

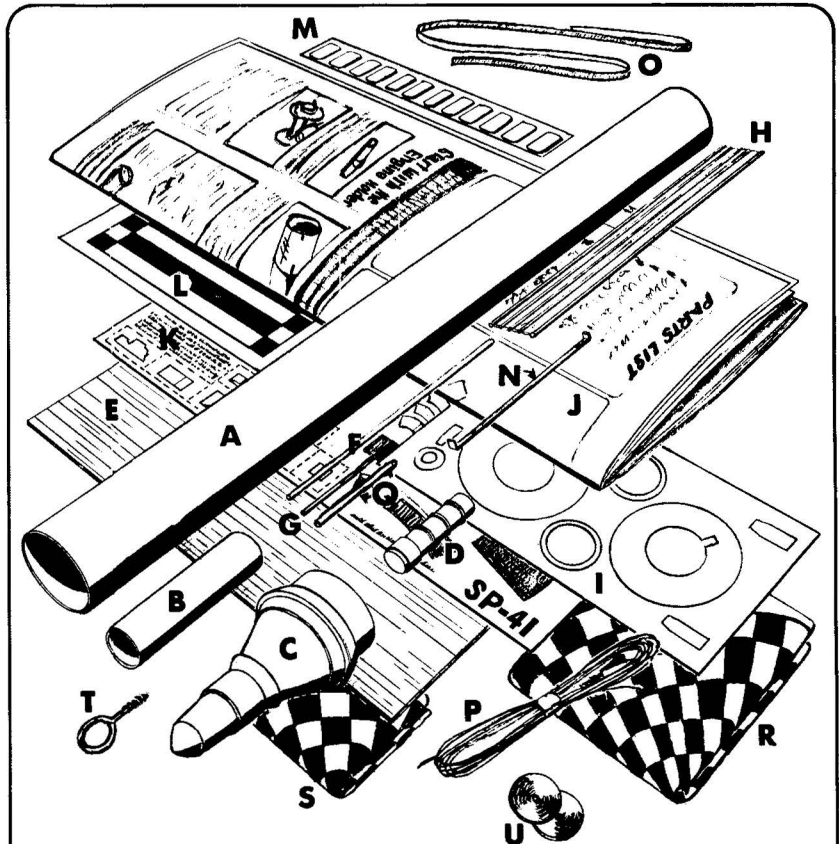


## MERCURY REDSTONE III PARTS LIST

<b>A</b>	1	Body tube	Part #BT-60KF
<b>B</b>	1	Body tube	Part #BT-20J
<b>C</b>	1	Capsule Cone	Part BNC-60AK
<b>D</b>	1	Escape motor nose piece	Part #BNP-41
<b>E</b>	1	Sheet balsa fin stock	Part #BFS-40
<b>F</b>	1	1/8" Dowel stock	Part #WD-1C
<b>G</b>	1	1/12" Dowel Stock	Part #WD-2B
<b>H</b>	1	Tower dowel section	Part #WD-41
<b>I</b>	1	Set of Rings and fin parts.	Part #TA-41
<b>J</b>	1	Set of instructions	Part #KP-41
<b>K</b>	1	Pattern and shroud sheet	Part #SP-41
<b>L</b>	1	Decal sheet	Part #KD-41
<b>M</b>	1	Sheet of 12 tape strips	Part #TD-2L
<b>N</b>	1	Engine hook	Part #EH-2
<b>O</b>	1	Shock cord	Part #SC-1
<b>P</b>	1	Shroud line stock	Part #SLT-180
<b>Q</b>	1	Launch lug	Part #LL-2B
<b>R</b>	1	18" Parachute	Part #PK-18A
<b>S</b>	1	12" Parachute	Part #PK-12A
<b>T</b>	1	Screw eye	Part #SE-1
<b>U</b>	2	Nose cone weights	Part #NCW-1

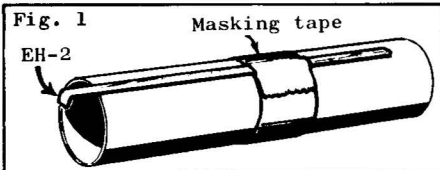
### ADDITIONAL TOOLS AND SUPPLIES:

White glue, model knife or single edge razor blade, ruler, ball point pen or pencil, tweezers, a piece of wax paper or "Handiwrap," fine and extra fine sandpaper and black, red and white enamel or dope.

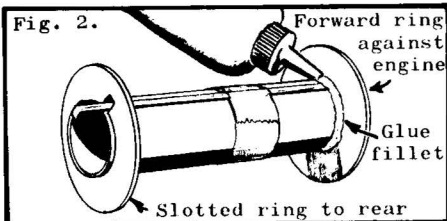


Read all the instructions first. Make sure you have all the kit parts, plus the tools and supplies listed above. Then start construction, checking off each step as you go.

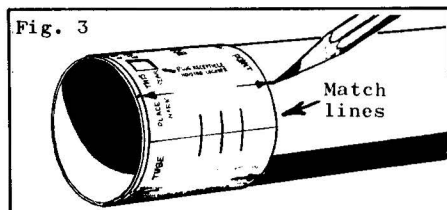
## Start with the Engine Holder



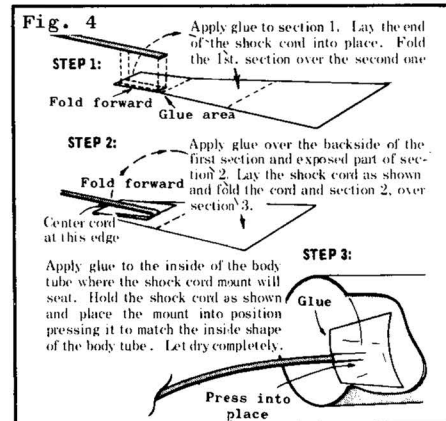
1. Cut a 1/8" slot in the engine holder tube 1/4" from one end. Push one end of the engine hook into this slot and fasten the middle of the hook to the body tube with a strip of masking tape. Apply a drop of glue over the slot.



2. Remove the two large rings from the TA-41 sheet and position them as shown above. Apply a line of glue on each side of each ring at the ring-tube joint. Set the unit aside to dry.

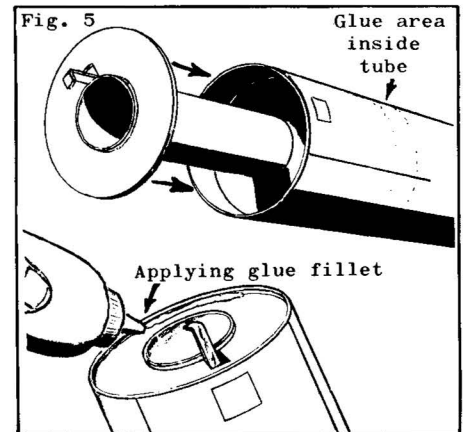


3. Cut out the marking guide from the pattern sheet. (Cut out the plug squares from the guide.) Wrap the guide around one end of the main body tube and mark as instructed on the guide.



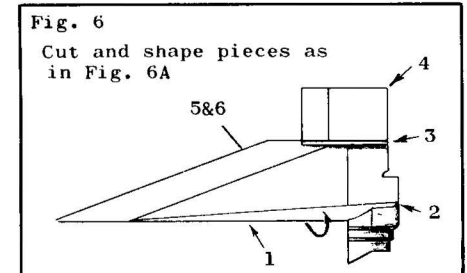
4. Cut the shock cord anchor plate from the lower edge of the GENERAL VIEW panel and prepare it as illustrated. Install the anchor 1-1/4" inside the front end of the body tube. (The opposite end from the markings.)

