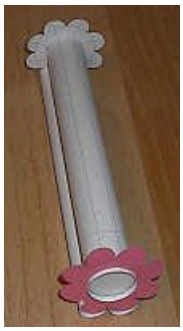
Precision Paper Space Model Assembly Instructions for Saturn 1B (SA-205/Apollo 7)

S-1B First Stage

Core Liquid Oxygen (LOX) Tank

1. Glue Core LOX Bulkhead Mounts (Page 2 Parts A or Parts 2A) on cardstock to opposite (inner) side of gray area on Core LOX Tank (Part 1A).



2. Double roll Core LOX Tank into cylinder. Glue at seam. Glue loose inner roll ends to outer layer.

3. Glue Core LOX Tank Bulkheads on cardstock (Parts 2B) against mounts at each end of Core LOX Tank.

4. Slide S-1B Bulkheads on cardstock (Parts 5A) over ends of Core LOX Tank and glue at lines 1/8 inch from each end. Align radial lines on Bulkheads with longitudinal lines on Core LOX Tank.

Outer S-1B Tanks

5. Print 4 copies each of Pages 3 and 4. Double roll 4 Outer LOX (Part 3A) and 4 Outer RP-1 fuel tanks (Part 4A) into cylinders. Glue at seam and at loose inner roll ends.

6. Glue 8 outer tanks into place against Core LOX Tank and Bulkheads, alternating LOX and RP-1 tanks.

S-1B Engine Section

7. Glue Aft Bulkhead Mount on cardstock (Part 7D) to opposite (inner) side of gray area on S-1B Engine Section Inner Skin (Part 7A).

8. Overlap and glue half of S-1B Engine Section Outer Skin (Part 7B) to Inner Skin (Part 7A) with triangles extend above top, then roll into cylinder.

9. Glue Engine Section Base on cardstock (Part 7C) against mount at aft end of engine section, aligning engine positions per photos.

10. Slide engine section over aft end of S-1B tanks. Align roll patterns per photos and glue into place.

11. Glue tapered S-1B Engine Section Fairing (Part 8A) to top of Engine Section, aligning roll patterns. Pull fairing tightly and glue small areas progressing around the stage.

S-1B/S-IVB Interstage

12. Glue cardstock to match gray area on S-1B/S-IVB Interstage Inner Skin (Part 6A).

13. Overlap 1/2 of Interstage Inner Skin with Interstage Outer Skin (Part 6B) and glue. When fixed, roll Interstage into a cylinder and glue.

14. Insert Interstage Bulkheads on cardstock (Parts 5B) against top and bottom of inner cardstock mounts and glue.

15. Insert bottom half of Interstage Top Adapter on cardstock (Part 6C) into top of Interstage, pressing against top Interstage Bulkhead, and glue.

16. Slide bottom of Interstage (with white band) over top of S-1B tanks. Align roll bars with black RP-1 tanks. Carefully center and glue.

17. Glue eight S-1B Fins (Parts 8B) to cardstock. Cut out parts, bend in half to make fin shape, and bend two rectangular attachment parts out to prevent gluing them together. Glue fins halves together.

18. Attach eight S-1B fins to Engine section aligned between eight outer tanks, taking care to match roll patterns.

19. Build four Inner Fixed H-1 Engines and four Outer Steering H-1 Engines for S-1B stage (Parts 2C). Cut out two parts for each engine - the solid gray inner half and the detailed outer half. Turn inner half to face inside, overlap and glue to outer half so that roughly half is glued. Roll into truncated cone and glue.

20. Center four Inner Fixed H-1 Engines on inner four black circles on S-1B Engine Section Base and glue.

21. Center four movable Outer Steering H-1 Engines on four outer circles on Engine Section Base and glue.

22. Attach four S-1B Antennas on cardstock (Parts 3B) to S-1B stage at top of outer tanks above fins I, II, III, and IIII. Press top of Antennas against bottom of Interstage with yellow antenna on right side.

S-IVB Second Stage

23. Reinforce gray area of S-IVB Inner Skin (Part 10A) with card stock or thick paper. This reinforcement will provide mounting points for upper and lower bulkheads. Overlap Inner Skin with S-IVB Outer Skin (Part 9A) at line, then roll into a cylinder. Most of the Douglas-built S-IVB consisted of a 260 inch diameter liquid hydrogen (LH2) tank. An elliptical liquid oxygen (LOX) tank was attached to the bottom of the LH2 tank at the top of the bottom black stripe. The tanks shared a common bulkhead. The cylindrical Instrument Unit that controlled the Saturn rocket was attached to the top of the S-IVB stage. It comprised about 1/2 of the top black stripe.

