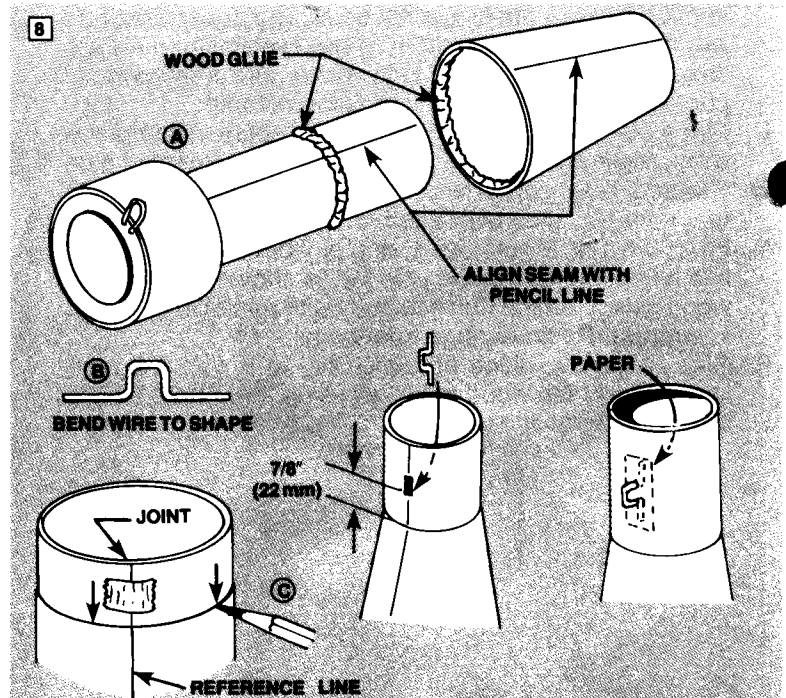
7.

- A. Carefully cut out the reduction wrap and gluing tab from printed card. Curl wrap until, when released, ends overlap slightly.
- B. Butt ends together and temporarily secure with two pieces of masking tape.
- C. Smear wood glue on tab and place on inside of reduction wrap seam. Ends of tab should be about 3/32" (2 mm) inside ends of wrap. Press tab down firmly over seam. Let glue dry, then remove masking tape.



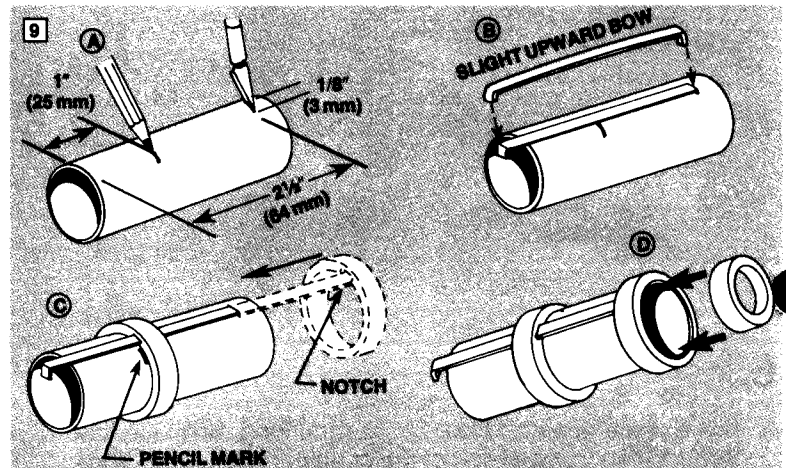
8.

- Slide reduction wrap down over L.E.M./S.M. body until bottom of wrap fits over top of coupler. Draw a line around body at top of wrap. Remove reduction wrap. Apply a bead of wood glue around body at pencil line and around inside of bottom of reduction wrap. Orient wrap so seam is aligned with reference line and slide wrap down over body.
- Bend the short piece of wire to shape shown. Cut a small slit in body on reference line at dimension shown. Insert wire into body with loop portion extending out through slit. Cut a small piece of paper and glue over ends of wire on inside of body.
- Cut R.C.S. nozzle guide from pattern sheet. Wrap around body and tape ends together. Rotate guide so joint is over reference line. Mark nozzle locations. Punch a small hole through body at each mark. The R.C.S. nozzles will be attached after painting.



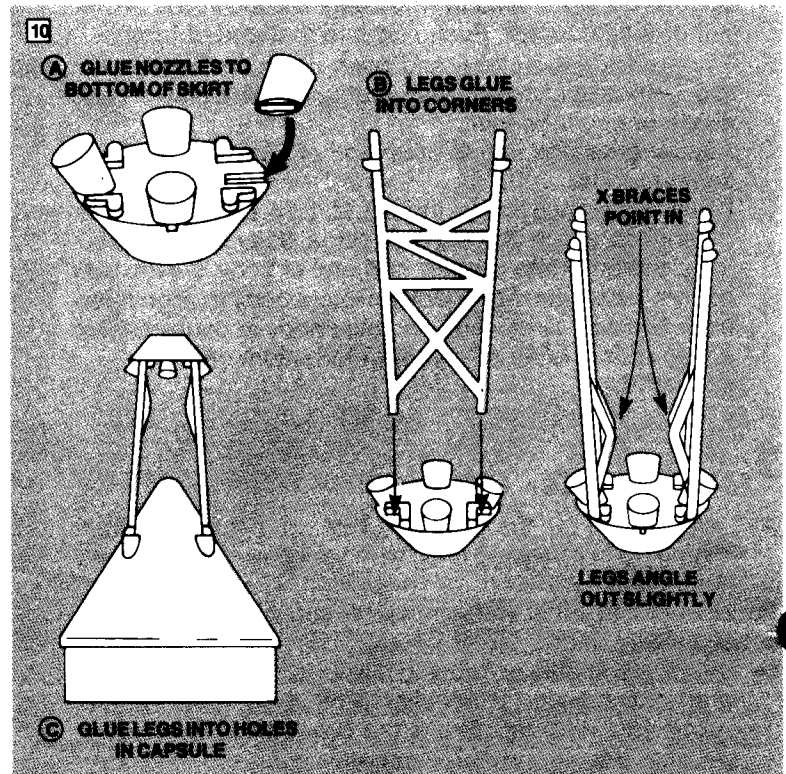
9.