5. After the glue on the engine mount assembly has dried completely, smear glue around the inside of the rear of the body tube about 2-1/2" from the end. Slide the engine holder assembly into the tube as shown until the rear ring is just inside the edge of the body tube. Apply a fillet of glue all the way around the ring-tube joint. Let dry.

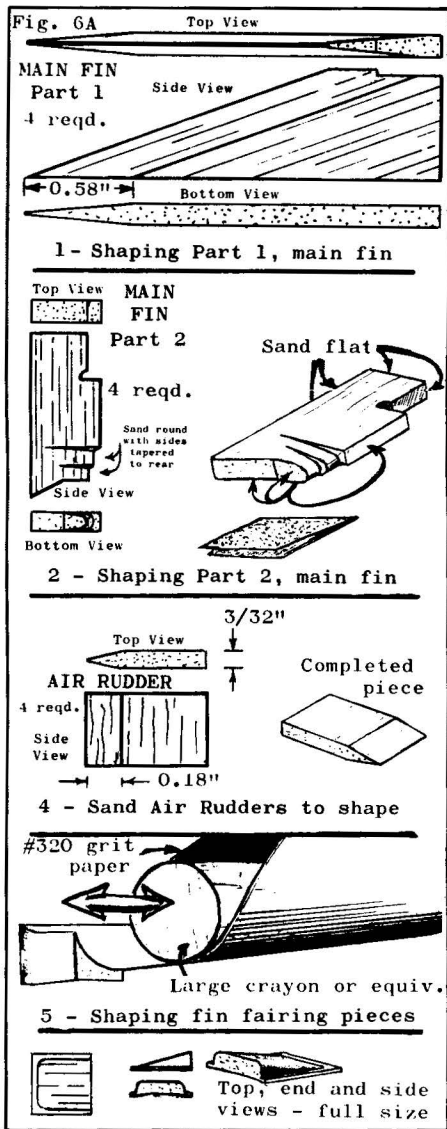


NOTE: During assembly of this kit, there will be times when you have to wait for the glue to dry. Use this time to assemble the 18" and 12" parachutes.

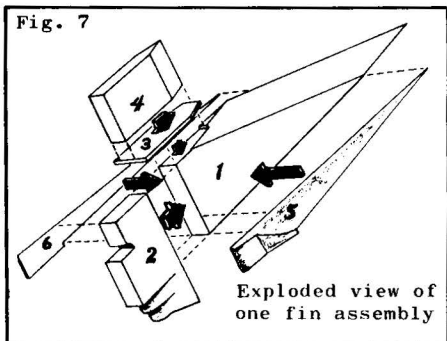
## Fins are next . . .



6. Read the template instructions on the pattern sheet and prepare the templates for use. Draw the proper number of



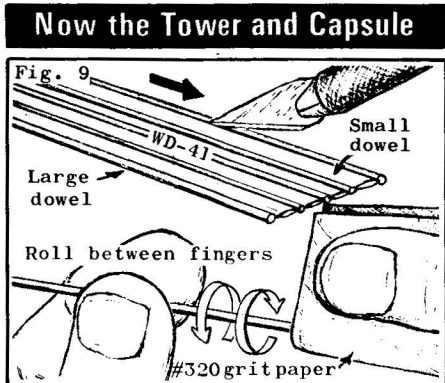
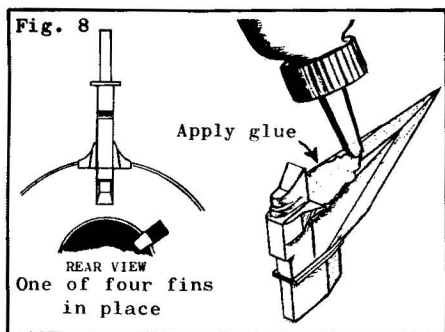
parts on the balsa stock to make four complete fins and two pull-away plugs. Cut out all the balsa parts and sand each as instructed. Sand the two pull-away plug sockets to the shape and size in the drawing above.



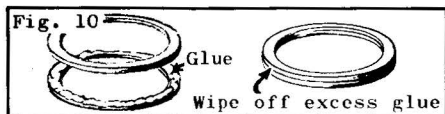
7. Assemble each fin in the following sequence: Glue main fin part 2 to part 1, add the fin tip plate (from the die-cut TA-41 sheet), the air rudder, then left and right fairing pieces.

8. Put glue on the root edge of one fin and center it on one of the guide lines at the rear end of the body tube. Repeat this step with the other three fins. (See the rear view.)

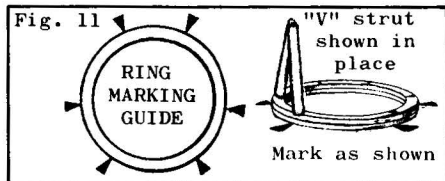
See Illus. top next column



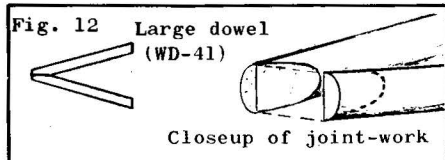
9. Separate the dowel strips carefully from the webbing using a sharp blade or a razor saw. Carefully "twirl-sand" each strip as shown. It is not necessary to sand the strips perfectly round—just smooth.



10. Remove the two identical thin rings from the TA-41 sheet and glue them together. This becomes the tower base ring.

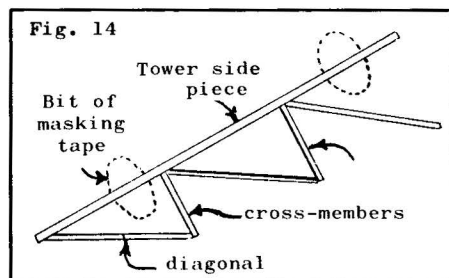
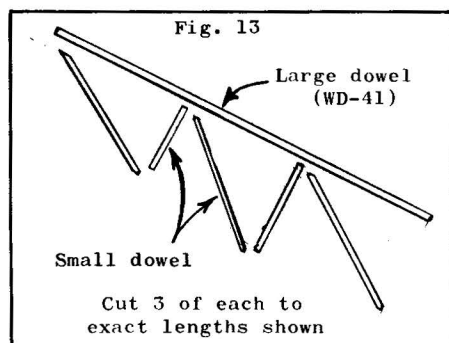


11. Lay the tower base ring on the marking guide above and mark at each arrow tip for the "V" strut ends.

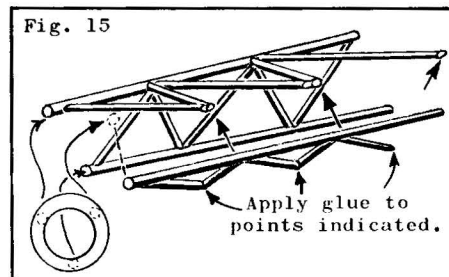


12. Cut enough pieces of the larger dowel strips prepared in step 9 to shape and length, to assemble three "V" struts. Glue each strut unit together over the side view drawing above after covering the drawing with wax paper or "Handi-wrap."

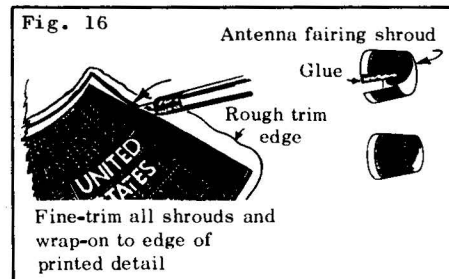
13. Cut three tower side pieces from the large dowel strips. Cut three pieces of each cross-member and each diagonal member from the small dowel strips prepared in step 9.