24. Insert upper and lower bulkheads on card stock (Parts 5C) into S-IVB cylinder. Glue into place against bulkhead mounting points.

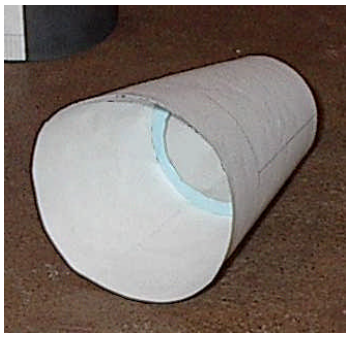
25. Glue S-IVB/SLA Adapter (Part 9B) into top of S-IVB stage with feathered side up.

26. Overlap S-IVB Thrust Structure Inner Skin (Part 11B) with Outer Skin (Part 11A) at line. Roll into cone shape and attach to base of S-IVB stage, pressing against bottom bulkhead.

27. Turn over J-2 Engine Nozzle Inner Face (Part 11D) and overlap about 50% with Outer Face (Part 11C). Roll into cone to form engine nozzle.

28. Roll J-2 Engine Thrust Chamber (Part 11E) into cylinder. Attach to top of completed J-2 Engine Nozzle. Attach completed J-2 engine assembly to apex of Thrust Structure. Rocketdyne J-2 produced 200,000 pounds of thrust.

Spacecraft LM Adapter (SLA)

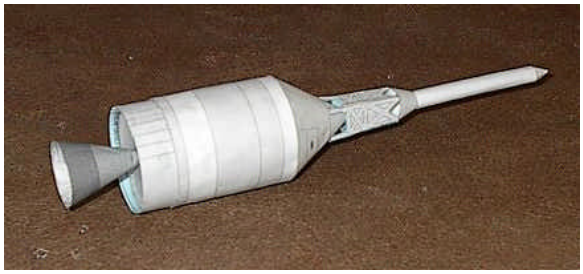


29. Cut out Spacecraft LM Adapter (SLA) (Part 12A). Trace outline to make SLA Inner Skin on a blank sheet of paper. Overlap two parts about 50%, then roll into a truncated cone. SLA housed Grumman-built Lunar Module, but was empty during Apollo 7 mission. The SLA and its contents and the CSM comprised the Saturn rocket's "payload".

30. Insert SLA Stiffener on card stock (Part 12B) into base of SLA until it is evenly centered and glue into place. This part is not prototypical, but is included for model integrity.

31. Glue SLA to top of S-IVB. Press feathered adapter parts into place with from above.

Command/Service Module (CSM) with Escape Tower



32. Overlap Service Module (SM) Inner Skin on card stock (Part 13B) about 50% with Outer Skin (Part 13A), aligning at line so Inner Skin extends about 1/2 inch beyond bottom of Outer Skin. This non-prototypical extension allows the CSM model to fit into the SLA model. The North American Aviation (NAA)-built SM provided propulsion, power, and life support for the manned, conical, NAA-built Command Module (CM).

33. Glue Inner Skin Bottom Bulkhead Mount (Part 13C) on card stock into inside area about 1/16 inch from bottom of Inner Skin base.

34. Roll SM parts into a cylinder.

35. Insert SM Top Bulkhead (Part 13D) on cardstock into top of SM against top of Inner Skin.

36. Insert SM Bottom Bulkhead (Part 13F) on card stock into bottom of SM against bulkhead mount.

37. Insert SM Top Adapter (Part 13E) into top of SM with feathered part up.

38. Roll Command Module (CM) Protective Boost Cover (Part 13G) into cone shape. Attach to top of SM by applying glue to adapter feathered section.

39. Turn over CSM Service Propulsion System Thrust Chamber (Part 13H) Inner Part and overlap about 50% with Outer Part. Roll into truncated cone. Mount to Center of SM Bottom Bulkhead.

40. Glue CM Launch Escape Tower (Part 13I) to card stock. Cut out and fold into four-sided lattice tower. Carefully center and glue to top of Command Module Boost Protective Cover.

41. Roll CM Escape Tower Rocket Body (Part 12C) into cylinder. Roll Rocket Base Fairing (Part 13D) into truncated cone. Roll Rocket Nose Fairing (Part 13E) into cone.

42. Insert feathered adapters into top and bottom of Rocket Body. Attach Base Fairing and Nose Fairing.

43. Carefully align and attach Escape Tower Rocket assembly to top of CM Launch Escape Tower.

44. Insert S-IVB into top of S-1B/S-IVB Interstage. Insert CSM into top of SLA. This completes assembly of your SA-205 model.