- Mark the engine mount tube at 1" (25 mm) and 2½" (64 mm) from one end. Cut a 1/8" (3 mm) wide slit at the 2½" (64 mm) mark.
- Gently bend engine hook so it has a very slight upward bow. Insert one end of hook in slit.
- Cut an 1/8" (3 mm) wide very shallow notch inside one centering ring. With notch aligned on engine hook, slide ring onto body and down to 1" (25 mm) mark. Glue in place with wood glue.
- Glue remaining ring to top of tube. Glue thrust ring into end of tube. This ring must be against end of hook.

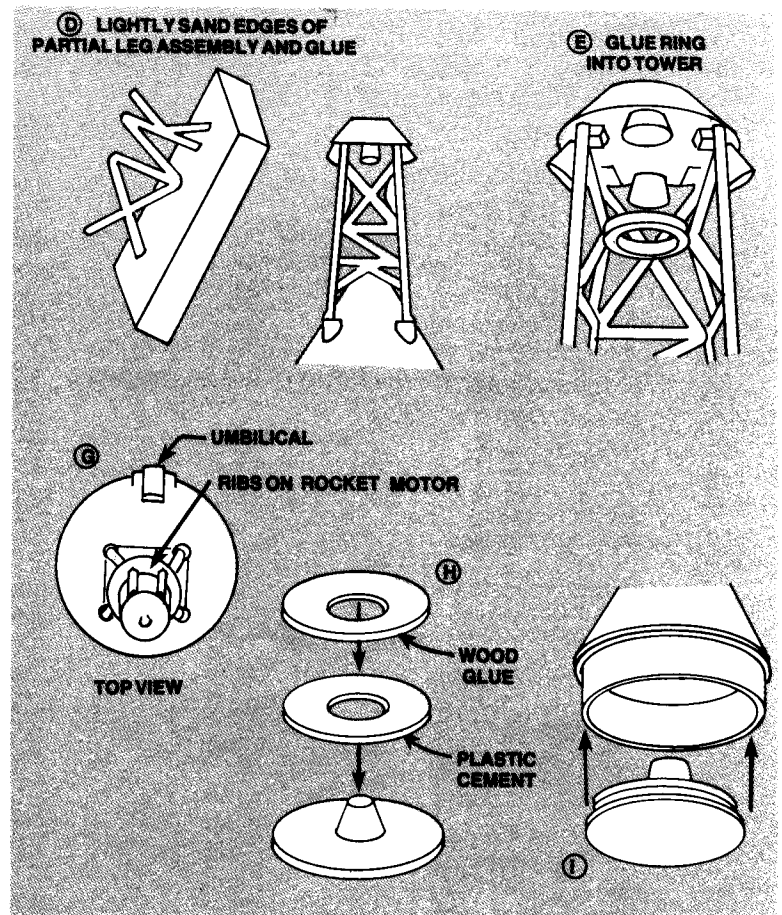


10.

- The small escape motor nozzles have ribs which fit into grooves in the bottom of the tower skirt. Using plastic cement, glue the nozzles in place and let dry.
- The leg assemblies fit against raised corner areas on bottom of skirt. Glue the leg assemblies in place with the "X" braces pointing in toward center of tower. Angle the legs out slightly as shown.
- Let glue partially dry (10 minutes). Drop a little plastic cement into holes in capsule. Place tower assembly on capsule with ends of legs in holes. Square up top of tower and let glue dry completely.

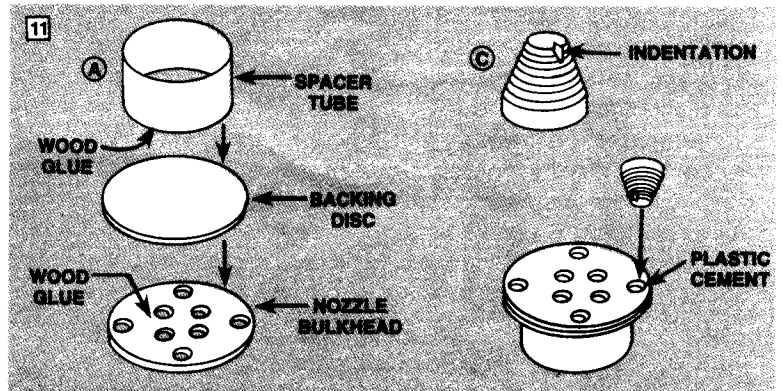


- D. Using a sanding block, lightly sand outside edges of a partial leg assembly. Test fit between legs. Sand more, if necessary, so partial leg fits between legs without forcing. The cross bracing on this part should line up with braces on the legs and the "X" brace should point in toward center of tower. Using a small amount of plastic cement, glue this part in place, align and let glue dry.
- E. Apply a small amount of glue to the center of the "X" braces and glue the support ring in place.
- F. The remaining partial leg is glued in place in same manner as the first. For added strength, use a toothpick to apply a small amount of glue to all previously glued joints. Turn assembly over and place glue inside the capsule where legs are joined. Hold assembly upside down for a few minutes until glue sets.
- G. Glue rocket motor to top of tower skirt with two ribs aligned on capsule umbilical connection.
- H. Two steel washers are glued to the capsule base for nose weight. Both washers are required for adequate stability safety margin. Sand both sides of washers to provide a "tooth" for the glue. Glue one washer to the base using plastic cement. Glue the second washer on top of the first using wood glue.
- I. Using plastic cement, glue base into capsule.



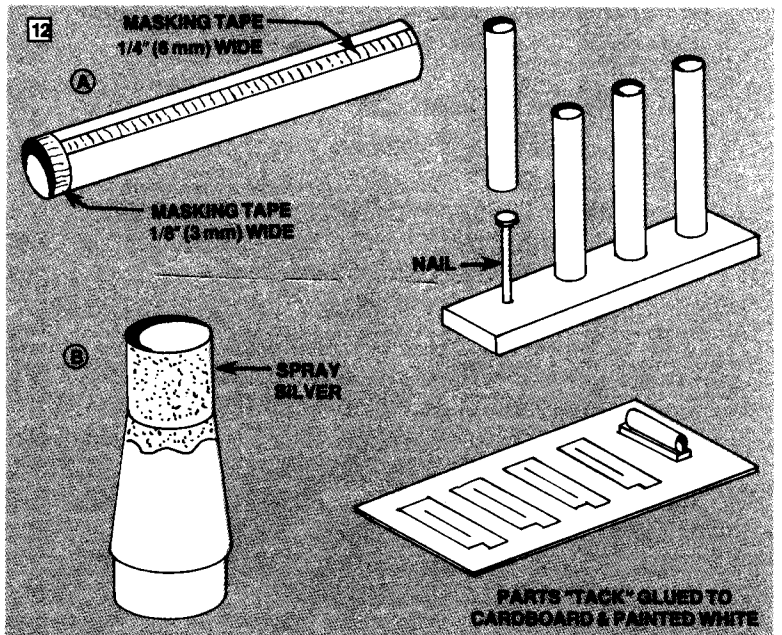
11.