14. Lay a piece of wax paper or "Handi-wrap" over the tower side member drawing. Apply two very small pieces of masking tape to one side member piece and position it over the drawing. Put a small drop of glue on one end of the shortest cross-member and, with tweezers, put it in place over the drawing (glue-end against the side member). Repeat this part of the step with the middle cross-member, then with the top-end, middle, and bottom-end diagonal pieces. (Note: The longest (bottom-end) cross-members are not glued in place until a later step.)

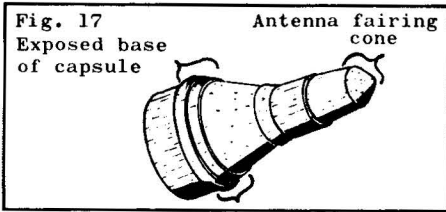


15. Repeat step 14 to make two more tower side assemblies. When completed, you should have three identical side assemblies. Glue them together into a triangular structure as illustrated above. Remove the small ring from TA-41 and glue into place on the top end of the tower structure.

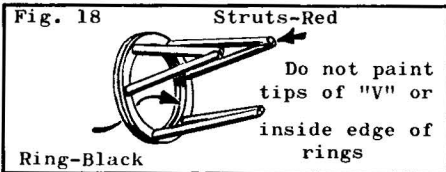


16. To prevent the ink from smearing, apply a coat of clear enamel spray to the three shrouds on the printed side of the pattern sheet. After the spray has dried, cut them out on the outside

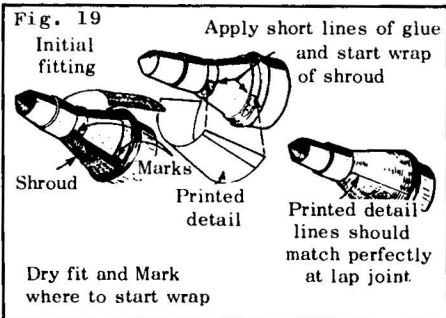
edges of the white lines just inside the printed area. Apply glue to the tab of the antenna fairing shroud and form this shroud. (The printed detail should just meet at the joint.) Set this shroud aside until step 23. All shrouds will fit correctly if they are cut from the SP-41 pattern sheet on the lines mentioned. Use a sharp model knife and take time to cut carefully.



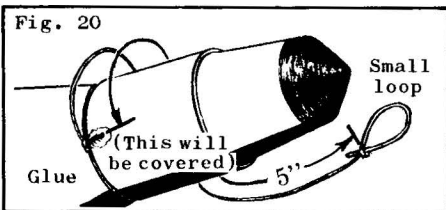
17. Apply a coat of sanding sealer to the areas of the capsule cone shown above. Sand carefully and apply another coat of sealer and sand again. Repeat this step until the areas are smooth to the sight and touch. Brush on two or three coats of black enamel or dope.



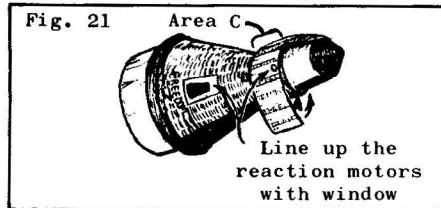
18. Brush on two coats of red enamel or dope to just the "V" struts. Brush on the same number of coats of black enamel or dope to just the tower base ring. DO NOT paint the inside edge of the ring or the very end of the "V" struts...These are glue points and will be touched up in a later step.



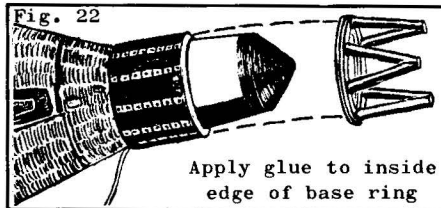
19. The crew compartment shroud is first "dry-fitted" to the capsule base to assure correct alignment of the glue-tab end for the next part of this step. (If it does not lap properly, sand shoulders lightly until it does.) Carefully unwrap the shroud and mark the shoulders at the edge of the glue-tab. Apply a short line of glue to each of the shoulders and set the glue-tab end of the shroud in place. Apply glue to the rest of the two shoulder areas and across the glue-tab. Carefully wrap the remainder of the shroud into place.



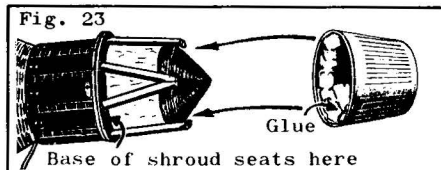
20. Cut an eight inch piece of shroud line and tie it securely around the cone at the forward end of the crew compartment shroud. Cut the short loose end close to the knot and apply a spot of glue to the knot. Tie a small loop in the long loose end of the line. This is the loop to which the 12" chute shroud lines will be tied.



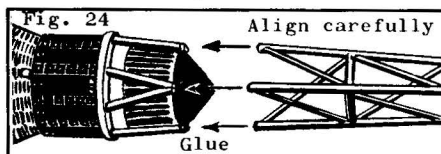
21. Apply glue to the back of the recovery compartment wrap-on. Carefully wrap this piece around area C, positioning it as shown in the drawing above.



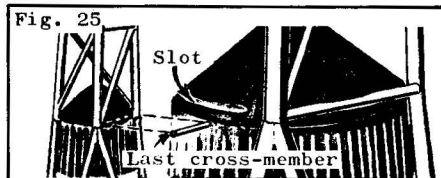
22. Apply a line of glue to the inside edge (unpainted) of the base ring "V" strut assembly. Seat this assembly against the forward edge of the recovery compartment with one of the "V" struts lined up with the upper window in the crew compartment shroud.



23. Apply a line of glue to the inside lower edge of the antenna fairing shroud. Slide this shroud in place over the top of the capsule cone and seat the bottom edge of the shroud against the inside edge of the tower base ring.



24. Apply a drop of glue to the top (unpainted) end of each "V" strut. Position the lower end of a tower side member on each "V" point and hold in place until dry.



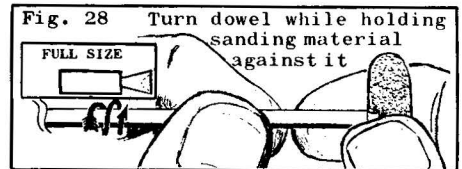
25. Dry-fit the last tower cross-member pieces in place and find out how much of a slot must be carefully cut into the side of the antenna fairing heat shield to accept each cross-member. Carve away just a little at a time, checking the fit of each cross-member until the ends just locate in their "V" strut side member joints.



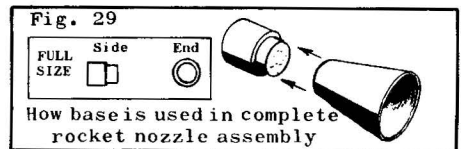
26. Apply a small drop of glue to each end of one cross-member. Fit it into a slot and seat each end in its "V" strut-side member joint. Repeat this step with the other two cross-members.



27. Apply a fillet of glue across each slot to restore the appearance of the heat shield. When dry, paint the exposed parts of the cross-members with two or more coats of red enamel or dope and touch up any flaws in the paint at the "V" strut-side member joints. Touch up the restored slots in the heat shield with black enamel or dope.



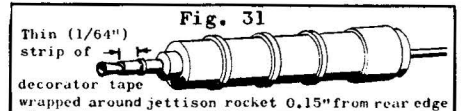
28. Shape the tower jettison rocket from the piece of 1/8" diameter rocket (WD-1) supplied. Shape the nozzle end first, then add the other details shown and finally cut off the piece at the correct length by measuring over the drawing.



29. Make 3 escape rocket nozzle bases, from the WD-1 dowel supplied. Use the same shaping technique as shown for step 2. Shape the shroud seat of the nozzle first, then cut off the base at the correct length.



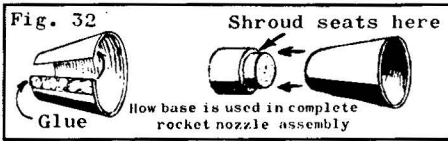
30. Perhaps the most fragile part is the aerodynamic spike. Shape the nose section from the WD-1 dowel, cutting it off as shown. Use a piece of tower side member dowel, cut and marked as illustrated, for the shaft. Glue the nose section to the unmarked end of the shaft. Locate the center of the top end of the BNP-41 escape motor and gently push the marked end of the shaft into the hole, then squirt glue into the hole, then reinsert the shaft and align it to point straight ahead of the escape rocket.



31. Glue the tower jettison rocket to the base end of the escape rocket, aligning it so it points straight rearward.

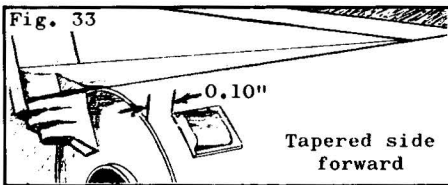


32. Apply sanding sealer to all parts of the escape rocket assembly. Sand very lightly and very carefully with very fine sandpaper. Repeat two or three times. When filling is completed, brush two or more coats of red on the escape motor and aerodynamic spike. The jettison rocket is painted silver.



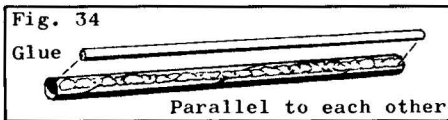
33. Cut out and form the three escape rocket nozzles. Apply glue to the shroud seat of one nozzle base piece and slip a nozzle into place. Align the pieces and set aside to dry. Repeat this part of the step with the other two nozzles and bases.

34. Apply two coats of red enamel or dope to the entire nozzle and base (except for the very end that glues to the escape rocket). Repeat this step with the other two assemblies.

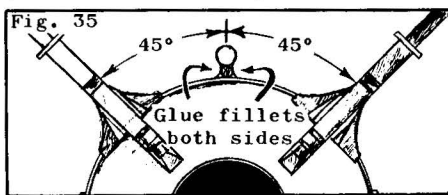


35. Apply glue to the back of one plug socket and locate it on one of the position marks at the rear of the main body tube. Repeat this step with the other socket and location mark.

36. Apply sanding sealer to the fins and sockets following the procedure explained in step 18. Work with these parts until they are very smooth.



37. Glue the 1/12" dowel (WD-2B) to the launch lug, making sure that it is parallel to the launch lug.



38. Glue the lug assembly to the body 6-1/8" up from the rear of the tube. Align the assembly so it is parallel to the tube centerline and sticks straight away from the centerline.

39. Go over the entire body tube and the fins with a lint-free cloth to remove all traces of sanding dust and other grit. Give the body tube, fins, etc., a first coat of white enamel or dope and let it dry completely.

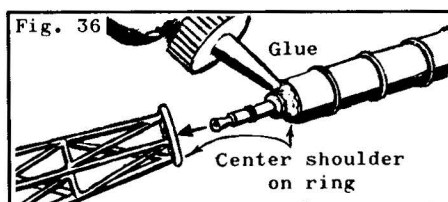
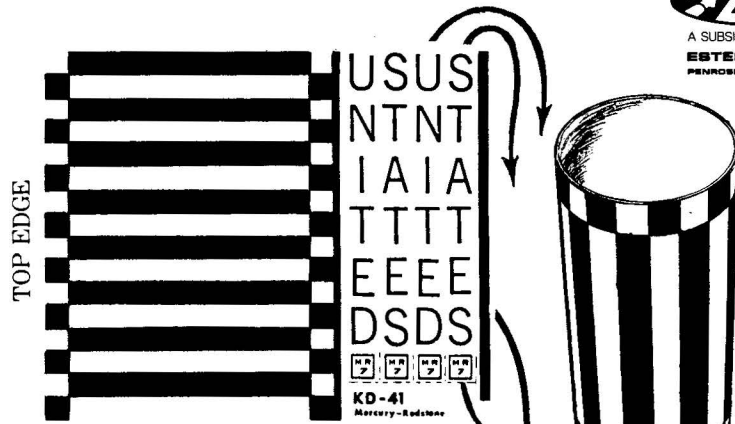
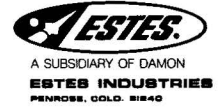
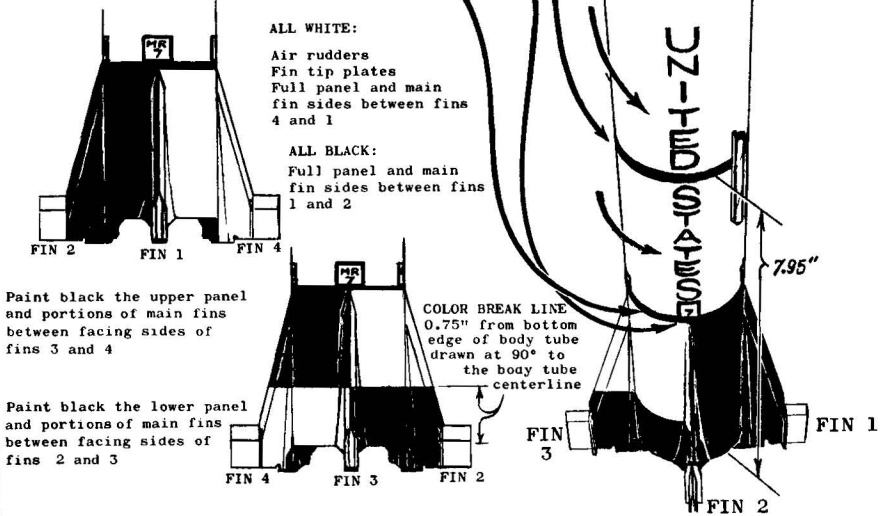


Fig. 39

DECAL PLACEMENT



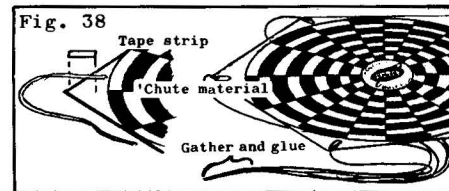
LOWER BODY PAINT SCHEME



40. While the body is drying, apply a thin line of glue around the base shoulder of the BNP-41 escape rocket assembly. Carefully insert the jettison rocket through the center of the tower structure top ring, seating the base shoulder of the escape rocket on the top of the ring.



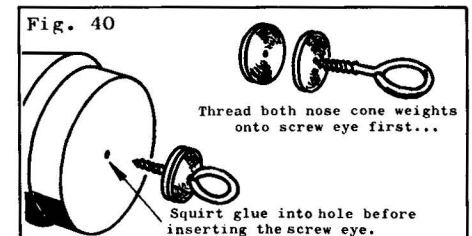
41. Apply a spot of glue to the base of one escape nozzle assembly. Insert the base of the nozzle as shown to fit evenly against the base of the BNP-41 escape rocket. Repeat this step with the other two escape nozzles.



42. If you have not assembled the parachutes as yet, do it now. Gather the free ends of the shroud lines from the 12" parachute and pass them through the small loop in the capsule static line (made in step 21) and tie to the loop. Tie the free end of the shock cord from the body tube to the gathered shroud lines of the 18" parachute.

43. Apply the second white coat of enamel or dope to the main body section, fins, etc., and allow to dry completely. Inspect the capsule, tower and escape rocket for any spots that were missed in painting either the red or black portions, and retouch them as needed.