- A. Using wood glue, glue the nozzle bulkhead to backing disc. Glue backing disc to spacer tube. Check fit into aft body. Sand edges of rings, if necessary, so they fit with just a bit of friction.
- B. Cut nozzles from sheet, leaving a small flange around base of each nozzle. Place nozzles on sheet of sandpaper and sand bottoms until flange is removed.
- C. The nozzles on the Saturn 1-B cant outward at a slight angle. There is a small indentation at the top of each nozzle. When gluing nozzles, the indentation should point toward the center of the disc. This establishes proper angle. Glue the nozzles into holes using plastic cement.

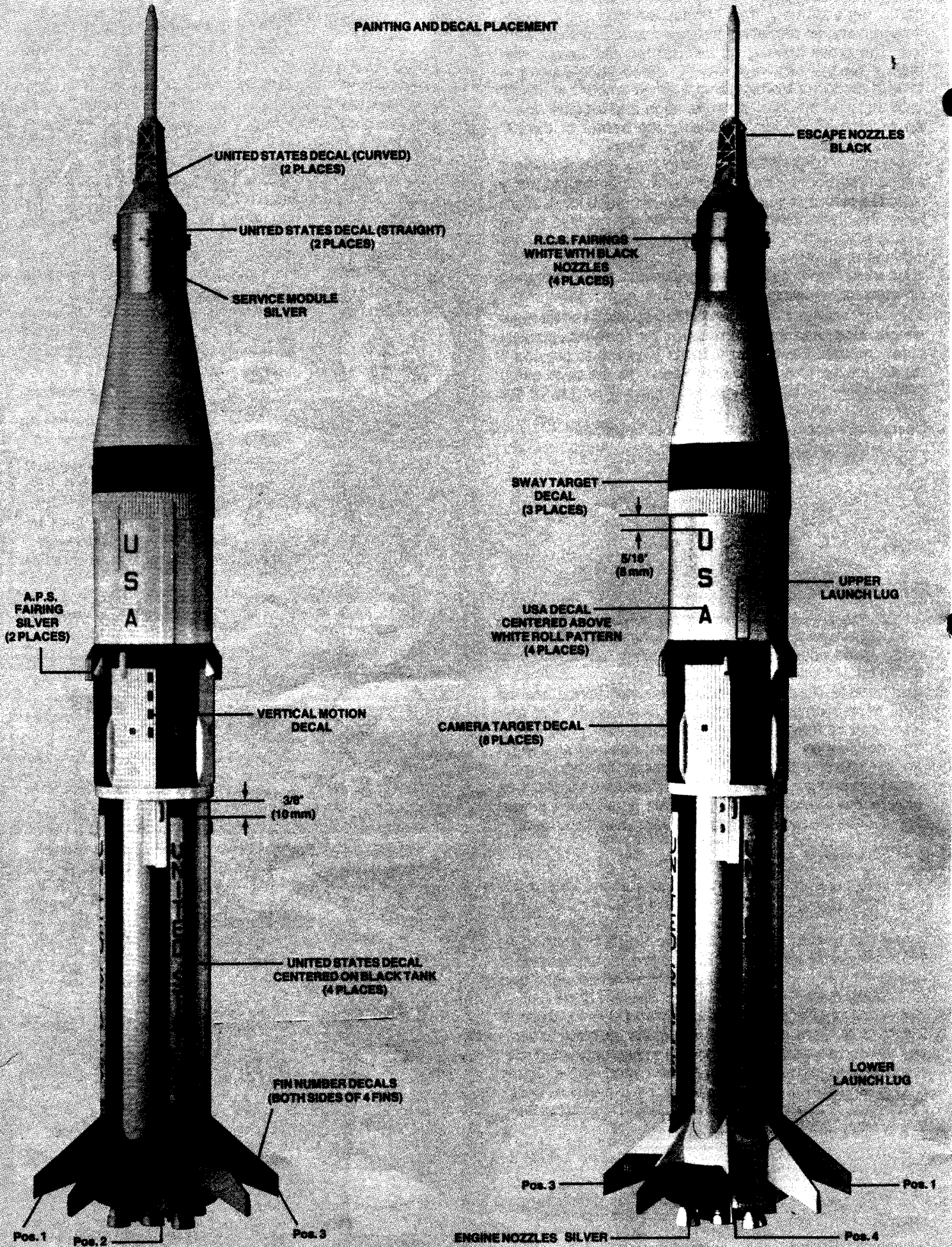


12.