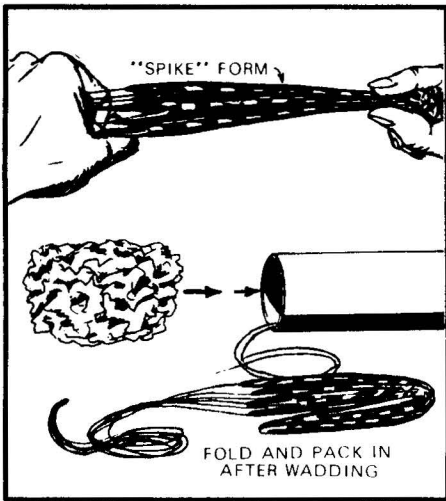
44. Final details may be added now as shown above. Paint the black portions of the fins and panels as indicated and let dry. Cut out only the decals you will immediately apply since some of them are small and easy to lose. After the decals are completely dry (it takes about 12 hours for a decal to dry correctly) they may be sealed with the coat of crystal clear spray that is to be applied over the whole bird, capsule, tower structure and escape rocket.



45. Turn the screw eye into the base of the capsule and remove it. Turn the screw eye first through one nose cone weight, then the other. (See the illustration.) Squirt glue into the hole in the capsule base, then turn the NCW/screw eye assembly back into the hole until snug.

# Countdown Checklist

- 13. Install an electrical igniter in the engine as it directed in the instructions which came with it.
- 12. Insert the engine into the engine mount tube springing the engine retainer up enough to slide the engine into place.
- 11. Loosely crumple 8 or 9 squares of flameproof wadding. Pack the wadding into the body tube from the top. The wadding should fill the tube for a distance of about 1-1/2 inches and seal tightly along the



of the tube. Hold the booster section parachute between two fingers at its center and pass the other hand down it to form a "spike" shape. Pack the shock cord and parachute into the tube, then fold the capsule chute and pack it in on top. Slide the capsule into place.

- 10. Remove the safety interlock or key from the launch control panel. (If a simple spring switch is used, install the protector around the spring.) Carry the key or interlock on the person of the launch control officer.

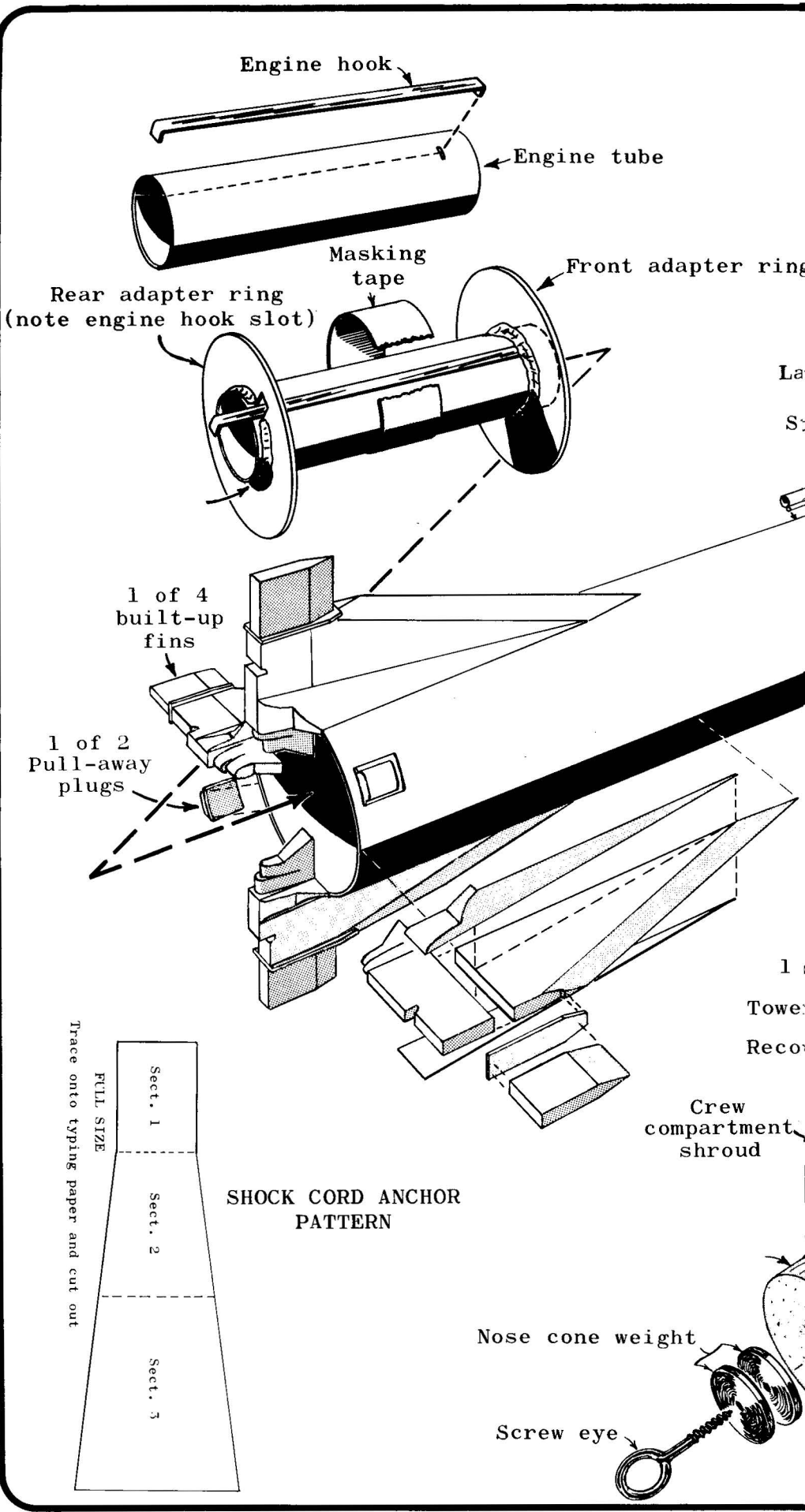
- 9. Place the rocket on the launcher. Check to be sure the panel is disarmed. Clean the micro-clips and attach them to the igniter.

- 8. Clear the launch area, alert the recovery crew and trackers.

- 7. Check for low flying aircraft and unauthorized persons in the recovery area.

- 6. Arm the launch panel.