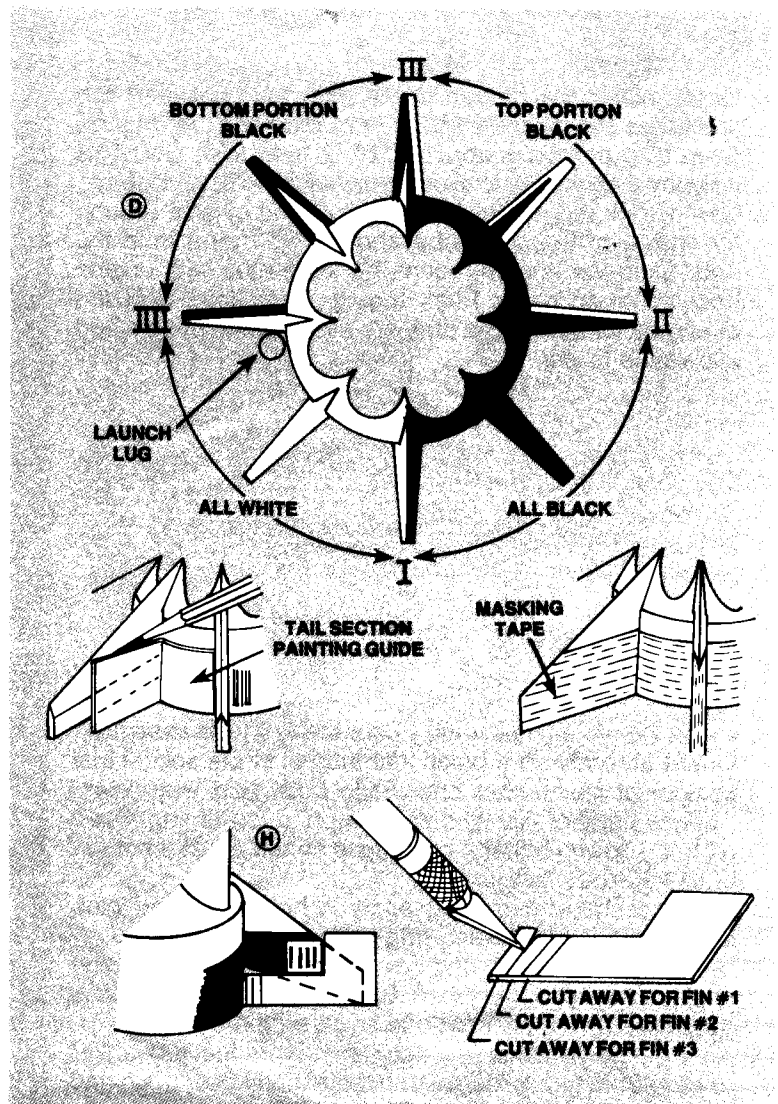
- A. The fuel tubes are painted before assembly. To provide unpainted gluing surfaces, wrap a 1/8" (3 mm) piece of masking tape around one end of each tube. Apply a 1/4" (6 mm) wide strip of tape along the length of each tube. Four large nails driven into a board provide a convenient holder for painting the tubes. Paint four tubes white and four tubes black. After paint is dry, remove tape.
- B. Spray the engine nozzle assembly and upper portion of L.E.M./S.M. assembly silver. Spray the aft body assembly, second stage body and capsule assembly white. Cut the plastic antenna boards apart and sand edges. Spray a very small amount of adhesive on a piece of scrap cardboard. Place the antenna boards and launch lug (step 5F) on this and spray white.



PAINTING AND DECAL PLACEMENT

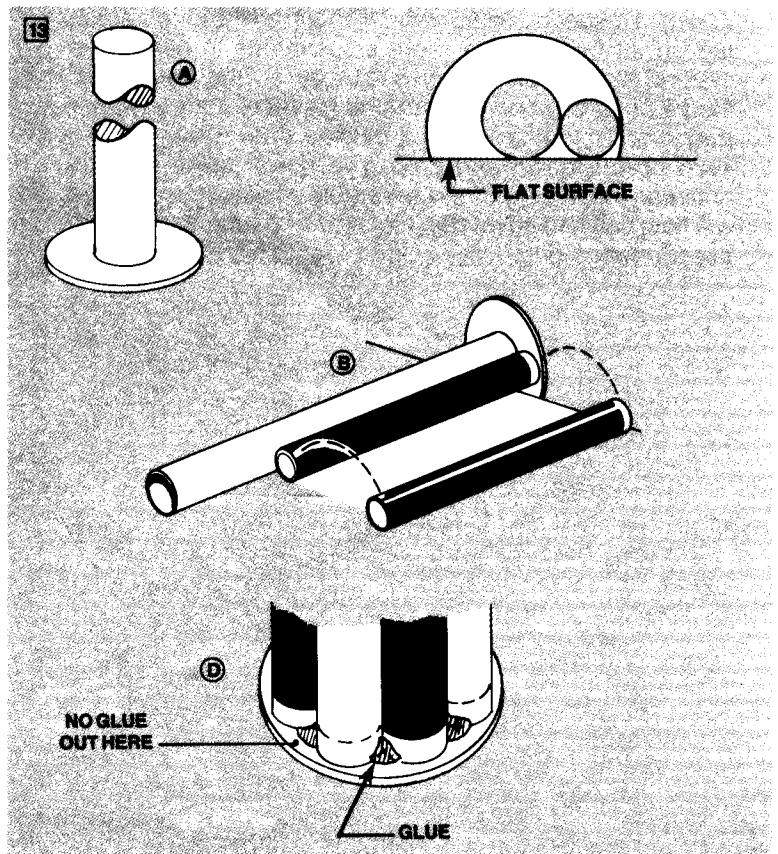


- C. Paint should be allowed to dry 24 hours before masking for second color. Before masking, tape should be pressed against a glass surface a couple of times to remove some of the "tack". Better yet, use a tape that is called "drafting tape" available in stationery and drafting supply stores. This tape has less tendency to lift the paint and leaves no gummy residue.
- D. Orient aft body so launch lug is in position shown in drawing. Cut tail section painting guide from pattern sheet. Use guide to draw paint separation lines on appropriate areas of body and fins. Mask off all areas that remain white and spray assembly black. Remove tape carefully as soon as paint is dry.
- E. Using photos on page 8 as a guide for paint separation points, mask the second stage body. As a masking aid, the body wraps have raised ribs across corrugations where horizontal paint separation points occur. Raised details on interstage wrap are easier to mask if narrow overlapping strips of tape are used. White midsection of body may be masked with sheet of paper. Be sure all edges are sealed with tape. Paint body black, let dry and remove tape and paper.
- F. Mask upper body and sides of tube coupler on L.E.M./S.M. assembly and spray reduction wrap white.
- G. Touch up may be accomplished by spraying a small amount of paint into spray can lid and using a small brush to paint desired areas. Brush paint the small raised areas on the antenna boards silver. Paint the two fairings on interstage wrap silver (refer to photos). Paint the ends of the Apollo escape rocket nozzles black. Cut the R.C.S. nozzles from the plastic runners and paint ends of nozzles black.
- H. All decals may be applied except the large United States decals that go on the fuel tubes. Cut the fin number guide from the pattern sheet and use this to apply numbers to fins. Refer to photos for remaining decal locations.