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



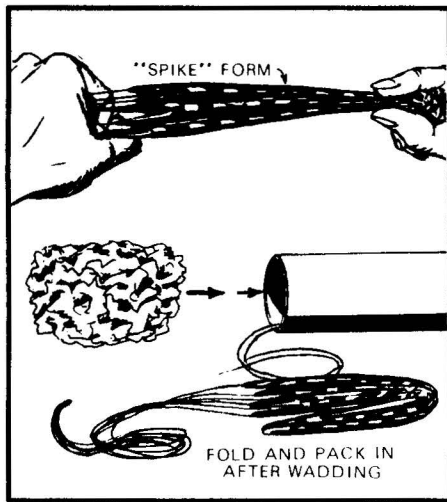


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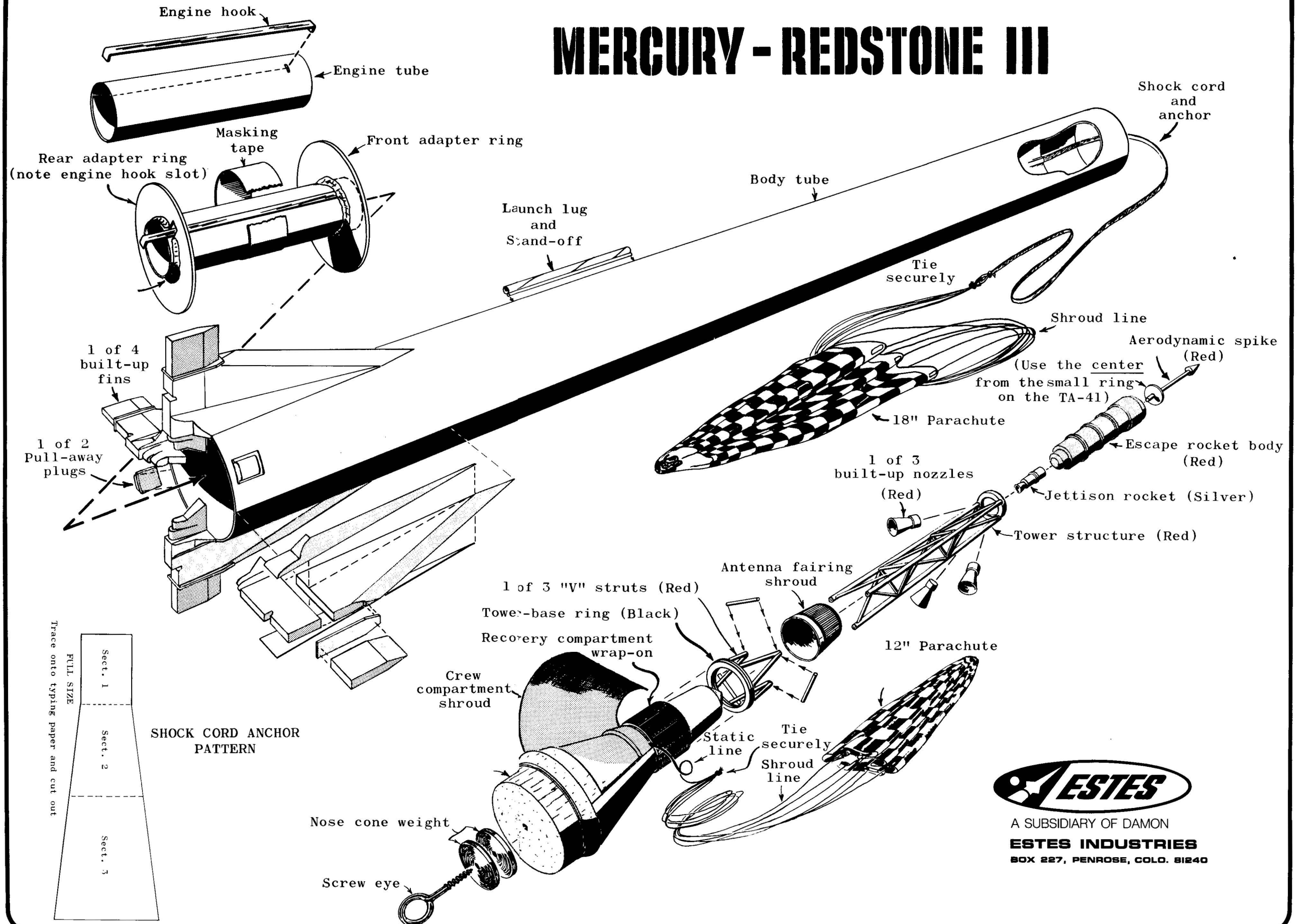
8. Clear the launch area, alert the recovery crew and trackers.

7. Check for low flying aircraft and unauthorized persons in the recovery area.

6. Arm the launch panel.

5.  4.  3.  2.  1. LAUNCH!

# MERCURY - REDSTONE III



A SUBSIDIARY OF DAMON  
**ESTES INDUSTRIES**  
 BOX 227, PENROSE, COLO. 81240



# MERCURY-REDSTONE III

## Another Great Bird of History

The Redstone missile has a history of "firsts." It was the booster for America's first satellite, for America's first manned ballistic space flight and for Australia's first satellite.

First launched in August, 1953, the Redstone achieved a record of solid success in its first 15 flights. Designed as a combat weapon it was a strong, simple, and reliable vehicle.

In September, 1956, the Redstone in its Jupiter C configuration, boosted a payload to an altitude of 682 miles. This flight demonstrated that radio communication from a missile to the ground at altitudes of over 500 miles was practical. A velocity of about 13,000 miles per hour was achieved on reentry.

Although the practicality of the Jupiter C as a satellite launcher was proven, it wasn't until after Sputnik I that the Army was permitted to go ahead with an orbital attempt. Known as the Juno-1, the Redstone with three solid propellant upper stages boosted Explorer I, the United States' first satellite, into orbit on January 31, 1958.

## America's first man in space

In project Mercury the Redstone was used to boost unmanned, monkeyed and manned capsules in suborbital tests. The most important of these came on May 5, 1961, when Astronaut Alan B. Shepard, Jr. became America's first man in space. Although the flight lasted only 15 minutes, it set a standard of excellence for future manned launchings and proved the soundness of the Mercury concept.

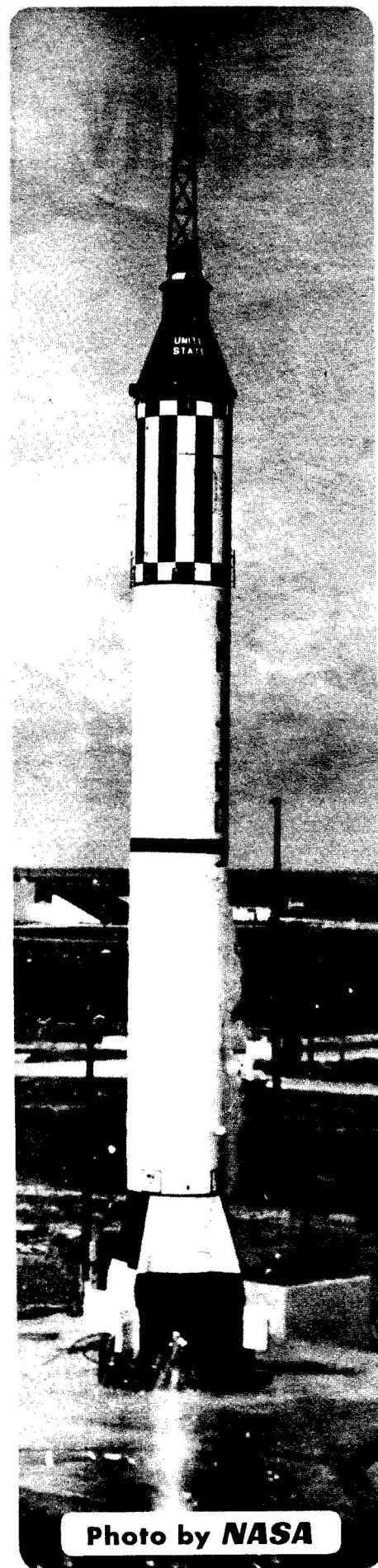
Although other, more glamorous, boosters were developed, the Redstone continued to prove its value as a booster for several more years. When Redstone missiles were replaced by more modern solid propellant missiles in the field, many were modified for use in the Sparta project. In this program, the Redstone was fitted with two solid propellant upper stages and used to test anti-missile systems.

One highlight of the Sparta project was the launching in late 1967 of Australia's first satellite. The 100-pound body was equipped to collect data on solar radiation.

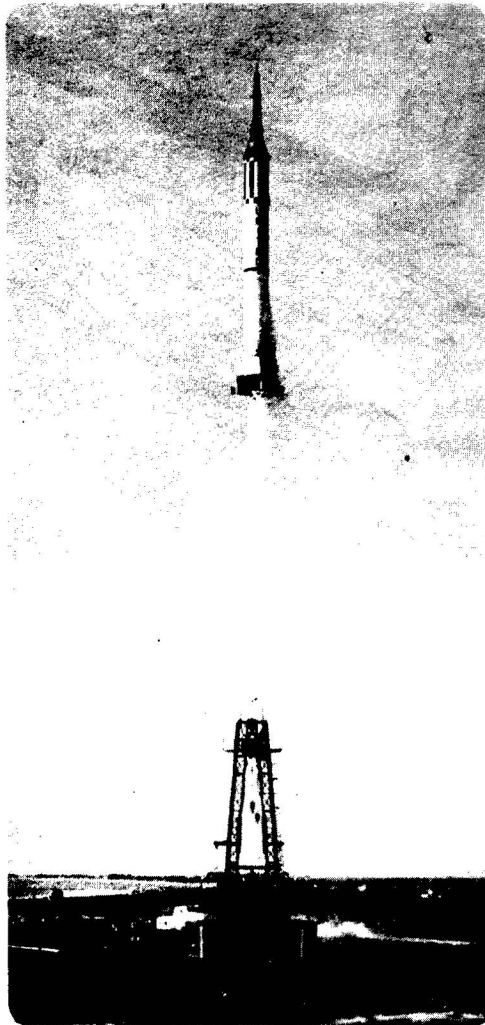
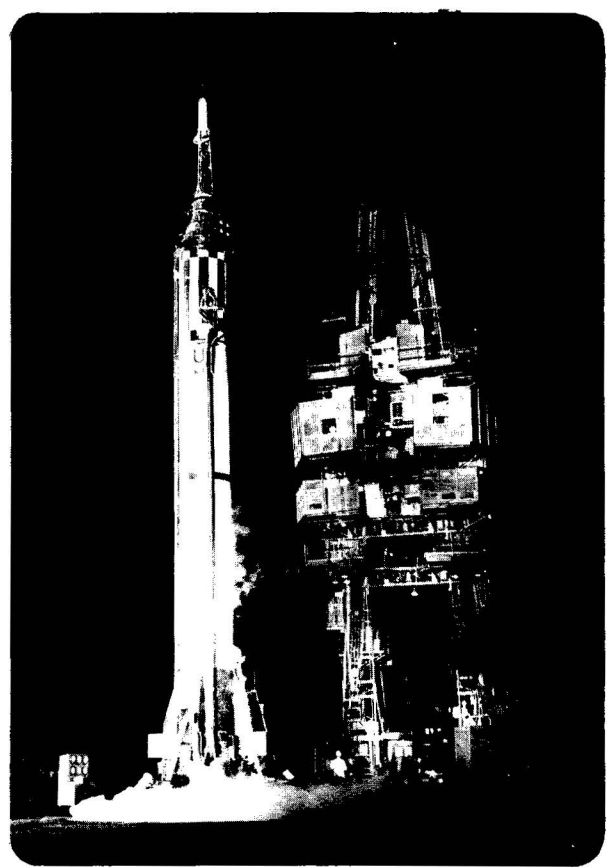
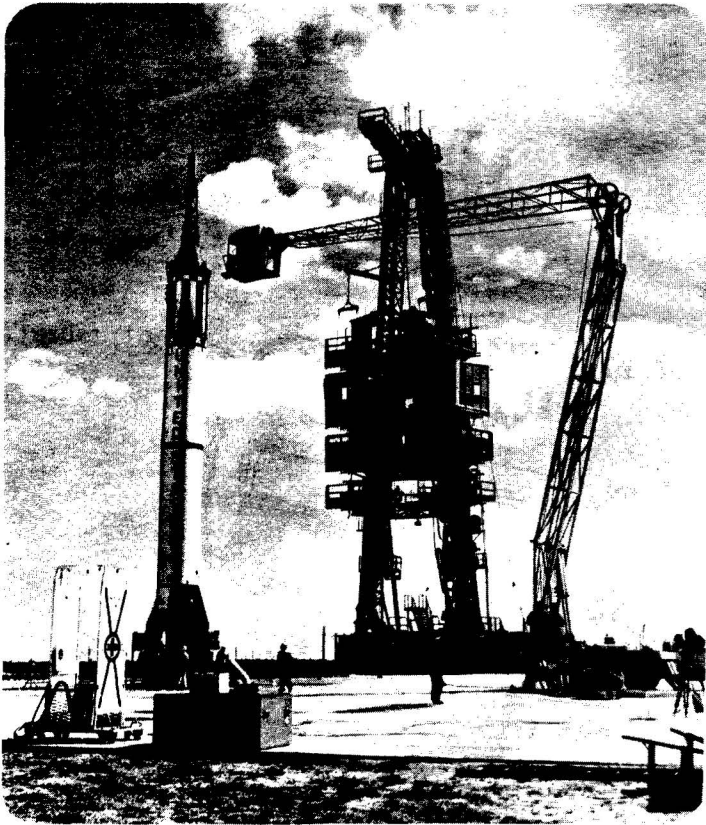
As the first successful military rocket developed by the United States, and as the direct descendant of the V-2, the Redstone deserves a special place in the history of space flight. Your Mercury-Redstone model is a tribute to the finest hour of this great bird.

### MERCURY-REDSTONE SPECIFICATIONS

Body Diameter	70 inches
Maximum Diameter	74 inches
Overall length	83 feet
Lift-off weight	66,000 lb.
Propellant	Liquid Oxygen 75% ethyl alcohol and 25% water
Engine type	Rocketdyne A-6
Thrust	78,000 lb.







*(Top Left) One of many "egress" tests conducted to remove the astronaut in event of an on-pad abort.*

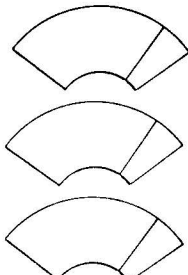
*(Top Right) Flight preparations in the early morning hours of May 5, 1961*

Photos by NASA

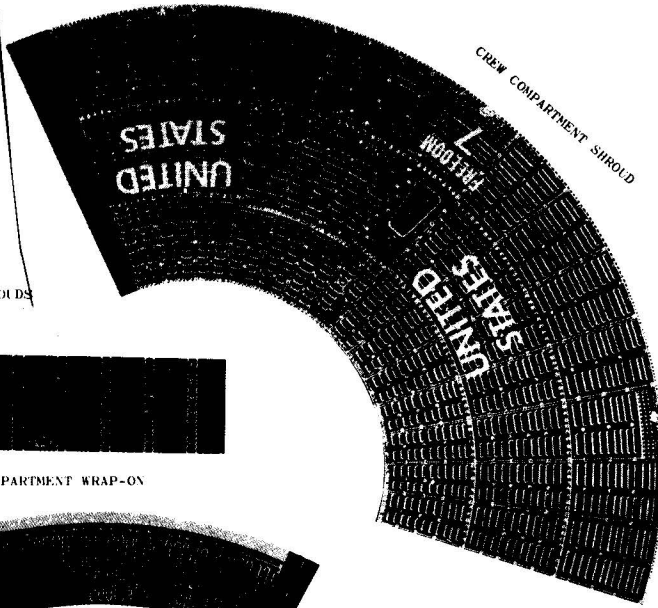
*(Lower Left) Approximately 9:34:05 EDT May 5, 1961, Alan B. Shepard Jr. is on his way into history.*

*(Lower Right) Shepard boards the recovery helicopter 11 minutes after splash down.*