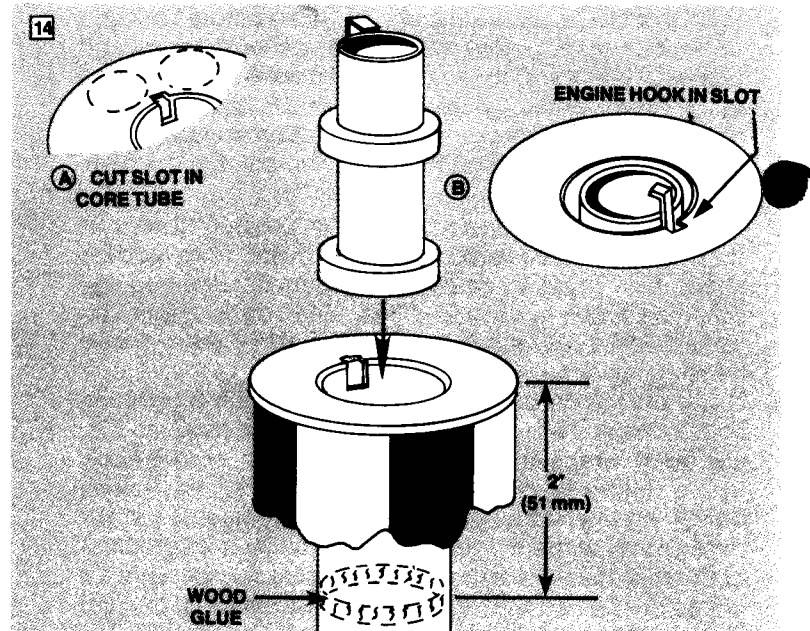
13.

- A. Place aft body ring on a flat surface and glue core tube into it. Ends of tube and ring are flush. Let glue dry, then test fit ring into aft body. Sand edge of ring, if necessary, to obtain a slip fit.
- B. Place core tube flat on a table with ring extending off end of table. Apply wood glue to unpainted strip along length of a black fuel tube. Glue this to core tube with unpainted end of tube against ring. Make sure both tubes are flat on table and let glue dry.
- C. Glue a white tube in place against black tube in same manner (make sure unpainted end is against ring). Work around core gluing alternating black and white tubes in place. CAUTION: Fuel tubes should touch, but do not squeeze them together or you will have a gap between the first and the last tubes applied.
- D. Apply a bead of glue to ring between each pair of fuel tubes. Be careful not to get any glue along outside portion of ring or tank shroud will not seat properly. Stand assembly on table and weight top of core tube while glue dries.



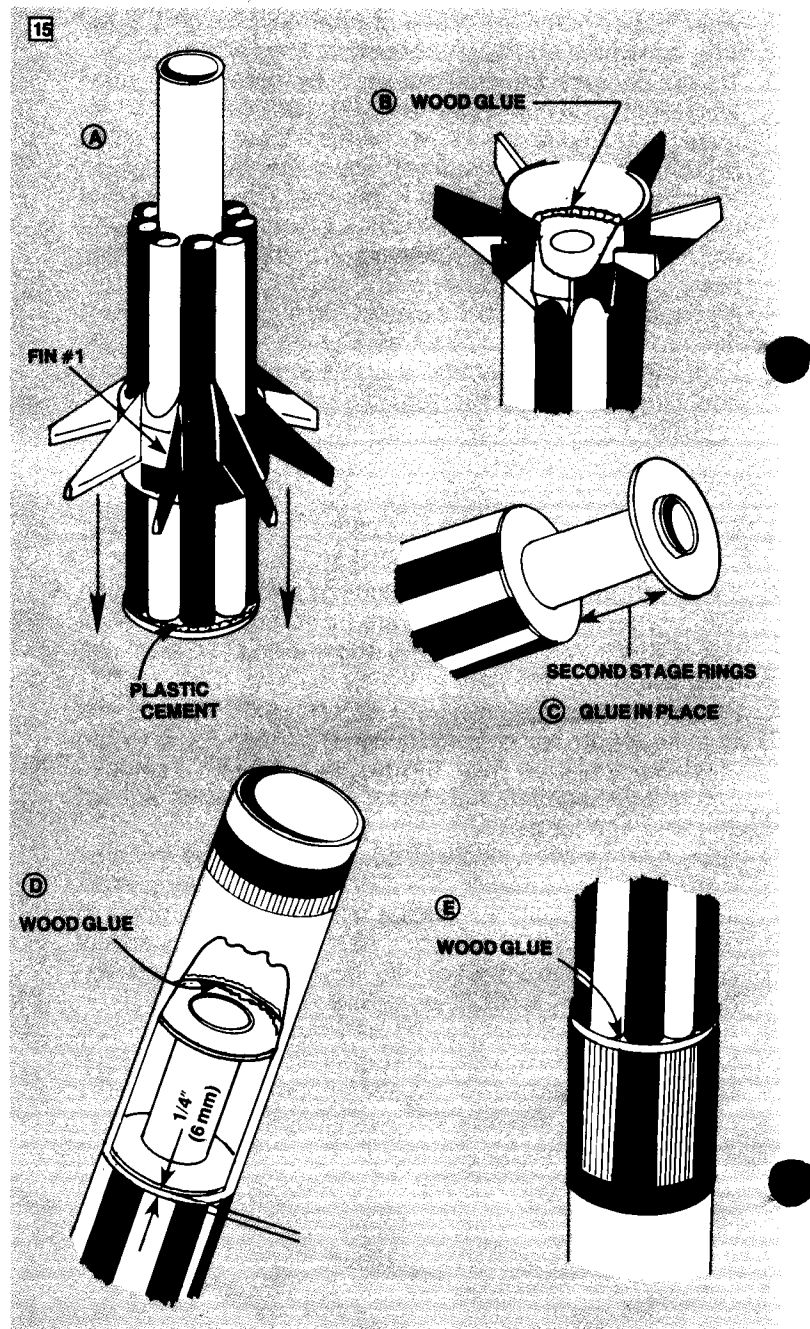
14.

- A. Cut a slot in the bottom of the core tube between two fuel tubes slightly over 1/8" (3 mm) wide and 1/4" (6 mm) deep. Cut ring back about 1/16" (2 mm) from slot. This will form a relief area to allow engine hook to flex properly.
- B. Use a stick to apply a fairly heavy bead of glue around the inside of the core tube about 2" (51 mm) from the end. Slide the engine mount into core tube with engine hook centered in slot. Push engine mount down until end of engine tube and core tube are even. Stand upright and allow glue to dry.



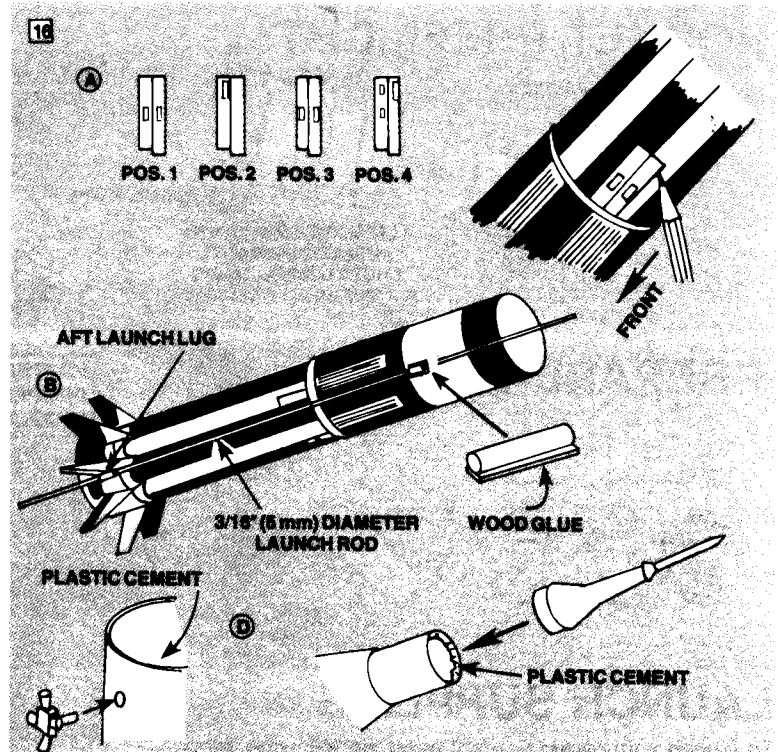
15.

- A. Place the aft body assembly over the fuel tube assembly. Orient aft body so a black fuel tube is in the socket just to right of fin number one. Slide body part way down. Apply a bead of plastic cement around top of ring. Push aft body down until aft body ring is butted against bottom of tank shroud flange.
- B. Turn assembly over and apply a bead of wood glue around the joint between ring and aft body.
- C. Slide a second stage ring down over core tube and glue in place on top of fuel tubes. Glue remaining ring in place about 1/16" (2 mm) from end of core tube.
- D. After glue on rings is dry, mark one of the fuel tubes 1/4" (6 mm) from top. Slide second stage body over rings and down to 1/4" (6 mm) mark (make sure body isn't upside down). Rotate body so wrap seams are above launch lug on aft body. Make slight adjustments to center the second stage paint patterns exactly on the fuel tubes. Run a bead of wood glue around inside of body at upper ring joint. Stand upright and let glue dry.
- E. Turn upside down and drop glue down inside of body between fuel tubes. Stand assembly upside down so glue will flow down to cover the joint between tube and bottom second stage ring.



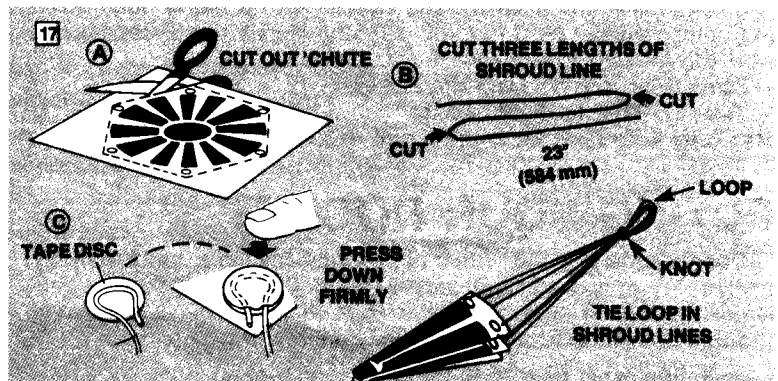
16.

- Antenna boards are glued to fuel tubes with left side of boards on a white tube and tops of boards $1/16''$ (2 mm) up inside second stage body. Locate position one antenna board, place on correct fuel tubes and draw lines on tubes along edges of board. Carefully scrape a narrow strip of paint from tubes just inside lines. Apply plastic cement to rear edges of board and glue in place. Attach remaining boards in same manner.
- Slide a $3/16''$ (5 mm) diameter launch rod through aft launch lug. Slip loose launch lug onto rod and slide down until lug is just above interstage wrap. Adjust lug so there is no binding on rod and mark body around wood base of lug. Remove lug and scrape paint away from body inside marks. Apply wood glue to rear of wood base, reposition lug on rod and glue in place against body. Make sure rod slides freely through both lugs. Let glue dry, then remove rod.
- Fuel tank decals may now be applied.
- Enlarge holes in S.M. body (from step 8C) so posts on backs of R.C.S. nozzles will fit through them. Attach nozzles and apply plastic cement to backs of posts inside body. Let glue dry, then apply a bead of plastic cement around the top inside of S.M. tube. Socket Apollo capsule into tube with capsule oriented as shown in photos.



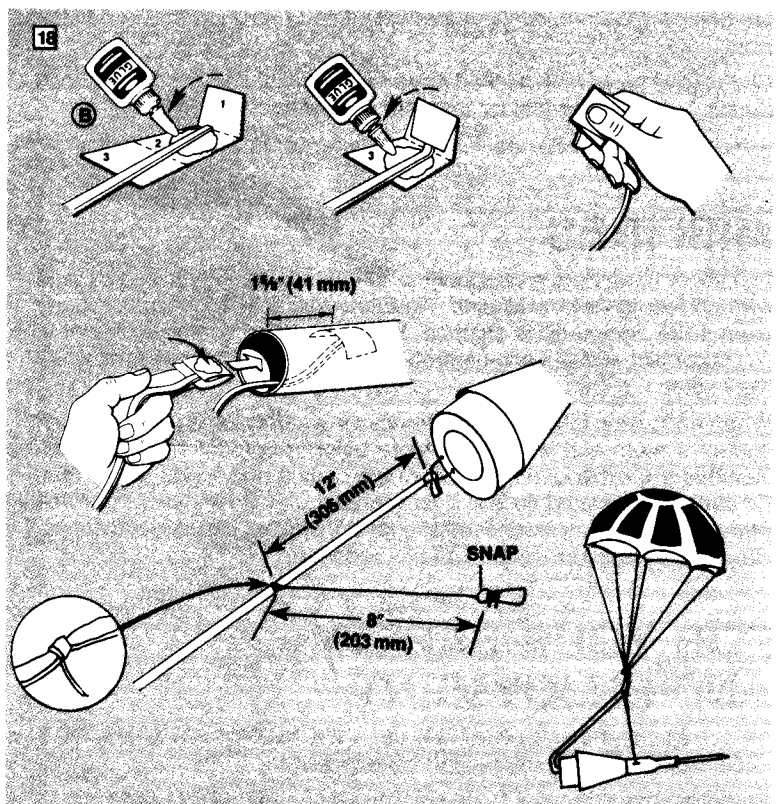
17.