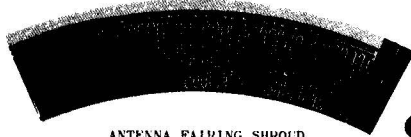
ESCAPE ROCKET NOZZLE SHROUDS



CREW COMPARTMENT SHROUD



RECOVERY COMPARTMENT WRAP-ON



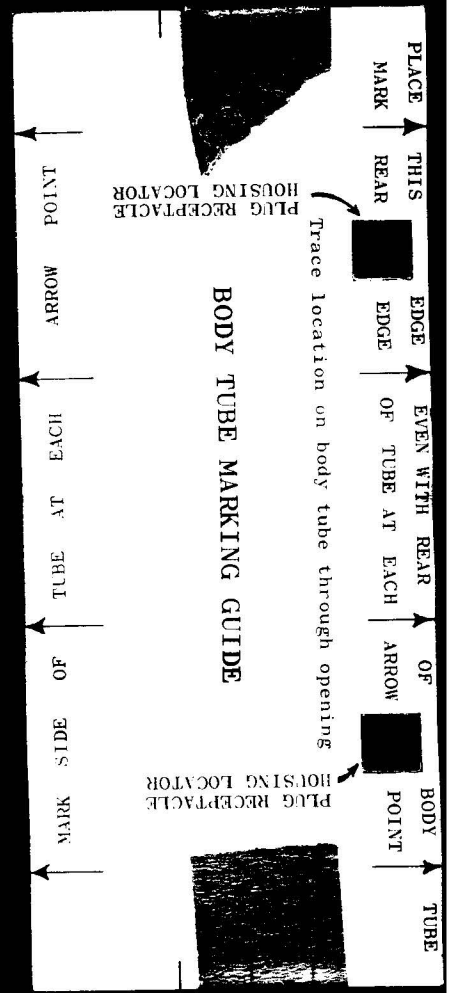
ANTENNA FAIRING SHROUD

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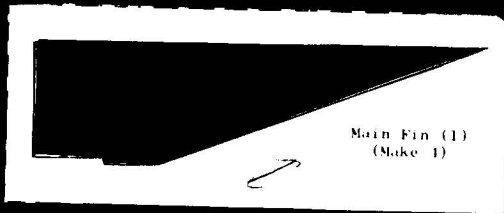
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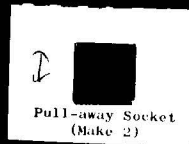
SP-41



Air Rudder (Make 4)



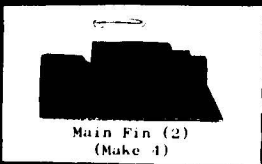
Main Fin (1) (Make 1)



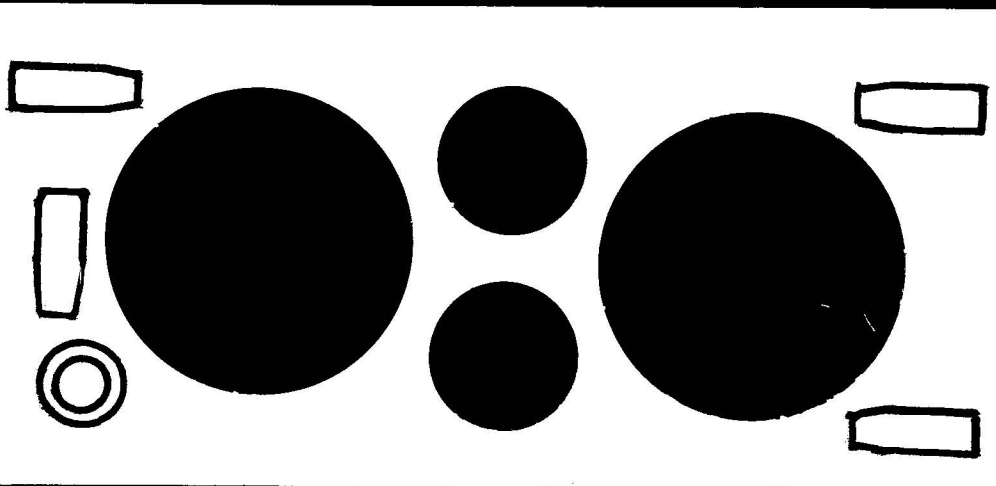
Pull-away Socket (Make 2)

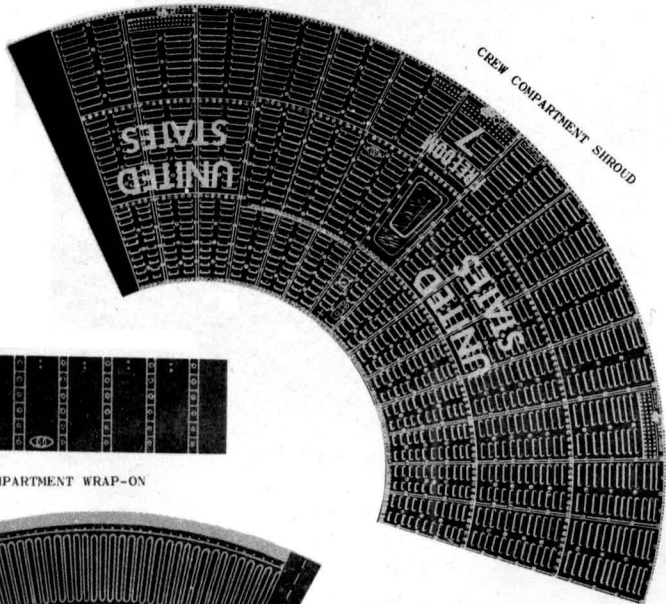


Fin Root Fairing (Make 8)



Main Fin (2) (Make 1)





RECOVERY COMPARTMENT WRAP-ON



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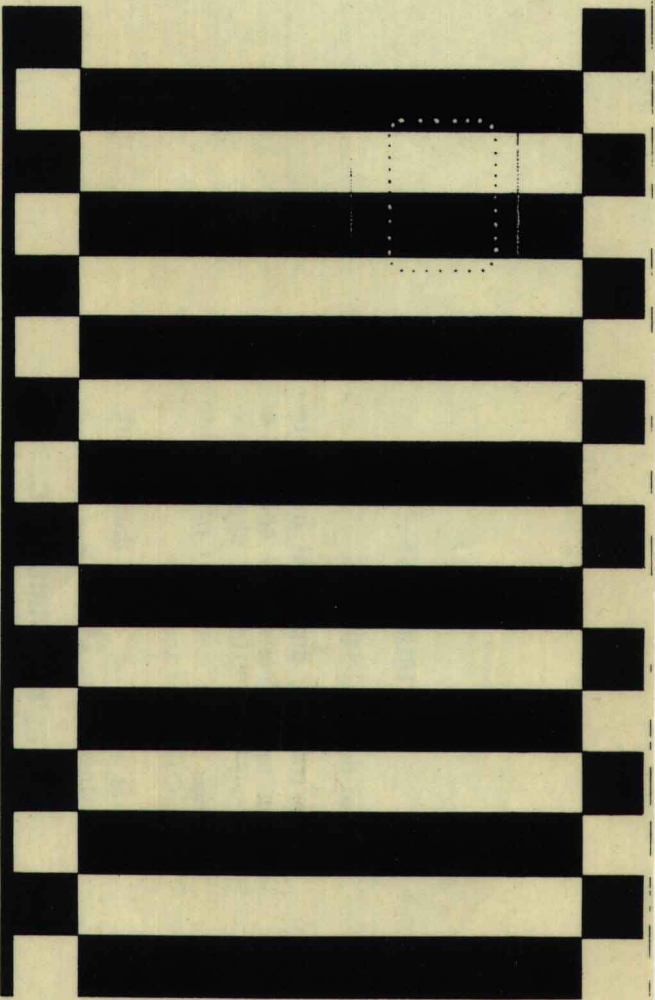
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MERCURY-REDSTONE

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