- Cut out the small (12" - 305 mm) parachute on edge lines.
- Cut three 23" (584 mm) lengths of shroud line from same piece used in Step 6A. Lay remainder of line aside for use in step 18E.
- 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.
- Hold 'chute at its center point and pull shroud lines tight. Tie free ends of lines into a small loop.
- Larger 'chute is assembled in same manner except shroud lines are cut into three 35" (889 mm) lengths.



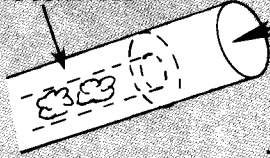
18.

- Cut shock cord mount from pattern sheet.
- Crease on dotted lines by folding. Spread glue on section 2 and lay end of large ($1/4''$ - 6 mm) shock cord into glue. Fold section one forward. Apply glue to section 3 and fold forward again. Clamp firmly with your fingers until glue sets.
- Apply glue to shock cord mount and glue into second stage body with top of mount $1\frac{5}{8}''$ (41 mm) down inside body. Smear glue over mount and surrounding area of body tube.
- After glue is dry, tie free end of shock cord to loop in shroud lines of large parachute. Tie a double knot.
- Tie one end of the smaller shock cord to the string in the base of the L.E.M./S.M. body. Tie a piece of shroud line around shock cord at a point 12" (305 mm) from base knot. Now tie shock cord around shroud line knot so it can't slide. Thread end of shroud line through eyelet in metal snap. Adjust so there is 8" (203 mm) of shroud line between shock cord knot and eyelet. Tie shroud line around eyelet and cut off excess. Tie free end of shock cord to shroud line loop in small 'chute.
- Attach snap to wire hook (step 8B) on S.M. body. Hold assembly by top of 'chute. The body should be suspended in position shown. This harness protects the tower from initial landing shock. When model is being displayed, snap may be unfastened and harness stored, out of sight, in 'chute compartment.

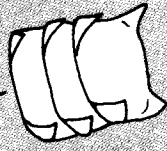


ROCKET PREFLIGHT

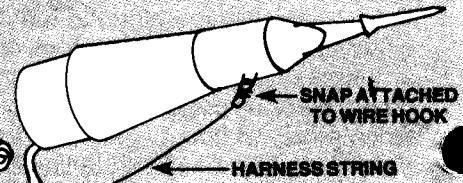
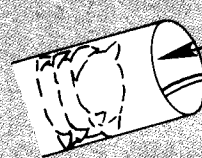
2 SQUARES OF WADDING CRUMPLED AND INSERTED INTO CORE TUBE



3 SQUARES OF WADDING PUSHED DOWN INTO CHUTE COMPARTMENT TO FORM NEST FOR CHUTES



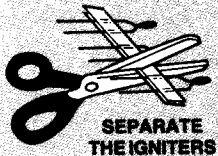
CHUTES FOLDED AND ROLLED AND PLACED INTO NEST OF WADDING



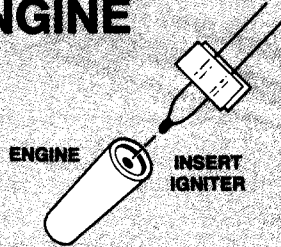
SNAP ATTACHED TO WIRE HOOK

HARNES STRING

PREPARE ENGINE



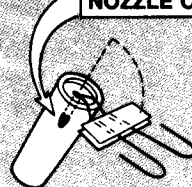
SEPARATE THE IGNITERS



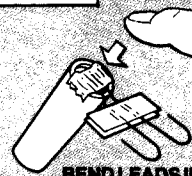
ENGINE

INSERT IGNITER

IGNITER TIP MUST TOUCH PROPELLANT DEEP INSIDE NOZZLE OPENING

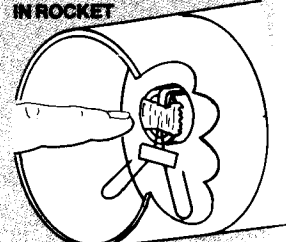


APPLY AND FIRMLY PRESS MASKING TAPE IN PLACE



BEND LEADS IN U SHAPES AND SPREAD

INSTALL ENGINE IN ROCKET



HOOK MUST LATCH SECURELY OVER END OF ENGINE

LAUNCH SUPPLIES

To launch your rocket you will need the following items:

- Estes Model Rocket Launching System with a heavy duty, 3/16" (4.5 mm) diameter by 3 foot (92 cm) long launch rod (Estes Maxi™ Rod #2244, sold separately)
- Estes Recovery Wadding No. 2274
- Estes D12-5 Engine and Igniter

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 250 feet (76 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.

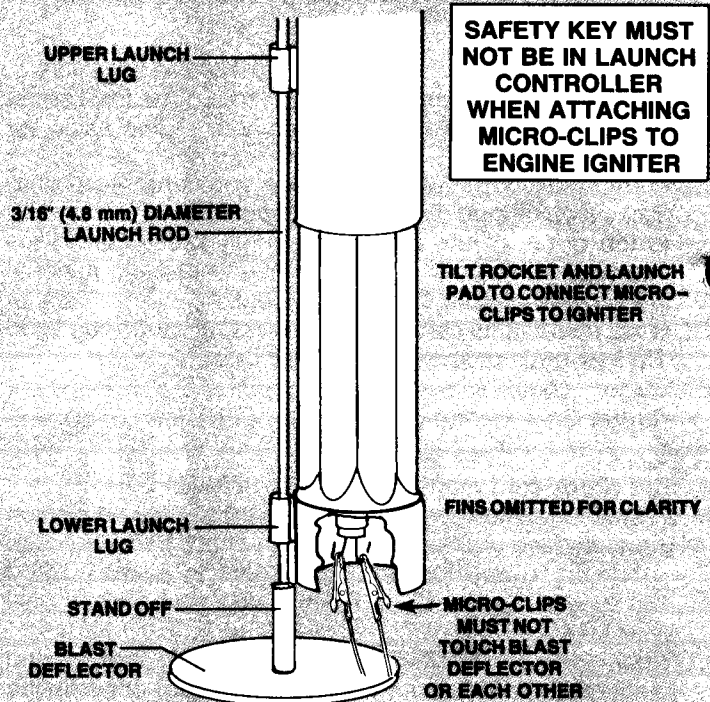
FOR YOUR SAFETY AND ENJOYMENT

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

*National Association of Rocketry-The Hobby Industry of America

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COUNTDOWN AND LAUNCH



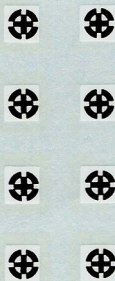
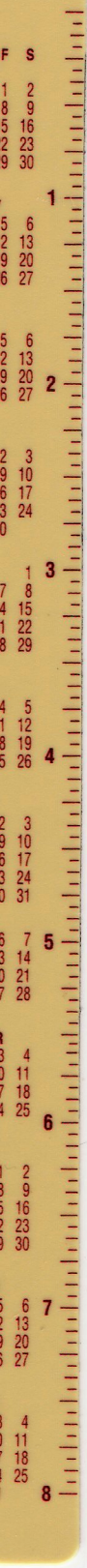
- BE CERTAIN SAFETY KEY IS NOT IN LAUNCH CONTROLLER.
- Remove safety cap and slide launch lug over launch rod to place rocket on launch pad. Make sure the rocket slides freely on the launch rod.
- Attach micro-clips to the igniter wires. Arrange the clips so they do not touch each other or the metal blast deflector. Attach clips as close to protective tape on igniter as possible.
- Move back from your rocket as far as launch wire will permit (at least 15 feet - 4.6 meters).
- 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.

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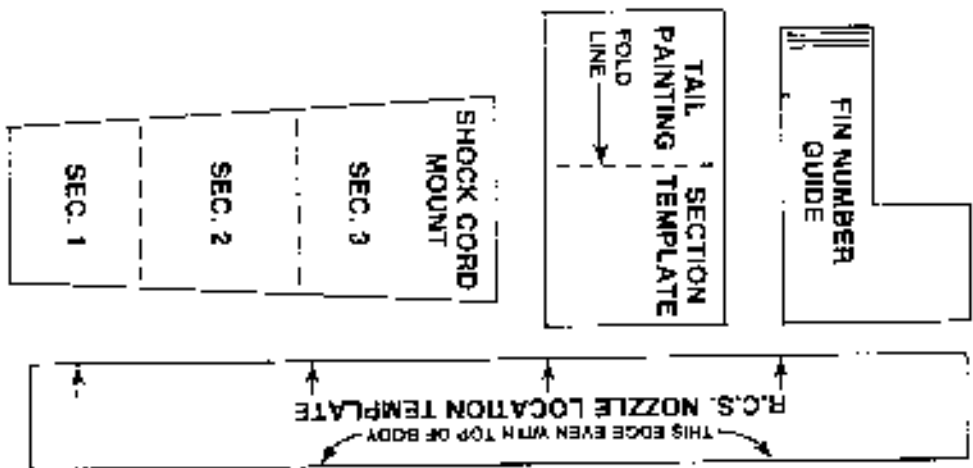
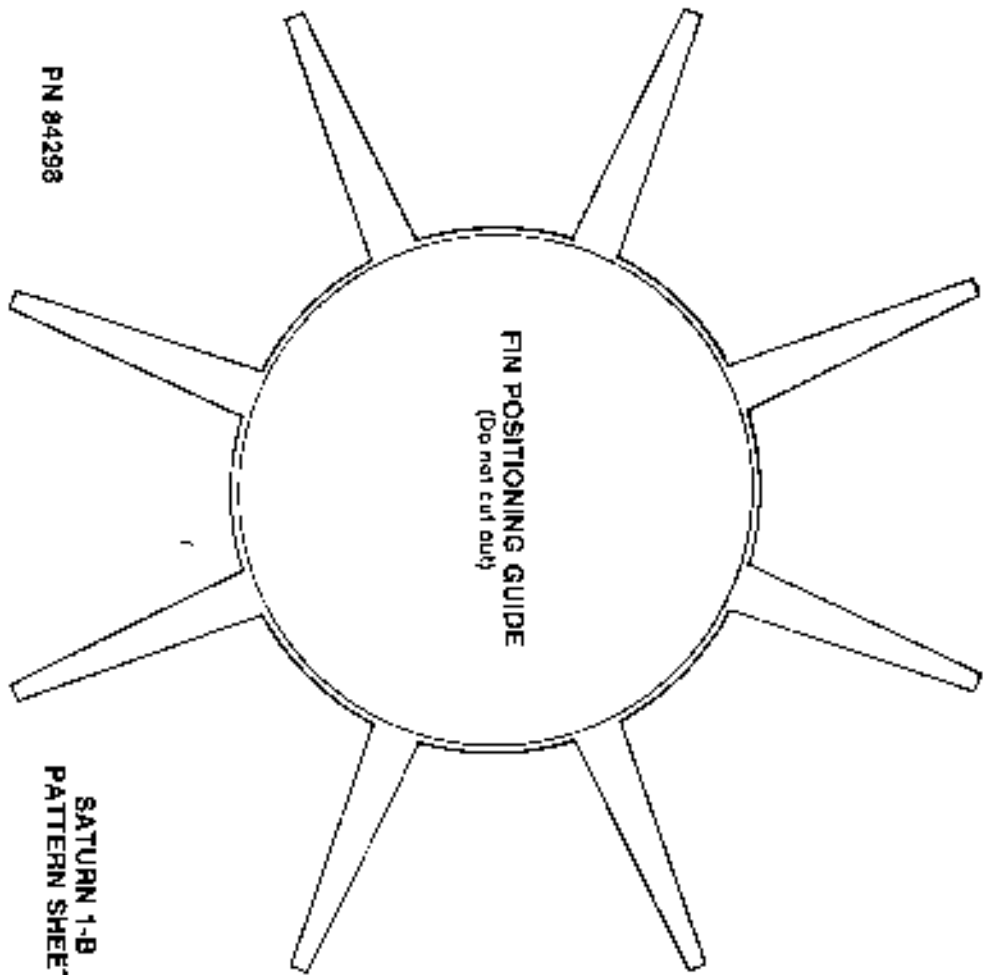
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